FOUNDATION REPORT
PALO COMADO CANYON ROAD OC (WIDEN)

Agoura Hills, California
Bridge No. 53-1678
07-LA-101-PM-33.5/33.9

Submitted to

CALTRANS

Prepared for

PARSONS
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Prepared by

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Project No. LA-1143
September 18, 2014
(Revised June 26, 2017)
(Updated September 1, 2017)

GROUP DELTA

September 18, 2014 (revised June 26, 2017, updated September 1, 2017)

PARSONS GDC Project No. LA-1143
2201 Dupont Drive
Irvine, CA 92612

Attention: Jon Hermstad, PE

Subject: Foundation Report
PALO COMADO CANYON ROAD OC (WIDEN)
Agoura Hills, California
Bridge No. 53-1678
07-LA-101-PM-33.5/33.9

Dear Jon:

Group Delta is pleased to submit this Foundation Report for the subject project. This report has been updated to address Caltrans' review comments and revised structural loads and pile-cut-off elevations (including piles below pilasters) for Abutments 1L and 1R. The general and foundation plans, Log of Test Borings (LOTBs), pile data tables and Appendix D (Analysis and Calculations) have been updated. Caltrans' recent review comments and our responses are included in Appendix E.

We appreciate the opportunity to assist you on this important project. Should you have any questions, please call us at (949) 450-2100.

Very truly yours,
GROUP DELTA CONSULTANTS, INC.

Curt Scheyhing, PE, GE
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Distribution: Addressee (Electronic copy to Parsons)

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1.0 INTRODUCTION

1.1 Scope of Work

This report provides foundation recommendations for design and construction of the subject bridge widening project, and was prepared in accordance with the provisions of American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications (6th Edition) with California Amendments (2014), and Caltrans "Foundation Report Preparation for Bridge Foundations," December 2009.

1.2 Project Description

Caltrans and the City of Agoura Hills (City) propose to improve the existing 4-span Palo Comado Canyon Road interchange at US 101 (PM 33.0/34.4) in Los Angeles County (See Figure 1). The proposed improvements will include widening of Palo Comado Canyon Road Overcrossing (OC) on both sides (from one lane to two lanes in each direction with median tum lane), sidewalks and minor modification of the ramps in order to improve traffic circulation, safety, and bicycle/pedestrian access. Type 1 standard retaining walls will be constructed along both sides of the south abutment approach. Two pairs of architectural pilasters are proposed on both sides of Abutments 1 and 5. Two pilasters on the south side (Abutment 1) will be supported on Abutment 1 footing. Other two pilasters on the north side (just north of Abutment 5) will be supported on individual footings. A topographic plan of the project site including Exploration Locations is shown in Figures 2A and 2B, the bridge General Plan and Foundation Plan are shown in Figures 3A through 3C, and retaining wall plans are shown in Figures 4A through 4C.

Improvements will include new pavements on Palo Comado Canyon Road and the US-101 northbound on- and off-ramps. Pavement recommendations are presented in a separate Pavement Design Report.

The project delivery will be conventional design-bid-build.

1.3 Exceptions to Policy

No exceptions to policy are proposed.

2.0 FIELD INVESTIGATION AND LABORATORY TESTING PROGRAM

2.1 Field Investigation Program

2.1.1 Previous Investigations

For original construction a subsurface investigation was conducted in 1961 and included one rotary boring and two penetration borings. The as-built Log of Test Borings (LOTB) is included in Appendix C. No laboratory data are available from the original investigation. The as-built LOTB also includes construction logs of selected production cast-in-drilled-hole piles.

2.1.2 Current Investigation

Group Delta investigated subsurface conditions at the project site in 2013 by performing six hollow-stem auger borings (A-13-001 through 006) and one hand auger boring (HA-13-007). Field investigations, logging, classification, and presentation of subsurface data were performed in general accordance with Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010). The boring locations are shown in Figures 2A and 2B. Details of the investigation and boring records are provided in Appendix A. Log of Test Borings (LOTB) sheets are provided in the attached Plates 1 through 11.

2.2 Laboratory Testing Program

Soil samples collected from Group Delta's investigation were packaged in the field and transported to the laboratory for further examination and testing. Tests were performed on selected samples as an aid in classifying the earth materials and to evaluate their physical and chemical properties and engineering characteristics. Laboratory testing for this investigation included:

- Soil and Rock Classification: USCS (ASTM D 2487) and Visual Manual (ASTM D 2488), (ISRM) (1981) standards and the Bureau of Reclamation (2001) standards;
- Moisture content (ASTM D 2216) and Dry Unit Weight (ASTM D 2937);
- Atterberg Limits (ASTM D 4318);
- Percent Passing No. 200 Sieve (ASTM D 1140);
- Direct Shear (ASTM D 3080);
- One-Dimensional Consolidation (ASTM D 2435);
- Expansion Index (D 4829);
- Soil Corrosivity-pH, Sulfate, Chloride, and Minimum Resistivity (CTM 643, 422, and 417);
- Resistance R-Value (CTM 301).

3.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

3.1 Geology

Based on the "Preliminary Geologic Map of the Los Angeles 30'x60' Quadrangle," (Yerkes and Campbell, 2005) the natural site geology at the bridge site consists of relatively young shallow alluvial deposits originating from Palo Comado and Chesebro Canyons, overlying soft sedimentary bedrock of the Calabasas Formation (Tcb). The site is shown on the geologic map in Figure 5, which shows Tcb exposed at the surface to the northeast and southwest of the bridge. Regionally Calabasas Formation undivided (early late Miocene and late middle Miocene) is generally interbedded clayey to silty sandstone and silty shale, containing local beds of sedimentary breccia (probable Conejo Volcanics) clasts. The formational materials encountered at the site consisted of high plasticity claystone. Approach fills have been placed at the abutments over the alluvial and bedrock materials.

3.2 Site Conditions

The freeway profile is relatively level where it passes under the overcrossing with US-101 centerline elevations of about El. 913 feet. There is a freeway cross-slope with elevations of the shoulders about El. 910 feet on the south side to El. 916 feet on the north side. Abutment approaches have maximum elevations of about El. 935 to 936 feet. Slopes on the sides of the freeway are generally 2h:1v or flatter, except at the abutments where the maximum inclinations are 1.5h:1v without slope paving below the abutments. Abutment slopes have a maximum height of about 26 feet. The topography to the east is rolling hills, with relatively level alluvial valley topography to the west of the overcrossing. Site topography is shown in Figures 2A and 2B.

3.3 Subsurface Soil Conditions

The original LOTB and data from the current investigation were used to characterize subsurface conditions at the site. To illustrate interpreted subsurface layering at the site, a geotechnical cross-section was developed by plotting the current borings (after datum adjustment) on the as-built LOTB profile as shown in Figure 6. The cross-section shows that the soils below original ground (OG) at the site included a layer of alluvial soil overlying the formational soft bedrock. The alluvial soil is generally a relatively thin veneer up to about 5 feet thick, except in the vicinity of Bent 3 where the alluvial soils are on the order of 15 to 20 feet thick indicating presence of a former channel. About 20 to 25 feet of fill was placed at each of the abutment approaches.

Fill soils, alluvial soils, and bedrock materials are mainly cohesive fine grained materials that are similar in grain size and plasticity characteristics; therefore, it appears that the fill and alluvial soils are derived from the formational soils. When classified as soils all materials are Fat Clay, Fat Clay with Sand, and Sandy Fat Clay (CH) with tested 55 to 79 percent passing No. 200 sieve.

The materials have Liquid Limit (LL) ranging from 53 to 68 and Plasticity Index (PI) ranging from 30 to 44. These soils are generally moderately to highly expansive with a single Expansion Index (EI) test result of EI=89 (borderline medium to high). R-values are low with measured R-Values of 6 and 17. The cohesive fill soils are mostly very stiff but range from stiff to hard with undrained shear strengths (S_u) based on pocket penetrometer ranging from 1.0 to 4.0 ksf. Cohesive alluvial soils are mostly very stiff but range from stiff to hard with S_u = 1.5 to 4.5 ksf. Pocket penetrometer readings in the bedrock materials generally showed it classifies as a hard cohesive soil with S_u > 4.5 ksf, with occasional readings in more weathered zones of S_u = 2.5 to 4.0 ksf, which classifies as very stiff to hard soil.

Table 1 presents the soil parameters selected for geotechnical design based on evaluation of the field and laboratory data and test results.

3.4 Groundwater

As shown in Figure 6, groundwater was not encountered in borings during the original subsurface investigation. One of the logged production CIDH piles from original construction reported groundwater near the pile tip at about El. 889 feet (approximately 21 feet below grade) at Bent 2. During our investigation groundwater was found near El. 887 feet (approximately 23 feet below grade) in Boring A-13-003 also near Bent 2. At Bent 4 boring A-13-005 encountered groundwater near El. 871.5 feet (approximately 46 feet below grade). None of other borings or any previous borings or pile logs encountered any groundwater. Based on its sporadic and localized occurrence, the groundwater is interpreted to be localized perched water or seepage; therefore, the permanent groundwater table is not anticipated above the pile tip elevations, although zones of perched groundwater should be expected locally below El. 889 feet.

3.5 Geologic Hazards

There is no evidence of landslides, embankment failures, subsidence, or soil collapse potential at the site. The site soils and formational materials are comprised of high plasticity clay (CH), and these soils are considered expansive, meaning they can swell and shrink in response to changes in moisture.

4.0 SCOUR EVALUATION

The site is not in or adjacent to an active channel so scour is not a design concern.

5.0 CORROSION EVALUATION

Caltrans Corrosion Guidelines (version 2.1, January 2015) define a corrosive area as "an area where the soil contains more than 500 ppm of chlorides, more than 2,000 ppm of sulfates or has a pH of less than 5.5." Representative samples of the site soils were tested to evaluate the corrosion potential. The tests include pH, electrical resistivity, and soluble chloride and sulfate concentrations. Results of the corrosivity tests are summarized in the following Table and included in Appendix B:

Boring No.	Depth (ft)	USCS Soil Type	Minimum Resistivity CTM 643 (ohm-cm)	pH CTM 643	Soluble Sulfate Content CTM 417 (ppm)	Soluble Chloride Content CTM 422 (ppm)
A-13-003	25-26.5	Fat Clay (CH)	-	7.29	13,250	5
A-13-006	0-5	Fat Clay (CH)	423	7.09	10,500	24

Based on the test results site materials classify as corrosive due to high sulfates in accordance with Caltrans criteria. Any imported soils should be evaluated for corrosion characteristics if they will be in contact with buried or at-grade structures and appropriate mitigative measures should be included. Concrete mix design and minimum concrete cover should be based on California Amendments to AASHTO LRFD Bridge Design Specifications – Sixth Edition (Sections 5.12.3 through 5.12.5) and Section 90-1.02H of the 2015 Standard Specifications.

6.0 SEISMIC RECOMMENDATIONS

6.1 Faulting and Seismicity

The site is located at latitude 34.1433 north, longitude -118.7379 west, and is in a seismically active area and a number of active faults are present in the area surrounding the site. The closest major faults are shown on the Caltrans ARS online fault map in Figure 7 along with their site to rupture distances (R_{rup}) and other fault parameters.

6.2 ARS Curve

The Acceleration Response Spectrum (ARS) curve was developed following the latest Caltrans Seismic Design Criteria (SDC) and Caltrans ARS Online 2012 methodology, which uses the upper bound envelope of probabilistic (975-year return period) and mean deterministic spectra for seismic design. Site subsurface conditions were included in the analysis based on the average shear wave velocity in the upper 30 meters [V_{S30}]. Since the site is underlain at shallow depth by shale bedrock (soil type C) and shallow alluvium and fill (soil type D), we assumed borderline soil type D/C with V_s30 = 360 m/s for this site for selection of ARS curves in the preliminary foundation report. The Vs_{30} of 360 m/s is also consistent with available correlations based on undrained shear strength estimated from our investigation. Near fault factors were applied to both the deterministic and probabilistic spectra. No basin factor was applied since the site is not in a deep sedimentary basin. Note that for this site the probabilistic spectrum governs the design envelope across all periods. Peak Ground Acceleration (PGA) is 0.57 g and peak spectral acceleration is 1.31 g at 0.2 second period. Based on probabilistic deaggregation analysis the earthquake magnitude and distance associated with the probabilistic ARS curve is 7.0 and 13.4 km, respectively. The deterministic, probabilistic, and recommended envelope spectra are included in Figure 8. Since liquefaction potential at the site is negligible (see following section) no adjustment to the site response is required for liquefaction. Seismic calculations are presented in Appendix D.

6.3 Liquefaction Evaluation

Three simultaneous conditions are required for liquefaction to occur: (1) cohesionless soils of loose to medium density; (2) saturated conditions; and (3) rapid, large strain, cyclic loading, normally provided by earthquake motions. Since the soils and bedrock at the site are highly plastic cohesive soils, and there is no permanent shallow groundwater table at the site, liquefaction is not an issue for design. Since there is no liquefaction seismic slope stability and lateral spreading are not a significant design concern.

7.0 AS-BUILT FOUNDATION DATA

As-built plans are presented in Appendix C, and a summary of each existing foundation support is presented in Table 2. Note that the datum shift between as-built and current plans has the following adjustment:

Elevation (new datum) = Elevation (old datum) + 2.34 feet

A brief summary of the existing bridge and foundations from the as-built data is presented below:

- The bridge structure is a four-span bridge with pre-stressed pre-cast "I" girders built in 1963. One I-girder was replaced on span 3 in 2006;
- All foundations are supported on 45-ton (90 kip) design capacity Cast In Drilled Hole (CIDH) piles (pile diameter = 16 inches);
- The bottom of footing elevation at both abutments is El. 924.5 feet. Average tip elevation at the abutments is El. +886.5 feet. The average pile penetration length at the abutments is 38 feet;
- Based on the Foundation Plan the bottom of footing elevation at Bent 2 is El. 900 feet. Average tip elevation at Bent 2 is about El. 884 to 887 feet. The average pile penetration length is about 13 to 16 feet;
- Bottom of footing elevation at Bent 3 is 903 feet. The average tip elevation at Bent 3 is El. 881 feet. The average pile penetration length is 22 feet;
- Bottom of footing elevation at Bent 4 is 907 feet. The average tip elevation at Bent 4 is at El. 884 to 887 feet. The average pile penetration length is 20 to 23 feet;

Except at Bent 3, all existing piles at the Bents are founded in Formational Soil (Bedrock).

8.0 FOUNDATION RECOMMENDATIONS

8.1 Bridge Foundations and Pilasters

8.1.1 Foundation Type

Due to potentially compressible near surface fill and alluvial soils, and to match the existing foundation type for similar seismic behavior, deep foundations are recommended for support of the widening structure. Due to the cohesive nature of the soils and bedrock, conditions are considered favorable for open-hole drilling. CIDH piles cause less noise and vibration compared to driven piles. In addition, CIDH piles were successfully used for the existing structure. For these reasons, Cast-in-Drilled-Hole (CIDH) piles are the recommended foundation type. Abutment piles are expected to tip above the groundwater at the site and have relatively low demands; therefore, 16-inch diameter standard CIDH piles are recommended for abutments and pilasters. Since subsurface data suggests perched groundwater may be encountered above the tip elevations for bents, and Caltrans requires a minimum 24-inch diameter CIDH if groundwater is present, 24-inch diameter standard CIDH piles are recommended for the bent supports. The General Plan and Foundation Plan are presented in Figures 3A through 3C. General foundation design information is presented in the Foundation Design Data Sheet in Table 3.

8.1.2 Axial Capacity

Axial shaft resistance in general can be developed in side resistance on the edge of the shaft and base resistance at the pile tip. Determination of shaft nominal axial capacity is based on AASHTO LRFD BDS 6th Edition with California Amendments Section 10.8.3.5. Due to difficulty in cleaning and inspecting the shaft bottom and potential for encountering perched water and need for wet construction, end bearing has not been included in the design. Site soils and bedrock are considered cohesive soils for design purposes, and shaft friction or side resistance is computed using the “alpha method,” in which a multiplier (α) is applied to undrained shear strength to estimate the nominal skin friction. Recommended minimum center-to-center spacing between piles is 2.5 times the pile diameter. Since the pile caps are in contact with the ground and the soils are stiff to hard, no axial group efficiency reduction is required, and block failure does not control in accordance with AASHTO LRFD Sections 10.8.3.6.2, 10.5.5.2.4, and 10.7.3.9. In accordance with AASHTO C10.8.3.5.1b the upper 5 feet of skin friction and the lower one shaft diameter was neglected in the design. Skin friction in tension was taken as 0.7 times the skin friction in compression.

Foundation loads provided by the Structural Engineer are presented in Table 4, Design Recommendations are summarized in Table 5, and the Pile Data Table is presented in Table 6. Axial capacity calculations are presented in Appendix D.

8.1.3 Lateral Capacity

Lateral capacity of foundations includes the lateral capacity of the piles plus available passive resistance on the embedded pile caps.

8.1.3.1 Lateral Pile Capacity

Lateral capacity of the piles was computed using the computer program LPILE (Ensoft, 2013) using the p-y curve method. Free-head (pinned) boundary condition was assumed at the top of the piles. Non-linear p-y curves were generated by LPILE assuming soil modeled as stiff clay without free water considering the undrained shear strength of the material. Group effects were incorporated into the analysis using the p-multiplier approach based on pile center to center spacing following California Amendments Section 10.7.2.4. Ground slope was modeled in the longitudinal direction at abutments. Cracked moment of inertia equal to 50% of the gross moment of inertia was used to model pile bending stiffness. A summary of lateral pile capacity analyses is presented in Table 7, and supporting calculations are provided in Appendix D.

8.1.3.2 Passive Resistance of Bent Caps

For the bent caps lateral passive resistance was estimated based on the undrained shear strength of the soils adjacent to the pile caps. Ultimate passive resistance depends on the amount of lateral displacement. Ultimate passive resistance may be taken as a uniform lateral pressure of 6 ksf, which is mobilized at a displacement equal to 2% of the thickness of the pile cap. At smaller displacements the passive resistance may be determined in accordance with Figure 9. For the diaphragm abutments passive resistance should be neglected due to unpaved adjacent slopes.

8.1.4 Settlement

Total settlement of pile foundation groups is estimated to be less than 1-inch.

8.1.5 Ultimate Lateral Capacity of Abutment Walls

The ultimate lateral capacity of an abutment wall is a function of the height of the abutment wall that is acted on by passive soil pressure. For abutment walls backfilled with structural backfill in accordance with the 2015 Standard Specifications, the Caltrans Seismic Design Criteria (SDC) Version 1.7, Section 7.8, dated April 2013 recommends a passive pressure of 5 ksf for a wall height of 5.5 feet based on full scale abutment testing conducted at UCLA. For wall heights other than 5.5 feet, the passive pressure may be determined by multiplying the 5-ksf value by the ratio (H/5.5), where H is wall height in feet in accordance with Caltrans SDC. For higher walls, the maximum value of the passive resistance should be limited to 7.3 ksf corresponding to a wall height of 8 feet. Initial stiffness may be taken as 50 kips/inch/ft.

8.1.6 Lateral Earth Pressures on Abutment Walls

The recommendations in Section 8.2.2 may be used for static and seismic lateral earth pressures on the diaphragm abutment walls.

8.2 Retaining Walls

8.2.1 Wall Type

Caltrans Standard Type 1 retaining walls (2015 Standard Plan B3-1A) with level backfill and traffic surcharge are proposed along both sides of the south abutment (Abutment 1) approach for the purpose of widening Palo Comado Canyon Road. Since the PGA at the site is less than 0.6g, the standard designs are applicable. The plans presented in Figures 4A through 4C show that the wall design heights generally range from 6 to 16 feet with the maximum height of 20 feet for a wall length of approximately 8 feet. Based on these considerations and engineering analyses, the proposed Type 1 walls may be supported on spread footings.

8.2.2 Lateral Earth Pressures

Lateral earth pressures recommended below assume all wall backfill complies with the requirements of Caltrans Standard Specifications (2015) Section 19-3.02C (minimum Sand Equivalent of 20 and gradation requirements). Recommended lateral earth pressure parameters are as follows:

- Total unit weight = 120 pcf
- Soil Friction Angle = 34 degrees
- Movement required to reach active state: 0.2% of wall height (1/4 inch per 10-foot of height)
- Coefficient of Static Active Earth Pressure: $K_a = 0.28$
- Static Active Earth Pressure as Equivalent Fluid: 34 pcf (use minimum 36 pcf per Caltrans practice)
- Pseudo-static horizontal acceleration coefficient, K_h = 1/3 PGA = 0.19
- Coefficient of Total Static plus Seismic Active Earth Pressure: $K_{ae} = 0.40$
- Total Static plus Seismic Active Earth Pressure as Equivalent Fluid: 48 pcf
- Restrained walls:
    - Coefficient of Static At-Rest Earth Pressure: $K_0 = 0.44$
    - At-rest equivalent fluid pressure (Static): 53 pcf
    - Coefficient of Static plus Seismic At-Rest Earth Pressure: $K_{0e} = 0.63$
    - At-rest equivalent fluid pressure (Seismic): 76 pcf

The above pressures assume that walls are equipped with a drainage system (Standard Plan BO-3 or approved equal) to prevent buildup of hydrostatic pressures in the backfill.

8.2.3 Lateral Resistance

Lateral resistance to sliding may be provided by friction along the base of the foundation and passive resistance on the footing. A sliding friction coefficient of 0.53 may be used for Type 1 walls with a key. Passive resistance to sliding may be taken as an equivalent fluid pressure of 400 pcf; the upper 1-foot of soil should be neglected in computing passive resistance. The leading edge of the footing should have a minimum horizontal setback of 4 feet from the adjacent slope face.

8.2.4 Bearing Capacity

Bearing capacity was evaluated at the service, strength, and extreme event limit states. Resistance factors of 0.55 and 0.8 were applied for the strength and extreme event cases, respectively, in accordance with Table 11.5.7-1 and Section 11.5.8 of AASHTO and California Amendments. Bearing capacity analysis was performed assuming the footings are founded in embankment fill with a maximum 2H:1V (Horizontal:Vertical) slope using Brinch-Hansen's formula and drained strength parameters provided in Table 1. The analysis indicates that for the equivalent base widths and applied bearing stresses listed in the Standard Plans the site soils have adequate bearing capacity for support of the proposed walls up to the maximum proposed design height of 20 feet. The footings have factor of safety of greater than 3.0 for service limit state and Capacity to Demand (C/D) ratios of greater than 1 for strength and extreme limit states. Supporting calculations are provided in Appendix D.

8.2.5 Settlement

Wall settlement based on footing bearing pressures in the Standard Plans is estimated at less than 1 inch, with a differential settlement of 1 inch over 50 feet. Supporting calculations are provided in Appendix D.

8.2.6 Global Stability

Global stability analysis was performed for the most critical sections of the proposed retaining walls, and the analysis indicates the factor of safety exceeds the required minimum of 1.5 for static case and 1.0 for pseudo-static case. Supporting calculations are provided in Appendix D.

8.2.7 Subgrade Preparation

Retaining wall footing subgrade should be excavated and observed by Group Delta during construction. No known unsuitable materials are present. If unsuitable soil is encountered during construction it should be remediated in accordance with the Caltrans Standard Specifications and Standard Special Provisions (SSP). If subgrade is found to be suitable, the surface should be scarified, brought to near optimum moisture content, and compacted to the specified density (95% relative compaction in accordance with the Standard Specifications) prior to placing concrete or steel. Once the subgrade has been approved it should be protected.

Any subgrade disturbed by rainfall or other source of moisture or by construction activities should be removed and replaced with suitable material.

8.3 Approach Fill Earthwork

Additional fills are proposed to widen the abutment approaches. All grading should comply with Caltrans Standard Specifications. To avoid downdrag on abutment piles the approach fills should be placed to at least the finished grade and allowed to settle and stabilize prior to abutment pile foundation construction. Due to presence of stiff to hard overconsolidated soils and bedrock and lack of groundwater table, the settlement is expected to be primarily elastic and occur quickly after completing fill placement. A settlement waiting period of 30 days is recommended. The settlement period should follow Section 19-6.03D of the 2015 Standard Specifications and SSP's. No additional surcharge is required above the finished grade.

Expansive soils should not be placed within 150 feet of bridge abutments. All new fills in this zone should have Expansion Index (EI) of less than 50.

9.0 NOTES TO DESIGNERS

1. Approach fills should be placed and allowed to settle prior to construction of abutment piles. A 30-day waiting period is recommended (see Section 8.3).
2. No permanent groundwater is anticipated at the abutment locations, and therefore inspection tubes and gamma-gamma logging may not be required during abutment pile installation.
3. Perched groundwater was encountered at Bent 2 and Bent 4; therefore, groundwater may be encountered above the pile tip elevations at the bents. The designers should include provisions for inspection tubes in the bent piles in accordance with Bridge Memo to Designers 3-1. In the event that piles require installation in the wet, gamma-gamma integrity testing will be required. If piles are constructed in the dry, no integrity testing will be required.

10.0 CONSTRUCTION CONSIDERATIONS

- The contractor should verify that adequate lateral and overhead clearance is available for operation of drilled pile construction equipment.
- CIDH piles will be drilled in primarily cohesive stiff to hard clay soils and claystone bedrock without a permanent groundwater table, so caving potential is generally considered to be low and open-hole construction is likely to be feasible.
- Perched groundwater has been observed above the pile tip elevation at Bent 2, and may be found elsewhere. The volume of water that may enter the drilled holes, and the ability to dewater the holes effectively, is uncertain. The contractor should be prepared to construct the piles in the wet (slurry method) in the event that field groundwater conditions are such that the piles cannot be constructed in a dry or dewatered hole in accordance with the Standard Specifications.
- Borings were drilled to below the tip elevations without refusal using an 8-inch diameter hollow stem auger. The contractor should select appropriate drilling equipment for the size and depth of piles and the site soil/bedrock conditions. Localized drilling difficulty may be encountered if zones of cemented soils or bedrock are encountered.
- CIDH pile construction and cleaning of the bottom should be performed in accordance with the Standard Specifications.

11.0 LIMITATIONS

The conclusions and recommendations contained in this report are professional opinions, intended for the use of Parsons and their design consultants. This report has been prepared solely for the design of the improvements described herein, and may not contain sufficient information for other uses. The recommendations should not be extrapolated to areas not covered by this report, or used for other facilities without the review and approval of Group Delta.

This report presents recommendations pertaining to the subject site based on the assumptions that the subsurface conditions do not deviate appreciably from those disclosed by our explorations. In view of past grading and the general geology of the area, the possibility of different geologic conditions cannot be discounted. It is the responsibility of the owner to bring any deviations or unexpected conditions observed during construction to the attention of the Geotechnical Engineer. In this way, any required supplemental recommendations can be made with a minimum of delay.

This study was performed in accordance with generally accepted geotechnical engineering principles and practice. The professional engineering work and judgments presented in this report meet the standard of care of our profession at this time. No warranty, express or implied, is made.

The recommendations for this project are to a high degree dependent upon proper quality control of grading and foundation construction. Consequently, the recommendations are made contingent on the opportunity of Group Delta to observe the grading and improvement operations. If parties other than Group Delta are engaged to provide such services, they must be notified that they will be required to assume responsibility for the geotechnical phase of the project by concurring with the recommendations or provide alternate recommendations as deemed appropriate.

12.0 REFERENCES

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Plates

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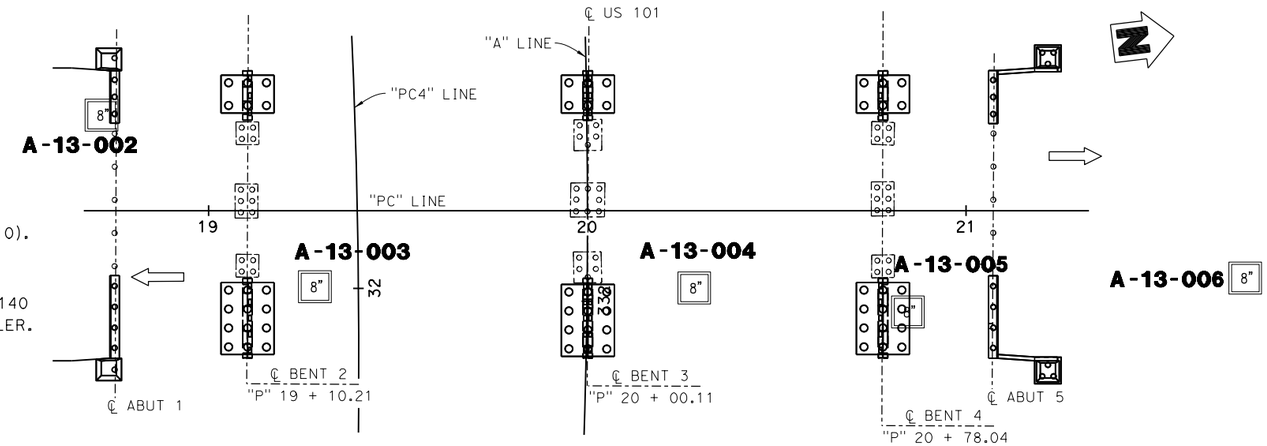
THE VERTICAL CONTROL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) NATIONAL GEODETIC SERVICES (NGS) BENCHMARK, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

NOTES:
(1) THIS LOTB SHEET WAS PREPARED IN ACCORDANCE WITH CALTRANS SOIL AND ROCK LOGGING, CLASSIFICATION AND PRESENTATION MANUAL (2010).
(2) 2.4" SAMPLES WERE TAKEN USING A 3.0" O.D. 2.42" I.D. CALIFORNIA MODIFIED SAMPLER.
(3) AN AUTOMATIC TRIP HAMMER SYSTEM CONSISTING OF A HAMMER WEIGHT OF 140 LBS AND 30" DROP WAS USED TO ADVANCE THE CALIFORNIA MODIFIED SAMPLER.
(4) GROUNDWATER ENCOUNTERED IN BOREHOLES A-13-005 & A-13-003



PLAN
1" = 20'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
07	LA	101	33.5/33.9		

Curt Scheyhing — GEOTECHNICAL PROFESSIONAL — 08-17-17 DATE

REGISTERED PROFESSIONAL ENGINEER — CURT SCHEYHING — No. G.E. 2766 — EXP. 6-30-19 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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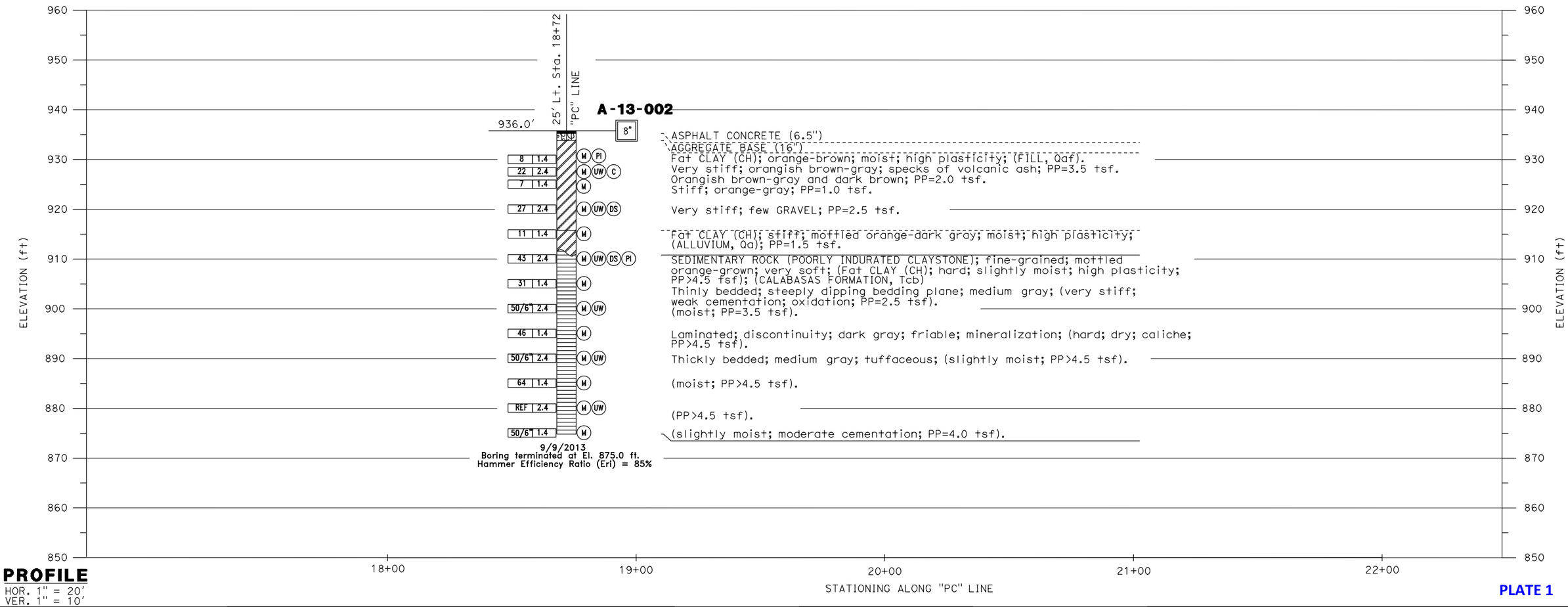
PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612



PROFILE
HOR. 1" = 20'
VER. 1" = 10'

PLATE 1

100% Intermediate PS&E - September 2017 (NOT FOR CONSTRUCTION)

DESIGN OVERSIGHT	DRAWN BY	S.AROUS/B.ANDERSON	S. STONE / T. LATIMER	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	JON HERMSTAD	BRIDGE NO. 53-1678	PALO COMADO CANYON RD. OC (WIDEN)
SIGN OFF DATE	CHECKED BY	M. DINICOLA/S.SATHIS	FIELD INVESTIGATION BY: DATE: AS SHOWN		PROJECT ENGINEER	POST MILES 33.69	LOG OF TEST BORINGS 1 of 3

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU:1821
EA:070001841

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 8-17-14 | 06-26-17 | 08-17-17

SHEET 30 OF 32

8/17/2017 1:42:36 PM N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\DGN\53-1628-z-ltb01.dgn

USERNAME = brettg

BENCH MARK:
1002 : FD. PUNCHED SPIKE & WASHER "LS 4453", FLUSH; AT INT. DOROTHY & CHESEBRO.
NORTHING: 1874980.99, EASTING: 6337736.49, ELEVATION: 903.05
THE VERTICAL CONTROL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) NATIONAL GEODETIC SERVICES (NGS) BENCHMARK, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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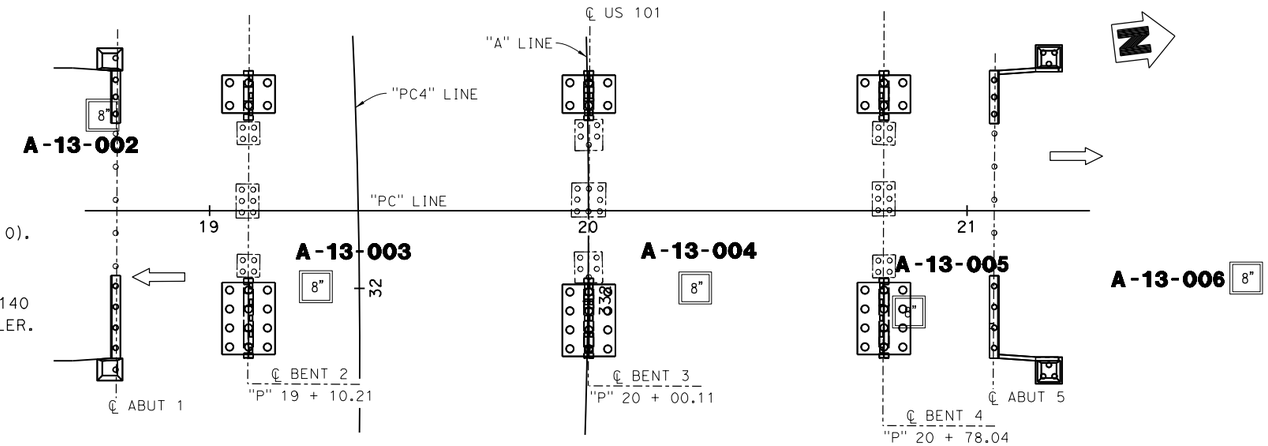

PLAN
1" = 20'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
07	LA	101	33.5/33.9		

Curt Scheyhing — GEOTECHNICAL PROFESSIONAL — 08-17-17 DATE

REGISTERED PROFESSIONAL ENGINEER — CURT SCHEYHING — No. G.E. 2766 — EXP. 6-30-19 GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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30001 LADYFACE COURT
AGOURA HILLS, CA 91301

PARSONS
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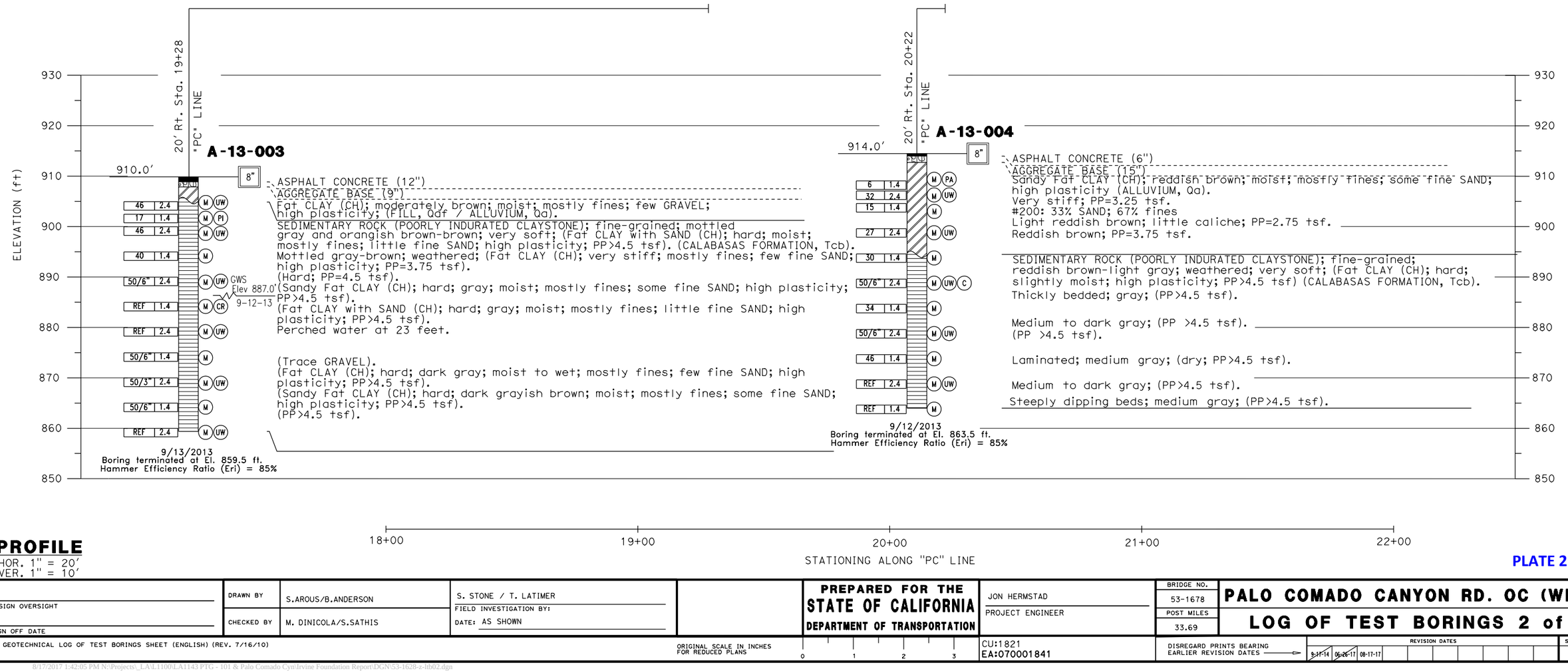
IRVINE, CA 92612



PROFILE
HOR. 1" = 20'
VER. 1" = 10'

100% Intermediate PS&E - September 2017 (NOT FOR CONSTRUCTION)

PLATE 2

DESIGN OVERSIGHT	DRAWN BY	S.AROUS/B.ANDERSON	S. STONE / T. LATIMER	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	JON HERMSTAD	BRIDGE NO. 53-1678	PALO COMADO CANYON RD. OC (WIDEN)
SIGN OFF DATE	CHECKED BY	M. DINICOLA/S.SATHIS	FIELD INVESTIGATION BY: DATE: AS SHOWN		PROJECT ENGINEER	POST MILES 33.69	LOG OF TEST BORINGS 2 of 3

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU:1821
EA:070001841

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 9-17-14 | 06-26-17 | 08-17-17

SHEET 31 OF 32

USERNAME =>

8/17/2017 1:42:05 PM N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\DGN\53-1628-z-ltb02.dgn

BENCH MARK:
1002 : FD. PUNCHED SPIKE & WASHER "LS 4453", FLUSH; AT INT. DOROTHY & CHESEBRO.
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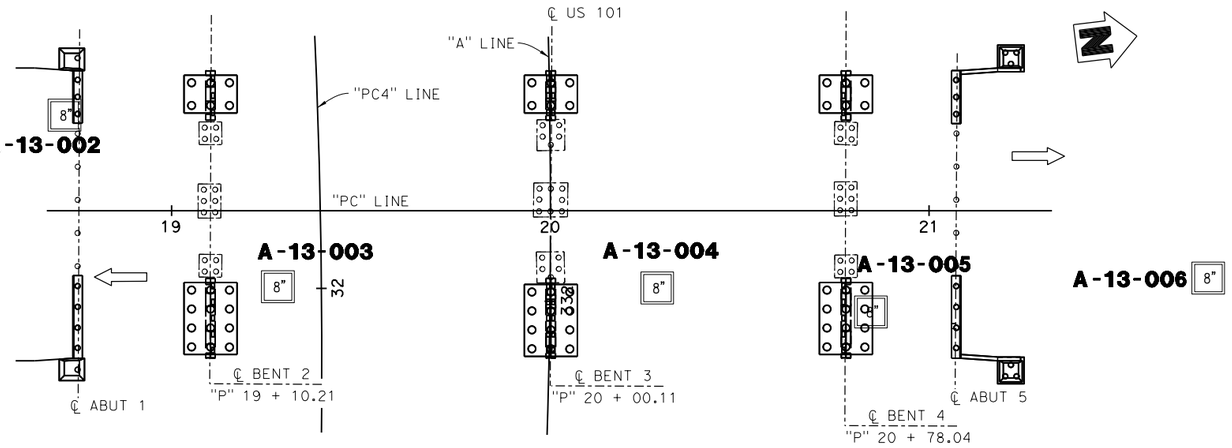
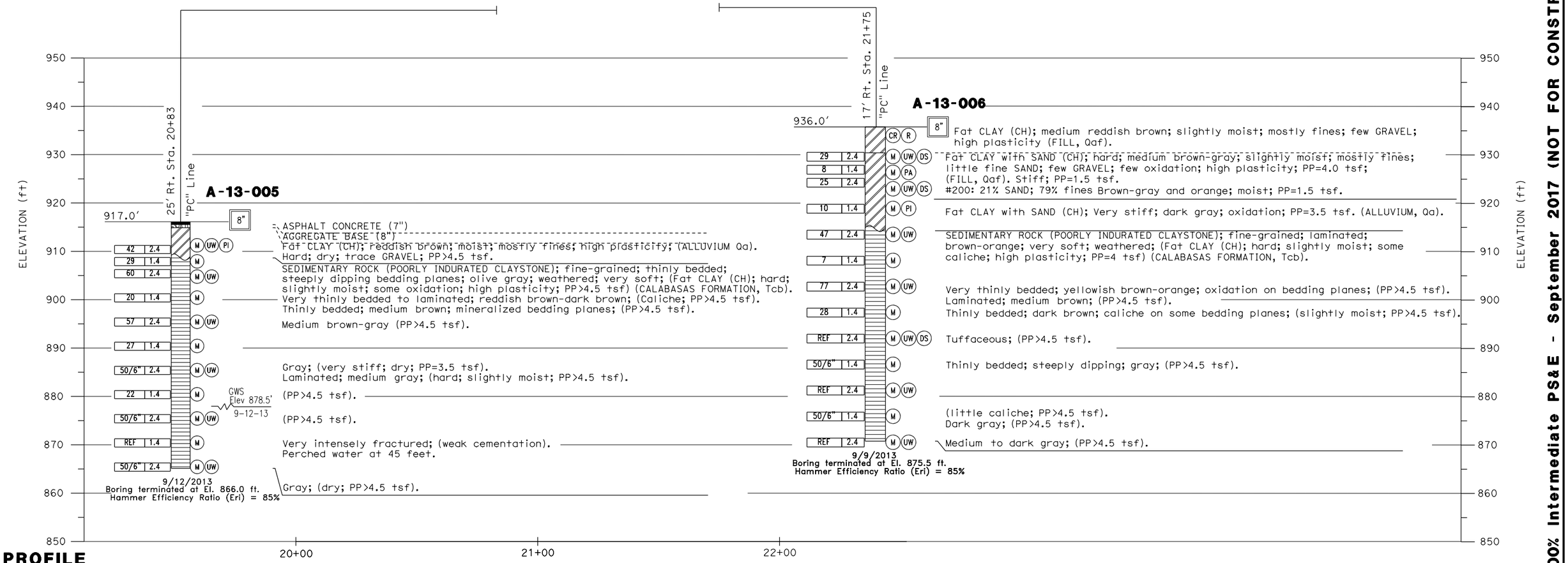


PLAN
1" = 20'



PROFILE
HOR. 1" = 20'
VER. 1" = 10'

STATIONING ALONG "PC" LINE

PLATE 3

100% Intermediate PS&E - September 2017 (NOT FOR CONSTRUCTION)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
07	LA	101	33.5/33.9		

Curt Scheyhing 08-17-17
GEOTECHNICAL PROFESSIONAL DATE

REGISTERED PROFESSIONAL ENGINEER — CURT SCHEYHING — No. G.E. 2766 — EXP. 6-30-19 — GEOTECHNICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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30001 LADYFACE COURT
AGOURA HILLS, CA 91301

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612

DESIGN OVERSIGHT	DRAWN BY	S.AROUS/B.ANDERSON	S. STONE / T. LATIMER
SIGN OFF DATE	CHECKED BY	M. DINICOLA/S.SATHIS	FIELD INVESTIGATION BY: DATE: AS SHOWN

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

JON HERMSTAD
PROJECT ENGINEER

CU:1821
EA:070001841

BRIDGE NO. 53-1678
POST MILES 33.69

PALO COMADO CANYON RD. OC (WIDEN)
LOG OF TEST BORINGS 3 of 3

GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 5-11-14 | 06-26-17 | 08-17-17

SHEET 32 OF 32

USERNAME => bretto

8/17/2017 1:41:36 PM N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\DGN\53-1628-z-ltb03.dgn

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL

NOT FOR CONSTRUCTION
SEPTEMBER 2017

GROUP DELTA, INC.
32 MAUCHLY
SUITE B
IRVINE, CA 92618

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

BENCH MARK:
1002 : FD. PUNCHED SPIKE & WASHER "LS 4453", FLUSH; AT INT. DOROTHY & CHESEBRO.
NORTHING: 1874980.99, EASTING: 6337736.49,
ELEVATION: 903.05
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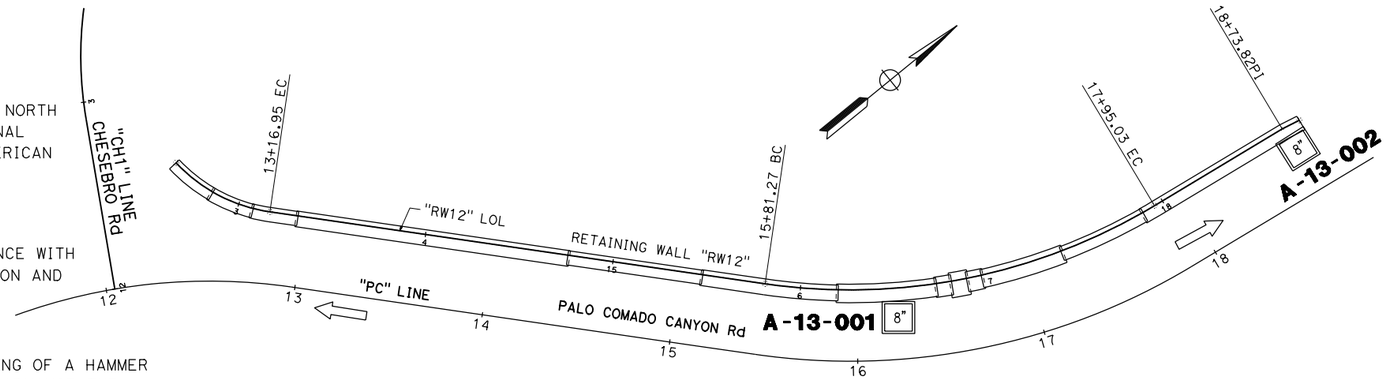
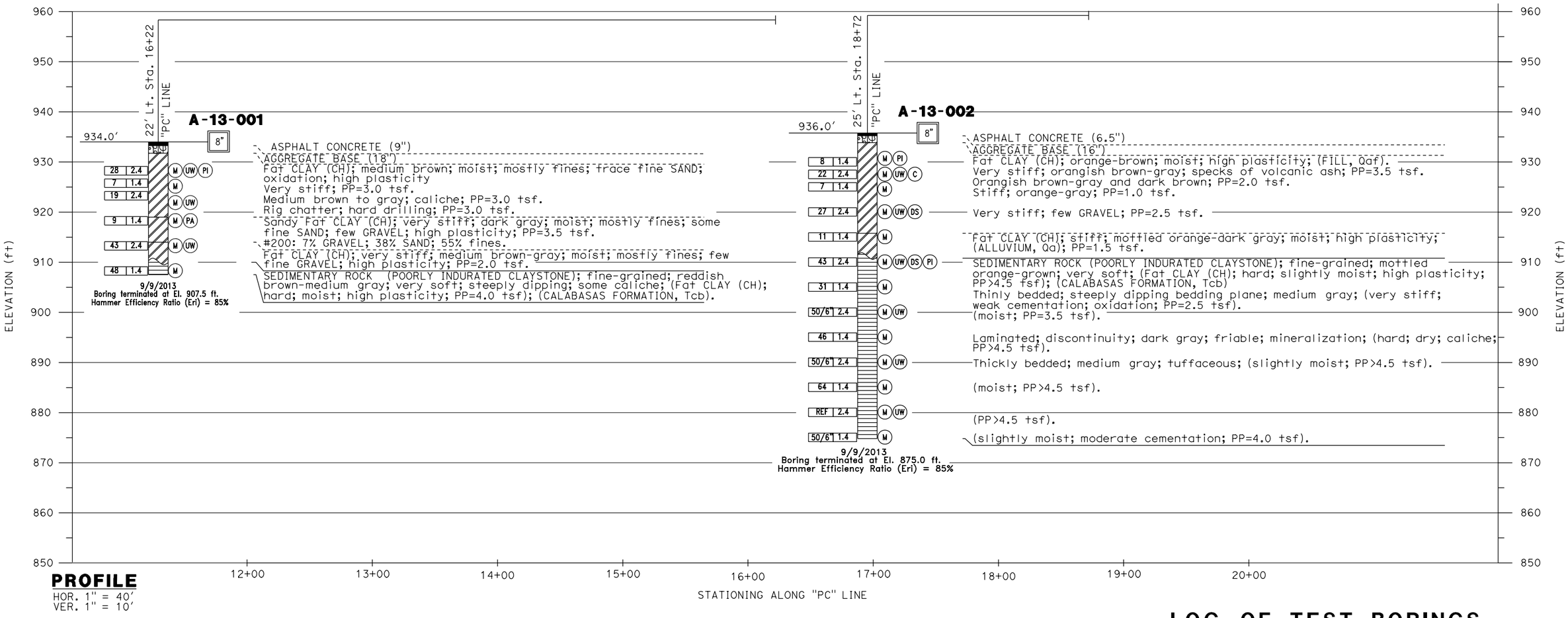


PLAN
1" = 40'



PROFILE
HOR. 1" = 40'
VER. 1" = 10'

LOG OF TEST BORINGS

RETAINING WALL No. 12

PLATE 4

R1-3

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
CURT SCHEYHING	KONRAD FERNANDES	B.ANDERSON	08/21/17

CONSULTANT FUNCTIONAL SUPERVISOR: SHAH GHANBARI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00
DATE PLOTTED => 24-AUG-2017
TIME PLOTTED => 11:22

BORDER LAST REVISED 7/2/2010 | USERNAME => bretta | DGN FILE => RW_12-lotb-001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1821 | PROJECT NUMBER & PHASE 0700001841

BENCH MARK:
1002 : FD. PUNCHED SPIKE & WASHER "LS 4453", FLUSH; AT INT. DOROTHY & CHESEBRO.
NORTHING: 1874980.99, EASTING: 6337736.49,
ELEVATION: 903.05
THE VERTICAL CONTROL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) NATIONAL GEODETIC SERVICES (NGS) BENCHMARK, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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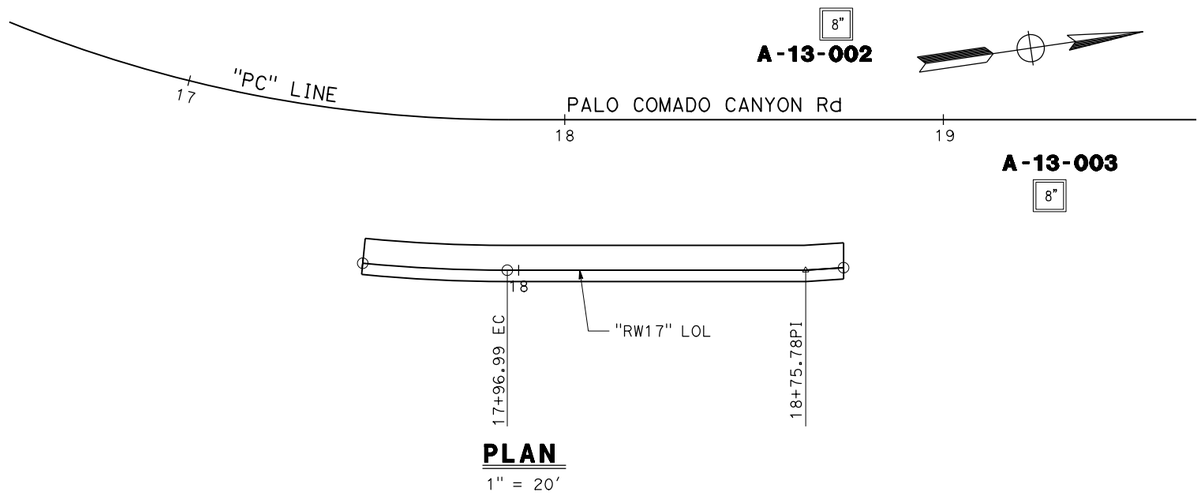
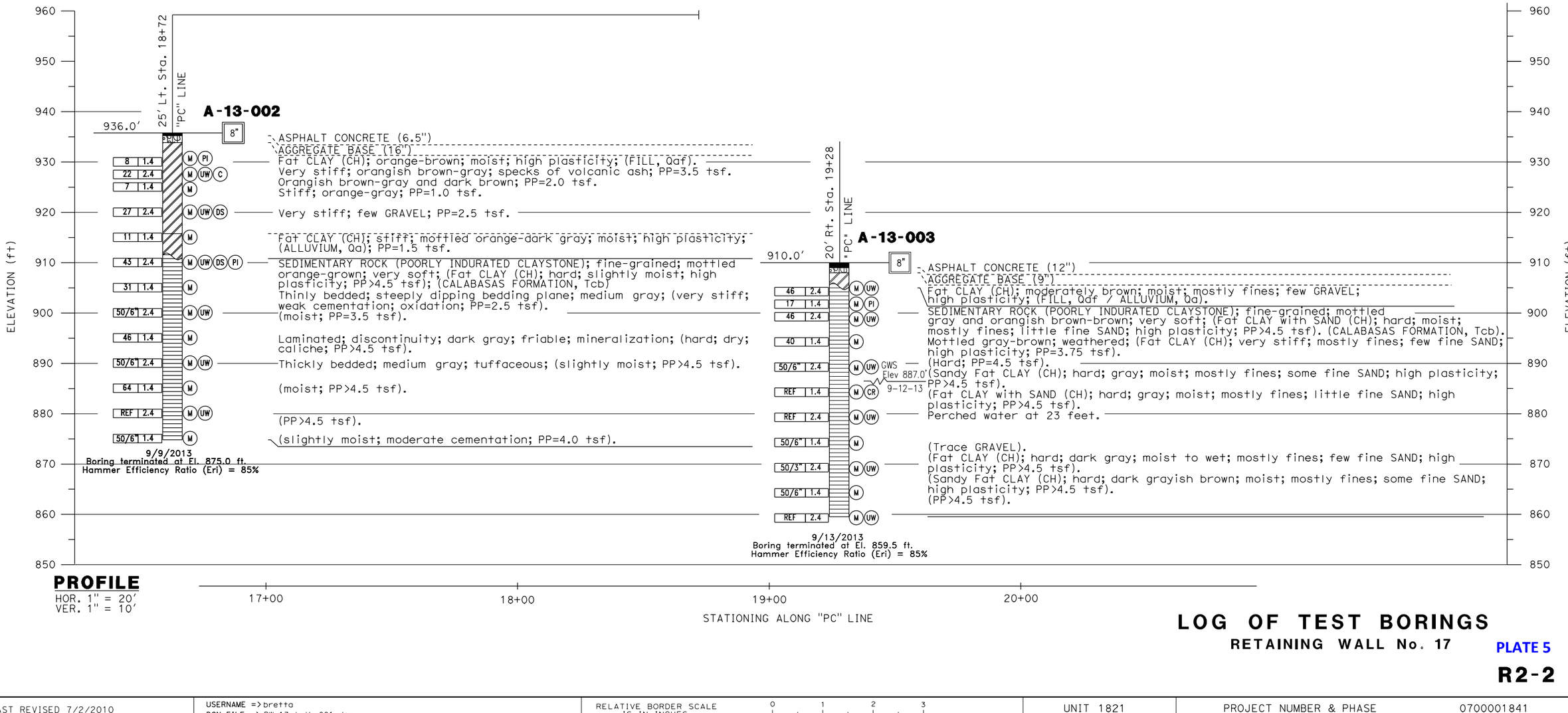


PLAN
1" = 20'



PROFILE
HOR. 1" = 20'
VER. 1" = 10'

LOG OF TEST BORINGS
RETAINING WALL No. 17

PLATE 5

R2-2

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL
NOT FOR CONSTRUCTION
SEPTEMBER 2017

GROUP DELTA, INC.
32 MAUCHLY
SUITE B
IRVINE, CA 92618

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

REVISED BY	DATE REVISED
B.ANDERSON	08/21/17

CALCULATED-DESIGNED BY: CURT SCHEYHING
CHECKED BY: KONRAD FERNANDES
CONSULTANT FUNCTIONAL SUPERVISOR: SHAH GHANBARI
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 00-00-00
DATE PLOTTED => 24-AUG-2017
TIME PLOTTED => 11:24

BORDER LAST REVISED 7/2/2010
USERNAME => bretta
DGN FILE => RW_17-lotb-001.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 1821
PROJECT NUMBER & PHASE 0700001841

Tables

TABLE 1
SOIL PROFILES

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Boring No. (surface elevation)	Location / Feature	Bottom of Layer		USCS Soil Classification	Geologic Unit	Total Unit Weight (pcf)	Undrained Shear Strength (ksf)	Drained Strength Parameters	
		Depth	Elevation					Cohesion, c'	Friction Angle, ϕ'
		(feet)	(feet)					(psf)	(degrees)
A-13-001 (El. 934')	Abutment 1 Approach Retaining Walls	15	919	CH	Fill, Qaf	120	3.00	300	26
		20	914				3.50		
		24	910	CH	Alluvium, Qal	120	2.00	300	26
		below 24	below 910	CH	Bedrock, Tcb	125	4.00	400	26
A-13-002 (El. 936')	Abutment 1 and Abutment 1 Approach Retaining Walls	7.5	928.5	CH	Fill, Qaf	120	3.50	300	26
		15	921				1.50		
		20	916				2.50		
		25	911	CH	Alluvium, Qal	120	1.50	300	26
		30	906	CH	Bedrock, Tcb	125	4.50	400	26
		35	901				2.50		
		40	896				3.50		
		below 40	below 896				4.50		
A-13-003 (El. 910')	Bent 2 and Abutment 1 Approach Retaining Walls	5	905	CH	Fill, Qaf	120	1.50	300	26
		7.5	902.5	CH	Bedrock, Tcb	125	4.50	400	26
		10	900				3.75		
		below 10	below 900				4.50		
A-13-004 (El. 914')	Bent 3	7.5	906.5	CH	Alluvium, Qal	120	3.25	300	26
		15	899				2.75		
		20	894				3.75		
		below 20	below 894	CH	Bedrock, Tcb	125	4.50	400	26
A-13-005 (El. 917')	Bent 4	7.5	909.5	CH	Alluvium, Qal	120	4.50	300	26
		below 7.5	below 909.5	CH	Bedrock, Tcb	125	4.50	400	26
A-13-006 (El. 936')	Abutment 5, Pilaster	7.5	928.5	CH	Fill, Qaf	120	4.00	300	26
		15	921				1.50		
		20	916	CH	Alluvium, Qal	120	3.50	300	26
		25	911	CH	Bedrock, Tcb	125	4.00	400	26
		below 25	below 911				4.50		

Column Notes:
(1) Exploration number and ground elevation
(2) Support and/or design feature location
(3) Depth of bottom of layer below ground surface
(4) Elevation of bottom of layer
(5) Soil classification in accordance with the Unified Soil Classification System (USCS) per ASTM D 2487 and 2488
(6) Interpreted Geologic Unit: Fill, Alluvium, or Bedrock
(7) Total unit weight used for design
(8) Undrained Shear Strength used for design, estmiated by Pocket Penetrometer
(9) & (10) Drained shear strength parameters for design based on direct shear test results and plasticity correlations

TABLE 2: SUMMARY OF AS-BUILT FOUNDATION CHARACTERISTICS
Palo Comado OC a.k.a Chesebro Road OC, Bridge No. 53-1678
07-LA-101 PM 33.69

Support Location	Foundation Type	Number of Piles	Capacity			Average Bottom of Pile Cap Elevation	Average Pile Tip Elevation	Average Length of Pile
			Design Compression	Ultimate Compressive	Ultimate Uplift			
			Kips	Kips	Kips	ft	ft	ft
Abut. 1	Cast In Drilled Hole (CIDH)	5	90	180	90	924.5	886	38.5
Bent 2*	Cast In Drilled Hole (CIDH)	14	90	180	90	900	884 - 887	13 - 16
Bent 3	Cast In Drilled Hole (CIDH)	24	90	180	90	903	881	22.0
Bent 4*	Cast In Drilled Hole (CIDH)	14	90	180	90	907	884 - 887	20 - 23
Abut. 5	Cast In Drilled Hole (CIDH)	5	90	180	90	924.1	887	37.5

Reference: ***1962 As-Built Log of Test Borings (LOTB) as-built sheet***

Notes:

*Pile data recorded on 1962 As-Built LOTB for Bent 2 and Bent 4 are reversed relative to the As-Built Foundation Plan. For purposes of this report it was assumed that the footing elevation in the Foundation Plan is correct, and that the tip elevations may have been transposed between Bent 2 and Bent 4. Therefore, a range of tip elvations is reported..

1. All piles are vertical (no batter piles).
2. Specified tip elevations are El. +888.0 feet for Abut 1, Abut 5, and Bent 4. Specified tip elevations are El. +882.0 and El. +885.0 feet for Bent 2 and Bent 3, respectively.
3. CIDH pile diameter = 16.0 inches.
4. Recommended axial pile load capacity values for seismic design assuming the piles are in good condition and the connection can transmit the uplift loads. The recommended values are limited to twice the reported design values.

Foundation Design Data Sheet							
Support No.	Pile Type	Finished Grade Elevation (ft)	Cut-off Elevation (ft)	Pile Cap Size (ft)		Permissible Settlement under Service Load (in)*	Number of Piles per Support
				B	L		
Abut 1L	16" CIDH	928	926.36 [(a)] 924.36 [(b)]	2.5	20	1"	4
Abut 1R	16" CIDH	928	927.08 [(a)] 925.08 [(b)]	2.5	28	1"	5
Bent 2L	24" CIDH	910	901.34	14	10	1"	6
Bent 2R	24" CIDH	910	901.34	14	19	1"	12
Bent 3L	24" CIDH	914	904.59	14	10	1"	6
Bent 3R	24" CIDH	914	904.59	14	19	1"	12
Bent 4L	24" CIDH	917	908.34	14	10	1"	6
Bent 4R	24" CIDH	917	908.34	14	19	1"	12
Abut 5L	16" CIDH	930	926.65	2.5	14	1"	3
Abut 5R	16" CIDH	930	926.69	2.5	22	1"	4
Abut 5 Pilaster	16" CIDH	935.5	930.75	7	7	1"	3

NOTES:

(a). Cut-off elevation for all piles except the pile below the pilaster.

(b). Cut-off elevation for the pile below the pilaster.

* Based on CALTRANS' current practice, the total permissible settlement is one inch for multi-span structures with continuous spans or multi-column bents, one inch for single span structures with diaphragm abutments, and two inches for single span structures with seat abutments. Different permissible settlement under service loads may be allowed if a structural analysis verifies that required level of serviceability is met.

TABLE 3
FOUNDATION DESIGN DATA SHEET

Foundation Factored Design Loads										
Support No.	Service-I Limit State (kips)		Strength/Construction Limit State (Controlling Group, kips)				Extreme Event Limit State (Controlling Group, kips)			
	Total Load Per Support*	Permanent Loads Per Support *	Compression		Tension		Compression		Tension	
			Per Support*	Max. Per Pile	Per Support*	Max. Per Pile	Per Support*	Max. Per Pile	Per Support*	Max. Per Pile
Abut 1L	350	250	450	140	0	0	N/A	N/A	N/A	N/A
Abut 1R	500	300	650	160	0	0	N/A	N/A	N/A	N/A
Bent 2L	660	550	910	260	0	20	550	300	0	140
Bent 2R	600	450	850	180	0	0	1000	320	150	180
Bent 3L	800	650	1100	280	0	20	650	320	0	120
Bent 3R	750	550	1050	200	0	0	1100	340	100	180
Bent 4L	600	460	810	220	0	0	470	300	0	140
Bent 4R	550	400	750	150	0	0	950	320	200	200
Abut 5L	200	150	300	140	0	0	N/A	N/A	N/A	N/A
Abut 5R	350	200	500	150	0	0	N/A	N/A	N/A	N/A
Abut 5 Pilaster	100	100	100	60	0	0	100	150	0	70

*** For Bent 2R, Bent 3R, and Bent 4R loads are per column.**

TABLE 4
FOUNDATION FACTORED DESIGN LOADS

Foundation Design Recommendations												
Support Location	Pile Type	Cut-off Elevation (ft)	Service-I Limit State Load per Support (kips)		Total Permissible Support Settlement (inches)	Required Factored Nominal Resistance Per Pile (kips)				DesignTip Elevations (ft)	Specified Tip Elevation (ft)	Required Nominal Driving Resistance (kips)
						Strength/Construction		Extreme Event				
			Total	Permanent		Comp. (ϕ = 0.7)	Tension (ϕ = 0.7)	Comp. (ϕ = 1.0)	Tension (ϕ = 1.0)			
Abut 1L	16" CIDH	926.36 [a] 924.36 [b]	350	250	1"	140	0	N/A	N/A	889.11 (a-I) 916.11 (c) 908.11 (d)	889.11	N/A
Abut 1R	16" CIDH	927.08 [a] 925.08 [b]	500	300	1"	160	0	N/A	N/A	885.83 (a-I) 916.83 (c) 908.83 (d)	885.83	N/A
Bent 2L	24" CIDH	901.34	660	550	1"	260	20	300	140	867.09 (a-I) 891.09 (b-I) 872.09 (a-II) 879.09 (b-II) 891.09 (c) 880.09 (d)	867.09	N/A
Bent 2R	24" CIDH	901.34	600	450	1"	180	0	320	180	875.09 (a-I) 870.09 (a-II) 875.09 (b-II) 891.09 (c) 880.09 (d)	870.09	N/A
Bent 3L	24" CIDH	904.59	800	650	1"	280	20	320	120	867.34 (a-I) 893.34 (b-I) 873.34 (a-II) 884.34 (b-II) 894.34 (c) 883.34 (d)	867.34	N/A
Bent 3R	24" CIDH	904.59	750	550	1"	200	0	340	180	875.34 (a-I) 871.34 (a-II) 877.34 (b-II) 894.34 (c) 883.34 (d)	871.34	N/A
Bent 4L	24" CIDH	908.34	600	460	1"	220	0	300	140	878.09 (a-I) 879.09 (a-II) 886.09 (b-II) 898.09 (c) 887.09 (d)	878.09	N/A
Bent 4R	24" CIDH	908.34	550	400	1"	150	0	320	200	885.09 (a-I) 877.09 (a-II) 880.09 (b-II) 898.09 (c) 887.09 (d)	877.09	N/A
Abut 5L	16" CIDH	926.65	200	150	1"	140	0	N/A	N/A	894.40 (a-I) 916.40 (c) 908.40 (d)	894.40	N/A
Abut 5R	16" CIDH	926.69	350	200	1"	150	0	N/A	N/A	893.44 (a-I) 916.44 (c) 908.44 (d)	893.44	N/A
Abut 5 Pilaster	16" CIDH	930.75	100	100	1"	60	0	150	70	911.50 (a-I) 904.50 (a-II) 909.50 (b-II) 920.50 (c) 918.50 (d)	904.50	N/A

Notes:
(a). Cut-off elevation for all piles except the pile below the pilaster.
(b). Cut-off elevation for the pile below the pilaster.
1) Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (b-I) Tension (Strength Limit), (a-II) Compression (Extreme Event), (b-II) Tension (Extreme Event), (c) Settlement, (d) Lateral Load.
2) The CIDH specified tip elevation shall not be raised.

GROUP DELTA

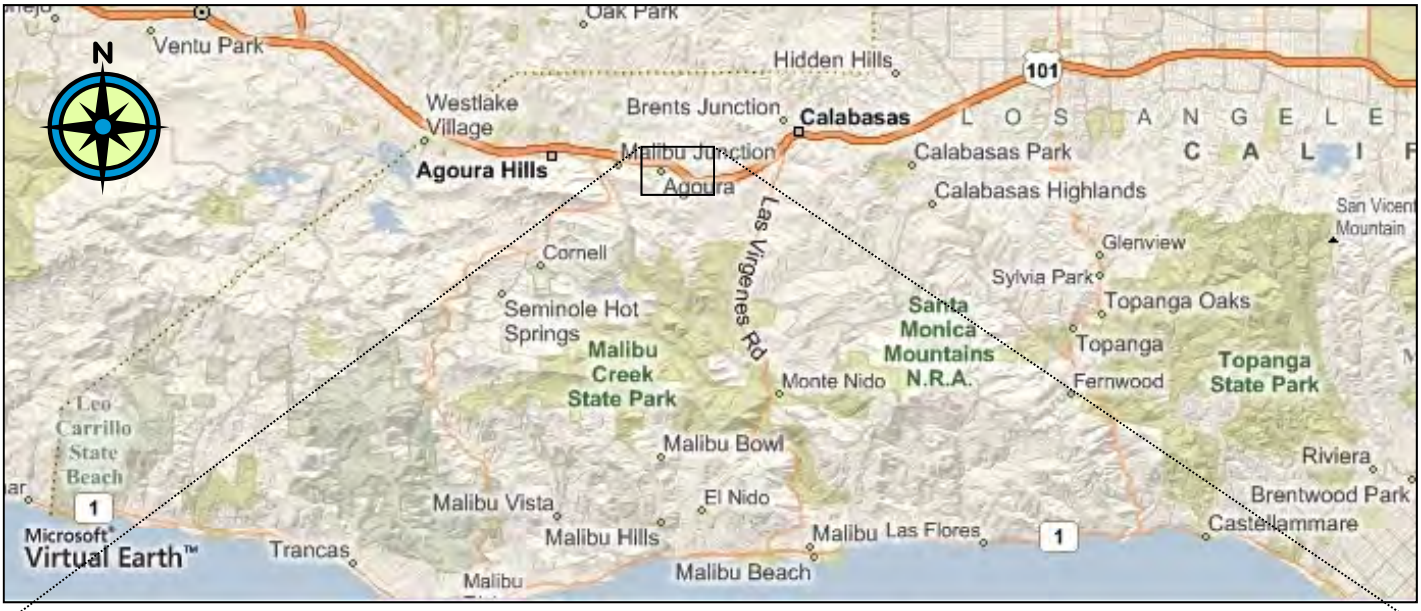
TABLE 5
FOUNDATION DESIGN RECOMMENDATIONS

Pile Data Table						
Location	Pile Type	Cut-Off Elevation (feet)	Nominal Resistance (kips)		Design Tip Elevations (ft)	Specified Tip Elevation (ft)
			Compression	Tension		
Abut 1L	16" CIDH	926.36 [(a)] 924.36 [(b)]	200	N/A	889.11 (a) 916.11 (c) 908.11 (d)	889.11
Abut 1R	16" CIDH	927.08 [(a)] 925.08 [(b)]	230	N/A	885.83 (a) 916.83 (c) 908.83 (d)	885.83
Bent 2L	24" CIDH	901.34	380	140	867.09 (a) 879.09 (b) 891.09 (c) 880.09 (d)	867.09
Bent 2R	24" CIDH	901.34	320	180	870.09 (a) 875.09 (b) 891.09 (c) 880.09 (d)	870.09
Bent 3L	24" CIDH	904.59	400	120	867.34 (a) 884.34 (b) 894.34 (c) 883.34 (d)	867.34
Bent 3R	24" CIDH	904.59	340	180	871.34 (a) 877.34 (b) 894.34 (c) 883.34 (d)	871.34
Bent 4L	24" CIDH	908.34	320	140	878.09 (a) 886.09 (b) 898.09 (c) 887.09 (d)	878.09
Bent 4R	24" CIDH	908.34	320	200	877.09 (a) 880.09 (b) 898.09 (c) 887.09 (d)	877.09
Abut 5L	16" CIDH	926.65	200	N/A	894.40 (a) 916.40 (c) 908.40 (d)	894.40
Abut 5R	16" CIDH	926.69	220	N/A	893.44 (a) 916.44 (c) 908.44 (d)	893.44
Abut 5 Pilaster	16" CIDH	930.75	150	70	904.50 (a) 909.50 (b) 920.50 (c) 918.50 (d)	904.50

Notes: (a). Cut-off elevation for all piles except the pile below the pilaster.
(b). Cut-off elevation for the pile below the pilaster.
1) Design tip elevations for Bents and Abutments are controlled by: (a) Compression, (b) Tension, (c) Settlement, (d) Lateral Load.
2) The CIDH Specified Tip Elevation shall not be raised.

Location	Pile Type	Head Condition	Load Direction	Spacing	Average P-mult	Leading P-mult	Ground Slope	Avg P-mult			Max P- Mult	
								Top Deflection	Top Shear (kips)	Critical Length (ft)	Max Moment (kips-ft)	Depth to Max Moment (ft)
Abut 1R	CIDH 16"	Free	Longitudinal	4D	1	1	1.5:1	0.25	13	15	32	4.5
								0.5	18		50	5
								1	24		79	5.5
			Transverse	4D	0.65	0.88	LEVEL	0.25	14	15	39	4
								0.5	19		61	4.5
								1	26		98	5
Abut 1L	CIDH 16"	Free	Longitudinal	3.375D	0.93	0.93	1.5:1	0.25	13	15	32	4.5
								0.5	18		51	5
								1	25		80	5.5
			Transverse	3.375D	0.58	0.8	LEVEL	0.25	13	15	33	4
								0.5	18		53	4.5
								1	24		84	5
Bent 2R	CIDH 24"	Free	Longitudinal	2.5D	0.48	0.675	LEVEL	0.25	42	17.5	129	5.0
								0.5	57		202	5.5
								1	79		318	6.5
			Transverse	2.5D	0.44	0.675		0.25	39	17.5	129	5.0
								0.5	54		202	5.5
								1	74		318	6.5
Bent 2L	CIDH 24"	Free	Longitudinal	2.5D	0.48	0.675	LEVEL	0.25	42	17.5	129	5.0
								0.5	57		202	5.5
								1	79		318	6.5
			Transverse	3D	0.65	0.75		0.25	52	17.5	136	5.0
								0.5	71		213	5.5
								1	98		334	6.5
Bent 3R	CIDH 24"	Free	Longitudinal	2.5D	0.48	0.675	LEVEL	0.25	31	17.5	109	5.0
								0.5	43		172	5.5
								1	60		274	6.5
			Transverse	2.5D	0.44	0.675		0.25	29	17.5	109	5.0
								0.5	40		172	5.5
								1	56		274	6.5
Bent 3L	CIDH 24"	Free	Longitudinal	2.5D	0.48	0.675	LEVEL	0.25	31	17.5	109	5.0
								0.5	43		172	5.5
								1	59		274	6.5
			Transverse	3D	0.65	0.75		0.25	39	17.5	114	5.0
								0.5	53		181	5.5
								1	74		287	6.5
Bent 4R	CIDH 24"	Free	Longitudinal	2.5D	0.48	0.675	LEVEL	0.25	44	17.5	131	5.0
								0.5	60		205	5.5
								1	82		322	6.5
			Transverse	2.5D	0.44	0.675		0.25	41	17.5	131	5.0
								0.5	56		205	5.5
								1	77		322	6.5
Bent 4L	CIDH 24"	Free	Longitudinal	2.5D	0.48	0.675	LEVEL	0.25	44	17.5	131	5.0
								0.5	60		205	5.5
								1	82		322	6.5
			Transverse	3D	0.65	0.75		0.25	59	17.5	138	5.0
								0.5	75		216	5.5
								1	102		338	6.5
Abut 5R	CIDH 16"	Free	Longitudinal	4D	1	1	1.5:1	0.25	13	15	29	5
								0.5	17		46	5.5
								1	24		75	6
			Transverse	4D	0.67	0.88	LEVEL	0.25	14	15	35	4.5
								0.5	20		56	5
								1	27		90	5.5
Abut 5L	CIDH 16"	Free	Longitudinal	3.375D	0.93	0.93	1.5:1	0.25	12	15	28	5
								0.5	16		45	5.5
								1	23		73	6
			Transverse	3.375D	0.62	0.8	LEVEL	0.25	13	15	34	4.5
								0.5	19		54	5
								1	26		86	5.5
Abut 5 Pilaster	CIDH 16"	Free	Longitudinal	2.25D	1	1	LEVEL	0.25	35	8	45	3
								0.5	46		68	3.5
								1	60		104	4.5
			Transverse	2.25D	0.52	0.64	LEVEL	0.25	14	10	35	4.5
								0.5	19		54	5
								1	26		83	5.5

Figures



The base maps are from Microsoft's Virtual Earth

GROUP DELTA

GDC Project No. LA-1143

Palo Comado Canyon Road OC (Widen)
Agoura Hills, California

VICINITY MAP

Figure 1

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

ABBREVIATIONS:

C CUT

F FILL

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL

NOT FOR CONSTRUCTION

SEPTEMBER 2017

PARSONS
525 B STREET, STE 1600
SAN DIEGO, CA 92101

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

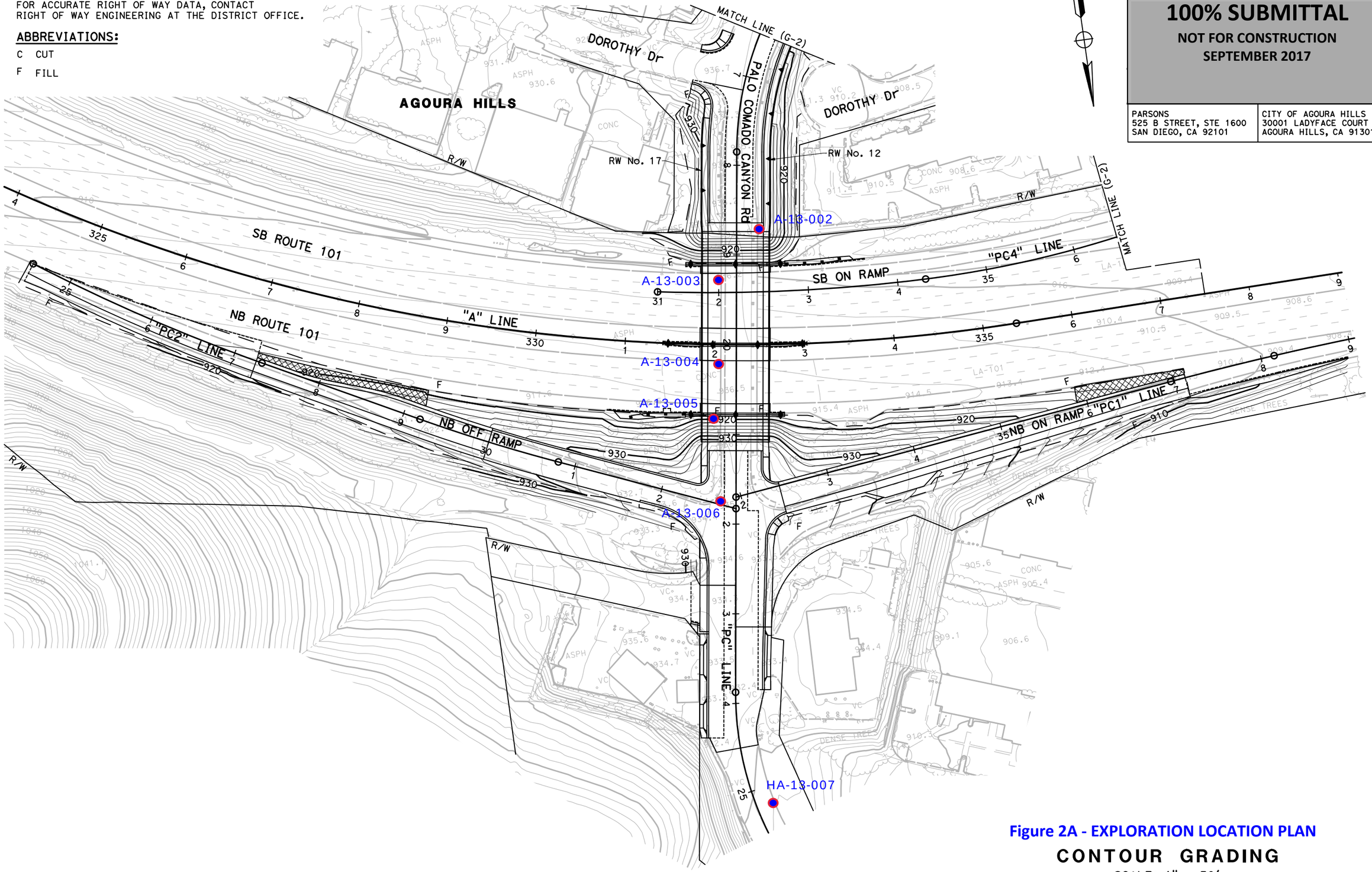


Figure 2A - EXPLORATION LOCATION PLAN

CONTOUR GRADING

SCALE: 1" = 50'

G-1

APPROVED FOR CONTOUR GRADING WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: MARK FIRGER

CALCULATED-DESIGNED BY: KEVIN CASTRO

CHECKED BY: TOMO TAKAHASHI

REVISED BY | DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => 6/9/2017

TIME PLOTTED => 4:15:41 PM

BORDER LAST REVISED 7/2/2010

USERNAME => p0024488

DGN FILE => 070000184ha001.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 1821

PROJECT NUMBER & PHASE 0700001841

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL

NOT FOR CONSTRUCTION
SEPTEMBER 2017

PARSONS
525 B STREET, STE 1600
SAN DIEGO, CA 92101

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

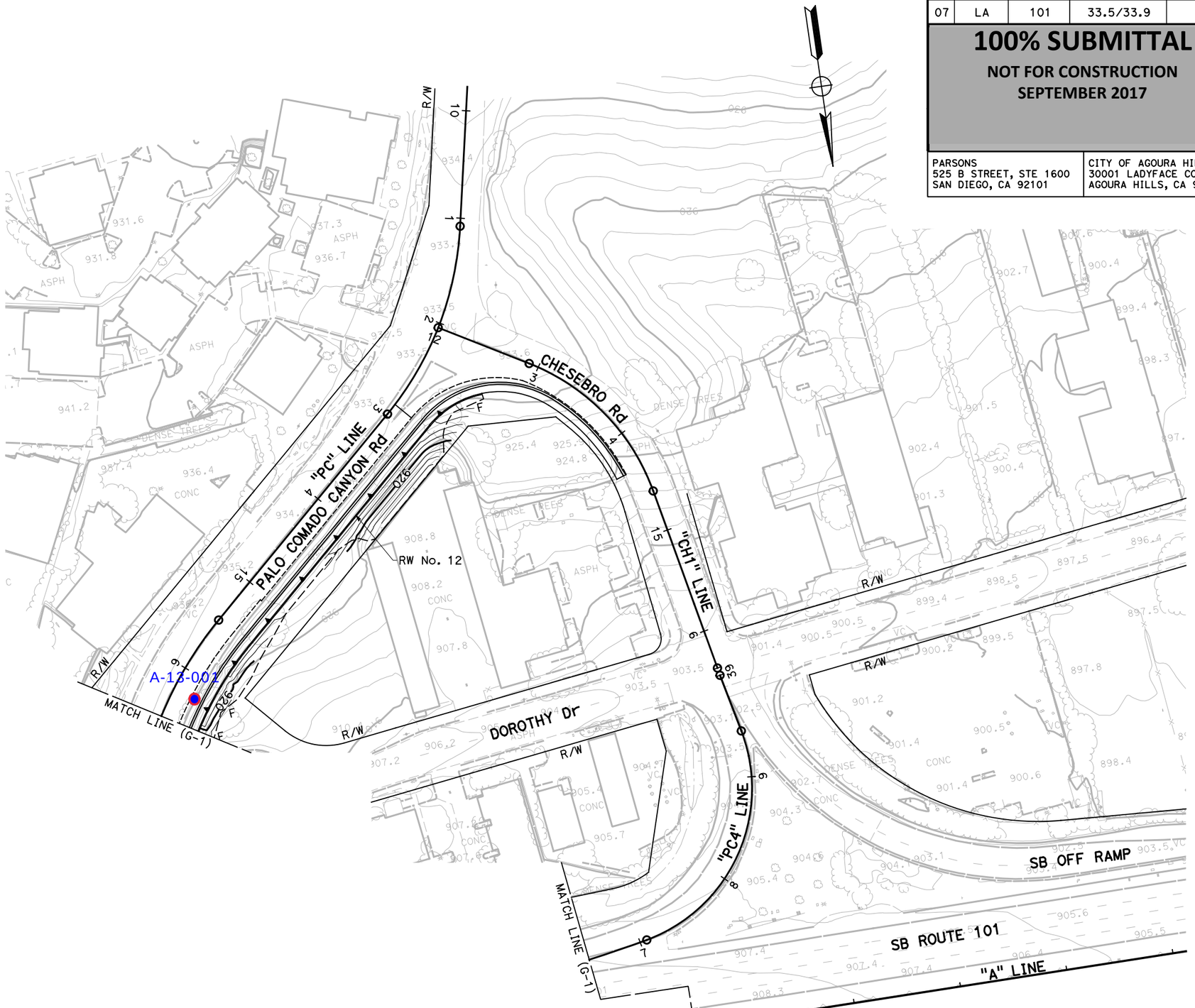


Figure 2B - EXPLORATION LOCATION PLAN

CONTOUR GRADING

SCALE: 1" = 50'

APPROVED FOR CONTOUR GRADING WORK ONLY

G-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: MARK FIRGER

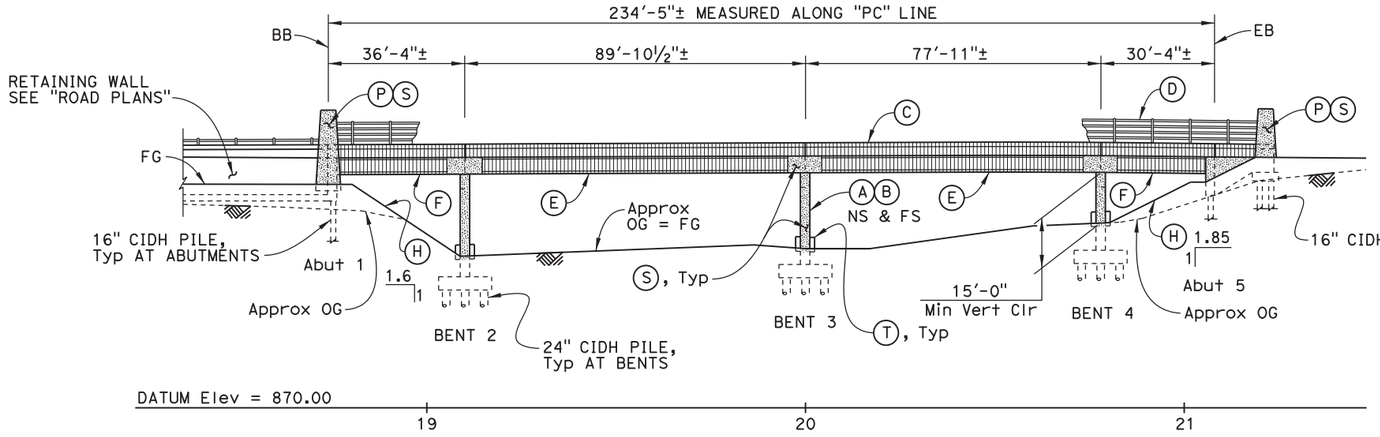
CALCULATED-DESIGNED BY: KEVIN CASTRO

CHECKED BY: TOMO TAKAHASHI

REVISED BY | DATE REVISED

LAST REVISION | DATE PLOTTED => 6/9/2017 | TIME PLOTTED => 3:51:12 PM | 00-00-00 | 00-00-00

BORDER LAST REVISED 7/2/2010 | USERNAME => p0024488 | DGN FILE => 070000184ha002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1821 | PROJECT NUMBER & PHASE 0700001841



ELEVATION

1" = 20'

CURVE DATA (1)

R = 1999.95'
Δ = 40°19'10"
T = 734.24'
L = 1407.38'

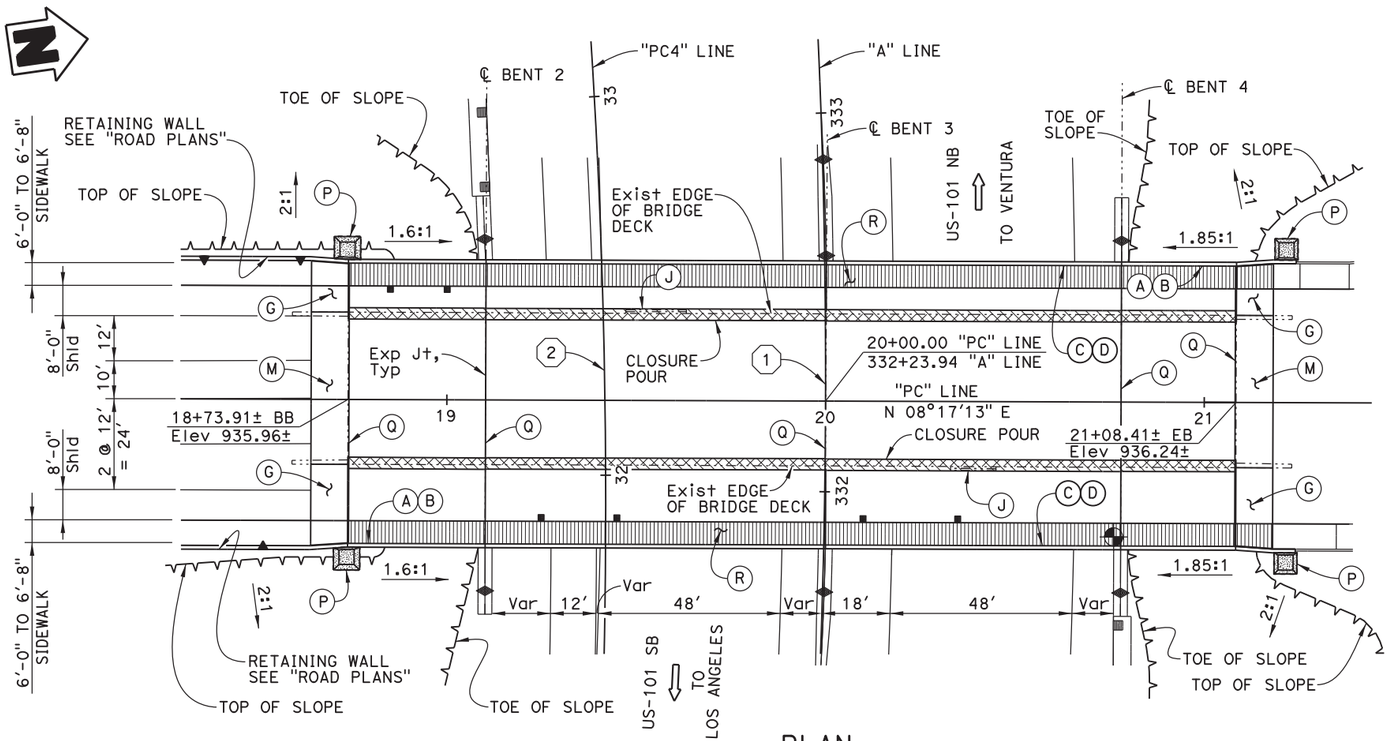
CURVE DATA (2)

R = 1920.11'
Δ = 08°56'23"
T = 150.10'
L = 299.59'

UTILITIES:

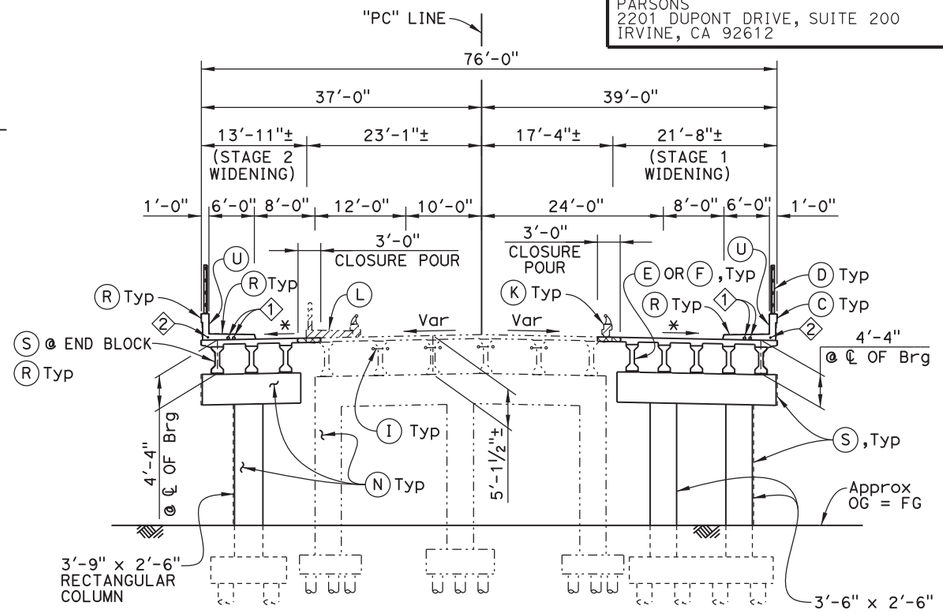
(1) 2 - 4"ø Future Utility Openings, See "ELECTRICAL PLANS"

(2) 1½"ø Electrical Conduit for Lighting, See "ELECTRICAL PLANS"



PLAN

1" = 20'



TYPICAL SECTION

1" = 10'

NOTES:

(A) Paint "Br No. 53-1678"
(B) Paint "PALO COMADO CANYON ROAD OC"
(C) Concrete Barrier (Type 732SW Mod)
(D) Chain Link Railing (Type 7 Mod)
(E) 3'-6" PC/PS Conc Girder (Spans 2 & 3)
(F) CIP Reinforced Concrete T-Girder (Spans 1 & 4)
(G) Structure Approach Slab Type EQ(10)
(H) Slope Paving
(I) Exist Cable Restrainer
(J) Remove Existing Bridge Mounted Sign
(K) Remove Existing Barrier
(L) Remove Existing Barrier, Sidewalk and Pipe Railing and Refinish Bridge Deck
(M) Structure Approach Slab Type R(10D)
(N) Stained Concrete
(P) Pilaster
(Q) Clean Expansion Joint and Place New Joint Seal
(R) Plank Texture With Stained Concrete
(S) Cobblestone Texture With Stained Concrete
(T) Concrete Barrier (Type 60R), see "ROADWAY PLANS"
(U) Barrier Lighting, See "ELECTRICAL PLANS"

LEGEND:

Indicates Existing Structure
Indicates Bridge Removal (Portion)
Indicates Closure Pour
Indicates Point of Minimum Vertical Clearance
Match Existing Grade & Cross Slope
Concrete Barrier (Type 60R), See "ROADWAY PLANS"
Indicates MGS, see "ROADWAY PLANS"
Indicates Deck Drain (Type D-1)

NOTE:
The contractor shall verify all controlling field dimensions before ordering or fabricating any material.

Figure 3A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
07	LA	101	33.5/33.9		

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — JON HERMSTAD — No. 66045 — Exp. 06/30/18 — CIVIL — STATE OF CALIFORNIA

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30001 LADYFACE COURT
AGOURA HILLS, CA 91301

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612

DESIGN OVERSIGHT	DESIGN	BY D. LaFranchi	CHECKED E. Ieong/G. Douglass	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE
SIGN OFF DATE	DETAILS	BY F. Hakemi	CHECKED E. Ieong	LAYOUT BY D. LaFranchi	CHECKED E. Ieong
	QUANTITIES	BY D. LaFranchi	CHECKED E. Ieong	SPECIFICATIONS BY J. Hermstad	PLANS AND SPECS COMPARED J. Hermstad

DESIGN GENERAL PLAN SHEET (ENGLISH) (REV. 03/14/12)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Jon Hermstad
PROJECT ENGINEER

BRIDGE NO. 53-1678
POST MILES 33.69

UNIT: 1821
PROJECT NUMBER & PHASE: 0700001841 CONTRACT NO.: 07-257200

FILE => 53-1628-a-gp01.dgn

PALO COMADO CANYON RD OC (WIDEN)

GENERAL PLAN

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
04/24/14	09/23/14	06/26/17	09/01/17	1	32

100% INTERMEDIATE PS&E - SEPTEMBER 2017 (NOT FOR CONSTRUCTION)

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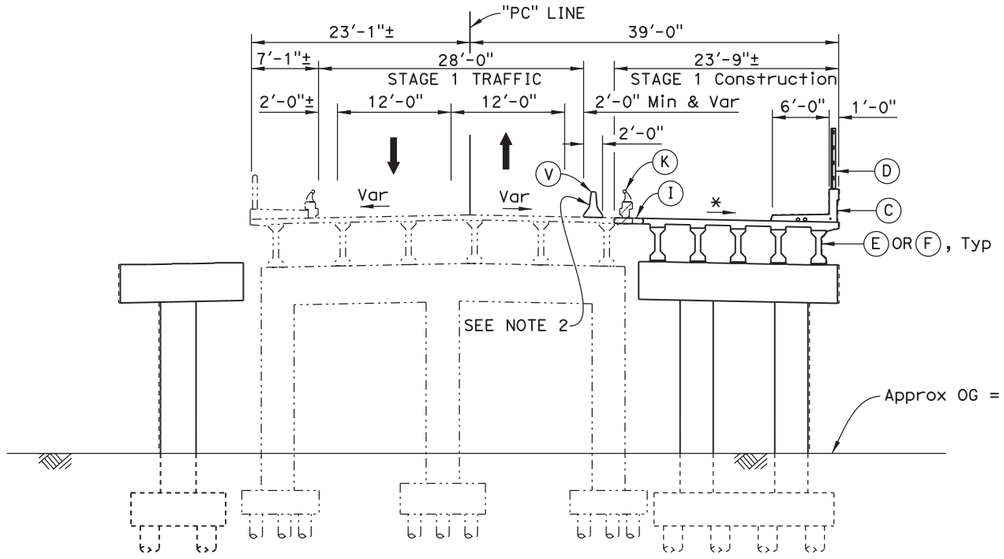
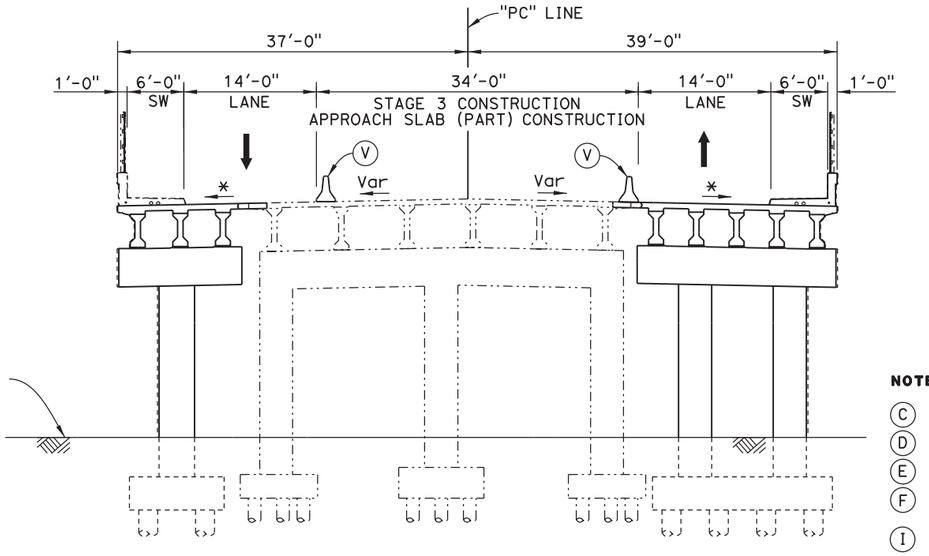


* Match Existing Slope

STAGE 1 CONSTRUCTION

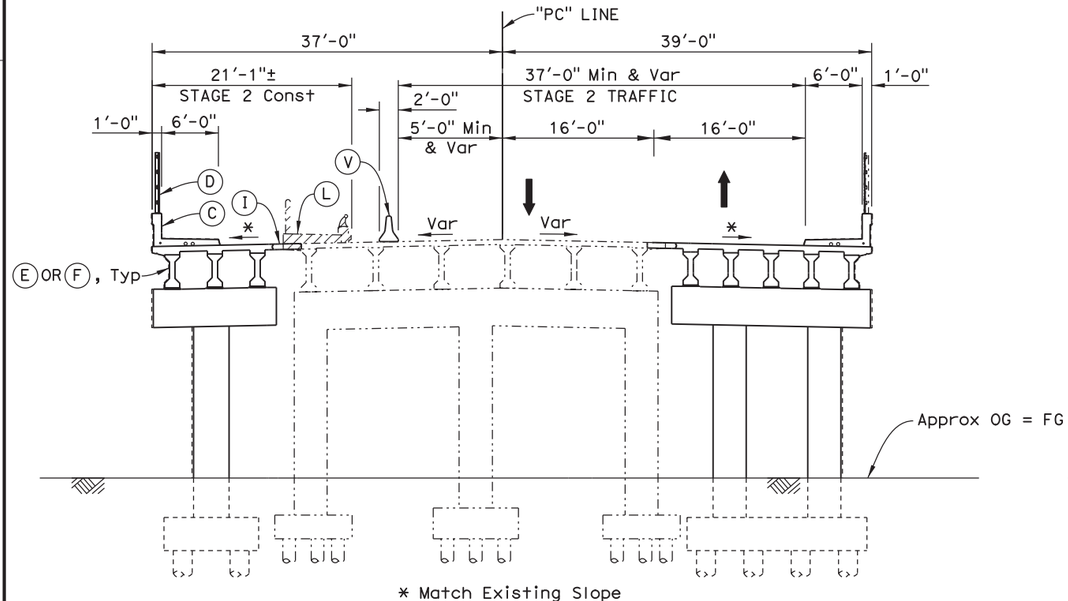
1/8" = 1'-0"



* Match Existing Slope

STAGE 3 CONSTRUCTION

1/8" = 1'-0"

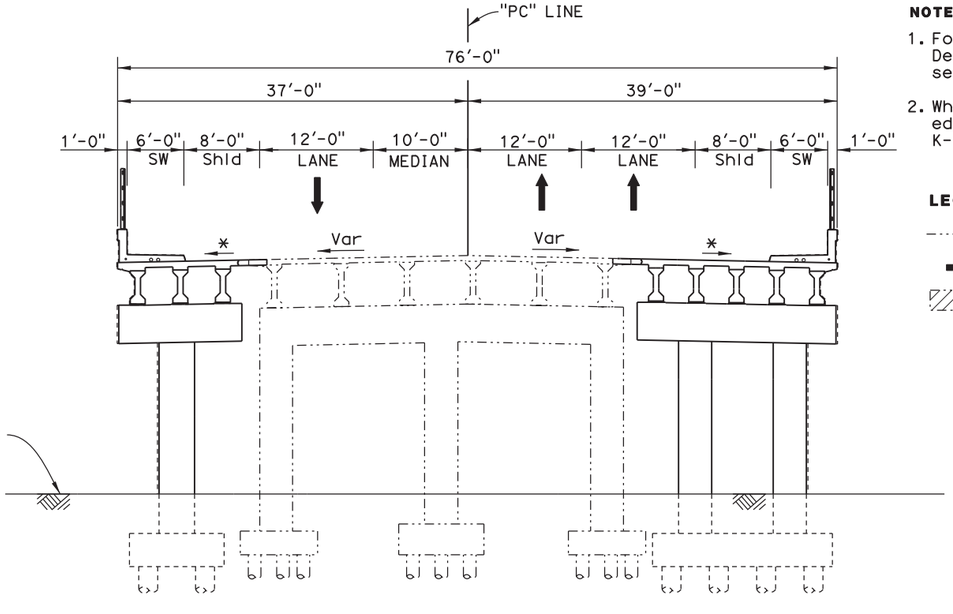


* Match Existing Slope

STAGE 2 CONSTRUCTION

1/8" = 1'-0"

NOTE:
The contractor shall verify all controlling field dimensions before ordering or fabricating any material.



* Match Existing Slope

FINAL STAGE CONSTRUCTION

1/8" = 1'-0"

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
07	LA	101	33.5/33.9		

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — JON HERMSTAD — No. 66045 — Exp. 06/30/18 — CIVIL — STATE OF CALIFORNIA

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CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612

NOTES:

- (C) Concrete Barrier (Type 732SW Mod)
- (D) Chain Link Railing (Type 7 Mod)
- (E) 3'-6" PC/PS Conc Girder (Spans 2 & 3)
- (F) CIP Reinforced Concrete T-Girder (Spans 1 & 4)
- (I) Closure Pour
- (K) Remove Existing Barrier
- (L) Remove Existing Barrier, Sidewalk and Pipe Railing and Refinish Bridge Deck
- (V) Temporary Railing (Type K) See "ROADWAY PLANS"

NOTES:

1. For overall project Stage Construction Details and Stage Construction Numbering, see "ROADWAY PLANS".
2. Where distance between K-rail and exposed edge of deck is less than 2'-0", attach K-rail to deck per Standard Plan T3A.

LEGEND:

- Indicates Existing Structure
- Indicates Traffic Lane
- Indicates Bridge Removal (Portion)

Figure 3B

100% INTERMEDIATE PS&E - SEPTEMBER 2017 (NOT FOR CONSTRUCTION)

USERNAME => p0040200a DATE PLOTTED => 25-AUG-2017 TIME PLOTTED => 10:33

DESIGN OVERSIGHT		DESIGN	BY D. LaFranchi	CHECKED E. Ieong/G. Douglass	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
SIGN OFF DATE		DETAILS	BY F. Hakemi	CHECKED E. Ieong	Jon Hermstad PROJECT ENGINEER
		QUANTITIES	BY D. LaFranchi	CHECKED E. Ieong	BRIDGE NO. 53-1678 POST MILES 33.69

PALO COMADO CANYON RD OC (WIDEN)

STAGE CONSTRUCTION

DESIGN DETAIL SHEET (ENGLISH) (REV. 03/14/12)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 1821 PROJECT NUMBER & PHASE: 0700001841 CONTRACT NO.: 07-257200

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
03/28/14	06/26/17	09/01/17		2	32

FILE => 53-1628-a-gp02.dgn

PILE DATA TABLE

LOCATION	PILE TYPE	NOMINAL RESISTANCE (KIPS)		DESIGN TIP ELEVATIONS (FT)	SPECIFIED TIP ELEVATIONS (FT)
		COMPRESSION	TENSION		
ABUTMENT 1L	16" CIDH	200	N/A	889.1 (a); 916.1 (c); 908.1 (d)	889.1
ABUTMENT 1R	16" CIDH	230	N/A	885.8 (a); 916.8 (c); 908.8 (d)	885.8
BENT 2L	24" CIDH	380	140	867.1 (a); 879.1 (b); 891.1 (c); 880.1 (d)	867.1
BENT 2R	24" CIDH	320	180	870.1 (a); 875.1 (b); 891.1 (c); 880.1 (d)	870.1
BENT 3L	24" CIDH	400	120	867.3 (a); 884.3 (b); 894.3 (c); 883.3 (d)	867.3
BENT 3R	24" CIDH	340	180	871.3 (a); 877.3 (b); 894.3 (c); 883.3 (d)	871.3
BENT 4L	24" CIDH	320	140	878.1 (a); 886.1 (b); 898.1 (c); 887.1 (d)	878.1
BENT 4R	24" CIDH	320	200	877.1 (a); 880.1 (b); 898.1 (c); 887.1 (d)	877.1
ABUTMENT 5L	16" CIDH	200	N/A	894.4 (a); 916.4 (c); 908.4 (d)	894.4
ABUTMENT 5R	16" CIDH	220	N/A	893.4 (a); 916.4 (c); 908.4 (d)	893.4
ABUTMENT 5 PILASTER	16" CIDH	150	70	904.5 (a); 909.5 (b); 920.5 (c); 918.5 (d)	904.5

NOTES:

1. Design tip elevations for Bents and Abutments are controlled by: (a) Compression, (b) Tension, (c) Settlement, (d) Lateral Load.
2. The CIDH Specified Tip Elevation shall not be raised.

BENCHMARK

BENCHMARK	Elev (ft)	DESCRIPTION
AA3356	904.20	FD. NGS BENCHMARK PID "AA3356", DES. "101 007", CALIFORNIA DOT BRASS DISK, AT BRIDGE ABUTMENT OVER CHESEBRO CREEK.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
07	LA	101	33.5/33.9		

REGISTERED CIVIL ENGINEER DATE

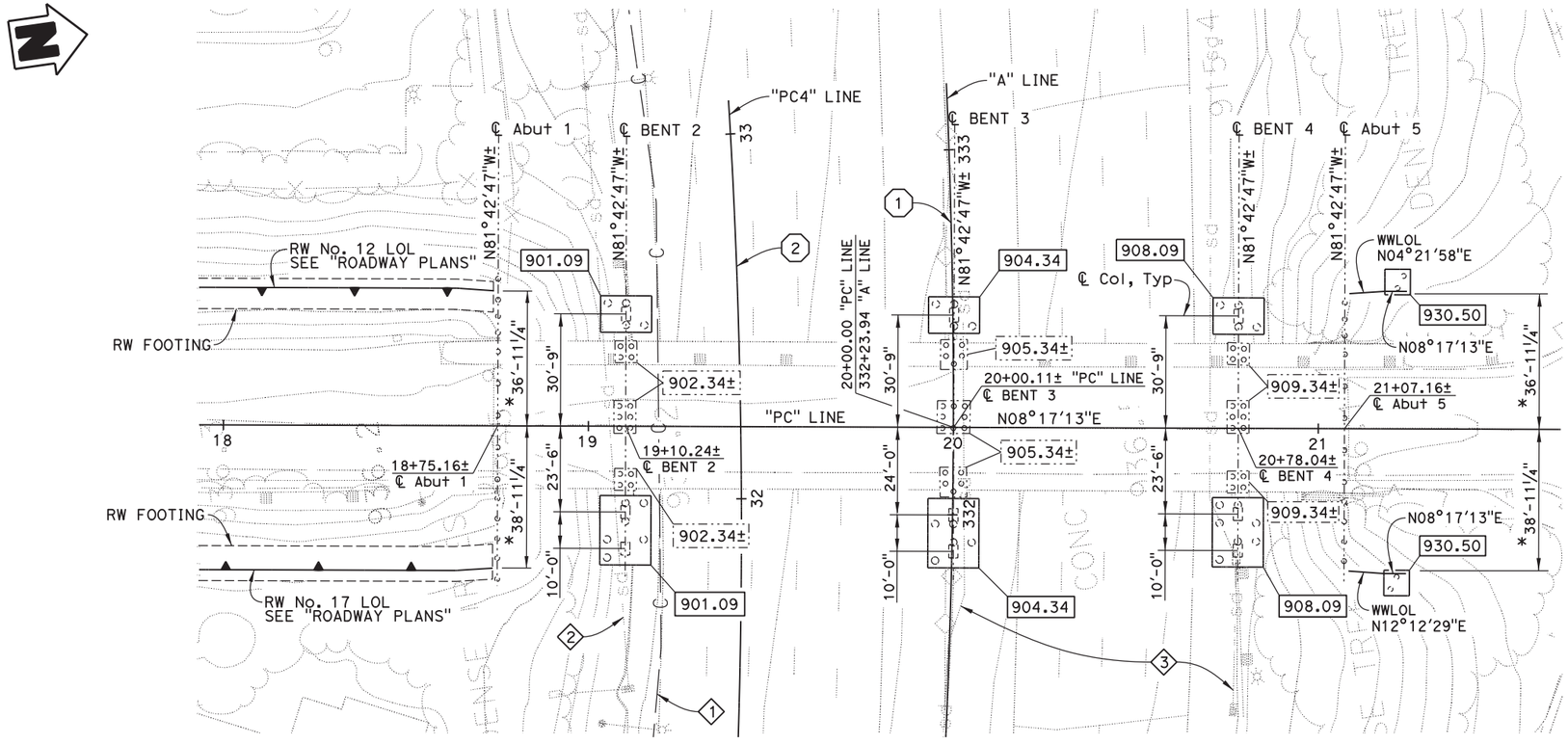
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — JON HERMSTAD — No. 66045 — Exp. 06/30/18 — CIVIL — STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

PARSONS
2201 DUPONT DRIVE, SUITE 200
IRVINE, CA 92612



PLAN
1" = 20'

* MEASURED TO THE INTERSECTION OF WWLOL OR RW LOL WITH ℄ Abut

LEGEND:

XXX.XX Indicates Bottom of Exist Footing Elevation

XXX.XX Indicates Bottom of Footing Elevation

Indicates Exist Structure

Indicates Exist Conc Pile

Indicates New 16" CIDH Conc Pile at Abutments B2-3

Indicates New 24" CIDH Conc Pile at Bents B2-3

NOTES:

1. All piles not shown.
2. Existing structure foundation locations are approximate.
3. Contours shown represent existing ground.
4. The types and locations of all utilities are provided for information only. The Contractor shall verify all existing utilities and notify utility agencies prior to any removal, relocation or new construction. See "ROADWAY PLANS" for Utility Details not shown.

UTILITIES:

1. Exist Caltrans 4" Fiber Optic Cable to be relocated, see "ROADWAY PLANS"
2. Exist 24" Storm Drain to be relocated, see "ROADWAY PLANS"
3. Exist 18" Storm Drain to be relocated, see "ROADWAY PLANS"

CURVE DATA ①

R = 1999.95'
Δ = 40°19'10"
T = 734.24'
L = 1407.38'

CURVE DATA ②

R = 1920.11'
Δ = 08°56'23"
T = 150.10'
L = 299.59'

NOTE:
The contractor shall verify all controlling field dimensions before ordering or fabricating any material.

Figure 3C

100% INTERMEDIATE PS&E - SEPTEMBER 2017 (NOT FOR CONSTRUCTION)

GEOTECHNICAL PROFESSIONAL APPROVAL DATE

DESIGN OVERSIGHT
SIGN OFF DATE

SCALE: X | VERT.DATUM X | HORZ.DATUM X
PHOTOGRAMMETRY AS OF: X | ALIGNMENT TIES X
SURVEYED BY X | DRAFTED BY X
FIELD CHECKED BY X | CHECKED BY X

	BY	CHECKED
DESIGN	D. LaFranchi	E. Ieong/G. Douglass
DETAILS	F. Hakemi	E. Ieong
QUANTITIES	D. LaFranchi	E. Ieong

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Jon Hermstad
PROJECT ENGINEER

BRIDGE NO. 53-1678
POST MILES 33.69

PALO COMADO CANYON RD OC (WIDEN)
FOUNDATION PLAN

FOUNDATION PLAN SHEET (ENGLISH) (REV. 03/14/12)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 1821
PROJECT NUMBER & PHASE: 0700001841 CONTRACT NO.: 07-257200

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES: 04/24/14 09/24/14 06/26/17 09/01/17

SHEET 4 OF 32

FILE => 53-1628-e-fdp101.dgn

USERNAME => b0040200a DATE PLOTTED => 25-AUG-2017 TIME PLOTTED => 10:34

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL

NOT FOR CONSTRUCTION

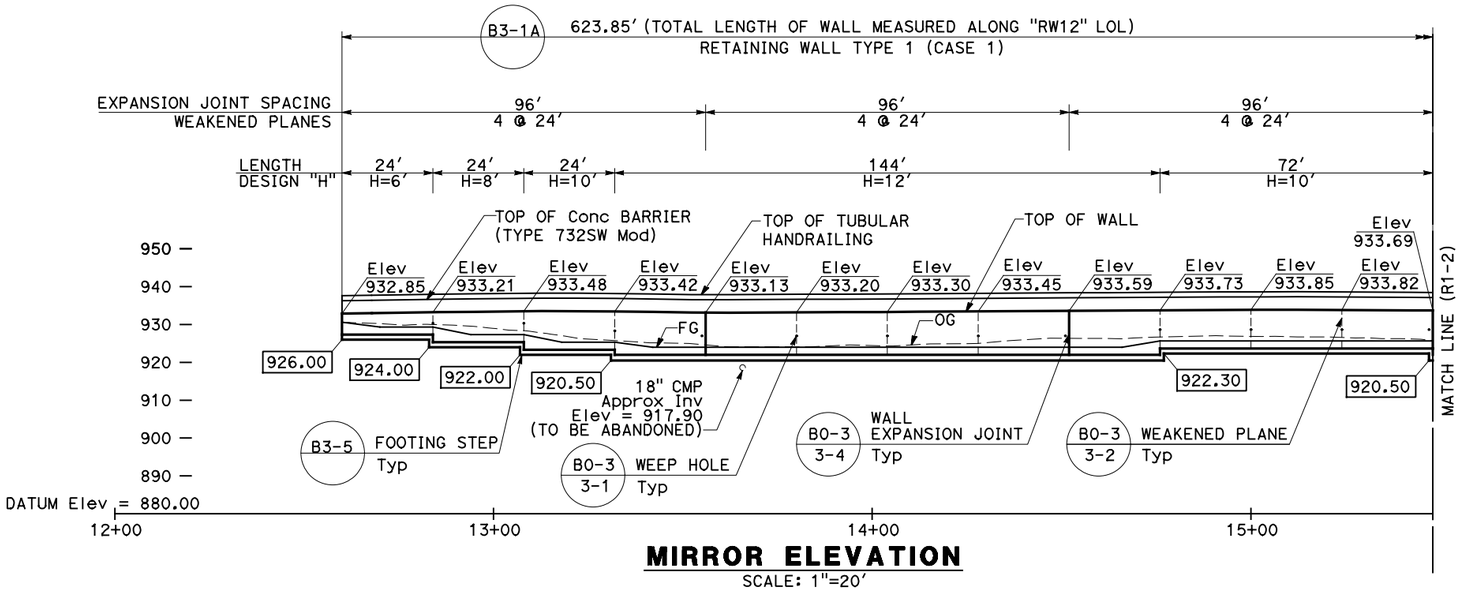
SEPTEMBER 2017

PARSONS
2201 DUPONT DR, STE 200
IRVINE, CA 92612

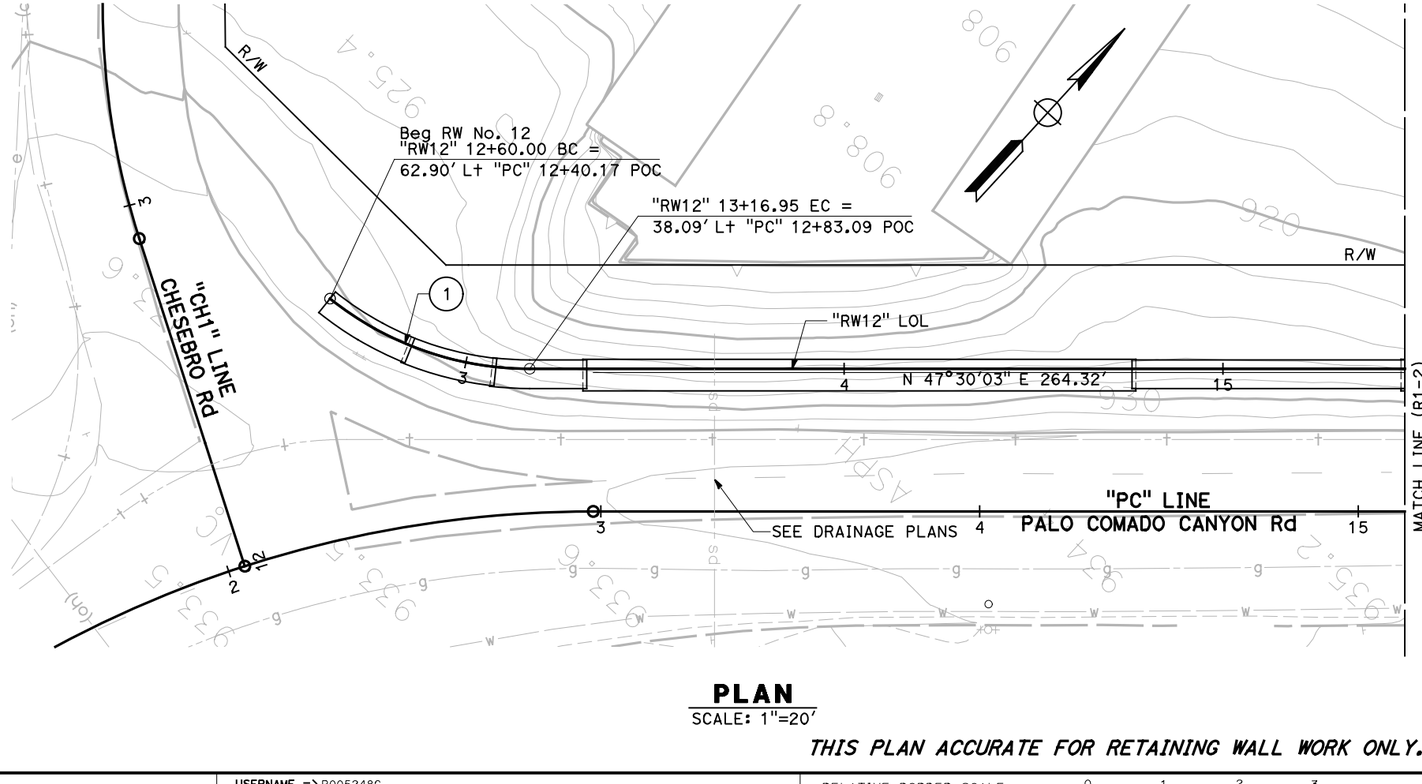
CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

NOTES:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION OF THE WALL.

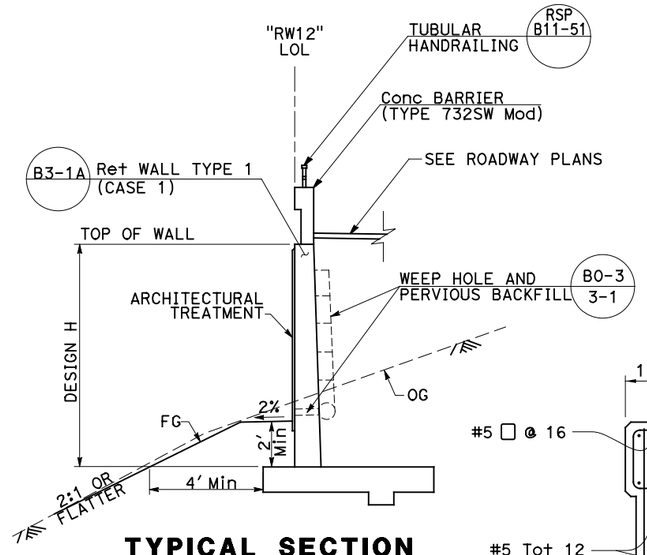


MIRROR ELEVATION
SCALE: 1"=20′

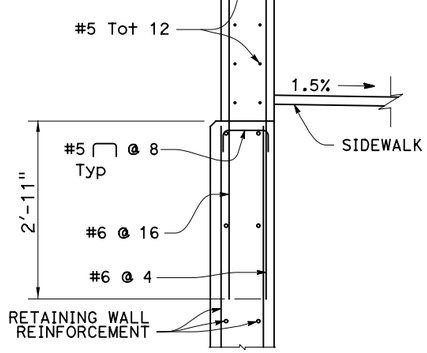


PLAN
SCALE: 1"=20′

THIS PLAN ACCURATE FOR RETAINING WALL WORK ONLY.



TYPICAL SECTION
NO SCALE



732SW Mod
NO SCALE

NOTE: FOR DIMENSIONS AND Reinf NOT SHOWN SEE REVISED Std PLAN B11-59

CURVE DATA				
No.	R	Δ	T	L
(1)	84.33′	38°41′38"	29.61′	56.95′

Figure 4A

RETAINING WALL PLAN

RETAINING WALL No. 12

SCALE AS SHOWN

R1-1

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: KEVIN CASTRO
CHECKED BY: TOMO TAKAHASHI
CONSULTANT FUNCTIONAL SUPERVISOR: MARK FIRGER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 00-00-00
DATE PLOTTED => 6/16/2017
TIME PLOTTED => 4:57:35 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => P005248C | DGN FILE => 070000184qa001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1821 | PROJECT NUMBER & PHASE 0700001841

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL

NOT FOR CONSTRUCTION

SEPTEMBER 2017

PARSONS
2201 DUPONT DR, STE 200
IRVINE, CA 92612

CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

NOTES:

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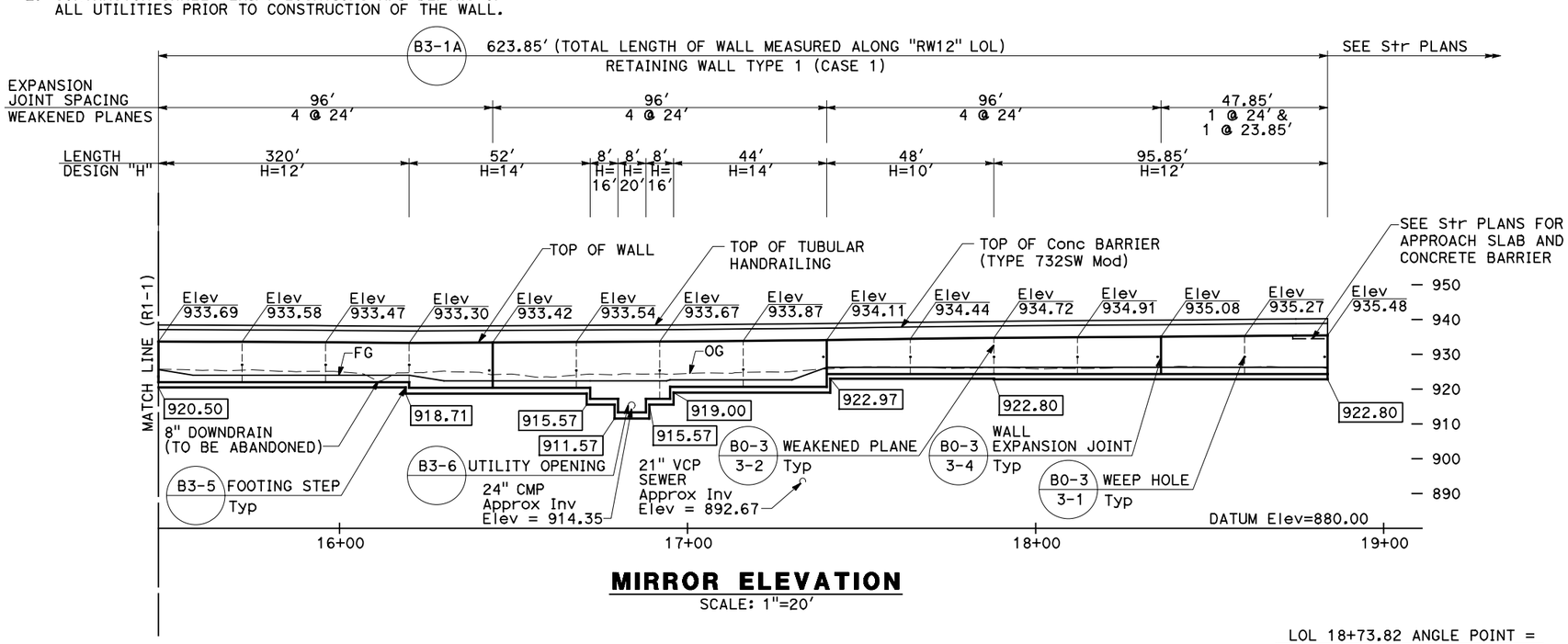
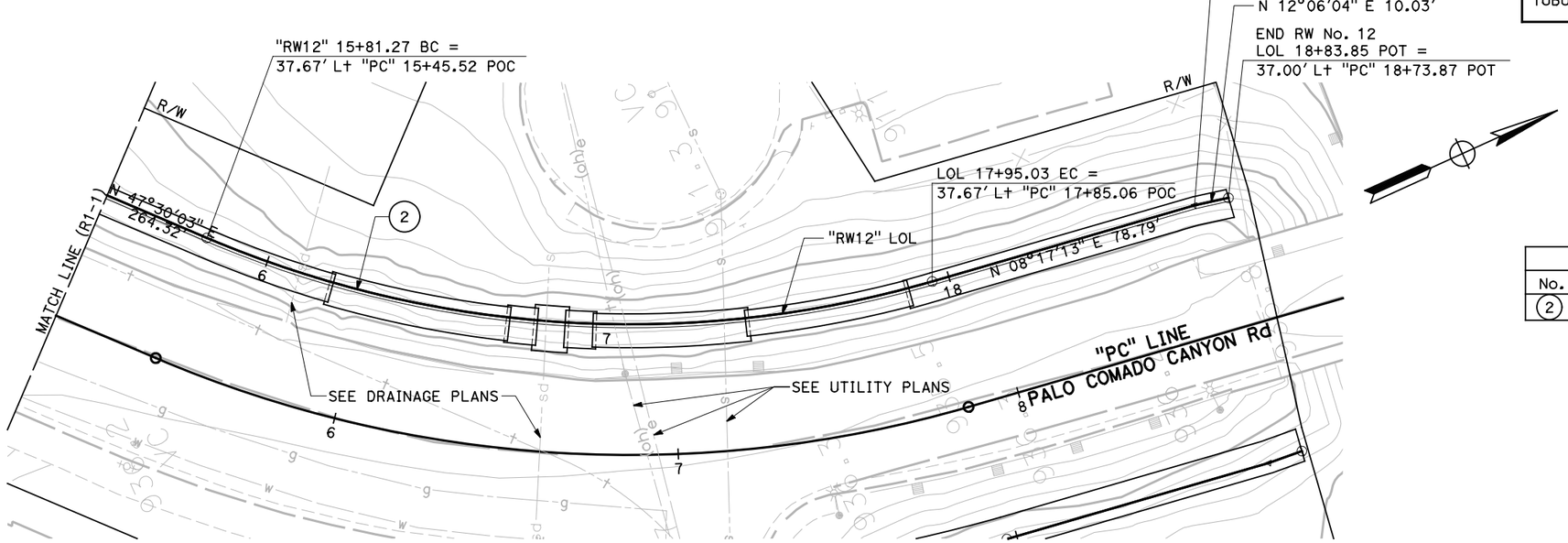


MIRROR ELEVATION

SCALE: 1"=20'



PLAN

SCALE: 1"=20'

THIS PLAN ACCURATE FOR RETAINING WALL WORK ONLY.

SUMMARY OF QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION (RETAINING WALL)	CY	856
STRUCTURE BACKFILL (RETAINING WALL)	CY	1,713
PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	CY	138
STRUCTURAL CONCRETE (RETAINING WALL)	CY	644
ARCHITECTURAL TREATMENT	SQFT	6,352
BAR REINFORCING STEEL (RETAINING WALL)	LB	84,396
CONCRETE BARRIER (TYPE 732SW Mod)	LF	624
TUBULAR HANDRAILING	LF	624

CURVE DATA

No.	R	Δ	T	L
(2)	312.33'	39°12'50"	111.26'	213.76'

Figure 4B

RETAINING WALL PLAN

RETAINING WALL No. 12

SCALE AS SHOWN

R1-2

REVISED BY | DATE REVISED

KEVIN CASTRO | TOMO TAKAHASHI

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: MARK FIRGER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00 | DATE PLOTTED => 6/16/2017 | TIME PLOTTED => 4:57:39 PM

BORDER LAST REVISED 7/2/2010 | USERNAME => P005248C | DGN FILE => 070000184qa002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 1821 | PROJECT NUMBER & PHASE 0700001841

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	33.5/33.9		

100% SUBMITTAL

NOT FOR CONSTRUCTION

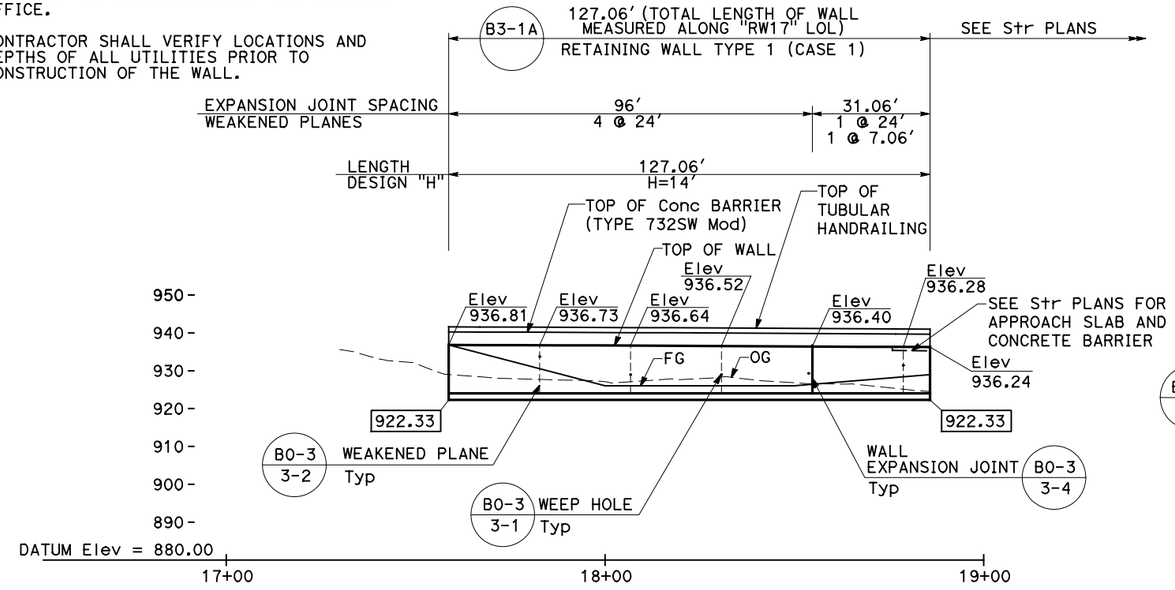
SEPTEMBER 2017

PARSONS
2201 DUPONT DR, STE 200
IRVINE, CA 92612

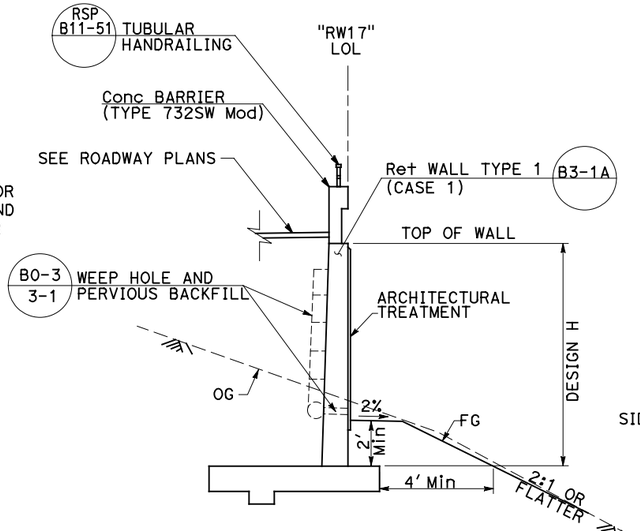
CITY OF AGOURA HILLS
30001 LADYFACE COURT
AGOURA HILLS, CA 91301

NOTES:

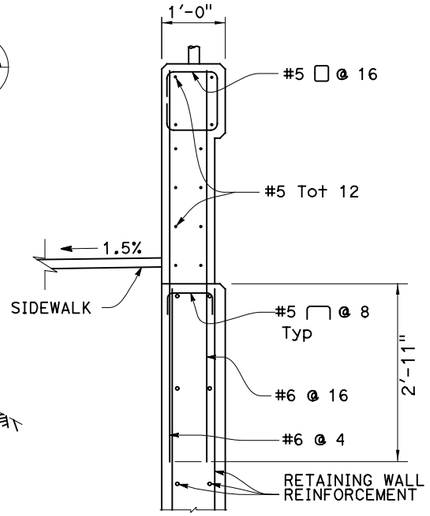
1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES PRIOR TO CONSTRUCTION OF THE WALL.



ELEVATION
SCALE: 1"=20′

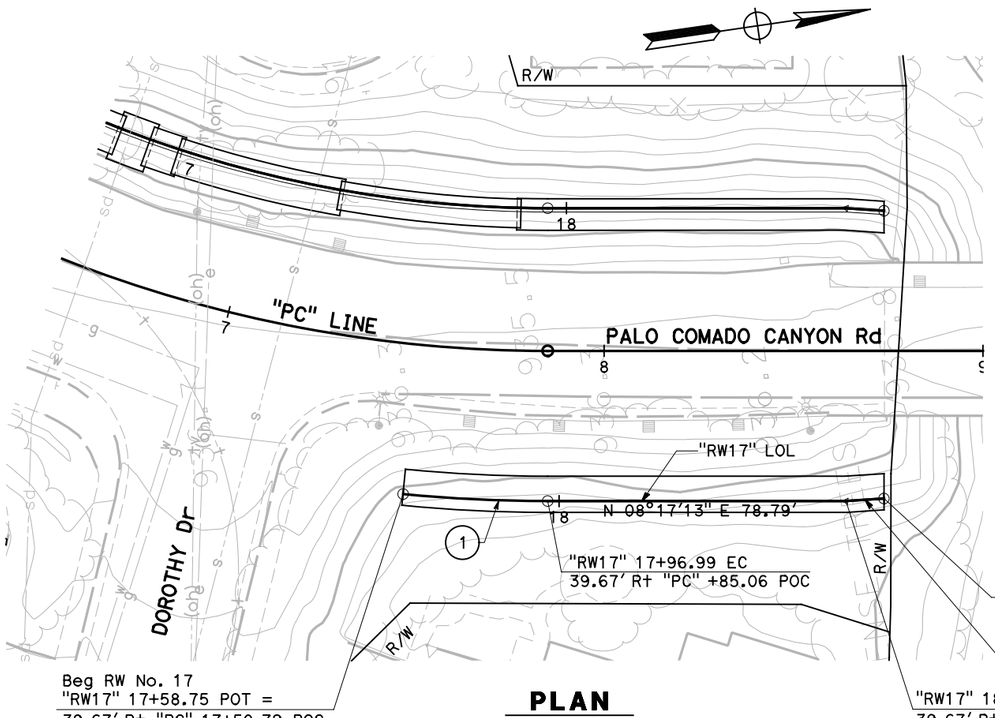


TYPICAL SECTION
NO SCALE



732SW Mod
NO SCALE

NOTE: FOR DIMENSIONS AND Reinf NOT SHOWN SEE REVISED Std PLAN B11-59



PLAN
SCALE: 1"=20′

CURVE DATA				
No.	R	Δ	T	L
1	389.67′	05°37′22"	19.14′	38.24′

SUMMARY OF QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION (RETAINING WALL)	CY	215
STRUCTURE BACKFILL (RETAINING WALL)	CY	430
PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	CY	34
STRUCTURAL CONCRETE (RETAINING WALL)	CY	157
ARCHITECTURAL TREATMENT	SQFT	1,597
BAR REINFORCING STEEL (RETAINING WALL)	LB	22,568
CONCRETE BARRIER (TYPE 732SW Mod)	LF	128
TUBULAR HANDRAILING	LF	128

Figure 4C

RETAINING WALL PLAN

RETAINING WALL No. 17

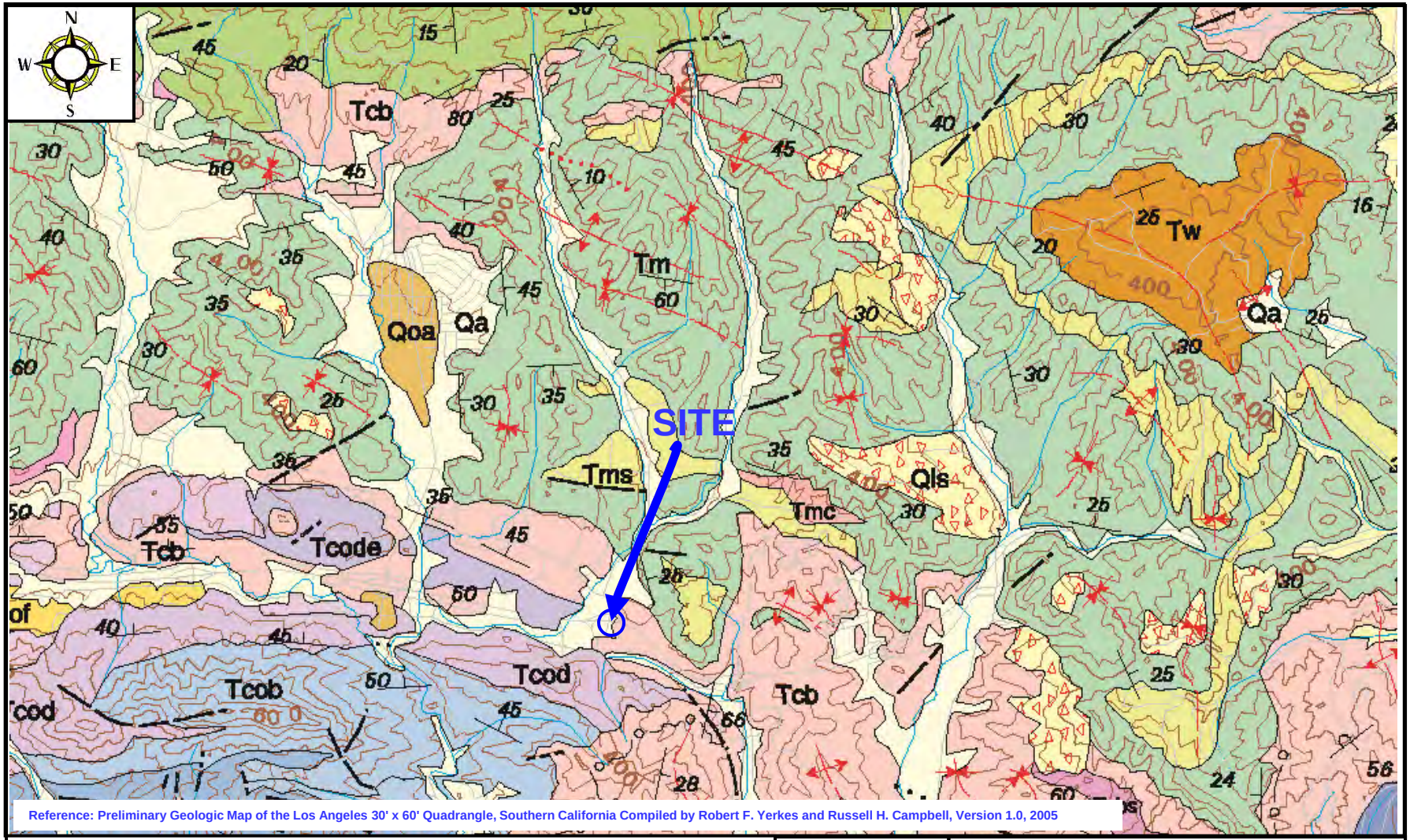
SCALE AS SHOWN

R2-1

THIS PLAN ACCURATE FOR RETAINING WALL WORK ONLY.

REVISED BY | DATE REVISED
KEVIN CASTRO | TOMO TAKAHASHI
CALCULATED-DESIGNED BY | CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR
MARK FIRGER
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 00-00-00 | DATE PLOTTED => 6/16/2017 | TIME PLOTTED => 4:57:44 PM



LEGEND

Qa = Young (Holocene) Alluvium
Qls = Landslide Debris (Holocene)
Tm = Modelo Formation, undivided (late Miocene)
Tms = Modelo Formation, sandstone (late Miocene)
Tmc = Mint Canyon Formation, undivided (late and middle Miocene)
Tcb = Calabasas Formation, undivided (early late Miocene and late middle Miocene)
Tco, Tcob, Tcod = Conejo Volcanics, undivided (middle middle Miocene), basaltic lower zone, dacite-bearing upper zone
Tw = Towsley Formation, undivided (early Pliocene and late Miocene)

GROUP DELTA

GDC Project No. LA-1143

Palo Comado Canyon Rd OC (Widen)
Agoura Hills, CA

GEOLOGIC MAP

Figure 5

BRIDGE DEPARTMENT

BENCH MARK #335-2LAC-58
Fd. 4.5" T in middle West edge of D1 on S. Ven. at Sta 335+62.91 P.O.T. 100'± E. Chesebro Rd. painted "TP 197"
ELEV. 907.95

5 = NO. PILES IN FOOTING OF ABUTMENT NO. 1
ACTUAL LENGTH OF PILES:
AV. 38.0 MAX. 38.0 MIN. 38.0
PILE TIP ELEVATION:
AV. 886.4 MAX. 886.5 MIN. 886.1
SPECIFIED TIP ELEV. 888.0

14 = NO. OF PILES IN FOOTING OF BENT NO. 2
ACTUAL LENGTH OF PILES:
AV. 16.1 MAX. 17.0 MIN. 15.5
PILE TIP ELEVATION:
AV. 883.9 MAX. 884.5 MIN. 883.0
SPECIFIED TIP ELEV. 885.0

℄ PROPOSED STRUCTURE
Logged pile
B-1
B-2
B-3
℄ RETAINING WALL (CATE. 2)
TO VENTURA
TO L.A.

14 = NO. OF PILES IN FOOTING OF BENT NO. 4
ACTUAL LENGTH OF PILES:
AV. 20.0 MAX. 20.0 MIN. 20.0
PILE TIP ELEVATION:
AV. 887.0 MAX. 887.0 MIN. 887.0
SPECIFIED TIP ELEVATION 888.0

5 = NO. 6 PILES IN FOOTING OF ABUTMENT NO. 5
ACTUAL LENGTH OF PILES:
AV. 37.9 MAX. 38.1 MIN. 37.6
PILE TIP ELEVATION:
AV. 886.6 MAX. 887.1 MIN. 886.4
SPECIFIED TIP ELEV. 888.0

24 = NO. OF PILES IN FOOTING OF BENT NO. 3 (INCLUDING CCO #8)
ACTUAL LENGTH OF PILES
AV. 22.0 MAX. 22.0 MIN. 22.0
PILE TIP ELEVATION:
AV. 881.0 MAX. 881.0 MIN. 881.0
SPECIFIED TIP ELEVATION 882.0

VII | LA | 5L

AS BUILT PLANS
Contract No. 63-7V13C58
Date Completed
Document No. 70002373

Perched groundwater found at Bent 2 on a production pile during original construction and in Group Delta borings A-13-003 and A-13-005, no water reported anywhere else.

ABUT 1 | BENT 2 | BENT 3 | BENT 4 | ABUT 5

EG
FILL
OG
Alluvium
BEDROCK

A-13-002 | A-13-003 | A-13-004 | A-13-005 | A-13-006

Approximate existing ground line along ℄ Proposed Structure
Fill Material
Bottom Pfg. El. +924.5
Bottom Pfg. El. +903.0
Bottom Pfg. El. +924.5
tan shale
grey shale
Stiff to v. stiff dark brown to black clayey silt
Slightly compact to compact tan-reddish brn. mottled clayey silt/sand - silt/sandy clay
Dense to very dense blue grey clay-siltstone - shale
Fill Material
tan shale
grey shale

Specified Pile Tip Elevations
Abut 1L
Abut 1R
Bent 2R
Bent 2L
Bent 3R
Bent 3L
Bent 4R
Bent 4L
Abut 5L
Abut 5R

No GW
Perched Water
No GW
Perched Water
No GW

NO GROUND WATER ENCOUNTERED DURING THIS INVESTIGATION BY BRIDGE DEPT. GEOLOGY SECTION
DATE June 1961

ELEVATIONS BASED ON OLD DATUM

	Current Datum
910	912.34
900	902.34
890	892.34
880	882.34
870	872.34

PILE DATA
TYPE OF PILE - C.I.D.H.
HAMMER DATA -
PILE DESIGN LOAD = 45 TONS
FOR THE STRUCTURE:
NUMBER OF PILES = 55 + 7 IN CCO #8
EST. LENGTH OF PILING = 1,210 L.F.
ACTUAL LENGTH OF PILING = 1,259.2 + 141.0 L.F. CCO #8

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 3-22-63, AS SUBMITTED BY RESIDENT ENGINEER Fred G. Michaels, B.D.R.
TRACINGS CORRECTED BY M.J. DATE 10-29-63

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS
DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND." THE TERMS "COARSE," "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS
Gravel
Sand
Silt
Clay
Sandy Clay or Clayey Sand
Sandy Silt or Silty Sand
Silty Clay or Clayey Silt
Peat and/or Organic Matter
Fill Material
Igneous Rock
Sedimentary Rock
Metamorphic Rock

LEGEND OF BORING OPERATIONS
Penetrometer
2½" Cone Penetrometer
Sampler, Boring (Dry)
Rotary Boring (Wet)
Auger Boring (Dry)
Jet Boring
Core Boring
Test Pit

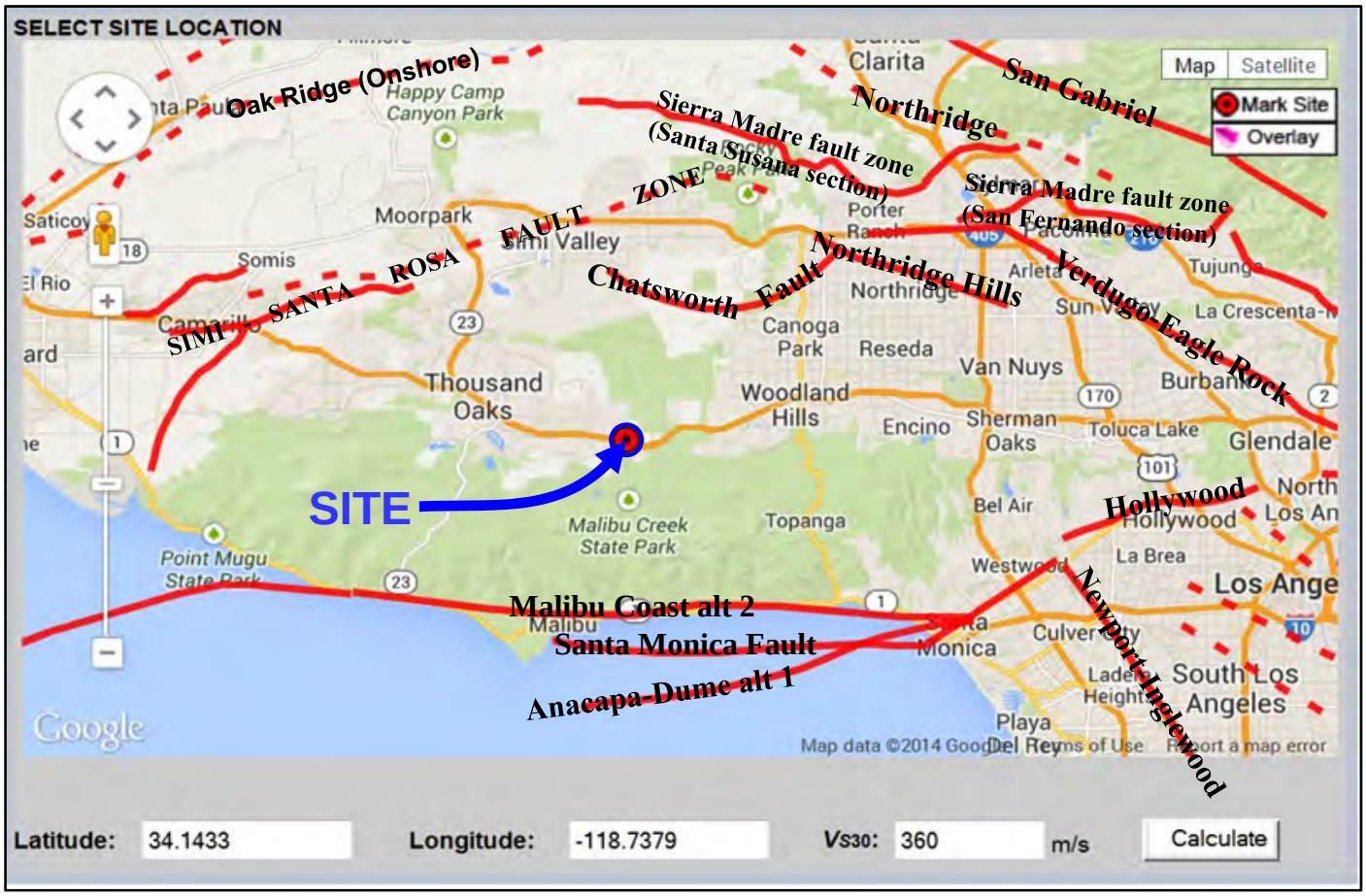
1" Soil Tube
Rotary Boring
Penetration Boring

NOTES
~~The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.~~
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHESEBRO RD. OVERCROSSING
LOG OF TEST BORINGS
SCALE Horiz 1"=20' Vert 1"=10' | BRIDGE 53-1678 | FILE | DRAWING C-53 1678-15
P.E.L. DRAWING P-53 1678-11

Figure 6 - GEOTECHNICAL CROSS SECTION



FAULT NAME	Fault Type	FAULT RUPTURE DISTANCE to SITE, Rrup (km)	MAGNITUDE Mw	PBA (g)
Anacapa-Dume alt1 (FID No. 348)	Reverse	13.0	7.2	0.432
Santa Monica Fault (FID No. 341)	Strike-Slip	14.2	7.0	0.257
Malibu Coast alt 2 (FID No. 346)	Strike-Slip	11.8	6.6	0.267
Oak Ridge Onshore (FID No. 291)	Reverse	25.5	7.4	0.234
Chatsworth fault (FID No. 308)	Reverse	10.3	6.4	0.253
Simi-Santa Rosa fault zone Simi-Santa Rosa Section (FID No. 300)	Strike-Slip	15.7	6.8	0.205
Simi-Santa Rosa fault zone Camarillo-Santa Rosa section (FID No. 314)	Strike-Slip	17.7	6.8	0.182
Sierra Madre fault zone Santa Susana section (FID No. 298)	Reverse	22.6	6.8	0.155
San Cayetano (FID No. 276)	Reverse	30.3	7.2	0.142
Newport Inglewood fault zone N. Los Angeles Basin section (FID No. 342)	Strike-Slip	31.2	7.2	0.131

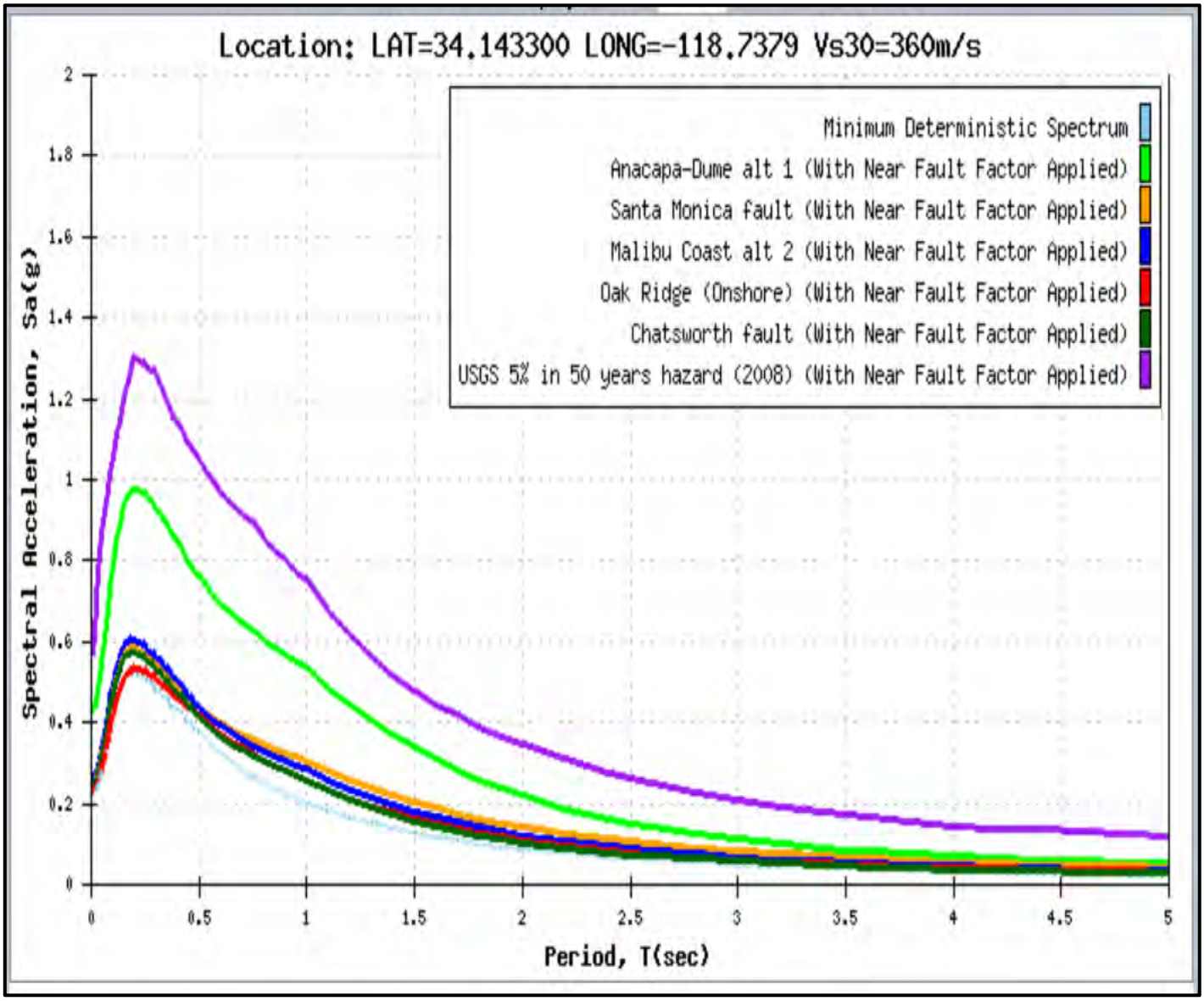
Reference: Caltrans ARS Online

GDC Project No. LA-1143

Palo Comado Canyon Road OC (Widen)
Agoura Hills, California

CALTRANS FAULT MAP

Figure 7



Period	SA
0.01	0.567
0.05	0.872
0.1	1.049
0.15	1.192
0.2	1.305
0.25	1.282
0.3	1.263
0.4	1.137
0.5	1.048
0.6	0.972
0.7	0.917
0.85	0.828
1	0.752
1.2	0.614
1.5	0.479
2	0.348
3	0.209
4	0.147
5	0.121

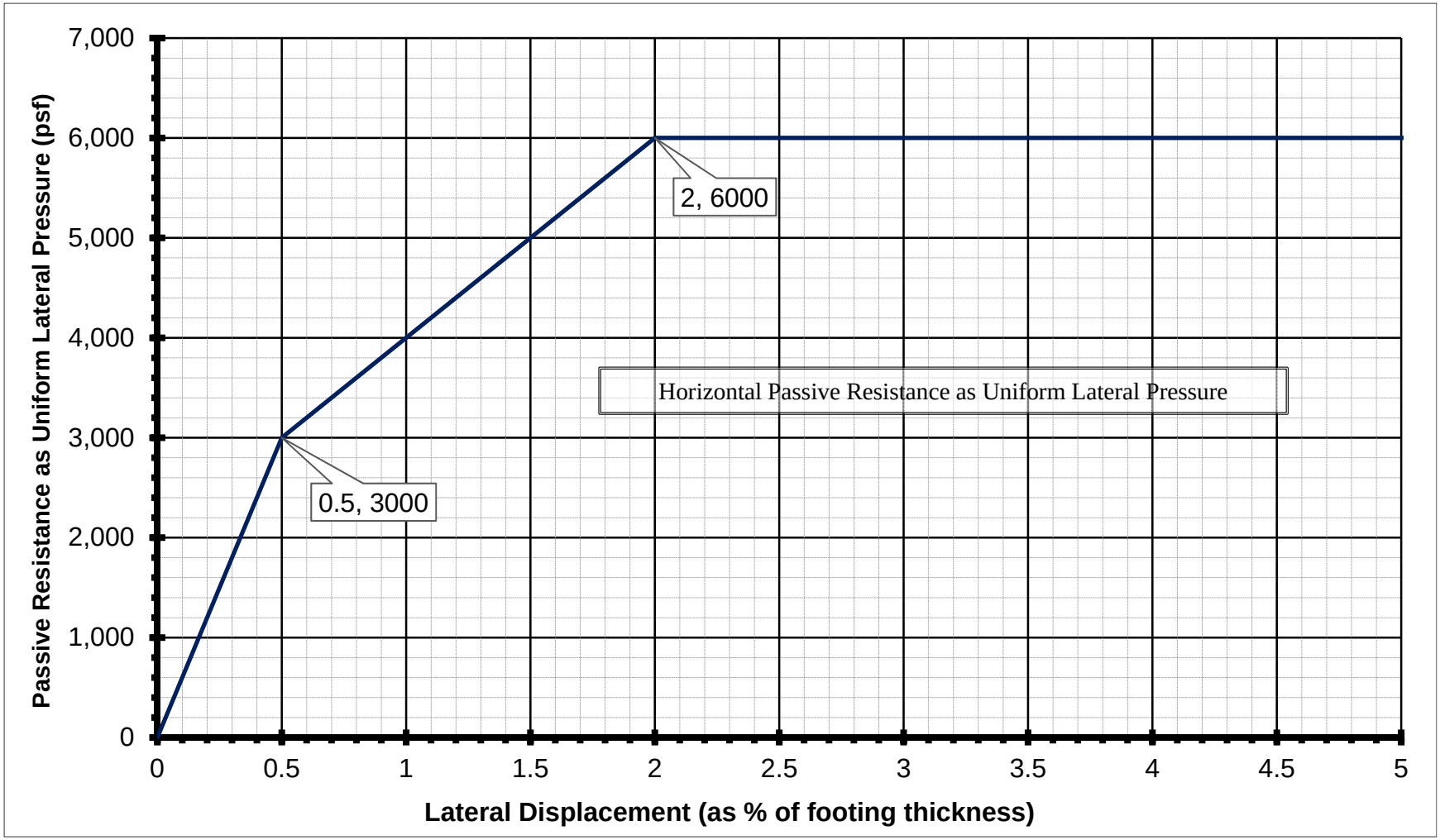
Reference: Caltrans ARS Online

GDC Project No. LA-1143

Palo Comado Canyon Road OC (Widen)
Agoura Hills, California

RECOMMENDED ARS CURVE

Figure 8



GDC Project No. LA-1143

Palo Comado Canyon Rd OC (Widen)
Agoura Hills, CA

PASSIVE RESISTANCE OF PILE CAP

Figure 9

Appendix A Field Investigation

APPENDIX A
FIELD INVESTIGATION

A.1 Introduction

The subsurface conditions at the PALO COMADO CANYON RD. (WIDEN) project site were investigated by performing six hollow stem auger borings and one hand auger boring on September 9, 12, and 13, 2013. The locations of the explorations are presented in the exploration plan of the main report. A summary of field explorations is presented in Table A-1.

Prior to beginning the exploration program, access permission and drilling permits were obtained as necessary. Subsurface utility maps were reviewed prior to selecting locations for subsurface investigations. Underground Service Alert (USA) was notified and each exploration location was cleared for underground utilities. Approved traffic control plans were implemented where necessary during field activities. The exploration methods are described in the following sections.

A.2 Soil Drilling and Sampling

Drilling, Logging, and Soil / Rock Classification

Borings were performed by GDC's drilling subcontractors Choice Drilling Inc. under the continuous technical supervision of a GDC field engineer geologist, who visually inspected the soil samples, measured groundwater levels, maintained detailed records of the borings, and visually / manually classified the soils in accordance with the ASTM D 2488 and the Unified Soil Classification System (USCS). Logging and classification was performed in general accordance with Caltrans "Soil and Rock Logging, Classification, and Presentation Manual (2010 Edition)". A Boring Record Legend and Key for Soil Classification are presented in Figures A-1a through A-1f. The boring records are presented in Figures A-2a through A-8a.

Sampling

Bulk samples of soil cuttings were collected at selected depths and drive samples were collected from the borings typically at 2.5 feet for the first ten feet of exploration, and at a typical interval of 5 feet from depth of ten feet to the end of the borehole. The sampling was performed using Standard Penetration Test (SPT) samplers in accordance with ASTM D 1586 and Ring-Lined "California" Split Barrel samplers in accordance with ASTM D 3550.

Bulk samples were collected from the hand auger boring and hollow-stem auger cuttings and placed in plastic bags.

SPT drive samples were obtained using a 2-inch outside diameter and 1.375-inch inside diameter split-spoon sampler without lining. The soil recovered from the SPT sampling was sealed in plastic bags to preserve the natural moisture content.

California drive samples were collected with a 3-inch outside diameter 2.5-inch inside diameter split barrel sampler with a 2.42-inch inside diameter cutting shoe. The sampler barrel is lined with 18-inches of metal rings for sample collection and has an additional length of waste barrel. Stainless steel or brass liner rings for sample collection are 1-inch high, 2.42-inch inside diameter, and 2.5-inch outside diameter. California samples were removed from the sampler, retained in the metal rings and placed in sealed plastic canisters to prevent loss of moisture.

At each sampling interval, the drive samplers were fitted onto sampling rod, lowered to the bottom of the boring, and driven 18 inches or to refusal (50 blows per 6 inches) with a 140-lb hammer free-falling a height of 30-inches using an automatic hammer. Compared to the SPT, the California sampler provides less disturbed samples.

Penetration Resistance

SPT blow counts adjusted to 60% hammer efficiency (N_{60}) are routinely used as an index of the relative density of coarse grained soils, and are sometimes used (but less reliable) to estimate consistency of cohesive soils. For samples collected using non-SPT samplers, different hammer weight and drop height, and/or efficiency different than 60%, correction factors can be applied to estimate the equivalent SPT N_{60} value following the approach of Burmister (1948) as follows:

$$N^*_{60} = N_R * C_E * C_H * C_S$$

where

N^*_{60} = equivalent SPT N_{60}

N_R = Raw Field Blowcount (blows per foot)

C_E = Hammer Efficiency Correction = Er_i / 60%

C_H = Hammer Energy Correction = (W * H) / (140 lb * 30 in)

C_S = Sampler Size Correction = $[(2.0\text{ in})^2-(1.375\text{ in})^2]/[D_o^2-D_i^2]$

Er_i = hammer efficiency, %

W= actual drive hammer weight, lbs

H = actual drive hammer drop, inch

D_o, D_i = actual sampler outside and inside diameter, respectively, inches

Burmister's correction assumes that penetration resistance (blowcount) is inversely proportional to the hammer energy. For a hammer other than a 140# hammer with 30" drop the hammer energy correction is equal to the ratio of the theoretical hammer energy (weight times drop) to the theoretical SPT hammer energy, or C_H = (W * H) / (140 lb * 30 in).

Burmister's correction assumes that penetration resistance (blowcount) is proportional to the annular end area of the drive sampler. For California drive samplers with D_o=3 inch and D_i=2.42 inch the sampler size correction factor is the ratio of the annular area of an SPT split spoon to that of the California Sampler, or $C_S = [2.0^2-1.375^2]/[3^2-2.42^2] = 0.67$.

To normalize the field SPT and California blowcounts to a hammer with 60% efficiency, an energy correction factor equal to Hammer Efficiency (%) / 60% was applied to the field blowcounts. Hammer efficiency was determined by Pile Driving Analyzer (PDA) measurement. Hammer efficiency measurements are presented in Figures A-9a through A-9e.

The correction factors applied to obtain N^*_{60} are summarized in the following table:

Hammer Type	Hammer Weight and Drop	C_H	Hammer Efficiency (%)	C_E	Cal Sampler Dimensions	C_S	Combined Correction Factor SPT Samples	Combined Correction Factor CAL Samples
CME Auto	140# 30"	1	85	1.42	D_o=3.0" D_i=2.42"	0.67	1.42	0.95

Corrected N^*_{60} are generally used, with due engineering judgment, only for qualitative assessment of in place density or consistency, and are not used for other more critical analyses such as liquefaction.

Relative Density and Consistency

Equivalent SPT N_{60} values were used as the basis for classifying relative density of granular/cohesionless soils. The correlations for consistency and relative density are shown in the Boring Record Legend, Figures A-1a through A-1d. Drive sample field blow counts, SPT

N^*_{60} values, pocket penetrometer readings, and corresponding density/consistency classifications are presented on the boring records.

Relative Density and Consistency

Equivalent SPT N_{60} values were used as the basis for classifying relative density of granular/cohesionless soils. Wherever possible consistency classification of cohesive soils was based on undrained shear strength estimated in the field with a pocket penetrometer and/or Torvane or by testing in the laboratory. The correlations for consistency and relative density are shown in the Boring Record Legend, Figures A-1a through A-1d. Drive sample field blow counts, SPT N^*_{60} values, and corresponding density/consistency classifications are presented on the boring records.

Borehole Abandonment

At the completion of the drilling groundwater was measured (where possible) and the borings were abandoned by backfilling the borehole with drill cuttings. The surface was patched with cold mix asphalt concrete or quickset concrete, as necessary.

Sample Handling and Transport

Geotechnical samples were sealed to prevent moisture loss, packed in appropriate protective containers, and transported to the geotechnical laboratory for further examination and geotechnical testing.

Laboratory Testing

The soils were further examined and tested in the laboratory and classified in accordance with the Unified Soil Classification System following ASTM D 2487 and D 2488 (see Figures A-1e and A-1f). Field classifications presented on the records were modified where necessary on the basis of the laboratory test results. Descriptions of the laboratory tests performed and a summary of the results are presented in Appendix B.

Hand Auger Boring

Choice Drilling Inc. performed one hand-auger Boring A-13-007 at depth of 5 feet. The test data is presented in Figure A-8

A.3 List of Attached Tables and Figures

The following tables and figures are attached and complete this appendix:

List of Tables

Table A-1 Summary of Field Explorations

List of Figures

Figures A-1a through A-1d Boring Record Legend
Figures A-1e and A-1f Key for Soil Classification
Figures A-2a through A-8 Boring Records
Figures A-9a through A-9e Hammer Efficiency Calibrations

TABLE A-1
SUMMARY OF FIELD EXPLORATIONS

Exploration No.	Approximate Exploration Location		Date	Exploration			Groundwater		Figure No.
	Station	Offset (ft)		Type	Surface Elevation (ft)	Total Depth (ft)	Depth (ft)	Elevation (ft)	
A-13-001	16 + 22	22L	9/09/13	HSA	934	26.5	NE	NE	A-2 (a-b)
A-13-002	18 + 72	25L	9/09/13	HSA	936	61	NE	NE	A-3 (a-c)
A-13-003	19 + 28	20R	9/12/13 – 9/13/13	HSA	910	50.4	23	887	A-4 (a-c)
A-13-004	20 + 22	20R	9/12/13	HSA	914	50.5	NE	NE	A-5 (a-c)
A-13-005	20 + 83	25R	9/12/13	HSA	917	51	45.5	871.5	A-6 (a-c)
A-13-006	21 + 75	17R	9/09/13	HSA	936	60.5	NE	NE	A-7 (a-c)
HA-13-007	25 + 43	14L	9/09/13	Hand Auger	928	5.0	NE	NE	A-8

Notes: 1) Boring locations are illustrated on the Exploration Location Plan in the main report.
2) Stations referenced to centerline of Palo Comado Road, perpendicular offset Right or Left of center line looking up station.
3) Elevations estimated to nearest 0.5 ft using tape measure and topographic map.

Other notes and abbreviations as needed
HSA = Hollow-Stem Auger MR = Mud Rotary NE = Not Encountered L = Left R = Right

SOIL IDENTIFICATION AND DESCRIPTION SEQUENCE

Sequence	Identification Components	Refer to Section: Field	Refer to Section: Lab	Required	Optional
1	Group Name	2.5.2	3.2.2	●	
2	Group Symbol	2.5.2	3.2.2	●	
	Description Components				
3	Consistency of Cohesive Soil	2.5.3	3.2.3	●	
4	Apparent Density of Cohesionless Soil	2.5.4		●	
5	Color	2.5.5		●	
6	Moisture	2.5.6		●	
7	Percent or Proportion of Soil	2.5.7	3.2.4	●	⬭
	Particle Size	2.5.8	2.5.8	●	⬭
	Particle Angularity	2.5.9			○
	Particle Shape	2.5.10			○
8	Plasticity (for fine-grained soil)	2.5.11	3.2.5		○
9	Dry Strength (for fine-grained soil)	2.5.12			○
10	Dilatency (for fine-grained soil)	2.5.13			○
11	Toughness (for fine-grained soil)	2.5.14			○
12	Structure	2.5.15			○
13	Cementation	2.5.16		●	
14	Percent of Cobbles and Boulders	2.5.17		●	
	Description of Cobbles and Boulders	2.5.18		●	
15	Consistency Field Test Result	2.5.3		●	
16	Additional Comments	2.5.19			○

Describe the soil using descriptive terms in the order shown

Minimum Required Sequence:

USCS Group Name (Group Symbol); Consistency or Density; Color; Moisture; Percent or Proportion of Soil; Particle Size; Plasticity (optional).

⬭ = optional for non-Caltrans projects

Where applicable:

Cementation; % cobbles & boulders; Description of cobbles & boulders; Consistency field test result

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).

HOLE IDENTIFICATION

Holes are identified using the following convention:

H – YY – NNN

Where:

H: Hole Type Code

YY: 2-digit year

NNN: 3-digit number (001-999)

Hole Type Code and Description

Hole Type Code	Description
A	Auger boring (hollow or solid stem, bucket)
R	Rotary drilled boring (conventional)
RC	Rotary core (self-cased wire-line, continuously-sampled)
RW	Rotary core (self-cased wire-line, not continuously sampled)
P	Rotary percussion boring (Air)
HD	Hand driven (1-inch soil tube)
HA	Hand auger
D	Driven (dynamic cone penetrometer)
CPT	Cone Penetration Test
O	Other (note on LOTB)

Description Sequence Examples:

SANDY lean CLAY (CL); very stiff; yellowish brown; moist; mostly fines; some SAND, from fine to medium; few gravels; medium plasticity; PP=2.75.

Well-graded SAND with SILT and GRAVEL and COBBLES (SW-SM); dense; brown; moist; mostly SAND, from fine to coarse; some fine GRAVEL; few fines; weak cementation; 10% GRANITE COBBLES; 3 to 6 inches; hard; subrounded.

Clayey SAND (SC); medium dense, light brown; wet; mostly fine sand,; little fines; low plasticity.

GROUP DELTA

GDC Project No. LA1143

Palo Comado Bridge OC (Widen)
Agoura Hills, CA

BORING RECORD LEGEND #1

Figure A-1a

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names	Graphic / Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

C	Consolidation (ASTM D 2435)
CL	Collapse Potential (ASTM D 5333)
CP	Compaction Curve (CTM 216)
CR	Corrosion, Sulfates, Chlorides (CTM 643, CTM 417, CTM 422)
CU	Consolidated Undrained Triaxial (ASTM D 4767)
DS	Direct Shear (ASTM D 3080)
EI	Expansion Index (ASTM D 4829)
M	Moisture Content (ASTM D 2216)
OC	Organic Content (ASTM D 2974)
P	Permeability (CTM 220)
PA	Particle Size Analysis (ASTM D 422)
PI	Liquid Limit, Plastic Limit, Plasticity Index (AASHTO T 89, AASHTO T 90)
PL	Point Load Index (ASTM D 5731)
PM	Pressure Meter
R	R-Value (CTM 301)
SE	Sand Equivalent (CTM 217)
SG	Specific Gravity (AASHTO T 100)
SL	Shrinkage Limit (ASTM D 427)
SW	Swell Potential (ASTM D 4546)
UC	Unconfined Compression - Soil (ASTM D 2166) Unconfined Compression - Rock (ASTM D 2938)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850)
UW	Unit Weight (ASTM D 4767)

SAMPLER GRAPHIC SYMBOLS

- Standard Penetration Test (SPT)
- Standard California Sampler
- Modified California Sampler (2.4" ID, 3" OD)
- Shelby Tube
- Piston Sampler
- NX Rock Core
- HQ Rock Core
- Bulk Sample
- Other (see remarks)

DRILLING METHOD SYMBOLS

Auger Drilling | Rotary Drilling | Dynamic Cone or Hand Driven | Diamond Core

WATER LEVEL SYMBOLS

- First Water Level Reading (during drilling)
- Static Water Level Reading (after drilling, date)

Definitions for Change in Material

Term	Definition	Symbol
Material Change	Change in material is observed in the sample or core and the location of change can be accurately located.	———
Estimated Material Change	Change in material cannot be accurately located either because the change is gradational or because of limitations of the drilling and sampling methods.	- - - - -
Soil / Rock Boundary	Material changes from soil characteristics to rock characteristics.	~~~

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).

GROUP DELTA

GDC Project No. LA1143

Palo Comado Bridge OC (Widen)
Agoura Hills, CA

BORING RECORD LEGEND #2

Figure A-1b

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer, PP, Measurement (tsf)	Torvane, TV, Measurement (tsf)	Vane Shear, VS, Measurement (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N_{60} (blows / 12 inches)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

PERCENT OR PROPORTION OF SOILS	
Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 - 10%
Little	15 - 25%
Some	30 - 45%
Mostly	50 - 100%

PARTICLE SIZE		
Description		Size (in)
Boulder		Greater than 12
Cobble		3 - 12
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay		Less than 1/300

CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010), with the exception of consistency of cohesive soils vs. N_{60}.

Plasticity

Description	Criteria
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

GROUP DELTA

GDC Project No. LA1143

Palo Comado Bridge OC (Widen)
Agoura Hills, CA

BORING RECORD LEGEND #3

Figure A-1c

LEGEND OF ROCK MATERIALS

IGNEOUS ROCK

SEDIMENTARY ROCK

METAMORPHIC ROCK

BEDDING SPACING

Description	Thickness/Spacing
Massive	Greater than 10 ft
Very Thickly Bedded	3 ft - 10 ft
Thickly Bedded	1 ft - 3 ft
Moderately Bedded	4 in - 1 ft
Thinly Bedded	1 in - 4 in
Very Thinly Bedded	1/4 in - 1 in
Laminated	Less than 1/4 in

WEATHERING DESCRIPTORS FOR INTACT ROCK

	Diagnostic Features					
	Chemical Weathering-Discoloration-Oxidation		Mechanical Weathering and Grain Boundary Conditions	Texture and Leaching		
Description	Body of Rock	Fracture Surfaces		Texture	Leaching	General Characteristics
Fresh	No discoloration, not oxidized	No discoloration or oxidation	No separation, intact (tight)	No change	No leaching	Hammer rings when crystalline rocks are struck.
Slightly Weathered	Discoloration or oxidation is limited to surface of, or short distance from, fractures; some feldspar crystals are dull	Minor to complete discoloration or oxidation of most surfaces	No visible separation, intact (tight)	Preserved	Minor leaching of some soluble minerals	Hammer rings when crystalline rocks are struck. Body of rock not weakened.
Moderately Weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty"; feldspar crystals are "cloudy"	All fracture surfaces are discolored or oxidized	Partial separation of boundaries visible	Generally preserved	Soluble minerals may be mostly leached	Hammer does not ring when rock is struck. Body of rock is slightly weakened.
Intensely Weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in situ disaggregation, grain boundary conditions	All fracture surfaces are discolored or oxidized; surfaces friable	Partial separation, rock is friable; in semi-arid conditions, granitics are disaggregated	Texture altered by chemical disintegration (hydration, argillation)	Leaching of soluble minerals may be complete	Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures or veinlets. Rock is significantly weakened.
Decomposed	Discolored of oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay		Complete separation of grain boundaries (disaggregated)	Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete		Can be granulated by hand. Resistant minerals such as quartz may be present as "stringers" or "dikes".

PERCENT CORE RECOVERY (REC)

$$\frac{\Sigma \text{ Length of the recovered core pieces (in.)}}{\text{Total length of core run (in.)}} \times 100$$

ROCK QUALITY DESIGNATION (RQD)

$$\frac{\Sigma \text{ Length of intact core pieces} \geq 4 \text{ in.}}{\text{Total length of core run (in.)}} \times 100$$

RQD* indicates soundness criteria not met.

ROCK HARDNESS

Description	Criteria
Extremely Hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows
Very Hard	Cannot be scratched with a pocketknife or sharp pick. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with a pocketknife or sharp pick with difficulty (heavy pressure). Breaks with heavy hammer blows.
Moderately Hard	Can be scratched with a pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows
Moderately Soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily with a pocketknife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft	Can be readily indented, grooved or gouged with fingernail, or carved with a pocketknife. Breaks with light manual pressure.

FRACTURE DENSITY

Description	Observed Fracture Density
Unfractured	No fractures
Very Slightly Fractured	Core lengths greater than 3 ft.
Slightly Fractured	Core lengths mostly from 1 to 3 ft.
Moderately Fractured	Core lengths mostly 4 in. to 1 ft.
Intensely Fractured	Core lengths mostly from 1 to 4 in.
Very Intensely Fractured	Mostly chips and fragments.

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).

GROUP DELTA

GDC Project No. LA1143

Palo Comado Bridge OC (Widen)
Agoura Hills, CA

BORING RECORD LEGEND #3

Figure A-1d

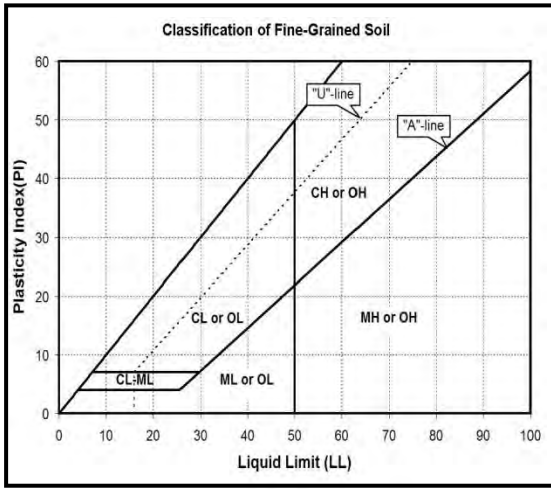
CLASSIFICATION OF INORGANIC FINE GRAINED SOILS (Soils with ≥50% finer than No. 200 Sieve)

GROUP SYMBOL				GROUP NAME
CL	<30% plus No. 200	<15% plus No. 200		Lean clay
		15-25% plus No. 200	%sand ≥%gravel	Lean clay with sand
			%sand <%gravel	Lean clay with gravel
	≥30% plus No. 200	% sand ≥ % gravel	<15% gravel	Sandy lean clay
			≥15% gravel	Sandy lean clay with gravel
		% sand < % gravel	<15% sand	Gravelly lean clay
			≥15% sand	Gravelly lean clay with sand
ML	<30% plus No. 200	<15% plus No. 200		Silt
		15-25% plus No. 200	%sand ≥%gravel	Silt with sand
			%sand <%gravel	Silt with gravel
	≥30% plus No. 200	% sand ≥ % gravel	<15% gravel	Sandy silt
			≥15% gravel	Sandy silt with gravel
		% sand < % gravel	<15% sand	Gravelly silt
			≥15% sand	Gravelly silt with sand
CH	<30% plus No. 200	<15% plus No. 200		Fat clay
		15-25% plus No. 200	%sand ≥%gravel	Fat clay with sand
			%sand <%gravel	Fat clay with gravel
	≥30% plus No. 200	% sand ≥ % gravel	<15% gravel	Sandy fat clay
			≥15% gravel	Sandy fat clay with gravel
		% sand < % gravel	<15% sand	Gravelly fat clay
			≥15% sand	Gravelly fat clay with sand
MH	<30% plus No. 200	<15% plus No. 200		Elastic silt
		15-25% plus No. 200	%sand ≥%gravel	Elastic silt with sand
			%sand <%gravel	Elastic silt with gravel
	≥30% plus No. 200	% sand ≥ % gravel	<15% gravel	Sandy elastic silt
			≥15% gravel	Sandy elastic silt with gravel
		% sand < % gravel	<15% sand	Gravelly elastic silt
			≥15% sand	Gravelly elastic silt with sand

Reference:
ASTM D 2487 and 2488

Laboratory Classification of Clay and Silt

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).



CL: LL<50; above A-Line.

CH: LL≥50; above A-Line.

ML: LL<50; below A-Line, or PI<4, or Non-Plastic

MH: LL≥50; below A-Line.

CL-ML: above A-Line and PI=4 to 7

CL/CH, ML/MH: at or near LL=50

ML/CL, MH/CH: at or near the A-Line

Field Identification of Clays and Silts

Group Symbol	Dry Strength	Dilatancy	Toughness	Plasticity
ML	None to low	Slow to rapid	Low or thread cannot be formed	Low to nonplastic
CL	Medium to high	None to slow	Medium	Medium
MH	Low to medium	None to slow	Low to medium	Low to medium
CH	High to very high	None	High	High

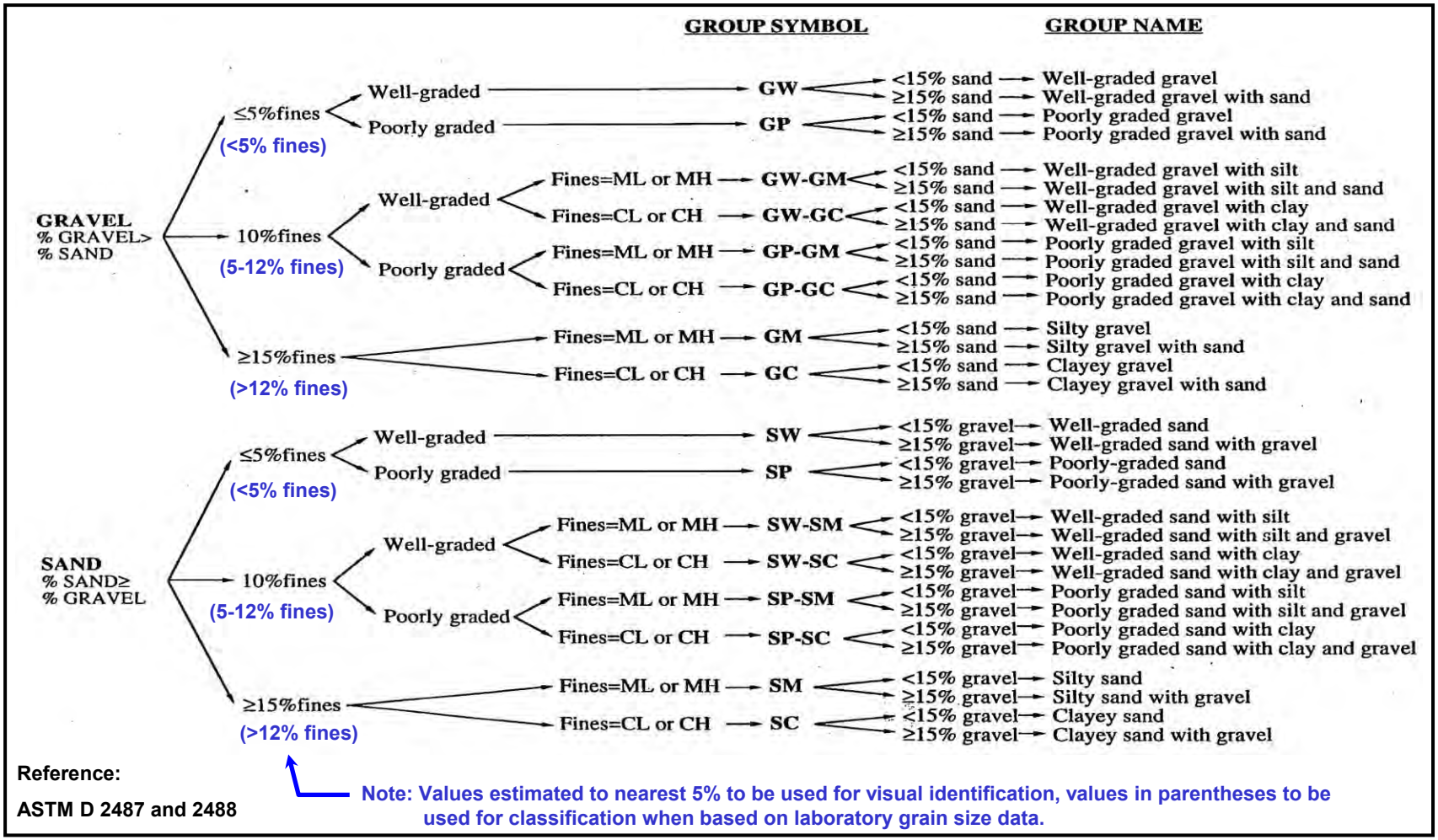
GDC Project No. LA1143

Palo Comado Bridge OC (Widen)
Agoura Hills, CA

KEY FOR SOIL CLASSIFICATION #1

Figure A-1e

CLASSIFICATION OF COARSE-GRAINED SOILS (Soils with <50% "fines" passing No. 200 Sieve)



Reference:

ASTM D 2487 and 2488

Note: Values estimated to nearest 5% to be used for visual identification, values in parentheses to be used for classification when based on laboratory grain size data.

Granular Soil Gradation Parameters

Coefficient of Uniformity: $C_u = D_{60}/D_{10}$

Coefficient of Curvature: $Cc = D_{30}^2 / (D_{60} \times D_{10})$

D_{10} = 10% of soil is finer than this diameter

D_{30} = 30% of soil is finer than this diameter

D_{60} = 60% of soil is finer than this diameter

Group Symbol	Gradation or Plasticity Requirement
SW	$C_u > 6$ and $1 \leq C_c \leq 3$
GW	$C_u > 4$ and $1 \leq C_c \leq 3$
GP or SP	Clean gravel or sand not meeting requirement for SW or GW
SM or GM	Non-plastic fines or below A-Line or PI<4
SC or GC	Plastic fines or above A-Line and PI>7

GROUP DELTA

GDC Project No. LA1143

Palo Comado Bridge OC (Widen)
Agoura Hills, CA

KEY FOR SOIL CLASSIFICATION #2

Figure A-1f

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-001**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	1 of 2

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	22 ft left Sta. 16 + 22

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	26.5	934 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/E / *NE* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
															ASPHALT CONCRETE (9")
															AGGREGATE BASE (18")
	930		B-1												Fat CLAY (CH); medium brown; moist; mostly fines; trace fine SAND; oxidation; high plasticity (ALLUVIUM, Qa)
5			R-2	9 12 16	28	27			24.8	95	56:31				Very stiff; PP=3.0 tsf.
															Medium brown to gray; caliche; PP=3.0 tsf.
			S-3	3 3 4	7	10			27.4						
	925														
10			R-4	7 8 11	19	18			22.5	98					Rig chatter; hard drilling; PP=3.0 tsf.
	920														
15			S-5	3 4 5	9	13			21.3						Sandy Fat CLAY (CH); very stiff; dark gray; moist; mostly fines; some fine SAND; few GRAVEL; high plasticity; PP=3.5 tsf. #200: 7% GRAVEL; 38% SAND; 55% fines.
	915														
20			R-6	13 18 25	43	41			21.7	101					Fat CLAY (CH); very stiff; medium brown-gray; moist; mostly fines; few fine GRAVEL; high plasticity; PP=2.0 tsf.
	910														SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE); fine-grained; reddish

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FIGURE
A-2 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-001**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	2 of 2

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	22 ft left Sta. 16 + 22

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	26.5	934 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/E / *NE* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		X	S-7	15 18 30	48	68			22.8						brown-medium gray; very soft; steeply dipping; some caliche; (Fat CLAY (CH); hard; moist; high plasticity; PP=4.0 tsf); (CALABASAS FORMATION, Tcb).
															Bottom of borehole at 26.5 feet. Boring terminated at planned depth. Groundwater not encountered.
30	905														
35	900														
40	895														
45	890														
	885														

This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010).

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FIGURE
A-2 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-002**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	1 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	25 ft left Sta. 18 + 72

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	61	936 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ N/E / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	935														ASPHALT CONCRETE (6.5")
															AGGREGATE BASE (16")
			B-1												Fat CLAY (CH); orange-brown; moist; high plasticity; (FILL, Qaf).
5															
	930		S-2	3 4 4	8	11			23.8		53:30				Very stiff; orangish brown-gray; specks of volcanic ash; PP=3.5 tsf.
			R-3	7 10 12	22	21			19.9	102		CN			Orangish brown-gray and dark brown; PP=2.0 tsf.
10															
	925		S-4	3 3 4	7	10			23.4						Stiff; orange-gray; PP=1.0 tsf.
15															
	920		R-5	12 15 22	27	26			18.1	109		DS			Very stiff; few GRAVEL; PP=2.5 tsf.
20															
	915		S-6	5 5 6	11	16			25.7						Fat CLAY (CH); stiff; mottled orange-dark gray; moist; high plasticity; (ALLUVIUM, Qa); PP=1.5 tsf.

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FIGURE
A-3 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-002**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	2 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	25 ft left Sta. 18 + 72

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	61	936 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ N/E / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	910		R-7	12 18 25	43	41			25.7	98	68:44	DS			SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE); fine-grained; mottled orange-grown; very soft; (Fat CLAY (CH); hard; slightly moist; high plasticity; PP>4.5 tsf); (CALABASAS FORMATION, Tcb).
30	905		S-8	11 14 17	31	44			21.4						Thinly bedded; steeply dipping bedding plane; medium gray; (very stiff; weak cementation; oxidation; PP=2.5 tsf).
35	900		R-9	22 50/6"	50/6"	48/6"			24.9	104					(moist; PP=3.5 tsf).
40	895		S-10	12 20 26	46	65			22.4						Laminated; discontinuity; dark gray; friable; mineralization; (hard; dry; caliche; PP>4.5 tsf).
45	890		R-11	45 50/6"	50/6"	48/6"			17.7	112					Thickly bedded; medium gray; tuffaceous; (slightly moist; PP>4.5 tsf).

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FIGURE
A-3 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-002**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	3 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	25 ft left Sta. 18 + 72

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	61	936 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ N/E / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	885		S-12	16 28 36	64	91			16.4						SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). (moist; PP>4.5 tsf).
55	880		R-13	50/6"	REF	REF			13.1	121					(PP>4.5 tsf).
60	875		S-14	29 50/6"	50/6"	71/6"			12.1						(slightly moist; moderate cementation; PP=4.0 tsf).
															Bottom of borehole at 61 feet. Boring terminated at planned depth.
65	870														This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010)
70	865														

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FIGURE
A-3 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-003**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/13/2013	1 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	20 ft right Sta. 19 + 28

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	T. Latimer	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	50.5	910 N/A	▽ 23.0 / *887.0* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	AFTER DRILLING
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/M / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
															ASPHALT CONCRETE (12")
															AGGREGATE BASE (9")
			B-1												Fat CLAY (CH); moderately brown; moist; mostly fines; few GRAVEL; high plasticity; (FILL, Qaf / ALLUVIUM, Qa).
5	905		R-2	12 21 25	46	44			27.9	94					SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE); fine-grained; mottled gray and orangish brown-brown; very soft; (Fat CLAY with SAND (CH); hard; moist; mostly fines; little fine SAND; high plasticity; PP>4.5 tsf). (CALABASAS FORMATION, Tcb).
			S-3	4 6 11	17	24			25.3		65:39				Mottled gray-brown; weathered; (Fat CLAY (CH); very stiff; mostly fines; few fine SAND; high plasticity; PP=3.75 tsf).
10	900		R-4	12 20 26	46	44			28.4	93					(Hard; PP=4.5 tsf).
15	895		S-5	12 18 22	40	57			15.4						(Sandy Fat CLAY (CH); hard; gray; moist; mostly fines; some fine SAND; high plasticity; PP>4.5 tsf).
20	890		R-6	31 50/6"	50/6"	48/6"			13.6	114					(Fat CLAY with SAND (CH); hard; gray; moist; mostly fines; little fine SAND; high plasticity; PP>4.5 tsf).
															▽ Perched water at 23 feet.

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FIGURE
A-4 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-003**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/13/2013	2 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	20 ft right Sta. 19 + 28

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	T. Latimer	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	50.5	910 N/A	▽ 23.0 / *887.0* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	AFTER DRILLING
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/M / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		⊠	S-7	50/6"	REF	REF			23.4			CR			SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). (Trace GRAVEL).
30	880	■	R-8	50/6"	REF	REF			17.1	120					(Fat CLAY (CH); hard; dark gray; moist to wet; mostly fines; few fine SAND; high plasticity; PP>4.5 tsf).
35	875	⊠	S-9	20 50/6"	50/6"	71/6"			20.4						(Sandy Fat CLAY (CH); hard; dark grayish brown; moist; mostly fines; some fine SAND; high plasticity; PP>4.5 tsf).
40	870	■	R-10	32 50/3"	50/3"	48/3"			21.4	101					(PP>4.5 tsf).
45	865	⊠	S-11	27 50/6"	50/6"	71/6"			22.1						

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FIGURE
A-4 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-003**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/13/2013	3 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	20 ft right Sta. 19 + 28

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	T. Latimer	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	50.5	910 N/A	▽ 23.0 / *887.0* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	AFTER DRILLING
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/M / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		⋈	R-12	50/5"	REF	REF			20	98					SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued).
															Bottom of borehole at 50.5 feet.
															Boring terminated at planned depth.
															Perched water encountered at 23 feet.
55	855														
															This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010)
60	850														
65	845														
70	840														

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FIGURE

A-4 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-004**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/12/2013	1 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	20 ft right Sta. 20 + 22

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	50.5	914 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ N/E / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
															ASPHALT CONCRETE (6")
															AGGREGATE BASE (15")
															Sandy Fat CLAY (CH); reddish brown; moist; mostly fines; some fine SAND; high plasticity (ALLUVIUM, Qa).
	910		B-1												
5															
			S-2	2 3 3	6	8			17.3						Very stiff; PP=3.25 tsf. #200: 33% SAND; 67% fines
			R-3	7 12 20	32	30			16.7	109					
	905														
10			S-4	4 7 8	15	21			18.5						Light reddish brown; little caliche; PP=2.75 tsf.
	900														
15			R-5	8 12 15	27	26			26.9	95					Reddish brown; PP=3.75 tsf.
	895														
20			S-6	7 10 20	30	42			23.1						SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE); fine-grained; reddish brown-light gray; weathered; very soft; (Fat CLAY (CH); hard; slightly moist; high plasticity; PP>4.5 tsf) (CALABASAS FORMATION, Tcb).
	890														

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FIGURE
A-5 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-004**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/12/2013	2 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	20 ft right Sta. 20 + 22

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	50.5	914 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/E / *NE* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-7	33 50/6"	50/6"	48/6"			21.5	104		CN			SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). Thickly bedded; gray; (PP>4.5 tsf).
	885														
30			S-8	11 15 19	34	48			20.2						Medium to dark gray; (PP >4.5 tsf).
	880														
35			R-9	34 50/6"	50/6"	48/6"			19.5	109					(PP >4.5 tsf).
	875														
40			S-10	14 21 25	46	65			20.5						Laminated; medium gray; (dry; PP>4.5 tsf).
	870														
45			R-11	50/6"	REF	REF			20.1	107					Medium to dark gray; (PP>4.5 tsf).
	865														

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FIGURE
A-5 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-004**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/12/2013	3 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	20 ft right Sta. 20 + 22

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	50.5	914 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/E / *NE* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		⊠	S-12	50/6"	REF	REF			15.1						SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). Steeply dipping beds; medium gray; (PP>4.5 tsf). Bottom of borehole at 50.5 feet Boring terminated at planned depth. Groundwater not encountered.
55	860														
60	855														This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010)
65	850														
70	845														
	840														

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FIGURE
A-5 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-005**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/12/2013	1 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	25 ft right Sta. 20 + 83

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	51	917 N/A	▽ 45.5 / *871.5* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	AFTER DRILLING
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ NM / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
															ASPHALT CONCRETE (7")
															AGGREGATE BASE (8")
	915		B-1												Fat CLAY (CH); reddish brown; moist; mostly fines; high plasticity; (ALLUVIUM Qa).
5			R-2	18 18 24	42	40			18.9	105	58:31				Hard; dry; trace GRAVEL; PP>4.5 tsf.
	910		S-3	7 12 17	29	41			25.8						SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE); fine-grained; thinly bedded; steeply dipping bedding planes; olive gray; weathered; very soft; (Fat CLAY (CH); hard; slightly moist; some oxidation; high plasticity; PP>4.5 tsf) (CALABASAS FORMATION, Tcb).
10			R-4	13 26 34	60	57			26.0	98					Very thinly bedded to laminated; reddish brown-dark brown; (Caliche; PP>4.5 tsf).
	905														
15			S-5	5 9 11	20	28			25.3						Thinly bedded; medium brown; mineralized bedding planes; (PP>4.5 tsf).
	900														
20			R-6	35 21 36	57	54			21.4	104					Medium brown-gray (PP>4.5 tsf).
	895														

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FIGURE
A-6 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-005**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/12/2013	2 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	25 ft right Sta. 20 + 83

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	51	917 N/A	▽ 45.5 / *871.5* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ NM / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-7	6 12 15	27	38			19.1						SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). Gray; (very stiff; dry; PP=3.5 tsf).
	890														
30			R-8	30 50/6"	50/6"	48/6"			20.8	106					Laminated; medium gray; (hard; slightly moist; PP>4.5 tsf).
	885														
35			S-9	8 10 12	22	31			20.4						(PP>4.5 tsf).
	880														
40			R-10	31 50/6"	50/6"	48/6"			18.4	110					(PP>4.5 tsf).
	875														
45			S-11	50/6"	REF	REF			15.0						▽ Very intensely fractured; (weak cementation). Perched water at 45.5 feet.
	870														

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FIGURE
A-6 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-005**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/12/2013	9/12/2013	3 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	25 ft right Sta. 20 + 83

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	51	917 N/A	▽ 45.5 / *871.5* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	AFTER DRILLING
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ NM / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-12	29 50/6"	50/6"	48/6"			19.9	109					SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). Gray; (dry; PP>4.5 tsf). Bottom of borehole at 51 feet. Boring terminated at planned depth. Perched water encountered at 45 feet.
55	865														
60	860														
65	855														
70	850														
	845														

This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging. Classification, and Presentation Manual (2010).

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FIGURE
A-6 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-006**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	1 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	17 ft right Sta. 21 + 75

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	60.5	936 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ N/E / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	935		B-1									CR R			Fat CLAY (CH); medium reddish brown; slightly moist; mostly fines; few GRAVEL; high plasticity (FILL, Qaf).
5	930		R-2	10 12 17	29	27			22.6	103		DS			Fat CLAY with SAND (CH); hard; medium brown-gray; slightly moist; mostly fines; little fine SAND; few GRAVEL; few oxidation; high plasticity; PP=4.0 tsf.
			S-3	4 4 4	8	11			23.4						Stiff; PP=1.5 tsf. #200: 21% SAND; 79% fines
10	925		R-4	8 11 14	25	24			21.3	101		DS			Brown-gray and orange; moist; PP=1.5 tsf.
15	920		S-5	3 4 6	10	14			22.1		57:39				Fat CLAY with SAND (CH);Very stiff; dark gray; oxidation; PP=3.5 tsf (ALLUVIUM, Qa).
20	915		R-6	13 19 28	47	45			29.9	93					SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE); fine-grained; laminated; brown-orange; very soft; weathered; (Fat CLAY (CH); hard; slightly moist; some caliche; high plasticity; PP=4 tsf) (CALABASAS FORMATION, Tcb).

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FIGURE
A-7 a

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-006**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	2 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	17 ft right Sta. 21 + 75

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	60.5	936 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	▼ N/E / *NE* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	910		S-7	3 3 4	7	10			28.5						SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). Very thinly bedded; yellowish brown-orange; oxidation on bedding planes; (PP>4.5 tsf).
30	905		R-8	18 32 45	77	73			31.1	92		DS			Laminated; medium brown; (PP>4.5 tsf).
35	900		S-9	10 12 16	28	40			25.3						Thinly bedded; dark brown; caliche on some bedding planes; (slightly moist; PP>4.5 tsf).
40	895		R-10	50/6"	REF	REF			25.1	101					Tuffaceous; (PP>4.5 tsf).
45	890		S-11	43 50/6"	50/6"	71/6"			19.9						Thinly bedded; steeply dipping; gray; (PP>4.5 tsf).

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FIGURE
A-7 b

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**A-13-006**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	3 of 3

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	17 ft right Sta. 21 + 75

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	CME 75	Hollow Stem Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
Automatic, (140 lbs., 30")	85%	8"	60.5	936 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
SPT (1.4"), CAL (2.4")	(N)60 = 1.42Nspt = 0.95Ncal	Soil Cuttings	AFTER DRILLING ▼ N/E / *NE*

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	885		R-12	50/6"	REF	REF			17.7	113					SEDIMENTARY ROCK (POORLY INDURATED CLAYSTONE) (CALABASAS FORMATION, Tcb) (continued). (little caliche; PP>4.5 tsf).
55	880		S-13	30 50/6"	50/6"	71/6"			15.7						Dark gray; (PP>4.5 tsf).
60			R-14	50/6"	REF	REF			18.2	103					Medium to dark gray; (PP>4.5 tsf).
	875														Bottom of borehole at 60.5 feet. Boring terminated at planned depth. Groundwater not encountered.
65	870														This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010)
70	865														

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FIGURE
A-7 c

BORING RECORD

PROJECT NAME	PROJECT NUMBER	HOLE ID
Palo Comado Bridge Widening	LA-1143	**HA-13-007**

DIST.	CO.	ROUTE	POSTMILE	BRIDGE NO.	CALTRANS ENCROACHMENT PERMIT NUMBER	START	FINISH	SHEET NO.
07	LA	101	33.69	53 - 1678	0700001840	9/9/2013	9/9/2013	1 of 1

SITE LOCATION	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	BOREHOLE LOCATION (Offset, Station, Line)
Agoura Hills, CA	Boring Location Plan	14 ft left Sta. 25 + 43

DRILLING COMPANY	DRILL RIG	DRILLING METHOD	LOGGED BY	CHECKED BY
Choice	Hand Auger	Hand Auger	S. Stone	M.DiNicola

HAMMER TYPE (WEIGHT/DROP)	HAMMER EFFICIENCY (ERi)	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GW (ft)
NA	NA	4"	5	928 N/A	▽ N/E / *NE* DURING DRILLING

DRIVE SAMPLER TYPE(S) & SIZE (ID)	NOTES	BOREHOLE BACKFILL & COMPLETION	
Bag Sample	N/A	Soil Cuttings	▼ N/E / *NE* AFTER DRILLING

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOWS/FT	SPT N^*_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
0	925		B-1									R EI			Fat CLAY (CH); light brown; dry; high plasticity. Slightly moist. Laminations and black oxidation nodules.
5	920														Bottom of hand auger at 5 feet. Hand auger terminated at palnned depth. Groundwater not encountered. This Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging. Classification, and Presentation Manual (2010).
10	915														
15	910														
20	905														

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FIGURE
A-8

SPT Hammer Energy Measurements

Hammer Calibration done on:
October 27,2012
in Canoga Park, CA

Choice Drilling Rig 1
Operator: Sean Pichinson
ETR = 85.2%

Prepared for:

Choice Drilling, Inc.
PO Box 299
Canoga Park, CA 91303

Prepared by:

Brian Serl
Calibration Engineer

SPT CAL
16254 Van Gogh Ct.
Chino Hills, CA 91709
http://www.sptcal.com
909-730-2161

Figure 9A

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Figure 9B

Presentation of SPT Analyzer Test Data

1. Introduction

This report presents the results of SPT Hammer Energy Measurements recorded with an SPT Analyzer from Pile Dynamics carried out on October 27, 2012 in Canoga Park, CA.

2. Field Equipment and Procedures

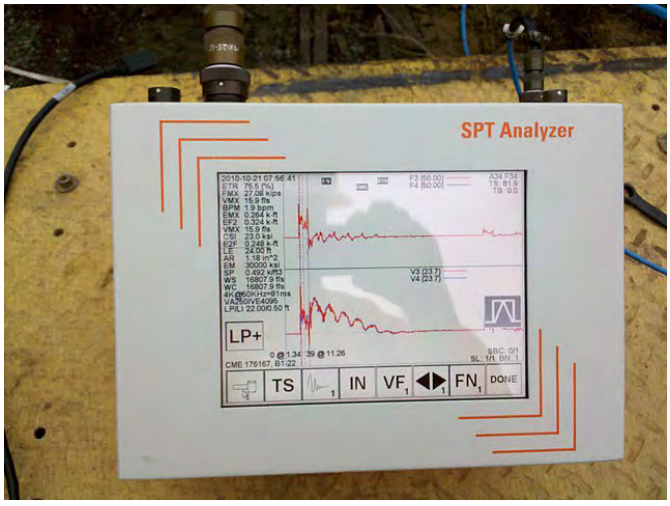
The drill used is referred to at Choice Drilling as Rig 1. The operator of this drill and attached hydraulic Landa automatic trip hammer was Sean Pichinson of Choice Drilling, Inc. The Landa auto hammer has the same specifications and dimensions as the CME automatic trip hammer.

The Landa Auto Hammer uses a 140 lb. weight dropped 30” on to an anvil above the bore hole. AWJ drill rod connects the anvil to a split spoon type soil sampler inside an 8” o.d. hollow stem auger at the designated sample depth. After a seeding blow the sampler is driven 18”. The number of blows required to penetrate the last 12" is referred to as the “N value”, which is related to soil strength.

The first recording was taken at 5' below ground surface and then every 5' to final recording at 50'.

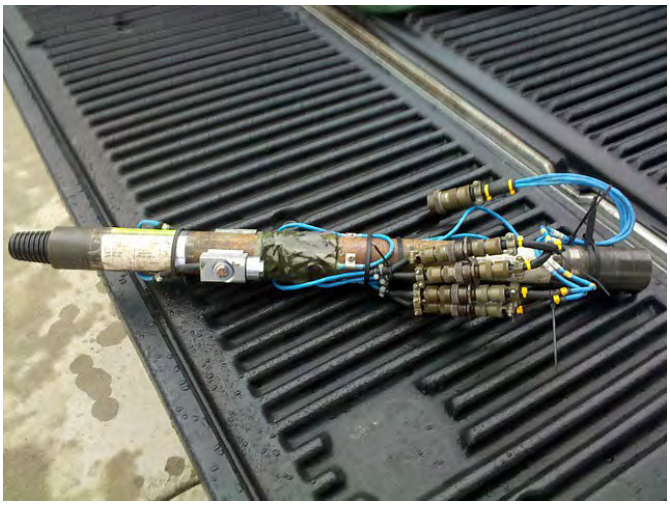
3. Instrumentation

An SPT Analyzer from Pile Dynamics was used to record and the process the data. The raw data was stored directly in the SPT Analyzer computer with subsequent analysis in the office with PDA-W and PDIPlot software. The measurements and analysis were conducted in general accordance with ASTM D4945 and ASTM D6066 test standards.



The SPT Analyzer is fully compliant with the minimum digital sampling frequency requirements of ASTM D4633-05 (50 kHz) and EN ISO 22476-3:2005 (100 kHz), as well as with the low pass filter, (cutoff frequency of 5000 Hz instead of 3000 Hz) requirements of ASTM D4633-05. All equipment and analysis also conform to ASTM D6066.

Figure 9C



A 2' instrumented section of AWJ rod, with two sets of accelerometers and strain transducers mounted on opposite sides of the drill rod, was placed below the anvil. It measured strain and acceleration of every hammer blow. The SPT Analyzer then calculates the amount of energy transferred to the rod by force and velocity measurements.

4. Observations

The the drill rig motor is diesel fueled. The throttle control is a push pull locking type. The drill and sample equipment looked to be well operated and maintained. The operator Sean Pichinson has been drilling in the geotechnical field with similar equipment for over 13 years. His professionalism, experience and expertise were evident during the drilling process.

5. Results

Results from the SPT Hammer Energy Measurements are summarized in Table 1. It shows the Energy Transfer Ratio (ETR) at each sampling depth. ETR is the ratio of the measured maximum transferred energy to rated energy of the hammer which is the product of the weight of the hammer times the height of the fall. 140 lb x 30” = 4200 lb-in = 0.350 kip-ft.

The ETR for all of the blow counts averaged **85.2%**

Figure 9D

Table 1 – Summary of SPT Hammer Energy Measurements

B1-05	84.9
B1-10	85.2
B1-15	84.0
B1-20	80.9
B1-25	82.5
B1-30	85.4
B1-35	86.9
B1-40	86.3
B1.45	90.3
B1-50	85.7
Average ETR%	**85.2**

References

- *Stress Wave Methods in Civil Engineering*. Proceedings of The Fifth Highway Geophysics - NDE Conference: Charlotte, NC; 472-480.
- Abou-matar, H., Goble, G. G., October, 1997. *SPT Dynamic Analysis and Measurements*. Journal of Geotechnical and Geoenvironmental Engineering, ASCE, October 1997: Reston, VA; 921-926.
- Rausche, F., Thendean, G., Abou-matar, H., Likins, G. E., Goble, G. G., September, 1995.*Robinson, B., Webster, S., Alvarez, C., December, 2008.* . PDA Users Day: Cleveland, OH.
- Batchelor, C., Goble, G. G., Berger, J. A., Miner, R., May, 1995. *Standard Penetration Test Energy Measurements on the Seattle ASCE Field Testing Program*. Seminar In Situ Testing for Seismic Evaluation: University of Washington.
- Goble, G. G., Abou-matar, H., September, 1992. *Determination of wave equation soil constants from the standard penetration test*. Proceedings of the Fourth International Conference on the Application of Stress-Wave Theory to Piles: The Netherlands; 99-103.
- Morgano, C.M., Liang, R., September, 1992. *Energy transfer in SPT - Rod length effect*. Proceedings of the Fourth International Conference on the Application of Stress-Wave Theory to Piles: The Netherlands; 121-127.
- *Check out our website at http://www.sptcal.com for more information and references.*

Figure 9E

Appendix B Laboratory Testing

APPENDIX B
LABORATORY TESTING

B.1 General

The laboratory testing was performed using appropriate American Society for Testing and Materials (ASTM) and Caltrans Test Methods (CTM).

Modified California drive samples, Standard Penetration Test (SPT) drive samples, and bulk samples collected during the field investigation were carefully sealed in the field to prevent moisture loss. The samples of earth materials were then transported to the laboratory for further examination and testing. Tests were performed on selected samples as an aid in classifying the earth materials and to evaluate their physical properties and engineering characteristics. Laboratory testing for this investigation included:

- Soil and Rock Classification: USCS (ASTM D 2487) and Visual Manual (ASTM D 2488), (ISRM) (1981) standards and the Bureau of Reclamation (2001) standards;
- Moisture content (ASTM D 2216) and Dry Unit Weight (ASTM D 2937);
- Atterberg Limits (ASTM D 4318);
- Percent Passing No. 200 Sieve (ASTM D 1140);
- Direct Shear (ASTM D 3080);
- One-Dimensional Consolidation (ASTM D 2435);
- Expansion Index (D 4829);
- Soil Corrosivity (Caltrans Methods 643, 422, and 417);
- Resistance R-Value (CTM 301).

A summary of laboratory test results is presented in Table B-1. Brief descriptions of the laboratory testing program and test results are presented below.

B.2 Soil and Rock Classification

Earth materials recovered from subsurface explorations were classified in general accordance with Caltrans' "Soil and Rock Logging Classification Manual, 2010". The subsurface soils were classified visually / manually in the field in accordance with the Unified Soil Classification System (USCS) following ASTM D 2488; soil classifications were modified as necessary based on testing in the laboratory in accordance with ASTM D 2487. Rock materials were classified using a hybrid of the International Society of Rock Mechanics (ISRM) (1981) standards and the Bureau of Reclamation (2001) standards, and modified where necessary on the basis of laboratory test results. The details of the soil and rock

classification systems and boring records presenting the classifications are presented in Appendix A.

B.3 Moisture Content and Dry Unit Weight

The in-situ moisture content of selected bulk, SPT, and ring samples was determined by oven drying in general accordance with ASTM D 2216. Selected California Ring samples were trimmed flush in the metal rings and wet weight was measured. After drying, the dry weight of each sample was measured, volume and weight of the metal containers was measured, and moisture content and dry density were calculated in general accordance with ASTM D 2216 and D 2937. Results of these tests are presented in Table B-1 and on the boring records in Appendix A.

B.4 Atterberg Limits

Characterization of the fine-grained fractions of soils was evaluated using the Atterberg Limits. This test includes Liquid Limit and Plastic Limit tests to determine the Plasticity Index in accordance with ASTM D 4318. Results of these tests are presented on the boring records in Appendix A, are summarized in Table B-1, and are plotted on a Plasticity Chart in Figure B-1 of this Appendix.

B.5 Percent Passing No. 200 Sieve

Representative samples were dried, weighed, soaked in water until individual soil particles were separated, and then washed on the No. 200 sieve. The percentage of fines (soil passing No. 200 sieve) was determined for selected samples in accordance with ASTM D 1140. For selected samples the washed fraction retained on the No. 200 sieve was then screened on a No. 4 sieve, and the fraction retained on No. 4 was weighed to determine the percentage of gravel. For selected samples, the washed material retained on No. 200 sieve was shaken through a standard stack of sieves in accordance with ASTM D 422 to determine the grain size distribution. For selected samples, the grain size distribution of the fraction finer than No. 200 sieve was determined by Hydrometer Analysis in accordance with ASTM D 422. The relative proportion (or percentage) by dry weight of gravel (retained on No. 4 sieve), sand (passing No. 4 and retained on No. 200 sieve), and fines (passing No. 200 sieve) are listed on the boring records in Appendix A and summarized in Table B-1.

B.6 Direct Shear Test

To determine the drained shear strength parameters of the on-site soils, direct shear tests were performed on selected in situ samples and compacted remolded samples in accordance with ASTM D 3080. After the initial weight and volume measurements were made, the sample was placed in the shear machine, and a selected normal load was applied. The sample was saturated or kept at field moisture (to model worst case field conditions), allowed to consolidate under the selected normal load, and then sheared to failure. Shear rate was selected to maintain drained conditions. Shear stress and vertical/horizontal sample deformations were monitored throughout the test. The process was repeated on additional samples of the same soil material at two additional normal loads. The test results are presented in Figures B-2a through B-2e of this appendix.

B.7 One-Dimensional Consolidation

The consolidation characteristics of representative soil samples under incremental loading were evaluated by performing one-dimensional consolidation in general accordance with ASTM D 2435, using a floating ring consolidometer and dead weight system. Results of the tests are presented in Figures B-3a and B-3b.

B.8 Expansion Index

The expansion potential of the site soils was estimated using the Expansion Index Test in accordance with ASTM D 4829. The results of this test are illustrated in Figure B-4.

B.9 R-Value

Resistance “R” Value tests were performed by stabilometer method on selected bulk samples of the subgrade soils. The tests were conducted in general accordance with CTM 301. The test results are presented in Figures B-5a through B-5d.

B.10 Soil Corrosivity

Tests were performed in order to determine corrosion potential of site soils on concrete and ferrous metals. Corrosivity testing included minimum resistivity and soil pH (Caltrans Method 643), water-soluble chlorides (Caltrans Method 422), water-soluble sulfates (Caltrans Method 417) and electrical resistivity (Caltrans Method 643). The test results are summarized in Table B-2.

B.11 List of Attached Table and Figures

The following tables and figures are attached and complete this appendix:

List of Table

List of Figures

Boring No.	Sample No.	Depth (ft)	Sample Type	Geologic Unit	USCS Group Symbol	SPT N*60 (blows/ft)	Undrained Shear Strength, Su (ksf)			Moisture Content (%)	Dry Unit Weight (pcf)	Total Unit Wt (pcf)	Atterberg Limits			Grain Size Distribution (%) by dry weight			Clay	Other Tests
							Pocket Pen.	Mini Vane	UU Test				LL	PL	PI	Gravel	Sand	Fines		
A-13-001	B-1	2.0	BULK		CH															
A-13-001	R-2	5.0	MC		CH	27	3			24.8	95	119	56	25	31					
A-13-001	S-3	7.5	SPT		CH	10	3			27.4										
A-13-001	R-4	10.0	MC		CH	18	3			22.5	98	120								
A-13-001	S-5	15.0	SPT		CL	13	3.5			21.3						7	38	55		
A-13-001	R-6	20.0	MC		CH	41	2			21.7	101	123								
A-13-001	S-7	25.0	SPT		ML	68	4			22.8										
A-13-002	B-1	2.0	BULK		CH															
A-13-002	S-2	5.0	SPT		CH	11	3.5			23.8			53	23	30					
A-13-002	R-3	7.5	MC		CH	21	2.0			19.9	102	122								CN
A-13-002	S-4	10.0	SPT		CH	10	1.0			23.4										
A-13-002	R-5	15.0	MC		CH	26	2.5			18.1	109	129								DS
A-13-002	S-6	20.0	SPT		CH	16	1.5			25.7										
A-13-002	R-7	25.0	MC		Tcb	41	4.5			25.7	98	123	68	24	44					DS
A-13-002	S-8	30.0	SPT		Tcb	44	2.5			21.4										
A-13-002	R-9	35.0	MC		Tcb	48/6"	3.5			24.9	104	130								
A-13-002	S-10	40.0	SPT		Tcb	65	>4.5			22.4										
A-13-002	R-11	45.0	MC		Tcb	48/6"	>4.5			17.7	112	132								
A-13-002	S-12	50.0	SPT		Tcb	91	>4.5			16.4										
A-13-002	R-13	55.0	MC		Tcb	REF	>4.5			13.1	121	137								
A-13-002	S-14	60.0	SPT		Tcb	71/6"	4.0			12.1										
A-13-003	B-1	2.0	BULK		CH															
A-13-003	R-2	5.0	MC		CH	44	4.5			27.9	94	120								
A-13-003	S-3	7.5	SPT		Tcb	24	3.75			25.3			65	26	39					
A-13-003	R-4	10.0	MC		Tcb	44	4.5			28.4	93	119								
A-13-003	S-5	15.0	SPT		Tcb	57	>4.5			15.4										
A-13-003	R-6	20.0	MC		Tcb	48/6"	>4.5			13.6	114	130								
A-13-003	S-7	25.0	SPT		Tcb	REF	1.5			23.4										Corrosivity
A-13-003	R-8	30.0	MC		Tcb	REF	4.5			17.1	120	141								
A-13-003	S-9	35.0	SPT		Tcb	71/6"	>4.5			20.4										

GDC_TABLE_B-1_CALTRANS_BORING_LOGS.GPJ_GDC2013.GDT_6/17/14

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TABLE B-1: Summary of Laboratory Results

Project: Palo Comado Bridge Widening

Location: Agoura Hills, CA

Number: LA-1143

Boring No.	Sample No.	Depth (ft)	Sample Type	Geologic Unit	USCS Group Symbol	SPT N*60 (blows/ft)	Undrained Shear Strength, Su (ksf)			Moisture Content (%)	Dry Unit Weight (pcf)	Total Unit Wt (pcf)	Atterberg Limits			Grain Size Distribution (%) by dry weight			Clay	Other Tests
							Pocket Pen.	Mini Vane	UU Test				LL	PL	PI	Gravel	Sand	Fines		
A-13-003	R-10	40.0	MC		Tcb	48/3"	>4.5			21.4	101	123								
A-13-003	S-11	45.0	SPT		Tcb	71/6"	>4.5			22.1										
A-13-003	R-12	50.0	MC		Tcb	REF	>4.5			20.0	98	118								
A-13-004	B-1	2.5	BULK		CH															
A-13-004	S-2	6.0	SPT		CH	8	3.25			17.3						0	33	67		
A-13-004	R-3	7.5	MC		CH	30	3.75			16.7	109	127								
A-13-004	S-4	10.0	SPT		CH	21	2.75			18.5										
A-13-004	R-5	15.0	MC		Tcb	26	3.75			26.9	95	121								
A-13-004	S-6	20.0	SPT		Tcb	42	>4.5			23.1										
A-13-004	R-7	25.0	MC		Tcb	48/6"	>4.5			21.5	104	126								CN
A-13-004	S-8	30.0	SPT		Tcb	48	>4.5			20.2										
A-13-004	R-9	35.0	MC		Tcb	48/6"	>4.5			19.5	109	130								
A-13-004	S-10	40.0	SPT		Tcb	65	>4.5			20.5										
A-13-004	R-11	45.0	MC		Tcb	REF	>4.5			20.1	107	129								
A-13-004	S-12	50.0	SPT		Tcb	REF	>4.5			15.1										
A-13-005	B-1	1.5	BULK		CH															
A-13-005	R-2	5.0	MC		CH	40	>4.5			18.9	105	125	58	27	31					
A-13-005	S-3	7.5	SPT		Tcb	41	>4.5			25.8										
A-13-005	R-4	10.0	MC		Tcb	57	>4.5			26.0	98	123								
A-13-005	S-5	15.0	SPT		Tcb	28	>4.5			25.3										
A-13-005	R-6	20.0	MC		Tcb	54	>4.5			21.4	104	126								
A-13-005	S-7	25.0	SPT		Tcb	38	3.5			19.1										
A-13-005	R-8	30.0	MC		Tcb	48/6"	>4.5			20.8	106	128								
A-13-005	S-9	35.0	SPT		Tcb	31	>4.5			20.4										
A-13-005	R-10	40.0	MC		Tcb	48/6"	>4.5			18.4	110	130								
A-13-005	S-11	45.0	SPT		Tcb	REF	>4.5			15.0										
A-13-005	R-12	50.0	MC		Tcb	48/6"	>4.5			19.9	109	131								
A-13-006	B-1	0.0	BULK		CH															Corrosivity, R
A-13-006	R-2	5.0	MC		CH	27	4.0			22.6	103	126								DS
A-13-006	S-3	7.5	SPT		CH	11	1.5			23.4						0	21	79		

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Project: Palo Comado Bridge Widening
Location: Agoura Hills, CA
Number: LA-1143

Boring No.	Sample No.	Depth (ft)	Sample Type	Geologic Unit	USCS Group Symbol	SPT N*60 (blows/ft)	Undrained Shear Strength, Su (ksf)			Moisture Content (%)	Dry Unit Weight (pcf)	Total Unit Wt (pcf)	Atterberg Limits			Grain Size Distribution (%) by dry weight			Clay	Other Tests
							Pocket Pen.	Mini Vane	UU Test				LL	PL	PI	Gravel	Sand	Fines		
A-13-006	R-4	10.0	MC		CH	24	1.5			21.3	101	123								DS
A-13-006	S-5	15.0	SPT		CH	14	3.5			22.1			57	18	39					
A-13-006	R-6	20.0	MC		Tcb	45	4.0			29.9	93	121								
A-13-006	S-7	25.0	SPT		Tcb	10	>4.5			28.5										
A-13-006	R-8	30.0	MC		Tcb	73	>4.5			31.1	92	121								DS
A-13-006	S-9	35.0	SPT		Tcb	40	>4.5			25.3										
A-13-006	R-10	40.0	MC		Tcb	REF	>4.5			25.1	101	126								
A-13-006	S-11	45.0	SPT		Tcb	71/6"	>4.5			19.9										
A-13-006	R-12	50.0	MC		Tcb	REF	>4.5			17.7	113	133								
A-13-006	S-13	55.0	SPT		Tcb	71/6"	>4.5			15.7										
A-13-006	R-14	60.0	MC		Tcb	REF	>4.5			18.2	103	122								
A-13-007	B-1	0.0	BULK		CH															R, EI

GDC_TABLE_B-1_CALTRANS BORING LOGS.GPJ GDC2013.GDT 6/17/14

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TABLE B-1: Summary of Laboratory Results

Project: Palo Comado Bridge Widening

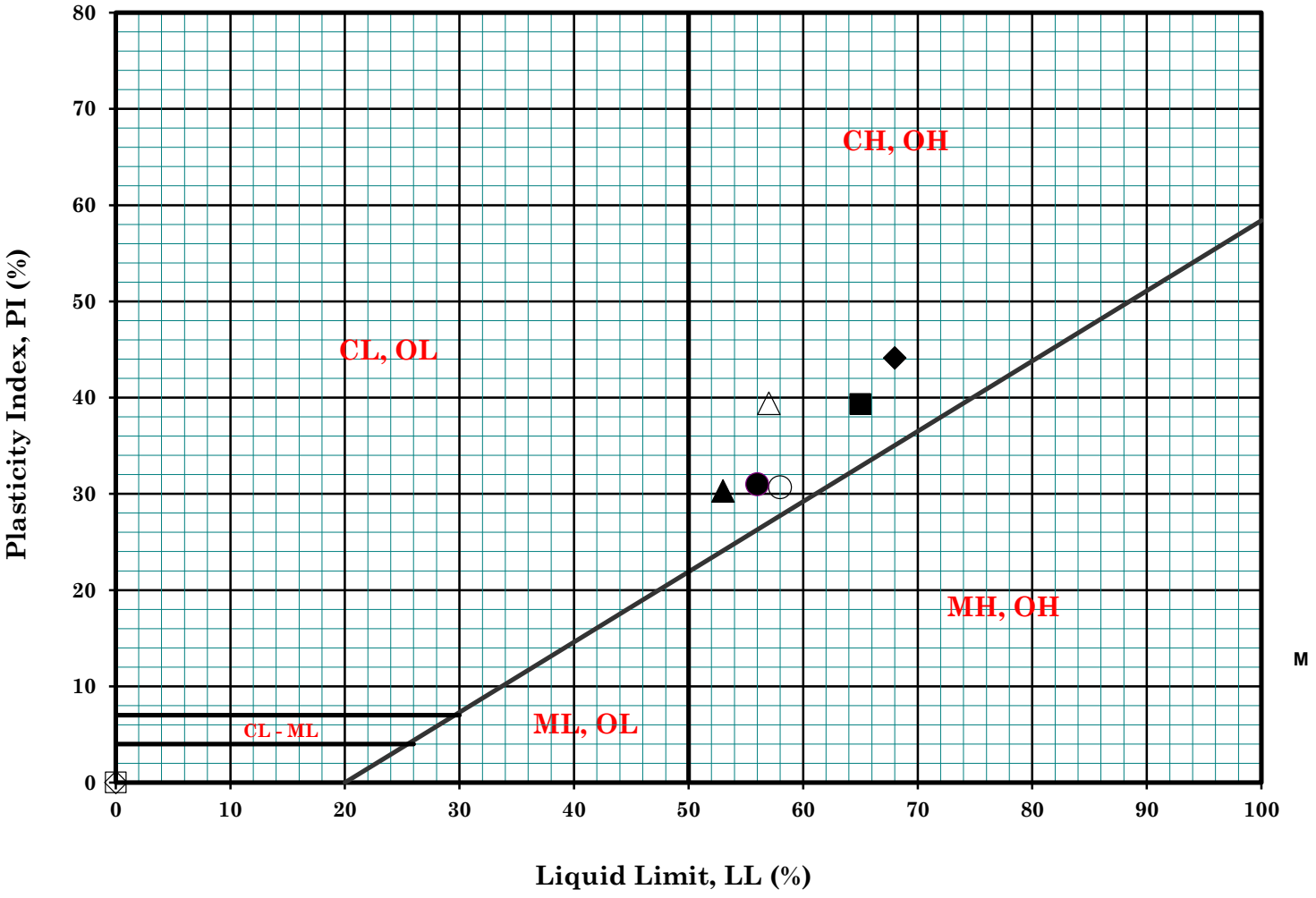
Location: Agoura Hills, CA

Number: LA-1143

TABLE B-2: SUMMARY OF CORROSION TEST RESULTS

Boring No	Sample No.	Depth (ft)	USCS Soil Type	Resistivity CTM 643 (ohm-cm)	pH CTM 643	Soluble Sulfate Content CTM 417 (ppm)	Soluble Chloride CTM 422 (ppm)
A-13-003	S-7	25	Tcb	NM	7.29	13250	< 0.01
A-13-006	B-1	0-5	CH	423	7.09	10500	< 0.01

PLASTICITY CHART



Symbol	Boring No.	Sample No.	Depth (ft)		Depth (m)		MC (%)	LL (%)	PL (%)	PI (%)	Description
●	A-13-001	R2	5.0	6.5	1.5	2.0	24.8	56	25	31	Fat Clay (CH)
▲	A-13-002	S-2	5.0	6.5	1.5	2.0	23.8	53	23	30	Fat Clay (CH)
◆	A-13-002	R-7	25.0	26.5	7.6	8.1	25.7	68	24	44	Calabasas Formation (Tcb)
■	A-13-003	S-3	7.5	9.0	2.3	2.7	25.3	65	26	39	Calabasas Formation (Tcb)
○	A-13-005	R-2	5.0	6.5	1.5	2.0	18.9	58	27	31	Fat Clay (CH)
△	A-13-006	S-5	15.0	16.5	4.6	5.0	22.1	57	18	39	Fat Clay (CH)

Remark :

GROUP DELTA

Palo Comado Bridge Widening

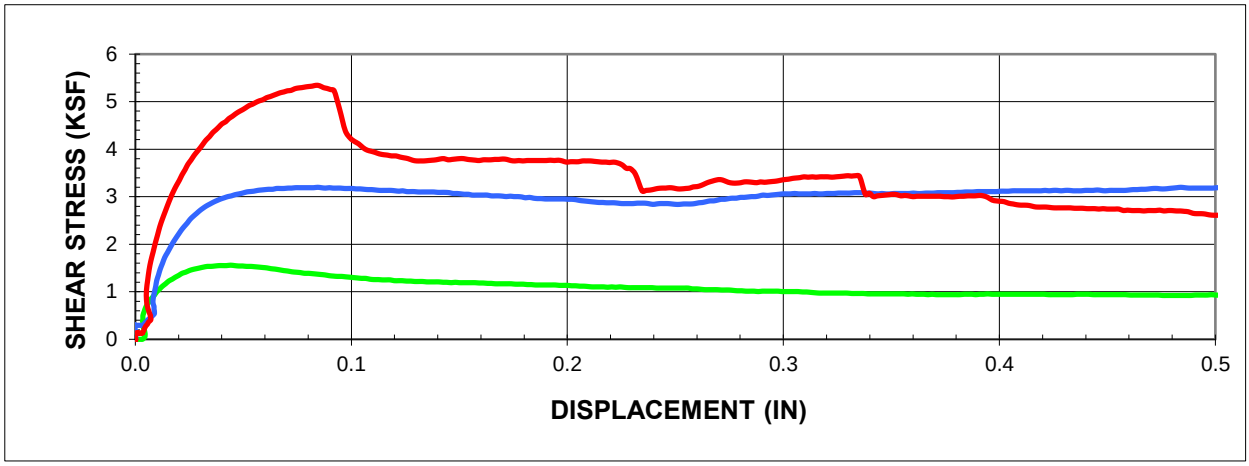
Project No. : *LA-1143*

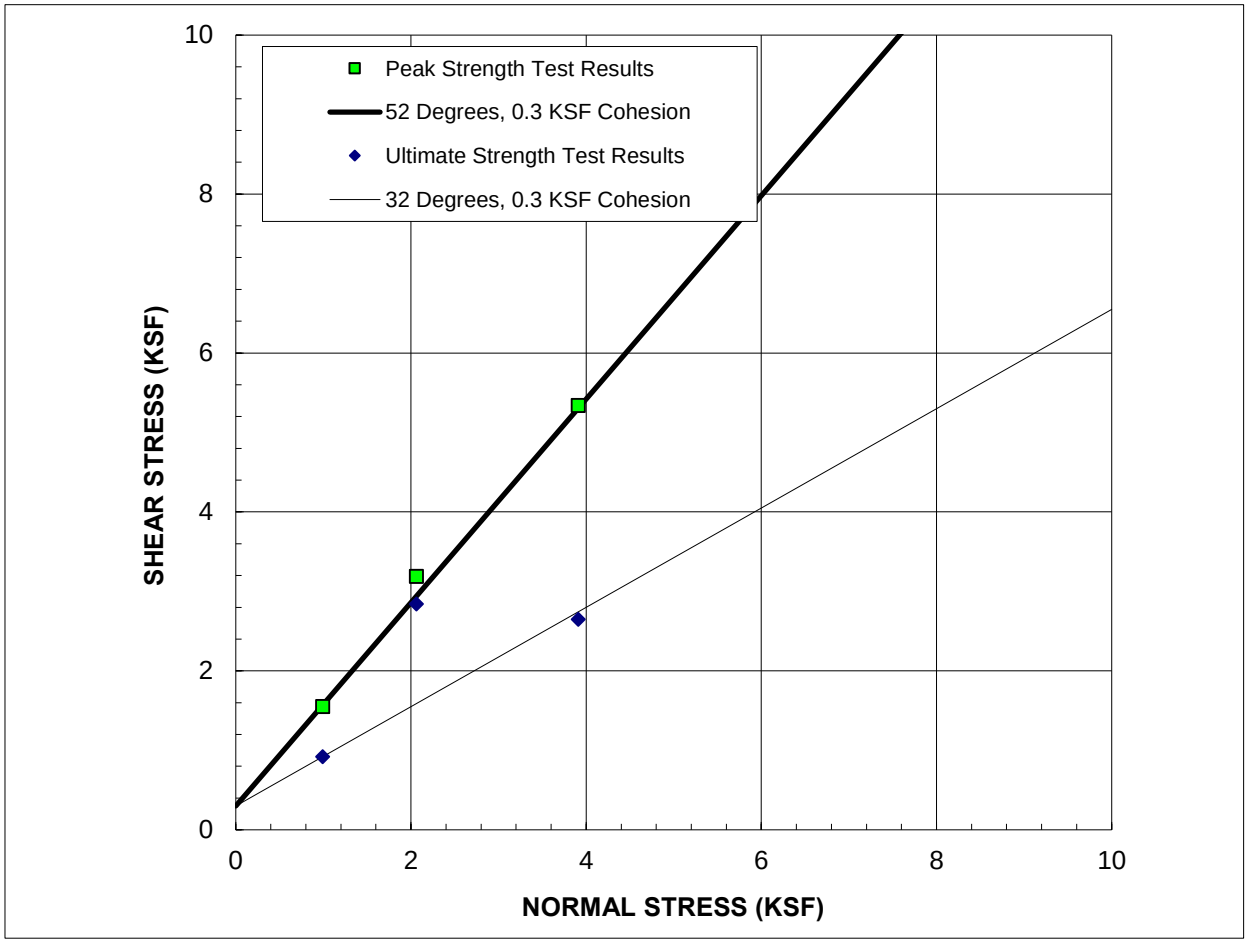
Date : *9/30/13*

ATTERBERG LIMITS

(ASTM D-4318-84)

FIGURE B-1





SAMPLE: A-13-002 R5@15'

Description: **CH**

STRAIN RATE: 0.0025 IN/MIN

(Sample was consolidated and drained)

	PEAK	ULTIMATE
ϕ'	52 ^{o}	32 ^{o}
c'	0.30 KSF	0.30 KSF

	IN-SITU	AS-TESTED
γ_d	109.0 PCF	109.0 PCF
w_c	18.1 %	28.8 %

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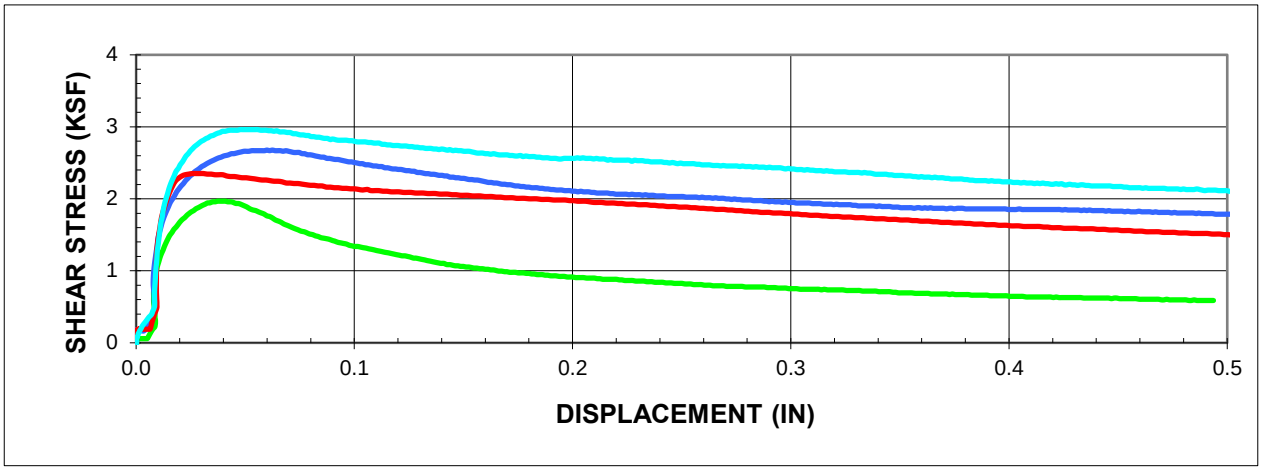
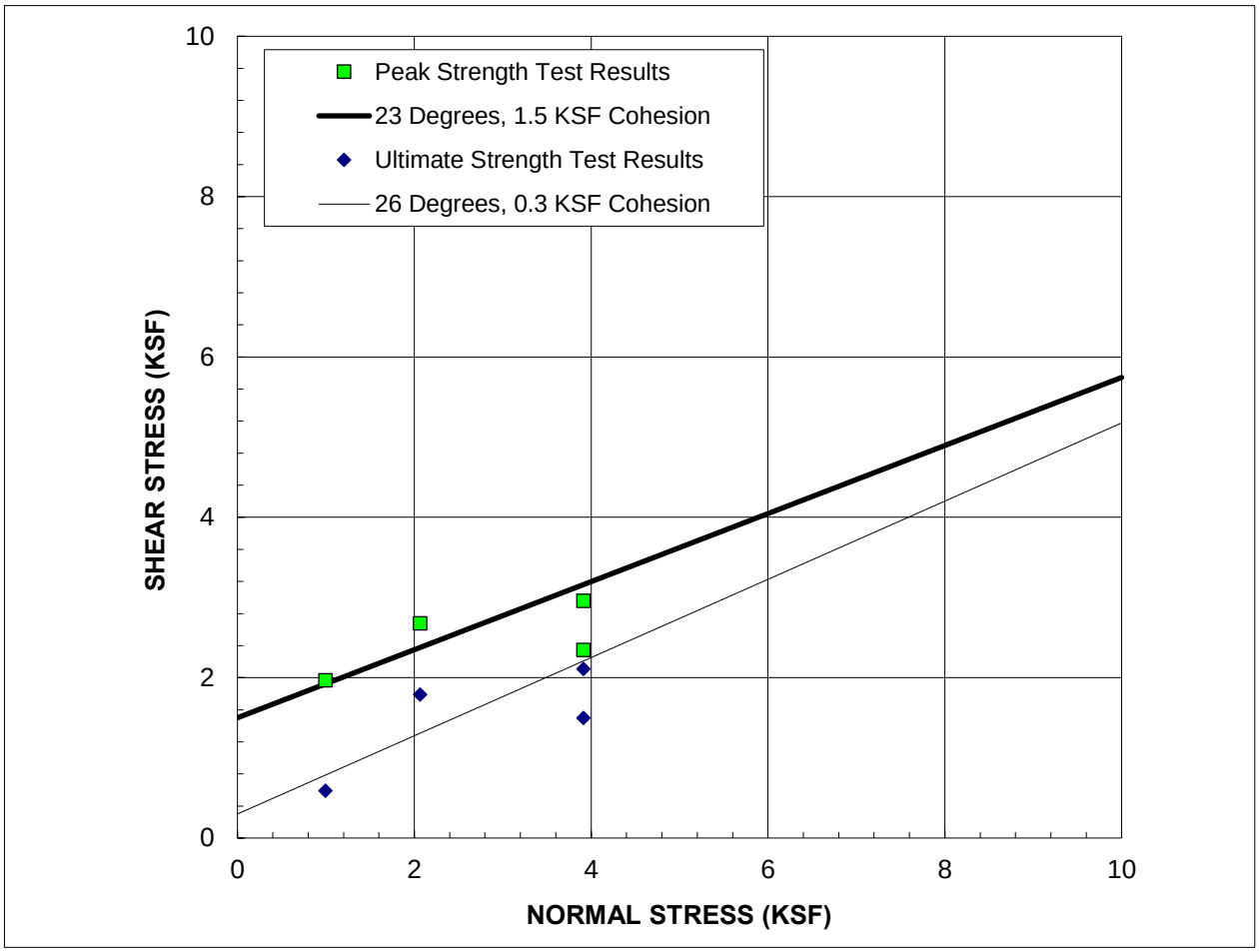
DIRECT SHEAR TEST RESULTS

Project No.: LA - 1143

FIGURE B-2a





SAMPLE: A-13-002 R7@25'

Description: **Tcb- Calabasas Formation**

STRAIN RATE: 0.0025 IN/MIN

(Sample was consolidated and drained)

	PEAK	ULTIMATE
ϕ'	23 ^{o}	26 ^{o}
c'	1.50 KSF	0.30 KSF

	IN-SITU	AS-TESTED
γ_d	98.0 PCF	98.0 PCF
w_c	25.7 %	30.9 %

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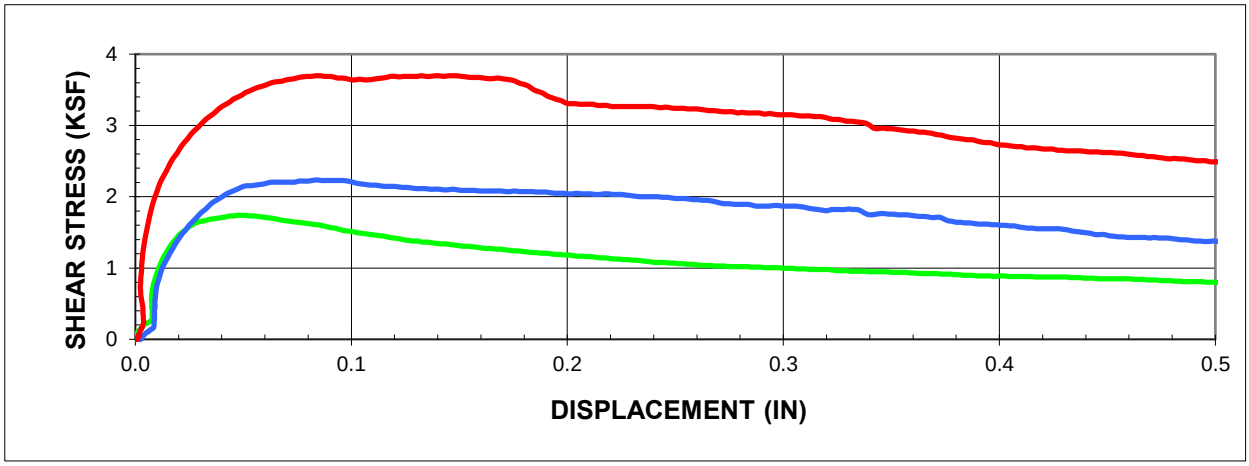
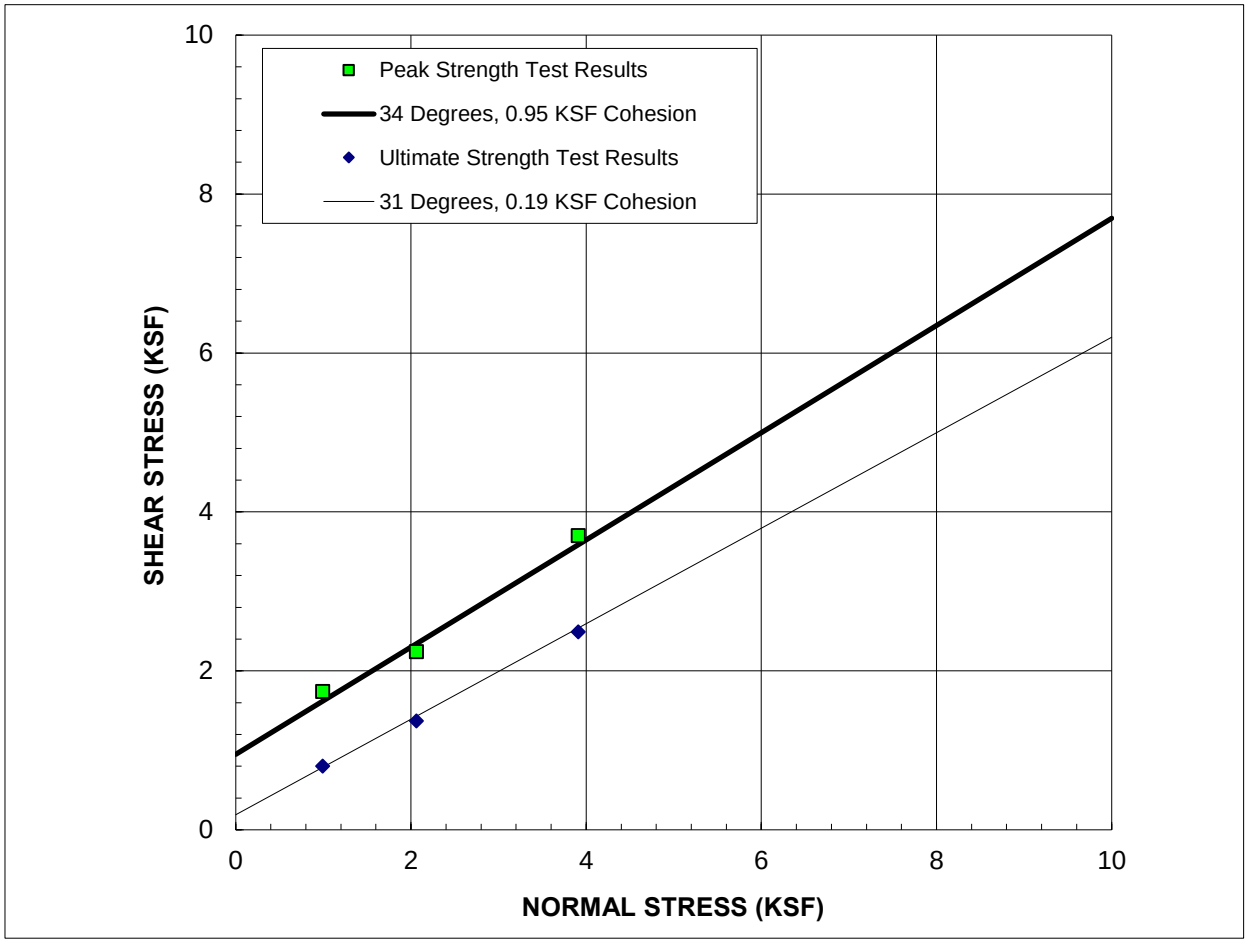
DIRECT SHEAR TEST RESULTS

Project No.: LA-1143

FIGURE B-2b





SAMPLE: A-13-006 R2@5'

Description: CH

STRAIN RATE: 0.0025 IN/MIN

(Sample was consolidated and drained)

	PEAK		ULTIMATE	
ϕ'	34	°	31	°
c'	0.95	KSF	0.19	KSF

	IN-SITU		AS-TESTED	
γ_d	103.0	PCF	104.5	PCF
w_c	22.6	%	26.3	%

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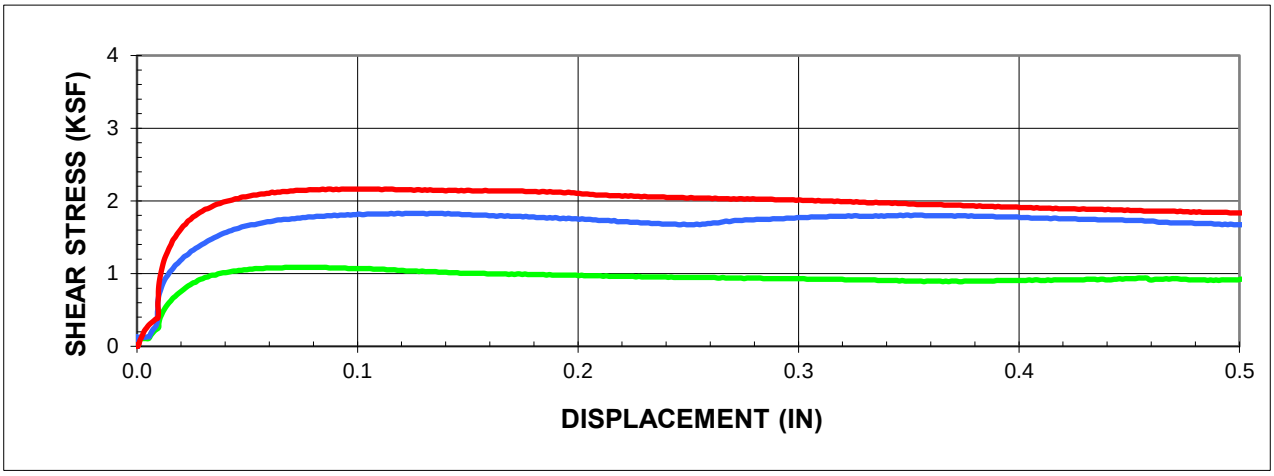
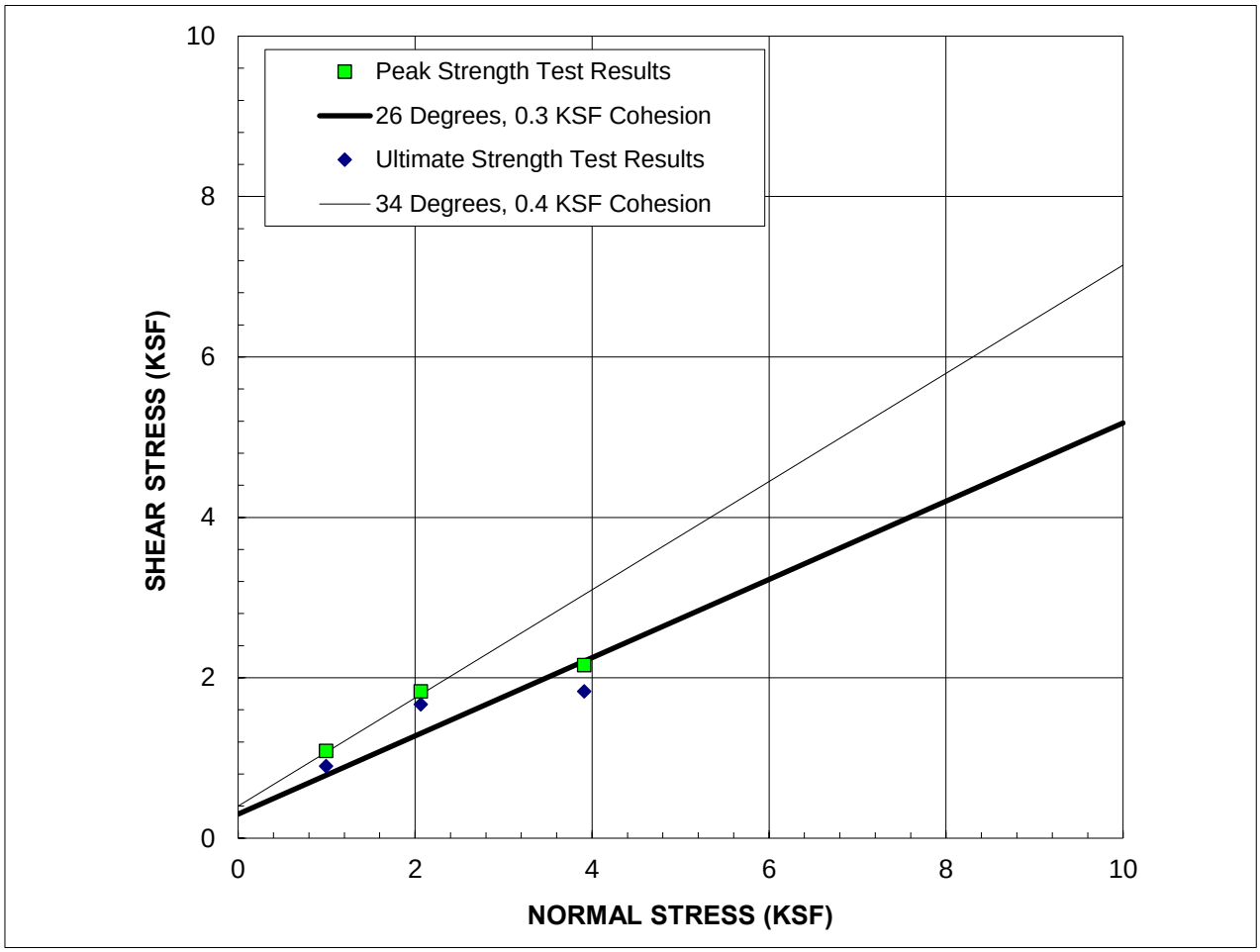
DIRECT SHEAR TEST RESULTS

Project LA- 1143

FIGURE B-2c





SAMPLE: A-13-006 R4@10'

Description: CH

STRAIN RATE: 0.0025 IN/MIN

(Sample was consolidated and drained)

	PEAK	ULTIMATE
ϕ'	26 °	34 °
c'	0.30 KSF	0.40 KSF

	IN-SITU	AS-TESTED
γ_d	101 PCF	101 PCF
w_c	21.3 %	26.2 %

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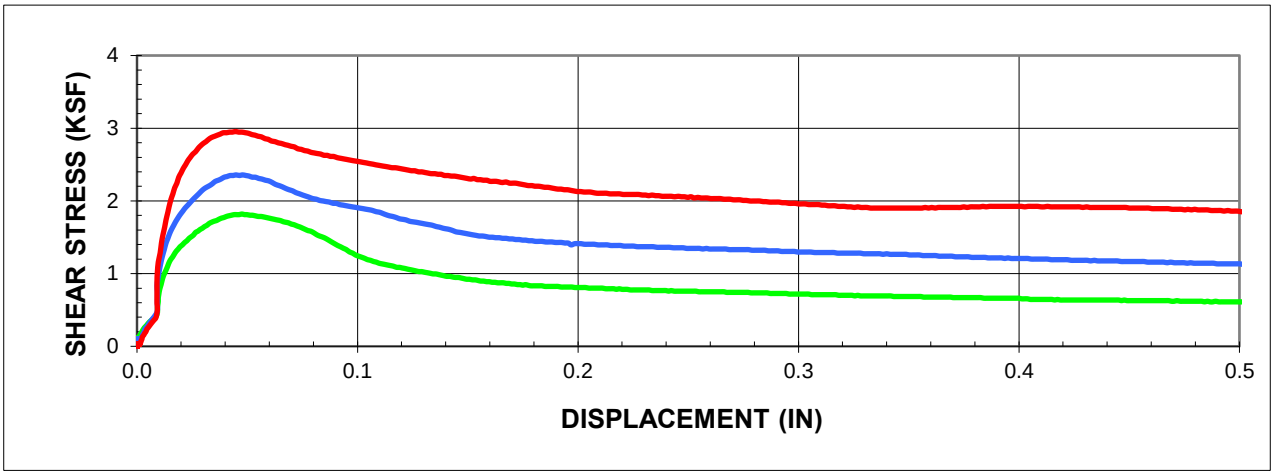
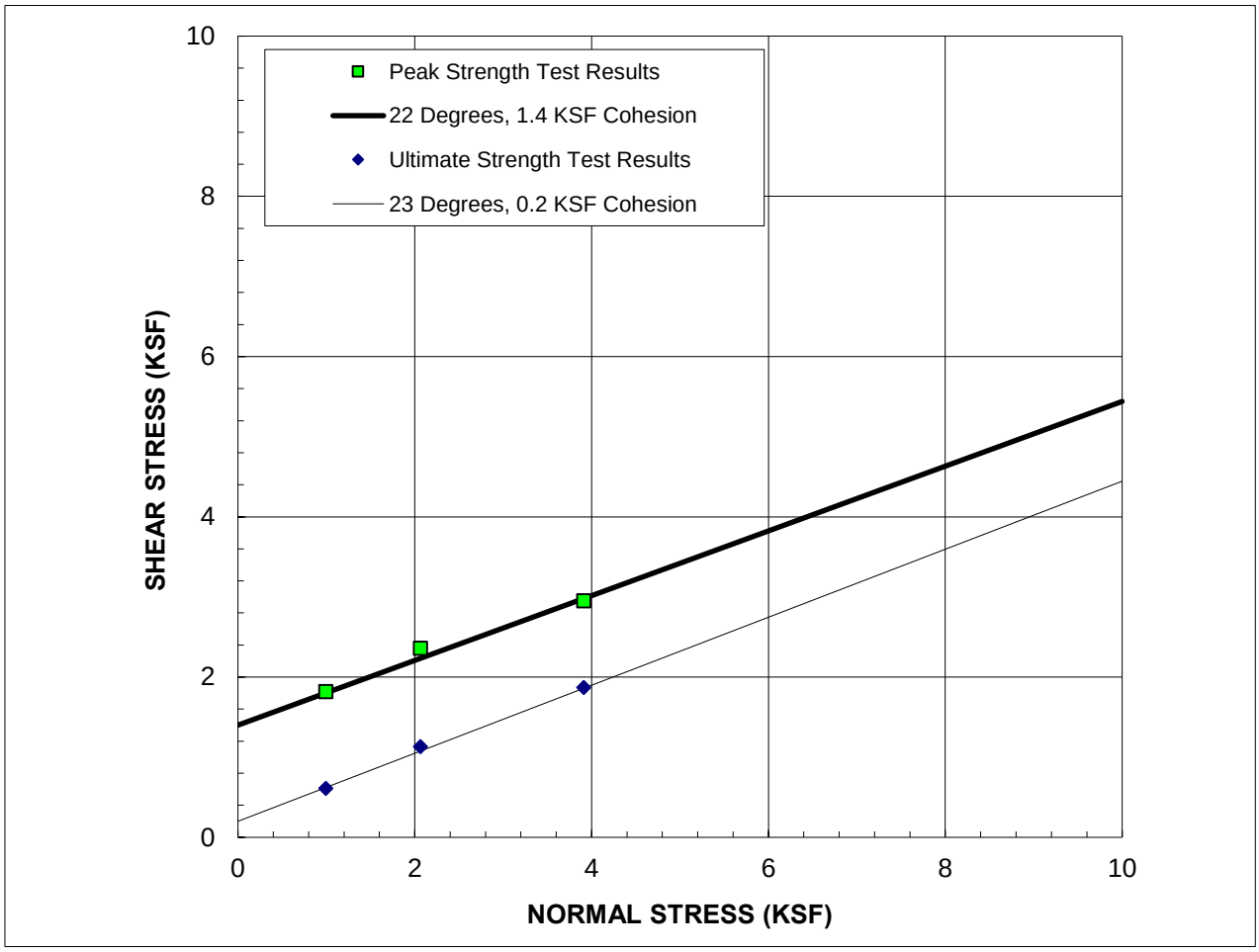
DIRECT SHEAR TEST RESULTS

Project No.: LA1143

FIGURE B-2d





SAMPLE: A-13-006 R8@30'

Description: Calabasas Formation (Tcb)

STRAIN RATE: 0.0025 IN/MIN

(Sample was consolidated and drained)

	PEAK	ULTIMATE
ϕ'	22 ^{o}	23 ^{o}
c'	1.40 KSF	0.20 KSF

	IN-SITU	AS-TESTED
γ_d	92.0 PCF	92.0 PCF
w_c	31.1 %	33.1 %

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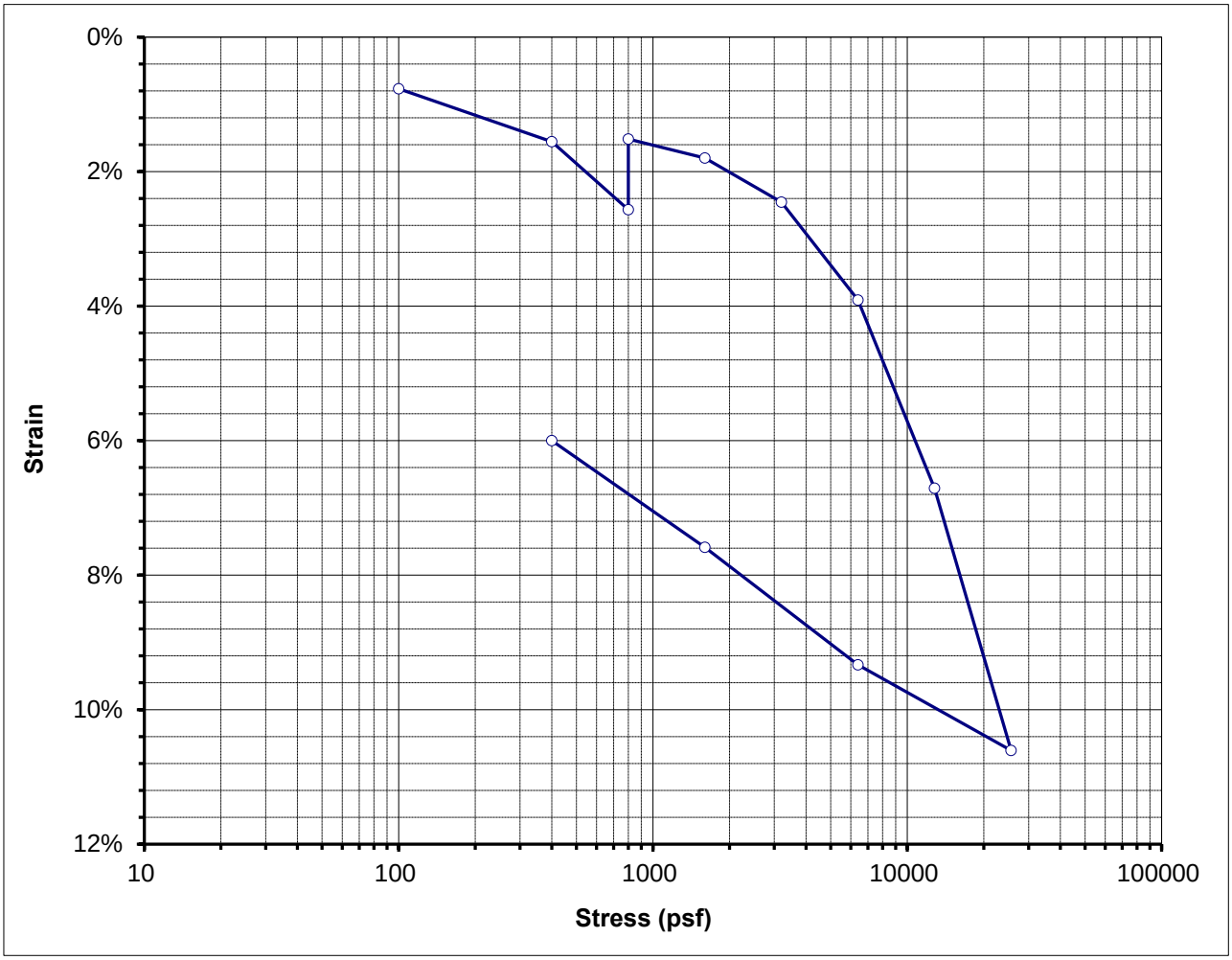
DIRECT SHEAR TEST RESULTS

Project No.: LA-1143

FIGURE B-2e

CONSOLIDATION TEST RESULTS
ASTM D-2435



Boring No.	A-13-002	Sample Depth	7.5 ft
Sample No.	R3	USCS	CH
Depth (feet)			

BEFORE TEST

Initial Moisture Content:	25.6%	
Initial Dry Unit Wt:	96.8	pcf
Initial Total Unit Wt.:	121.7	pcf
Initial Void Ratio:	0.8202	
Initial Degree of Saturation:	88.3%	

AFTER TEST

Final Moisture Content:	25.8%	
Final Dry Unit Wt:	102.0	pcf
Final Total Unit Wt.:	128.3	pcf
Final Void Ratio:	0.7282	
Final Degree of Saturation:	100.0%	

Water Added at: 800 psf

ATTERBERG LIMITS					
LL=	53	PL=	23	PI=	30

Assumed Specific Gravity of Solids, Gs: 2.83

PRESSURE (psf)	SAMPLE STRAIN	VOID RATIO
100	0.77%	0.8062
400	1.56%	0.7919
800	2.57%	0.7735
800	1.52%	0.7926
1600	1.80%	0.7874
3200	2.45%	0.7755
6400	3.91%	0.7490
12800	6.71%	0.6981
25600	10.61%	0.6271
6400	9.33%	0.6503
1600	7.59%	0.6821
400	6.00%	0.7110

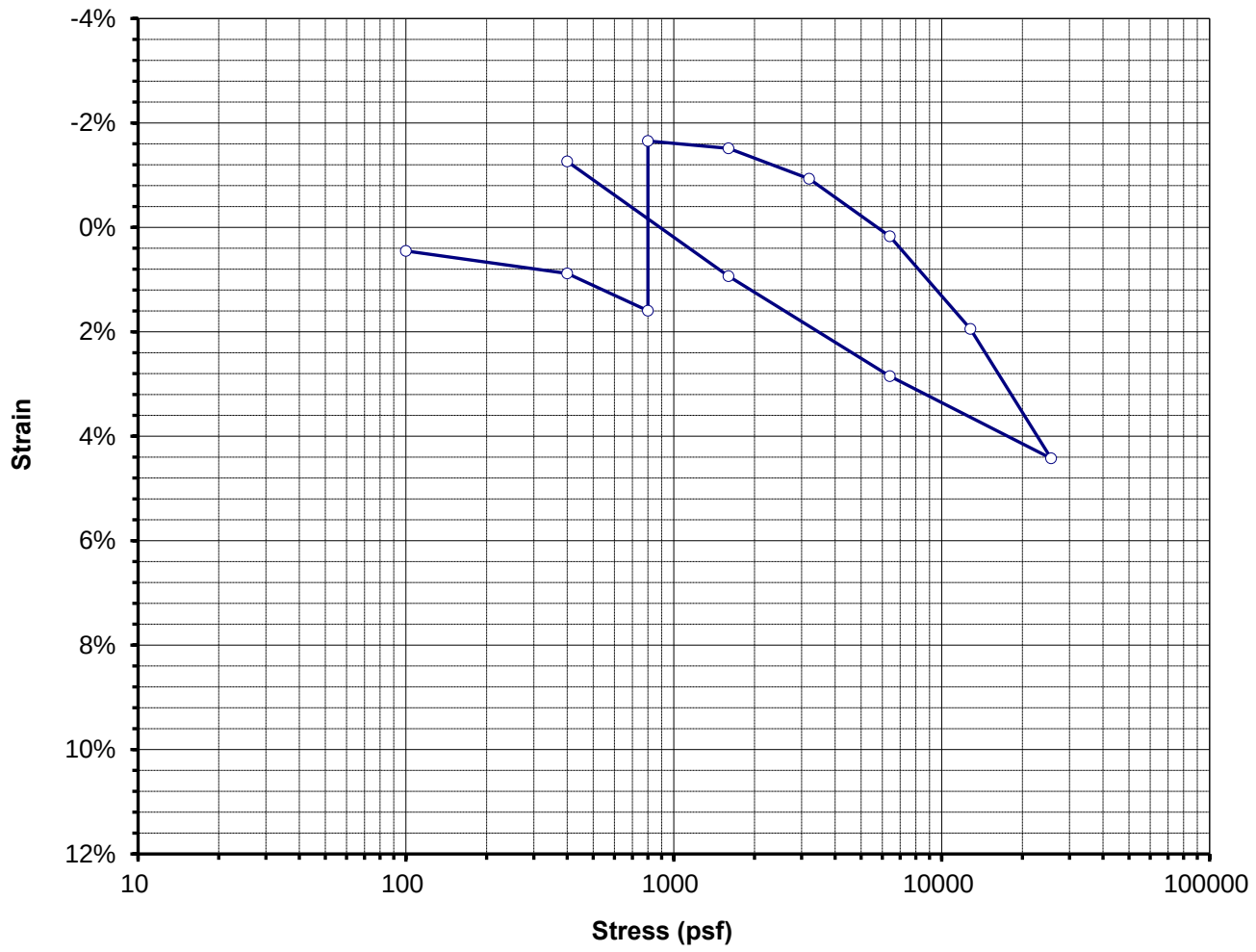
PROJECT NUMBER: LA - 1143

PROJECT NAME: Palo Comado Bridge Widening

FIGURE B-3a

GROUP DELTA

CONSOLIDATION TEST RESULTS
ASTM D-2435



Boring No.	A-13-004	Sample Depth	25 ft
Sample No.	R7	USCS	Tcb

BEFORE TEST

Initial Moisture Content:	22.7%	
Initial Dry Unit Wt:	103.4	pcf
Initial Total Unit Wt.:	126.8	pcf
Initial Void Ratio:	0.9441	
Initial Degree of Saturation:	77.3%	

AFTER TEST

Final Moisture Content:	26.9%	
Final Dry Unit Wt:	107.6	pcf
Final Total Unit Wt.:	136.6	pcf
Final Void Ratio:	0.8673	
Final Degree of Saturation:	99.9%	

Water Added at: 800 psf

ATTERBERG LIMITS					
LL=	N/M	PL=	N/M	PI=	N/M

Assumed Specific Gravity of Solids, Gs: 3.22

PRESSURE (psf)	SAMPLE STRAIN	VOID RATIO
100	0.45%	0.9353
400	0.88%	0.9269
800	1.59%	0.9131
800	-1.65%	0.9763
1600	-1.51%	0.9735
3200	-0.93%	0.9622
6400	0.17%	0.9408
12800	1.95%	0.9063
25600	4.42%	0.8581
6400	2.85%	0.8887
1600	0.93%	0.9259
400	-1.26%	0.9687

PROJECT NUMBER: LA-1143

PROJECT NAME: Palo Comado Bridge Widening

FIGURE B-3b

GROUP DELTA

EXPANSION INDEX OF SOIL

ASTM D-4829-10 / UBC 29-2

Project Name	: Palo Comado Bridge Widening				
Project No.	: LA-1143	**Sampled By :**	Steve S.	**Date :**	
Boring No.	: HA-13-007	**Prepared By :**	Eric Y.	**Date :**	09/21/13
Sample No.	: B-1	**Test By :**	Eric Y.	**Date :**	09/23/13
Depth (ft/m)	: 0-5 ###	**Calculated By :**	Eric Y.	**Date :**	09/24/13
Location	:	**Checked By :**		**Date :**	
Description	: Fat Clay (CH)				

Sample Preparation

Weight of Total Soil	3271.50	**Weight of Soil Retained on No. 4 Sieve**	50.70	**% Passing No. 4 Sieve**	98.45

Trail	**Field**	**2**	**3**	**4**	**Tested**	**M & D After Test**	
Container No.	SP3	SP3				**Container No.**	
Weight of Wet Soil + Container (gm)	577.60	411.70				**Wet Soil+Cont.+Ring**	
Weight of Dry Soil + Container (gm)	512.60	381.10				**Dry Soil+Cont.+Ring**	
Weight of Container (gm)	192.10	192.10				**Wt. of Container**	
Moisture Content (%)	20.28	16.19			16.19	**Moisture Content**	
Weight of Wet Soil + Ring (gm)	565.20	552.90					
Weight of Ring (gm) No. 1.0	202.58	202.58			202.58		
Weight of Wet Soil (gm)	362.62	350.32					
Wet Density of Soil (pcf)	109.38	105.67				**Wet Density (pcf)**	
Dry Density of Soil (pcf)	90.94	90.95				**Dry Density (pcf)**	
Precent Saturation of Soil $S_{(Meas.)}$	64.15	51.22			51.22	**(%) Saturation**	

Loading Machine No.

Date	Reading Time	Elapsed Time	Dial Reading	Expansion
09/23/13	8:50:00	0:10:00		0.0000
09/23/13				
09/23/13	9:00:00	**0:00:00**	**0.5000**	**0.0000**
Add Distilled Water to Sample				
			0.5000	0.0000
	10:00:00	1:00:00	0.5770	0.0770
	11:00:00	2:00:00	0.5800	0.0800
	12:00:00	3:00:00	0.5820	0.0820
	14:00:00	5:00:00	0.5830	0.0830
	17:00:00	8:00:00	0.5840	0.0840
09/24/13	7:30:00	22:30:00	0.5850	0.0850
09/24/13	9:00:00	0:00:00	0.5850	0.0850

Remark :

1. *Screen sample through* **No. 4** *Sieve*
2. *Sample should be compacted into a metal ring of the Degree of Saturation of* **50 +/- 2% (48 - 52).**
3. *Inundated sample in distilled water to 24 h, or until the rate of expansion > (0.0002 in./h), no less than 3 h.*

Volume of Mold (ft^3)	0.00731	**Specific Gravity**	2.70
Rammer Weight (lb.)	5.0	**Blows/Layer**	15
Vertical Confining Pressure		1.0 (lbf/in^2) / 6.9 (kPa)	

$$(\%)\ S = \frac{S.G. \times W \times Dd}{Wd \times S.G. - Dd}$$

S.G.=Specific Gravity, **W**=Water Content
Dd=Dry Soil Density, **Wd**=Unit Wt. of Water

$$E.I._{(meas)} = \frac{\text{Change in High}}{\text{Initial Thickness}} \times 1000 = \mathbf{85.00}$$

$$\text{Expansion Index}_{(50)} = EI_{(meas.)} - (50 - S_{(meas.)}) \times \frac{65 + EI_{(meas.)}}{220 - S_{(meas.)}}$$

86	**Medium**

Expansion Index	Potential Expansion
0 - 20	*Very Low*
21 - 50	*Low*
51 - 90	*Medium*
91 - 130	*High*
> 130	*Very High*

GROUP DELTA

Figure: B-4

SAMPLE NO.: HA-13-007 **SAMPLE DATE:** 9/9/13

SAMPLE LOCATION: B-1 @ 0' - 5' **TEST DATE:** 9/27/13

SAMPLE DESCRIPTION: Dark yellow brown lean clay (CL)

LABORATORY TEST DATA

	TEST SPECIMEN	1	2	3	4	5	
A	COMPACTOR PRESSURE	130	160	200			[PSI]
B	INITIAL MOISTURE	16.9	16.9	16.9			[%]
C	BATCH SOIL WEIGHT	1200	1200	1200			[G]
D	WATER ADDED	120	112	104			[ML]
E	WATER ADDED (D*(100+B)/C)	11.7	10.9	10.1			[%]
F	COMPACTION MOISTURE (B+E)	28.6	27.8	27.0			[%]
G	MOLD WEIGHT	2111.6	2114.6	2099.0			[G]
H	TOTAL BRIQUETTE WEIGHT	3151.1	3110.0	3087.2			[G]
I	NET BRIQUETTE WEIGHT (H-G)	1039.5	995.4	988.2			[G]
J	BRIQUETTE HEIGHT	2.65	2.52	2.48			[IN]
K	DRY DENSITY (30.3*I/((100+F)*J))	92.4	93.6	95.0			[PCF]
L	EXUDATION LOAD	3200	4479	5976			[LB]
M	EXUDATION PRESSURE (L/12.54)	255	357	477			[PSI]
N	STABILOMETER AT 1000 LBS	53	48	42			[PSI]
O	STABILOMETER AT 2000 LBS	123	112	103			[PSI]
P	DISPLACEMENT FOR 100 PSI	4.46	4.34	4.27			[Turns]
Q	R VALUE BY STABILOMETER	14	20	24			
R	CORRECTED R-VALUE (See Fig. 14)	16	20	24			
S	EXPANSION DIAL READING	0.0031	0.0046	0.0069			[IN]
T	EXPANSION PRESSURE (S*43,300)	134	199	299			[PSF]
U	COVER BY STABILOMETER	1.55	1.48	1.40			[FT]
V	COVER BY EXPANSION	1.03	1.53	2.30			[FT]

TRAFFIC INDEX:	7.5
GRAVEL FACTOR:	1.30
UNIT WEIGHT OF COVER [PCF]:	130
R-VALUE BY EXUDATION:	17
R-VALUE BY EXPANSION:	20
R-VALUE AT EQUILIBRIUM:	17

*Note: Gravel factor estimated from pavement section using CTM 301, Section C, Part b.

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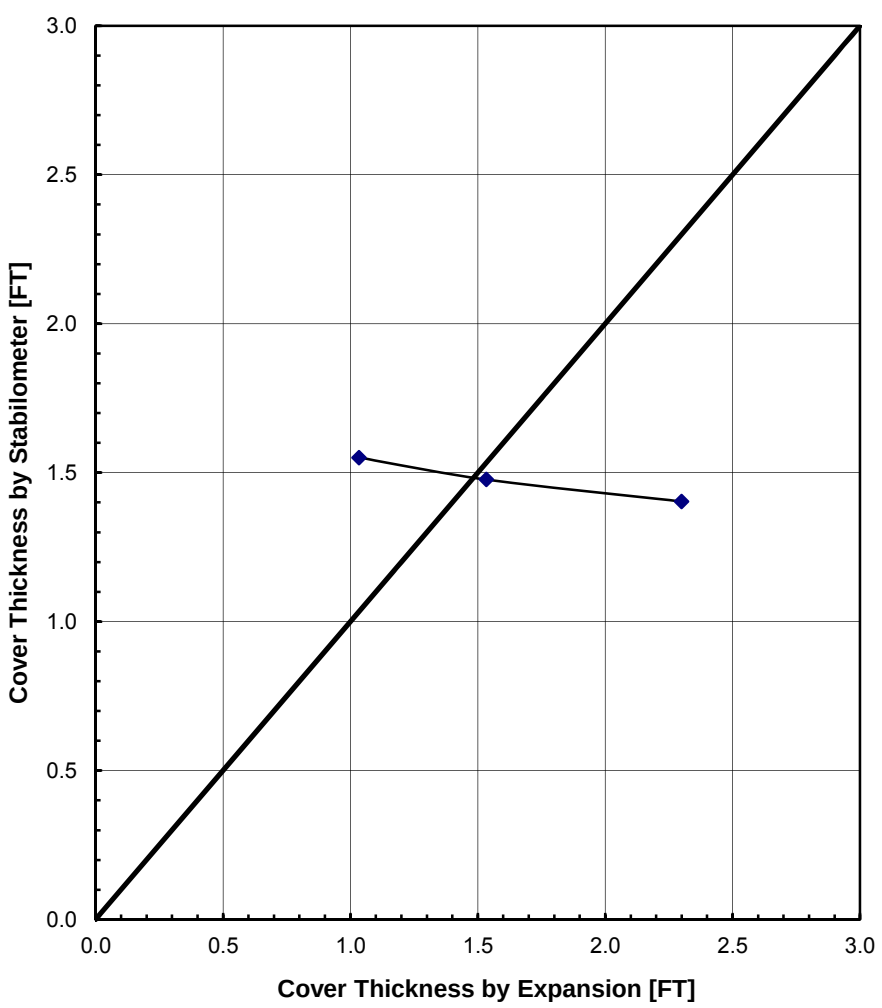
R-VALUE TEST RESULTS

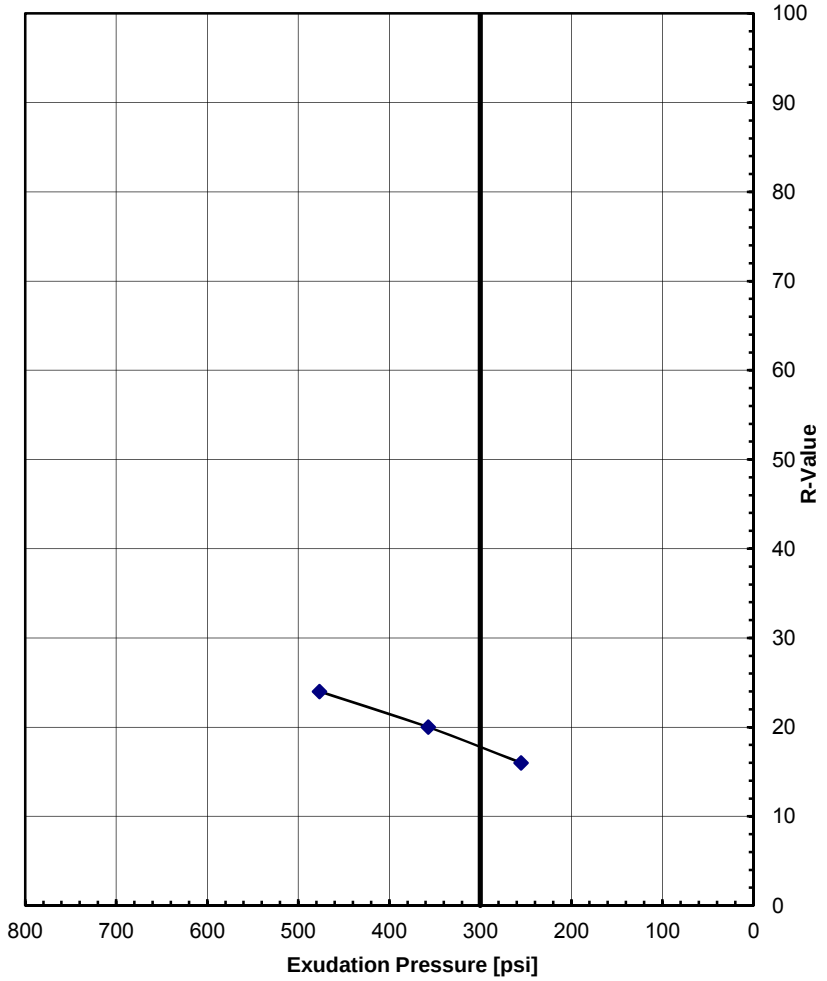
Document No. 13-0194
Project No. LA1143

FIGURE B-5a

Sample: HA-13-007, B-1 @ 0' - 5'

R-Value at Equilibrium: 17





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COVER AND EXUDATION CHARTS

Document No. 13-0194
Project No. LA1143
FIGURE B-5b

BORING NO.: A-13-006, B-1 **SAMPLE DATE:** 6/23/14

BORING LOCATION: 0-5' **TEST DATE:** 6/26/14

SAMPLE DESCRIPTION: Dark yellow brown fat clay (CH)

LABORATORY TEST DATA

	TEST SPECIMEN	1	2	3	4	5	
A	COMPACTOR PRESSURE	145	100	80			[PSI]
B	INITIAL MOISTURE	6.0	6.0	6.0			[%]
C	BATCH SOIL WEIGHT	1100	1100	1100			[G]
D	WATER ADDED	140	160	185			[ML]
E	WATER ADDED (D*(100+B)/C)	13.5	15.4	17.8			[%]
F	COMPACTION MOISTURE (B+E)	19.5	21.4	23.8			[%]
G	MOLD WEIGHT	2108.0	2113.3	2111.5			[G]
H	TOTAL BRIQUETTE WEIGHT	3162.0	3136.6	3167.3			[G]
I	NET BRIQUETTE WEIGHT (H-G)	1054.0	1023.3	1055.8			[G]
J	BRIQUETTE HEIGHT	2.53	2.51	2.64			[IN]
K	DRY DENSITY (30.3*I/((100+F)*J))	105.6	101.7	97.9			[PCF]
L	EXUDATION LOAD	7795	5567	3427			[LB]
M	EXUDATION PRESSURE (L/12.54)	622	444	273			[PSI]
N	STABILOMETER AT 1000 LBS	50	59	66			[PSI]
O	STABILOMETER AT 2000 LBS	121	135	144			[PSI]
P	DISPLACEMENT FOR 100 PSI	3.94	4.47	5.72			[Turns]
Q	R VALUE BY STABILOMETER	17	9	5			
R	CORRECTED R-VALUE (See Fig. 14)	17	9	5			
S	EXPANSION DIAL READING	0.0041	0.0022	0.0010			[IN]
T	EXPANSION PRESSURE (S*43,300)	178	95	43			[PSF]
U	COVER BY STABILOMETER	0.80	0.88	0.92			[FT]
V	COVER BY EXPANSION	1.37	0.73	0.33			[FT]

TRAFFIC INDEX:	4.5
GRAVEL FACTOR:	1.49
UNIT WEIGHT OF COVER [PCF]:	130
R-VALUE BY EXUDATION:	6
R-VALUE BY EXPANSION:	10
R-VALUE AT EQUILIBRIUM:	6

*Note: Gravel factor estimated from required AC pavement section using CT301, Part 6.B.2.

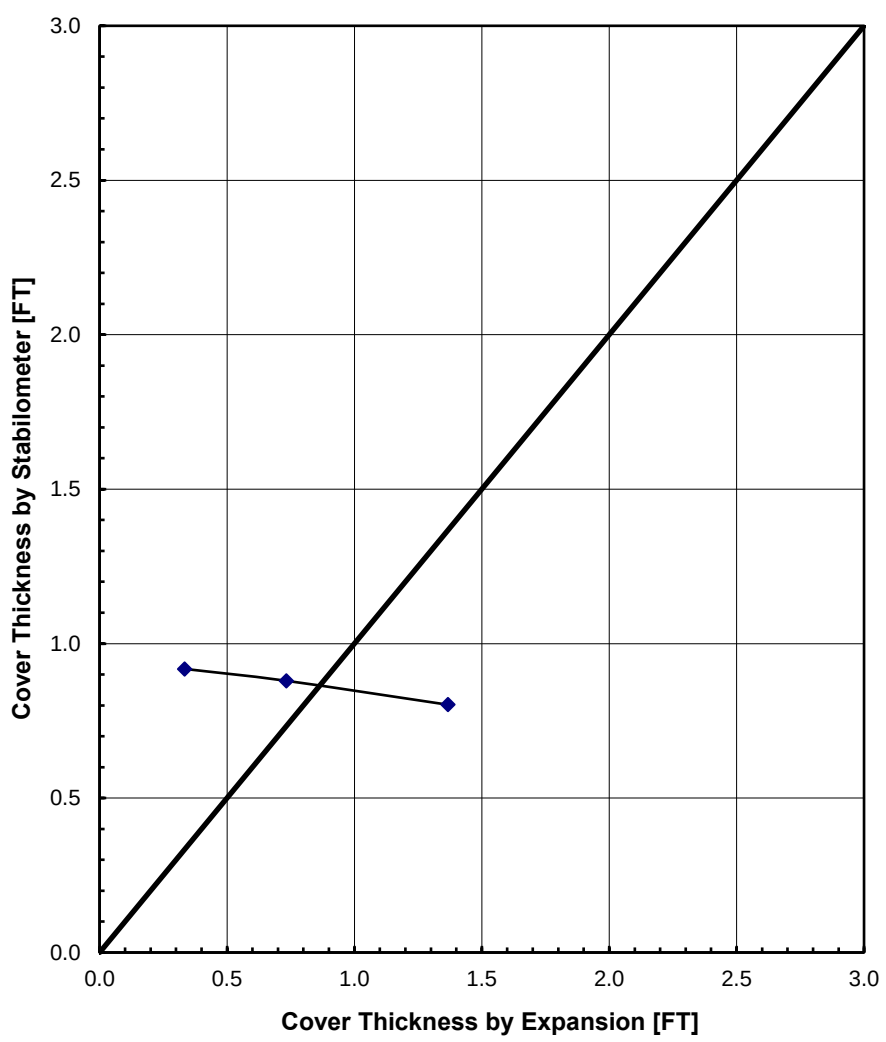
GROUP DELTA

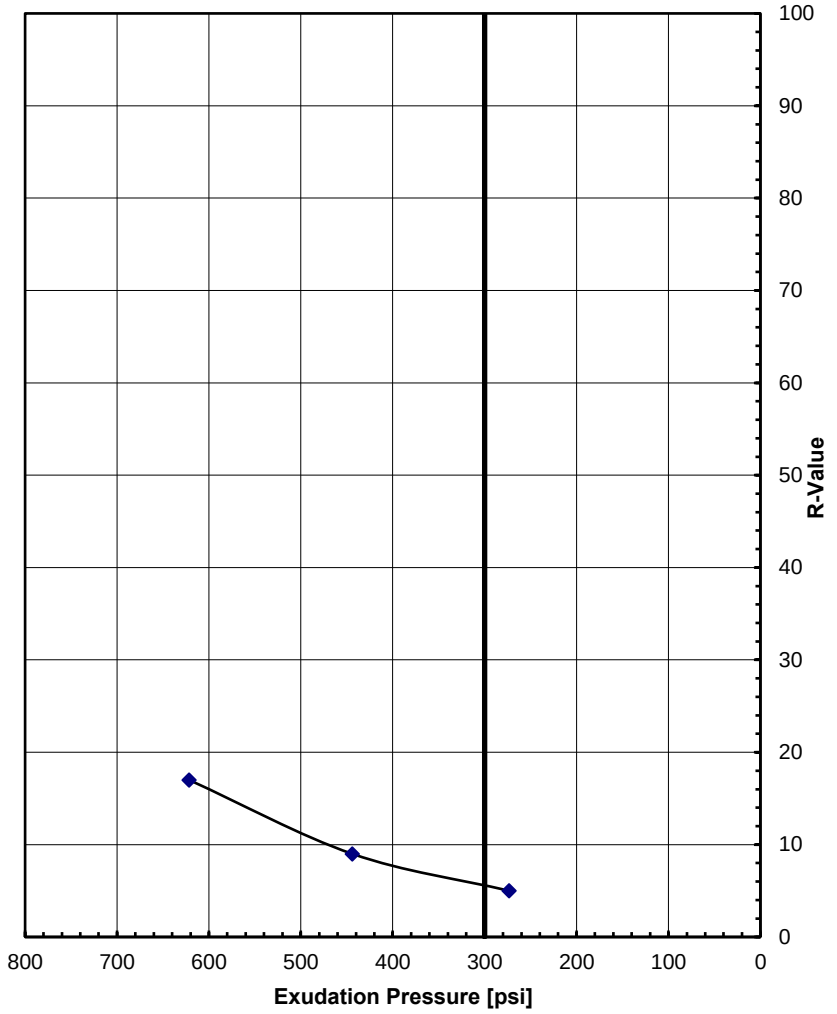
R-VALUE TEST RESULTS

Document No.
Project No. LA1143
FIGURE B-5c

Sample A-13-006, B-1

R-Value at Equilibrium: 6





GROUP DELTA

COVER AND EXUDATION CHARTS

Document No.
Project No. LA1143
FIGURE B-5d

FED. ROAD DIV. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CALIF.			57	77

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
07	LA	23	W.C.	1	15

VII | LA | 5

PM. 33.7

101

Date approved: 7-22-65

18+50
El. 953.53

+ 0.370 %

20+50.00 B.V.C.
El. 934.27

50' V.C. - Rc = 3,636.4' (0.5%)

21+00.00 E.V.C.
El. 934.01

-1.404 %

PROFILE GRADE

Concrete
Cast-in-Drilled Hole Piles

Location	Specified Tip Elev.
Abut. No. 1	888.0
Bent " 2	885.0
Bent " 3	882.0
Bent " 4	888.0
Abut " 5	888.0

S.B. — E.B.

Total Length of Bridge = 234'-0"

1'-0" | 35'-0" | 90'-0" | 75'-0" | 29'-0" | 1'-0"

℄ Abut. — ℄ Abut.

17.00' Min. Clr.

15'-0" Min. Clr. (Ultimate)

① Far Side
② Near Side

Approx. Orig. Ground along Rt. Edge of Deck

El. 907.0

Abut. #1 El. 900.0 | Bent #2 | Bent #3 | Bent #4 | Abut. #5

8" Future Surfacing

Datum Line El. 890.0

18 | 19 | 20 | 21

Average CIDH pile tip elevation

ELEVATION
Scale: 1" = 20'-0"

① = Point Bridge No. & Date
② = Point Chesebro Rd. O.C.
⊗ Indicates point of minimum vertical clearance.

℄ Chesebro Rd. O.C.

7'-1" | 32'-0" Roadway | 1'-4"
6" | 5'-0" | 4'-0" | 12'-0" | 12'-0" | 4'-0"

Pipe Railing — Profile Grade — Barrier Railing Type 1

-2% — -2% & Varies

Precast Prestressed Girders in Spans # 2 & 3
Precast or Cast-in-Place Option in Spans 1 & 4

TYPICAL SECTION
Scale: 1/8" = 1'-0"

℄ Freeway
Δ = 40° 19' 26"
R = 1999.95'
T = 734.35'
L = 1407.55'
⊙ N 162,764.015
E 64,217.688

TO VENTURA

TO LOS ANGELES

Top of cut — Toe of cut — Varies — Top of fill — Toe of fill

Initial Constr.

℄ Ventura Frwy.

R=1999.95 — 333

Chain Link Fence

1½:1

R=350' — 17+65.00 E.C.

16+74.00 B.C.
El. 933.62

℄ Ber. #2
19+10.00

20+00.00 P.O.T. Chesebro Rd.
332+23.94 P.O.C. Ventura Frwy.

℄ Bent #4
20+78.00

21+08.00 E.B.
El. 933.90

℄ Chesebro Rd. O.C.
N 08° 05' 35" E
(Radial)

22+05.00 P.O.T. Chesebro ℄ On Ramp

21+92.00 P.O.T. Chesebro ℄ Off Ramp

℄ On Ramp
R=350'
1 Type B1 Curb
N 81° 54' 24" W

℄ Off Ramp
R=350'
1 Type B1 Curb
N 65° 27' 24" W

32'-0" Roadway

935.11 | 935.19 | 935.28 | 935.37 | 935.42 | 935.51 | 935.56 | 935.67 | 935.71 | 935.97 | 935.97 | 935.71 | 935.69 | 935.72

Top of fill — Toe of fill — Top of fill — Toe of fill

Varies

Existing

Future

Future

8' | 12' | 24' | 8' | 24' | 2' | 18' | 18' | 2' | 24' | 8' | 24' | 8' | 3'

9' Min. — 10' Min.

332

SETTLEMENT ELEVATIONS
B - Top of outside bolt in barrier railing post
N - Copper nail in top of concrete barrier railing

B.M. No. 335-21AC-56 El. 907.95
Std. L & T.'s in rock at the west edge of D.I. on the north side 315-62.91 ℄ of 100'± E Chesebro Rd. and set in "T.P. 197"

B.M. No. 321-21AC-56 El. 894.52
Std. alum. cap on 12" R.C.P. in conc. 0.2'± below F.L. Median sta. 8 on ℄ Ventura Frwy. at sta. 321+39.63 B.C.

PLAN
Scale: 1" = 20'-0"

L.L. = H20-S.6-44
& Alternative

For General Notes See Sheet No. 2

BRIDGE DEPARTMENT
··· DESIGN SECTION ···
4

Project Designer: E.I. Sage
Chief Designer: R.A. Fetter

DESIGN	By R.W.A., R.S.A. 11/61	Checked	
DETAILS	By Charles W. Lum 7-61	Checked	
QUANTITIES	By [illegible] 12-61	Checked	
SPECIFICATIONS	By [illegible]	Prep. for Spec. Approval	

Approval Recommended by: [illegible] Chief of Design — Civil Engr. License No. [illegible]

AS BUILT PLANS
Contract No. 63-7V13C56
Date Completed
Document No. 7000 2373

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 9-4-63, AS SUBMITTED BY RESIDENT ENGINEER Fred G. Michaels, P.E.
TRACINGS CORRECTED BY M.M.M. DATE: 10-24-63

INDEX TO PLANS

APPROXIMATE QUANTITIES

*STRUCTURE EXCAVATION (BRIDGE)	310 C.Y.
*STRUCTURE BACKFILL (BRIDGE)	180 C.Y.
16" C.I.D.H. CONCRETE PILING	1,210 L.F.
FURNISHING PC/PS CONCRETE GIRDERS (90'-0")	6 EA.
FURNISHING PC/PS CONCRETE GIRDERS (78'-0")	6 EA.
ERECTING PC/PS CONCRETE GIRDERS	12 EA.
*CLASS "A" CONCRETE (BRIDGE)	540 C.Y.
RUBBER WATERSTOPS	128 L.F.
JOINT SEALER	128 L.F.
*BAR REINFORCING STEEL (BRIDGE)	109,000 LBS.
MISCELLANEOUS METAL (BRIDGE)	400 LBS.
BARRIER RAILING (TYPE 1)	528 L.F.
PIPE BRIDGE RAILING (3'-6")	262 L.F.

*FINAL QUANTITIES

Contract # 63-7V13C56

Note: Route Change (VII-LA-101-5)

VENTURA FREEWAY

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHESEBRO ROAD OVERCROSSING

LOCATED ABOUT 400 FEET EAST OF THE INTERSECTION OF EXISTING CHESEBRO RD. AND VENTURA FRWY. IN LOS ANGELES COUNTY

GENERAL PLAN

SCALE AS NOTED | BRIDGE 53-1878 | FILE | DRAWING C-531678-1

Disregard prints bearing earlier numbers → PREL. DRAWING No. P-531678-1

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE ___ SIGNATURE ___ TITLE ___

MICROFILM - STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS - MICROFILM

SCALE 1" = 50' — SCALE 1" = 20'

FED. ROAD DIV. NO.	STATE	F. A. PROJECT NO.	SHEET NO.	TOTAL SHEETS
7	CALIF.		53	91

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
VII	LA	5	C	3	75

VII LA 5

Date Approved: December 8, 1962

335+37.72 E.C. ℄ Ventura Frwy

N 164,753.718
E 64,186.391

Tank

S 85° 08' 12" W

TO VENTURA

908

910

912

914

916

918

920

922

924

926

928

930

932

934

85' | 24' Rdwy | 2' Shoulder | 16' Median | 2' Shoulder | 24' Rdwy | 9'

Shoulder

A.C.

Dirt

A.C.

R = 1999.95

333

331

℄ ON-RAMP

S 79° 34' 41" W

20+00.00 P.O.T. ℄ Chesebro Rd. O.C.
332+23.93 P.O.C. ℄ Ventura Frwy.

N 164,734.045
E 64,499.240

22+05.00 P.O.T. ℄ Chesebro Rd O.C.
℄ ON-Ramp

17+85.00 E.C. ℄ Chesebro Rd. O.C.

℄ Chesebro
Δ = 39° 14' 25"
R = 350
T = 124.77
L = 239.71

℄ Abut. #1
18+75.00

℄ Bent #2
19+10.00

℄ Bent #3

Bent #4 similar to Bent #2

℄ Bent #4
20+78.00

℄ Abut. #5
21+07.00

Abut. #5 is similar to Abut. #1

R = 350'

℄ CHESEBRO RD. O.C.

N 08° 05' 35" E

18 19 21 22

900.0

903.0

907.0

℄ Frwy
Δ = 40° 19' 26"
R = 1999.95
T = 734.33
L = 1,407.55

N 162,754.015
E 64,217.688

14 Wire Fence

321+30.19 B.C. ℄ Ventura Frwy

N164,298.839
E 65,487.850

℄ Exist E.P.

℄ VENTURA FRWY

TO LOS ANGELES

N 50° 34' 22" W

63 Wire Fence

N 63° 21' 44" W

℄ OFF-RAMP

21+92.00 P.O.T. ℄ Chesebro Rd O.C.
℄ OFF-Ramp

Notes:
Bottom of footing Elev shown thus: 000.0
Abuts & Bents are normal to ℄ Chesebro Rd. O.C.
For Pile Layout see Sheets No. 4 & 5

BENCH MARKS

B.M. No. 335-2LAC-58 Elev 907.95
Fd. L.E.T. in middle west edge of D.I. on ℄ vent. at sta. 335+62.91 P.O.T. 100' ± E. Chesebro Rd. painted T.P. 197"

B.M. No 321-2LAC-58 Elev. 896.52
Fd. alum. cap on "T Bar" in conc., 0.2' ± below FL. Median strip on ℄ vent at sta. 321+39.63 B.C.

AS BUILT PLANS
Contract No. 63-7V13C58
Date Completed
Document No. 7000 2373

CONTOURS CHECKED & VERIFIED IN FIELD
Date: June-1961
by: J.E.B.

Drawn By H R Mariscal 6-26-61
Checked By E.C. Mitchell 6-27-61

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 7-16-63 AS SUBMITTED BY RESIDENT ENGINEER Fred G. Mitchell, A.D.E.
TRACINGS CORRECTED BY: M.J.K. DATE: 10-25-63

BRIDGE DEPARTMENT
DESIGN SECTION

Section Supervisor R. A. Foster

DESIGN	By E.I.S.	Date 8-61
	Checked By E.C. Bowman	
DETAILS	By Mar Wan	Date 11-61
	Checked By E.C. Bowman	
QUANTITIES	By E.I.S.	Date 12-61
	Checked By E.C. Bowman	

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHESEBRO ROAD OVERCROSSING

FOUNDATION PLAN

SCALE 1"=20' | BRIDGE 53-1678 | FILE 53 | DRAWING C-53/678-3

Disregard prints bearing earlier numbers → PREL. DRAWING NO. P- 53/678 [illegible]

59

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

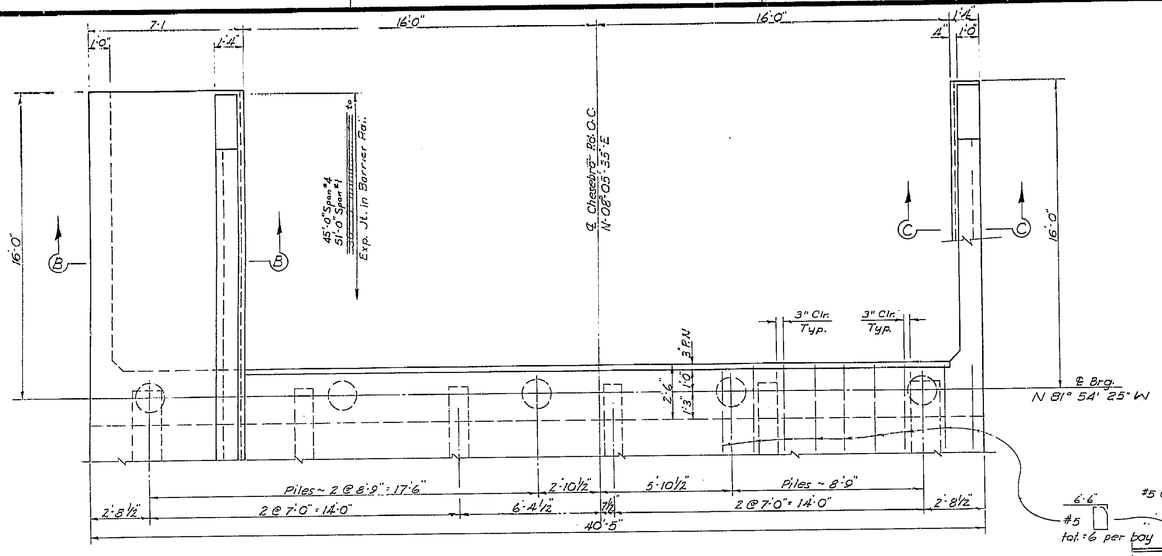
DATE 7-11-63 SIGNATURE [illegible] TITLE [illegible]

FED. ROAD DIV. NO.	STATE	F. A. PROJECT No.	SHEET NO.	TOTAL SHEETS
7	CALIF.		60	131

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
VII	LA	5			

Chief Engineer — Legislative Mandate

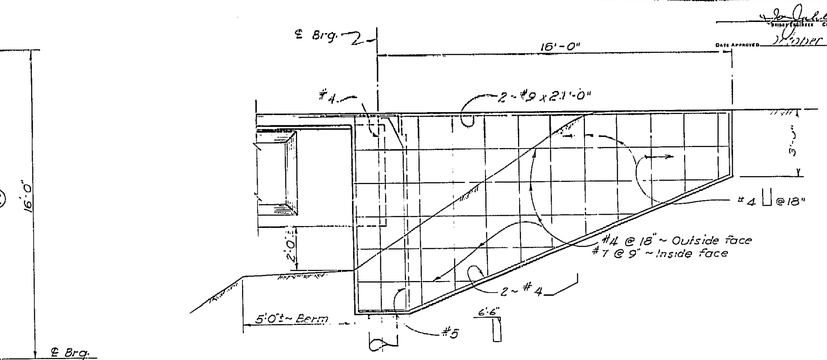
Date Approved: October 3, 1962



PLAN

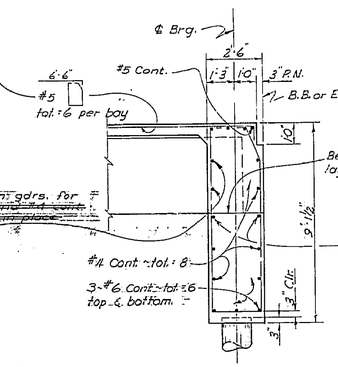
Scale: 3/8" = 1'-0"

Note: Abutment #2 shown, Abutment #1 is similar



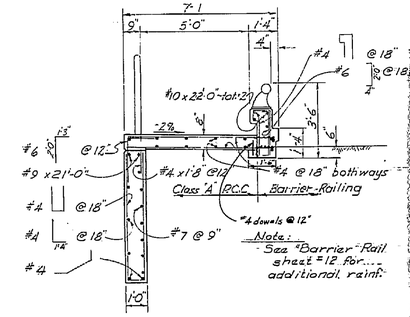
WINGWALL ELEVATION

Scale: 3/8" = 1'-0"



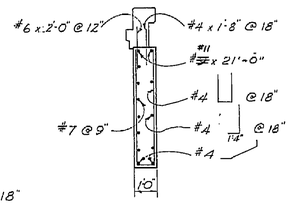
SECTION A-A

Scale: 3/8" = 1'-0"



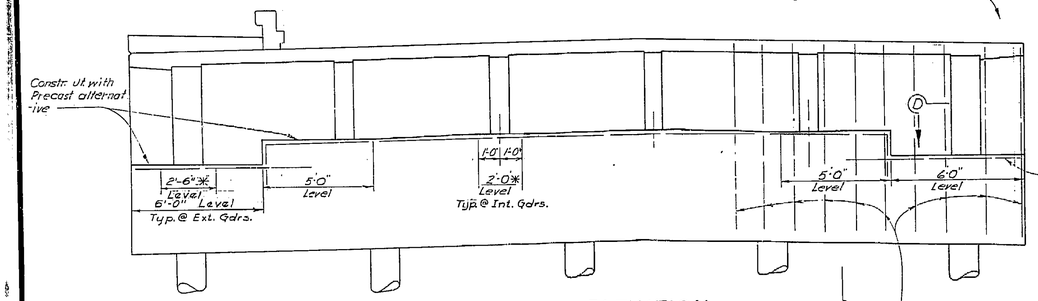
SECTION B-B

Scale: 3/8" = 1'-0"



SECTION C-C

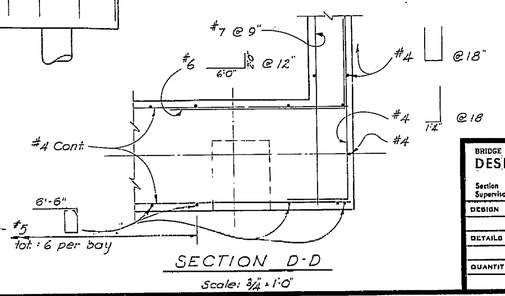
Scale: 3/8" = 1'-0"



ELEVATION

Scale: 3/8" = 1'-0"

* For Precast Option — Finish or grind to a smooth surface, (level normal to ℄ Gdrs, and at slope of gdr. longit. to ℄ gdr.) set girders in a thin layer of neat cement grout.



SECTION D-D

Scale: 3/4" = 1'-0"

Barrier Railing not shown.

Note:
For Barrier Railing Details not shown See Sheets #12 & 13

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 7-16-63, AS SUBMITTED BY RESIDENT ENGINEER E. J. McAdams, B.P.R.
TRACINGS CORRECTED BY: M.J.R. DATE: 10-25-63

AS BUILT PLANS
Contract No. 63-7V13C58
Date Completed
Document No. 7000 2373

BRIDGE DEPARTMENT
DESIGN SECTION 4
Section Supervisor R. E. Fiske

DESIGN	By F.L.S., R.S.B.	11-61
DETAILS	By C. J. Perna	11-61
QUANTITIES	By	

Disregard prints bearing earlier revision dates →

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHESEBRO ROAD OVERCROSSING

ABUTMENT DETAILS

SCALE AS SHOWN	BRIDGE 53-1678	FILE	DRAWING C. 531678-4

PRELIMINARY DRAWING No. P-531678-3

REVISION DATES

60

74

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 1/11/72 SIGNATURE _____ TITLE _____

MICROFILM - STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS - MICROFILM

VII	LA	5

FED. ROAD DIST./NO.	STATE	F. A. PROJECT NO.	SHEET NO.	TOTAL SHEETS
7	CALIF.		51	71

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
VII	LA	118	C	5	75

DATE APPROVED: 12-27-63

1" x 8" x 18" Elastomeric Bearing Pad

1" Exp. Jt Filler under diaphragm between Precast Prestr. Gdrs.

1" ϕ x 2'-0" dowel with 2" ϕ x 1'-1½" Std. pipe sleeve (galv.)

℄ Chesebro Rd. O.C.

℄ Bent

7'-0" 7'-0" 6'-4½" 7½"

2'-3" 2'-6" 2'-3" Typical 17'-6" 3'-6" (Typical) 2'-10½" 1'-9" 38'-6"

HALF PLAN
Scale: 3/8" = 1'-0"

℄ Col. #1 — ℄ Col. #2

2-#10 Cont. ⓐ
2-#10 x 16'-0" ⓑ
2-#10 x 14'-0" ⓒ
2-#10 x 12'-0" ⓓ
2-#10 x 10'-0" ⓔ
2-#5 Cont. - tot. = 4
2-#10 ⓑ ⓒ
#5 tot. = 3
Level
2-#11 Cont. ⓕ
2-#11 x 15'-0" ⓖ
2-#11 x 12'-0" ⓗ
2-#11 x 10'-0" ⓙ
7@5" 2@6" 2@8" @12"± 2@8" 2@6" 9@4" 2"
#5 #5

#11 Dowels - tot. = 12
#11 Dowels - tot. = 12
#7 - tot. = 13
#7 - tot. = 17
#5 - tot. = 15 + #6 - total = 6
#7 - tot. = 13 (stagger lengthwise)
Elev. = 903.0

HALF ELEVATION
BENT NO. 3
Scale: 3/8" = 1'-0"

3'-6"
2'-6"
1½" Clr. Typ.
#11 tot. = 12 - Interior ℄ Exterior Columns
#4 @12"

COLUMN SECTION
BENT 3
Scale: 3/4" = 1'-0"

#8 x 2'-0" dowels @2'-1"
1" ϕ smooth galv. dowels
CAST-IN-PLACE OPTION

1'-0"
1½"
11½"
#8 x 2'-0" dowels
Top of Cap
1" ϕ x 2'-0" dowels
1" Exp. Jt. Mat'l
#5
1'-1"
#5 @12"

PRECAST OPTION
CAP SECTION
BENTS NO. 2 ℄ 4
Scale: 3/4" = 1'-0"

Note:
Number at ends of bars indicate distance in feet from ℄ Col. for top reinf. and from ℄ between Col. for bottom reinf.

2'-6"
a b c c b a
d e e d
5 Bar Designation
Bearing Pads
2" Chamfer
#5 See Elevation
#5 Cont.
4'-0" min.
2¾" Clr.
h f g J J g f h Bar Designation

CAP SECTION
BENT NO. 3
Scale: 3/4" = 1'-0"

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 7-19-63 AS SUBMITTED BY RESIDENT ENGINEER Fred G. Michaels D.O.S.
TRACINGS CORRECTED BY: M.J.P. DATE: 10-25-63

1" Exp. Jt Filler under diaph. between Precast Prestressed Girders

℄ Chesebro Rd. O.C.

2" ϕ x 1'-1½" Std pipe sleeve - See Sht. #

1" x 8" x 18" Elastomeric Bearing Pad

℄ Bent

7½" 7'-0" 7'-0"

2'-3" 2'-6" 2'-3" Typical 14'-7½" 2'-6" (Typical) 2'-10½" 1'-0" 38'-6"

℄ 1" ϕ x 2'-0" dowels - See Sht. #11

Bed girder ends (Precast Gdr. Alt.) on thin layer of neat cement paste. Pour diaph. between precast gdrs. in direct contact with top of cap See notes * Sheet #4

HALF PLAN
Scale: 3/8" = 1'-0"

Top of Cap, Precast Option

℄ Col. #2 — ℄ Col. #3

2-#10 Cont. ⓐ
2-#10 x 16'-0" ⓑ
2-#10 x 14'-0" ⓒ
2-#10 x 12'-0" ⓓ
2-#10 x 10'-0" ⓔ
2-#5 Cont. - tot. = 4
2-#10 ⓑ
2-#10 ⓒ
#5 tot. = 3
Level
4-#10 Cont.; 2-ⓒ & 2-ⓖ
2-#10 x 15'-0" ⓕ
2-#10 x 10'-0" ⓙ
2" 6@6" 2@6 2@8" @12"± 2@8" 6@6" 2"
#5 #5

#11 Dowels - tot. = 14
#11 Dowels - tot. = 10
#6 - tot. = 18
#6 - tot. = 12
#9 - tot. = 12
#5 - tot. = 7
Bent #2 - El. = 900.0
Bent #4 - El. = 907.0

HALF ELEVATION
BENTS NO. 2 & 4
Scale: 3/8" = 1'-0"

9'-0"
1'-6" 3'-0" 3'-0" 1'-6"
3'-0"
6'-0"
1'-6"

COLUMN NO. 2

6'-0"
1'-6" 1'-6" 1'-6" 1'-6"
3'-0"
6'-0"
1'-6"

COLUMNS NO. 1 & 3

FOOTING PLAN
Scale: 1/4" = 1'-0"

Indicates no pile
Piles in place but not used
℄ Column
1'-6" 3'-0" 2'-2" 1'-6"
3'-9½" 4'-4½" 8'-2"
1'-6" 2'-2" 2'-2" 1'-6"
Column footings #1 & #3 similar but not symmetrical about ℄ column #2

COLUMNS NO. 1 & 3
No Scale

9'-0"
1'-6" 3'-0" 3'-0" 1'-6"
3'-0"
9'-0"
1'-6"
Piles in place but not used.
1½" ℄ Column

COLUMN NO. 2

FOOTING PLAN
Scale: 3/8" = 1'-0"

3'-6"
2'-6"
1½" Clr. Typ.
#11 tot. = 14 @ Exterior Column Bents #2 & 4
#4 @12"

3'-6"
1½" Clr. Typ.
2'-6"
#4 @12"
#11 tot. = 10 @ Interior Column-Bents #2 & 4

COLUMN SECTION
BENTS 2 & 4
Scale: 3/4" = 1'-0"

BRIDGE DEPARTMENT
DESIGN SECTION 4
Section Supervisor: R.F. Fetter

DESIGN	By E.J.S. R.S.B. 11/61	Checked F.B. Burrows
DETAILS	By J.P.C. 11-61	Checked F.B. Burrows
QUANTITIES	By J.P.C. 12/61	Checked F.B. Burrows

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHESEBRO ROAD OVERCROSSING
BENT DETAILS

SCALE AS SHOWN | BRIDGE 53-1c78 | FILE | DRAWING C-531678-5

PRELIMINARY DRAWING NO. P-531678-9

REVISION DATES

Disregard prints bearing earlier revision dates →

AS BUILT PLANS
Contract No. 63-7V136
Date Completed
Document No. 7000 2373

61

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE 1/11/72 SIGNATURE _____ TITLE _____

MICROFILM - STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS - MICROFILM

FED. ROAD DIV. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	CAL.			1	1

DIST.	COUNTY	ROUTE	SECTION	BRIDGE NO.	TOTAL SHEETS
VII	LA	5		53-1678	15

VII LA 5

Jay Gabbitas
BRIDGE ENGINEER — CIVIL ENGINEER — LICENSED 24793
DATE APPROVED 12-15-61

BENCH MARK "335-2LAC-56

Fd L & T in middle West edge of D.I. on ℄ Ven. at Sta 335+62.91 P.O.T. 100'± E. Chesebro Rd. painted "T.P. 197"

ELEV. 907.95

5 = NO. PILES IN FOOTING OF ABUTMENT NO. 1
ACTUAL LENGTH OF PILES:
AV. 38.0 MAX. 38.0 MIN. 38.0
PILE TIP ELEVATION:
AV. 886.4 MAX. 886.5 MIN. 886.1
SPECIFIED TIP ELEV. 888.0

14 = NO. OF PILES IN FOOTING OF BENT NO. 2
ACTUAL LENGTH OF PILES:
AV. 16.1 MAX. 17.0 MIN. 15.5
PILE TIP ELEVATION:
AV. 883.9 MAX. 884.5 MIN. 883.0
SPECIFIED TIP ELEV. 885.0

14 = NO. OF PILES IN FOOTING OF BENT NO. 4
ACTUAL LENGTH OF PILES:
AV. 20.0 MAX. 20.0 MIN. 20.0
PILE TIP ELEVATION:
AV. 887.0 MAX. 887.0 MIN. 887.0
SPECIFIED TIP ELEVATION 888.0

5 = NO. PILES IN FOOTING OF ABUTMENT NO. 5
ACTUAL LENGTH OF PILES:
AV. 37.9 MAX. 38.1 MIN. 37.6
PILE TIP ELEVATION:
AV. 886.6 MAX. 887.1 MIN. 886.4
SPECIFIED TIP ELEV. 888.0

24 = NO. OF PILES IN FOOTING OF BENT NO. 3 (INCLUDING CCO #8)
ACTUAL LENGTH OF PILES
AV. 22.0 MAX. 22.0 MIN. 22.0
PILE TIP ELEVATION:
AV. 881.0 MAX. 881.0 MIN. 881.0
SPECIFIED TIP ELEVATION 882.0

Abut #1 · B-2 · B-1 · B-3 · Abut #5 · Logged pile · ℄ PROPOSED STRUCTURE · ℄ RETRACEMENT (RTE. 2) · TO VENTURA · TO L.A. · 18 · 19 · 20 · 21 · 22 · 332 · 332.40

AS BUILT PLANS
Contract No. 63-7V13C58
Date Completed
Document No. 70002373

PILE DATA

TYPE OF PILE - C.I.D.H.
HAMMER DATA -
PILE DIAMETER: TIP 16" BUTT 15"
PILE DESIGN LOAD = 45 TONS
FOR THE STRUCTURE:
NUMBER OF PILES = 55 + 7 IN CCO #8
EST. LENGTH OF PILING = 1,210 L.F.
ACTUAL LENGTH OF PILING = 1,259.2 + 154.0 L.F. CCO #8

Bottom Ftg. El.+924.5 · Approximate existing ground line along ℄ Proposed Structure · Fill Material · Sta. 19+38 ℄ Prop. Structure · Sta. 20+69 ℄ Prop. Structure · Sta. 20+71 ℄ Prop. Structure · B-1 · B-2 · B-3 · Soft & loose dark brown-black clayey silt. · tan shale · gray shale · ground water · Bottom Ftg. El.+907.0 · Bottom Ftg. El.+903.0 · Bottom Ftg. El.+900.0 · Slightly compact to compact tan-reddish brn., mottled clay-siltstone-shale. · sandy clay · Dense to very dense blue grey clay-siltstone-shale. · 6-26-61 · 910 · 900 · 890 · 880 · 870

THIS SET OF PLANS HAS BEEN CORRECTED TO CORRESPOND TO THE "AS BUILT" PRINTS DATED 3-22-63, AS SUBMITTED BY RESIDENT ENGINEER Fred G. Michaels, B.D.R.
TRACINGS CORRECTED BY: M.J.R. DATE: 10-29-63

NO GROUND WATER ENCOUNTERED DURING THIS INVESTIGATION BY BRIDGE DEPT. GEOLOGY SECTION
DATE June, 1961

FIELD STUDY	By: E.M.F. Curry 6-26-61
DRAWN	By: K. Tochino 7-7-61
CHECKED	By: Ole Bauman Mg 7-24-61

Approval Recommended by: C.F. Hoffman 8-4-61 for Engineering Geologist
E.L. Hamilton 8-4-61 for Soils Engineer

BRIDGE DEPARTMENT

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

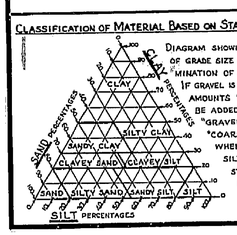


DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND". THE TERMS "COARSE", "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SANDY SILT OR SILTY SAND
- SILTY CLAY OR CLAYEY SILT
- PEAT AND/OR ORGANIC MATTER
- FILL MATERIAL
- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PENETROMETER
- 2½" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT

1" SOIL TUBE: Top Hole El. · Location · B-N# · G.W.S. Date measured · Groundwater surface after 24 hrs. · Description of material · Blows per foot (Using ___ lb. hammer with a 12" Free fall) · Sample taken · Pulled pipe · Refusal · Date of boring

ROTARY BORING: Top Hole El. · Casing driven · Location · B-N# · Size of sampler (inches) · Blows per foot (Using a 140 lb hammer with a 30" drop, or as noted) · Unconfined compressive strength (T/sq. Ft) · Description of material · Unit weight (#/cu ft) · % Moisture · Consolidation Test · G.W.S. Elev. Date measured · Conformable material change · Estimated material change · Unconformable material change · Vane shear · Shear strength (#/sq. Ft) · Date of boring

PENETRATION BORING: Top Hole El. · Pushed · Location · B-N# · No. Counts · Seconds per foot (Using a N-2, McKiernan-Terry Air hammer @ 115 psi or as noted) · G.W.S. Elev. Date measured · Average skin Friction above this point (#/sq. Ft) · Natural boring · Graphic representation of driving rate · Seconds per foot

NOTES

~~The contractor's attention is directed to Section 2, Article (c) of the Standard Specifications and to the Special Provisions accompanying this set of plans.~~
Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

CHESEBRO RD. OVERCROSSING

LOG OF TEST BORINGS

SCALE Horiz. 1"=20' Vert. 1"=10' | BRIDGE 53-1678 | FILE | DRAWING C-531678-15

PILE DRAWING P-531678-11

71

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF PUBLIC WORKS.

DATE _____ SIGNATURE _____ TITLE _____

APPENDIX D-1

SEISMIC ANALYSES

Shear Wave Velocity Calculation Summary

CPT No.	Computed Vs30 (m/s)
A-13-002	321
A-13-003	373
A-13-004	361
A-13-005	384
A-13-006	345

Average Vs30 for the site= **357** m/s

Design= **360** m/s

SHEAR WAVE VELOCITY CALCULATIONS

Boring: A-13-002
Boring Depth 100

Depth (feet) from	to	layer thickness, Di (feet)	soil type	N_{60}	Su (psf)	Vs m/s	Vs ft/sec	Di (ft) / Vs (fps)	
0	6.25	6.25	clay		3500	265	869	0.007	soil
6.25	8.75	2.5	clay		2000	203	666	0.004	
8.75	12.5	3.75	clay		1000	146	479	0.008	
12.5	17.5	5	clay		2500	226	740	0.007	
17.5	22.5	5	clay		1500	177	581	0.009	
22.5	27.5	5	clay		4500	298	979	0.005	
27.5	32.5	5	clay		8170	396	1300	0.004	rock
32.5	37.5	5	clay		8170	396	1300	0.004	
37.5	42.5	5	clay		8170	396	1300	0.004	
42.5	47.5	5	clay		8170	396	1300	0.004	
47.5	52.5	5	clay		8170	396	1300	0.004	
52.5	57.5	5	clay		8170	396	1300	0.004	
57.5	60	2.5	clay		8170	396	1300	0.002	
60	65	5	clay		8170	396	1300	0.004	
65	70	5	clay		8170	396	1300	0.004	
70	75	5	clay		8170	396	1300	0.004	
75	80	5	clay		8170	396	1300	0.004	
80	90	10	clay		8170	396	1300	0.008	
90	100	10	clay		8170	396	1300	0.008	
					Vs(d) =	**321**	1052		
					Vs30 =	**318**			

REFERENCES

Cohesionless Soil, Sykora (1987): $V_s=100.5(N_{60})^{0.29}$

Vs=shear wave velocity (m/s)
N60=SPT blowcount corrected for hammer energy only

Cohesive Soil, Dickenson (1994): $V_s=203(S_u/2000)^{0.475}$

Vs=shear wave velocity (m/s)
Su=undrained shear strength (psf)

Averaging method (Geotechnical Services Design Manual Version 1.0 August 2009 Section 1.1.7) V_{s30}= 100 feet / ($D_1/V_{s1}+D_2/V_{s2}+.....+D_n/V_{sn}$)

V_{s30}= average shear wave velocity in ft/sec upper 30 m (100 feet)
Di= layer thickness (feet) for individual layers
Vsi= shear wave velocity (ft/sec) for individual layers

SHEAR WAVE VELOCITY CALCULATIONS

Boring: A-13-003
Boring Depth 100

Depth (feet) from	to	layer thickness, Di (feet)	soil type	N_{60}	Su (psf)	Vs m/s	Vs ft/sec	Di (ft) / Vs (fps)	
0	5	5	clay		1500	177	581	0.009	soil
5	8.75	3.75	clay		8170	396	1300	0.003	
8.75	10.625	1.875	clay		8170	396	1300	0.001	
10.625	13.125	2.5	clay		8170	396	1300	0.002	
13.125	17.5	4.375	clay		8170	396	1300	0.003	rock
17.5	22.5	5	clay		8170	396	1300	0.004	
22.5	27.5	5	clay		8170	396	1300	0.004	
27.5	32.5	5	clay		8170	396	1300	0.004	
32.5	37.5	5	clay		8170	396	1300	0.004	
37.5	42.5	5	clay		8170	396	1300	0.004	
42.5	47.5	5	clay		8170	396	1300	0.004	
47.5	50	2.5	clay		8170	396	1300	0.002	
50	55	5	clay		8170	396	1300	0.004	
55	60	5	clay		8170	396	1300	0.004	
60	65	5	clay		8170	396	1300	0.004	
65	70	5	clay		8170	396	1300	0.004	
70	75	5	clay		8170	396	1300	0.004	
75	80	5	clay		8170	396	1300	0.004	
80	90	10	clay		8170	396	1300	0.008	
90	100	10	clay		8170	396	1300	0.008	
					Vs(d) =	**373**	1224		
					Vs30 =	**370**			

REFERENCES

Cohesionless Soil, Sykora (1987): $V_s=100.5(N_{60})^{0.29}$

Vs=shear wave velocity (m/s)
N60=SPT blowcount corrected for hammer energy only

Cohesive Soil, Dickenson (1994): $V_s=203(S_u/2000)^{0.475}$

Vs=shear wave velocity (m/s)
Su=undrained shear strength (psf)

Averaging method (Geotechnical Services Design Manual Version 1.0 August 2009 Section 1.1.7) V_{s30}= 100 feet / ($D_1/V_{s1}+D_2/V_{s2}+.....+D_n/V_{sn}$)

V_{s30}= average shear wave velocity in ft/sec upper 30 m (100 feet)

Di= layer thickness (feet) for individual layers
Vsi= shear wave velocity (ft/sec) for individual layers

SHEAR WAVE VELOCITY CALCULATIONS

Boring: A-13-004
Boring Depth 100

Depth (feet) from	to	layer thickness, Di (feet)	soil type	N_{60}	Su (psf)	Vs m/s	Vs ft/sec	Di (ft) / Vs (fps)	
0	5	5	clay		3250	256	839	0.006	soil
5	10.5	5.5	clay		3250	256	839	0.007	
10.5	13.5	3	clay		2750	236	775	0.004	
13.5	17.5	4	clay		3750	274	898	0.004	
17.5	22.5	5	clay		8170	396	1300	0.004	rock
22.5	27.5	5	clay		8170	396	1300	0.004	
27.5	32.5	5	clay		8170	396	1300	0.004	
32.5	37.5	5	clay		8170	396	1300	0.004	
37.5	42.5	5	clay		8170	396	1300	0.004	
42.5	47.75	5.25	clay		8170	396	1300	0.004	
47.75	50	2.25	clay		8170	396	1300	0.002	
50	55	5	clay		8170	396	1300	0.004	
55	60	5	clay		8170	396	1300	0.004	
60	65	5	clay		8170	396	1300	0.004	
65	70	5	clay		8170	396	1300	0.004	
70	75	5	clay		8170	396	1300	0.004	
75	80	5	clay		8170	396	1300	0.004	
80	85	5	clay		8170	396	1300	0.004	
85	90	5	clay		8170	396	1300	0.004	
90	95	5	clay		8170	396	1300	0.004	
95	100	5	clay		8170	396	1300	0.004	
					Vs(d) =	**361**	1186		
					Vs30 =	**359**			

REFERENCES

Cohesionless Soil, Sykora (1987): $V_s=100.5(N_{60})^{0.29}$

Vs=shear wave velocity (m/s)
N60=SPT blowcount corrected for hammer energy only

Cohesive Soil, Dickenson (1994): $V_s=203(S_u/2000)^{0.475}$

Vs=shear wave velocity (m/s)
Su=undrained shear strength (psf)

Averaging method (Geotechnical Services Design Manual Version 1.0 August 2009 Section 1.1.7) V_{s30}= 100 feet / $(D_1/V_{s1}+D_2/V_{s2}+.....+D_n/V_{sn})$

V_{s30}= average shear wave velocity in ft/sec upper 30 m (100 feet)
Di= layer thickness (feet) for individual layers
Vsi= shear wave velocity (ft/sec) for individual layers

SHEAR WAVE VELOCITY CALCULATIONS

Boring: A-13-005
Boring Depth 100

Depth (feet) from	to	layer thickness, Di (feet)	soil type	N_{60}	Su (psf)	Vs m/s	Vs ft/sec	Di (ft) / Vs (fps)	
0	6.25	6.25	clay		4500	298	979	0.006	soil
6.25	9.375	3.125	clay		4500	298	979	0.003	
9.375	13.125	3.75	clay		8170	396	1300	0.003	rock
13.125	17.5	4.375	clay		8170	396	1300	0.003	
17.5	22.5	5	clay		8170	396	1300	0.004	
22.5	27.5	5	clay		8170	396	1300	0.004	
27.5	32.5	5	clay		8170	396	1300	0.004	
32.5	37.5	5	clay		8170	396	1300	0.004	
37.5	42.5	5	clay		8170	396	1300	0.004	
42.5	47.5	5	clay		8170	396	1300	0.004	
47.5	50	2.5	clay		8170	396	1300	0.002	
50	55	5	clay		8170	396	1300	0.004	
55	60	5	clay		8170	396	1300	0.004	
60	65	5	clay		8170	396	1300	0.004	
65	70	5	clay		8170	396	1300	0.004	
70	75	5	clay		8170	396	1300	0.004	
75	80	5	clay		8170	396	1300	0.004	
80	85	5	clay		8170	396	1300	0.004	
85	90	5	clay		8170	396	1300	0.004	
90	100	10	clay		8170	396	1300	0.008	
					Vs(d) =	**384**	1261		
					Vs30 =	**382**			

REFERENCES

Cohesionless Soil, Sykora (1987): $V_s=100.5(N_{60})^{0.29}$

Vs=shear wave velocity (m/s)
N60=SPT blowcount corrected for hammer energy only

Cohesive Soil, Dickenson (1994): $V_s=203(S_u/2000)^{0.475}$

Vs=shear wave velocity (m/s)
Su=undrained shear strength (psf)

Averaging method (Geotechnical Services Design Manual Version 1.0 August 2009 Section 1.1.7) V_{s30}= 100 feet / ($D_1/V_{s1}+D_2/V_{s2}+.....+D_n/V_{sn}$)

V_{s30}= average shear wave velocity in ft/sec upper 30 m (100 feet)

Di= layer thickness (feet) for individual layers

Vsi= shear wave velocity (ft/sec) for individual layers

SHEAR WAVE VELOCITY CALCULATIONS

Boring: A-13-006
Boring Depth 100

Depth (feet) from	to	layer thickness, Di (feet)	soil type	N_{60}	Su (psf)	Vs m/s	Vs ft/sec	Di (ft) / Vs (fps)	
0	6.25	6.25	clay		4000	282	926	0.007	soil
6.25	8.75	2.5	clay		1500	177	581	0.004	
8.75	12.5	3.75	clay		1500	177	581	0.006	
12.5	17.5	5	clay		3500	265	869	0.006	
17.5	22.5	5	clay		4000	282	926	0.005	
22.5	27.5	5	clay		8170	396	1300	0.004	rock
27.5	32.5	5	clay		8170	396	1300	0.004	
32.5	37.5	5	clay		8170	396	1300	0.004	
37.5	42.5	5	clay		8170	396	1300	0.004	
42.5	47.5	5	clay		8170	396	1300	0.004	
47.5	50	2.5	clay		8170	396	1300	0.002	
50	55	5	clay		8170	396	1300	0.004	
55	60	5	clay		8170	396	1300	0.004	
60	65	5	clay		8170	396	1300	0.004	
65	70	5	clay		8170	396	1300	0.004	
70	75	5	clay		8170	396	1300	0.004	
75	80	5	clay		8170	396	1300	0.004	
80	85	5	clay		8170	396	1300	0.004	
85	90	5	clay		8170	396	1300	0.004	
90	100	10	clay		8170	396	1300	0.008	
					Vs(d) =	**345**	1132		
					Vs30 =	**343**			

REFERENCES

Cohesionless Soil, Sykora (1987): $V_s=100.5(N_{60})^{0.29}$

Vs=shear wave velocity (m/s)
N60=SPT blowcount corrected for hammer energy only

Cohesive Soil, Dickenson (1994): $V_s=203(S_u/2000)^{0.475}$

Vs=shear wave velocity (m/s)
Su=undrained shear strength (psf)

Averaging method (Geotechnical Services Design Manual Version 1.0 August 2009 Section 1.1.7) V_{s30}= 100 feet / ($D_1/V_{s1}+D_2/V_{s2}+.....+D_n/V_{sn}$)

V_{s30}= average shear wave velocity in ft/sec upper 30 m (100 feet)

Di= layer thickness (feet) for individual layers

Vsi= shear wave velocity (ft/sec) for individual layers

SITE DATA (ARS Online Version 2.3.06)

Shear Wave Velocity, V_{S30}:	360 m/s
Latitude:	34.143300
Longitude:	-118.737900
Depth to Vs = 1.0 km/s:	N/A
Depth to Vs = 2.5 km/s:	N/A

DETERMINISTIC

Anacapa-Dume alt 1

Fault ID:	348
Maximum Magnitude (MMax):	7.2
Fault Type:	Rev
Fault Dip:	45 Deg
Dip Direction:	N
Bottom of Rupture Plane:	15.60 km
Top of Rupture Plane(Ztor):	0.00 km
Rrup	12.99 km
Rjb:	2.77 km
Rx:	18.37 km
Fnorm:	0
Frev:	1

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.432	1.000	1.000	0.432
0.05	0.550	1.000	1.000	0.550
0.1	0.783	1.000	1.000	0.783
0.15	0.933	1.000	1.000	0.933
0.2	0.978	1.000	1.000	0.978
0.25	0.962	1.000	1.000	0.962
0.3	0.930	1.000	1.000	0.930
0.4	0.843	1.000	1.000	0.843
0.5	0.759	1.000	1.000	0.759
0.6	0.671	1.000	1.040	0.697
0.7	0.601	1.000	1.080	0.649
0.85	0.516	1.000	1.140	0.588
1	0.447	1.000	1.200	0.536
1.2	0.370	1.000	1.200	0.444
1.5	0.284	1.000	1.200	0.341
2	0.183	1.000	1.200	0.219
3	0.092	1.000	1.200	0.111
4	0.058	1.000	1.200	0.070
5	0.045	1.000	1.200	0.054

Santa Monica fault

Fault ID:	341
Maximum Magnitude (MMax):	7
Fault Type:	SS
Fault Dip:	75 Deg
Dip Direction:	N
Bottom of Rupture Plane:	17.90 km
Top of Rupture Plane(Ztor):	0.00 km
Rrup	14.25 km
Rjb:	9.95 km
Rx:	14.75 km
Fnorm:	0
Frev:	0

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.257	1.000	1.000	0.257
0.05	0.322	1.000	1.000	0.322
0.1	0.471	1.000	1.000	0.471
0.15	0.562	1.000	1.000	0.562
0.2	0.584	1.000	1.000	0.584
0.25	0.568	1.000	1.000	0.568
0.3	0.545	1.000	1.000	0.545
0.4	0.489	1.000	1.000	0.489
0.5	0.437	1.000	1.000	0.437
0.6	0.383	1.000	1.040	0.399
0.7	0.342	1.000	1.080	0.369
0.85	0.293	1.000	1.140	0.334
1	0.255	1.000	1.200	0.306
1.2	0.214	1.000	1.200	0.257
1.5	0.170	1.000	1.200	0.204
2	0.119	1.000	1.200	0.143
3	0.069	1.000	1.200	0.083
4	0.047	1.000	1.200	0.057
5	0.036	1.000	1.200	0.043

Malibu Coast alt 2

Fault ID:	346
Maximum Magnitude (MMax):	6.6
Fault Type:	SS
Fault Dip:	74 Deg
Dip Direction:	N
Bottom of Rupture Plane:	16.30 km
Top of Rupture Plane(Ztor):	0.00 km
Rrup	11.82 km
Rjb:	7.62 km
Rx:	12.29 km

Fnorm: 0

Frev: 0

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.267	1.000	1.000	0.267
0.05	0.335	1.000	1.000	0.335
0.1	0.494	1.000	1.000	0.494
0.15	0.587	1.000	1.000	0.587
0.2	0.608	1.000	1.000	0.608
0.25	0.587	1.000	1.000	0.587
0.3	0.561	1.000	1.000	0.561
0.4	0.502	1.000	1.000	0.502
0.5	0.440	1.000	1.000	0.440
0.6	0.378	1.000	1.040	0.393
0.7	0.332	1.000	1.080	0.358
0.85	0.278	1.000	1.140	0.317
1	0.237	1.000	1.200	0.285
1.2	0.195	1.000	1.200	0.234
1.5	0.151	1.000	1.200	0.181
2	0.102	1.000	1.200	0.122
3	0.057	1.000	1.200	0.068
4	0.038	1.000	1.200	0.045
5	0.028	1.000	1.200	0.034

PROBABILISTIC

Probabilistic Model
USGS Seismic Hazard Map(2008) 975 Year Return Period

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.567	1.000	1.000	0.567
0.05	0.872	1.000	1.000	0.872
0.1	1.049	1.000	1.000	1.049
0.15	1.192	1.000	1.000	1.192
0.2	1.305	1.000	1.000	1.305
0.25	1.282	1.000	1.000	1.282
0.3	1.263	1.000	1.000	1.263
0.4	1.137	1.000	1.000	1.137
0.5	1.048	1.000	1.000	1.048
0.6	0.935	1.000	1.040	0.972
0.7	0.849	1.000	1.080	0.917
0.85	0.726	1.000	1.140	0.828
1	0.627	1.000	1.200	0.752
1.2	0.512	1.000	1.200	0.614

1.5	0.399	1.000	1.200	0.479
2	0.290	1.000	1.200	0.348
3	0.175	1.000	1.200	0.209
4	0.122	1.000	1.200	0.147
5	0.101	1.000	1.200	0.121

MINIMUM DETERMINISTIC SPECTRUM

Period	SA
0.01	0.225
0.05	0.283
0.1	0.422
0.15	0.504
0.2	0.522
0.25	0.505
0.3	0.482
0.4	0.430
0.5	0.375
0.6	0.320
0.7	0.280
0.85	0.233
1	0.198
1.2	0.162
1.5	0.125
2	0.086
3	0.050
4	0.034
5	0.025

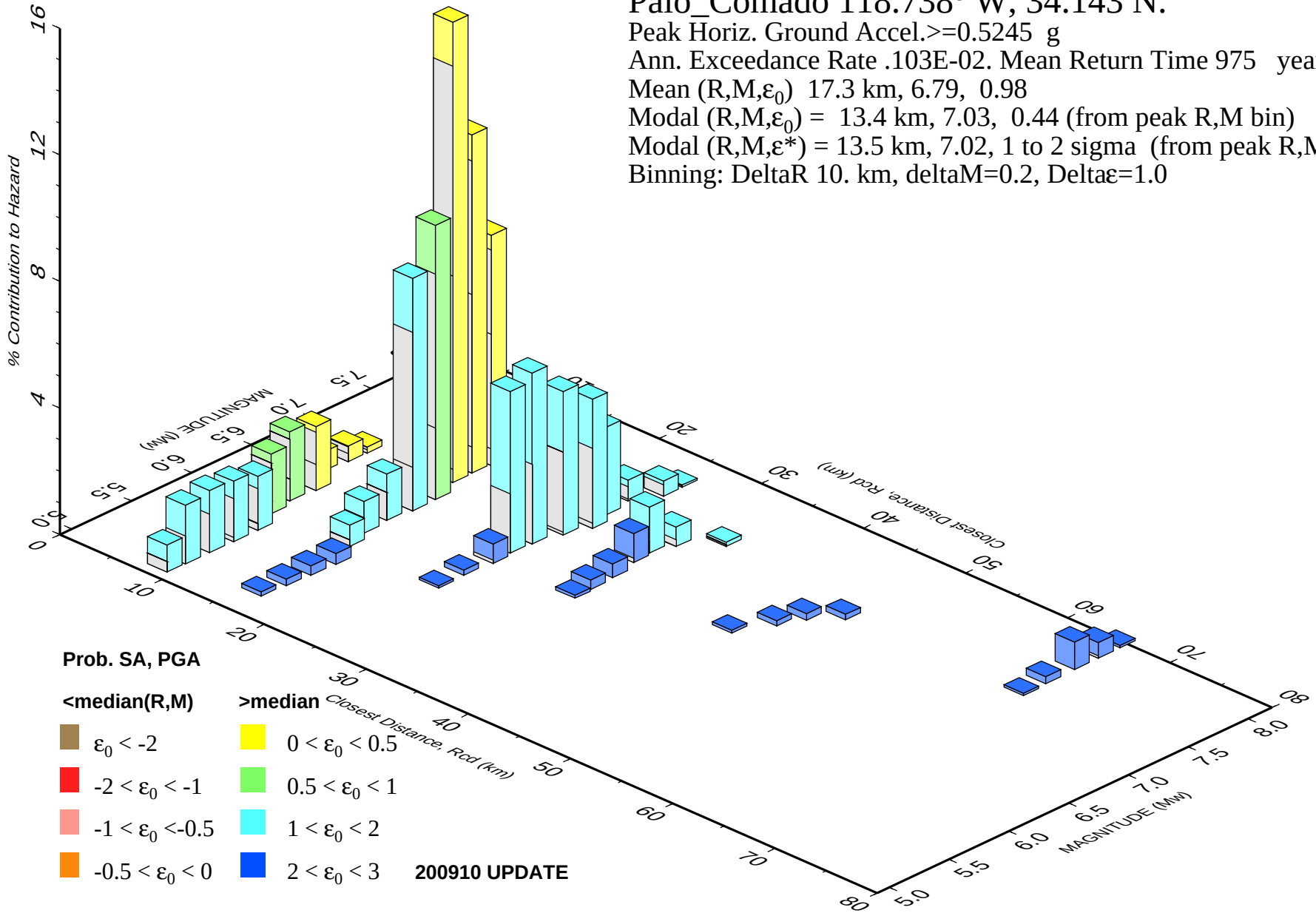
Envelope Data

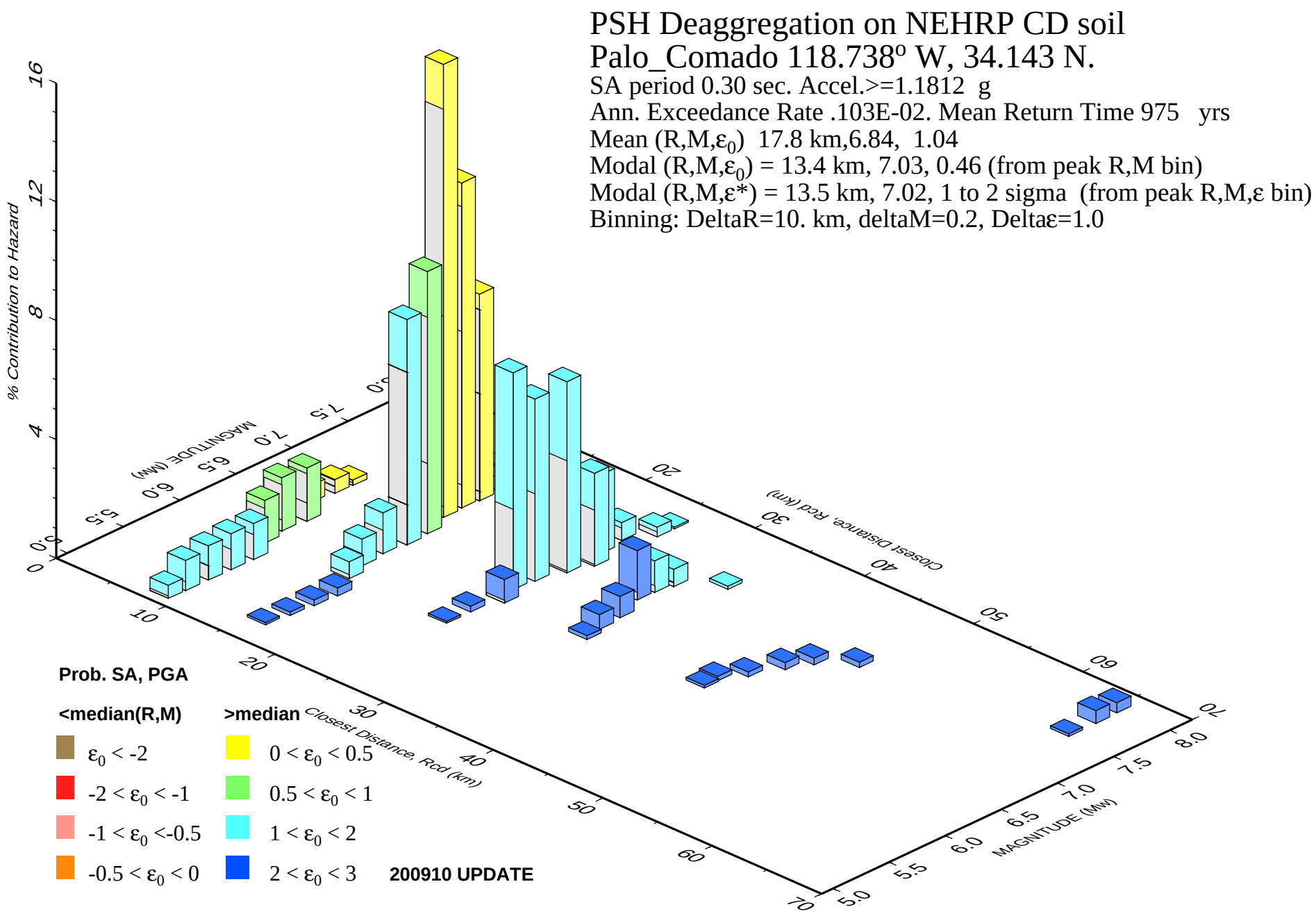
Period	SA
0.01	0.567
0.05	0.872
0.1	1.049
0.15	1.192
0.2	1.305
0.25	1.282
0.3	1.263
0.4	1.137
0.5	1.048
0.6	0.972
0.7	0.917
0.85	0.828
1	0.752

1.2	0.614
1.5	0.479
2	0.348
3	0.209
4	0.147
5	0.121

PSH Deaggregation on NEHRP CD soil
Palo_Comado 118.738º W, 34.143 N.

Peak Horiz. Ground Accel.>=0.5245 g
Ann. Exceedance Rate .103E-02. Mean Return Time 975 years
Mean (R,M,ε_0) 17.3 km, 6.79, 0.98
Modal (R,M,ε_0) = 13.4 km, 7.03, 0.44 (from peak R,M bin)
Modal (R,M,ε*) = 13.5 km, 7.02, 1 to 2 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0

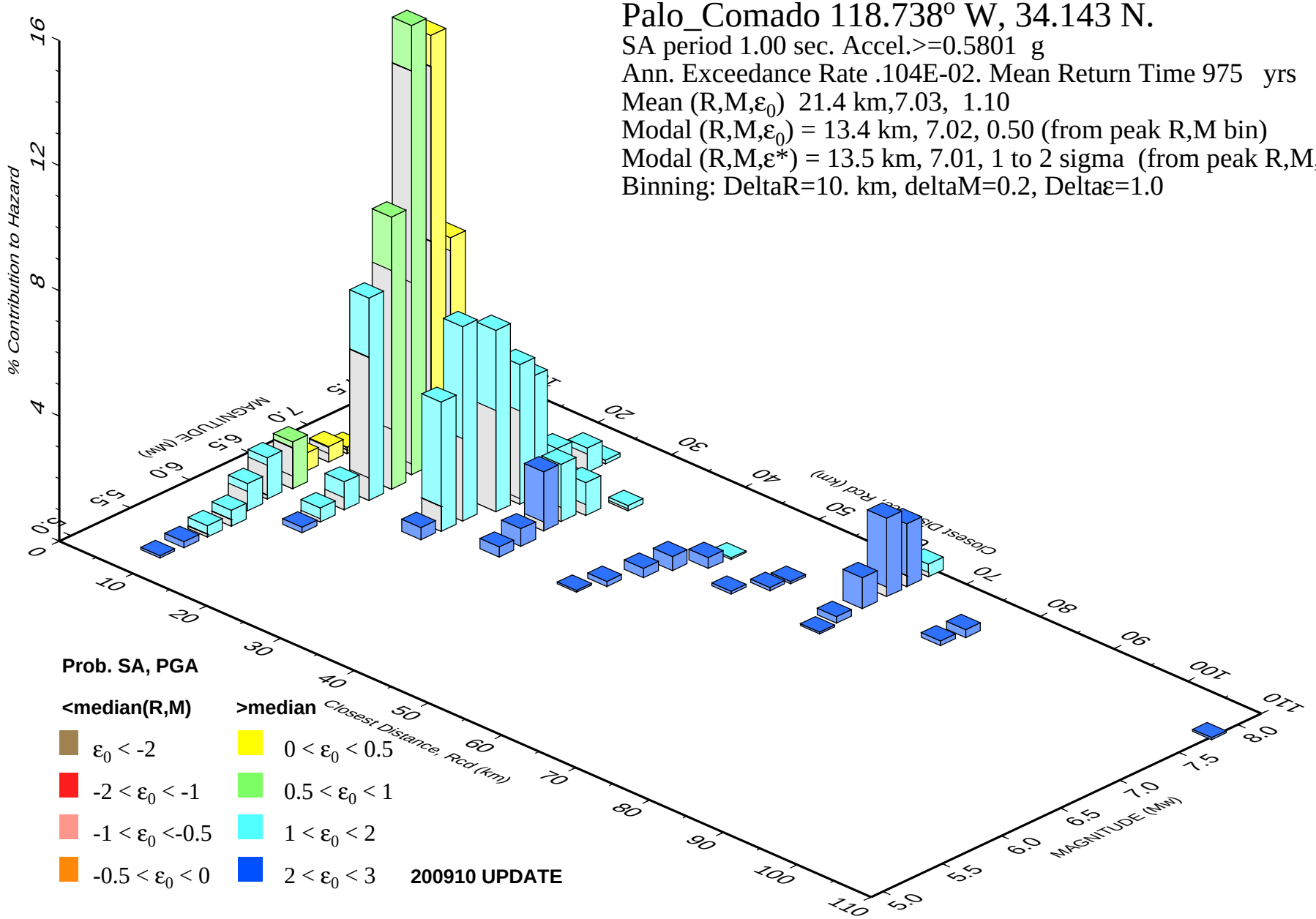




GMT 2014 Apr 25 06:34:07 **Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on soil with average vs= 360. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted**

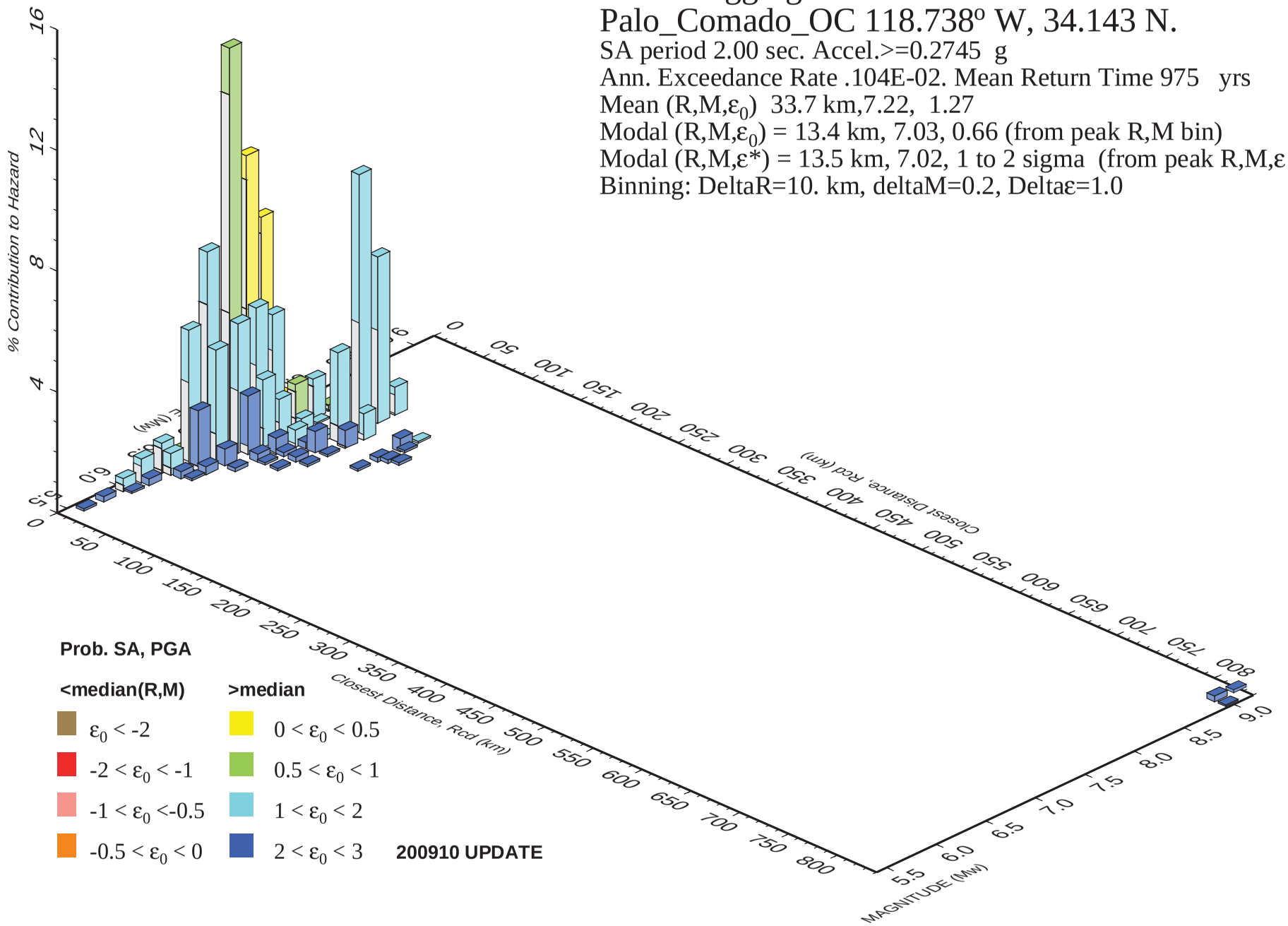
PSH Deaggregation on NEHRP CD soil
Palo_Comado 118.738º W, 34.143 N.

SA period 1.00 sec. Accel.>=0.5801 g
Ann. Exceedance Rate .104E-02. Mean Return Time 975 yrs
Mean (R,M,ε_0) 21.4 km,7.03, 1.10
Modal (R,M,ε_0) = 13.4 km, 7.02, 0.50 (from peak R,M bin)
Modal (R,M,ε*) = 13.5 km, 7.01, 1 to 2 sigma (from peak R,M,ε bin)
Binning: DeltaR=10. km, deltaM=0.2, Deltaε=1.0



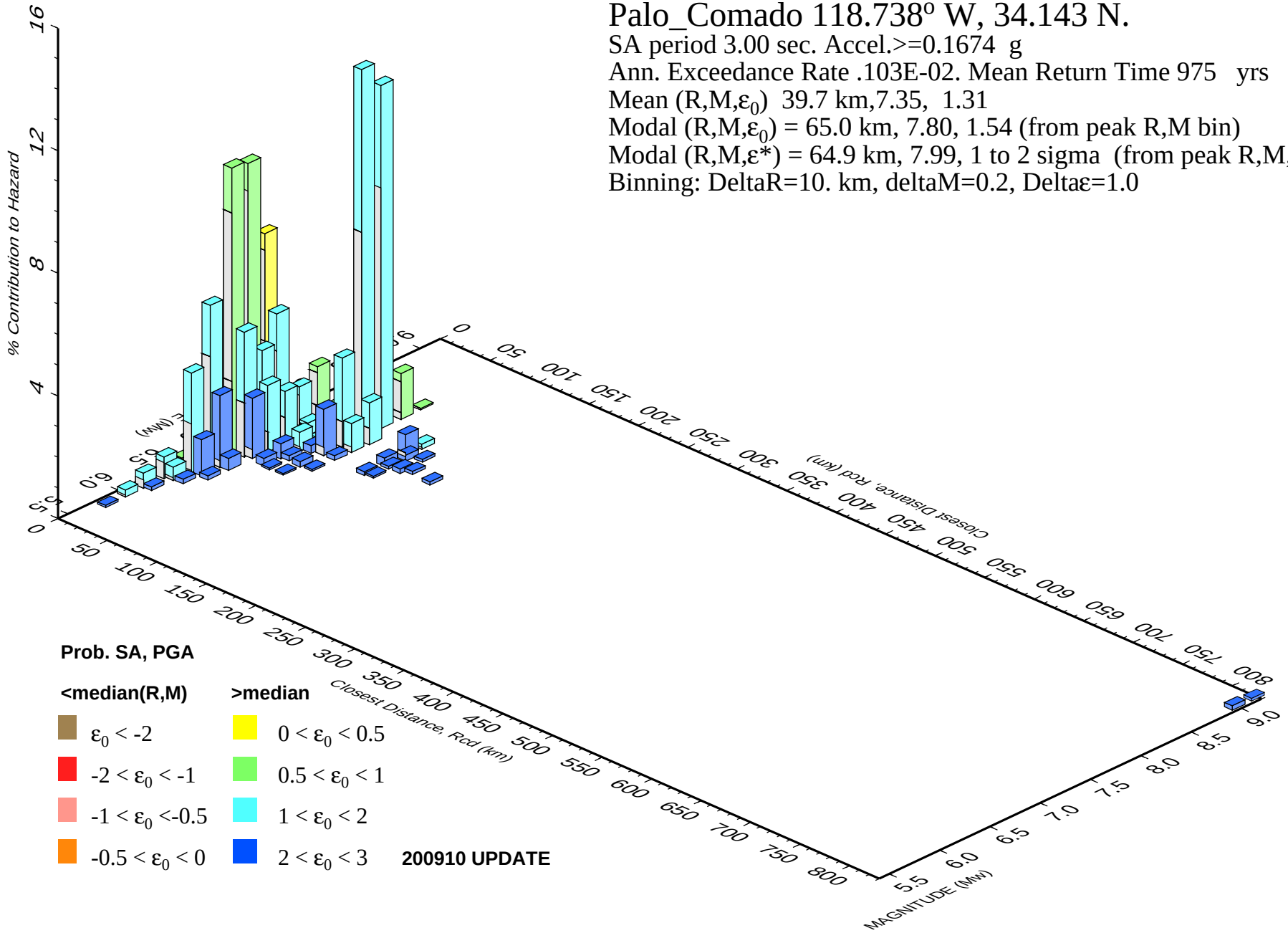
PSH Deaggregation on NEHRP CD soil
Palo_Comado_OC 118.738º W, 34.143 N.

SA period 2.00 sec. Accel.>=0.2745 g
Ann. Exceedance Rate .104E-02. Mean Return Time 975 yrs
Mean (R,M,ε_0) 33.7 km,7.22, 1.27
Modal (R,M,ε_0) = 13.4 km, 7.03, 0.66 (from peak R,M bin)
Modal (R,M,ε*) = 13.5 km, 7.02, 1 to 2 sigma (from peak R,M,ε bin)
Binning: DeltaR=10. km, deltaM=0.2, Deltaε=1.0



PSH Deaggregation on NEHRP CD soil
Palo_Comado 118.738º W, 34.143 N.

SA period 3.00 sec. Accel.>=0.1674 g
Ann. Exceedance Rate .103E-02. Mean Return Time 975 yrs
Mean (R,M,ε_0) 39.7 km,7.35, 1.31
Modal (R,M,ε_0) = 65.0 km, 7.80, 1.54 (from peak R,M bin)
Modal (R,M,ε*) = 64.9 km, 7.99, 1 to 2 sigma (from peak R,M,ε bin)
Binning: DeltaR=10. km, deltaM=0.2, Deltaε=1.0



APPENDIX D-2

AXIAL PILE CAPACITY CALCULATIONS

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 16 inch CIDH Abutment 1L

Pile Diameter= 1.333333 ft
Perimeter= 4.189 ft
End Area= 1.396 ft²

Group Efficiency Factor= 1
5% D= 0.80 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.21735 ksf
Depth of overburden= 1.89 ft

Pile head below ground surface (ft) 1.89
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 98.11

Req. Nom.= N/A kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Factored= 140 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	140
35	140
35	0
35	140

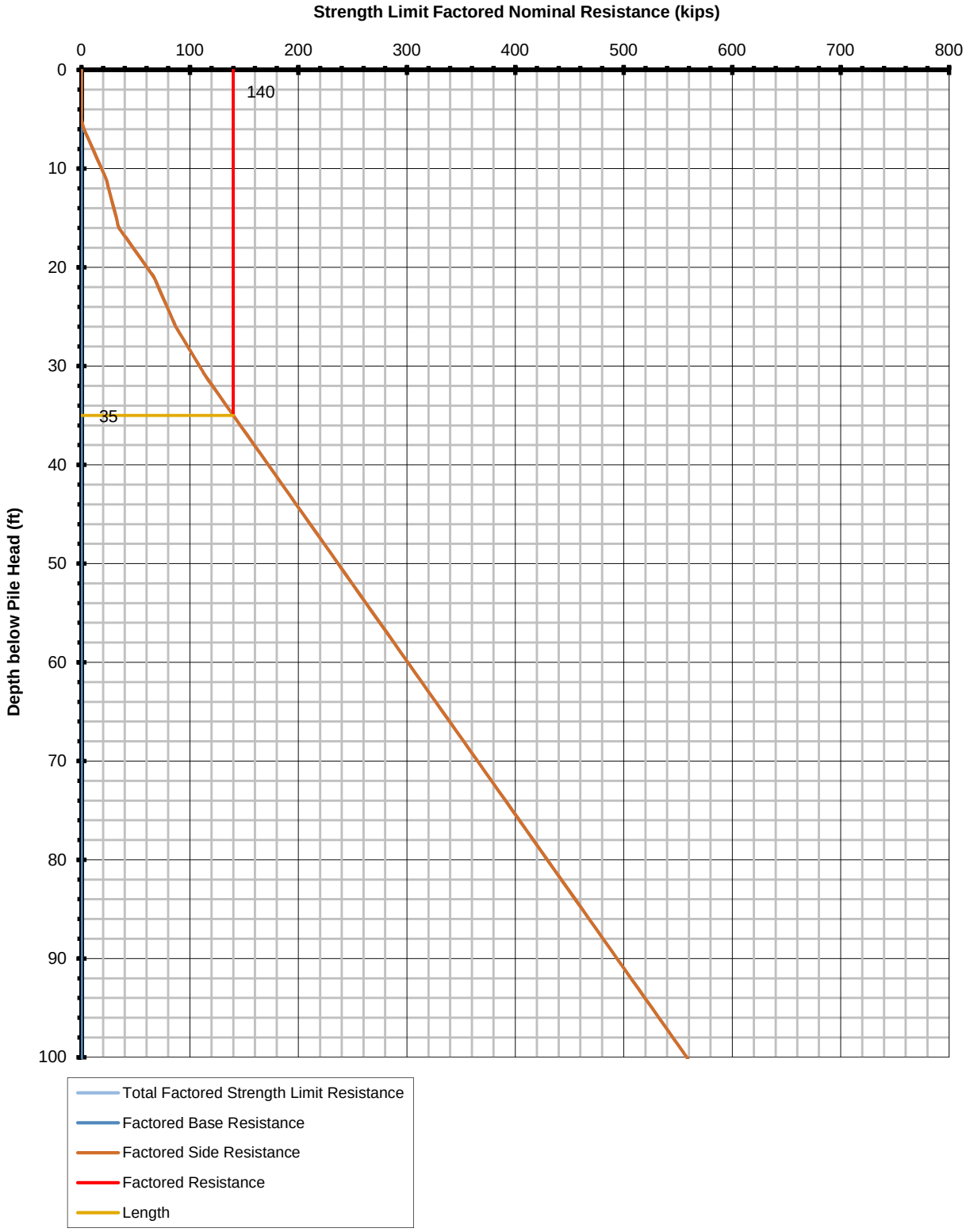
Req. Nom. T= N/A kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side CompressionResistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
926.11	0	1.89												0			0	0	0			0	0	0	0	0	0	0
925.1	1	2.89	2.39	CLAY	1.5	120	0.277	0	1.000	1	N/A	0.550	0.00	1	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
924.1	2	3.89	3.39	CLAY	1.5	120	0.397	0	1.000	1	N/A	0.550	0.00	2	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
923.1	3	4.89	4.39	CLAY	1.5	120	0.517	0	1.000	1	N/A	0.550	0.00	3	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
922.1	4	5.89	5.39	CLAY	1.5	120	0.637	0	1.000	1	N/A	0.550	0.00	4	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
921.1	5	6.89	6.39	CLAY	1.5	120	0.757	0	1.000	1	N/A	0.550	0.00	5	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
920.1	6	7.89	7.39	CLAY	1.5	120	0.877	1	1.000	1	N/A	0.550	0.83	6	4.19	3.46	3	2	0	2,250	0.0	0	0	0	2	3	2
919.1	7	8.89	8.39	CLAY	2.5	120	0.997	1	1.000	1	N/A	0.550	1.38	7	4.19	5.76	9	6	0	8,750	0.0	0	0	0	6	9	6
918.1	8	9.89	9.39	CLAY	2.5	120	1.117	1	1.000	1	N/A	0.550	1.38	8	4.19	5.76	15	10	0	8,750	0.0	0	0	0	10	15	10
917.1	9	10.89	10.39	CLAY	2.5	120	1.237	1	1.000	1	N/A	0.550	1.38	9	4.19	5.76	21	15	0	8,750	0.0	0	0	0	15	21	15
916.1	10	11.89	11.39	CLAY	2.5	120	1.357	1	1.000	1	N/A	0.550	1.38	10	4.19	5.76	26	19	0	8,750	0.0	0	0	0	19	26	19
915.1	11	12.89	12.39	CLAY	2.5	120	1.477	1	1.000	1	N/A	0.550	1.38	11	4.19	5.76	32	23	0	8,750	0.0	0	0	0	23	32	23
914.1	12	13.89	13.39	CLAY	1.5	120	1.597	1	1.000	1	N/A	0.550	0.83	12	4.19	3.46	36	25	0	2,250	0.0	0	0	0	25	36	25
913.1	13	14.89	14.39	CLAY	1.5	120	1.717	1	1.000	1	N/A	0.550	0.83	13	4.19	3.46	39	27	0	2,250	0.0	0	0	0	27	39	27
912.1	14	15.89	15.39	CLAY	1.5	120	1.837	1	1.000	1	N/A	0.550	0.83	14	4.19	3.46	43	30	0	2,250	0.0	0	0	0	30	43	30
911.1	15	16.89	16.39	CLAY	1.5	120	1.957	1	1.000	1	N/A	0.550	0.83	15	4.19	3.46	46	32	0	2,250	0.0	0	0	0	32	46	32
910.1	16	17.89	17.39	CLAY	1.5	125	2.080	1	1.000	1	N/A	0.550	0.83	16	4.19	3.46	50	35	0	2,250	0.0	0	0	0	35	50	35
909.1	17	18.89	18.39	CLAY	4.5	125	2.205	1	1.000	1	N/A	0.487	2.19	17	4.19	9.19	59	41	0	15,750	0.0	0	0	0	41	59	41
908.1	18	19.89	19.39	CLAY	4.5	125	2.330	1	1.000	1	N/A	0.487	2.19	18	4.19	9.19	68	48	0	15,750	0.0	0	0	0	48	68	48
907.1	19	20.89	20.39	CLAY	4.5	125	2.455	1	1.000	1	N/A	0.487	2.19	19	4.19	9.19	77	54	0	15,750	0.0	0	0	0	54	77	54
906.1	20	21.89	21.39	CLAY	4.5	125	2.580	1	1.000	1	N/A	0.487	2.19	20	4.19	9.19	86	60	0	15,750	0.0	0	0	0	60	86	60
905.1	21	22.89	22.39	CLAY	4.5	125	2.705	1	1.000	1	N/A	0.487	2.19	21	4.19	9.19	95	67	0	15,750	0.0	0	0	0	67	95	67
904.1	22	23.89	23.39	CLAY	2.5	125	2.830	1	1.000	1	N/A	0.550	1.38	22	4.19	5.76	101	71	0	8,750	0.0	0	0	0	71	101	71
903.1	23	24.89	24.39	CLAY	2.5	125	2.955	1	1.000	1	N/A	0.550	1.38	23	4.19	5.76	107	75	0	8,750	0.0	0	0	0	75	107	75
902.1	24	25.89	25.39	CLAY	2.5	125	3.080	1	1.000	1	N/A	0.550	1.38	24	4.19	5.76	113	79	0	8,750	0.0	0	0	0	79	113	79
901.1	25	26.89	26.39	CLAY	2.5	125	3.205	1	1.000	1	N/A	0.550	1.38	25	4.19	5.76	119	83	0	8,750	0.0	0	0	0	83	119	83
900.1	26	27.89	27.39	CLAY	2.5	125	3.330	1	1.000	1	N/A	0.550	1.38	26	4.19	5.76	124	87	0	8,750	0.0	0	0	0	87	124	87
899.1	27	28.89	28.39	CLAY	3.5	125	3.455	1	1.000	1	N/A	0.535	1.87	27	4.19	7.84	132	92	0	12,250	0.0	0	0	0	92	132	92
898.1	28	29.89	29.39	CLAY	3.5	125	3.580	1	1.000	1	N/A	0.535	1.87	28	4.19	7.84	140	98	0	12,250	0.0	0	0	0	98	140	98
897.1	29	30.89	30.39	CLAY	3.5	125	3.705	1	1.000	1	N/A	0.535	1.87	29	4.19	7.84	148	103	0	12,250	0.0	0	0	0	103	148	103
896.1	30	31.89	31.39	CLAY	3.5	125	3.830	1	1.000	1	N/A	0.535	1.87	30	4.19	7.84	156	109	0	12,250	0.0	0	0	0	109	156	109
895.1	31	32.89	32.39	CLAY	3.5	125	3.955	1	1.000	1	N/A	0.535	1.87	31	4.19	7.84	163	114	0	12,250	0.0	0	0	0	114	163	114
894.1	32	33.89	33.39	CLAY	4.5	125	4.080	1	1.000	1	N/A	0.487	2.19	32	4.19	9.19	173	121	0	15,750	0.0	0	0	0	121	173	121
893.1	33	34.89	34.39	CLAY	4.5	125	4.205	1	1.000	1	N/A	0.487	2.19	33	4.19	9.19	182	127	0	15,750	0.0	0	0	0	127	182	127
892.1	34	35.89	35.39	CLAY	4.5	125	4.330	1	1.000	1	N/A	0.487	2.19	34	4.19	9.19	191	134	0	15,750	0.0	0	0	0	134	191	134
891.1	35	36.89	36.39	CLAY	4.5	125	4.455	1	1.000	1	N/A	0.487	2.19	35	4.19	9.19	200	140	0	15,750	0.0	0	0	0	140	200	140
890.1	36	37.89	37.39	CLAY	4.5	125	4.580	1	1.000	1	N/A	0.487	2.19	36	4.19	9.19	209	147	0	15,750	0.0	0	0	0	147	209	147
889.1	37	38.89	38.39	CLAY	4.5	125	4.705	1	1.000	1	N/A	0.487	2.19	37	4.19	9.19	219	153	0	15,750	0.0	0	0	0	153	219	153
888.1	38	39.89	39.39	CLAY	4.5	125	4.830	1	1.000	1	N/A	0.487	2.19	38	4.19	9.19	228	159	0	15,750	0.0	0	0	0	159	228	159
887.1	39	40.89	40.39	CLAY	4.5	125	4.955	1	1.000	1	N/A	0.487	2.19	39	4.19	9.19	237	166	0	15,750	0.0	0	0	0	166	237	166
886.1	40	41.89	41.39	CLAY	4.5	125	5.080	1	1.000	1	N/A	0.487	2.19	40	4.19	9.19	246	172	0	15,750	0.0	0	0	0	172	246	172
885.1	41	42.89	42.39	CLAY	4.5	125	5.205	1	1.000	1	N/A	0.487	2.19	41	4.19	9.19	255	179	0	15,750	0.0	0	0	0	179	255	179
884.1	42	43.89	43.39	CLAY	4.5	125	5.330	1	1.000	1	N/A	0.487	2.19	42	4.19	9.19	265	185	0	15,750	0.0	0	0	0	185	265	185
883.1	43	44.89	44.39	CLAY	4.5	125	5.455	1	1.000	1	N/A	0.487	2.19	43	4.19	9.19	274	192	0	15,750	0.0	0	0	0	192	274	192
882.1	44	45.89	45.39	CLAY	4.5	125	5.580	1	1.000	1	N/A	0.487	2.19	44	4.19	9.19	283	198	0	15,750	0.0	0	0	0	198	283	198
881.1	45	46.89	46.39	CLAY	4.5	125	5.705	1	1.000	1	N/A	0.487	2.19	45	4.19	9.19	292	204	0	15,750	0.0	0	0	0	204	292	204
880.1	46	47.89	47.39	CLAY	4.5	125	5.830	1	1.000	1	N/A	0.487	2.19	46	4.19	9.19	301	211	0	15,750	0.0	0	0	0	211	301	211
879.1	47	48.89	48.39	CLAY	4.5	125	5.955	1	1.000	1	N/A	0.487	2.19	47	4.19	9.19	310	217	0	15,750	0.0	0	0	0	217	310	217
878.1	48	49.89	49.39	CLAY	4.5	125	6.080	1	1.000	1	N/A	0.487	2.19	48	4.19	9.19	320	224	0	15,750	0.0	0	0	0	224	320	224
877.1	49	50.89	50.39	CLAY	4.5	125	6.205	1	1.000	1	N/A	0.487	2.19	49	4.19	9.19	329	230	0	15,750	0.0	0	0	0	230	329	230
876.1	50	51.89	51.39	CLAY	4.5	125	6.330	1	1.000	1	N/A	0.487	2.19	50	4.19	9.19	338	237	0	15,750	0.0	0	0	0	237	338	237
875.1	51	52.89	52.39	CLAY	4.5	125	6.455	1	1.000	1	N/A	0.487	2.19	51	4.19	9.19	347	243	0	15,750	0.0	0	0	0	243	347	243
874.1	52	53.89	53.39	CLAY	4.5	125	6.580	1	1.000	1	N/A	0.487	2.19	52	4.19	9.19	356	249	0	15,750	0.0	0	0	0	249	356	249
873.1	53	54.89	54.39	CLAY	4.5	125	6.705	1	1.000	1	N/A	0.487	2.19	53	4.19	9.19	366	256	0	15,750	0.0	0	0	0	256	366	256
872.1	54	55.89	55.39	CLAY	4.5	125	6.830	1	1.000	1	N/A	0.487	2.19	54	4.19	9.19	375	262	0	15,750	0.0	0	0	0	262	375	262
871.1	55	56.89	56.39	CLAY	4.5	125	6.955	1	1.000	1	N/A	0.487	2.19	55	4.19	9.19	384	269	0	15,750	0.0	0	0	0	269	384	269
870.1	56	57.89	57.39	CLAY	4.5	125	7.080	1	1.000	1	N/A	0.487	2.19	56	4.19	9.19	393	275	0	15,750	0.0	0	0	0	275	393	275
869.1	57	58.89	58.39	CLAY	4.5	125	7.205	1	1.000	1	N/A	0.487	2.19	57	4.19	9.19	402	282	0	15,750	0.0	0	0	0	282	402	282
868.1	58	59.89	59.39	CLAY	4.5	125	7.330	1	1.000	1	N/A	0.487	2.19	58	4.19	9.19	411	288	0	15,750	0.0	0	0	0	288	411	288
867.1	59	60.89	60.39	CLAY	4.5	125	7.455	1	1.000	1	N/A	0.487	2.19	59	4.19	9.19	421	294	0	15,750	0.0	0	0	0	294	421	294
866.1	60	61.89	61.39	CLAY	4.5	125	7.580	1	1.000	1	N/A	0.487	2.19	60	4.19	9.19	430	301	0	15,750	0.0	0	0	0	301	430	301
865.1	61	62.89	62.39	CLAY	4.5	125	7.705	1	1.000	1	N/A	0.487	2.19	61	4.19	9.19	439	307	0	15,750	0.0	0	0	0	307	439	307
864.1	62	63.89	63.39	CLAY	4.5	125	7.830	1	1.000	1	N/A	0.487	2.19	62	4.19	9.19	448	314	0	15,750	0.0	0	0	0	314	448	314
863.1	63	64.89	64.39	CLAY	4.5	125	7.955	1	1.000	1	N/A	0.487	2.19	63	4.19	9.19	457	320	0	15,750	0.0	0	0	0	320	457	320
862.1	64	65.89	65.39	CLAY	4.5	125	8.080	1	1.000	1	N/A	0.487	2.19	64	4.19	9.19	467	327	0	15,750	0.0	0	0	0	327	467	327
861.1	65	66.89	66.39	CLAY	4.5	125	8.205	1	1.000	1	N/A	0.487	2.19	65	4.19	9.19	476	333	0	15,750	0.0	0	0	0	333	476	333
860.1	66	67.89	67.39	CLAY	4.5	125	8.330	1	1.000	1	N/A	0.487	2.19	66	4.19	9.19	485	339	0	15,750	0.0	0	0	0	339	485	339
859.1	67	68.89	68.39	CLAY	4.5	125	8.455	1	1.000	1	N/A	0.487	2.19	67	4.19	9.19	494	346	0	15,750	0.0	0	0	0	346	494	346
858.1	68	69.89	69.39	CLAY	4.5	125	8.580	1	1.000	1	N/A	0.487	2.19	68	4.19	9.19	503	352	0	15,750	0.0	0	0	0	352	503	352
857.1	69	70.89	70.39	CLAY	4.5	125	8.705	1	1.000	1	N/A	0.487	2.19	69	4.19	9.19	513	359	0	15,750	0.0	0	0	0	359	513	359
856.1	70	71.89	71.39	CLAY	4.5	125	8.830	1	1.000	1	N/A	0.487	2.19	70	4.19	9.19	522	365	0	15,750	0.0	0	0	0	365	522	365
855.1	71	72.89	72.39	CLAY	4.5	125	8.955	1	1.000	1	N/A	0.487	2.19	71	4.19	9.19	531	372	0	15,750	0.0	0	0	0	372	531	372
854.1	72	73.89	73.39	CLAY	4.5	125	9.080	1	1.000	1	N/A	0.487	2.19	72	4.19	9.19	540	378	0	15,750	0.0	0	0	0	378	540	378
853.1	73	74.89	74.39	CLAY	4.5	125	9.205	1	1.000	1	N/A	0.487	2.19	73	4.19	9.19	549	384	0	15,750	0.0	0	0	0	384	549	384
852.1	74	75.89	75.39	CLAY	4.5	125	9.330	1	1.000	1	N/A	0.487	2.19	74	4.19	9.19	558	391	0	15,750	0.0	0	0	0	391	558	391
851.1	75	76.89	76.39	CLAY	4.5	125	9.455	1	1.000	1	N/A	0.487	2.19	75	4.19	9.19	568	397	0	15,750	0.0	0	0	0	397	568	397
850.1	76	77.89	77.39	CLAY	4.5	125	9.580	1	1.000	1	N/A	0.487	2.19	76	4.19	9.19	577	404	0	15,750	0.0	0	0	0	404	577	404
849.1	77	78.89	78.39	CLAY	4.5	125	9.705	1	1.000	1	N/A	0.487	2.19	77	4.19	9.19	586	410	0	15,750	0.0	0	0	0	410	586	410
848.1	78	79.89	79.39	CLAY	4.5	125	9.830	1	1.000	1	N/A	0.487	2.19	78	4.19	9.19	595	417	0	15,750	0.0	0	0	0	417	595	417
847.1	79	80.89	80.39	CLAY	4.5	125	9.955	1	1.000	1	N/A	0.487	2.19	79	4.19	9.19	604	423	0	15,750	0.0	0	0	0	423	604	423
846.1	80	81.89	81.39	CLAY	4.5	125	10.080	1	1.000	1	N/A	0.487	2.19	80	4.19	9.19	614	430	0	15,750	0.0	0	0	0	430	614	430
845.1	81	82.89	82.39	CLAY	4.5	125	10.205	1	1.000	1	N/A	0.487	2.19	81	4.19	9.19	623	436	0	15,750	0.0	0	0	0	436	623	436
844.1	82	83.89	83.39	CLAY	4.5	125	10.330	1	1.000	1	N/A	0.487	2.19	82	4.19	9.19	632	442	0	15,750	0.0	0	0	0	442	632	442
843.1	83	84.89	84.39	CLAY	4.5	125	10.455	1	1.000	1	N/A	0.487	2.19	83	4.19	9.19	641	449	0	15,750	0.0	0	0	0	449	641	449
842.1	84	85.89	85.39	CLAY	4.5	125	10.580	1	1.000	1	N/A	0.487	2.19	84	4.19	9.19	650	455	0	15,750	0.0	0	0	0	455	650	455
841.1	85	86.89	86.39	CLAY	4.5	125	10.705	1	1.000	1	N/A	0.487	2.19	85	4.19	9.19	660	462	0	15,750	0.0	0	0	0	462	660	462
840.1	86	87.89	87.39	CLAY	4.5	125	10.830	1	1.000	1	N/A	0.487	2.19	86	4.19	9.19	669	468	0	15,750	0.0	0	0	0	468	669	468
839.1	87	88.89	88.39	CLAY	4.5	125	10.955	1	1.000	1	N/A	0.487	2.19	87	4.19	9.19	678	475	0	15,750	0.0	0	0	0	475	678	475
838.1	88	89.89	89.39	CLAY	4.5	125	11.080	1	1.000	1	N/A	0.487	2.19	88	4.19	9.19	687	481	0	15,750	0.0	0	0	0	481	687	481
837.1	89	90.89	90.39	CLAY	4.5	125	11.205	1	1.000	1	N/A	0.487	2.19	89	4.19	9.19	696	487	0	15,750	0.0	0	0	0	487	696	487
836.1	90	91.89	91.39	CLAY	4.5	125	11.330	1	1.000	1	N/A	0.487	2.19	90	4.19	9.19	705	494	0	15,750	0.0	0	0	0	494	705	494
835.1	91	92.89	92.39	CLAY	4.5	125	11.455	1	1.000	1	N/A	0.487	2.19	91	4.19	9.19	715	500	0	15,750	0.0	0	0	0	500	715	500
834.1	92	93.89	93.39	CLAY	4.5	125	11.580	1	1.000	1	N/A	0.487	2.19	92	4.19	9.19	724	507	0	15,750	0.0	0	0	0	507	724	507
833.1	93	94.89	94.39	CLAY	4.5	125	11.705	1	1.000	1	N/A	0.487	2.19	93	4.19	9.19	733	513	0	15,750	0.0	0	0	0	513	733	513
832.1	94	95.89	95.39	CLAY	4.5	125	11.830	1	1.000	1	N/A	0.487	2.19	94	4.19	9.19	742	520	0	15,750	0.0	0	0	0	520	742	520
831.1	95	96.89	96.39	CLAY	4.5	125	11.955	1	1.000	1	N/A	0.487	2.19	95	4.19	9.19	751	526	0	15,750	0.0	0	0	0	526	751	526
830.1	96	97.89	97.39	CLAY	4.5	125	12.080	1	1.000	1	N/A	0.487	2.19	96	4.19	9.19	761	532	0	15,750	0.0	0	0	0	532	761	532
829.1	97	98.89	98.39	CLAY	4.5	125	12.205	1	1.000	1	N/A	0.487	2.19	97	4.19	9.19	770	539	0	15,750	0.0	0	0	0	539	770	539
828.1	98	99.89	99.39	CLAY	4.5	125	12.330	1	1.000	1	N/A	0.487	2.19	98	4.19	9.19	779	545	0	15,750	0.0	0	0	0	545	779	545
827.1	99	100.89	100.39	CLAY	4.5	125	12.455	1	1.000	1	N/A	0.487	2.19	99	4.19	9.19	788	552	0	15,750	0.0	0	0	0	552	788	552
826.1	100	101.89	101.39	CLAY	4.5	125	12.580	1	1.000	1	N/A	0.487	2.19	100	4.19	9.19	797	558	0	15,750	0.0	0	0	0	558	797	558
825.1	101	102.89	102.39	CLAY	4.5	125	12.705	1	1.000	1	N/A	0.487	2.19	101	4.19	9.19	807	565	0	15,750	0.0	0	0	0	565	807	565
824.1	102	103.89	103.39	CLAY	4.5	125	12.830	1	1.000	1	N/A	0.487	2.19	102	4.19	9.19	816	571	0	15,750	0.0	0	0	0	571	816	571
823.1	103	104.89	104.39	CLAY	4.5	125	12.955	1	1.000	1	N/A	0.487	2.19	103	4.19	9.19	825	577	0	15,750	0.0	0	0	0	577	825	577
822.1	104	105.89	105.39	CLAY	4.5	125	13.080	1	1.000	1	N/A	0.487	2.19	104	4.19	9.19	834	584	0	15,750	0.0	0	0	0	584	834	584
821.1	105	106.89	106.39	CLAY	4.5	125	13.205	1	1.000	1	N/A	0.487	2.19	105	4.19	9.19	843	590	0	15,750	0.0	0	0	0	590	843	590
820.1	106	107.89	107.39	CLAY	4.5	125	13.330	1	1.000	1	N/A	0.487	2.19	106	4.19	9.19	852	597	0	15,750	0.0	0	0	0	597	852	597
819.1	107	108.89	108.39	CLAY	4.5	125	13.455	1	1.000	1	N/A	0.487	2.19	107	4.19	9.19	862	603	0	15,

LA-1143/Palo Comado OC

16 inch CIDH Abutment 1L



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 16 inch CIDH Abutment 1R

Pile Diameter= 1.333333 ft
Perimeter= 4.189 ft
End Area= 1.396 ft²

Group Efficiency Factor= 1
5% D= 0.80 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.13455 ksf
Depth of overburden= 1.17 ft

Pile head below ground surface (ft) 1.17
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 98.83

Req. Nom.= N/A kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Factored= 160 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	160
39	160
39	0
39	160

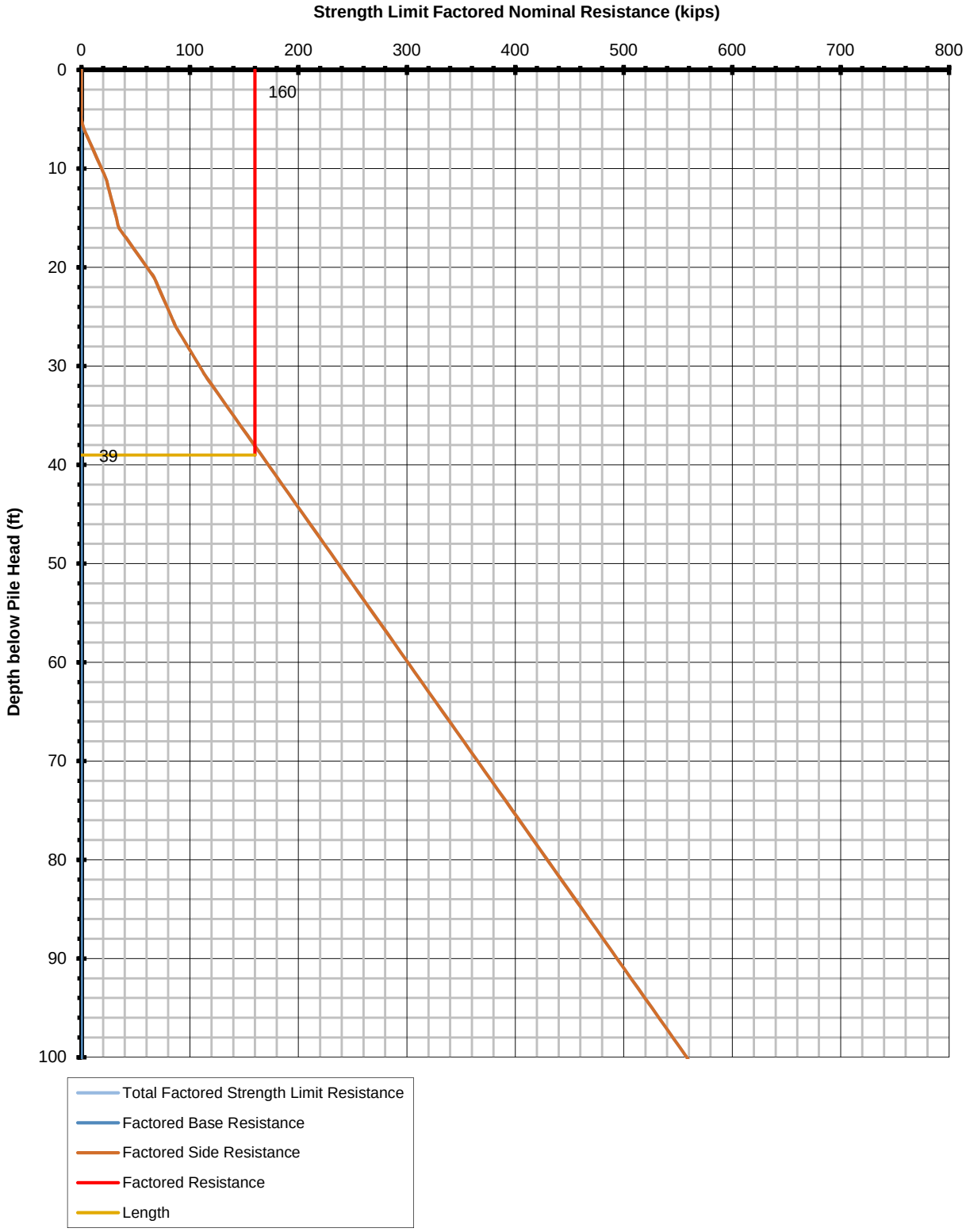
Req. Nom. T= N/A kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS (kips)	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
926.83	0	1.17												0			0	0									
925.8	1	2.17	1.67	CLAY	1.5	120	0.195	0	1.000	1	N/A	0.550	0.00	1	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
924.8	2	3.17	2.67	CLAY	1.5	120	0.315	0	1.000	1	N/A	0.550	0.00	2	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
923.8	3	4.17	3.67	CLAY	1.5	120	0.435	0	1.000	1	N/A	0.550	0.00	3	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	3	0
922.8	4	5.17	4.67	CLAY	1.5	120	0.555	0	1.000	1	N/A	0.550	0.00	4	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
921.8	5	6.17	5.67	CLAY	1.5	120	0.675	0	1.000	1	N/A	0.550	0.00	5	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
920.8	6	7.17	6.67	CLAY	1.5	120	0.795	1	1.000	1	N/A	0.550	0.83	6	4.19	3.46	3	2	0	2,250	0.0	0	0	0	2	3	2
919.8	7	8.17	7.67	CLAY	2.5	120	0.915	1	1.000	1	N/A	0.550	1.38	7	4.19	5.76	9	6	0	8,750	0.0	0	0	0	6	9	6
918.8	8	9.17	8.67	CLAY	2.5	120	1.035	1	1.000	1	N/A	0.550	1.38	8	4.19	5.76	15	10	0	8,750	0.0	0	0	0	10	15	10
917.8	9	10.17	9.67	CLAY	2.5	120	1.155	1	1.000	1	N/A	0.550	1.38	9	4.19	5.76	21	15	0	8,750	0.0	0	0	0	15	21	15
916.8	10	11.17	10.67	CLAY	2.5	120	1.275	1	1.000	1	N/A	0.550	1.38	10	4.19	5.76	26	19	0	8,750	0.0	0	0	0	19	26	19
915.8	11	12.17	11.67	CLAY	2.5	120	1.395	1	1.000	1	N/A	0.550	1.38	11	4.19	5.76	32	23	0	8,750	0.0	0	0	0	23	32	23
914.8	12	13.17	12.67	CLAY	2.5	120	1.515	1	1.000	1	N/A	0.550	0.83	12	4.19	3.46	36	25	0	2,250	0.0	0	0	0	25	36	25
913.8	13	14.17	13.67	CLAY	1.5	120	1.635	1	1.000	1	N/A	0.550	0.83	13	4.19	3.46	39	27	0	2,250	0.0	0	0	0	27	39	27
912.8	14	15.17	14.67	CLAY	1.5	120	1.755	1	1.000	1	N/A	0.550	0.83	14	4.19	3.46	43	30	0	2,250	0.0	0	0	0	30	43	30
911.8	15	16.17	15.67	CLAY	1.5	120	1.875	1	1.000	1	N/A	0.550	0.83	15	4.19	3.46	46	32	0	2,250	0.0	0	0	0	32	46	32
910.8	16	17.17	16.67	CLAY	1.5	125	1.997	1	1.000	1	N/A	0.550	0.83	16	4.19	3.46	50	35	0	2,250	0.0	0	0	0	35	50	35
909.8	17	18.17	17.67	CLAY	4.5	125	2.122	1	1.000	1	N/A	0.487	2.19	17	4.19	9.19	59	41	0	15,750	0.0	0	0	0	41	59	41
908.8	18	19.17	18.67	CLAY	4.5	125	2.247	1	1.000	1	N/A	0.487	2.19	18	4.19	9.19	68	48	0	15,750	0.0	0	0	0	48	68	48
907.8	19	20.17	19.67	CLAY	4.5	125	2.372	1	1.000	1	N/A	0.487	2.19	19	4.19	9.19	77	54	0	15,750	0.0	0	0	0	54	77	54
906.8	20	21.17	20.67	CLAY	4.5	125	2.497	1	1.000	1	N/A	0.487	2.19	20	4.19	9.19	86	60	0	15,750	0.0	0	0	0	60	86	60
905.8	21	22.17	21.67	CLAY	4.5	125	2.622	1	1.000	1	N/A	0.487	2.19	21	4.19	9.19	95	67	0	15,750	0.0	0	0	0	67	95	67
904.8	22	23.17	22.67	CLAY	4.5	125	2.747	1	1.000	1	N/A	0.550	1.38	22	4.19	5.76	101	71	0	8,750	0.0	0	0	0	71	101	71
903.8	23	24.17	23.67	CLAY	2.5	125	2.872	1	1.000	1	N/A	0.550	1.38	23	4.19	5.76	107	75	0	8,750	0.0	0	0	0	75	107	75
902.8	24	25.17	24.67	CLAY	2.5	125	2.997	1	1.000	1	N/A	0.550	1.38	24	4.19	5.76	113	79	0	8,750	0.0	0	0	0	79	113	79
901.8	25	26.17	25.67	CLAY	2.5	125	3.122	1	1.000	1	N/A	0.550	1.38	25	4.19	5.76	119	83	0	8,750	0.0	0	0	0	83	119	83
900.8	26	27.17	26.67	CLAY	2.5	125	3.247	1	1.000	1	N/A	0.550	1.38	26	4.19	5.76	124	87	0	8,750	0.0	0	0	0	87	124	87
899.8	27	28.17	27.67	CLAY	3.5	125	3.372	1	1.000	1	N/A	0.535	1.87	27	4.19	7.84	132	92	0	12,250	0.0	0	0	0	92	132	92
898.8	28	29.17	28.67	CLAY	3.5	125	3.497	1	1.000	1	N/A	0.535	1.87	28	4.19	7.84	140	98	0	12,250	0.0	0	0	0	98	140	98
897.8	29	30.17	29.67	CLAY	3.5	125	3.622	1	1.000	1	N/A	0.535	1.87	29	4.19	7.84	148	103	0	12,250	0.0	0	0	0	103	148	103
896.8	30	31.17	30.67	CLAY	3.5	125	3.747	1	1.000	1	N/A	0.535	1.87	30	4.19	7.84	156	109	0	12,250	0.0	0	0	0	109	156	109
895.8	31	32.17	31.67	CLAY	3.5	125	3.872	1	1.000	1	N/A	0.535	1.87	31	4.19	7.84	163	114	0	12,250	0.0	0	0	0	114	163	114
894.8	32	33.17	32.67	CLAY	4.5	125	3.997	1	1.000	1	N/A	0.487	2.19	32	4.19	9.19	173	121	0	15,750	0.0	0	0	0	121	173	121
893.8	33	34.17	33.67	CLAY	4.5	125	4.122	1	1.000	1	N/A	0.487	2.19	33	4.19	9.19	182	127	0	15,750	0.0	0	0	0	127	182	127
892.8	34	35.17	34.67	CLAY	4.5	125	4.247	1	1.000	1	N/A	0.487	2.19	34	4.19	9.19	191	134	0	15,750	0.0	0	0	0	134	191	134
891.8	35	36.17	35.67	CLAY	4.5	125	4.372	1	1.000	1	N/A	0.487	2.19	35	4.19	9.19	200	140	0	15,750	0.0	0	0	0	140	200	140
890.8	36	37.17	36.67	CLAY	4.5	125	4.497	1	1.000	1	N/A	0.487	2.19	36	4.19	9.19	209	147	0	15,750	0.0	0	0	0	147	209	147
889.8	37	38.17	37.67	CLAY	4.5	125	4.622	1	1.000	1	N/A	0.487	2.19	37	4.19	9.19	219	153	0	15,750	0.0	0	0	0	153	219	153
888.8	38	39.17	38.67	CLAY	4.5	125	4.747	1	1.000	1	N/A	0.487	2.19	38	4.19	9.19	228	159	0	15,750	0.0	0	0	0	159	228	159
887.8	39	40.17	39.67	CLAY	4.5	125	4.872	1	1.000	1	N/A	0.487	2.19	39	4.19	9.19	237	166	0	15,750	0.0	0	0	0	166	237	166
886.8	40	41.17	40.67	CLAY	4.5	125	4.997	1	1.000	1	N/A	0.487	2.19	40	4.19	9.19	246	172	0	15,750	0.0	0	0	0	172	246	172
885.8	41	42.17	41.67	CLAY	4.5	125	5.122	1	1.000	1	N/A	0.487	2.19	41	4.19	9.19	255	179	0	15,750	0.0	0	0	0	179	255	179
884.8	42	43.17	42.67	CLAY	4.5	125	5.247	1	1.000	1	N/A	0.487	2.19	42	4.19	9.19	265	185	0	15,750	0.0	0	0	0	185	265	185
883.8	43	44.17	43.67	CLAY	4.5	125	5.372	1	1.000	1	N/A	0.487	2.19	43	4.19	9.19	274	192	0	15,750	0.0	0	0	0	192	274	192
882.8	44	45.17	44.67	CLAY	4.5	125	5.497	1	1.000	1	N/A	0.487	2.19	44	4.19	9.19	283	198	0	15,750	0.0	0	0	0	198	283	198
881.8	45	46.17	45.67	CLAY	4.5	125	5.622	1	1.000	1	N/A	0.487	2.19	45	4.19	9.19	292	204	0	15,750	0.0	0	0	0	204	292	204
880.8	46	47.17	46.67	CLAY	4.5	125	5.747	1	1.000	1	N/A	0.487	2.19	46	4.19	9.19	301	211	0	15,750	0.0	0	0	0	211	301	211
879.8	47	48.17	47.67	CLAY	4.5	125	5.872	1	1.000	1	N/A	0.487	2.19	47	4.19	9.19	310	217	0	15,750	0.0	0	0	0	217	310	217
878.8	48	49.17	48.67	CLAY	4.5	125	5.997	1	1.000	1	N/A	0.487	2.19	48	4.19	9.19	320	224	0	15,750	0.0	0	0	0	224	320	224
877.8	49	50.17	49.67	CLAY	4.5	125	6.122	1	1.000	1	N/A	0.487	2.19	49	4.19	9.19	329	230	0	15,750	0.0	0	0	0	230	329	230
876.8	50	51.17	50.67	CLAY	4.5	125	6.247	1	1.000	1	N/A	0.487	2.19	50	4.19	9.19	338	237	0	15,750	0.0	0	0	0	237	338	237
875.8	51	52.17	51.67	CLAY	4.5	125	6.372	1	1.000	1	N/A	0.487	2.19	51	4.19	9.19	347	243	0	15,750	0.0	0	0	0	243	347	243
874.8	52	53.17	52.67	CLAY	4.5	125	6.497	1	1.000	1	N/A	0.487	2.19	52	4.19	9.19	356	249	0	15,750	0.0	0	0	0	249	356	249
873.8	53	54.17	53.67	CLAY	4.5	125	6.622	1	1.000	1	N/A	0.487	2.19	53	4.19	9.19	366	256	0	15,750	0.0	0	0	0	256	366	256
872.8	54	55.17	54.67	CLAY	4.5	125	6.747	1	1.000	1	N/A	0.487	2.19	54	4.19	9.19	375	262	0	15,750	0.0	0	0	0	262	375	262
871.8	55	56.17	55.67	CLAY	4.5	125	6.872	1	1.000	1	N/A	0.487	2.19	55	4.19	9.19	384	269	0	15,750	0.0	0	0	0	269	384	269
870.8	56	57.17	56.67	CLAY	4.5	125	6.997	1	1.000	1	N/A	0.487	2.19	56	4.19	9.19	393	275	0	15,750	0.0	0	0	0	275	393	275
869.8	57	58.17	57.67	CLAY	4.5	125	7.122	1	1.000	1	N/A	0.487	2.19	57	4.19	9.19	402	282	0	15,750	0.0	0	0	0	282	402	282
868.8	58	59.17	58.67	CLAY	4.5	125	7.247	1	1.000	1	N/A	0.487	2.19	58	4.19	9.19	411	288	0	15,750	0.0	0	0	0	288	411	288
867.8	59	60.17	59.67	CLAY	4.5	125	7.372	1	1.000	1	N/A	0.487	2.19	59	4.19	9.19	421	294	0	15,750	0.0	0	0	0	294	421	294
866.8	60	61.17	60.67	CLAY	4.5	125	7.497	1	1.000	1	N/A	0.487	2.19	60	4.19	9.19	430	301	0	15,750	0.0	0	0	0	301	430	301
865.8	61	62.17	61.67	CLAY	4.5	125	7.622	1	1.000	1	N/A	0.487	2.19	61	4.19	9.19	439	307	0	15,750	0.0	0	0	0	307	439	307
864.8	62	63.17	62.67	CLAY	4.5	125	7.747	1	1.000	1	N/A	0.487	2.19	62	4.19	9.19	448	314	0	15,750	0.0	0	0	0	314	448	314
863.8	63	64.17	63.67	CLAY	4.5	125	7.872	1	1.000	1	N/A	0.487	2.19	63	4.19	9.19	457	320	0	15,750	0.0	0	0	0	320	457	320
862.8	64	65.17	64.67	CLAY	4.5	125	7.997	1	1.000	1	N/A	0.487	2.19	64	4.19	9.19	467	327	0	15,750	0.0	0	0	0	327	467	327
861.8	65	66.17	65.67	CLAY	4.5	125	8.122	1	1.000	1	N/A	0.487	2.19	65	4.19	9.19	476	333	0	15,750	0.0	0	0	0	333	476	333
860.8	66	67.17	66.67	CLAY	4.5	125	8.247	1	1.000	1	N/A	0.487	2.19	66	4.19	9.19	485	339	0	15,750	0.0	0	0	0	339	485	339
859.8	67	68.17	67.67	CLAY	4.5	125	8.372	1	1.000	1	N/A	0.487	2.19	67	4.19	9.19	494	346	0	15,750	0.0	0	0	0	346	494	346
858.8	68	69.17	68.67	CLAY	4.5	125	8.497	1	1.000	1	N/A	0.487	2.19	68	4.19	9.19	503	352	0	15,750	0.0	0	0	0	352	503	352
857.8	69	70.17	69.67	CLAY	4.5	125	8.622	1	1.000	1	N/A	0.487	2.19	69	4.19	9.19	513	359	0	15,750	0.0	0	0	0	359	513	359
856.8	70	71.17	70.67	CLAY	4.5	125	8.747	1	1.000	1	N/A	0.487	2.19	70	4.19	9.19	522	365	0	15,750	0.0	0	0	0	365	522	365
855.8	71	72.17	71.67	CLAY	4.5	125	8.872	1	1.000	1	N/A	0.487	2.19	71	4.19	9.19	531	372	0	15,750	0.0	0	0	0	372	531	372
854.8	72	73.17	72.67	CLAY	4.5	125	8.997	1	1.000	1	N/A	0.487	2.19	72	4.19	9.19	540	378	0	15,750	0.0	0	0	0	378	540	378
853.8	73	74.17	73.67	CLAY	4.5	125	9.122	1	1.000	1	N/A	0.487	2.19	73	4.19	9.19	549	384	0	15,750	0.0	0	0	0	384	549	384
852.8	74	75.17	74.67	CLAY	4.5	125	9.247	1	1.000	1	N/A	0.487	2.19	74	4.19	9.19	558	391	0	15,750	0.0	0	0	0	391	558	391
851.8	75	76.17	75.67	CLAY	4.5	125	9.372	1	1.000	1	N/A	0.487	2.19	75	4.19	9.19	568	397	0	15,750	0.0	0	0	0	397	568	397
850.8	76	77.17	76.67	CLAY	4.5	125	9.497	1	1.000	1	N/A	0.487	2.19	76	4.19	9.19	577	404	0	15,750	0.0	0	0	0	404	577	404
849.8	77	78.17	77.67	CLAY	4.5	125	9.622	1	1.000	1	N/A	0.487	2.19	77	4.19	9.19	586	410	0	15,750	0.0	0	0	0	410	586	410
848.8	78	79.17	78.67	CLAY	4.5	125	9.747	1	1.000	1	N/A	0.487	2.19	78	4.19	9.19	595	417	0	15,750	0.0	0	0	0	417	595	417
847.8	79	80.17	79.67	CLAY	4.5	125	9.872	1	1.000	1	N/A	0.487	2.19	79	4.19	9.19	604	423	0	15,750	0.0	0	0	0	423	604	423
846.8	80	81.17	80.67	CLAY	4.5	125	9.997	1	1.000	1	N/A	0.487	2.19	80	4.19	9.19	614	430	0	15,750	0.0	0	0	0	430	614	430
845.8	81	82.17	81.67	CLAY	4.5	125	10.122	1	1.000	1	N/A	0.487	2.19	81	4.19	9.19	623	436	0	15,750	0.0	0	0	0	436	623	436
844.8	82	83.17	82.67	CLAY	4.5	125	10.247	1	1.000	1	N/A	0.487	2.19	82	4.19	9.19	632	442	0	15,750	0.0	0	0	0	442	632	442
843.8	83	84.17	83.67	CLAY	4.5	125	10.372	1	1.000	1	N/A	0.487	2.19	83	4.19	9.19	641	449	0	15,750	0.0	0	0	0	449	641	449
842.8	84	85.17	84.67	CLAY	4.5	125	10.497	1	1.000	1	N/A	0.487	2.19	84	4.19	9.19	650	455	0	15,750	0.0	0	0	0	455	650	455
841.8	85	86.17	85.67	CLAY	4.5	125	10.622	1	1.000	1	N/A	0.487	2.19	85	4.19	9.19	660	462	0	15,750	0.0	0	0	0	462	660	462
840.8	86	87.17	86.67	CLAY	4.5	125	10.747	1	1.000	1	N/A	0.487	2.19	86	4.19	9.19	669	468	0	15,750	0.0	0	0	0	468	669	468
839.8	87	88.17	87.67	CLAY	4.5	125	10.872	1	1.000	1	N/A	0.487	2.19	87	4.19	9.19	678	475	0	15,750	0.0	0	0	0	475	678	475
838.8	88	89.17	88.67	CLAY	4.5	125	10.997	1	1.000	1	N/A	0.487	2.19	88	4.19	9.19	687	481	0	15,750	0.0	0	0	0	481	687	481
837.8	89	90.17	89.67	CLAY	4.5	125	11.122	1	1.000	1	N/A	0.487	2.19	89	4.19	9.19	696	487	0	15,750	0.0	0	0	0	487	696	487
836.8	90	91.17	90.67	CLAY	4.5	125	11.247	1	1.000	1	N/A	0.487	2.19	90	4.19	9.19	705	494	0	15,750	0.0	0	0	0	494	705	494
835.8	91	92.17	91.67	CLAY	4.5	125	11.372	1	1.000	1	N/A	0.487	2.19	91	4.19	9.19	715	500	0	15,750	0.0	0	0	0	500	715	500
834.8	92	93.17	92.67	CLAY	4.5	125	11.497	1	1.000	1	N/A	0.487	2.19	92	4.19	9.19	724	507	0	15,750	0.0	0	0	0	507	724	507
833.8	93	94.17	93.67	CLAY	4.5	125	11.622	1	1.000	1	N/A	0.487	2.19	93	4.19	9.19	733	513	0	15,750	0.0	0	0	0	513	733	513
832.8	94	95.17	94.67	CLAY	4.5	125	11.747	1	1.000	1	N/A	0.487	2.19	94	4.19	9.19	742	520	0	15,750	0.0	0	0	0	520	742	520
831.8	95	96.17	95.67	CLAY	4.5	125	11.872	1	1.000	1	N/A	0.487	2.19	95	4.19	9.19	751	526	0	15,750	0.0	0	0	0	526	751	526
830.8	96	97.17	96.67	CLAY	4.5	125	11.997	1	1.000	1	N/A	0.487	2.19	96	4.19	9.19	761	532	0	15,750	0.0	0	0	0	532	761	532
829.8	97	98.17	97.67	CLAY	4.5	125	12.122	1	1.000	1	N/A	0.487	2.19	97	4.19	9.19	770	539	0	15,750	0.0	0	0	0	539	770	539
828.8	98	99.17	98.67	CLAY	4.5	125	12.247	1	1.000	1	N/A	0.487	2.19	98	4.19	9.19	779	545	0	15,750	0.0	0	0	0	545	779	545
827.8	99	100.17	99.67	CLAY	4.5	125	12.372	1	1.000	1	N/A	0.487	2.19	99	4.19	9.19	788	552	0	15,750	0.0	0	0	0	552	788	552
826.8	100	101.17	100.67	CLAY	4.5	125	12.497	1	1.000	1	N/A	0.487	2.19	100	4.19	9.19	797	558	0	15,750	0.0	0	0	0	558	797	558
825.8	101	102.17	101.67	CLAY	4.5	125	12.622	1	1.000	1	N/A	0.487	2.19	101	4.19	9.19	807	565	0	15,750	0.0	0	0	0	565	807	565
824.8	102	103.17	102.67	CLAY	4.5	125	12.747	1	1.000	1	N/A	0.487	2.19	102	4.19	9.19	816	571	0	15,750	0.0	0	0	0	571	816	571
823.8	103	104.17	103.67	CLAY	4.5	125	12.872	1	1.000	1	N/A	0.487	2.19	103	4.19	9.19	825	577	0	15,750	0.0	0	0	0	577	825	577
822.8	104	105.17	104.67	CLAY	4.5	125	12.997	1	1.000	1	N/A	0.487	2.19	104	4.19	9.19	834	584	0	15,750	0.0	0	0	0	584	834	584
821.8	105	106.17	105.67	CLAY	4.5	125	13.122	1	1.000	1	N/A	0.487	2.19	105	4.19	9.19	843	590	0	15,750	0.0	0	0	0	590	843	590
820.8	106	107.17	106.67	CLAY	4.5	125	13.247	1	1.000	1	N/A	0.487	2.19	106	4.19	9.19	852	597	0	15,750	0.0	0	0	0	597	852	597
819.8	107	108.17	107.67	CLAY	4.5	125	13.372	1	1.000	1	N/A	0.487	2.19	107	4.19	9.19	862	603	0	15,750	0.0	0	0	0	603	862	603
818

LA-1143/Palo Comado OC

16 inch CIDH Abutment 1R



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 24 inch CIDH Bent 2L

Pile Diameter=	2	ft	Group Efficiency Factor=	1	Pile head below ground surface (ft)	8.91	
Perimeter=	6.283	ft	5% D=	1.20	inch	Groundwater below ground surface (ft)	100
End Area=	3.142	ft^2	Limiting Settlement for Qbase=	0.00	inch	Groundwater below pile head (ft)	91.09
			Overburden at pile cutoff=	0.23	ksf		
			Depth of overburden=	2	ft		

Req. Nom.= 300 kips

Nominal Comp Plot

Depth (ft)	Load (kips)
0	300
27	300
27	0
27	300

Factored= 260 kips

Strength Plot

Depth (ft)	Factored Load (kips)
0	260
32	260
32	0
32	260

Req. Nom. T= 140 kips

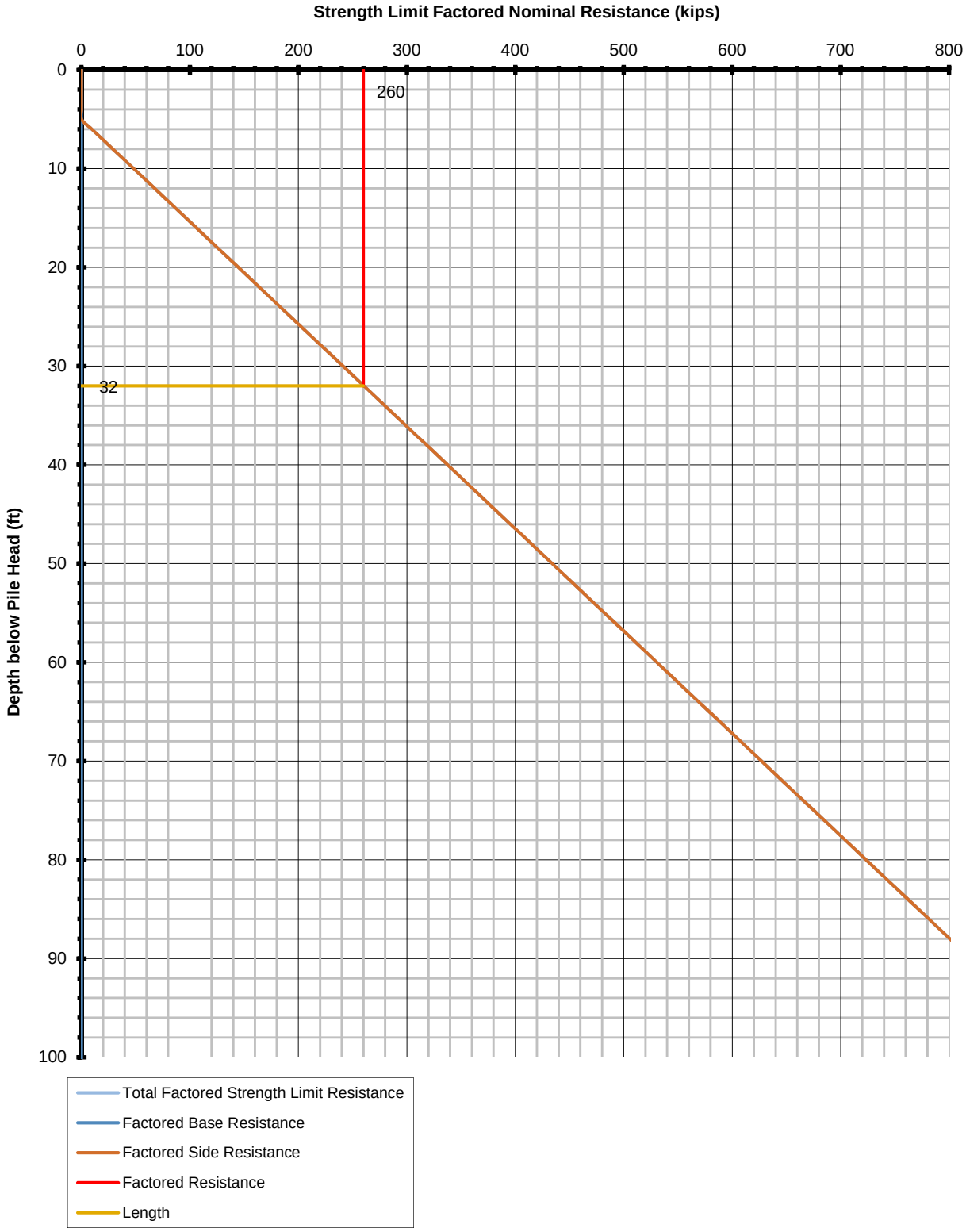
Nominal Tension Plot

Depth (ft)	Load (kips)
0	140
20	140
20	0
20	140

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft^2)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
901.09	0	8.91												0			0	0										
900.1	1	9.91	9.41	CLAY	3.75	125	0.293	0	1.000	1	N/A	0.523	0.00	1	6.28	0.00	0	0	0	13,125	0.0	0	0	0	0	0	0
899.1	2	10.91	10.41	CLAY	4.5	125	0.418	0	1.000	1	N/A	0.487	0.00	2	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
898.1	3	11.91	11.41	CLAY	4.5	125	0.543	0	1.000	1	N/A	0.487	0.00	3	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
897.1	4	12.91	12.41	CLAY	4.5	125	0.668	0	1.000	1	N/A	0.487	0.00	4	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
896.1	5	13.91	13.41	CLAY	4.5	125	0.793	0	1.000	1	N/A	0.487	0.00	5	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
895.1	6	14.91	14.41	CLAY	4.5	125	0.918	1	1.000	1	N/A	0.487	2.19	6	6.28	13.78	14	10	0	15,750	0.0	0	0	0	10	14	10
894.1	7	15.91	15.41	CLAY	4.5	125	1.043	1	1.000	1	N/A	0.487	2.19	7	6.28	13.78	28	19	0	15,750	0.0	0	0	0	19	28	19
893.1	8	16.91	16.41	CLAY	4.5	125	1.168	1	1.000	1	N/A	0.487	2.19	8	6.28	13.78	41	29	0	15,750	0.0	0	0	0	29	41	29
892.1	9	17.91	17.41	CLAY	4.5	125	1.293	1	1.000	1	N/A	0.487	2.19	9	6.28	13.78	55	39	0	15,750	0.0	0	0	0	39	55	39
891.1	10	18.91	18.41	CLAY	4.5	125	1.418	1	1.000	1	N/A	0.487	2.19	10	6.28	13.78	69	48	0	15,750	0.0	0	0	0	48	69	48
890.1	11	19.91	19.41	CLAY	4.5	125	1.543	1	1.000	1	N/A	0.487	2.19	11	6.28	13.78	83	58	0	15,750	0.0	0	0	0	58	83	58
889.1	12	20.91	20.41	CLAY	4.5	125	1.668	1	1.000	1	N/A	0.487	2.19	12	6.28	13.78	96	68	0	15,750	0.0	0	0	0	68	96	68
888.1	13	21.91	21.41	CLAY	4.5	125	1.793	1	1.000	1	N/A	0.487	2.19	13	6.28	13.78	110	77	0	15,750	0.0	0	0	0	77	110	77
887.1	14	22.91	22.41	CLAY	4.5	125	1.918	1	1.000	1	N/A	0.487	2.19	14	6.28	13.78	124	87	0	15,750	0.0	0	0	0	87	124	87
886.1	15	23.91	23.41	CLAY	4.5	125	2.043	1	1.000	1	N/A	0.487	2.19	15	6.28	13.78	138	96	0	15,750	0.0	0	0	0	96	138	96
885.1	16	24.91	24.41	CLAY	4.5	125	2.168	1	1.000	1	N/A	0.487	2.19	16	6.28	13.78	152	106	0	15,750	0.0	0	0	0	106	152	106
884.1	17	25.91	25.41	CLAY	4.5	125	2.293	1	1.000	1	N/A	0.487	2.19	17	6.28	13.78	165	116	0	15,750	0.0	0	0	0	116	165	116
883.1	18	26.91	26.41	CLAY	4.5	125	2.418	1	1.000	1	N/A	0.487	2.19	18	6.28	13.78	179	125	0	15,750	0.0	0	0	0	125	179	125
882.1	19	27.91	27.41	CLAY	4.5	125	2.543	1	1.000	1	N/A	0.487	2.19	19	6.28	13.78	193	135	0	15,750	0.0	0	0	0	135	193	135
881.1	20	28.91	28.41	CLAY	4.5	125	2.668	1	1.000	1	N/A	0.487	2.19	20	6.28	13.78	207	145	0	15,750	0.0	0	0	0	145	207	145
880.1	21	29.91	29.41	CLAY	4.5	125	2.793	1	1.000	1	N/A	0.487	2.19	21	6.28	13.78	220	154	0	15,750	0.0	0	0	0	154	220	154
879.1	22	30.91	30.41	CLAY	4.5	125	2.918	1	1.000	1	N/A	0.487	2.19	22	6.28	13.78	234	164	0	15,750	0.0	0	0	0	164	234	164
878.1	23	31.91	31.41	CLAY	4.5	125	3.043	1	1.000	1	N/A	0.487	2.19	23	6.28	13.78	248	174	0	15,750	0.0	0	0	0	174	248	174
877.1	24	32.91	32.41	CLAY	4.5	125	3.168	1	1.000	1	N/A	0.487	2.19	24	6.28	13.78	262	183	0	15,750	0.0	0	0	0	183	262	183
876.1	25	33.91	33.41	CLAY	4.5	125	3.293	1	1.000	1	N/A	0.487	2.19	25	6.28	13.78	276	193	0	15,750	0.0	0	0	0	193	276	193
875.1	26	34.91	34.41	CLAY	4.5	125	3.418	1	1.000	1	N/A	0.487	2.19	26	6.28	13.78	289	203	0	15,750	0.0	0	0	0	203	289	203
874.1	27	35.91	35.41	CLAY	4.5	125	3.543	1	1.000	1	N/A	0.487	2.19	27	6.28	13.78	303	212	0	15,750	0.0	0	0	0	212	303	212
873.1	28	36.91	36.41	CLAY	4.5	125	3.668	1	1.000	1	N/A	0.487	2.19	28	6.28	13.78	317	222	0	15,750	0.0	0	0	0	222	317	222
872.1	29	37.91	37.41	CLAY	4.5	125	3.793	1	1.000	1	N/A	0.487	2.19	29	6.28	13.78	331	231	0	15,750	0.0	0	0	0	231	331	231
871.1	30	38.91	38.41	CLAY	4.5	125	3.918	1	1.000	1	N/A	0.487	2.19	30	6.28	13.78	344	241	0	15,750	0.0	0	0	0	241	344	241
870.1	31	39.91	39.41	CLAY	4.5	125	4.043	1	1.000	1	N/A	0.487	2.19	31	6.28	13.78	358	251	0	15,750	0.0	0	0	0	251	358	251
869.1	32	40.91	40.41	CLAY	4.5	125	4.168	1	1.000	1	N/A	0.487	2.19	32	6.28	13.78	372	260	0	15,750	0.0	0	0	0	260	372	260
868.1	33	41.91	41.41	CLAY	4.5	125	4.293	1	1.000	1	N/A	0.487	2.19	33	6.28	13.78	386	270	0	15,750	0.0	0	0	0	270	386	270
867.1	34	42.91	42.41	CLAY	4.5	125	4.418	1	1.000	1	N/A	0.487	2.19	34	6.28	13.78	400	280	0	15,750	0.0	0	0	0	280	400	280
866.1	35	43.91	43.41	CLAY	4.5	125	4.543	1	1.000	1	N/A	0.487	2.19	35	6.28	13.78	413	289	0	15,750	0.0	0	0	0	289	413	289
865.1	36	44.91	44.41	CLAY	4.5	125	4.668	1	1.000	1	N/A	0.487	2.19	36	6.28	13.78	427	299	0	15,750	0.0	0	0	0	299	427	299
864.1	37	45.91	45.41	CLAY	4.5	125	4.793	1	1.000	1	N/A	0.487	2.19	37	6.28	13.78	441	309	0	15,750	0.0	0	0	0	309	441	309
863.1	38	46.91	46.41	CLAY	4.5	125	4.918	1	1.000	1	N/A	0.487	2.19	38	6.28	13.78	455	318	0	15,750	0.0	0	0	0	318	455	318
862.1	39	47.91	47.41	CLAY	4.5	125	5.043	1	1.000	1	N/A	0.487	2.19	39	6.28	13.78	469	328	0	15,750	0.0	0	0	0	328	469	328
861.1	40	48.91	48.41	CLAY	4.5	125	5.168	1	1.000	1	N/A	0.487	2.19	40	6.28	13.78	482	338	0	15,750	0.0	0	0	0	338	482	338
860.1	41	49.91	49.41	CLAY	4.5	125	5.293	1	1.000	1	N/A	0.487	2.19	41	6.28	13.78	496	347	0	15,750	0.0	0	0	0	347	496	347
859.1	42	50.91	50.41	CLAY	4.5	125	5.418	1	1.000	1	N/A	0.487	2.19	42	6.28	13.78	510	357	0	15,750	0.0	0	0	0	357	510	357
858.1	43	51.91	51.41	CLAY	4.5	125	5.543	1	1.000	1	N/A	0.487	2.19	43	6.28	13.78	524	367	0	15,750	0.0	0	0	0	367	524	367
857.1	44	52.91	52.41	CLAY	4.5	125	5.668	1	1.000	1	N/A	0.487	2.19	44	6.28	13.78	537	376	0	15,750	0.0	0	0	0	376	537	376
856.1	45	53.91	53.41	CLAY	4.5	125	5.793	1	1.000	1	N/A	0.487	2.19	45	6.28	13.78	551	386	0	15,750	0.0	0	0	0	386	551	386
855.1	46	54.91	54.41	CLAY	4.5	125	5.918	1	1.000	1	N/A	0.487	2.19	46	6.28	13.78	565	395	0	15,750	0.0	0	0	0	395	565	395
854.1	47	55.91	55.41	CLAY	4.5	125	6.043	1	1.000	1	N/A	0.487	2.19	47	6.28	13.78	579	405	0	15,750	0.0	0	0	0	405	579	405
853.1	48	56.91	56.41	CLAY	4.5	125	6.168	1	1.000	1	N/A	0.487	2.19	48	6.28	13.78	593	415	0	15,750	0.0	0	0	0	415	593	415
852.1	49	57.91	57.41	CLAY	4.5	125	6.293	1	1.000	1	N/A	0.487	2.19	49	6.28	13.78	606	424	0	15,750	0.0	0	0	0	424	606	424
851.1	50	58.91	58.41	CLAY	4.5	125	6.418	1	1.000	1	N/A	0.487	2.19	50	6.28	13.78	620	434	0	15,750	0.0	0	0	0	434	620	434
850.1	51	59.91	59.41	CLAY	4.5	125	6.543	1	1.000	1	N/A	0.487	2.19	51	6.28	13.78	634	444	0	15,750	0.0	0	0	0	444	634	444
849.1	52	60.91	60.41	CLAY	4.5	125	6.668	1	1.000	1	N/A	0.487	2.19	52	6.28	13.78	648	453	0	15,750	0.0	0	0	0	453	648	453
848.1	53	61.91	61.41	CLAY	4.5	125	6.793	1	1.000	1	N/A	0.487	2.19	53	6.28	13.78	661	463	0	15,750	0.0	0	0	0	463	661	463
847.1	54	62.91	62.41	CLAY	4.5	125	6.918	1	1.000	1	N/A	0.487	2.19	54	6.28	13.78	675	473	0	15,750	0.0	0	0	0	473	675	473
846.1	55	63.91	63.41	CLAY	4.5	125	7.043	1	1.000	1	N/A	0.487	2.19	55	6.28	13.78	689	482	0	15,750	0.0	0	0	0	482	689	482
845.1	56	64.91	64.41	CLAY	4.5	125	7.168	1	1.000	1	N/A	0.487	2.19	56	6.28	13.78	703	492	0	15,750	0.0	0	0	0	492	703	492
844.1	57	65.91	65.41	CLAY	4.5	125	7.293	1	1.000	1	N/A	0.487	2.19	57	6.28	13.78	717	502	0	15,750	0.0	0	0	0	502	717	502
843.1	58	66.91	66.41	CLAY	4.5	125	7.418	1	1.000	1	N/A	0.487	2.19	58	6.28	13.78	730	511	0	15,750	0.0	0	0	0	511	730	511
842.1	59	67.91	67.41	CLAY	4.5	125	7.543	1	1.000	1	N/A	0.487	2.19	59	6.28	13.78	744	521	0	15,750	0.0	0	0	0	521	744	521
841.1	60	68.91	68.41	CLAY	4.5	125	7.668	1	1.000	1	N/A	0.487	2.19	60	6.28	13.78	758	531	0	15,750	0.0	0	0	0	531	758	531
840.1	61	69.91	69.41	CLAY	4.5	125	7.793	1	1.000	1	N/A	0.487	2.19	61	6.28	13.78	772	540	0	15,750	0.0	0	0	0	540	772	540
839.1	62	70.91	70.41	CLAY	4.5	125	7.918	1	1.000	1	N/A	0.487	2.19	62	6.28	13.78	785	550	0	15,750	0.0	0	0	0	550	785	550
838.1	63	71.91	71.41	CLAY	4.5	125	8.043	1	1.000	1	N/A	0.487	2.19	63	6.28	13.78	799	559	0	15,750	0.0	0	0	0	559	799	559
837.1	64	72.91	72.41	CLAY	4.5	125	8.168	1	1.000	1	N/A	0.487	2.19	64	6.28	13.78	813	569	0	15,750	0.0	0	0	0	569	813	569
836.1	65	73.91	73.41	CLAY	4.5	125	8.293	1	1.000	1	N/A	0.487	2.19	65	6.28	13.78	827	579	0	15,750	0.0	0	0	0	579	827	579
835.1	66	74.91	74.41	CLAY	4.5	125	8.418	1	1.000	1	N/A	0.487	2.19	66	6.28	13.78	841	588	0	15,750	0.0	0	0	0	588	841	588
834.1	67	75.91	75.41	CLAY	4.5	125	8.543	1	1.000	1	N/A	0.487	2.19	67	6.28	13.78	854	598	0	15,750	0.0	0	0	0	598	854	598
833.1	68	76.91	76.41	CLAY	4.5	125	8.668	1	1.000	1	N/A	0.487	2.19	68	6.28	13.78	868	608	0	15,750	0.0	0	0	0	608	868	608
832.1	69	77.91	77.41	CLAY	4.5	125	8.793	1	1.000	1	N/A	0.487	2.19	69	6.28	13.78	882	617	0	15,750	0.0	0	0	0	617	882	617
831.1	70	78.91	78.41	CLAY	4.5	125	8.918	1	1.000	1	N/A	0.487	2.19	70	6.28	13.78	896	627	0	15,750	0.0	0	0	0	627	896	627
830.1	71	79.91	79.41	CLAY	4.5	125	9.043	1	1.000	1	N/A	0.487	2.19	71	6.28	13.78	909	637	0	15,750	0.0	0	0	0	637	909	637
829.1	72	80.91	80.41	CLAY	4.5	125	9.168	1	1.000	1	N/A	0.487	2.19	72	6.28	13.78	923	646	0	15,750	0.0	0	0	0	646	923	646
828.1	73	81.91	81.41	CLAY	4.5	125	9.293	1	1.000	1	N/A	0.487	2.19	73	6.28	13.78	937	656	0	15,750	0.0	0	0	0	656	937	656
827.1	74	82.91	82.41	CLAY	4.5	125	9.418	1	1.000	1	N/A	0.487	2.19	74	6.28	13.78	951	666	0	15,750	0.0	0	0	0	666	951	666
826.1	75	83.91	83.41	CLAY	4.5	125	9.543	1	1.000	1	N/A	0.487	2.19	75	6.28	13.78	965	675	0	15,750	0.0	0	0	0	675	965	675
825.1	76	84.91	84.41	CLAY	4.5	125	9.668	1	1.000	1	N/A	0.487	2.19	76	6.28	13.78	978	685	0	15,750	0.0	0	0	0	685	978	685
824.1	77	85.91	85.41	CLAY	4.5	125	9.793	1	1.000	1	N/A	0.487	2.19	77	6.28	13.78	992	694	0	15,750	0.0	0	0	0	694	992	694
823.1	78	86.91	86.41	CLAY	4.5	125	9.918	1	1.000	1	N/A	0.487	2.19	78	6.28	13.78	1006	704	0	15,750	0.0	0	0	0	704	1,006	704
822.1	79	87.91	87.41	CLAY	4.5	125	10.043	1	1.000	1	N/A	0.487	2.19	79	6.28	13.78	1020	714	0	15,750	0.0	0	0	0	714	1,020	714
821.1	80	88.91	88.41	CLAY	4.5	125	10.168	1	1.000	1	N/A	0.487	2.19	80	6.28	13.78	1033	723	0	15,750	0.0	0	0	0	723	1,033	723
820.1	81	89.91	89.41	CLAY	4.5	125	10.293	1	1.000	1	N/A	0.487	2.19	81	6.28	13.78	1047	733	0	15,750	0.0	0	0	0	733	1,047	733
819.1	82	90.91	90.41	CLAY	4.5	125	10.418	1	1.000	1	N/A	0.487	2.19	82	6.28	13.78	1061	743	0	15,750	0.0	0	0	0	743	1,061	743
818.1	83	91.91	91.41	CLAY	4.5	125	10.543	1	1.000	1	N/A	0.487	2.19	83	6.28	13.78	1075	752	0	15,750	0.0	0	0	0	752	1,075	752
817.1	84	92.91	92.41	CLAY	4.5	125	10.668	1	1.000	1	N/A	0.487	2.19	84	6.28	13.78	1089	762	0	15,750	0.0	0	0	0	762	1,089	762
816.1	85	93.91	93.41	CLAY	4.5	125	10.793	1	1.000	1	N/A	0.487	2.19	85	6.28	13.78	1102	772	0	15,750	0.0	0	0	0	772	1,102	772
815.1	86	94.91	94.41	CLAY	4.5	125	10.918	1	1.000	1	N/A	0.487	2.19	86	6.28	13.78	1116	781	0	15,750	0.0	0	0	0	781	1,116	781
814.1	87	95.91	95.41	CLAY	4.5	125	11.043	1	1.000	1	N/A	0.487	2.19	87	6.28	13.78	1130	791	0	15,750	0.0	0	0	0	791	1,130	791
813.1	88	96.91	96.41	CLAY	4.5	125	11.168	1	1.000	1	N/A	0.487	2.19	88	6.28	13.78	1144	801	0	15,750	0.0	0	0	0	801	1,144	801
812.1	89	97.91	97.41	CLAY	4.5	125	11.293	1	1.000	1	N/A	0.487	2.19	89	6.28	13.78	1157	810	0	15,750	0.0	0	0	0	810	1,157	810
811.1	90	98.91	98.41	CLAY	4.5	125	11.418	1	1.000	1	N/A	0.487	2.19	90	6.28	13.78	1171	820	0	15,750	0.0	0	0	0	820	1,171	820
810.1	91	99.91	99.41	CLAY	4.5	125	11.543	1	1.000	1	N/A	0.487	2.19	91	6.28	13.78	1185	830	0	15,750	0.0	0	0	0	830	1,185	830
809.1	92	100.91	100.41	CLAY	4.5	125	11.668	1	1.000	1	N/A	0.487	2.19	92	6.28	13.78	1199	839	0	15,750	0.0	0	0	0	839	1,199	839
808.1	93	101.91	101.41	CLAY	4.5	125	11.793	1	1.000	1	N/A	0.487	2.19	93	6.28	13.78	1213	849	0	15,750	0.0	0	0	0	849	1,213	849
807.1	94	102.91	102.41	CLAY	4.5	125	11.918	1	1.000	1	N/A	0.487	2.19	94	6.28	13.78	1226	858	0	15,750	0.0	0	0	0	858	1,226	858
806.1	95	103.91	103.41	CLAY	4.5	125	12.043	1	1.000	1	N/A	0.487	2.19	95	6.28	13.78	1240	868	0	15,750	0.0	0	0	0	868	1,240	868
805.1	96	104.91	104.41	CLAY	4.5	125	12.168	1	1.000	1	N/A	0.487	2.19	96	6.28	13.78	1254	878	0	15,750	0.0	0	0	0	878	1,254	878
804.1	97	105.91	105.41	CLAY	4.5	125	12.293	1	1.000	1	N/A	0.487	2.19	97	6.28	13.78	1268	887	0	15,750	0.0	0	0	0	887	1,268	887
803.1	98	106.91	106.41	CLAY	4.5	125	12.418	1	1.000	1	N/A	0.487	2.19	98	6.28	13.78	1282	897	0	15,750	0.0	0	0	0	897	1,282	897
802.1	99	107.91	107.41	CLAY	4.5	125	12.543	1	1.000	1	N/A	0.487	2.19	99	6.28	13.78	1295	907	0	15,750	0.0	0	0	0	907	1,295	907
801.1	100	108.91	108.41	CLAY	4.5	125	12.668	1	1.000	1	N/A	0.487	2.19	100	6.28	13.78	1309	916	0	15,750	0.0	0	0	0	916	1,309	916
800.1	101	109.91	109.41	CLAY	4.5	125	12.793	1	1.000	1	N/A	0.487	2.19	101	6.28	13.78	1323	926	0	15,750	0.0	0	0	0	926	1,323	926
799.1	102	110.91	110.41	CLAY	4.5	125	12.918	1	1.000	1	N/A	0.487	2.19	102	6.28	13.78	1337	936	0	15,750	0.0	0	0	0	936	1,337	936
798.1	103	111.91	111.41	CLAY	4.5	125	13.043	1	1.000	1	N/A	0.487	2.19	103	6.28	13.78	1350	945	0	15,750	0.0	0	0	0	945	1,350	945
797.1	104	112.91	112.41	CLAY	4.5	125	13.168	1	1.000	1	N/A	0.487	2.19	104	6.28	13.78	1364	955	0	15,750	0.0	0	0	0	955	1,364	955
796.1	105	113.91	113.41	CLAY	4.5	125	13.293	1	1.000	1	N/A	0.487	2.19	105	6.28	13.78	1378	965	0	15,750	0.0	0	0	0	965	1,378	965
795.1	106	114.91	114.41	CLAY	4.5	125	13.418	1	1.000	1	N/A	0.487	2.19	106	6.28	13.78	1392	974	0	15,750

LA-1143/Palo Comado OC

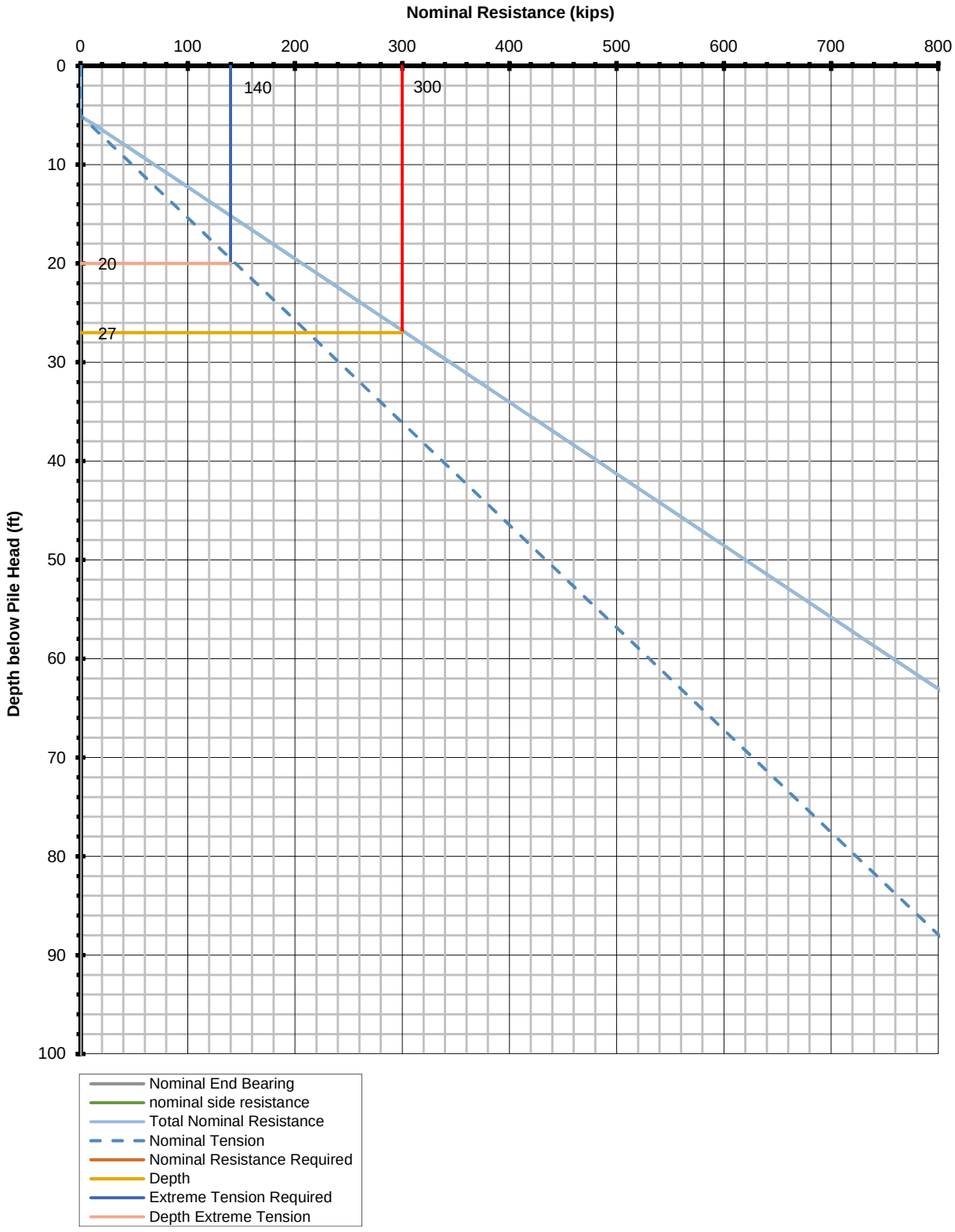
24 inch CIDH Bent 2L



GROUP DELTA

LA-1143/Palo Comado OC

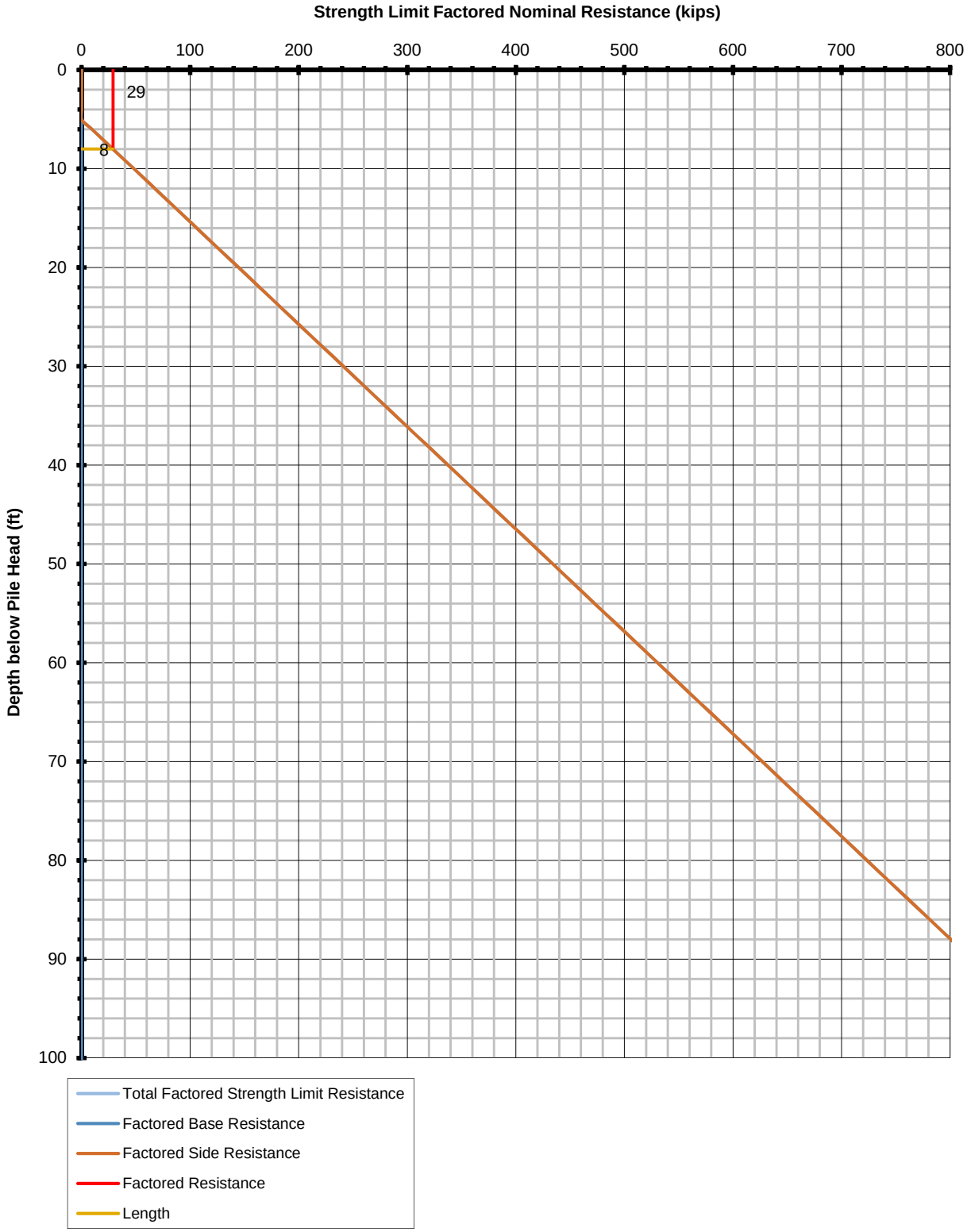
24 inch CIDH Bent 2L



GROUP DELTA

LA-1143/Palo Comado OC

24 inch CIDH Bent 2L



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 24 inch CIDH Bent 2R

Pile Diameter=	2	ft	Group Efficiency Factor=	1			
Perimeter=	6.283	ft	5% D=	1.20	inch	Pile head below ground surface (ft)	8.91
End Area=	3.142	ft^2	Limiting Settlement for Qbase=	0.00	inch	Groundwater below ground surface (ft)	100
			Overburden at pile cutoff=	0.23	ksf	Groundwater below pile head (ft)	91.09
			Depth of overburden=	2	ft		

Req. Nom.= 320 kips

Nominal Comp Plot

Depth (ft)	Load (kips)
0	320
29	320
29	0
29	320

Factored= 180 kips

Strength Plot

Depth (ft)	Factored Load (kips)
0	180
24	180
24	0
24	180

Req. Nom. T= 180 kips

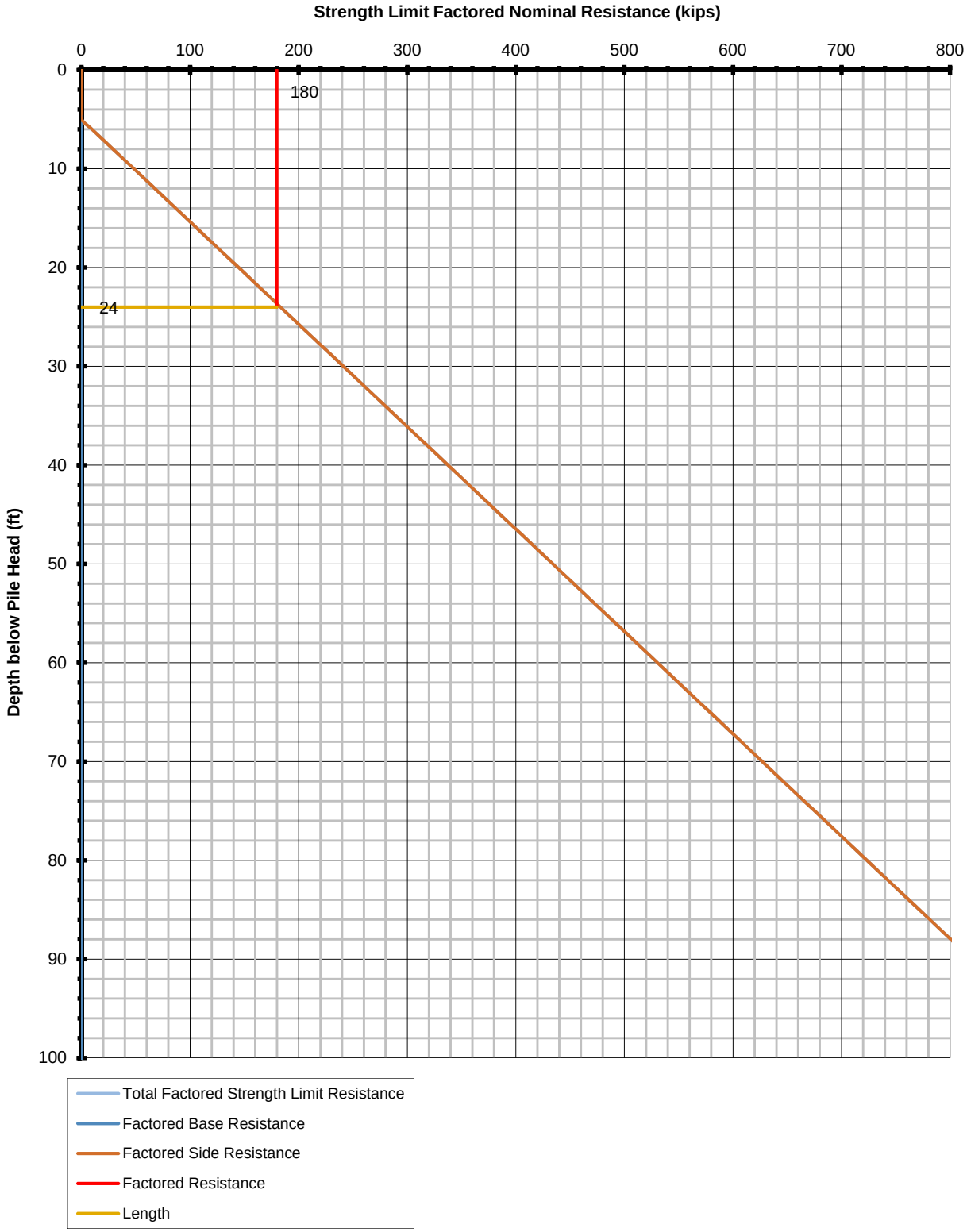
Nominal Tension Plot

Depth (ft)	Load (kips)
0	180
24	180
24	0
24	180

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft^2)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
901.09	0	8.91												0			0	0			0	0	0	0	0	0	0
900.1	1	9.91	9.41	CLAY	3.75	125	0.293	0	1.000	1	N/A	0.523	0.00	1	6.28	0.00	0	0	0	13,125	0.0	0	0	0	0	0	0
899.1	2	10.91	10.41	CLAY	4.5	125	0.418	0	1.000	1	N/A	0.487	0.00	2	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
898.1	3	11.91	11.41	CLAY	4.5	125	0.543	0	1.000	1	N/A	0.487	0.00	3	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
897.1	4	12.91	12.41	CLAY	4.5	125	0.668	0	1.000	1	N/A	0.487	0.00	4	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
896.1	5	13.91	13.41	CLAY	4.5	125	0.793	0	1.000	1	N/A	0.487	0.00	5	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
895.1	6	14.91	14.41	CLAY	4.5	125	0.918	1	1.000	1	N/A	0.487	2.19	6	6.28	13.78	14	10	0	15,750	0.0	0	0	0	10	14	10
894.1	7	15.91	15.41	CLAY	4.5	125	1.043	1	1.000	1	N/A	0.487	2.19	7	6.28	13.78	28	19	0	15,750	0.0	0	0	0	19	28	19
893.1	8	16.91	16.41	CLAY	4.5	125	1.168	1	1.000	1	N/A	0.487	2.19	8	6.28	13.78	41	29	0	15,750	0.0	0	0	0	29	41	29
892.1	9	17.91	17.41	CLAY	4.5	125	1.293	1	1.000	1	N/A	0.487	2.19	9	6.28	13.78	55	39	0	15,750	0.0	0	0	0	39	55	39
891.1	10	18.91	18.41	CLAY	4.5	125	1.418	1	1.000	1	N/A	0.487	2.19	10	6.28	13.78	69	48	0	15,750	0.0	0	0	0	48	69	48
890.1	11	19.91	19.41	CLAY	4.5	125	1.543	1	1.000	1	N/A	0.487	2.19	11	6.28	13.78	83	58	0	15,750	0.0	0	0	0	58	83	58
889.1	12	20.91	20.41	CLAY	4.5	125	1.668	1	1.000	1	N/A	0.487	2.19	12	6.28	13.78	96	68	0	15,750	0.0	0	0	0	68	96	68
888.1	13	21.91	21.41	CLAY	4.5	125	1.793	1	1.000	1	N/A	0.487	2.19	13	6.28	13.78	110	77	0	15,750	0.0	0	0	0	77	110	77
887.1	14	22.91	22.41	CLAY	4.5	125	1.918	1	1.000	1	N/A	0.487	2.19	14	6.28	13.78	124	87	0	15,750	0.0	0	0	0	87	124	87
886.1	15	23.91	23.41	CLAY	4.5	125	2.043	1	1.000	1	N/A	0.487	2.19	15	6.28	13.78	138	96	0	15,750	0.0	0	0	0	96	138	96
885.1	16	24.91	24.41	CLAY	4.5	125	2.168	1	1.000	1	N/A	0.487	2.19	16	6.28	13.78	152	106	0	15,750	0.0	0	0	0	106	152	106
884.1	17	25.91	25.41	CLAY	4.5	125	2.293	1	1.000	1	N/A	0.487	2.19	17	6.28	13.78	165	116	0	15,750	0.0	0	0	0	116	165	116
883.1	18	26.91	26.41	CLAY	4.5	125	2.418	1	1.000	1	N/A	0.487	2.19	18	6.28	13.78	179	125	0	15,750	0.0	0	0	0	125	179	125
882.1	19	27.91	27.41	CLAY	4.5	125	2.543	1	1.000	1	N/A	0.487	2.19	19	6.28	13.78	193	135	0	15,750	0.0	0	0	0	135	193	135
881.1	20	28.91	28.41	CLAY	4.5	125	2.668	1	1.000	1	N/A	0.487	2.19	20	6.28	13.78	207	145	0	15,750	0.0	0	0	0	145	207	145
880.1	21	29.91	29.41	CLAY	4.5	125	2.793	1	1.000	1	N/A	0.487	2.19	21	6.28	13.78	220	154	0	15,750	0.0	0	0	0	154	220	154
879.1	22	30.91	30.41	CLAY	4.5	125	2.918	1	1.000	1	N/A	0.487	2.19	22	6.28	13.78	234	164	0	15,750	0.0	0	0	0	164	234	164
878.1	23	31.91	31.41	CLAY	4.5	125	3.043	1	1.000	1	N/A	0.487	2.19	23	6.28	13.78	248	174	0	15,750	0.0	0	0	0	174	248	174
877.1	24	32.91	32.41	CLAY	4.5	125	3.168	1	1.000	1	N/A	0.487	2.19	24	6.28	13.78	262	183	0	15,750	0.0	0	0	0	183	262	183
876.1	25	33.91	33.41	CLAY	4.5	125	3.293	1	1.000	1	N/A	0.487	2.19	25	6.28	13.78	276	193	0	15,750	0.0	0	0	0	193	276	193
875.1	26	34.91	34.41	CLAY	4.5	125	3.418	1	1.000	1	N/A	0.487	2.19	26	6.28	13.78	289	203	0	15,750	0.0	0	0	0	203	289	203
874.1	27	35.91	35.41	CLAY	4.5	125	3.543	1	1.000	1	N/A	0.487	2.19	27	6.28	13.78	303	212	0	15,750	0.0	0	0	0	212	303	212
873.1	28	36.91	36.41	CLAY	4.5	125	3.668	1	1.000	1	N/A	0.487	2.19	28	6.28	13.78	317	222	0	15,750	0.0	0	0	0	222	317	222
872.1	29	37.91	37.41	CLAY	4.5	125	3.793	1	1.000	1	N/A	0.487	2.19	29	6.28	13.78	331	231	0	15,750	0.0	0	0	0	231	331	231
871.1	30	38.91	38.41	CLAY	4.5	125	3.918	1	1.000	1	N/A	0.487	2.19	30	6.28	13.78	344	241	0	15,750	0.0	0	0	0	241	344	241
870.1	31	39.91	39.41	CLAY	4.5	125	4.043	1	1.000	1	N/A	0.487	2.19	31	6.28	13.78	358	251	0	15,750	0.0	0	0	0	251	358	251
869.1	32	40.91	40.41	CLAY	4.5	125	4.168	1	1.000	1	N/A	0.487	2.19	32	6.28	13.78	372	260	0	15,750	0.0	0	0	0	260	372	260
868.1	33	41.91	41.41	CLAY	4.5	125	4.293	1	1.000	1	N/A	0.487	2.19	33	6.28	13.78	386	270	0	15,750	0.0	0	0	0	270	386	270
867.1	34	42.91	42.41	CLAY	4.5	125	4.418	1	1.000	1	N/A	0.487	2.19	34	6.28	13.78	400	280	0	15,750	0.0	0	0	0	280	400	280
866.1	35	43.91	43.41	CLAY	4.5	125	4.543	1	1.000	1	N/A	0.487	2.19	35	6.28	13.78	413	289	0	15,750	0.0	0	0	0	289	413	289
865.1	36	44.91	44.41	CLAY	4.5	125	4.668	1	1.000	1	N/A	0.487	2.19	36	6.28	13.78	427	299	0	15,750	0.0	0	0	0	299	427	299
864.1	37	45.91	45.41	CLAY	4.5	125	4.793	1	1.000	1	N/A	0.487	2.19	37	6.28	13.78	441	309	0	15,750	0.0	0	0	0	309	441	309
863.1	38	46.91	46.41	CLAY	4.5	125	4.918	1	1.000	1	N/A	0.487	2.19	38	6.28	13.78	455	318	0	15,750	0.0	0	0	0	318	455	318
862.1	39	47.91	47.41	CLAY	4.5	125	5.043	1	1.000	1	N/A	0.487	2.19	39	6.28	13.78	469	328	0	15,750	0.0	0	0	0	328	469	328
861.1	40	48.91	48.41	CLAY	4.5	125	5.168	1	1.000	1	N/A	0.487	2.19	40	6.28	13.78	482	338	0	15,750	0.0	0	0	0	338	482	338
860.1	41	49.91	49.41	CLAY	4.5	125	5.293	1	1.000	1	N/A	0.487	2.19	41	6.28	13.78	496	347	0	15,750	0.0	0	0	0	347	496	347
859.1	42	50.91	50.41	CLAY	4.5	125	5.418	1	1.000	1	N/A	0.487	2.19	42	6.28	13.78	510	357	0	15,750	0.0	0	0	0	357	510	357
858.1	43	51.91	51.41	CLAY	4.5	125	5.543	1	1.000	1	N/A	0.487	2.19	43	6.28	13.78	524	367	0	15,750	0.0	0	0	0	367	524	367
857.1	44	52.91	52.41	CLAY	4.5	125	5.668	1	1.000	1	N/A	0.487	2.19	44	6.28	13.78	537	376	0	15,750	0.0	0	0	0	376	537	376
856.1	45	53.91	53.41	CLAY	4.5	125	5.793	1	1.000	1	N/A	0.487	2.19	45	6.28	13.78	551	386	0	15,750	0.0	0	0	0	386	551	386
855.1	46	54.91	54.41	CLAY	4.5	125	5.918	1	1.000	1	N/A	0.487	2.19	46	6.28	13.78	565	395	0	15,750	0.0	0	0	0	395	565	395
854.1	47	55.91	55.41	CLAY	4.5	125	6.043	1	1.000	1	N/A	0.487	2.19	47	6.28	13.78	579	405	0	15,750	0.0	0	0	0	405	579	405
853.1	48	56.91	56.41	CLAY	4.5	125	6.168	1	1.000	1	N/A	0.487	2.19	48	6.28	13.78	593	415	0	15,750	0.0	0	0	0	415	593	415
852.1	49	57.91	57.41	CLAY	4.5	125	6.293	1	1.000	1	N/A	0.487	2.19	49	6.28	13.78	606	424	0	15,750	0.0	0	0	0	424	606	424
851.1	50	58.91	58.41	CLAY	4.5	125	6.418	1	1.000	1	N/A	0.487	2.19	50	6.28	13.78	620	434	0	15,750	0.0	0	0	0	434	620	434
850.1	51	59.91	59.41	CLAY	4.5	125	6.543	1	1.000	1	N/A	0.487	2.19	51	6.28	13.78	634	444	0	15,750	0.0	0	0	0	444	634	444
849.1	52	60.91	60.41	CLAY	4.5	125	6.668	1	1.000	1	N/A	0.487	2.19	52	6.28	13.78	648	453	0	15,750	0.0	0	0	0	453	648	453
848.1	53	61.91	61.41	CLAY	4.5	125	6.793	1	1.000	1	N/A	0.487	2.19	53	6.28	13.78	661	463	0	15,750	0.0	0	0	0	463	661	463
847.1	54	62.91	62.41	CLAY	4.5	125	6.918	1	1.000	1	N/A	0.487	2.19	54	6.28	13.78	675	473	0	15,750	0.0	0	0	0	473	675	473
846.1	55	63.91	63.41	CLAY	4.5	125	7.043	1	1.000	1	N/A	0.487	2.19	55	6.28	13.78	689	482	0	15,750	0.0	0	0	0	482	689	482
845.1	56	64.91	64.41	CLAY	4.5	125	7.168	1	1.000	1	N/A	0.487	2.19	56	6.28	13.78	703	492	0	15,750	0.0	0	0	0	492	703	492
844.1	57	65.91	65.41	CLAY	4.5	125	7.293	1	1.000	1	N/A	0.487	2.19	57	6.28	13.78	717	502	0	15,750	0.0	0	0	0	502	717	502
843.1	58	66.91	66.41	CLAY	4.5	125	7.418	1	1.000	1	N/A	0.487	2.19	58	6.28	13.78	730	511	0	15,750	0.0	0	0	0	511	730	511
842.1	59	67.91	67.41	CLAY	4.5	125	7.543	1	1.000	1	N/A	0.487	2.19	59	6.28	13.78	744	521	0	15,750	0.0	0	0	0	521	744	521
841.1	60	68.91	68.41	CLAY	4.5	125	7.668	1	1.000	1	N/A	0.487	2.19	60	6.28	13.78	758	531	0	15,750	0.0	0	0	0	531	758	531
840.1	61	69.91	69.41	CLAY	4.5	125	7.793	1	1.000	1	N/A	0.487	2.19	61	6.28	13.78	772	540	0	15,750	0.0	0	0	0	540	772	540
839.1	62	70.91	70.41	CLAY	4.5	125	7.918	1	1.000	1	N/A	0.487	2.19	62	6.28	13.78	785	550	0	15,750	0.0	0	0	0	550	785	550
838.1	63	71.91	71.41	CLAY	4.5	125	8.043	1	1.000	1	N/A	0.487	2.19	63	6.28	13.78	799	559	0	15,750	0.0	0	0	0	559	799	559
837.1	64	72.91	72.41	CLAY	4.5	125	8.168	1	1.000	1	N/A	0.487	2.19	64	6.28	13.78	813	569	0	15,750	0.0	0	0	0	569	813	569
836.1	65	73.91	73.41	CLAY	4.5	125	8.293	1	1.000	1	N/A	0.487	2.19	65	6.28	13.78	827	579	0	15,750	0.0	0	0	0	579	827	579
835.1	66	74.91	74.41	CLAY	4.5	125	8.418	1	1.000	1	N/A	0.487	2.19	66	6.28	13.78	841	588	0	15,750	0.0	0	0	0	588	841	588
834.1	67	75.91	75.41	CLAY	4.5	125	8.543	1	1.000	1	N/A	0.487	2.19	67	6.28	13.78	854	598	0	15,750	0.0	0	0	0	598	854	598
833.1	68	76.91	76.41	CLAY	4.5	125	8.668	1	1.000	1	N/A	0.487	2.19	68	6.28	13.78	868	608	0	15,750	0.0	0	0	0	608	868	608
832.1	69	77.91	77.41	CLAY	4.5	125	8.793	1	1.000	1	N/A	0.487	2.19	69	6.28	13.78	882	617	0	15,750	0.0	0	0	0	617	882	617
831.1	70	78.91	78.41	CLAY	4.5	125	8.918	1	1.000	1	N/A	0.487	2.19	70	6.28	13.78	896	627	0	15,750	0.0	0	0	0	627	896	627
830.1	71	79.91	79.41	CLAY	4.5	125	9.043	1	1.000	1	N/A	0.487	2.19	71	6.28	13.78	909	637	0	15,750	0.0	0	0	0	637	909	637
829.1	72	80.91	80.41	CLAY	4.5	125	9.168	1	1.000	1	N/A	0.487	2.19	72	6.28	13.78	923	646	0	15,750	0.0	0	0	0	646	923	646
828.1	73	81.91	81.41	CLAY	4.5	125	9.293	1	1.000	1	N/A	0.487	2.19	73	6.28	13.78	937	656	0	15,750	0.0	0	0	0	656	937	656
827.1	74	82.91	82.41	CLAY	4.5	125	9.418	1	1.000	1	N/A	0.487	2.19	74	6.28	13.78	951	666	0	15,750	0.0	0	0	0	666	951	666
826.1	75	83.91	83.41	CLAY	4.5	125	9.543	1	1.000	1	N/A	0.487	2.19	75	6.28	13.78	965	675	0	15,750	0.0	0	0	0	675	965	675
825.1	76	84.91	84.41	CLAY	4.5	125	9.668	1	1.000	1	N/A	0.487	2.19	76	6.28	13.78	978	685	0	15,750	0.0	0	0	0	685	978	685
824.1	77	85.91	85.41	CLAY	4.5	125	9.793	1	1.000	1	N/A	0.487	2.19	77	6.28	13.78	992	694	0	15,750	0.0	0	0	0	694	992	694
823.1	78	86.91	86.41	CLAY	4.5	125	9.918	1	1.000	1	N/A	0.487	2.19	78	6.28	13.78	1006	704	0	15,750	0.0	0	0	0	704	1,006	704
822.1	79	87.91	87.41	CLAY	4.5	125	10.043	1	1.000	1	N/A	0.487	2.19	79	6.28	13.78	1020	714	0	15,750	0.0	0	0	0	714	1,020	714
821.1	80	88.91	88.41	CLAY	4.5	125	10.168	1	1.000	1	N/A	0.487	2.19	80	6.28	13.78	1033	723	0	15,750	0.0	0	0	0	723	1,033	723
820.1	81	89.91	89.41	CLAY	4.5	125	10.293	1	1.000	1	N/A	0.487	2.19	81	6.28	13.78	1047	733	0	15,750	0.0	0	0	0	733	1,047	733
819.1	82	90.91	90.41	CLAY	4.5	125	10.418	1	1.000	1	N/A	0.487	2.19	82	6.28	13.78	1061	743	0	15,750	0.0	0	0	0	743	1,061	743
818.1	83	91.91	91.41	CLAY	4.5	125	10.543	1	1.000	1	N/A	0.487	2.19	83	6.28	13.78	1075	752	0	15,750	0.0	0	0	0	752	1,075	752
817.1	84	92.91	92.41	CLAY	4.5	125	10.668	1	1.000	1	N/A	0.487	2.19	84	6.28	13.78	1089	762	0	15,750	0.0	0	0	0	762	1,089	762
816.1	85	93.91	93.41	CLAY	4.5	125	10.793	1	1.000	1	N/A	0.487	2.19	85	6.28	13.78	1102	772	0	15,750	0.0	0	0	0	772	1,102	772
815.1	86	94.91	94.41	CLAY	4.5	125	10.918	1	1.000	1	N/A	0.487	2.19	86	6.28	13.78	1116	781	0	15,750	0.0	0	0	0	781	1,116	781
814.1	87	95.91	95.41	CLAY	4.5	125	11.043	1	1.000	1	N/A	0.487	2.19	87	6.28	13.78	1130	791	0	15,750	0.0	0	0	0	791	1,130	791
813.1	88	96.91	96.41	CLAY	4.5	125	11.168	1	1.000	1	N/A	0.487	2.19	88	6.28	13.78	1144	801	0	15,750	0.0	0	0	0	801	1,144	801
812.1	89	97.91	97.41	CLAY	4.5	125	11.293	1	1.000	1	N/A	0.487	2.19	89	6.28	13.78	1157	810	0	15,750	0.0	0	0	0	810	1,157	810
811.1	90	98.91	98.41	CLAY	4.5	125	11.418	1	1.000	1	N/A	0.487	2.19	90	6.28	13.78	1171	820	0	15,750	0.0	0	0	0	820	1,171	820
810.1	91	99.91	99.41	CLAY	4.5	125	11.543	1	1.000	1	N/A	0.487	2.19	91	6.28	13.78	1185	830	0	15,750	0.0	0	0	0	830	1,185	830
809.1	92	100.91	100.41	CLAY	4.5	125	11.668	1	1.000	1	N/A	0.487	2.19	92	6.28	13.78	1199	839	0	15,750	0.0	0	0	0	839	1,199	839
808.1	93	101.91	101.41	CLAY	4.5	125	11.793	1	1.000	1	N/A	0.487	2.19	93	6.28	13.78	1213	849	0	15,750	0.0	0	0	0	849	1,213	849
807.1	94	102.91	102.41	CLAY	4.5	125	11.918	1	1.000	1	N/A	0.487	2.19	94	6.28	13.78	1226	858	0	15,750	0.0	0	0	0	858	1,226	858
806.1	95	103.91	103.41	CLAY	4.5	125	12.043	1	1.000	1	N/A	0.487	2.19	95	6.28	13.78	1240	868	0	15,750	0.0	0	0	0	868	1,240	868
805.1	96	104.91	104.41	CLAY	4.5	125	12.168	1	1.000	1	N/A	0.487	2.19	96	6.28	13.78	1254	878	0	15,750	0.0	0	0	0	878	1,254	878
804.1	97	105.91	105.41	CLAY	4.5	125	12.293	1	1.000	1	N/A	0.487	2.19	97	6.28	13.78	1268	887	0	15,750	0.0	0	0	0	887	1,268	887
803.1	98	106.91	106.41	CLAY	4.5	125	12.418	1	1.000	1	N/A	0.487	2.19	98	6.28	13.78	1282	897	0	15,750	0.0	0	0	0	897	1,282	897
802.1	99	107.91	107.41	CLAY	4.5	125	12.543	1	1.000	1	N/A	0.487	2.19	99	6.28	13.78	1295	907	0	15,750	0.0	0	0	0	907	1,295	907
801.1	100	108.91	108.41	CLAY	4.5	125	12.668	1	1.000	1	N/A	0.487	2.19	100	6.28	13.78	1309	916	0	15,750	0.0	0	0	0	916	1,309	916
800.1	101	109.91	109.41	CLAY	4.5	125	12.793	1	1.000	1	N/A	0.487	2.19	101	6.28	13.78	1323	926	0	15,750	0.0	0	0	0	926	1,323	926
799.1	102	110.91	110.41	CLAY	4.5	125	12.918	1	1.000	1	N/A	0.487	2.19	102	6.28	13.78	1337	936	0	15,750	0.0	0	0	0	936	1,337	936
798.1	103	111.91	111.41	CLAY	4.5	125	13.043	1	1.000	1	N/A	0.487	2.19	103	6.28	13.78	1350	945	0	15,750	0.0	0	0	0	945	1,350	945
797.1	104	112.91	112.41	CLAY	4.5	125	13.168	1	1.000	1	N/A	0.487	2.19	104	6.28	13.78	1364	955	0	15,750	0.0	0	0	0	955	1,364	955
796.1	105	113.91	113.41	CLAY	4.5	125	13.293	1	1.000	1	N/A	0.487	2.19	105	6.28	13.78	1378	965	0	15,750	0.0	0	0	0	965	1,378	965
795.1	106	114.91	114.41	CLAY	4.5	125	13.418	1	1.000	1	N/A	0.487	2.19	106	6.28	13.

LA-1143/Palo Comado OC

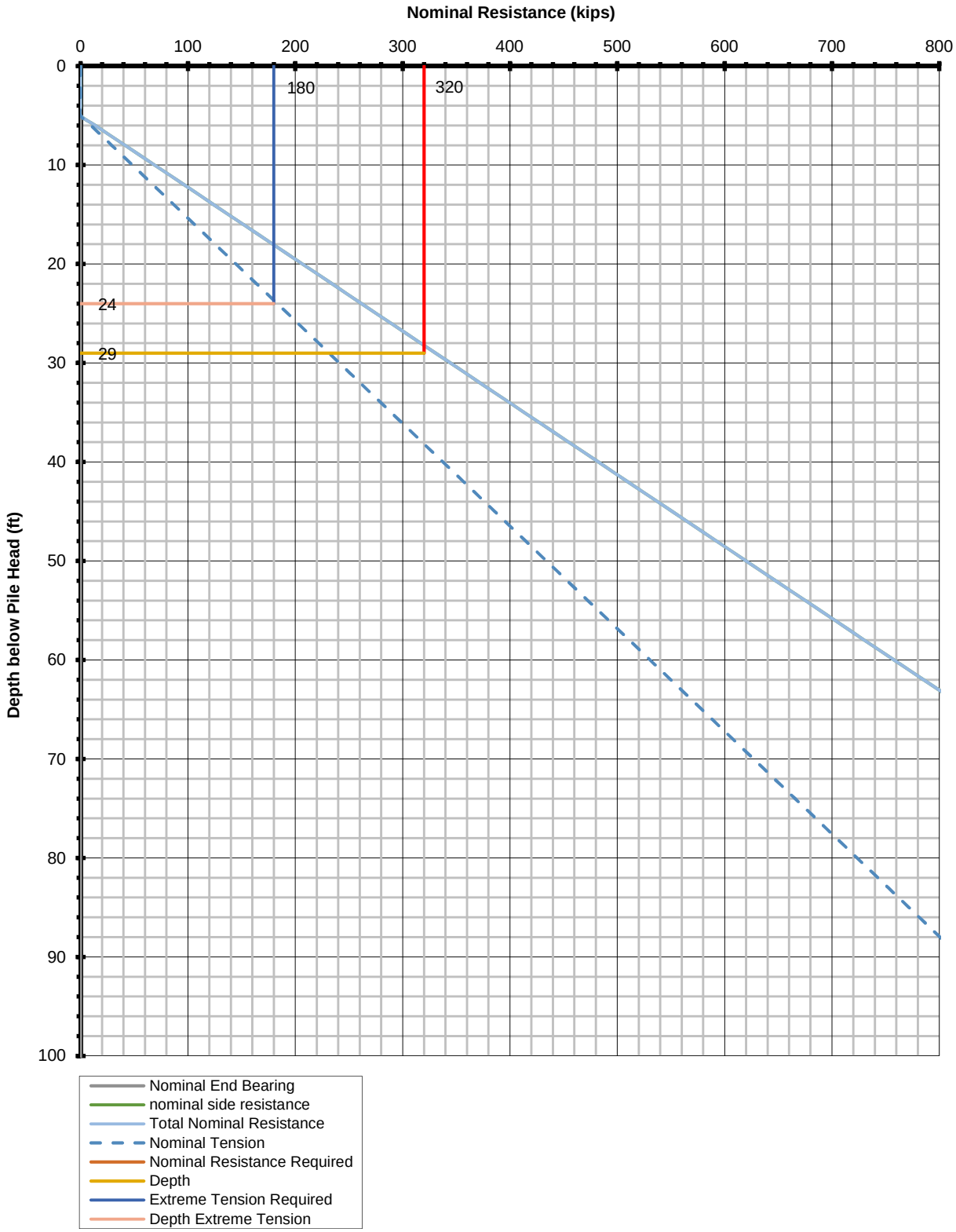
24 inch CIDH Bent 2R



GROUP DELTA

LA-1143/Palo Comado OC

24 inch CIDH Bent 2R



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 24 inch CIDH Bent 3L

Pile Diameter= 2 ft
Perimeter= 6.283 ft
End Area= 3.142 ft²

Group Efficiency Factor= 1
5% D= 1.20 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile head below ground surface (ft) 9.66
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 90.34

Req. Nom.= 320 kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	320
29	320
29	0
29	320

Factored= 280 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	280
35	280
35	0
35	280

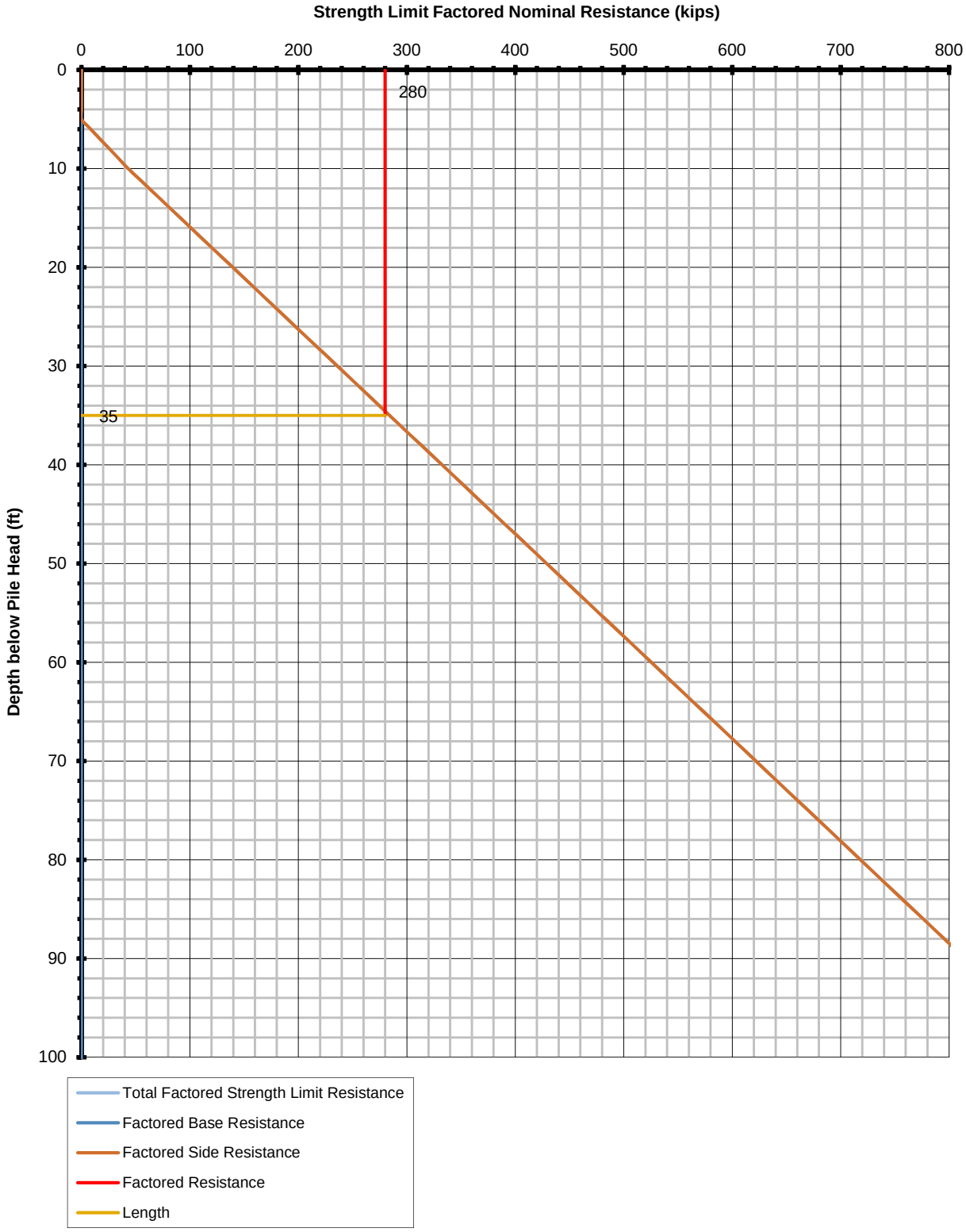
Req. Nom. T= 120 kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	120
18	120
18	0
18	120

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
904.34	0	9.66												0			0	0										
903.3	1	10.66	10.16	CLAY	2.75	120	0.290	0	1.000	1	N/A	0.550	0.00	1	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
902.3	2	11.66	11.16	CLAY	2.75	120	0.410	0	1.000	1	N/A	0.550	0.00	2	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
901.3	3	12.66	12.16	CLAY	2.75	120	0.530	0	1.000	1	N/A	0.550	0.00	3	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
900.3	4	13.66	13.16	CLAY	2.75	120	0.650	0	1.000	1	N/A	0.550	0.00	4	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
899.3	5	14.66	14.16	CLAY	2.75	120	0.770	0	1.000	1	N/A	0.550	0.00	5	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
898.3	6	15.66	15.16	CLAY	3.75	120	0.890	1	1.000	1	N/A	0.523	1.96	6	6.28	12.32	12	9	0	13,125	0.0	0	0	0	9	12	9
897.3	7	16.66	16.16	CLAY	3.75	120	1.010	1	1.000	1	N/A	0.523	1.96	7	6.28	12.32	25	17	0	13,125	0.0	0	0	0	17	25	17
896.3	8	17.66	17.16	CLAY	3.75	120	1.130	1	1.000	1	N/A	0.523	1.96	8	6.28	12.32	37	26	0	13,125	0.0	0	0	0	26	37	26
895.3	9	18.66	18.16	CLAY	3.75	120	1.250	1	1.000	1	N/A	0.523	1.96	9	6.28	12.32	49	34	0	13,125	0.0	0	0	0	34	49	34
894.3	10	19.66	19.16	CLAY	3.75	120	1.370	1	1.000	1	N/A	0.523	1.96	10	6.28	12.32	62	43	0	13,125	0.0	0	0	0	43	62	43
893.3	11	20.66	20.16	CLAY	4.5	125	1.493	1	1.000	1	N/A	0.487	2.19	11	6.28	13.78	75	53	0	15,750	0.0	0	0	0	53	75	53
892.3	12	21.66	21.16	CLAY	4.5	125	1.618	1	1.000	1	N/A	0.487	2.19	12	6.28	13.78	89	62	0	15,750	0.0	0	0	0	62	89	62
891.3	13	22.66	22.16	CLAY	4.5	125	1.743	1	1.000	1	N/A	0.487	2.19	13	6.28	13.78	103	72	0	15,750	0.0	0	0	0	72	103	72
890.3	14	23.66	23.16	CLAY	4.5	125	1.868	1	1.000	1	N/A	0.487	2.19	14	6.28	13.78	117	82	0	15,750	0.0	0	0	0	82	117	82
889.3	15	24.66	24.16	CLAY	4.5	125	1.993	1	1.000	1	N/A	0.487	2.19	15	6.28	13.78	130	91	0	15,750	0.0	0	0	0	91	130	91
888.3	16	25.66	25.16	CLAY	4.5	125	2.118	1	1.000	1	N/A	0.487	2.19	16	6.28	13.78	144	101	0	15,750	0.0	0	0	0	101	144	101
887.3	17	26.66	26.16	CLAY	4.5	125	2.243	1	1.000	1	N/A	0.487	2.19	17	6.28	13.78	158	111	0	15,750	0.0	0	0	0	111	158	111
886.3	18	27.66	27.16	CLAY	4.5	125	2.368	1	1.000	1	N/A	0.487	2.19	18	6.28	13.78	172	120	0	15,750	0.0	0	0	0	120	172	120
885.3	19	28.66	28.16	CLAY	4.5	125	2.493	1	1.000	1	N/A	0.487	2.19	19	6.28	13.78	186	130	0	15,750	0.0	0	0	0	130	186	130
884.3	20	29.66	29.16	CLAY	4.5	125	2.618	1	1.000	1	N/A	0.487	2.19	20	6.28	13.78	199	140	0	15,750	0.0	0	0	0	140	199	140
883.3	21	30.66	30.16	CLAY	4.5	125	2.743	1	1.000	1	N/A	0.487	2.19	21	6.28	13.78	213	149	0	15,750	0.0	0	0	0	149	213	149
882.3	22	31.66	31.16	CLAY	4.5	125	2.868	1	1.000	1	N/A	0.487	2.19	22	6.28	13.78	227	159	0	15,750	0.0	0	0	0	159	227	159
881.3	23	32.66	32.16	CLAY	4.5	125	2.993	1	1.000	1	N/A	0.487	2.19	23	6.28	13.78	241	169	0	15,750	0.0	0	0	0	169	241	169
880.3	24	33.66	33.16	CLAY	4.5	125	3.118	1	1.000	1	N/A	0.487	2.19	24	6.28	13.78	255	178	0	15,750	0.0	0	0	0	178	255	178
879.3	25	34.66	34.16	CLAY	4.5	125	3.243	1	1.000	1	N/A	0.487	2.19	25	6.28	13.78	268	188	0	15,750	0.0	0	0	0	188	268	188
878.3	26	35.66	35.16	CLAY	4.5	125	3.368	1	1.000	1	N/A	0.487	2.19	26	6.28	13.78	282	197	0	15,750	0.0	0	0	0	197	282	197
877.3	27	36.66	36.16	CLAY	4.5	125	3.493	1	1.000	1	N/A	0.487	2.19	27	6.28	13.78	296	207	0	15,750	0.0	0	0	0	207	296	207
876.3	28	37.66	37.16	CLAY	4.5	125	3.618	1	1.000	1	N/A	0.487	2.19	28	6.28	13.78	310	217	0	15,750	0.0	0	0	0	217	310	217
875.3	29	38.66	38.16	CLAY	4.5	125	3.743	1	1.000	1	N/A	0.487	2.19	29	6.28	13.78	323	226	0	15,750	0.0	0	0	0	226	323	226
874.3	30	39.66	39.16	CLAY	4.5	125	3.868	1	1.000	1	N/A	0.487	2.19	30	6.28	13.78	337	236	0	15,750	0.0	0	0	0	236	337	236
873.3	31	40.66	40.16	CLAY	4.5	125	3.993	1	1.000	1	N/A	0.487	2.19	31	6.28	13.78	351	246	0	15,750	0.0	0	0	0	246	351	246
872.3	32	41.66	41.16	CLAY	4.5	125	4.118	1	1.000	1	N/A	0.487	2.19	32	6.28	13.78	365	255	0	15,750	0.0	0	0	0	255	365	255
871.3	33	42.66	42.16	CLAY	4.5	125	4.243	1	1.000	1	N/A	0.487	2.19	33	6.28	13.78	379	265	0	15,750	0.0	0	0	0	265	379	265
870.3	34	43.66	43.16	CLAY	4.5	125	4.368	1	1.000	1	N/A	0.487	2.19	34	6.28	13.78	392	275	0	15,750	0.0	0	0	0	275	392	275
869.3	35	44.66	44.16	CLAY	4.5	125	4.493	1	1.000	1	N/A	0.487	2.19	35	6.28	13.78	406	284	0	15,750	0.0	0	0	0	284	406	284
868.3	36	45.66	45.16	CLAY	4.5	125	4.618	1	1.000	1	N/A	0.487	2.19	36	6.28	13.78	420	294	0	15,750	0.0	0	0	0	294	420	294
867.3	37	46.66	46.16	CLAY	4.5	125	4.743	1	1.000	1	N/A	0.487	2.19	37	6.28	13.78	434	304	0	15,750	0.0	0	0	0	304	434	304
866.3	38	47.66	47.16	CLAY	4.5	125	4.868	1	1.000	1	N/A	0.487	2.19	38	6.28	13.78	447	313	0	15,750	0.0	0	0	0	313	447	313
865.3	39	48.66	48.16	CLAY	4.5	125	4.993	1	1.000	1	N/A	0.487	2.19	39	6.28	13.78	461	323	0	15,750	0.0	0	0	0	323	461	323
864.3	40	49.66	49.16	CLAY	4.5	125	5.118	1	1.000	1	N/A	0.487	2.19	40	6.28	13.78	475	332	0	15,750	0.0	0	0	0	332	475	332
863.3	41	50.66	50.16	CLAY	4.5	125	5.243	1	1.000	1	N/A	0.487	2.19	41	6.28	13.78	489	342	0	15,750	0.0	0	0	0	342	489	342
862.3	42	51.66	51.16	CLAY	4.5	125	5.368	1	1.000	1	N/A	0.487	2.19	42	6.28	13.78	503	352	0	15,750	0.0	0	0	0	352	503	352
861.3	43	52.66	52.16	CLAY	4.5	125	5.493	1	1.000	1	N/A	0.487	2.19	43	6.28	13.78	516	361	0	15,750	0.0	0	0	0	361	516	361
860.3	44	53.66	53.16	CLAY	4.5	125	5.618	1	1.000	1	N/A	0.487	2.19	44	6.28	13.78	530	371	0	15,750	0.0	0	0	0	371	530	371
859.3	45	54.66	54.16	CLAY	4.5	125	5.743	1	1.000	1	N/A	0.487	2.19	45	6.28	13.78	544	381	0	15,750	0.0	0	0	0	381	544	381
858.3	46	55.66	55.16	CLAY	4.5	125	5.868	1	1.000	1	N/A	0.487	2.19	46	6.28	13.78	558	390	0	15,750	0.0	0	0	0	390	558	390
857.3	47	56.66	56.16	CLAY	4.5	125	5.993	1	1.000	1	N/A	0.487	2.19	47	6.28	13.78	571	400	0	15,750	0.0	0	0	0	400	571	400
856.3	48	57.66	57.16	CLAY	4.5	125	6.118	1	1.000	1	N/A	0.487	2.19	48	6.28	13.78	585	410	0	15,750	0.0	0	0	0	410	585	410
855.3	49	58.66	58.16	CLAY	4.5	125	6.243	1	1.000	1	N/A	0.487	2.19	49	6.28	13.78	599	419	0	15,750	0.0	0	0	0	419	599	419
854.3	50	59.66	59.16	CLAY	4.5	125	6.368	1	1.000	1	N/A	0.487	2.19	50	6.28	13.78	613	429	0	15,750	0.0	0	0	0	429	613	429
853.3	51	60.66	60.16	CLAY	4.5	125	6.493	1	1.000	1	N/A	0.487	2.19	51	6.28	13.78	627	439	0	15,750	0.0	0	0	0	439	627	439
852.3	52	61.66	61.16	CLAY	4.5	125	6.618	1	1.000	1	N/A	0.487	2.19	52	6.28	13.78	640	448	0	15,750	0.0	0	0	0	448	640	448
851.3	53	62.66	62.16	CLAY	4.5	125	6.743	1	1.000	1	N/A	0.487	2.19	53	6.28	13.78	654	458	0	15,750	0.0	0	0	0	458	654	458
850.3	54	63.66	63.16	CLAY	4.5	125	6.868	1	1.000	1	N/A	0.487	2.19	54	6.28	13.78	668	468	0	15,750	0.0	0	0	0	468	668	468
849.3	55	64.66	64.16	CLAY	4.5	125	6.993	1	1.000	1	N/A	0.487	2.19	55	6.28	13.78	682	477	0	15,750	0.0	0	0	0	477	682	477
848.3	56	65.66	65.16	CLAY	4.5	125	7.118	1	1.000	1	N/A	0.487	2.19	56	6.28	13.78	695	487	0	15,750	0.0	0	0	0	487	695	487
847.3	57	66.66	66.16	CLAY	4.5	125	7.243	1	1.000	1	N/A	0.487	2.19	57	6.28	13.78	709	496	0	15,750	0.0	0	0	0	496	709	496
846.3	58	67.66	67.16	CLAY	4.5	125	7.368	1	1.000	1	N/A	0.487	2.19	58	6.28	13.78	723	506	0	15,750	0.0	0	0	0	506	723	506
845.3	59	68.66	68.16	CLAY	4.5	125	7.493	1	1.000	1	N/A	0.487	2.19	59	6.28	13.78	737	516	0	15,750	0.0	0	0	0	516	737	516
844.3	60	69.66	69.16	CLAY	4.5	125	7.618	1	1.000	1	N/A	0.487	2.19	60	6.28	13.78	751	525	0	15,750	0.0	0	0	0	525	751	525
843.3	61	70.66	70.16	CLAY	4.5	125	7.743	1	1.000	1	N/A	0.487	2.19	61	6.28	13.78	764	535	0	15,750	0.0	0	0	0	535	764	535
842.3	62	71.66	71.16	CLAY	4.5	125	7.868	1	1.000	1	N/A	0.487	2.19	62	6.28	13.78	778	545	0	15,750	0.0	0	0	0	545	778	545
841.3	63	72.66	72.16	CLAY	4.5	125	7.993	1	1.000	1	N/A	0.487	2.19	63	6.28	13.78	792	554	0	15,750	0.0	0	0	0	554	792	554
840.3	64	73.66	73.16	CLAY	4.5	125	8.118	1	1.000	1	N/A	0.487	2.19	64	6.28	13.78	806	564	0	15,750	0.0	0	0	0	564	806	564
839.3	65	74.66	74.16	CLAY	4.5	125	8.243	1	1.000	1	N/A	0.487	2.19	65	6.28	13.78	819	574	0	15,750	0.0	0	0	0	574	819	574
838.3	66	75.66	75.16	CLAY	4.5	125	8.368	1	1.000	1	N/A	0.487	2.19	66	6.28	13.78	833	583	0	15,750	0.0	0	0	0	583	833	583
837.3	67	76.66	76.16	CLAY	4.5	125	8.493	1	1.000	1	N/A	0.487	2.19	67	6.28	13.78	847	593	0	15,750	0.0	0	0	0	593	847	593
836.3	68	77.66	77.16	CLAY	4.5	125	8.618	1	1.000	1	N/A	0.487	2.19	68	6.28	13.78	861	603	0	15,750	0.0	0	0	0	603	861	603
835.3	69	78.66	78.16	CLAY	4.5	125	8.743	1	1.000	1	N/A	0.487	2.19	69	6.28	13.78	875	612	0	15,750	0.0	0	0	0	612	875	612
834.3	70	79.66	79.16	CLAY	4.5	125	8.868	1	1.000	1	N/A	0.487	2.19	70	6.28	13.78	888	622	0	15,750	0.0	0	0	0	622	888	622
833.3	71	80.66	80.16	CLAY	4.5	125	8.993	1	1.000	1	N/A	0.487	2.19	71	6.28	13.78	902	632	0	15,750	0.0	0	0	0	632	902	632
832.3	72	81.66	81.16	CLAY	4.5	125	9.118	1	1.000	1	N/A	0.487	2.19	72	6.28	13.78	916	641	0	15,750	0.0	0	0	0	641	916	641
831.3	73	82.66	82.16	CLAY	4.5	125	9.243	1	1.000	1	N/A	0.487	2.19	73	6.28	13.78	930	651	0	15,750	0.0	0	0	0	651	930	651
830.3	74	83.66	83.16	CLAY	4.5	125	9.368	1	1.000	1	N/A	0.487	2.19	74	6.28	13.78	943	660	0	15,750	0.0	0	0	0	660	943	660
829.3	75	84.66	84.16	CLAY	4.5	125	9.493	1	1.000	1	N/A	0.487	2.19	75	6.28	13.78	957	670	0	15,750	0.0	0	0	0	670	957	670
828.3	76	85.66	85.16	CLAY	4.5	125	9.618	1	1.000	1	N/A	0.487	2.19	76	6.28	13.78	971	680	0	15,750	0.0	0	0	0	680	971	680
827.3	77	86.66	86.16	CLAY	4.5	125	9.743	1	1.000	1	N/A	0.487	2.19	77	6.28	13.78	985	689	0	15,750	0.0	0	0	0	689	985	689
826.3	78	87.66	87.16	CLAY	4.5	125	9.868	1	1.000	1	N/A	0.487	2.19	78	6.28	13.78	999	699	0	15,750	0.0	0	0	0	699	999	699
825.3	79	88.66	88.16	CLAY	4.5	125	9.993	1	1.000	1	N/A	0.487	2.19	79	6.28	13.78	1012	709	0	15,750	0.0	0	0	0	709	1,012	709
824.3	80	89.66	89.16	CLAY	4.5	125	10.118	1	1.000	1	N/A	0.487	2.19	80	6.28	13.78	1026	718	0	15,750	0.0	0	0	0	718	1,026	718
823.3	81	90.66	90.16	CLAY	4.5	125	10.243	1	1.000	1	N/A	0.487	2.19	81	6.28	13.78	1040	728	0	15,750	0.0	0	0	0	728	1,040	728
822.3	82	91.66	91.16	CLAY	4.5	125	10.368	1	1.000	1	N/A	0.487	2.19	82	6.28	13.78	1054	738	0	15,750	0.0	0	0	0	738	1,054	738
821.3	83	92.66	92.16	CLAY	4.5	125	10.493	1	1.000	1	N/A	0.487	2.19	83	6.28	13.78	1068	747	0	15,750	0.0	0	0	0	747	1,068	747
820.3	84	93.66	93.16	CLAY	4.5	125	10.618	1	1.000	1	N/A	0.487	2.19	84	6.28	13.78	1081	757	0	15,750	0.0	0	0	0	757	1,081	757
819.3	85	94.66	94.16	CLAY	4.5	125	10.743	1	1.000	1	N/A	0.487	2.19	85	6.28	13.78	1095	767	0	15,750	0.0	0	0	0	767	1,095	767
818.3	86	95.66	95.16	CLAY	4.5	125	10.868	1	1.000	1	N/A	0.487	2.19	86	6.28	13.78	1109	776	0	15,750	0.0	0	0	0	776	1,109	776
817.3	87	96.66	96.16	CLAY	4.5	125	10.993	1	1.000	1	N/A	0.487	2.19	87	6.28	13.78	1123	786	0	15,750	0.0	0	0	0	786	1,123	786
816.3	88	97.66	97.16	CLAY	4.5	125	11.118	1	1.000	1	N/A	0.487	2.19	88	6.28	13.78	1136	795	0	15,750	0.0	0	0	0	795	1,136	795
815.3	89	98.66	98.16	CLAY	4.5	125	11.243	1	1.000	1	N/A	0.487	2.19	89	6.28	13.78	1150	805	0	15,750	0.0	0	0	0	805	1,150	805
814.3	90	99.66	99.16	CLAY	4.5	125	11.368	1	1.000	1	N/A	0.487	2.19	90	6.28	13.78	1164	815	0	15,750	0.0	0	0	0	815	1,164	815
813.3	91	100.66	100.16	CLAY	4.5	125	11.493	1	1.000	1	N/A	0.487	2.19	91	6.28	13.78	1178	824	0	15,750	0.0	0	0	0	824	1,178	824
812.3	92	101.66	101.16	CLAY	4.5	125	11.618	1	1.000	1	N/A	0.487	2.19	92	6.28	13.78	1192	834	0	15,750	0.0	0	0	0	834	1,192	834
811.3	93	102.66	102.16	CLAY	4.5	125	11.743	1	1.000	1	N/A	0.487	2.19	93	6.28	13.78	1205	844	0	15,750	0.0	0	0	0	844	1,205	844
810.3	94	103.66	103.16	CLAY	4.5	125	11.868	1	1.000	1	N/A	0.487	2.19	94	6.28	13.78	1219	853	0	15,750	0.0	0	0	0	853	1,219	853
809.3	95	104.66	104.16	CLAY	4.5	125	11.993	1	1.000	1	N/A	0.487	2.19	95	6.28	13.78	1233	863	0	15,750	0.0	0	0	0	863	1,233	863
808.3	96	105.66	105.16	CLAY	4.5	125	12.118	1	1.000	1	N/A	0.487	2.19	96	6.28	13.78	1247	873	0	15,750	0.0	0	0	0	873	1,247	873
807.3	97	106.66	106.16	CLAY	4.5	125	12.243	1	1.000	1	N/A	0.487	2.19	97	6.28	13.78	1260	882	0	15,750	0.0	0	0	0	882	1,260	882
806.3	98	107.66	107.16	CLAY	4.5	125	12.368	1	1.000	1	N/A	0.487	2.19	98	6.28	13.78	1274	892	0	15,750	0.0	0	0	0	892	1,274	892
805.3	99	108.66	108.16	CLAY	4.5	125	12.493	1	1.000	1	N/A	0.487	2.19	99	6.28	13.78	1288	902	0	15,750	0.0	0	0	0	902	1,288	902
804.3	100	109.66	109.16	CLAY	4.5	125	12.618	1	1.000	1	N/A	0.487	2.19	100	6.28	13.78	1302	911	0	15,750	0.0	0	0	0	911	1,302	911
803.3	101	110.66	110.16	CLAY	4.5	125	12.743	1	1.000	1	N/A	0.487	2.19	101	6.28	13.78	1316	921	0	15,750	0.0	0	0	0	921	1,316	921
802.3	102	111.66	111.16	CLAY	4.5	125	12.868	1	1.000	1	N/A	0.487	2.19	102	6.28	13.78	1329	931	0	15,750	0.0	0	0	0	931	1,329	931
801.3	103	112.66	112.16	CLAY	4.5	125	12.993	1	1.000	1	N/A	0.487	2.19	103	6.28	13.78	1343	940	0	15,750	0.0	0	0	0	940	1,343	940
800.3	104	113.66	113.16	CLAY	4.5	125	13.118	1	1.000	1	N/A	0.487	2.19	104	6.28	13.78	1357	950	0	15,750	0.0	0	0	0	950	1,357	950
799.3	105	114.66	114.16	CLAY	4.5	125	13.243	1	1.000	1	N/A	0.487	2.19	105	6.28	13.78	1371	959	0	15,750	0.0	0	0	0	959	1,371	959
798.3	106	115.66	115.16	CLAY	4.5	125	13.368	1	1.000	1	N/A	0.487	2.19	106	6.28	13.78	1384	969	0	15,750	0.0	0	0	0	969	1,384	969
797.3	107	116.66	116.16	CLAY	4.5	125	13.493	1	1.000	1	N/A	0.487

LA-1143/Palo Comado OC

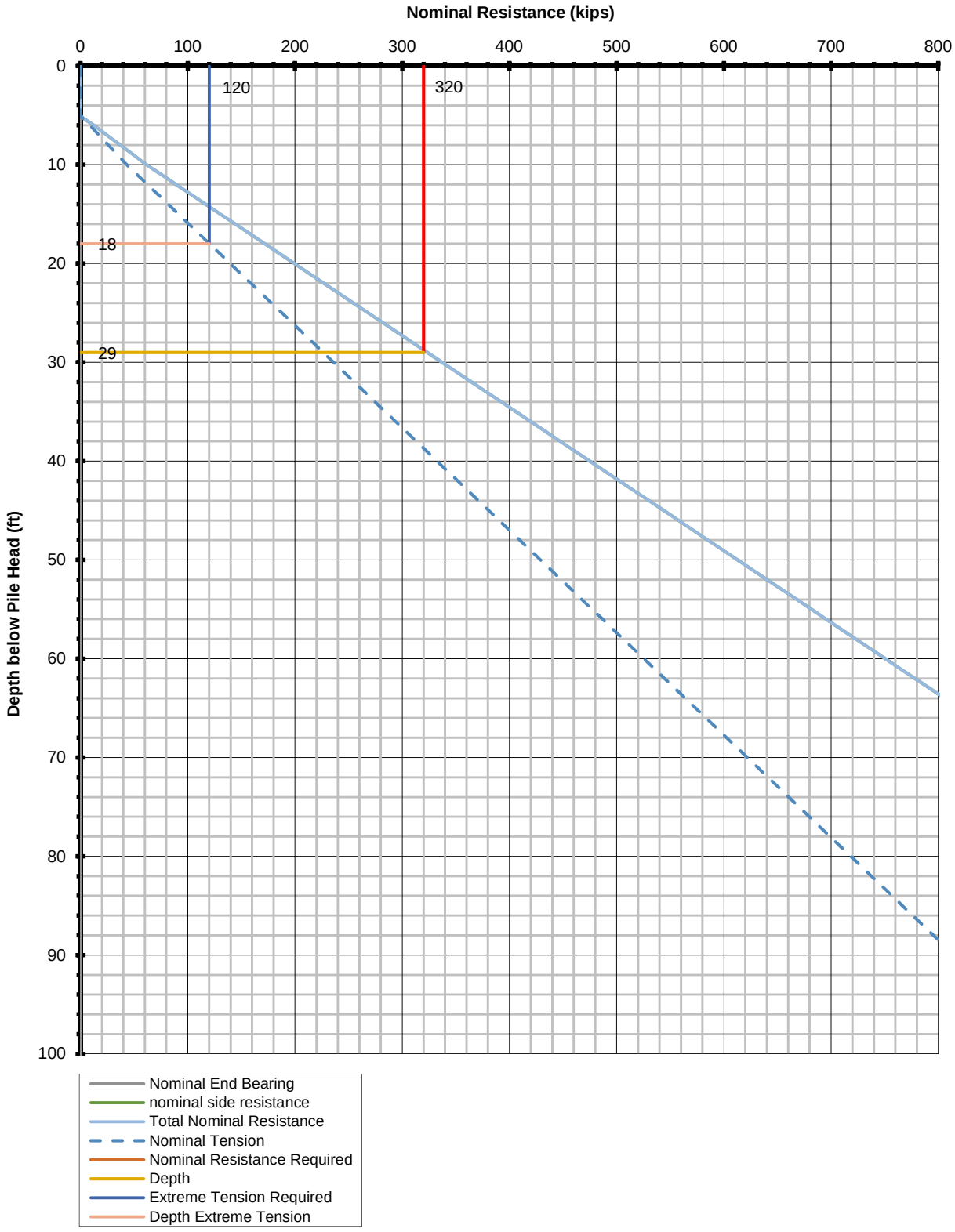
24 inch CIDH Bent 3L



GROUP DELTA

LA-1143/Palo Comado OC

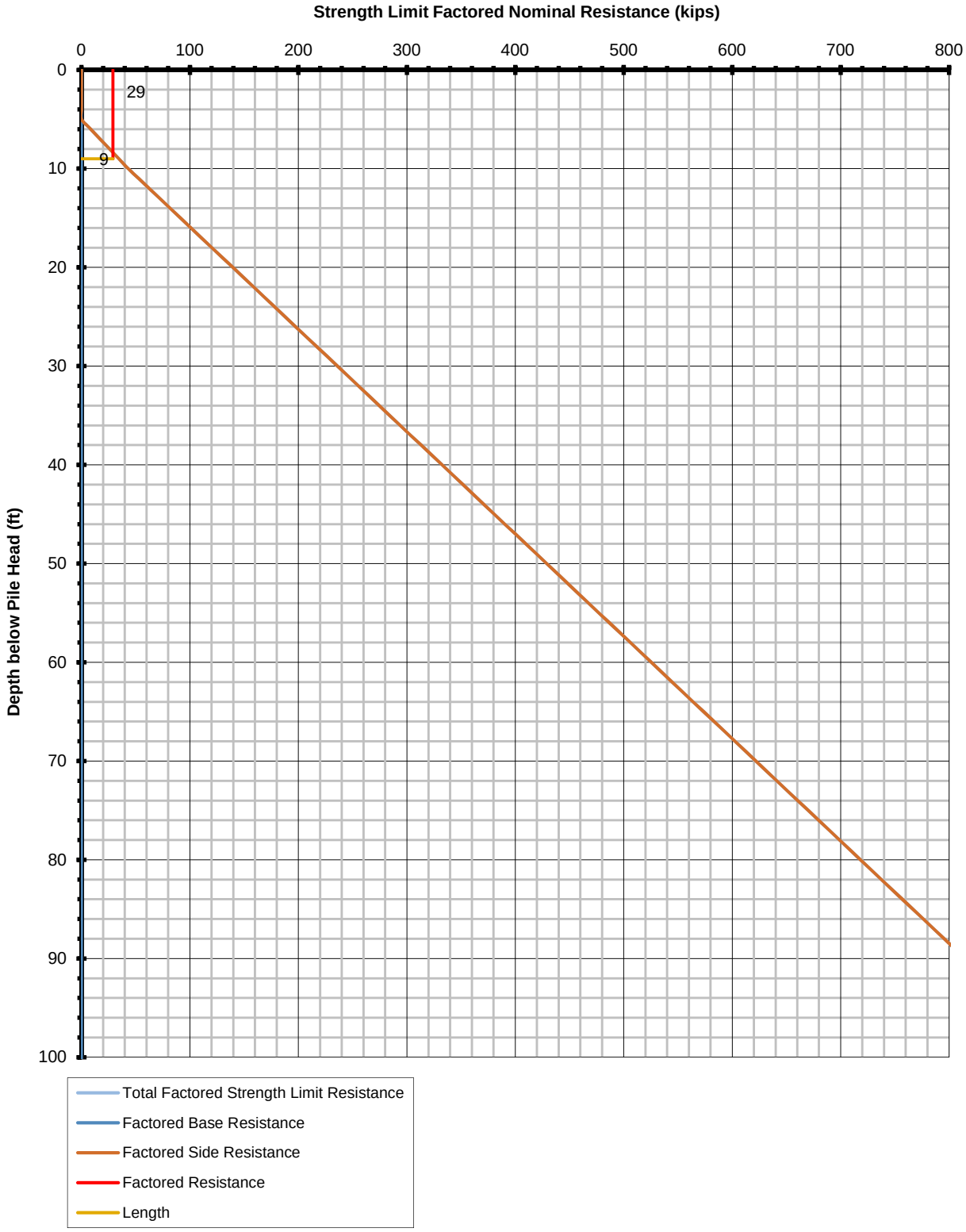
24 inch CIDH Bent 3L



GROUP DELTA

LA-1143/Palo Comado OC

24 inch CIDH Bent 3L



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 24 inch CIDH Bent 3R

Pile Diameter= 2 ft
Perimeter= 6.283 ft
End Area= 3.142 ft²

Group Efficiency Factor= 1
5% D= 1.20 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile head below ground surface (ft) 9.66
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 90.34

Req. Nom.= 340 kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	340
31	340
31	0
31	340

Factored= 200 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	200
27	200
27	0
27	200

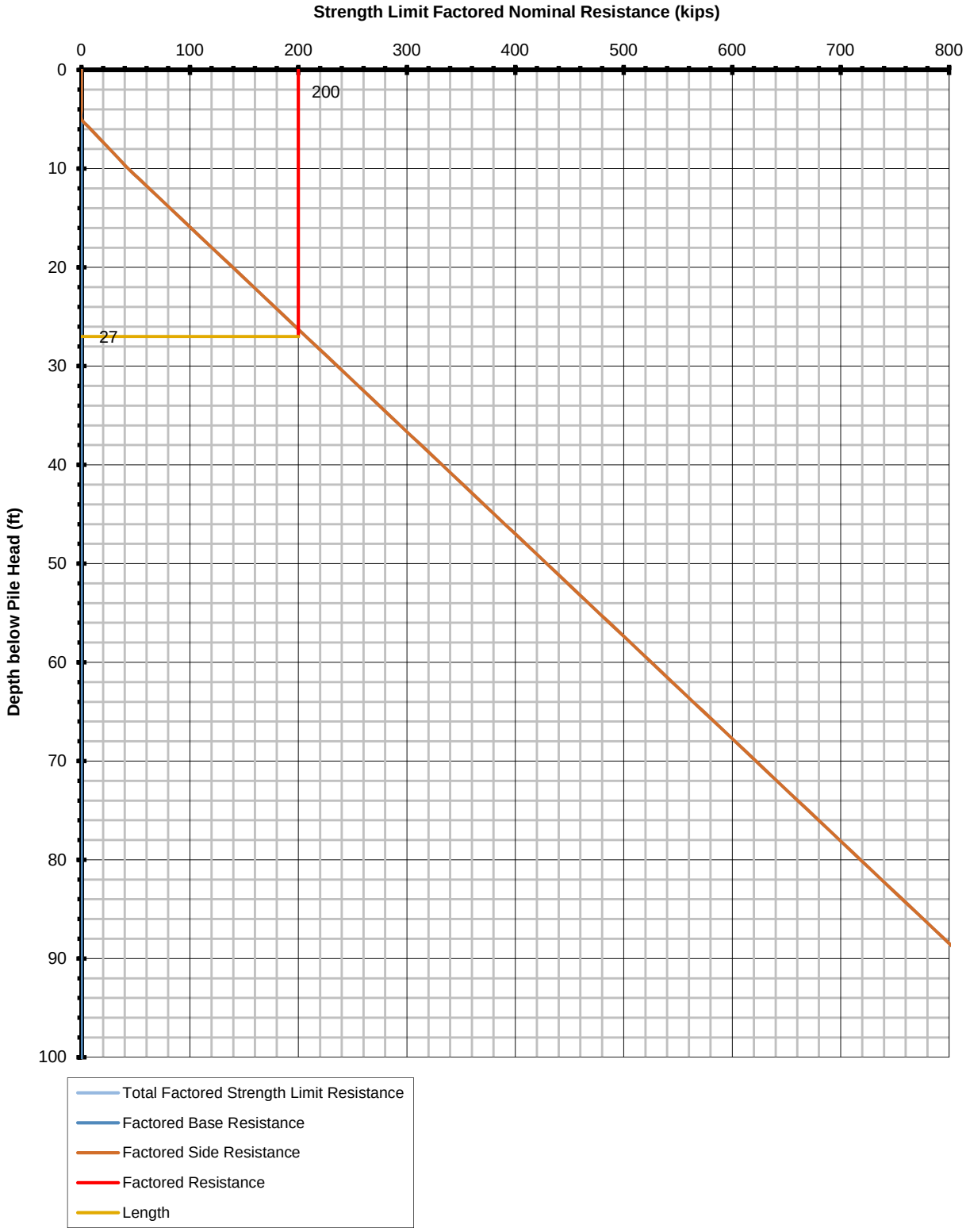
Req. Nom. T= 180 kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	180
25	180
25	0
25	180

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
904.34	0	9.66												0			0	0										
903.3	1	10.66	10.16	CLAY	2.75	120	0.290	0	1.000	1	N/A	0.550	0.00	1	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
902.3	2	11.66	11.16	CLAY	2.75	120	0.410	0	1.000	1	N/A	0.550	0.00	2	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
901.3	3	12.66	12.16	CLAY	2.75	120	0.530	0	1.000	1	N/A	0.550	0.00	3	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
900.3	4	13.66	13.16	CLAY	2.75	120	0.650	0	1.000	1	N/A	0.550	0.00	4	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
899.3	5	14.66	14.16	CLAY	2.75	120	0.770	0	1.000	1	N/A	0.550	0.00	5	6.28	0.00	0	0	0	9,625	0.0	0	0	0	0	0	0
898.3	6	15.66	15.16	CLAY	3.75	120	0.890	1	1.000	1	N/A	0.523	1.96	6	6.28	12.32	12	9	0	13,125	0.0	0	0	0	9	12	9
897.3	7	16.66	16.16	CLAY	3.75	120	1.010	1	1.000	1	N/A	0.523	1.96	7	6.28	12.32	25	17	0	13,125	0.0	0	0	0	17	25	17
896.3	8	17.66	17.16	CLAY	3.75	120	1.130	1	1.000	1	N/A	0.523	1.96	8	6.28	12.32	37	26	0	13,125	0.0	0	0	0	26	37	26
895.3	9	18.66	18.16	CLAY	3.75	120	1.250	1	1.000	1	N/A	0.523	1.96	9	6.28	12.32	49	34	0	13,125	0.0	0	0	0	34	49	34
894.3	10	19.66	19.16	CLAY	3.75	120	1.370	1	1.000	1	N/A	0.523	1.96	10	6.28	12.32	62	43	0	13,125	0.0	0	0	0	43	62	43
893.3	11	20.66	20.16	CLAY	4.5	125	1.493	1	1.000	1	N/A	0.487	2.19	11	6.28	13.78	75	53	0	15,750	0.0	0	0	0	53	75	53
892.3	12	21.66	21.16	CLAY	4.5	125	1.618	1	1.000	1	N/A	0.487	2.19	12	6.28	13.78	89	62	0	15,750	0.0	0	0	0	62	89	62
891.3	13	22.66	22.16	CLAY	4.5	125	1.743	1	1.000	1	N/A	0.487	2.19	13	6.28	13.78	103	72	0	15,750	0.0	0	0	0	72	103	72
890.3	14	23.66	23.16	CLAY	4.5	125	1.868	1	1.000	1	N/A	0.487	2.19	14	6.28	13.78	117	82	0	15,750	0.0	0	0	0	82	117	82
889.3	15	24.66	24.16	CLAY	4.5	125	1.993	1	1.000	1	N/A	0.487	2.19	15	6.28	13.78	130	91	0	15,750	0.0	0	0	0	91	130	91
888.3	16	25.66	25.16	CLAY	4.5	125	2.118	1	1.000	1	N/A	0.487	2.19	16	6.28	13.78	144	101	0	15,750	0.0	0	0	0	101	144	101
887.3	17	26.66	26.16	CLAY	4.5	125	2.243	1	1.000	1	N/A	0.487	2.19	17	6.28	13.78	158	111	0	15,750	0.0	0	0	0	111	158	111
886.3	18	27.66	27.16	CLAY	4.5	125	2.368	1	1.000	1	N/A	0.487	2.19	18	6.28	13.78	172	120	0	15,750	0.0	0	0	0	120	172	120
885.3	19	28.66	28.16	CLAY	4.5	125	2.493	1	1.000	1	N/A	0.487	2.19	19	6.28	13.78	186	130	0	15,750	0.0	0	0	0	130	186	130
884.3	20	29.66	29.16	CLAY	4.5	125	2.618	1	1.000	1	N/A	0.487	2.19	20	6.28	13.78	199	140	0	15,750	0.0	0	0	0	140	199	140
883.3	21	30.66	30.16	CLAY	4.5	125	2.743	1	1.000	1	N/A	0.487	2.19	21	6.28	13.78	213	149	0	15,750	0.0	0	0	0	149	213	149
882.3	22	31.66	31.16	CLAY	4.5	125	2.868	1	1.000	1	N/A	0.487	2.19	22	6.28	13.78	227	159	0	15,750	0.0	0	0	0	159	227	159
881.3	23	32.66	32.16	CLAY	4.5	125	2.993	1	1.000	1	N/A	0.487	2.19	23	6.28	13.78	241	169	0	15,750	0.0	0	0	0	169	241	169
880.3	24	33.66	33.16	CLAY	4.5	125	3.118	1	1.000	1	N/A	0.487	2.19	24	6.28	13.78	255	178	0	15,750	0.0	0	0	0	178	255	178
879.3	25	34.66	34.16	CLAY	4.5	125	3.243	1	1.000	1	N/A	0.487	2.19	25	6.28	13.78	268	188	0	15,750	0.0	0	0	0	188	268	188
878.3	26	35.66	35.16	CLAY	4.5	125	3.368	1	1.000	1	N/A	0.487	2.19	26	6.28	13.78	282	197	0	15,750	0.0	0	0	0	197	282	197
877.3	27	36.66	36.16	CLAY	4.5	125	3.493	1	1.000	1	N/A	0.487	2.19	27	6.28	13.78	296	207	0	15,750	0.0	0	0	0	207	296	207
876.3	28	37.66	37.16	CLAY	4.5	125	3.618	1	1.000	1	N/A	0.487	2.19	28	6.28	13.78	310	217	0	15,750	0.0	0	0	0	217	310	217
875.3	29	38.66	38.16	CLAY	4.5	125	3.743	1	1.000	1	N/A	0.487	2.19	29	6.28	13.78	323	226	0	15,750	0.0	0	0	0	226	323	226
874.3	30	39.66	39.16	CLAY	4.5	125	3.868	1	1.000	1	N/A	0.487	2.19	30	6.28	13.78	337	236	0	15,750	0.0	0	0	0	236	337	236
873.3	31	40.66	40.16	CLAY	4.5	125	3.993	1	1.000	1	N/A	0.487	2.19	31	6.28	13.78	351	246	0	15,750	0.0	0	0	0	246	351	246
872.3	32	41.66	41.16	CLAY	4.5	125	4.118	1	1.000	1	N/A	0.487	2.19	32	6.28	13.78	365	255	0	15,750	0.0	0	0	0	255	365	255
871.3	33	42.66	42.16	CLAY	4.5	125	4.243	1	1.000	1	N/A	0.487	2.19	33	6.28	13.78	379	265	0	15,750	0.0	0	0	0	265	379	265
870.3	34	43.66	43.16	CLAY	4.5	125	4.368	1	1.000	1	N/A	0.487	2.19	34	6.28	13.78	392	275	0	15,750	0.0	0	0	0	275	392	275
869.3	35	44.66	44.16	CLAY	4.5	125	4.493	1	1.000	1	N/A	0.487	2.19	35	6.28	13.78	406	284	0	15,750	0.0	0	0	0	284	406	284
868.3	36	45.66	45.16	CLAY	4.5	125	4.618	1	1.000	1	N/A	0.487	2.19	36	6.28	13.78	420	294	0	15,750	0.0	0	0	0	294	420	294
867.3	37	46.66	46.16	CLAY	4.5	125	4.743	1	1.000	1	N/A	0.487	2.19	37	6.28	13.78	434	304	0	15,750	0.0	0	0	0	304	434	304
866.3	38	47.66	47.16	CLAY	4.5	125	4.868	1	1.000	1	N/A	0.487	2.19	38	6.28	13.78	447	313	0	15,750	0.0	0	0	0	313	447	313
865.3	39	48.66	48.16	CLAY	4.5	125	4.993	1	1.000	1	N/A	0.487	2.19	39	6.28	13.78	461	323	0	15,750	0.0	0	0	0	323	461	323
864.3	40	49.66	49.16	CLAY	4.5	125	5.118	1	1.000	1	N/A	0.487	2.19	40	6.28	13.78	475	332	0	15,750	0.0	0	0	0	332	475	332
863.3	41	50.66	50.16	CLAY	4.5	125	5.243	1	1.000	1	N/A	0.487	2.19	41	6.28	13.78	489	342	0	15,750	0.0	0	0	0	342	489	342
862.3	42	51.66	51.16	CLAY	4.5	125	5.368	1	1.000	1	N/A	0.487	2.19	42	6.28	13.78	503	352	0	15,750	0.0	0	0	0	352	503	352
861.3	43	52.66	52.16	CLAY	4.5	125	5.493	1	1.000	1	N/A	0.487	2.19	43	6.28	13.78	516	361	0	15,750	0.0	0	0	0	361	516	361
860.3	44	53.66	53.16	CLAY	4.5	125	5.618	1	1.000	1	N/A	0.487	2.19	44	6.28	13.78	530	371	0	15,750	0.0	0	0	0	371	530	371
859.3	45	54.66	54.16	CLAY	4.5	125	5.743	1	1.000	1	N/A	0.487	2.19	45	6.28	13.78	544	381	0	15,750	0.0	0	0	0	381	544	381
858.3	46	55.66	55.16	CLAY	4.5	125	5.868	1	1.000	1	N/A	0.487	2.19	46	6.28	13.78	558	390	0	15,750	0.0	0	0	0	390	558	390
857.3	47	56.66	56.16	CLAY	4.5	125	5.993	1	1.000	1	N/A	0.487	2.19	47	6.28	13.78	571	400	0	15,750	0.0	0	0	0	400	571	400
856.3	48	57.66	57.16	CLAY	4.5	125	6.118	1	1.000	1	N/A	0.487	2.19	48	6.28	13.78	585	410	0	15,750	0.0	0	0	0	410	585	410
855.3	49	58.66	58.16	CLAY	4.5	125	6.243	1	1.000	1	N/A	0.487	2.19	49	6.28	13.78	599	419	0	15,750	0.0	0	0	0	419	599	419
854.3	50	59.66	59.16	CLAY	4.5	125	6.368	1	1.000	1	N/A	0.487	2.19	50	6.28	13.78	613	429	0	15,750	0.0	0	0	0	429	613	429
853.3	51	60.66	60.16	CLAY	4.5	125	6.493	1	1.000	1	N/A	0.487	2.19	51	6.28	13.78	627	439	0	15,750	0.0	0	0	0	439	627	439
852.3	52	61.66	61.16	CLAY	4.5	125	6.618	1	1.000	1	N/A	0.487	2.19	52	6.28	13.78	640	448	0	15,750	0.0	0	0	0	448	640	448
851.3	53	62.66	62.16	CLAY	4.5	125	6.743	1	1.000	1	N/A	0.487	2.19	53	6.28	13.78	654	458	0	15,750	0.0	0	0	0	458	654	458
850.3	54	63.66	63.16	CLAY	4.5	125	6.868	1	1.000	1	N/A	0.487	2.19	54	6.28	13.78	668	468	0	15,750	0.0	0	0	0	468	668	468
849.3	55	64.66	64.16	CLAY	4.5	125	6.993	1	1.000	1	N/A	0.487	2.19	55	6.28	13.78	682	477	0	15,750	0.0	0	0	0	477	682	477
848.3	56	65.66	65.16	CLAY	4.5	125	7.118	1	1.000	1	N/A	0.487	2.19	56	6.28	13.78	695	487	0	15,750	0.0	0	0	0	487	695	487
847.3	57	66.66	66.16	CLAY	4.5	125	7.243	1	1.000	1	N/A	0.487	2.19	57	6.28	13.78	709	496	0	15,750	0.0	0	0	0	496	709	496
846.3	58	67.66	67.16	CLAY	4.5	125	7.368	1	1.000	1	N/A	0.487	2.19	58	6.28	13.78	723	506	0	15,750	0.0	0	0	0	506	723	506
845.3	59	68.66	68.16	CLAY	4.5	125	7.493	1	1.000	1	N/A	0.487	2.19	59	6.28	13.78	737	516	0	15,750	0.0	0	0	0	516	737	516
844.3	60	69.66	69.16	CLAY	4.5	125	7.618	1	1.000	1	N/A	0.487	2.19	60	6.28	13.78	751	525	0	15,750	0.0	0	0	0	525	751	525
843.3	61	70.66	70.16	CLAY	4.5	125	7.743	1	1.000	1	N/A	0.487	2.19	61	6.28	13.78	764	535	0	15,750	0.0	0	0	0	535	764	535
842.3	62	71.66	71.16	CLAY	4.5	125	7.868	1	1.000	1	N/A	0.487	2.19	62	6.28	13.78	778	545	0	15,750	0.0	0	0	0	545	778	545
841.3	63	72.66	72.16	CLAY	4.5	125	7.993	1	1.000	1	N/A	0.487	2.19	63	6.28	13.78	792	554	0	15,750	0.0	0	0	0	554	792	554
840.3	64	73.66	73.16	CLAY	4.5	125	8.118	1	1.000	1	N/A	0.487	2.19	64	6.28	13.78	806	564	0	15,750	0.0	0	0	0	564	806	564
839.3	65	74.66	74.16	CLAY	4.5	125	8.243	1	1.000	1	N/A	0.487	2.19	65	6.28	13.78	819	574	0	15,750	0.0	0	0	0	574	819	574
838.3	66	75.66	75.16	CLAY	4.5	125	8.368	1	1.000	1	N/A	0.487	2.19	66	6.28	13.78	833	583	0	15,750	0.0	0	0	0	583	833	583
837.3	67	76.66	76.16	CLAY	4.5	125	8.493	1	1.000	1	N/A	0.487	2.19	67	6.28	13.78	847	593	0	15,750	0.0	0	0	0	593	847	593
836.3	68	77.66	77.16	CLAY	4.5	125	8.618	1	1.000	1	N/A	0.487	2.19	68	6.28	13.78	861	603	0	15,750	0.0	0	0	0	603	861	603
835.3	69	78.66	78.16	CLAY	4.5	125	8.743	1	1.000	1	N/A	0.487	2.19	69	6.28	13.78	875	612	0	15,750	0.0	0	0	0	612	875	612
834.3	70	79.66	79.16	CLAY	4.5	125	8.868	1	1.000	1	N/A	0.487	2.19	70	6.28	13.78	888	622	0	15,750	0.0	0	0	0	622	888	622
833.3	71	80.66	80.16	CLAY	4.5	125	8.993	1	1.000	1	N/A	0.487	2.19	71	6.28	13.78	902	632	0	15,750	0.0	0	0	0	632	902	632
832.3	72	81.66	81.16	CLAY	4.5	125	9.118	1	1.000	1	N/A	0.487	2.19	72	6.28	13.78	916	641	0	15,750	0.0	0	0	0	641	916	641
831.3	73	82.66	82.16	CLAY	4.5	125	9.243	1	1.000	1	N/A	0.487	2.19	73	6.28	13.78	930	651	0	15,750	0.0	0	0	0	651	930	651
830.3	74	83.66	83.16	CLAY	4.5	125	9.368	1	1.000	1	N/A	0.487	2.19	74	6.28	13.78	943	660	0	15,750	0.0	0	0	0	660	943	660
829.3	75	84.66	84.16	CLAY	4.5	125	9.493	1	1.000	1	N/A	0.487	2.19	75	6.28	13.78	957	670	0	15,750	0.0	0	0	0	670	957	670
828.3	76	85.66	85.16	CLAY	4.5	125	9.618	1	1.000	1	N/A	0.487	2.19	76	6.28	13.78	971	680	0	15,750	0.0	0	0	0	680	971	680
827.3	77	86.66	86.16	CLAY	4.5	125	9.743	1	1.000	1	N/A	0.487	2.19	77	6.28	13.78	985	689	0	15,750	0.0	0	0	0	689	985	689
826.3	78	87.66	87.16	CLAY	4.5	125	9.868	1	1.000	1	N/A	0.487	2.19	78	6.28	13.78	999	699	0	15,750	0.0	0	0	0	699	999	699
825.3	79	88.66	88.16	CLAY	4.5	125	9.993	1	1.000	1	N/A	0.487	2.19	79	6.28	13.78	1012	709	0	15,750	0.0	0	0	0	709	1,012	709
824.3	80	89.66	89.16	CLAY	4.5	125	10.118	1	1.000	1	N/A	0.487	2.19	80	6.28	13.78	1026	718	0	15,750	0.0	0	0	0	718	1,026	718
823.3	81	90.66	90.16	CLAY	4.5	125	10.243	1	1.000	1	N/A	0.487	2.19	81	6.28	13.78	1040	728	0	15,750	0.0	0	0	0	728	1,040	728
822.3	82	91.66	91.16	CLAY	4.5	125	10.368	1	1.000	1	N/A	0.487	2.19	82	6.28	13.78	1054	738	0	15,750	0.0	0	0	0	738	1,054	738
821.3	83	92.66	92.16	CLAY	4.5	125	10.493	1	1.000	1	N/A	0.487	2.19	83	6.28	13.78	1068	747	0	15,750	0.0	0	0	0	747	1,068	747
820.3	84	93.66	93.16	CLAY	4.5	125	10.618	1	1.000	1	N/A	0.487	2.19	84	6.28	13.78	1081	757	0	15,750	0.0	0	0	0	757	1,081	757
819.3	85	94.66	94.16	CLAY	4.5	125	10.743	1	1.000	1	N/A	0.487	2.19	85	6.28	13.78	1095	767	0	15,750	0.0	0	0	0	767	1,095	767
818.3	86	95.66	95.16	CLAY	4.5	125	10.868	1	1.000	1	N/A	0.487	2.19	86	6.28	13.78	1109	776	0	15,750	0.0	0	0	0	776	1,109	776
817.3	87	96.66	96.16	CLAY	4.5	125	10.993	1	1.000	1	N/A	0.487	2.19	87	6.28	13.78	1123	786	0	15,750	0.0	0	0	0	786	1,123	786
816.3	88	97.66	97.16	CLAY	4.5	125	11.118	1	1.000	1	N/A	0.487	2.19	88	6.28	13.78	1136	795	0	15,750	0.0	0	0	0	795	1,136	795
815.3	89	98.66	98.16	CLAY	4.5	125	11.243	1	1.000	1	N/A	0.487	2.19	89	6.28	13.78	1150	805	0	15,750	0.0	0	0	0	805	1,150	805
814.3	90	99.66	99.16	CLAY	4.5	125	11.368	1	1.000	1	N/A	0.487	2.19	90	6.28	13.78	1164	815	0	15,750	0.0	0	0	0	815	1,164	815
813.3	91	100.66	100.16	CLAY	4.5	125	11.493	1	1.000	1	N/A	0.487	2.19	91	6.28	13.78	1178	824	0	15,750	0.0	0	0	0	824	1,178	824
812.3	92	101.66	101.16	CLAY	4.5	125	11.618	1	1.000	1	N/A	0.487	2.19	92	6.28	13.78	1192	834	0	15,750	0.0	0	0	0	834	1,192	834
811.3	93	102.66	102.16	CLAY	4.5	125	11.743	1	1.000	1	N/A	0.487	2.19	93	6.28	13.78	1205	844	0	15,750	0.0	0	0	0	844	1,205	844
810.3	94	103.66	103.16	CLAY	4.5	125	11.868	1	1.000	1	N/A	0.487	2.19	94	6.28	13.78	1219	853	0	15,750	0.0	0	0	0	853	1,219	853
809.3	95	104.66	104.16	CLAY	4.5	125	11.993	1	1.000	1	N/A	0.487	2.19	95	6.28	13.78	1233	863	0	15,750	0.0	0	0	0	863	1,233	863
808.3	96	105.66	105.16	CLAY	4.5	125	12.118	1	1.000	1	N/A	0.487	2.19	96	6.28	13.78	1247	873	0	15,750	0.0	0	0	0	873	1,247	873
807.3	97	106.66	106.16	CLAY	4.5	125	12.243	1	1.000	1	N/A	0.487	2.19	97	6.28	13.78	1260	882	0	15,750	0.0	0	0	0	882	1,260	882
806.3	98	107.66	107.16	CLAY	4.5	125	12.368	1	1.000	1	N/A	0.487	2.19	98	6.28	13.78	1274	892	0	15,750	0.0	0	0	0	892	1,274	892
805.3	99	108.66	108.16	CLAY	4.5	125	12.493	1	1.000	1	N/A	0.487	2.19	99	6.28	13.78	1288	902	0	15,750	0.0	0	0	0	902	1,288	902
804.3	100	109.66	109.16	CLAY	4.5	125	12.618	1	1.000	1	N/A	0.487	2.19	100	6.28	13.78	1302	911	0	15,750	0.0	0	0	0	911	1,302	911
803.3	101	110.66	110.16	CLAY	4.5	125	12.743	1	1.000	1	N/A	0.487	2.19	101	6.28	13.78	1316	921	0	15,750	0.0	0	0	0	921	1,316	921
802.3	102	111.66	111.16	CLAY	4.5	125	12.868	1	1.000	1	N/A	0.487	2.19	102	6.28	13.78	1329	931	0	15,750	0.0	0	0	0	931	1,329	931
801.3	103	112.66	112.16	CLAY	4.5	125	12.993	1	1.000	1	N/A	0.487	2.19	103	6.28	13.78	1343	940	0	15,750	0.0	0	0	0	940	1,343	940
800.3	104	113.66	113.16	CLAY	4.5	125	13.118	1	1.000	1	N/A	0.487	2.19	104	6.28	13.78	1357	950	0	15,750	0.0	0	0	0	950	1,357	950
799.3	105	114.66	114.16	CLAY	4.5	125	13.243	1	1.000	1	N/A	0.487	2.19	105	6.28	13.78	1371	959	0	15,750	0.0	0	0	0	959	1,371	959
798.3	106	115.66	115.16	CLAY	4.5	125	13.368	1	1.000	1	N/A	0.487	2.19	106	6.28	13.78	1384	969	0	15,750	0.0	0	0	0	969	1,384	969
797.3	107	116.66	116.16	CLAY	4.5	125	13.493	1	1.000	1	N/A	0.487

LA-1143/Palo Comado OC

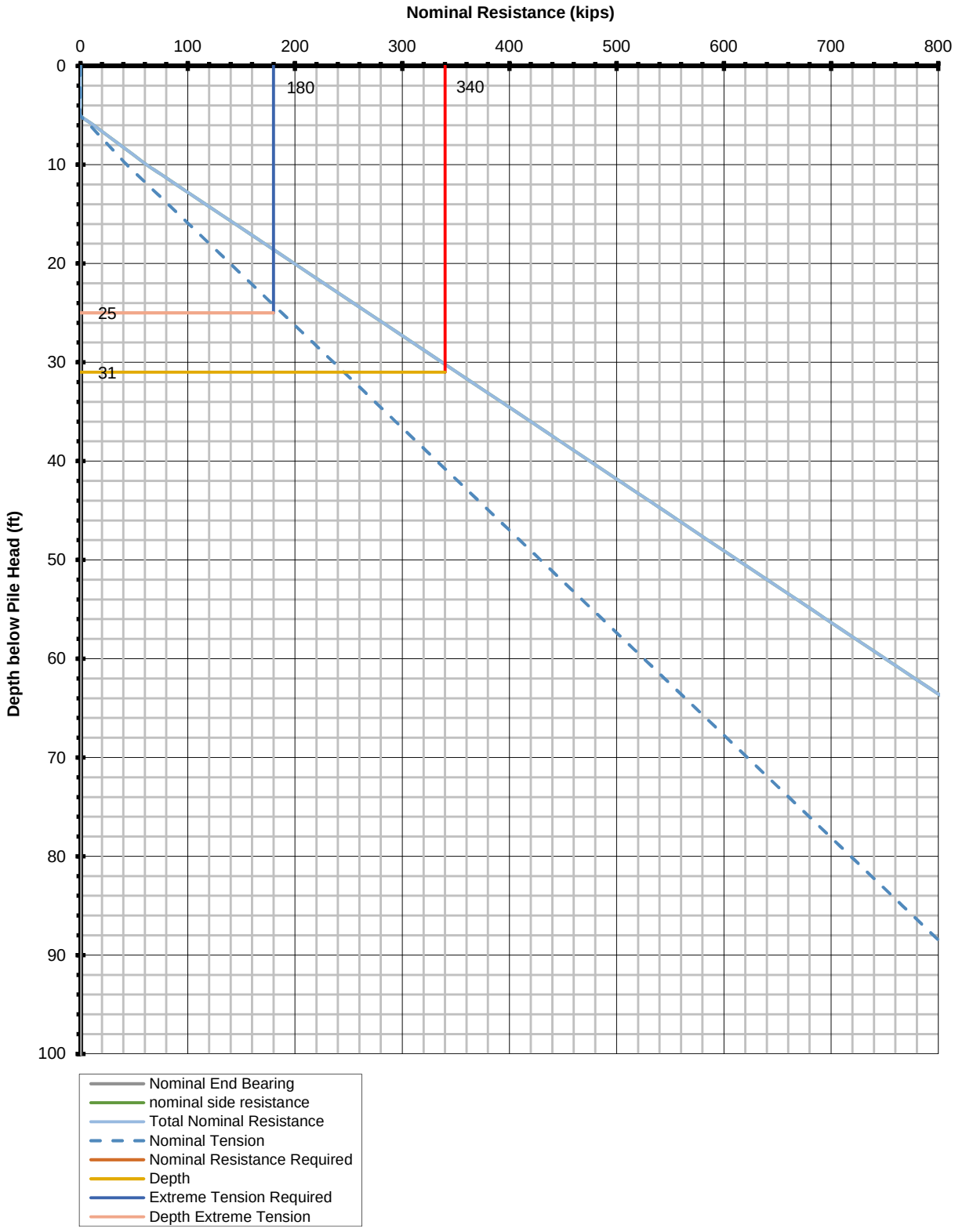
24 inch CIDH Bent 3R



GROUP DELTA

LA-1143/Palo Comado OC

24 inch CIDH Bent 3R



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 24 inch CIDH Bent 4L

Req. Nom.= 300 kips

Nominal Comp Plot

Depth (ft)	Load (kips)
0	300
27	300
27	0
27	300

Factored= 220 kips

Strength Plot

Depth (ft)	Factored Load (kips)
0	220
28	220
28	0
28	220

Req. Nom. T= 140 kips

Nominal Tension Plot

Depth (ft)	Load (kips)
0	140
20	140
20	0
20	140

Pile Diameter= 2 ft
Perimeter= 6.283 ft
End Area= 3.142 ft^2

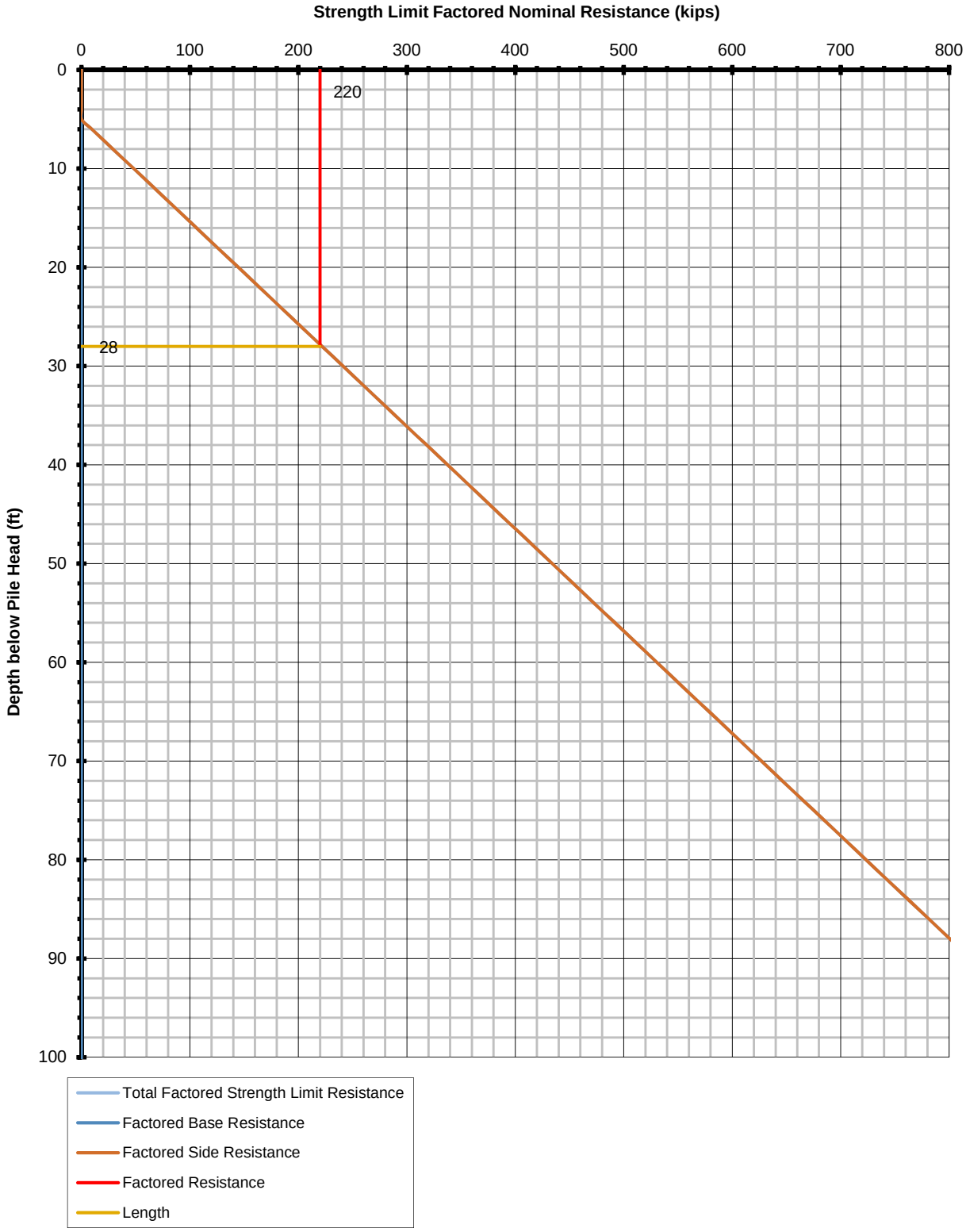
Group Efficiency Factor= 1
5% D= 1.20 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile head below ground surface (ft) 8.91
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 91.09

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft^2)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
908.09	0	8.91												0			0	0										
907.1	1	9.91	9.41	CLAY	4.5	125	0.293	0	1.000	1	N/A	0.487	0.00	1	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0	0
906.1	2	10.91	10.41	CLAY	4.5	125	0.418	0	1.000	1	N/A	0.487	0.00	2	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0	0
905.1	3	11.91	11.41	CLAY	4.5	125	0.543	0	1.000	1	N/A	0.487	0.00	3	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0	0
904.1	4	12.91	12.41	CLAY	4.5	125	0.668	0	1.000	1	N/A	0.487	0.00	4	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0	0
903.1	5	13.91	13.41	CLAY	4.5	125	0.793	0	1.000	1	N/A	0.487	0.00	5	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0	0
902.1	6	14.91	14.41	CLAY	4.5	125	0.918	1	1.000	1	N/A	0.487	2.19	6	6.28	13.78	14	10	0	15,750	0.0	0	0	0	10	14	10
901.1	7	15.91	15.41	CLAY	4.5	125	1.043	1	1.000	1	N/A	0.487	2.19	7	6.28	13.78	28	19	0	15,750	0.0	0	0	0	19	28	19
900.1	8	16.91	16.41	CLAY	4.5	125	1.168	1	1.000	1	N/A	0.487	2.19	8	6.28	13.78	41	29	0	15,750	0.0	0	0	0	29	41	29
899.1	9	17.91	17.41	CLAY	4.5	125	1.293	1	1.000	1	N/A	0.487	2.19	9	6.28	13.78	55	39	0	15,750	0.0	0	0	0	39	55	39
898.1	10	18.91	18.41	CLAY	4.5	125	1.418	1	1.000	1	N/A	0.487	2.19	10	6.28	13.78	69	48	0	15,750	0.0	0	0	0	48	69	48
897.1	11	19.91	19.41	CLAY	4.5	125	1.543	1	1.000	1	N/A	0.487	2.19	11	6.28	13.78	83	58	0	15,750	0.0	0	0	0	58	83	58
896.1	12	20.91	20.41	CLAY	4.5	125	1.668	1	1.000	1	N/A	0.487	2.19	12	6.28	13.78	96	68	0	15,750	0.0	0	0	0	68	96	68
895.1	13	21.91	21.41	CLAY	4.5	125	1.793	1	1.000	1	N/A	0.487	2.19	13	6.28	13.78	110	77	0	15,750	0.0	0	0	0	77	110	77
894.1	14	22.91	22.41	CLAY	4.5	125	1.918	1	1.000	1	N/A	0.487	2.19	14	6.28	13.78	124	87	0	15,750	0.0	0	0	0	87	124	87
893.1	15	23.91	23.41	CLAY	4.5	125	2.043	1	1.000	1	N/A	0.487	2.19	15	6.28	13.78	138	96	0	15,750	0.0	0	0	0	96	138	96
892.1	16	24.91	24.41	CLAY	4.5	125	2.168	1	1.000	1	N/A	0.487	2.19	16	6.28	13.78	152	106	0	15,750	0.0	0	0	0	106	152	106
891.1	17	25.91	25.41	CLAY	4.5	125	2.293	1	1.000	1	N/A	0.487	2.19	17	6.28	13.78	165	116	0	15,750	0.0	0	0	0	116	165	116
890.1	18	26.91	26.41	CLAY	4.5	125	2.418	1	1.000	1	N/A	0.487	2.19	18	6.28	13.78	179	125	0	15,750	0.0	0	0	0	125	179	125
889.1	19	27.91	27.41	CLAY	4.5	125	2.543	1	1.000	1	N/A	0.487	2.19	19	6.28	13.78	193	135	0	15,750	0.0	0	0	0	135	193	135
888.1	20	28.91	28.41	CLAY	4.5	125	2.668	1	1.000	1	N/A	0.487	2.19	20	6.28	13.78	207	145	0	15,750	0.0	0	0	0	145	207	145
887.1	21	29.91	29.41	CLAY	4.5	125	2.793	1	1.000	1	N/A	0.487	2.19	21	6.28	13.78	220	154	0	15,750	0.0	0	0	0	154	220	154
886.1	22	30.91	30.41	CLAY	4.5	125	2.918	1	1.000	1	N/A	0.487	2.19	22	6.28	13.78	234	164	0	15,750	0.0	0	0	0	164	234	164
885.1	23	31.91	31.41	CLAY	4.5	125	3.043	1	1.000	1	N/A	0.487	2.19	23	6.28	13.78	248	174	0	15,750	0.0	0	0	0	174	248	174
884.1	24	32.91	32.41	CLAY	4.5	125	3.168	1	1.000	1	N/A	0.487	2.19	24	6.28	13.78	262	183	0	15,750	0.0	0	0	0	183	262	183
883.1	25	33.91	33.41	CLAY	4.5	125	3.293	1	1.000	1	N/A	0.487	2.19	25	6.28	13.78	276	193	0	15,750	0.0	0	0	0	193	276	193
882.1	26	34.91	34.41	CLAY	4.5	125	3.418	1	1.000	1	N/A	0.487	2.19	26	6.28	13.78	289	203	0	15,750	0.0	0	0	0	203	289	203
881.1	27	35.91	35.41	CLAY	4.5	125	3.543	1	1.000	1	N/A	0.487	2.19	27	6.28	13.78	303	212	0	15,750	0.0	0	0	0	212	303	212
880.1	28	36.91	36.41	CLAY	4.5	125	3.668	1	1.000	1	N/A	0.487	2.19	28	6.28	13.78	317	222	0	15,750	0.0	0	0	0	222	317	222
879.1	29	37.91	37.41	CLAY	4.5	125	3.793	1	1.000	1	N/A	0.487	2.19	29	6.28	13.78	331	231	0	15,750	0.0	0	0	0	231	331	231
878.1	30	38.91	38.41	CLAY	4.5	125	3.918	1	1.000	1	N/A	0.487	2.19	30	6.28	13.78	344	241	0	15,750	0.0	0	0	0	241	344	241
877.1	31	39.91	39.41	CLAY	4.5	125	4.043	1	1.000	1	N/A	0.487	2.19	31	6.28	13.78	358	251	0	15,750	0.0	0	0	0	251	358	251
876.1	32	40.91	40.41	CLAY	4.5	125	4.168	1	1.000	1	N/A	0.487	2.19	32	6.28	13.78	372	260	0	15,750	0.0	0	0	0	260	372	260
875.1	33	41.91	41.41	CLAY	4.5	125	4.293	1	1.000	1	N/A	0.487	2.19	33	6.28	13.78	386	270	0	15,750	0.0	0	0	0	270	386	270
874.1	34	42.91	42.41	CLAY	4.5	125	4.418	1	1.000	1	N/A	0.487	2.19	34	6.28	13.78	400	280	0	15,750	0.0	0	0	0	280	400	280
873.1	35	43.91	43.41	CLAY	4.5	125	4.543	1	1.000	1	N/A	0.487	2.19	35	6.28	13.78	413	289	0	15,750	0.0	0	0	0	289	413	289
872.1	36	44.91	44.41	CLAY	4.5	125	4.668	1	1.000	1	N/A	0.487	2.19	36	6.28	13.78	427	299	0	15,750	0.0	0	0	0	299	427	299
871.1	37	45.91	45.41	CLAY	4.5	125	4.793	1	1.000	1	N/A	0.487	2.19	37	6.28	13.78	441	309	0	15,750	0.0	0	0	0	309	441	309
870.1	38	46.91	46.41	CLAY	4.5	125	4.918	1	1.000	1	N/A	0.487	2.19	38	6.28	13.78	455	318	0	15,750	0.0	0	0	0	318	455	318
869.1	39	47.91	47.41	CLAY	4.5	125	5.043	1	1.000	1	N/A	0.487	2.19	39	6.28	13.78	469	328	0	15,750	0.0	0	0	0	328	469	328
868.1	40	48.91	48.41	CLAY	4.5	125	5.168	1	1.000	1	N/A	0.487	2.19	40	6.28	13.78	482	338	0	15,750	0.0	0	0	0	338	482	338
867.1	41	49.91	49.41	CLAY	4.5	125	5.293	1	1.000	1	N/A	0.487	2.19	41	6.28	13.78	496	347	0	15,750	0.0	0	0	0	347	496	347
866.1	42	50.91	50.41	CLAY	4.5	125	5.418	1	1.000	1	N/A	0.487	2.19	42	6.28	13.78	510	357	0	15,750	0.0	0	0	0	357	510	357
865.1	43	51.91	51.41	CLAY	4.5	125	5.543	1	1.000	1	N/A	0.487	2.19	43	6.28	13.78	524	367	0	15,750	0.0	0	0	0	367	524	367
864.1	44	52.91	52.41	CLAY	4.5	125	5.668	1	1.000	1	N/A	0.487	2.19	44	6.28	13.78	537	376	0	15,750	0.0	0	0	0	376	537	376
863.1	45	53.91	53.41	CLAY	4.5	125	5.793	1	1.000	1	N/A	0.487	2.19	45	6.28	13.78	551	386	0	15,750	0.0	0	0	0	386	551	386
862.1	46	54.91	54.41	CLAY	4.5	125	5.918	1	1.000	1	N/A	0.487	2.19	46	6.28	13.78	565	395	0	15,750	0.0	0	0	0	395	565	395
861.1	47	55.91	55.41	CLAY	4.5	125	6.043	1	1.000	1	N/A	0.487	2.19	47	6.28	13.78	579	405	0	15,750	0.0	0	0	0	405	579	405
860.1	48	56.91	56.41	CLAY	4.5	125	6.168	1	1.000	1	N/A	0.487	2.19	48	6.28	13.78	593	415	0	15,750	0.0	0	0	0	415	593	415
859.1	49	57.91	57.41	CLAY	4.5	125	6.293	1	1.000	1	N/A	0.487	2.19	49	6.28	13.78	606	424	0	15,750	0.0	0	0	0	424	606	424
858.1	50	58.91	58.41	CLAY	4.5	125	6.418	1	1.000	1	N/A	0.487	2.19	50	6.28	13.78	620	434	0	15,750	0.0	0	0	0	434	620	434
857.1	51	59.91	59.41	CLAY	4.5	125	6.543	1	1.000	1	N/A	0.487	2.19	51	6.28	13.78	634	444	0	15,750	0.0	0	0	0	444	634	444
856.1	52	60.91	60.41	CLAY	4.5	125	6.668	1	1.000	1	N/A	0.487	2.19	52	6.28	13.78	648	453	0	15,750	0.0	0	0	0	453	648	453
855.1	53	61.91	61.41	CLAY	4.5	125	6.793	1	1.000	1	N/A	0.487	2.19	53	6.28	13.78	661	463	0	15,750	0.0	0	0	0	463	661	463
854.1	54	62.91	62.41	CLAY	4.5	125	6.918	1	1.000	1	N/A	0.487	2.19	54	6.28	13.78	675	473	0	15,750	0.0	0	0	0	473	675	473
853.1	55	63.91	63.41	CLAY	4.5	125	7.043	1	1.000	1	N/A	0.487	2.19	55	6.28	13.78	689	482	0	15,750	0.0	0	0	0	482	689	482
852.1	56	64.91	64.41	CLAY	4.5	125	7.168	1	1.000	1	N/A	0.487	2.19	56	6.28	13.78	703	492	0	15,750	0.0	0	0	0	492	703	492
851.1	57	65.91	65.41	CLAY	4.5	125	7.293	1	1.000	1	N/A	0.487	2.19	57	6.28	13.78	717	502	0	15,750	0.0	0	0	0	502	717	502
850.1	58	66.91	66.41	CLAY	4.5	125	7.418	1	1.000	1	N/A	0.487	2.19	58	6.28	13.78	730	511	0	15,750	0.0	0	0	0	511	730	511
849.1	59	67.91	67.41	CLAY	4.5	125	7.543	1	1.000	1	N/A	0.487	2.19	59	6.28	13.78	744	521	0	15,750	0.0	0	0	0	521	744	521
848.1	60	68.91	68.41	CLAY	4.5	125	7.668	1	1.000	1	N/A	0.487	2.19	60	6.28	13.78	758	531	0	15,750	0.0	0	0	0	531	758	531
847.1	61	69.91	69.41	CLAY	4.5	125	7.793	1	1.000	1	N/A	0.487	2.19	61	6.28	13.78	772	540	0	15,750	0.0	0	0	0	540	772	540
846.1	62	70.91	70.41	CLAY	4.5	125	7.918	1	1.000	1	N/A	0.487	2.19	62	6.28	13.78	785	550	0	15,750	0.0	0	0	0	550	785	550
845.1	63	71.91	71.41	CLAY	4.5	125	8.043	1	1.000	1	N/A	0.487	2.19	63	6.28	13.78	799	559	0	15,750	0.0	0	0	0	559	799	559
844.1	64	72.91	72.41	CLAY	4.5	125	8.168	1	1.000	1	N/A	0.487	2.19	64	6.28	13.78	813	569	0	15,750	0.0	0	0	0	569	813	569
843.1	65	73.91	73.41	CLAY	4.5	125	8.293	1	1.000	1	N/A	0.487	2.19	65	6.28	13.78	827	579	0	15,750	0.0	0	0	0	579	827	579
842.1	66	74.91	74.41	CLAY	4.5	125	8.418	1	1.000	1	N/A	0.487	2.19	66	6.28	13.78	841	588	0	15,750	0.0	0	0	0	588	841	588
841.1	67	75.91	75.41	CLAY	4.5	125	8.543	1	1.000	1	N/A	0.487	2.19	67	6.28	13.78	854	598	0	15,750	0.0	0	0	0	598	854	598
840.1	68	76.91	76.41	CLAY	4.5	125	8.668	1	1.000	1	N/A	0.487	2.19	68	6.28	13.78	868	608	0	15,750	0.0	0	0	0	608	868	608
839.1	69	77.91	77.41	CLAY	4.5	125	8.793	1	1.000	1	N/A	0.487	2.19	69	6.28	13.78	882	617	0	15,750	0.0	0	0	0	617	882	617
838.1	70	78.91	78.41	CLAY	4.5	125	8.918	1	1.000	1	N/A	0.487	2.19	70	6.28	13.78	896	627	0	15,750	0.0	0	0	0	627	896	627
837.1	71	79.91	79.41	CLAY	4.5	125	9.043	1	1.000	1	N/A	0.487	2.19	71	6.28	13.78	909	637	0	15,750	0.0	0	0	0	637	909	637
836.1	72	80.91	80.41	CLAY	4.5	125	9.168	1	1.000	1	N/A	0.487	2.19	72	6.28	13.78	923	646	0	15,750	0.0	0	0	0	646	923	646
835.1	73	81.91	81.41	CLAY	4.5	125	9.293	1	1.000	1	N/A	0.487	2.19	73	6.28	13.78	937	656	0	15,750	0.0	0	0	0	656	937	656
834.1	74	82.91	82.41	CLAY	4.5	125	9.418	1	1.000	1	N/A	0.487	2.19	74	6.28	13.78	951	666	0	15,750	0.0	0	0	0	666	951	666
833.1	75	83.91	83.41	CLAY	4.5	125	9.543	1	1.000	1	N/A	0.487	2.19	75	6.28	13.78	965	675	0	15,750	0.0	0	0	0	675	965	675
832.1	76	84.91	84.41	CLAY	4.5	125	9.668	1	1.000	1	N/A	0.487	2.19	76	6.28	13.78	978	685	0	15,750	0.0	0	0	0	685	978	685
831.1	77	85.91	85.41	CLAY	4.5	125	9.793	1	1.000	1	N/A	0.487	2.19	77	6.28	13.78	992	694	0	15,750	0.0	0	0	0	694	992	694
830.1	78	86.91	86.41	CLAY	4.5	125	9.918	1	1.000	1	N/A	0.487	2.19	78	6.28	13.78	1006	704	0	15,750	0.0	0	0	0	704	1,006	704
829.1	79	87.91	87.41	CLAY	4.5	125	10.043	1	1.000	1	N/A	0.487	2.19	79	6.28	13.78	1020	714	0	15,750	0.0	0	0	0	714	1,020	714
828.1	80	88.91	88.41	CLAY	4.5	125	10.168	1	1.000	1	N/A	0.487	2.19	80	6.28	13.78	1033	723	0	15,750	0.0	0	0	0	723	1,033	723
827.1	81	89.91	89.41	CLAY	4.5	125	10.293	1	1.000	1	N/A	0.487	2.19	81	6.28	13.78	1047	733	0	15,750	0.0	0	0	0	733	1,047	733
826.1	82	90.91	90.41	CLAY	4.5	125	10.418	1	1.000	1	N/A	0.487	2.19	82	6.28	13.78	1061	743	0	15,750	0.0	0	0	0	743	1,061	743
825.1	83	91.91	91.41	CLAY	4.5	125	10.543	1	1.000	1	N/A	0.487	2.19	83	6.28	13.78	1075	752	0	15,750	0.0	0	0	0	752	1,075	752
824.1	84	92.91	92.41	CLAY	4.5	125	10.668	1	1.000	1	N/A	0.487	2.19	84	6.28	13.78	1089	762	0	15,750	0.0	0	0	0	762	1,089	762
823.1	85	93.91	93.41	CLAY	4.5	125	10.793	1	1.000	1	N/A	0.487	2.19	85	6.28	13.78	1102	772	0	15,750	0.0	0	0	0	772	1,102	772
822.1	86	94.91	94.41	CLAY	4.5	125	10.918	1	1.000	1	N/A	0.487	2.19	86	6.28	13.78	1116	781	0	15,750	0.0	0	0	0	781	1,116	781
821.1	87	95.91	95.41	CLAY	4.5	125	11.043	1	1.000	1	N/A	0.487	2.19	87	6.28	13.78	1130	791	0	15,750	0.0	0	0	0	791	1,130	791
820.1	88	96.91	96.41	CLAY	4.5	125	11.168	1	1.000	1	N/A	0.487	2.19	88	6.28	13.78	1144	801	0	15,750	0.0	0	0	0	801	1,144	801
819.1	89	97.91	97.41	CLAY	4.5	125	11.293	1	1.000	1	N/A	0.487	2.19	89	6.28	13.78	1157	810	0	15,750	0.0	0	0	0	810	1,157	810
818.1	90	98.91	98.41	CLAY	4.5	125	11.418	1	1.000	1	N/A	0.487	2.19	90	6.28	13.78	1171	820	0	15,750	0.0	0	0	0	820	1,171	820
817.1	91	99.91	99.41	CLAY	4.5	125	11.543	1	1.000	1	N/A	0.487	2.19	91	6.28	13.78	1185	830	0	15,750	0.0	0	0	0	830	1,185	830
816.1	92	100.91	100.41	CLAY	4.5	125	11.668	1	1.000	1	N/A	0.487	2.19	92	6.28	13.78	1199	839	0	15,750	0.0	0	0	0	839	1,199	839
815.1	93	101.91	101.41	CLAY	4.5	125	11.793	1	1.000	1	N/A	0.487	2.19	93	6.28	13.78	1213	849	0	15,750	0.0	0	0	0	849	1,213	849
814.1	94	102.91	102.41	CLAY	4.5	125	11.918	1	1.000	1	N/A	0.487	2.19	94	6.28	13.78	1226	858	0	15,750	0.0	0	0	0	858	1,226	858
813.1	95	103.91	103.41	CLAY	4.5	125	12.043	1	1.000	1	N/A	0.487	2.19	95	6.28	13.78	1240	868	0	15,750	0.0	0	0	0	868	1,240	868
812.1	96	104.91	104.41	CLAY	4.5	125	12.168	1	1.000	1	N/A	0.487	2.19	96	6.28	13.78	1254	878	0	15,750	0.0	0	0	0	878	1,254	878
811.1	97	105.91	105.41	CLAY	4.5	125	12.293	1	1.000	1	N/A	0.487	2.19	97	6.28	13.78	1268	887	0	15,750	0.0	0	0	0	887	1,268	887
810.1	98	106.91	106.41	CLAY	4.5	125	12.418	1	1.000	1	N/A	0.487	2.19	98	6.28	13.78	1282	897	0	15,750	0.0	0	0	0	897	1,282	897
809.1	99	107.91	107.41	CLAY	4.5	125	12.543	1	1.000	1	N/A	0.487	2.19	99	6.28	13.78	1295	907	0	15,750	0.0	0	0	0	907	1,295	907
808.1	100	108.91	108.41	CLAY	4.5	125	12.668	1	1.000	1	N/A	0.487	2.19	100	6.28	13.78	1309	916	0	15,750	0.0	0	0	0	916	1,309	916
807.1	101	109.91	109.41	CLAY	4.5	125	12.793	1	1.000	1	N/A	0.487	2.19	101	6.28	13.78	1323	926	0	15,750	0.0	0	0	0	926	1,323	926
806.1	102	110.91	110.41	CLAY	4.5	125	12.918	1	1.000	1	N/A	0.487	2.19	102	6.28	13.78	1337	936	0	15,750	0.0	0	0	0	936	1,337	936
805.1	103	111.91	111.41	CLAY	4.5	125	13.043	1	1.000	1	N/A	0.487	2.19	103	6.28	13.78	1350	945	0	15,750	0.0	0	0	0	945	1,350	945
804.1	104	112.91	112.41	CLAY	4.5	125	13.168	1	1.000	1	N/A	0.487	2.19	104	6.28	13.78	1364	955	0	15,750	0.0	0	0	0	955	1,364	955
803.1	105	113.91	113.41	CLAY	4.5	125	13.293	1	1.000	1	N/A	0.487	2.19	105	6.28	13.78	1378	965	0	15,750	0.0	0	0	0	965	1,378	965
802.1	106	114.91	114.41	CLAY	4.5	125	13.418	1	1.000	1	N/A	0.487	2.19	106	6.28	13.78	1392	974	0	15,750	0.0	0	0	0	974	1,392	974
801.1	107	115.91

LA-1143/Palo Comado OC

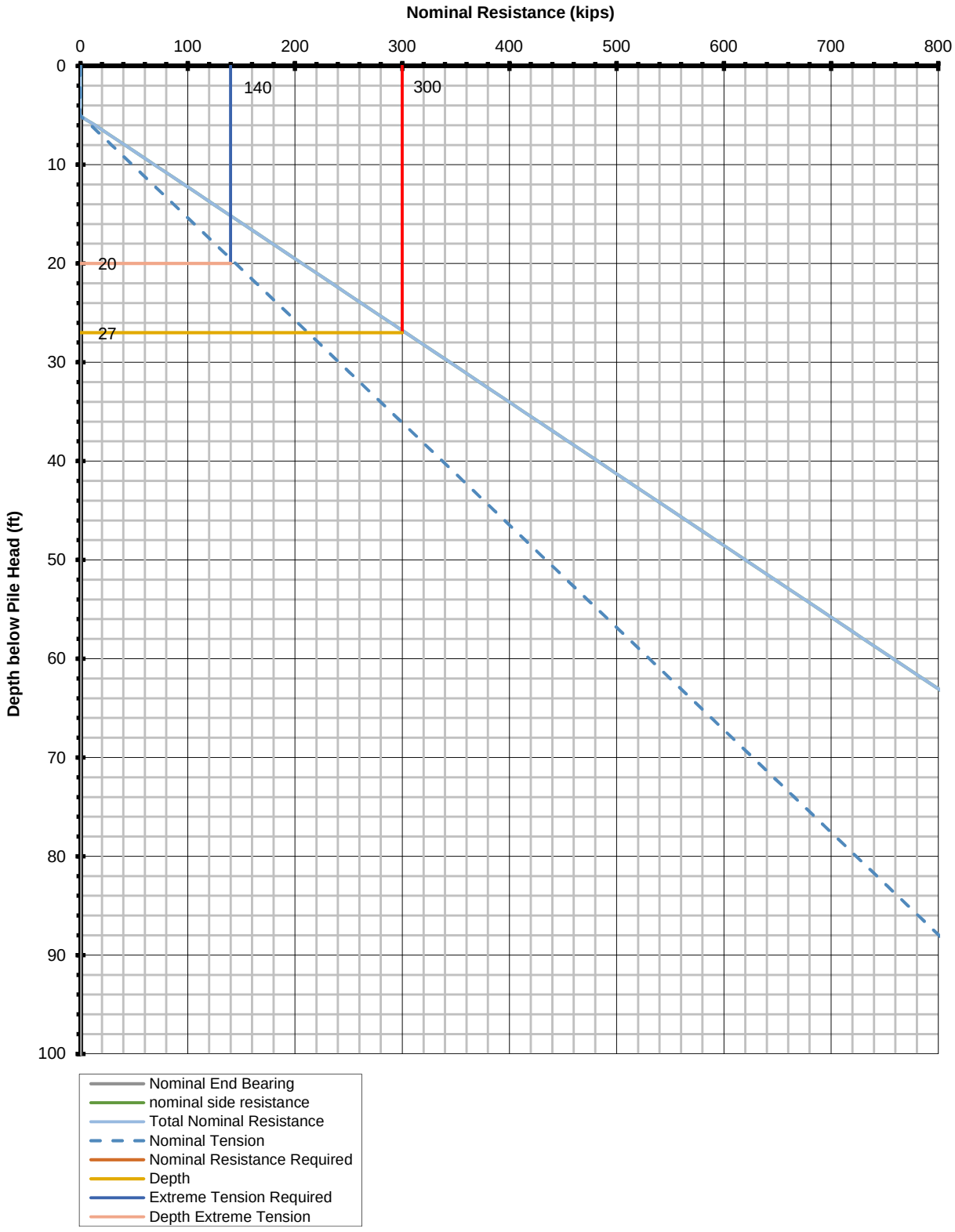
24 inch CIDH Bent 4L



GROUP DELTA

LA-1143/Palo Comado OC

24 inch CIDH Bent 4L



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 24 inch CIDH Bent 4R

Pile Diameter= 2 ft
Perimeter= 6.283 ft
End Area= 3.142 ft²

Group Efficiency Factor= 1
5% D= 1.20 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile Head below ground surface (ft) 8.91
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 91.09

Req. Nom.= 320 kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	320
29	320
29	0
29	320

Factored= 150 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	150
21	150
21	0
21	150

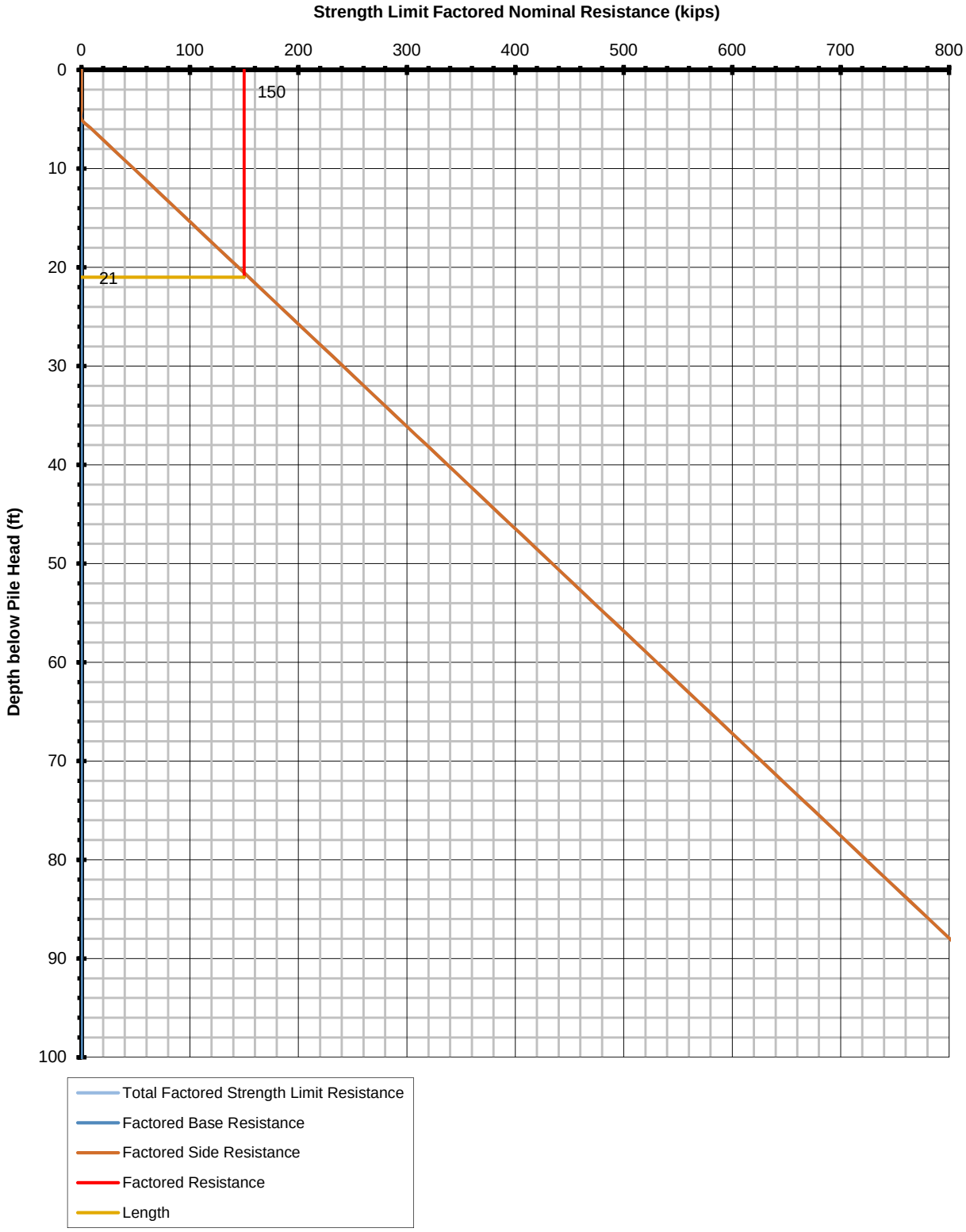
Req. Nom. T= 200 kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	200
26	200
26	0
26	200

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
908.09	0	8.91												0			0	0									
907.1	1	9.91	9.41	CLAY	4.5	125	0.293	0	1.000	1	N/A	0.487	0.00	1	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
906.1	2	10.91	10.41	CLAY	4.5	125	0.418	0	1.000	1	N/A	0.487	0.00	2	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
905.1	3	11.91	11.41	CLAY	4.5	125	0.543	0	1.000	1	N/A	0.487	0.00	3	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
904.1	4	12.91	12.41	CLAY	4.5	125	0.668	0	1.000	1	N/A	0.487	0.00	4	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
903.1	5	13.91	13.41	CLAY	4.5	125	0.793	0	1.000	1	N/A	0.487	0.00	5	6.28	0.00	0	0	0	15,750	0.0	0	0	0	0	0	0
902.1	6	14.91	14.41	CLAY	4.5	125	0.918	1	1.000	1	N/A	0.487	2.19	6	6.28	13.78	14	10	0	15,750	0.0	0	0	0	10	14	10
901.1	7	15.91	15.41	CLAY	4.5	125	1.043	1	1.000	1	N/A	0.487	2.19	7	6.28	13.78	28	19	0	15,750	0.0	0	0	0	19	28	19
900.1	8	16.91	16.41	CLAY	4.5	125	1.168	1	1.000	1	N/A	0.487	2.19	8	6.28	13.78	41	29	0	15,750	0.0	0	0	0	29	41	29
899.1	9	17.91	17.41	CLAY	4.5	125	1.293	1	1.000	1	N/A	0.487	2.19	9	6.28	13.78	55	39	0	15,750	0.0	0	0	0	39	55	39
898.1	10	18.91	18.41	CLAY	4.5	125	1.418	1	1.000	1	N/A	0.487	2.19	10	6.28	13.78	69	48	0	15,750	0.0	0	0	0	48	69	48
897.1	11	19.91	19.41	CLAY	4.5	125	1.543	1	1.000	1	N/A	0.487	2.19	11	6.28	13.78	83	58	0	15,750	0.0	0	0	0	58	83	58
896.1	12	20.91	20.41	CLAY	4.5	125	1.668	1	1.000	1	N/A	0.487	2.19	12	6.28	13.78	96	68	0	15,750	0.0	0	0	0	68	96	68
895.1	13	21.91	21.41	CLAY	4.5	125	1.793	1	1.000	1	N/A	0.487	2.19	13	6.28	13.78	110	77	0	15,750	0.0	0	0	0	77	110	77
894.1	14	22.91	22.41	CLAY	4.5	125	1.918	1	1.000	1	N/A	0.487	2.19	14	6.28	13.78	124	87	0	15,750	0.0	0	0	0	87	124	87
893.1	15	23.91	23.41	CLAY	4.5	125	2.043	1	1.000	1	N/A	0.487	2.19	15	6.28	13.78	138	96	0	15,750	0.0	0	0	0	96	138	96
892.1	16	24.91	24.41	CLAY	4.5	125	2.168	1	1.000	1	N/A	0.487	2.19	16	6.28	13.78	152	106	0	15,750	0.0	0	0	0	106	152	106
891.1	17	25.91	25.41	CLAY	4.5	125	2.293	1	1.000	1	N/A	0.487	2.19	17	6.28	13.78	165	116	0	15,750	0.0	0	0	0	116	165	116
890.1	18	26.91	26.41	CLAY	4.5	125	2.418	1	1.000	1	N/A	0.487	2.19	18	6.28	13.78	179	125	0	15,750	0.0	0	0	0	125	179	125
889.1	19	27.91	27.41	CLAY	4.5	125	2.543	1	1.000	1	N/A	0.487	2.19	19	6.28	13.78	193	135	0	15,750	0.0	0	0	0	135	193	135
888.1	20	28.91	28.41	CLAY	4.5	125	2.668	1	1.000	1	N/A	0.487	2.19	20	6.28	13.78	207	145	0	15,750	0.0	0	0	0	145	207	145
887.1	21	29.91	29.41	CLAY	4.5	125	2.793	1	1.000	1	N/A	0.487	2.19	21	6.28	13.78	220	154	0	15,750	0.0	0	0	0	154	220	154
886.1	22	30.91	30.41	CLAY	4.5	125	2.918	1	1.000	1	N/A	0.487	2.19	22	6.28	13.78	234	164	0	15,750	0.0	0	0	0	164	234	164
885.1	23	31.91	31.41	CLAY	4.5	125	3.043	1	1.000	1	N/A	0.487	2.19	23	6.28	13.78	248	174	0	15,750	0.0	0	0	0	174	248	174
884.1	24	32.91	32.41	CLAY	4.5	125	3.168	1	1.000	1	N/A	0.487	2.19	24	6.28	13.78	262	183	0	15,750	0.0	0	0	0	183	262	183
883.1	25	33.91	33.41	CLAY	4.5	125	3.293	1	1.000	1	N/A	0.487	2.19	25	6.28	13.78	276	193	0	15,750	0.0	0	0	0	193	276	193
882.1	26	34.91	34.41	CLAY	4.5	125	3.418	1	1.000	1	N/A	0.487	2.19	26	6.28	13.78	289	203	0	15,750	0.0	0	0	0	203	289	203
881.1	27	35.91	35.41	CLAY	4.5	125	3.543	1	1.000	1	N/A	0.487	2.19	27	6.28	13.78	303	212	0	15,750	0.0	0	0	0	212	303	212
880.1	28	36.91	36.41	CLAY	4.5	125	3.668	1	1.000	1	N/A	0.487	2.19	28	6.28	13.78	317	222	0	15,750	0.0	0	0	0	222	317	222
879.1	29	37.91	37.41	CLAY	4.5	125	3.793	1	1.000	1	N/A	0.487	2.19	29	6.28	13.78	331	231	0	15,750	0.0	0	0	0	231	331	231
878.1	30	38.91	38.41	CLAY	4.5	125	3.918	1	1.000	1	N/A	0.487	2.19	30	6.28	13.78	344	241	0	15,750	0.0	0	0	0	241	344	241
877.1	31	39.91	39.41	CLAY	4.5	125	4.043	1	1.000	1	N/A	0.487	2.19	31	6.28	13.78	358	251	0	15,750	0.0	0	0	0	251	358	251
876.1	32	40.91	40.41	CLAY	4.5	125	4.168	1	1.000	1	N/A	0.487	2.19	32	6.28	13.78	372	260	0	15,750	0.0	0	0	0	260	372	260
875.1	33	41.91	41.41	CLAY	4.5	125	4.293	1	1.000	1	N/A	0.487	2.19	33	6.28	13.78	386	270	0	15,750	0.0	0	0	0	270	386	270
874.1	34	42.91	42.41	CLAY	4.5	125	4.418	1	1.000	1	N/A	0.487	2.19	34	6.28	13.78	400	280	0	15,750	0.0	0	0	0	280	400	280
873.1	35	43.91	43.41	CLAY	4.5	125	4.543	1	1.000	1	N/A	0.487	2.19	35	6.28	13.78	413	289	0	15,750	0.0	0	0	0	289	413	289
872.1	36	44.91	44.41	CLAY	4.5	125	4.668	1	1.000	1	N/A	0.487	2.19	36	6.28	13.78	427	299	0	15,750	0.0	0	0	0	299	427	299
871.1	37	45.91	45.41	CLAY	4.5	125	4.793	1	1.000	1	N/A	0.487	2.19	37	6.28	13.78	441	309	0	15,750	0.0	0	0	0	309	441	309
870.1	38	46.91	46.41	CLAY	4.5	125	4.918	1	1.000	1	N/A	0.487	2.19	38	6.28	13.78	455	318	0	15,750	0.0	0	0	0	318	455	318
869.1	39	47.91	47.41	CLAY	4.5	125	5.043	1	1.000	1	N/A	0.487	2.19	39	6.28	13.78	469	328	0	15,750	0.0	0	0	0	328	469	328
868.1	40	48.91	48.41	CLAY	4.5	125	5.168	1	1.000	1	N/A	0.487	2.19	40	6.28	13.78	482	338	0	15,750	0.0	0	0	0	338	482	338
867.1	41	49.91	49.41	CLAY	4.5	125	5.293	1	1.000	1	N/A	0.487	2.19	41	6.28	13.78	496	347	0	15,750	0.0	0	0	0	347	496	347
866.1	42	50.91	50.41	CLAY	4.5	125	5.418	1	1.000	1	N/A	0.487	2.19	42	6.28	13.78	510	357	0	15,750	0.0	0	0	0	357	510	357
865.1	43	51.91	51.41	CLAY	4.5	125	5.543	1	1.000	1	N/A	0.487	2.19	43	6.28	13.78	524	367	0	15,750	0.0	0	0	0	367	524	367
864.1	44	52.91	52.41	CLAY	4.5	125	5.668	1	1.000	1	N/A	0.487	2.19	44	6.28	13.78	537	376	0	15,750	0.0	0	0	0	376	537	376
863.1	45	53.91	53.41	CLAY	4.5	125	5.793	1	1.000	1	N/A	0.487	2.19	45	6.28	13.78	551	386	0	15,750	0.0	0	0	0	386	551	386
862.1	46	54.91	54.41	CLAY	4.5	125	5.918	1	1.000	1	N/A	0.487	2.19	46	6.28	13.78	565	395	0	15,750	0.0	0	0	0	395	565	395
861.1	47	55.91	55.41	CLAY	4.5	125	6.043	1	1.000	1	N/A	0.487	2.19	47	6.28	13.78	579	405	0	15,750	0.0	0	0	0	405	579	405
860.1	48	56.91	56.41	CLAY	4.5	125	6.168	1	1.000	1	N/A	0.487	2.19	48	6.28	13.78	593	415	0	15,750	0.0	0	0	0	415	593	415
859.1	49	57.91	57.41	CLAY	4.5	125	6.293	1	1.000	1	N/A	0.487	2.19	49	6.28	13.78	606	424	0	15,750	0.0	0	0	0	424	606	424
858.1	50	58.91	58.41	CLAY	4.5	125	6.418	1	1.000	1	N/A	0.487	2.19	50	6.28	13.78	620	434	0	15,750	0.0	0	0	0	434	620	434
857.1	51	59.91	59.41	CLAY	4.5	125	6.543	1	1.000	1	N/A	0.487	2.19	51	6.28	13.78	634	444	0	15,750	0.0	0	0	0	444	634	444
856.1	52	60.91	60.41	CLAY	4.5	125	6.668	1	1.000	1	N/A	0.487	2.19	52	6.28	13.78	648	453	0	15,750	0.0	0	0	0	453	648	453
855.1	53	61.91	61.41	CLAY	4.5	125	6.793	1	1.000	1	N/A	0.487	2.19	53	6.28	13.78	661	463	0	15,750	0.0	0	0	0	463	661	463
854.1	54	62.91	62.41	CLAY	4.5	125	6.918	1	1.000	1	N/A	0.487	2.19	54	6.28	13.78	675	473	0	15,750	0.0	0	0	0	473	675	473
853.1	55	63.91	63.41	CLAY	4.5	125	7.043	1	1.000	1	N/A	0.487	2.19	55	6.28	13.78	689	482	0	15,750	0.0	0	0	0	482	689	482
852.1	56	64.91	64.41	CLAY	4.5	125	7.168	1	1.000	1	N/A	0.487	2.19	56	6.28	13.78	703	492	0	15,750	0.0	0	0	0	492	703	492
851.1	57	65.91	65.41	CLAY	4.5	125	7.293	1	1.000	1	N/A	0.487	2.19	57	6.28	13.78	717	502	0	15,750	0.0	0	0	0	502	717	502
850.1	58	66.91	66.41	CLAY	4.5	125	7.418	1	1.000	1	N/A	0.487	2.19	58	6.28	13.78	730	511	0	15,750	0.0	0	0	0	511	730	511
849.1	59	67.91	67.41	CLAY	4.5	125	7.543	1	1.000	1	N/A	0.487	2.19	59	6.28	13.78	744	521	0	15,750	0.0	0	0	0	521	744	521
848.1	60	68.91	68.41	CLAY	4.5	125	7.668	1	1.000	1	N/A	0.487	2.19	60	6.28	13.78	758	531	0	15,750	0.0	0	0	0	531	758	531
847.1	61	69.91	69.41	CLAY	4.5	125	7.793	1	1.000	1	N/A	0.487	2.19	61	6.28	13.78	772	540	0	15,750	0.0	0	0	0	540	772	540
846.1	62	70.91	70.41	CLAY	4.5	125	7.918	1	1.000	1	N/A	0.487	2.19	62	6.28	13.78	785	550	0	15,750	0.0	0	0	0	550	785	550
845.1	63	71.91	71.41	CLAY	4.5	125	8.043	1	1.000	1	N/A	0.487	2.19	63	6.28	13.78	799	559	0	15,750	0.0	0	0	0	559	799	559
844.1	64	72.91	72.41	CLAY	4.5	125	8.168	1	1.000	1	N/A	0.487	2.19	64	6.28	13.78	813	569	0	15,750	0.0	0	0	0	569	813	569
843.1	65	73.91	73.41	CLAY	4.5	125	8.293	1	1.000	1	N/A	0.487	2.19	65	6.28	13.78	827	579	0	15,750	0.0	0	0	0	579	827	579
842.1	66	74.91	74.41	CLAY	4.5	125	8.418	1	1.000	1	N/A	0.487	2.19	66	6.28	13.78	841	588	0	15,750	0.0	0	0	0	588	841	588
841.1	67	75.91	75.41	CLAY	4.5	125	8.543	1	1.000	1	N/A	0.487	2.19	67	6.28	13.78	854	598	0	15,750	0.0	0	0	0	598	854	598
840.1	68	76.91	76.41	CLAY	4.5	125	8.668	1	1.000	1	N/A	0.487	2.19	68	6.28	13.78	868	608	0	15,750	0.0	0	0	0	608	868	608
839.1	69	77.91	77.41	CLAY	4.5	125	8.793	1	1.000	1	N/A	0.487	2.19	69	6.28	13.78	882	617	0	15,750	0.0	0	0	0	617	882	617
838.1	70	78.91	78.41	CLAY	4.5	125	8.918	1	1.000	1	N/A	0.487	2.19	70	6.28	13.78	896	627	0	15,750	0.0	0	0	0	627	896	627
837.1	71	79.91	79.41	CLAY	4.5	125	9.043	1	1.000	1	N/A	0.487	2.19	71	6.28	13.78	909	637	0	15,750	0.0	0	0	0	637	909	637
836.1	72	80.91	80.41	CLAY	4.5	125	9.168	1	1.000	1	N/A	0.487	2.19	72	6.28	13.78	923	646	0	15,750	0.0	0	0	0	646	923	646
835.1	73	81.91	81.41	CLAY	4.5	125	9.293	1	1.000	1	N/A	0.487	2.19	73	6.28	13.78	937	656	0	15,750	0.0	0	0	0	656	937	656
834.1	74	82.91	82.41	CLAY	4.5	125	9.418	1	1.000	1	N/A	0.487	2.19	74	6.28	13.78	951	666	0	15,750	0.0	0	0	0	666	951	666
833.1	75	83.91	83.41	CLAY	4.5	125	9.543	1	1.000	1	N/A	0.487	2.19	75	6.28	13.78	965	675	0	15,750	0.0	0	0	0	675	965	675
832.1	76	84.91	84.41	CLAY	4.5	125	9.668	1	1.000	1	N/A	0.487	2.19	76	6.28	13.78	978	685	0	15,750	0.0	0	0	0	685	978	685
831.1	77	85.91	85.41	CLAY	4.5	125	9.793	1	1.000	1	N/A	0.487	2.19	77	6.28	13.78	992	694	0	15,750	0.0	0	0	0	694	992	694
830.1	78	86.91	86.41	CLAY	4.5	125	9.918	1	1.000	1	N/A	0.487	2.19	78	6.28	13.78	1006	704	0	15,750	0.0	0	0	0	704	1,006	704
829.1	79	87.91	87.41	CLAY	4.5	125	10.043	1	1.000	1	N/A	0.487	2.19	79	6.28	13.78	1020	714	0	15,750	0.0	0	0	0	714	1,020	714
828.1	80	88.91	88.41	CLAY	4.5	125	10.168	1	1.000	1	N/A	0.487	2.19	80	6.28	13.78	1033	723	0	15,750	0.0	0	0	0	723	1,033	723
827.1	81	89.91	89.41	CLAY	4.5	125	10.293	1	1.000	1	N/A	0.487	2.19	81	6.28	13.78	1047	733	0	15,750	0.0	0	0	0	733	1,047	733
826.1	82	90.91	90.41	CLAY	4.5	125	10.418	1	1.000	1	N/A	0.487	2.19	82	6.28	13.78	1061	743	0	15,750	0.0	0	0	0	743	1,061	743
825.1	83	91.91	91.41	CLAY	4.5	125	10.543	1	1.000	1	N/A	0.487	2.19	83	6.28	13.78	1075	752	0	15,750	0.0	0	0	0	752	1,075	752
824.1	84	92.91	92.41	CLAY	4.5	125	10.668	1	1.000	1	N/A	0.487	2.19	84	6.28	13.78	1089	762	0	15,750	0.0	0	0	0	762	1,089	762
823.1	85	93.91	93.41	CLAY	4.5	125	10.793	1	1.000	1	N/A	0.487	2.19	85	6.28	13.78	1102	772	0	15,750	0.0	0	0	0	772	1,102	772
822.1	86	94.91	94.41	CLAY	4.5	125	10.918	1	1.000	1	N/A	0.487	2.19	86	6.28	13.78	1116	781	0	15,750	0.0	0	0	0	781	1,116	781
821.1	87	95.91	95.41	CLAY	4.5	125	11.043	1	1.000	1	N/A	0.487	2.19	87	6.28	13.78	1130	791	0	15,750	0.0	0	0	0	791	1,130	791
820.1	88	96.91	96.41	CLAY	4.5	125	11.168	1	1.000	1	N/A	0.487	2.19	88	6.28	13.78	1144	801	0	15,750	0.0	0	0	0	801	1,144	801
819.1	89	97.91	97.41	CLAY	4.5	125	11.293	1	1.000	1	N/A	0.487	2.19	89	6.28	13.78	1157	810	0	15,750	0.0	0	0	0	810	1,157	810
818.1	90	98.91	98.41	CLAY	4.5	125	11.418	1	1.000	1	N/A	0.487	2.19	90	6.28	13.78	1171	820	0	15,750	0.0	0	0	0	820	1,171	820
817.1	91	99.91	99.41	CLAY	4.5	125	11.543	1	1.000	1	N/A	0.487	2.19	91	6.28	13.78	1185	830	0	15,750	0.0	0	0	0	830	1,185	830
816.1	92	100.91	100.41	CLAY	4.5	125	11.668	1	1.000	1	N/A	0.487	2.19	92	6.28	13.78	1199	839	0	15,750	0.0	0	0	0	839	1,199	839
815.1	93	101.91	101.41	CLAY	4.5	125	11.793	1	1.000	1	N/A	0.487	2.19	93	6.28	13.78	1213	849	0	15,750	0.0	0	0	0	849	1,213	849
814.1	94	102.91	102.41	CLAY	4.5	125	11.918	1	1.000	1	N/A	0.487	2.19	94	6.28	13.78	1226	858	0	15,750	0.0	0	0	0	858	1,226	858
813.1	95	103.91	103.41	CLAY	4.5	125	12.043	1	1.000	1	N/A	0.487	2.19	95	6.28	13.78	1240	868	0	15,750	0.0	0	0	0	868	1,240	868
812.1	96	104.91	104.41	CLAY	4.5	125	12.168	1	1.000	1	N/A	0.487	2.19	96	6.28	13.78	1254	878	0	15,750	0.0	0	0	0	878	1,254	878
811.1	97	105.91	105.41	CLAY	4.5	125	12.293	1	1.000	1	N/A	0.487	2.19	97	6.28	13.78	1268	887	0	15,750	0.0	0	0	0	887	1,268	887
810.1	98	106.91	106.41	CLAY	4.5	125	12.418	1	1.000	1	N/A	0.487	2.19	98	6.28	13.78	1282	897	0	15,750	0.0	0	0	0	897	1,282	897
809.1	99	107.91	107.41	CLAY	4.5	125	12.543	1	1.000	1	N/A	0.487	2.19	99	6.28	13.78	1295	907	0	15,750	0.0	0	0	0	907	1,295	907
808.1	100	108.91	108.41	CLAY	4.5	125	12.668	1	1.000	1	N/A	0.487	2.19	100	6.28	13.78	1309	916	0	15,750	0.0	0	0	0	916	1,309	916
807.1	101	109.91	109.41	CLAY	4.5	125	12.793	1	1.000	1	N/A	0.487	2.19	101	6.28	13.78	1323	926	0	15,750	0.0	0	0	0	926	1,323	926
806.1	102	110.91	110.41	CLAY	4.5	125	12.918	1	1.000	1	N/A	0.487	2.19	102	6.28	13.78	1337	936	0	15,750	0.0	0	0	0	936	1,337	936
805.1	103	111.91	111.41	CLAY	4.5	125	13.043	1	1.000	1	N/A	0.487	2.19	103	6.28	13.78	1350	945	0	15,750	0.0	0	0	0	945	1,350	945
804.1	104	112.91	112.41	CLAY	4.5	125	13.168	1	1.000	1	N/A	0.487	2.19	104	6.28	13.78	1364	955	0	15,750	0.0	0	0	0	955	1,364	955
803.1	105	113.91	113.41	CLAY	4.5	125	13.293	1	1.000	1	N/A	0.487	2.19	105	6.28	13.78	1378	965	0	15,750	0.0	0	0	0	965	1,378	965
802.1	106	114.91	114.41	CLAY	4.5	125	13.418	1	1.000	1	N/A	0.487	2.19	106	6.28	13.78	1392	974	0	15,750	0.0	0	0	0	974	1,392	974
801.1	107	115.91	115.41	CLAY	4.5	125	13.543	1	1.000	1	N/A	0.

LA-1143/Palo Comado OC

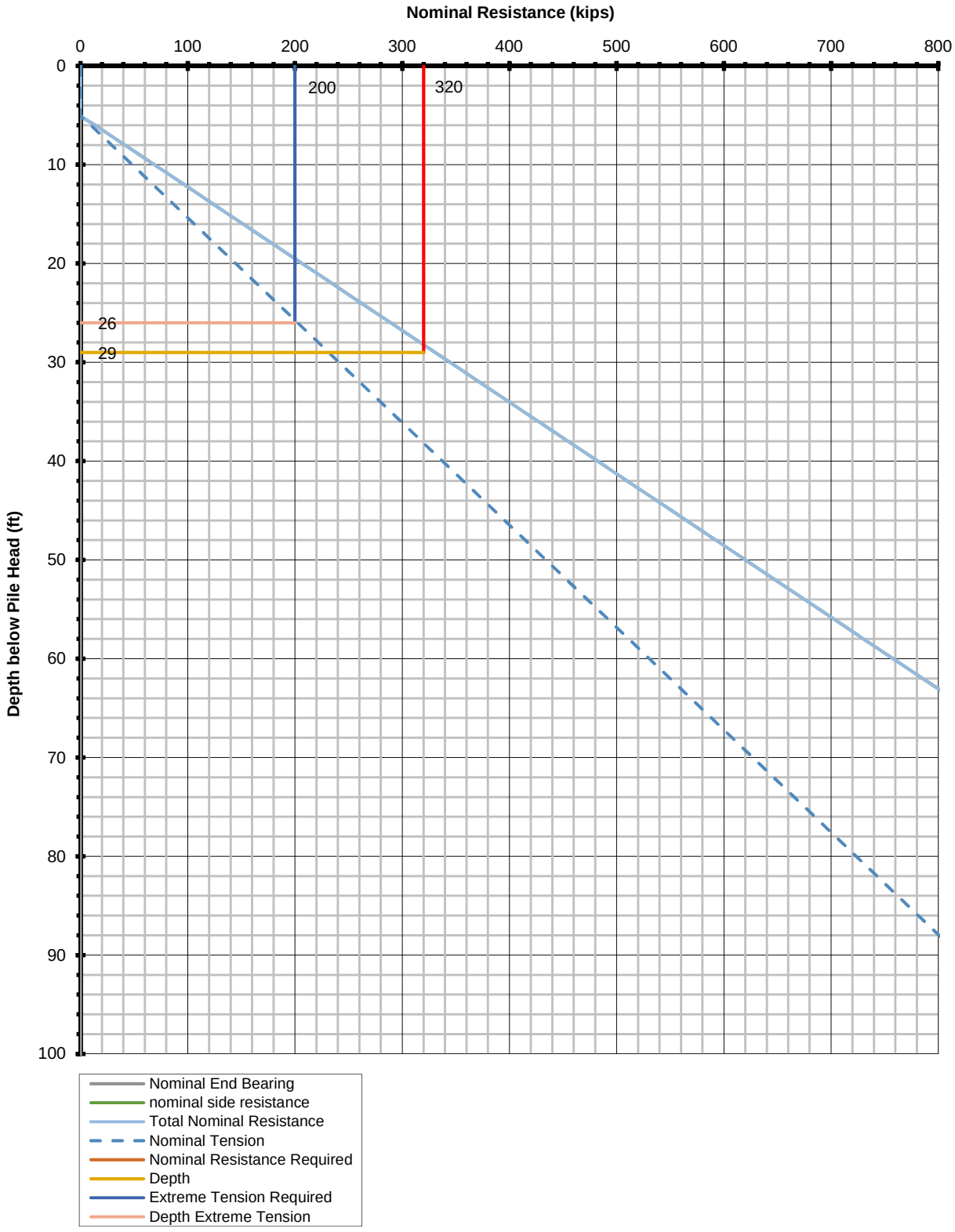
24 inch CIDH Bent 4R



GROUP DELTA

LA-1143/Palo Comado OC

24 inch CIDH Bent 4R



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 16 inch CIDH Abut 5L

Pile Diameter= 1.333333 ft
Perimeter= 4.189 ft
End Area= 1.396 ft²

Group Efficiency Factor= 1
5% D= 0.80 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile head below ground surface (ft) 3.6
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 96.4

Req. Nom.= N/A kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Factored= 140 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	140
30	140
30	0
30	140

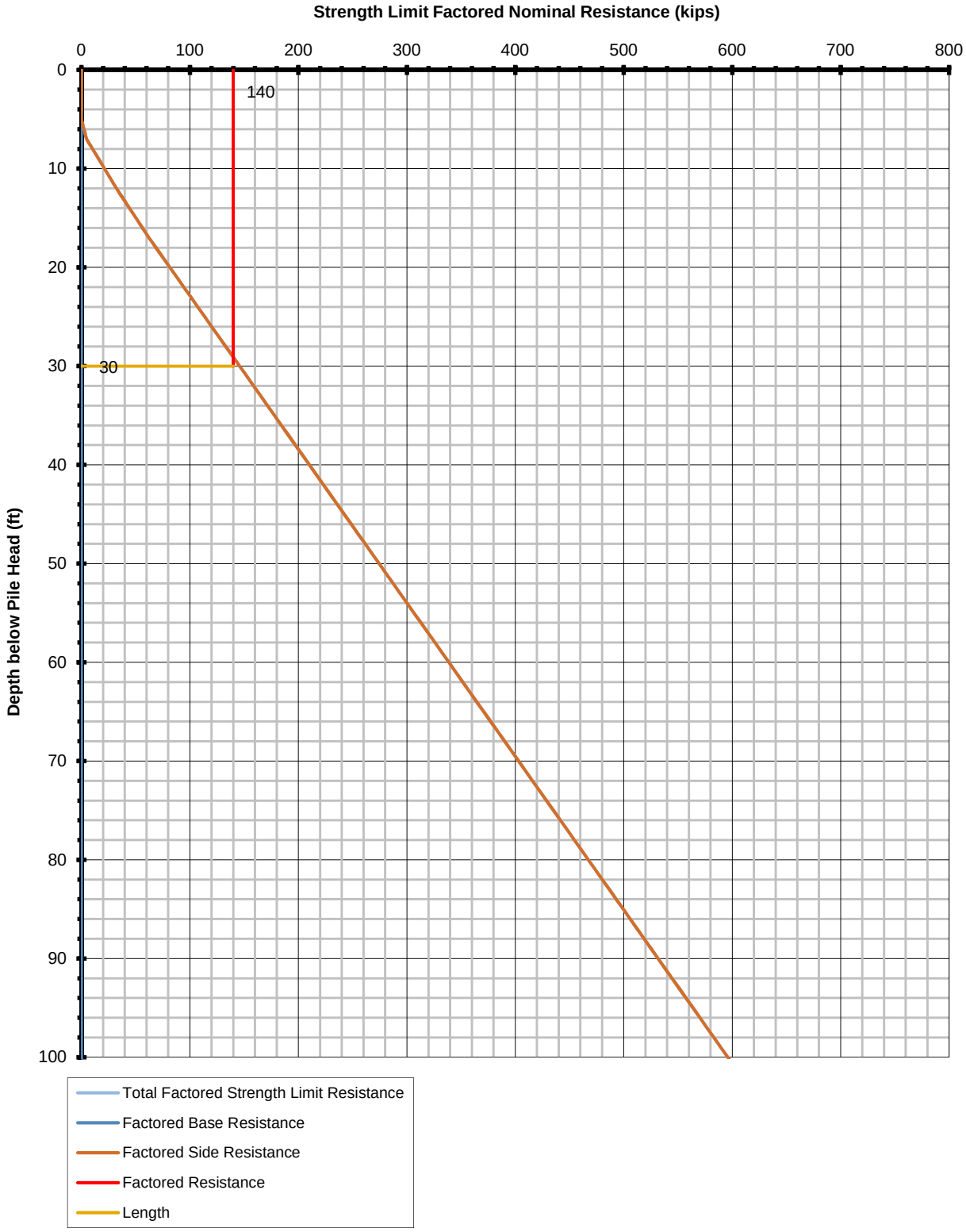
Req. Nom. T= N/A kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS (kips)	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
926.4	0	3.6												0			0	0									
925.4	1	4.6	4.1	CLAY	1.5	120	0.290	0	1.000	1	N/A	0.550	0.00	1	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
924.4	2	5.6	5.1	CLAY	1.5	120	0.410	0	1.000	1	N/A	0.550	0.00	2	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
923.4	3	6.6	6.1	CLAY	1.5	120	0.530	0	1.000	1	N/A	0.550	0.00	3	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
922.4	4	7.6	7.1	CLAY	1.5	120	0.650	0	1.000	1	N/A	0.550	0.00	4	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
921.4	5	8.6	8.1	CLAY	1.5	120	0.770	0	1.000	1	N/A	0.550	0.00	5	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
920.4	6	9.6	9.1	CLAY	1.5	120	0.890	1	1.000	1	N/A	0.550	0.83	6	4.19	3.46	3	2	0	2,250	0.0	0	0	0	2	3	2
919.4	7	10.6	10.1	CLAY	1.5	120	1.010	1	1.000	1	N/A	0.550	0.83	7	4.19	3.46	7	5	0	2,250	0.0	0	0	0	5	7	5
918.4	8	11.6	11.1	CLAY	3.5	120	1.130	1	1.000	1	N/A	0.535	1.87	8	4.19	7.84	15	10	0	12,250	0.0	0	0	0	10	15	10
917.4	9	12.6	12.1	CLAY	3.5	125	1.253	1	1.000	1	N/A	0.535	1.87	9	4.19	7.84	23	16	0	12,250	0.0	0	0	0	16	23	16
916.4	10	13.6	13.1	CLAY	3.5	125	1.378	1	1.000	1	N/A	0.535	1.87	10	4.19	7.84	30	21	0	12,250	0.0	0	0	0	21	30	21
915.4	11	14.6	14.1	CLAY	3.5	125	1.503	1	1.000	1	N/A	0.535	1.87	11	4.19	7.84	38	27	0	12,250	0.0	0	0	0	27	38	27
914.4	12	15.6	15.1	CLAY	3.5	125	1.628	1	1.000	1	N/A	0.535	1.87	12	4.19	7.84	46	32	0	12,250	0.0	0	0	0	32	46	32
913.4	13	16.6	16.1	CLAY	4	125	1.753	1	1.000	1	N/A	0.511	2.04	13	4.19	8.56	55	38	0	14,000	0.0	0	0	0	38	55	38
912.4	14	17.6	17.1	CLAY	4	125	1.878	1	1.000	1	N/A	0.511	2.04	14	4.19	8.56	63	44	0	14,000	0.0	0	0	0	44	63	44
911.4	15	18.6	18.1	CLAY	4	125	2.003	1	1.000	1	N/A	0.511	2.04	15	4.19	8.56	72	50	0	14,000	0.0	0	0	0	50	72	50
910.4	16	19.6	19.1	CLAY	4	125	2.128	1	1.000	1	N/A	0.511	2.04	16	4.19	8.56	80	56	0	14,000	0.0	0	0	0	56	80	56
909.4	17	20.6	20.1	CLAY	4	125	2.253	1	1.000	1	N/A	0.511	2.04	17	4.19	8.56	89	62	0	14,000	0.0	0	0	0	62	89	62
908.4	18	21.6	21.1	CLAY	4.5	125	2.378	1	1.000	1	N/A	0.487	2.19	18	4.19	9.19	98	69	0	15,750	0.0	0	0	0	69	98	69
907.4	19	22.6	22.1	CLAY	4.5	125	2.503	1	1.000	1	N/A	0.487	2.19	19	4.19	9.19	107	75	0	15,750	0.0	0	0	0	75	107	75
906.4	20	23.6	23.1	CLAY	4.5	125	2.628	1	1.000	1	N/A	0.487	2.19	20	4.19	9.19	116	82	0	15,750	0.0	0	0	0	82	116	82
905.4	21	24.6	24.1	CLAY	4.5	125	2.753	1	1.000	1	N/A	0.487	2.19	21	4.19	9.19	126	88	0	15,750	0.0	0	0	0	88	126	88
904.4	22	25.6	25.1	CLAY	4.5	125	2.878	1	1.000	1	N/A	0.487	2.19	22	4.19	9.19	135	94	0	15,750	0.0	0	0	0	94	135	94
903.4	23	26.6	26.1	CLAY	4.5	125	3.003	1	1.000	1	N/A	0.487	2.19	23	4.19	9.19	144	101	0	15,750	0.0	0	0	0	101	144	101
902.4	24	27.6	27.1	CLAY	4.5	125	3.128	1	1.000	1	N/A	0.487	2.19	24	4.19	9.19	153	107	0	15,750	0.0	0	0	0	107	153	107
901.4	25	28.6	28.1	CLAY	4.5	125	3.253	1	1.000	1	N/A	0.487	2.19	25	4.19	9.19	162	114	0	15,750	0.0	0	0	0	114	162	114
900.4	26	29.6	29.1	CLAY	4.5	125	3.378	1	1.000	1	N/A	0.487	2.19	26	4.19	9.19	172	120	0	15,750	0.0	0	0	0	120	172	120
899.4	27	30.6	30.1	CLAY	4.5	125	3.503	1	1.000	1	N/A	0.487	2.19	27	4.19	9.19	181	127	0	15,750	0.0	0	0	0	127	181	127
898.4	28	31.6	31.1	CLAY	4.5	125	3.628	1	1.000	1	N/A	0.487	2.19	28	4.19	9.19	190	133	0	15,750	0.0	0	0	0	133	190	133
897.4	29	32.6	32.1	CLAY	4.5	125	3.753	1	1.000	1	N/A	0.487	2.19	29	4.19	9.19	199	139	0	15,750	0.0	0	0	0	139	199	139
896.4	30	33.6	33.1	CLAY	4.5	125	3.878	1	1.000	1	N/A	0.487	2.19	30	4.19	9.19	208	146	0	15,750	0.0	0	0	0	146	208	146
895.4	31	34.6	34.1	CLAY	4.5	125	4.003	1	1.000	1	N/A	0.487	2.19	31	4.19	9.19	218	152	0	15,750	0.0	0	0	0	152	218	152
894.4	32	35.6	35.1	CLAY	4.5	125	4.128	1	1.000	1	N/A	0.487	2.19	32	4.19	9.19	227	159	0	15,750	0.0	0	0	0	159	227	159
893.4	33	36.6	36.1	CLAY	4.5	125	4.253	1	1.000	1	N/A	0.487	2.19	33	4.19	9.19	236	165	0	15,750	0.0	0	0	0	165	236	165
892.4	34	37.6	37.1	CLAY	4.5	125	4.378	1	1.000	1	N/A	0.487	2.19	34	4.19	9.19	245	172	0	15,750	0.0	0	0	0	172	245	172
891.4	35	38.6	38.1	CLAY	4.5	125	4.503	1	1.000	1	N/A	0.487	2.19	35	4.19	9.19	254	178	0	15,750	0.0	0	0	0	178	254	178
890.4	36	39.6	39.1	CLAY	4.5	125	4.628	1	1.000	1	N/A	0.487	2.19	36	4.19	9.19	263	184	0	15,750	0.0	0	0	0	184	263	184
889.4	37	40.6	40.1	CLAY	4.5	125	4.753	1	1.000	1	N/A	0.487	2.19	37	4.19	9.19	273	191	0	15,750	0.0	0	0	0	191	273	191
888.4	38	41.6	41.1	CLAY	4.5	125	4.878	1	1.000	1	N/A	0.487	2.19	38	4.19	9.19	282	197	0	15,750	0.0	0	0	0	197	282	197
887.4	39	42.6	42.1	CLAY	4.5	125	5.003	1	1.000	1	N/A	0.487	2.19	39	4.19	9.19	291	204	0	15,750	0.0	0	0	0	204	291	204
886.4	40	43.6	43.1	CLAY	4.5	125	5.128	1	1.000	1	N/A	0.487	2.19	40	4.19	9.19	300	210	0	15,750	0.0	0	0	0	210	300	210
885.4	41	44.6	44.1	CLAY	4.5	125	5.253	1	1.000	1	N/A	0.487	2.19	41	4.19	9.19	309	217	0	15,750	0.0	0	0	0	217	309	217
884.4	42	45.6	45.1	CLAY	4.5	125	5.378	1	1.000	1	N/A	0.487	2.19	42	4.19	9.19	319	223	0	15,750	0.0	0	0	0	223	319	223
883.4	43	46.6	46.1	CLAY	4.5	125	5.503	1	1.000	1	N/A	0.487	2.19	43	4.19	9.19	328	229	0	15,750	0.0	0	0	0	229	328	229
882.4	44	47.6	47.1	CLAY	4.5	125	5.628	1	1.000	1	N/A	0.487	2.19	44	4.19	9.19	337	236	0	15,750	0.0	0	0	0	236	337	236
881.4	45	48.6	48.1	CLAY	4.5	125	5.753	1	1.000	1	N/A	0.487	2.19	45	4.19	9.19	346	242	0	15,750	0.0	0	0	0	242	346	242
880.4	46	49.6	49.1	CLAY	4.5	125	5.878	1	1.000	1	N/A	0.487	2.19	46	4.19	9.19	355	249	0	15,750	0.0	0	0	0	249	355	249
879.4	47	50.6	50.1	CLAY	4.5	125	6.003	1	1.000	1	N/A	0.487	2.19	47	4.19	9.19	365	255	0	15,750	0.0	0	0	0	255	365	255
878.4	48	51.6	51.1	CLAY	4.5	125	6.128	1	1.000	1	N/A	0.487	2.19	48	4.19	9.19	374	262	0	15,750	0.0	0	0	0	262	374	262
877.4	49	52.6	52.1	CLAY	4.5	125	6.253	1	1.000	1	N/A	0.487	2.19	49	4.19	9.19	383	268	0	15,750	0.0	0	0	0	268	383	268
876.4	50	53.6	53.1	CLAY	4.5	125	6.378	1	1.000	1	N/A	0.487	2.19	50	4.19	9.19	392	274	0	15,750	0.0	0	0	0	274	392	274
875.4	51	54.6	54.1	CLAY	4.5	125	6.503	1	1.000	1	N/A	0.487	2.19	51	4.19	9.19	401	281	0	15,750	0.0	0	0	0	281	401	281
874.4	52	55.6	55.1	CLAY	4.5	125	6.628	1	1.000	1	N/A	0.487	2.19	52	4.19	9.19	410	287	0	15,750	0.0	0	0	0	287	410	287
873.4	53	56.6	56.1	CLAY	4.5	125	6.753	1	1.000	1	N/A	0.487	2.19	53	4.19	9.19	420	294	0	15,750	0.0	0	0	0	294	420	294
872.4	54	57.6	57.1	CLAY	4.5	125	6.878	1	1.000	1	N/A	0.487	2.19	54	4.19	9.19	429	300	0	15,750	0.0	0	0	0	300	429	300
871.4	55	58.6	58.1	CLAY	4.5	125	7.003	1	1.000	1	N/A	0.487	2.19	55	4.19	9.19	438	307	0	15,750	0.0	0	0	0	307	438	307
870.4	56	59.6	59.1	CLAY	4.5	125	7.128	1	1.000	1	N/A	0.487	2.19	56	4.19	9.19	447	313	0	15,750	0.0	0	0	0	313	447	313
869.4	57	60.6	60.1	CLAY	4.5	125	7.253	1	1.000	1	N/A	0.487	2.19	57	4.19	9.19	456	319	0	15,750	0.0	0	0	0	319	456	319
868.4	58	61.6	61.1	CLAY	4.5	125	7.378	1	1.000	1	N/A	0.487	2.19	58	4.19	9.19	466	326	0	15,750	0.0	0	0	0	326	466	326
867.4	59	62.6	62.1	CLAY	4.5	125	7.503	1	1.000	1	N/A	0.487	2.19	59	4.19	9.19	475	332	0	15,750	0.0	0	0	0	332	475	332
866.4	60	63.6	63.1	CLAY	4.5	125	7.628	1	1.000	1	N/A	0.487	2.19	60	4.19	9.19	484	339	0	15,750	0.0	0	0	0	339	484	339
865.4	61	64.6	64.1	CLAY	4.5	125	7.753	1	1.000	1	N/A	0.487	2.19	61	4.19	9.19	493	345	0	15,750	0.0	0	0	0	345	493	345
864.4	62	65.6	65.1	CLAY	4.5	125	7.878	1	1.000	1	N/A	0.487	2.19	62	4.19	9.19	502	352	0	15,750	0.0	0	0	0	352	502	352
863.4	63	66.6	66.1	CLAY	4.5	125	8.003	1	1.000	1	N/A	0.487	2.19	63	4.19	9.19	511	358	0	15,750	0.0	0	0	0	358	511	358
862.4	64	67.6	67.1	CLAY	4.5	125	8.128	1	1.000	1	N/A	0.487	2.19	64	4.19	9.19	521	364	0	15,750	0.0	0	0	0	364	521	364
861.4	65	68.6	68.1	CLAY	4.5	125	8.253	1	1.000	1	N/A	0.487	2.19	65	4.19	9.19	530	371	0	15,750	0.0	0	0	0	371	530	371
860.4	66	69.6	69.1	CLAY	4.5	125	8.378	1	1.000	1	N/A	0.487	2.19	66	4.19	9.19	539	377	0	15,750	0.0	0	0	0	377	539	377
859.4	67	70.6	70.1	CLAY	4.5	125	8.503	1	1.000	1	N/A	0.487	2.19	67	4.19	9.19	548	384	0	15,750	0.0	0	0	0	384	548	384
858.4	68	71.6	71.1	CLAY	4.5	125	8.628	1	1.000	1	N/A	0.487	2.19	68	4.19	9.19	557	390	0	15,750	0.0	0	0	0	390	557	390
857.4	69	72.6	72.1	CLAY	4.5	125	8.753	1	1.000	1	N/A	0.487	2.19	69	4.19	9.19	567	397	0	15,750	0.0	0	0	0	397	567	397
856.4	70	73.6	73.1	CLAY	4.5	125	8.878	1	1.000	1	N/A	0.487	2.19	70	4.19	9.19	576	403	0	15,750	0.0	0	0	0	403	576	403
855.4	71	74.6	74.1	CLAY	4.5	125	9.003	1	1.000	1	N/A	0.487	2.19	71	4.19	9.19	585	409	0	15,750	0.0	0	0	0	409	585	409
854.4	72	75.6	75.1	CLAY	4.5	125	9.128	1	1.000	1	N/A	0.487	2.19	72	4.19	9.19	594	416	0	15,750	0.0	0	0	0	416	594	416
853.4	73	76.6	76.1	CLAY	4.5	125	9.253	1	1.000	1	N/A	0.487	2.19	73	4.19	9.19	603	422	0	15,750	0.0	0	0	0	422	603	422
852.4	74	77.6	77.1	CLAY	4.5	125	9.378	1	1.000	1	N/A	0.487	2.19	74	4.19	9.19	613	429	0	15,750	0.0	0	0	0	429	613	429
851.4	75	78.6	78.1	CLAY	4.5	125	9.503	1	1.000	1	N/A	0.487	2.19	75	4.19	9.19	622	435	0	15,750	0.0	0	0	0	435	622	435
850.4	76	79.6	79.1	CLAY	4.5	125	9.628	1	1.000	1	N/A	0.487	2.19	76	4.19	9.19	631	442	0	15,750	0.0	0	0	0	442	631	442
849.4	77	80.6	80.1	CLAY	4.5	125	9.753	1	1.000	1	N/A	0.487	2.19	77	4.19	9.19	640	448	0	15,750	0.0	0	0	0	448	640	448
848.4	78	81.6	81.1	CLAY	4.5	125	9.878	1	1.000	1	N/A	0.487	2.19	78	4.19	9.19	649	454	0	15,750	0.0	0	0	0	454	649	454
847.4	79	82.6	82.1	CLAY	4.5	125	10.003	1	1.000	1	N/A	0.487	2.19	79	4.19	9.19	658	461	0	15,750	0.0	0	0	0	461	658	461
846.4	80	83.6	83.1	CLAY	4.5	125	10.128	1	1.000	1	N/A	0.487	2.19	80	4.19	9.19	668	467	0	15,750	0.0	0	0	0	467	668	467
845.4	81	84.6	84.1	CLAY	4.5	125	10.253	1	1.000	1	N/A	0.487	2.19	81	4.19	9.19	677	474	0	15,750	0.0	0	0	0	474	677	474
844.4	82	85.6	85.1	CLAY	4.5	125	10.378	1	1.000	1	N/A	0.487	2.19	82	4.19	9.19	686	480	0	15,750	0.0	0	0	0	480	686	480
843.4	83	86.6	86.1	CLAY	4.5	125	10.503	1	1.000	1	N/A	0.487	2.19	83	4.19	9.19	695	487	0	15,750	0.0	0	0	0	487	695	487
842.4	84	87.6	87.1	CLAY	4.5	125	10.628	1	1.000	1	N/A	0.487	2.19	84	4.19	9.19	704	493	0	15,750	0.0	0	0	0	493	704	493
841.4	85	88.6	88.1	CLAY	4.5	125	10.753	1	1.000	1	N/A	0.487	2.19	85	4.19	9.19	714	500	0	15,750	0.0	0	0	0	500	714	500
840.4	86	89.6	89.1	CLAY	4.5	125	10.878	1	1.000	1	N/A	0.487	2.19	86	4.19	9.19	723	506	0	15,750	0.0	0	0	0	506	723	506
839.4	87	90.6	90.1	CLAY	4.5	125	11.003	1	1.000	1	N/A	0.487	2.19	87	4.19	9.19	732	512	0	15,750	0.0	0	0	0	512	732	512
838.4	88	91.6	91.1	CLAY	4.5	125	11.128	1	1.000	1	N/A	0.487	2.19	88	4.19	9.19	741	519	0	15,750	0.0	0	0	0	519	741	519
837.4	89	92.6	92.1	CLAY	4.5	125	11.253	1	1.000	1	N/A	0.487	2.19	89	4.19	9.19	750	525	0	15,750	0.0	0	0	0	525	750	525
836.4	90	93.6	93.1	CLAY	4.5	125	11.378	1	1.000	1	N/A	0.487	2.19	90	4.19	9.19	760	532	0	15,750	0.0	0	0	0	532	760	532
835.4	91	94.6	94.1	CLAY	4.5	125	11.503	1	1.000	1	N/A	0.487	2.19	91	4.19	9.19	769	538	0	15,750	0.0	0	0	0	538	769	538
834.4	92	95.6	95.1	CLAY	4.5	125	11.628	1	1.000	1	N/A	0.487	2.19	92	4.19	9.19	778	545	0	15,750	0.0	0	0	0	545	778	545
833.4	93	96.6	96.1	CLAY	4.5	125	11.753	1	1.000	1	N/A	0.487	2.19	93	4.19	9.19	787	551	0	15,750	0.0	0	0	0	551	787	551
832.4	94	97.6	97.1	CLAY	4.5	125	11.878	1	1.000	1	N/A	0.487	2.19	94	4.19	9.19	796	557	0	15,750	0.0	0	0	0	557	796	557
831.4	95	98.6	98.1	CLAY	4.5	125	12.003	1	1.000	1	N/A	0.487	2.19	95	4.19	9.19	805	564	0	15,750	0.0	0	0	0	564	805	564
830.4	96	99.6	99.1	CLAY	4.5	125	12.128	1	1.000	1	N/A	0.487	2.19	96	4.19	9.19	815	570	0	15,750	0.0	0	0	0	570	815	570
829.4	97	100.6	100.1	CLAY	4.5	125	12.253	1	1.000	1	N/A	0.487	2.19	97	4.19	9.19	824	577	0	15,750	0.0	0	0	0	577	824	577
828.4	98	101.6	101.1	CLAY	4.5	125	12.378	1	1.000	1	N/A	0.487	2.19	98	4.19	9.19	833	583	0	15,750	0.0	0	0	0	583	833	583
827.4	99	102.6	102.1	CLAY	4.5	125	12.503	1	1.000	1	N/A	0.487	2.19	99	4.19	9.19	842	590	0	15,750	0.0	0	0	0	590	842	590
826.4	100	103.6	103.1	CLAY	4.5	125	12.628	1	1.000	1	N/A	0.487	2.19	100	4.19	9.19	851	596	0	15,750	0.0	0	0	0	596	851	596
825.4	101	104.6	104.1	CLAY	4.5	125	12.753	1	1.000	1	N/A	0.487	2.19	101	4.19	9.19	861	602	0	15,750	0.0	0	0	0	602	861	602
824.4	102	105.6	105.1	CLAY	4.5	125	12.878	1	1.000	1	N/A	0.487	2.19	102	4.19	9.19	870	609	0	15,750	0.0	0	0	0	609	870	609
823.4	103	106.6	106.1	CLAY	4.5	125	13.003	1	1.000	1	N/A	0.487	2.19	103	4.19	9.19	879	615	0	15,750	0.0	0	0	0	615	879	615
822.4	104	107.6	107.1	CLAY	4.5	125	13.128	1	1.000	1	N/A	0.487	2.19	104	4.19	9.19	888	622	0	15,750	0.0	0	0	0	622	888	622
821.4	105	108.6	108.1	CLAY	4.5	125	13.253	1	1.000	1	N/A	0.487	2.19	105	4.19	9.19	897	628	0	15,750	0.0	0	0	0	628	897	628
820.4	106	109.6	109.1	CLAY	4.5	125	13.378	1	1.000	1	N/A	0.487	2.19	106	4.19	9.19	906	635	0	15,750	0.0	0	0	0	635	906	635
819.4	107	110.6	110.1	CLAY	4.5	125	13.503	1	1.000	1	N/A	0.487	2.19	107	4.19	9.19	916	641	0	15,750	0.0	0	0	0	641	916	641
818.4	108	111.6

LA-1143/Palo Comado OC

16 inch CIDH Abut 5L



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 16 inch CIDH Abut 5R

Pile Diameter= 1.333333 ft
Perimeter= 4.189 ft
End Area= 1.396 ft²

Group Efficiency Factor= 1
5% D= 0.80 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile head below ground surface (ft) 3.56
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 96.44

Req. Nom.= N/A kips
Nominal Comp Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Factored= 150 kips
Strength Plot

Depth (ft)	Factored Load (kips)
0	150
31	150
31	0
31	150

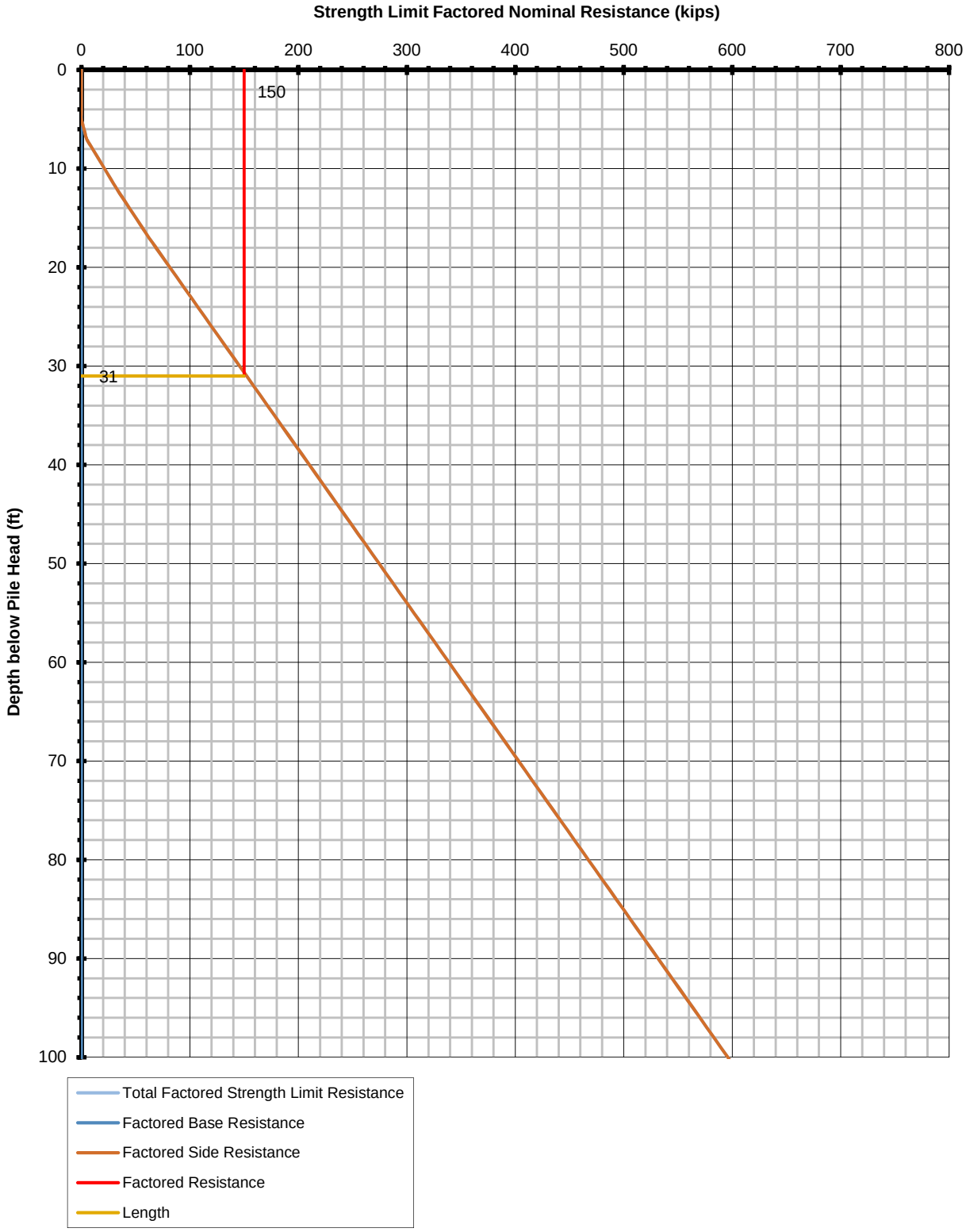
Req. Nom. T= N/A kips
Nominal Tension Plot

Depth (ft)	Load (kips)
0	N/A
N/A	N/A
N/A	0
N/A	N/A

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
926.44	0	3.56												0			0	0										
925.4	1	4.56	4.06	CLAY	1.5	120	0.290	0	1.000	1	N/A	0.550	0.00	1	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
924.4	2	5.56	5.06	CLAY	1.5	120	0.410	0	1.000	1	N/A	0.550	0.00	2	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
923.4	3	6.56	6.06	CLAY	1.5	120	0.530	0	1.000	1	N/A	0.550	0.00	3	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	3	0
922.4	4	7.56	7.06	CLAY	1.5	120	0.650	0	1.000	1	N/A	0.550	0.00	4	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
921.4	5	8.56	8.06	CLAY	1.5	120	0.770	0	1.000	1	N/A	0.550	0.00	5	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
920.4	6	9.56	9.06	CLAY	1.5	120	0.890	1	1.000	1	N/A	0.550	0.83	6	4.19	3.46	3	2	0	2,250	0.0	0	0	0	2	3	2
919.4	7	10.56	10.06	CLAY	1.5	120	1.010	1	1.000	1	N/A	0.550	0.83	7	4.19	3.46	7	5	0	2,250	0.0	0	0	0	5	7	5
918.4	8	11.56	11.06	CLAY	3.5	120	1.130	1	1.000	1	N/A	0.535	1.87	8	4.19	7.84	15	10	0	12,250	0.0	0	0	0	10	15	10
917.4	9	12.56	12.06	CLAY	3.5	120	1.250	1	1.000	1	N/A	0.535	1.87	9	4.19	7.84	23	16	0	12,250	0.0	0	0	0	16	23	16
916.4	10	13.56	13.06	CLAY	3.5	120	1.370	1	1.000	1	N/A	0.535	1.87	10	4.19	7.84	30	21	0	12,250	0.0	0	0	0	21	30	21
915.4	11	14.56	14.06	CLAY	3.5	120	1.490	1	1.000	1	N/A	0.535	1.87	11	4.19	7.84	38	27	0	12,250	0.0	0	0	0	27	38	27
914.4	12	15.56	15.06	CLAY	3.5	120	1.610	1	1.000	1	N/A	0.535	1.87	12	4.19	7.84	46	32	0	12,250	0.0	0	0	0	32	46	32
913.4	13	16.56	16.06	CLAY	4	125	1.733	1	1.000	1	N/A	0.511	2.04	13	4.19	8.56	55	38	0	14,000	0.0	0	0	0	38	55	38
912.4	14	17.56	17.06	CLAY	4	125	1.858	1	1.000	1	N/A	0.511	2.04	14	4.19	8.56	63	44	0	14,000	0.0	0	0	0	44	63	44
911.4	15	18.56	18.06	CLAY	4	125	1.983	1	1.000	1	N/A	0.511	2.04	15	4.19	8.56	72	50	0	14,000	0.0	0	0	0	50	72	50
910.4	16	19.56	19.06	CLAY	4	125	2.108	1	1.000	1	N/A	0.511	2.04	16	4.19	8.56	80	56	0	14,000	0.0	0	0	0	56	80	56
909.4	17	20.56	20.06	CLAY	4	125	2.233	1	1.000	1	N/A	0.511	2.04	17	4.19	8.56	89	62	0	14,000	0.0	0	0	0	62	89	62
908.4	18	21.56	21.06	CLAY	4.5	125	2.358	1	1.000	1	N/A	0.487	2.19	18	4.19	9.19	98	69	0	15,750	0.0	0	0	0	69	98	69
907.4	19	22.56	22.06	CLAY	4.5	125	2.483	1	1.000	1	N/A	0.487	2.19	19	4.19	9.19	107	75	0	15,750	0.0	0	0	0	75	107	75
906.4	20	23.56	23.06	CLAY	4.5	125	2.608	1	1.000	1	N/A	0.487	2.19	20	4.19	9.19	116	82	0	15,750	0.0	0	0	0	82	116	82
905.4	21	24.56	24.06	CLAY	4.5	125	2.733	1	1.000	1	N/A	0.487	2.19	21	4.19	9.19	126	88	0	15,750	0.0	0	0	0	88	126	88
904.4	22	25.56	25.06	CLAY	4.5	125	2.858	1	1.000	1	N/A	0.487	2.19	22	4.19	9.19	135	94	0	15,750	0.0	0	0	0	94	135	94
903.4	23	26.56	26.06	CLAY	4.5	125	2.983	1	1.000	1	N/A	0.487	2.19	23	4.19	9.19	144	101	0	15,750	0.0	0	0	0	101	144	101
902.4	24	27.56	27.06	CLAY	4.5	125	3.108	1	1.000	1	N/A	0.487	2.19	24	4.19	9.19	153	107	0	15,750	0.0	0	0	0	107	153	107
901.4	25	28.56	28.06	CLAY	4.5	125	3.233	1	1.000	1	N/A	0.487	2.19	25	4.19	9.19	162	114	0	15,750	0.0	0	0	0	114	162	114
900.4	26	29.56	29.06	CLAY	4.5	125	3.358	1	1.000	1	N/A	0.487	2.19	26	4.19	9.19	172	120	0	15,750	0.0	0	0	0	120	172	120
899.4	27	30.56	30.06	CLAY	4.5	125	3.483	1	1.000	1	N/A	0.487	2.19	27	4.19	9.19	181	127	0	15,750	0.0	0	0	0	127	181	127
898.4	28	31.56	31.06	CLAY	4.5	125	3.608	1	1.000	1	N/A	0.487	2.19	28	4.19	9.19	190	133	0	15,750	0.0	0	0	0	133	190	133
897.4	29	32.56	32.06	CLAY	4.5	125	3.733	1	1.000	1	N/A	0.487	2.19	29	4.19	9.19	199	139	0	15,750	0.0	0	0	0	139	199	139
896.4	30	33.56	33.06	CLAY	4.5	125	3.858	1	1.000	1	N/A	0.487	2.19	30	4.19	9.19	208	146	0	15,750	0.0	0	0	0	146	208	146
895.4	31	34.56	34.06	CLAY	4.5	125	3.983	1	1.000	1	N/A	0.487	2.19	31	4.19	9.19	218	152	0	15,750	0.0	0	0	0	152	218	152
894.4	32	35.56	35.06	CLAY	4.5	125	4.108	1	1.000	1	N/A	0.487	2.19	32	4.19	9.19	227	159	0	15,750	0.0	0	0	0	159	227	159
893.4	33	36.56	36.06	CLAY	4.5	125	4.233	1	1.000	1	N/A	0.487	2.19	33	4.19	9.19	236	165	0	15,750	0.0	0	0	0	165	236	165
892.4	34	37.56	37.06	CLAY	4.5	125	4.358	1	1.000	1	N/A	0.487	2.19	34	4.19	9.19	245	172	0	15,750	0.0	0	0	0	172	245	172
891.4	35	38.56	38.06	CLAY	4.5	125	4.483	1	1.000	1	N/A	0.487	2.19	35	4.19	9.19	254	178	0	15,750	0.0	0	0	0	178	254	178
890.4	36	39.56	39.06	CLAY	4.5	125	4.608	1	1.000	1	N/A	0.487	2.19	36	4.19	9.19	263	184	0	15,750	0.0	0	0	0	184	263	184
889.4	37	40.56	40.06	CLAY	4.5	125	4.733	1	1.000	1	N/A	0.487	2.19	37	4.19	9.19	273	191	0	15,750	0.0	0	0	0	191	273	191
888.4	38	41.56	41.06	CLAY	4.5	125	4.858	1	1.000	1	N/A	0.487	2.19	38	4.19	9.19	282	197	0	15,750	0.0	0	0	0	197	282	197
887.4	39	42.56	42.06	CLAY	4.5	125	4.983	1	1.000	1	N/A	0.487	2.19	39	4.19	9.19	291	204	0	15,750	0.0	0	0	0	204	291	204
886.4	40	43.56	43.06	CLAY	4.5	125	5.108	1	1.000	1	N/A	0.487	2.19	40	4.19	9.19	300	210	0	15,750	0.0	0	0	0	210	300	210
885.4	41	44.56	44.06	CLAY	4.5	125	5.233	1	1.000	1	N/A	0.487	2.19	41	4.19	9.19	309	217	0	15,750	0.0	0	0	0	217	309	217
884.4	42	45.56	45.06	CLAY	4.5	125	5.358	1	1.000	1	N/A	0.487	2.19	42	4.19	9.19	319	223	0	15,750	0.0	0	0	0	223	319	223
883.4	43	46.56	46.06	CLAY	4.5	125	5.483	1	1.000	1	N/A	0.487	2.19	43	4.19	9.19	328	229	0	15,750	0.0	0	0	0	229	328	229
882.4	44	47.56	47.06	CLAY	4.5	125	5.608	1	1.000	1	N/A	0.487	2.19	44	4.19	9.19	337	236	0	15,750	0.0	0	0	0	236	337	236
881.4	45	48.56	48.06	CLAY	4.5	125	5.733	1	1.000	1	N/A	0.487	2.19	45	4.19	9.19	346	242	0	15,750	0.0	0	0	0	242	346	242
880.4	46	49.56	49.06	CLAY	4.5	125	5.858	1	1.000	1	N/A	0.487	2.19	46	4.19	9.19	355	249	0	15,750	0.0	0	0	0	249	355	249
879.4	47	50.56	50.06	CLAY	4.5	125	5.983	1	1.000	1	N/A	0.487	2.19	47	4.19	9.19	365	255	0	15,750	0.0	0	0	0	255	365	255
878.4	48	51.56	51.06	CLAY	4.5	125	6.108	1	1.000	1	N/A	0.487	2.19	48	4.19	9.19	374	262	0	15,750	0.0	0	0	0	262	374	262
877.4	49	52.56	52.06	CLAY	4.5	125	6.233	1	1.000	1	N/A	0.487	2.19	49	4.19	9.19	383	268	0	15,750	0.0	0	0	0	268	383	268
876.4	50	53.56	53.06	CLAY	4.5	125	6.358	1	1.000	1	N/A	0.487	2.19	50	4.19	9.19	392	274	0	15,750	0.0	0	0	0	274	392	274
875.4	51	54.56	54.06	CLAY	4.5	125	6.483	1	1.000	1	N/A	0.487	2.19	51	4.19	9.19	401	281	0	15,750	0.0	0	0	0	281	401	281
874.4	52	55.56	55.06	CLAY	4.5	125	6.608	1	1.000	1	N/A	0.487	2.19	52	4.19	9.19	410	287	0	15,750	0.0	0	0	0	287	410	287
873.4	53	56.56	56.06	CLAY	4.5	125	6.733	1	1.000	1	N/A	0.487	2.19	53	4.19	9.19	420	294	0	15,750	0.0	0	0	0	294	420	294
872.4	54	57.56	57.06	CLAY	4.5	125	6.858	1	1.000	1	N/A	0.487	2.19	54	4.19	9.19	429	300	0	15,750	0.0	0	0	0	300	429	300
871.4	55	58.56	58.06	CLAY	4.5	125	6.983	1	1.000	1	N/A	0.487	2.19	55	4.19	9.19	438	307	0	15,750	0.0	0	0	0	307	438	307
870.4	56	59.56	59.06	CLAY	4.5	125	7.108	1	1.000	1	N/A	0.487	2.19	56	4.19	9.19	447	313	0	15,750	0.0	0	0	0	313	447	313
869.4	57	60.56	60.06	CLAY	4.5	125	7.233	1	1.000	1	N/A	0.487	2.19	57	4.19	9.19	456	319	0	15,750	0.0	0	0	0	319	456	319
868.4	58	61.56	61.06	CLAY	4.5	125	7.358	1	1.000	1	N/A	0.487	2.19	58	4.19	9.19	466	326	0	15,750	0.0	0	0	0	326	466	326
867.4	59	62.56	62.06	CLAY	4.5	125	7.483	1	1.000	1	N/A	0.487	2.19	59	4.19	9.19	475	332	0	15,750	0.0	0	0	0	332	475	332
866.4	60	63.56	63.06	CLAY	4.5	125	7.608	1	1.000	1	N/A	0.487	2.19	60	4.19	9.19	484	339	0	15,750	0.0	0	0	0	339	484	339
865.4	61	64.56	64.06	CLAY	4.5	125	7.733	1	1.000	1	N/A	0.487	2.19	61	4.19	9.19	493	345	0	15,750	0.0	0	0	0	345	493	345
864.4	62	65.56	65.06	CLAY	4.5	125	7.858	1	1.000	1	N/A	0.487	2.19	62	4.19	9.19	502	352	0	15,750	0.0	0	0	0	352	502	352
863.4	63	66.56	66.06	CLAY	4.5	125	7.983	1	1.000	1	N/A	0.487	2.19	63	4.19	9.19	511	358	0	15,750	0.0	0	0	0	358	511	358
862.4	64	67.56	67.06	CLAY	4.5	125	8.108	1	1.000	1	N/A	0.487	2.19	64	4.19	9.19	521	364	0	15,750	0.0	0	0	0	364	521	364
861.4	65	68.56	68.06	CLAY	4.5	125	8.233	1	1.000	1	N/A	0.487	2.19	65	4.19	9.19	530	371	0	15,750	0.0	0	0	0	371	530	371
860.4	66	69.56	69.06	CLAY	4.5	125	8.358	1	1.000	1	N/A	0.487	2.19	66	4.19	9.19	539	377	0	15,750	0.0	0	0	0	377	539	377
859.4	67	70.56	70.06	CLAY	4.5	125	8.483	1	1.000	1	N/A	0.487	2.19	67	4.19	9.19	548	384	0	15,750	0.0	0	0	0	384	548	384
858.4	68	71.56	71.06	CLAY	4.5	125	8.608	1	1.000	1	N/A	0.487	2.19	68	4.19	9.19	557	390	0	15,750	0.0	0	0	0	390	557	390
857.4	69	72.56	72.06	CLAY	4.5	125	8.733	1	1.000	1	N/A	0.487	2.19	69	4.19	9.19	567	397	0	15,750	0.0	0	0	0	397	567	397
856.4	70	73.56	73.06	CLAY	4.5	125	8.858	1	1.000	1	N/A	0.487	2.19	70	4.19	9.19	576	403	0	15,750	0.0	0	0	0	403	576	403
855.4	71	74.56	74.06	CLAY	4.5	125	8.983	1	1.000	1	N/A	0.487	2.19	71	4.19	9.19	585	409	0	15,750	0.0	0	0	0	409	585	409
854.4	72	75.56	75.06	CLAY	4.5	125	9.108	1	1.000	1	N/A	0.487	2.19	72	4.19	9.19	594	416	0	15,750	0.0	0	0	0	416	594	416
853.4	73	76.56	76.06	CLAY	4.5	125	9.233	1	1.000	1	N/A	0.487	2.19	73	4.19	9.19	603	422	0	15,750	0.0	0	0	0	422	603	422
852.4	74	77.56	77.06	CLAY	4.5	125	9.358	1	1.000	1	N/A	0.487	2.19	74	4.19	9.19	613	429	0	15,750	0.0	0	0	0	429	613	429
851.4	75	78.56	78.06	CLAY	4.5	125	9.483	1	1.000	1	N/A	0.487	2.19	75	4.19	9.19	622	435	0	15,750	0.0	0	0	0	435	622	435
850.4	76	79.56	79.06	CLAY	4.5	125	9.608	1	1.000	1	N/A	0.487	2.19	76	4.19	9.19	631	442	0	15,750	0.0	0	0	0	442	631	442
849.4	77	80.56	80.06	CLAY	4.5	125	9.733	1	1.000	1	N/A	0.487	2.19	77	4.19	9.19	640	448	0	15,750	0.0	0	0	0	448	640	448
848.4	78	81.56	81.06	CLAY	4.5	125	9.858	1	1.000	1	N/A	0.487	2.19	78	4.19	9.19	649	454	0	15,750	0.0	0	0	0	454	649	454
847.4	79	82.56	82.06	CLAY	4.5	125	9.983	1	1.000	1	N/A	0.487	2.19	79	4.19	9.19	658	461	0	15,750	0.0	0	0	0	461	658	461
846.4	80	83.56	83.06	CLAY	4.5	125	10.108	1	1.000	1	N/A	0.487	2.19	80	4.19	9.19	668	467	0	15,750	0.0	0	0	0	467	668	467
845.4	81	84.56	84.06	CLAY	4.5	125	10.233	1	1.000	1	N/A	0.487	2.19	81	4.19	9.19	677	474	0	15,750	0.0	0	0	0	474	677	474
844.4	82	85.56	85.06	CLAY	4.5	125	10.358	1	1.000	1	N/A	0.487	2.19	82	4.19	9.19	686	480	0	15,750	0.0	0	0	0	480	686	480
843.4	83	86.56	86.06	CLAY	4.5	125	10.483	1	1.000	1	N/A	0.487	2.19	83	4.19	9.19	695	487	0	15,750	0.0	0	0	0	487	695	487
842.4	84	87.56	87.06	CLAY	4.5	125	10.608	1	1.000	1	N/A	0.487	2.19	84	4.19	9.19	704	493	0	15,750	0.0	0	0	0	493	704	493
841.4	85	88.56	88.06	CLAY	4.5	125	10.733	1	1.000	1	N/A	0.487	2.19	85	4.19	9.19	714	500	0	15,750	0.0	0	0	0	500	714	500
840.4	86	89.56	89.06	CLAY	4.5	125	10.858	1	1.000	1	N/A	0.487	2.19	86	4.19	9.19	723	506	0	15,750	0.0	0	0	0	506	723	506
839.4	87	90.56	90.06	CLAY	4.5	125	10.983	1	1.000	1	N/A	0.487	2.19	87	4.19	9.19	732	512	0	15,750	0.0	0	0	0	512	732	512
838.4	88	91.56	91.06	CLAY	4.5	125	11.108	1	1.000	1	N/A	0.487	2.19	88	4.19	9.19	741	519	0	15,750	0.0	0	0	0	519	741	519
837.4	89	92.56	92.06	CLAY	4.5	125	11.233	1	1.000	1	N/A	0.487	2.19	89	4.19	9.19	750	525	0	15,750	0.0	0	0	0	525	750	525
836.4	90	93.56	93.06	CLAY	4.5	125	11.358	1	1.000	1	N/A	0.487	2.19	90	4.19	9.19	760	532	0	15,750	0.0	0	0	0	532	760	532
835.4	91	94.56	94.06	CLAY	4.5	125	11.483	1	1.000	1	N/A	0.487	2.19	91	4.19	9.19	769	538	0	15,750	0.0	0	0	0	538	769	538
834.4	92	95.56	95.06	CLAY	4.5	125	11.608	1	1.000	1	N/A	0.487	2.19	92	4.19	9.19	778	545	0	15,750	0.0	0	0	0	545	778	545
833.4	93	96.56	96.06	CLAY	4.5	125	11.733	1	1.000	1	N/A	0.487	2.19	93	4.19	9.19	787	551	0	15,750	0.0	0	0	0	551	787	551
832.4	94	97.56	97.06	CLAY	4.5	125	11.858	1	1.000	1	N/A	0.487	2.19	94	4.19	9.19	796	557	0	15,750	0.0	0	0	0	557	796	557
831.4	95	98.56	98.06	CLAY	4.5	125	11.983	1	1.000	1	N/A	0.487	2.19	95	4.19	9.19	805	564	0	15,750	0.0	0	0	0	564	805	564
830.4	96	99.56	99.06	CLAY	4.5	125	12.108	1	1.000	1	N/A	0.487	2.19	96	4.19	9.19	815	570	0	15,750	0.0	0	0	0	570	815	570
829.4	97	100.56	100.06	CLAY	4.5	125	12.233	1	1.000	1	N/A	0.487	2.19	97	4.19	9.19	824	577	0	15,750	0.0	0	0	0	577	824	577
828.4	98	101.56	101.06	CLAY	4.5	125	12.358	1	1.000	1	N/A	0.487	2.19	98	4.19	9.19	833	583	0	15,750	0.0	0	0	0	583	833	583
827.4	99	102.56	102.06	CLAY	4.5	125	12.483	1	1.000	1	N/A	0.487	2.19	99	4.19	9.19	842	590	0	15,750	0.0	0	0	0	590	842	590
826.4	100	103.56	103.06	CLAY	4.5	125	12.608	1	1.000	1	N/A	0.487	2.19	100	4.19	9.19	851	596	0	15,750	0.0	0	0	0	596	851	596
825.4	101	104.56	104.06	CLAY	4.5	125	12.733	1	1.000	1	N/A	0.487	2.19	101	4.19	9.19	861	602	0	15,750	0.0	0	0	0	602	861	602
824.4	102	105.56	105.06	CLAY	4.5	125	12.858	1	1.000	1	N/A	0.487	2.19	102	4.19	9.19	870	609	0	15,750	0.0	0	0	0	609	870	609
823.4	103	106.56	106.06	CLAY	4.5	125	12.983	1	1.000	1	N/A	0.487	2.19	103	4.19	9.19	879	615	0	15,750	0.0	0	0	0	615	879	615
822.4	104	107.56	107.06	CLAY	4.5	125	13.108	1	1.000	1	N/A	0.487	2.19	104	4.19	9.19	888	622	0	15,750	0.0	0	0	0	622	888	622
821.4	105	108.56	108.06	CLAY	4.5	125	13.233	1	1.000	1	N/A	0.487	2.19	105	4.19	9.19	897	628	0	15,750	0.0	0	0	0	628	897	628
820.4	106	109.56	109.06	CLAY	4.5	125	13.358	1	1.000	1	N/A	0.487	2.19	106	4.19	9.19	906	635	0	15,750	0.0	0	0	0	635	906	635
819.4	107	110.56	110.06	CLAY	4.5	125	13.483	1	1.000	1	N/A	0.487	2.19	107	4.19	9.19	916	641	0	15,750	0.0	0	0	0	641	916	641
818.4	108	111.56	111.

LA-1143/Palo Comado OC

16 inch CIDH Abut 5R



GROUP DELTA

PROJECT NUMBER / NAME: LA-1143/Palo Comado OC

CALCULATION NAME: 16 inch CIDH Abut 5 Pilaster

Req. Nom.= 150 kips

Nominal Comp Plot

Depth (ft)	Load (kips)
0	150
24	150
24	0
24	150

Factored= 60 kips

Strength Plot

Depth (ft)	Factored Load (kips)
0	60
17	60
17	0
17	60

Req. Nom. T= 70 kips

Nominal Tension Plot

Depth (ft)	Load (kips)
0	70
19	70
19	0
19	70

Pile Diameter= 1.333333 ft
Perimeter= 4.189 ft
End Area= 1.396 ft²

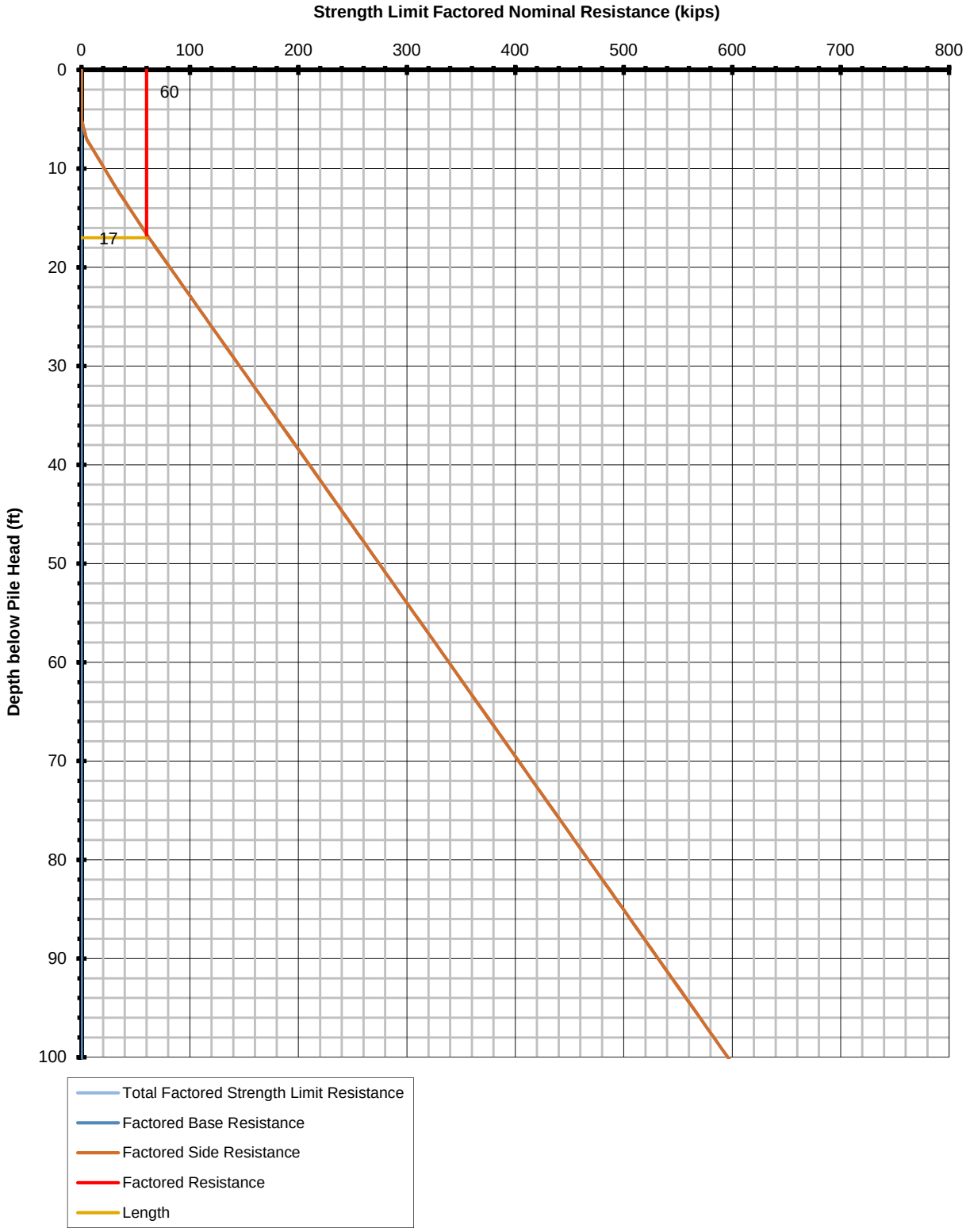
Group Efficiency Factor= 1
5% D= 0.80 inch
Limiting Settlement for Qbase= 0.00 inch
Overburden at pile cutoff= 0.23 ksf
Depth of overburden= 2 ft

Pile head below ground surface (ft) 5
Groundwater below ground surface (ft) 100
Groundwater below pile head (ft) 95

Elevation (ft)	Layer Bottom Depth below Pile Head (ft)	Layer Bottom Depth below ground (ft)	Mid Layer Z (ft)	SAND or CLAY	SAND SPT N_{60} or CLAY Su (ksf)	EFFECTIVE UNIT WEIGHT γ (pcf)	Mid-Layer σ'_v (ksf)	User Input Friction Factor	SAND Friction Factor for SPT N_{60}	Friction Factor for Group Efficiency	β	α	fs (ksf)	Pile Depth (ft)	A_s (ft²)	fs * As (kips)	Nominal Side Resistance QS = Σ fs * As (kips)	Strength Limit State Factored Side Compression Resistance 0.7*QS (kips)	User Input Factor on Base Resistance	Undrained Modulus Es (ksf)	Nominal Unit Base Resistance at 5%D (ksf)	Nominal Base Resistance at 5%D (kips)	Nominal Base Resistance at Specified Settlement (kips)	Strength Limit State Factored Base Resistance (kips)	Factored Compression Resistance Strength Limit State 0.5*QB+0.7QS (kips)	Compression Resistance Extreme Event Limit State QB+QS	Tension Extreme Event QSup= 0.7*QS (kips)
930.5	0	5												0			0	0			0	0	0	0	0	0	0
929.5	1	6	5.5	CLAY	1.5	120	0.290	0	1.000	1	N/A	0.550	0.00	1	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
928.5	2	7	6.5	CLAY	1.5	120	0.410	0	1.000	1	N/A	0.550	0.00	2	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
927.5	3	8	7.5	CLAY	1.5	120	0.530	0	1.000	1	N/A	0.550	0.00	3	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
926.5	4	9	8.5	CLAY	1.5	120	0.650	0	1.000	1	N/A	0.550	0.00	4	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
925.5	5	10	9.5	CLAY	1.5	120	0.770	0	1.000	1	N/A	0.550	0.00	5	4.19	0.00	0	0	0	2,250	0.0	0	0	0	0	0	0
924.5	6	11	10.5	CLAY	1.5	120	0.890	1	1.000	1	N/A	0.550	0.83	6	4.19	3.46	3	2	0	2,250	0.0	0	0	0	2	3	2
923.5	7	12	11.5	CLAY	1.5	120	1.010	1	1.000	1	N/A	0.550	0.83	7	4.19	3.46	7	5	0	2,250	0.0	0	0	0	5	7	5
922.5	8	13	12.5	CLAY	3.5	120	1.130	1	1.000	1	N/A	0.535	1.87	8	4.19	7.84	15	10	0	12,250	0.0	0	0	0	10	15	10
921.5	9	14	13.5	CLAY	3.5	125	1.253	1	1.000	1	N/A	0.535	1.87	9	4.19	7.84	23	16	0	12,250	0.0	0	0	0	16	23	16
920.5	10	15	14.5	CLAY	3.5	125	1.378	1	1.000	1	N/A	0.535	1.87	10	4.19	7.84	30	21	0	12,250	0.0	0	0	0	21	30	21
919.5	11	16	15.5	CLAY	3.5	125	1.503	1	1.000	1	N/A	0.535	1.87	11	4.19	7.84	38	27	0	12,250	0.0	0	0	0	27	38	27
918.5	12	17	16.5	CLAY	3.5	125	1.628	1	1.000	1	N/A	0.535	1.87	12	4.19	7.84	46	32	0	12,250	0.0	0	0	0	32	46	32
917.5	13	18	17.5	CLAY	4	125	1.753	1	1.000	1	N/A	0.511	2.04	13	4.19	8.56	55	38	0	14,000	0.0	0	0	0	38	55	38
916.5	14	19	18.5	CLAY	4	125	1.878	1	1.000	1	N/A	0.511	2.04	14	4.19	8.56	63	44	0	14,000	0.0	0	0	0	44	63	44
915.5	15	20	19.5	CLAY	4	125	2.003	1	1.000	1	N/A	0.511	2.04	15	4.19	8.56	72	50	0	14,000	0.0	0	0	0	50	72	50
914.5	16	21	20.5	CLAY	4	125	2.128	1	1.000	1	N/A	0.511	2.04	16	4.19	8.56	80	56	0	14,000	0.0	0	0	0	56	80	56
913.5	17	22	21.5	CLAY	4	125	2.253	1	1.000	1	N/A	0.511	2.04	17	4.19	8.56	89	62	0	14,000	0.0	0	0	0	62	89	62
912.5	18	23	22.5	CLAY	4.5	125	2.378	1	1.000	1	N/A	0.487	2.19	18	4.19	9.19	98	69	0	15,750	0.0	0	0	0	69	98	69
911.5	19	24	23.5	CLAY	4.5	125	2.503	1	1.000	1	N/A	0.487	2.19	19	4.19	9.19	107	75	0	15,750	0.0	0	0	0	75	107	75
910.5	20	25	24.5	CLAY	4.5	125	2.628	1	1.000	1	N/A	0.487	2.19	20	4.19	9.19	116	82	0	15,750	0.0	0	0	0	82	116	82
909.5	21	26	25.5	CLAY	4.5	125	2.753	1	1.000	1	N/A	0.487	2.19	21	4.19	9.19	126	88	0	15,750	0.0	0	0	0	88	126	88
908.5	22	27	26.5	CLAY	4.5	125	2.878	1	1.000	1	N/A	0.487	2.19	22	4.19	9.19	135	94	0	15,750	0.0	0	0	0	94	135	94
907.5	23	28	27.5	CLAY	4.5	125	3.003	1	1.000	1	N/A	0.487	2.19	23	4.19	9.19	144	101	0	15,750	0.0	0	0	0	101	144	101
906.5	24	29	28.5	CLAY	4.5	125	3.128	1	1.000	1	N/A	0.487	2.19	24	4.19	9.19	153	107	0	15,750	0.0	0	0	0	107	153	107
905.5	25	30	29.5	CLAY	4.5	125	3.253	1	1.000	1	N/A	0.487	2.19	25	4.19	9.19	162	114	0	15,750	0.0	0	0	0	114	162	114
904.5	26	31	30.5	CLAY	4.5	125	3.378	1	1.000	1	N/A	0.487	2.19	26	4.19	9.19	172	120	0	15,750	0.0	0	0	0	120	172	120
903.5	27	32	31.5	CLAY	4.5	125	3.503	1	1.000	1	N/A	0.487	2.19	27	4.19	9.19	181	127	0	15,750	0.0	0	0	0	127	181	127
902.5	28	33	32.5	CLAY	4.5	125	3.628	1	1.000	1	N/A	0.487	2.19	28	4.19	9.19	190	133	0	15,750	0.0	0	0	0	133	190	133
901.5	29	34	33.5	CLAY	4.5	125	3.753	1	1.000	1	N/A	0.487	2.19	29	4.19	9.19	199	139	0	15,750	0.0	0	0	0	139	199	139
900.5	30	35	34.5	CLAY	4.5	125	3.878	1	1.000	1	N/A	0.487	2.19	30	4.19	9.19	208	146	0	15,750	0.0	0	0	0	146	208	146
899.5	31	36	35.5	CLAY	4.5	125	4.003	1	1.000	1	N/A	0.487	2.19	31	4.19	9.19	218	152	0	15,750	0.0	0	0	0	152	218	152
898.5	32	37	36.5	CLAY	4.5	125	4.128	1	1.000	1	N/A	0.487	2.19	32	4.19	9.19	227	159	0	15,750	0.0	0	0	0	159	227	159
897.5	33	38	37.5	CLAY	4.5	125	4.253	1	1.000	1	N/A	0.487	2.19	33	4.19	9.19	236	165	0	15,750	0.0	0	0	0	165	236	165
896.5	34	39	38.5	CLAY	4.5	125	4.378	1	1.000	1	N/A	0.487	2.19	34	4.19	9.19	245	172	0	15,750	0.0	0	0	0	172	245	172
895.5	35	40	39.5	CLAY	4.5	125	4.503	1	1.000	1	N/A	0.487	2.19	35	4.19	9.19	254	178	0	15,750	0.0	0	0	0	178	254	178
894.5	36	41	40.5	CLAY	4.5	125	4.628	1	1.000	1	N/A	0.487	2.19	36	4.19	9.19	263	184	0	15,750	0.0	0	0	0	184	263	184
893.5	37	42	41.5	CLAY	4.5	125	4.753	1	1.000	1	N/A	0.487	2.19	37	4.19	9.19	273	191	0	15,750	0.0	0	0	0	191	273	191
892.5	38	43	42.5	CLAY	4.5	125	4.878	1	1.000	1	N/A	0.487	2.19	38	4.19	9.19	282	197	0	15,750	0.0	0	0	0	197	282	197
891.5	39	44	43.5	CLAY	4.5	125	5.003	1	1.000	1	N/A	0.487	2.19	39	4.19	9.19	291	204	0	15,750	0.0	0	0	0	204	291	204
890.5	40	45	44.5	CLAY	4.5	125	5.128	1	1.000	1	N/A	0.487	2.19	40	4.19	9.19	300	210	0	15,750	0.0	0	0	0	210	300	210
889.5	41	46	45.5	CLAY	4.5	125	5.253	1	1.000	1	N/A	0.487	2.19	41	4.19	9.19	309	217	0	15,750	0.0	0	0	0	217	309	217
888.5	42	47	46.5	CLAY	4.5	125	5.378	1	1.000	1	N/A	0.487	2.19	42	4.19	9.19	319	223	0	15,750	0.0	0	0	0	223	319	223
887.5	43	48	47.5	CLAY	4.5	125	5.503	1	1.000	1	N/A	0.487	2.19	43	4.19	9.19	328	229	0	15,750	0.0	0	0	0	229	328	229
886.5	44	49	48.5	CLAY	4.5	125	5.628	1	1.000	1	N/A	0.487	2.19	44	4.19	9.19	337	236	0	15,750	0.0	0	0	0	236	337	236
885.5	45	50	49.5	CLAY	4.5	125	5.753	1	1.000	1	N/A	0.487	2.19	45	4.19	9.19	346	242	0	15,750	0.0	0	0	0	242	346	242
884.5	46	51	50.5	CLAY	4.5	125	5.878	1	1.000	1	N/A	0.487	2.19	46	4.19	9.19	355	249	0	15,750	0.0	0	0	0	249	355	249
883.5	47	52	51.5	CLAY	4.5	125	6.003	1	1.000	1	N/A	0.487	2.19	47	4.19	9.19	365	255	0	15,750	0.0	0	0	0	255	365	255
882.5	48	53	52.5	CLAY	4.5	125	6.128	1	1.000	1	N/A	0.487	2.19	48	4.19	9.19	374	262	0	15,750	0.0	0	0	0	262	374	262
881.5	49	54	53.5	CLAY	4.5	125	6.253	1	1.000	1	N/A	0.487	2.19	49	4.19	9.19	383	268	0	15,750	0.0	0	0	0	268	383	268
880.5	50	55	54.5	CLAY	4.5	125	6.378	1	1.000	1	N/A	0.487	2.19	50	4.19	9.19	392	274	0	15,750	0.0	0	0	0	274	392	274
879.5	51	56	55.5	CLAY	4.5	125	6.503	1	1.000	1	N/A	0.487	2.19	51	4.19	9.19	401	281	0	15,750	0.0	0	0	0	281	401	281
878.5	52	57	56.5	CLAY	4.5	125	6.628	1	1.000	1	N/A	0.487	2.19	52	4.19	9.19	410	287	0	15,750	0.0	0	0	0	287	410	287
877.5	53	58	57.5	CLAY	4.5	125	6.753	1	1.000	1	N/A	0.487	2.19	53	4.19	9.19	420	294	0	15,750	0.0	0	0	0	294	420	294
876.5	54	59	58.5	CLAY	4.5	125	6.878	1	1.000	1	N/A	0.487	2.19	54	4.19	9.19	429	300	0	15,750	0.0	0	0	0	300	429	300
875.5	55	60	59.5	CLAY	4.5	125	7.003	1	1.000	1	N/A	0.487	2.19	55	4.19	9.19	438	307	0	15,750	0.0	0	0	0	307	438	307
874.5	56	61	60.5	CLAY	4.5	125	7.128	1	1.000	1	N/A	0.487	2.19	56	4.19	9.19	447	313	0	15,750	0.0	0	0	0	313	447	313
873.5	57	62	61.5	CLAY	4.5	125	7.253	1	1.000	1	N/A	0.487	2.19	57	4.19	9.19	456	319	0	15,750	0.0	0	0	0	319	456	319
872.5	58	63	62.5	CLAY	4.5	125	7.378	1	1.000	1	N/A	0.487	2.19	58	4.19	9.19	466	326	0	15,750	0.0	0	0	0	326	466	326
871.5	59	64	63.5	CLAY	4.5	125	7.503	1	1.000	1	N/A	0.487	2.19	59	4.19	9.19	475	332	0	15,750	0.0	0	0	0	332	475	332
870.5	60	65	64.5	CLAY	4.5	125	7.628	1	1.000	1	N/A	0.487	2.19	60	4.19	9.19	484	339	0	15,750	0.0	0	0	0	339	484	339
869.5	61	66	65.5	CLAY	4.5	125	7.753	1	1.000	1	N/A	0.487	2.19	61	4.19	9.19	493	345	0	15,750	0.0	0	0	0	345	493	345
868.5	62	67	66.5	CLAY	4.5	125	7.878	1	1.000	1	N/A	0.487	2.19	62	4.19	9.19	502	352	0	15,750	0.0	0	0	0	352	502	352
867.5	63	68	67.5	CLAY	4.5	125	8.003	1	1.000	1	N/A	0.487	2.19	63	4.19	9.19	511	358	0	15,750	0.0	0	0	0	358	511	358
866.5	64	69	68.5	CLAY	4.5	125	8.128	1	1.000	1	N/A	0.487	2.19	64	4.19	9.19	521	364	0	15,750	0.0	0	0	0	364	521	364
865.5	65	70	69.5	CLAY	4.5	125	8.253	1	1.000	1	N/A	0.487	2.19	65	4.19	9.19	530	371	0	15,750	0.0	0	0	0	371	530	371
864.5	66	71	70.5	CLAY	4.5	125	8.378	1	1.000	1	N/A	0.487	2.19	66	4.19	9.19	539	377	0	15,750	0.0	0	0	0	377	539	377
863.5	67	72	71.5	CLAY	4.5	125	8.503	1	1.000	1	N/A	0.487	2.19	67	4.19	9.19	548	384	0	15,750	0.0	0	0	0	384	548	384
862.5	68	73	72.5	CLAY	4.5	125	8.628	1	1.000	1	N/A	0.487	2.19	68	4.19	9.19	557	390	0	15,750	0.0	0	0	0	390	557	390
861.5	69	74	73.5	CLAY	4.5	125	8.753	1	1.000	1	N/A	0.487	2.19	69	4.19	9.19	567	397	0	15,750	0.0	0	0	0	397	567	397
860.5	70	75	74.5	CLAY	4.5	125	8.878	1	1.000	1	N/A	0.487	2.19	70	4.19	9.19	576	403	0	15,750	0.0	0	0	0	403	576	403
859.5	71	76	75.5	CLAY	4.5	125	9.003	1	1.000	1	N/A	0.487	2.19	71	4.19	9.19	585	409	0	15,750	0.0	0	0	0	409	585	409
858.5	72	77	76.5	CLAY	4.5	125	9.128	1	1.000	1	N/A	0.487	2.19	72	4.19	9.19	594	416	0	15,750	0.0	0	0	0	416	594	416
857.5	73	78	77.5	CLAY	4.5	125	9.253	1	1.000	1	N/A	0.487	2.19	73	4.19	9.19	603	422	0	15,750	0.0	0	0	0	422	603	422
856.5	74	79	78.5	CLAY	4.5	125	9.378	1	1.000	1	N/A	0.487	2.19	74	4.19	9.19	613	429	0	15,750	0.0	0	0	0	429	613	429
855.5	75	80	79.5	CLAY	4.5	125	9.503	1	1.000	1	N/A	0.487	2.19	75	4.19	9.19	622	435	0	15,750	0.0	0	0	0	435	622	435
854.5	76	81	80.5	CLAY	4.5	125	9.628	1	1.000	1	N/A	0.487	2.19	76	4.19	9.19	631	442	0	15,750	0.0	0	0	0	442	631	442
853.5	77	82	81.5	CLAY	4.5	125	9.753	1	1.000	1	N/A	0.487	2.19	77	4.19	9.19	640	448	0	15,750	0.0	0	0	0	448	640	448
852.5	78	83	82.5	CLAY	4.5	125	9.878	1	1.000	1	N/A	0.487	2.19	78	4.19	9.19	649	454	0	15,750	0.0	0	0	0	454	649	454
851.5	79	84	83.5	CLAY	4.5	125	10.003	1	1.000	1	N/A	0.487	2.19	79	4.19	9.19	658	461	0	15,750	0.0	0	0	0	461	658	461
850.5	80	85	84.5	CLAY	4.5	125	10.128	1	1.000	1	N/A	0.487	2.19	80	4.19	9.19	668	467	0	15,750	0.0	0	0	0	467	668	467
849.5	81	86	85.5	CLAY	4.5	125	10.253	1	1.000	1	N/A	0.487	2.19	81	4.19	9.19	677	474	0	15,750	0.0	0	0	0	474	677	474
848.5	82	87	86.5	CLAY	4.5	125	10.378	1	1.000	1	N/A	0.487	2.19	82	4.19	9.19	686	480	0	15,750	0.0	0	0	0	480	686	480
847.5	83	88	87.5	CLAY	4.5	125	10.503	1	1.000	1	N/A	0.487	2.19	83	4.19	9.19	695	487	0	15,750	0.0	0	0	0	487	695	487
846.5	84	89	88.5	CLAY	4.5	125	10.628	1	1.000	1	N/A	0.487	2.19	84	4.19	9.19	704	493	0	15,750	0.0	0	0	0	493	704	493
845.5	85	90	89.5	CLAY	4.5	125	10.753	1	1.000	1	N/A	0.487	2.19	85	4.19	9.19	714	500	0	15,750	0.0	0	0	0	500	714	500
844.5	86	91	90.5	CLAY	4.5	125	10.878	1	1.000	1	N/A	0.487	2.19	86	4.19	9.19	723	506	0	15,750	0.0	0	0	0	506	723	506
843.5	87	92	91.5	CLAY	4.5	125	11.003	1	1.000	1	N/A	0.487	2.19	87	4.19	9.19	732	512	0	15,750	0.0	0	0	0	512	732	512
842.5	88	93	92.5	CLAY	4.5	125	11.128	1	1.000	1	N/A	0.487	2.19	88	4.19	9.19	741	519	0	15,750	0.0	0	0	0	519	741	519
841.5	89	94	93.5	CLAY	4.5	125	11.253	1	1.000	1	N/A	0.487	2.19	89	4.19	9.19	750	525	0	15,750	0.0	0	0	0	525	750	525
840.5	90	95	94.5	CLAY	4.5	125	11.378	1	1.000	1	N/A	0.487	2.19	90	4.19	9.19	760	532	0	15,750	0.0	0	0	0	532	760	532
839.5	91	96	95.5	CLAY	4.5	125	11.503	1	1.000	1	N/A	0.487	2.19	91	4.19	9.19	769	538	0	15,750	0.0	0	0	0	538	769	538
838.5	92	97	96.5	CLAY	4.5	125	11.628	1	1.000	1	N/A	0.487	2.19	92	4.19	9.19	778	545	0	15,750	0.0	0	0	0	545	778	545
837.5	93	98	97.5	CLAY	4.5	125	11.753	1	1.000	1	N/A	0.487	2.19	93	4.19	9.19	787	551	0	15,750	0.0	0	0	0	551	787	551
836.5	94	99	98.5	CLAY	4.5	125	11.878	1	1.000	1	N/A	0.487	2.19	94	4.19	9.19	796	557	0	15,750	0.0	0	0	0	557	796	557
835.5	95	100	99.5	CLAY	4.5	125	12.003	1	1.000	1	N/A	0.487	2.19	95	4.19	9.19	805	564	0	15,750	0.0	0	0	0	564	805	564
834.5	96	101	100.5	CLAY	4.5	125	12.128	1	1.000	1	N/A	0.487	2.19	96	4.19	9.19	815	570	0	15,750	0.0	0	0	0	570	815	570
833.5	97	102	101.5	CLAY	4.5	125	12.253	1	1.000	1	N/A	0.487	2.19	97	4.19	9.19	824	577	0	15,750	0.0	0	0	0	577	824	577
832.5	98	103	102.5	CLAY	4.5	125	12.378	1	1.000	1	N/A	0.487	2.19	98	4.19	9.19	833	583	0	15,750	0.0	0	0	0	583	833	583
831.5	99	104	103.5	CLAY	4.5	125	12.503	1	1.000	1	N/A	0.487	2.19	99	4.19	9.19	842	590	0	15,750	0.0	0	0	0	590	842	590
830.5	100	105	104.5	CLAY	4.5	125	12.628	1	1.000	1	N/A	0.487	2.19	100	4.19	9.19	851	596	0	15,750	0.0	0	0	0	596	851	596
829.5	101	106	105.5	CLAY	4.5	125	12.753	1	1.000	1	N/A	0.487	2.19	101	4.19	9.19	861	602	0	15,750	0.0	0	0	0	602	861	602
828.5	102	107	106.5	CLAY	4.5	125	12.878	1	1.000	1	N/A	0.487	2.19	102	4.19	9.19	870	609	0	15,750	0.0	0	0	0	609	870	609
827.5	103	108	107.5	CLAY	4.5	125	13.003	1	1.000	1	N/A	0.487	2.19	103	4.19	9.19	879	615	0	15,750	0.0	0	0	0	615	879	615
826.5	104	109	108.5	CLAY	4.5	125	13.128	1	1.000	1	N/A	0.487	2.19	104	4.19	9.19	888	622	0	15,750	0.0	0	0	0	622	888	622
825.5	105	110	109.5	CLAY	4.5	125	13.253	1	1.000	1	N/A	0.487	2.19	105	4.19	9.19	897	628	0	15,750	0.0	0	0	0	628	897	628
824.5	106	111	110.5	CLAY	4.5	125	13.378	1	1.000	1	N/A	0.487	2.19	106	4.19	9.19	906	635	0	15,750	0.0	0	0	0	635	906	635
823.5	107	112	111.5	CLAY	4.5	125	13.503	1	1.000	1	N/A	0.487	2.19	107	4.19	9.19	916	641	0	15,750	0.0	0	0	0	641	916	641
822.5	108	113	112.5	CLAY	4.5	125	13.628	1	1.000	1	N/A	0.487	2.19	108	4.19	9.19	925	647	0	15,750	0.0	0	0	0	647	925	647
821.5	109	114	113.5	CLAY	4.5	125	13.753	1	1.000	1	N/A	0.487	2.19	109

LA-1143/Palo Comado OC

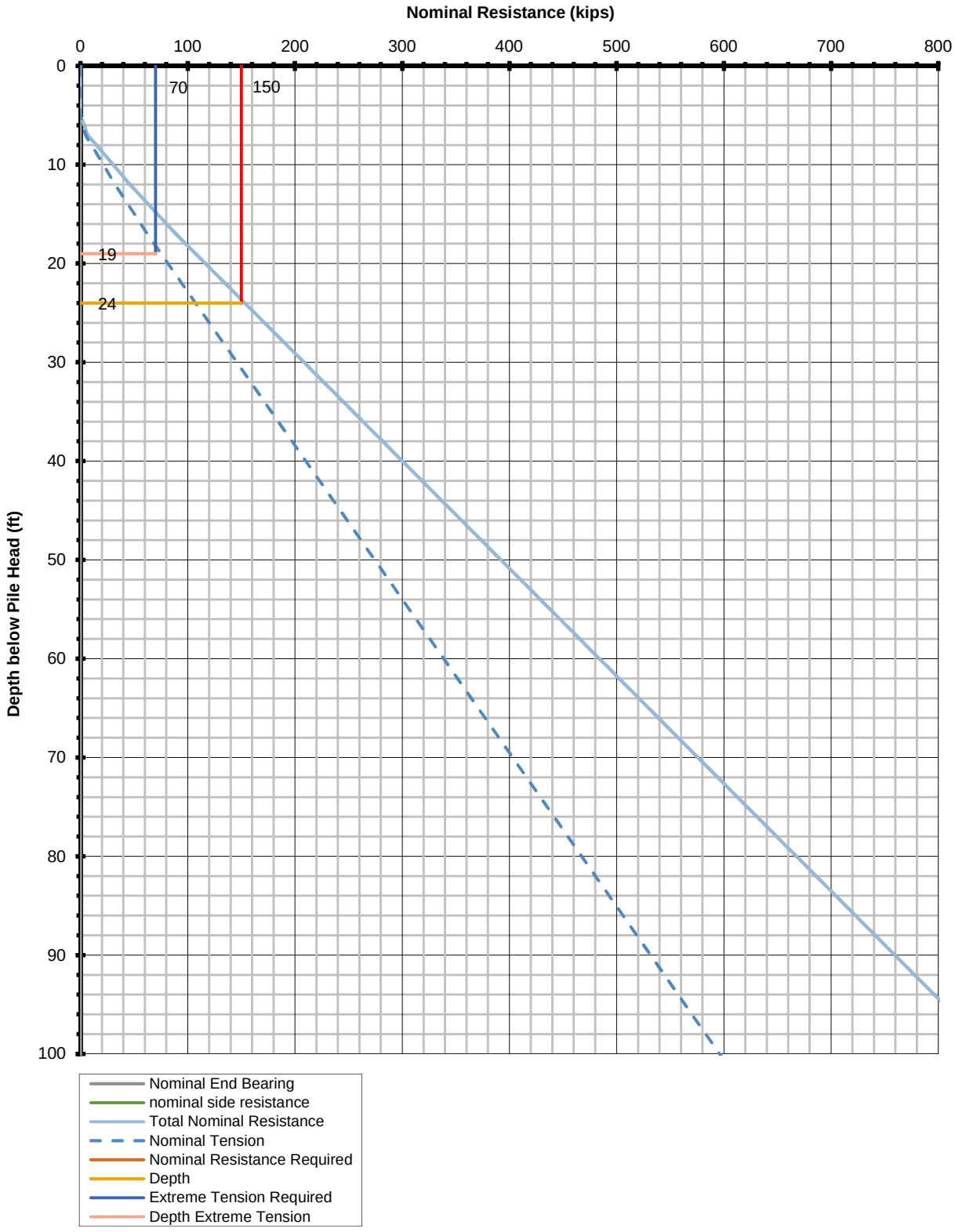
16 inch CIDH Abut 5 Pilaster



GROUP DELTA

LA-1143/Palo Comado OC

16 inch CIDH Abut 5 Pilaster



GROUP DELTA

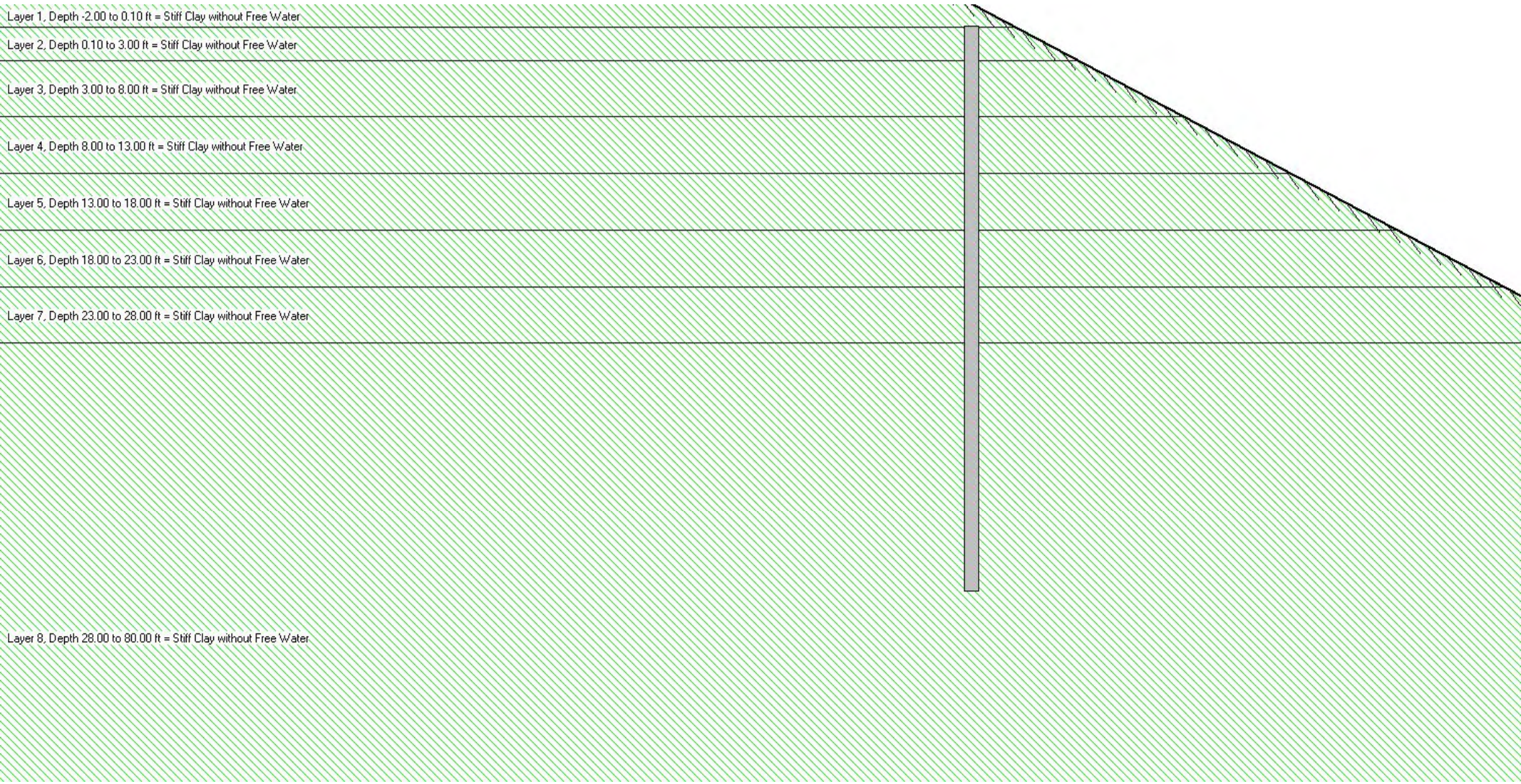
APPENDIX D-3

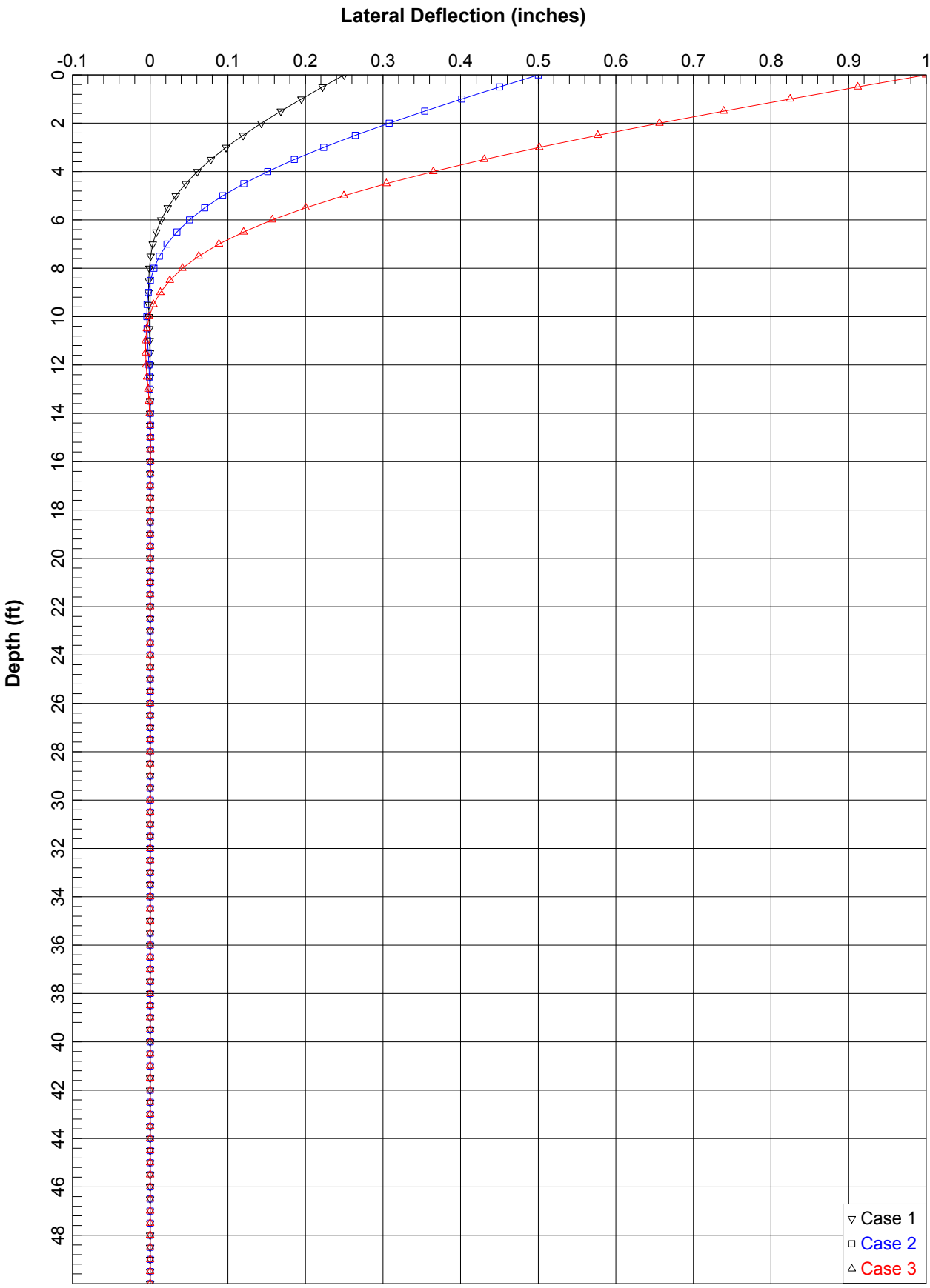
LATERAL PILE CAPACITY CALCULATIONS

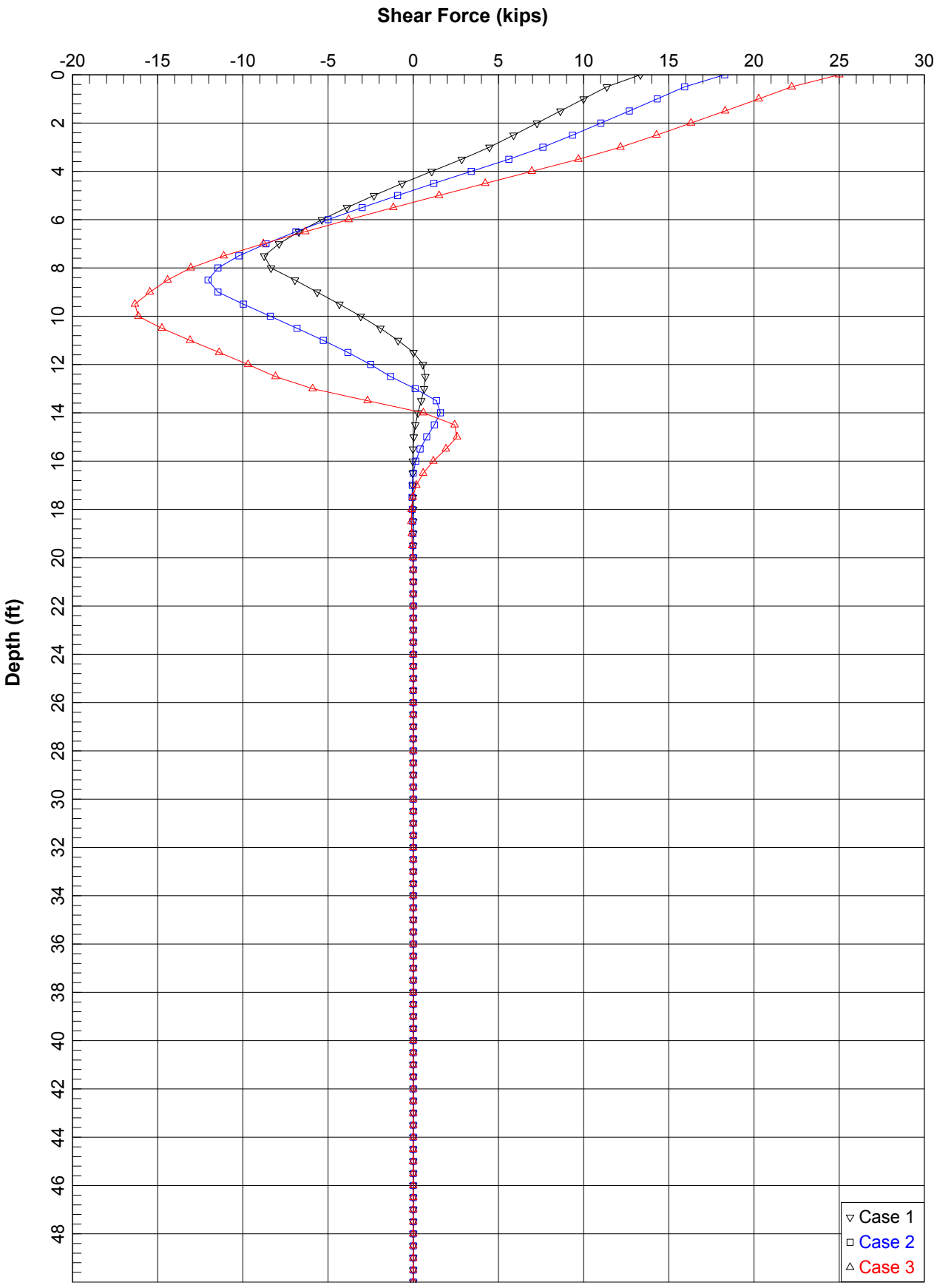
SUPPORT: **ABUTMENT 1R**

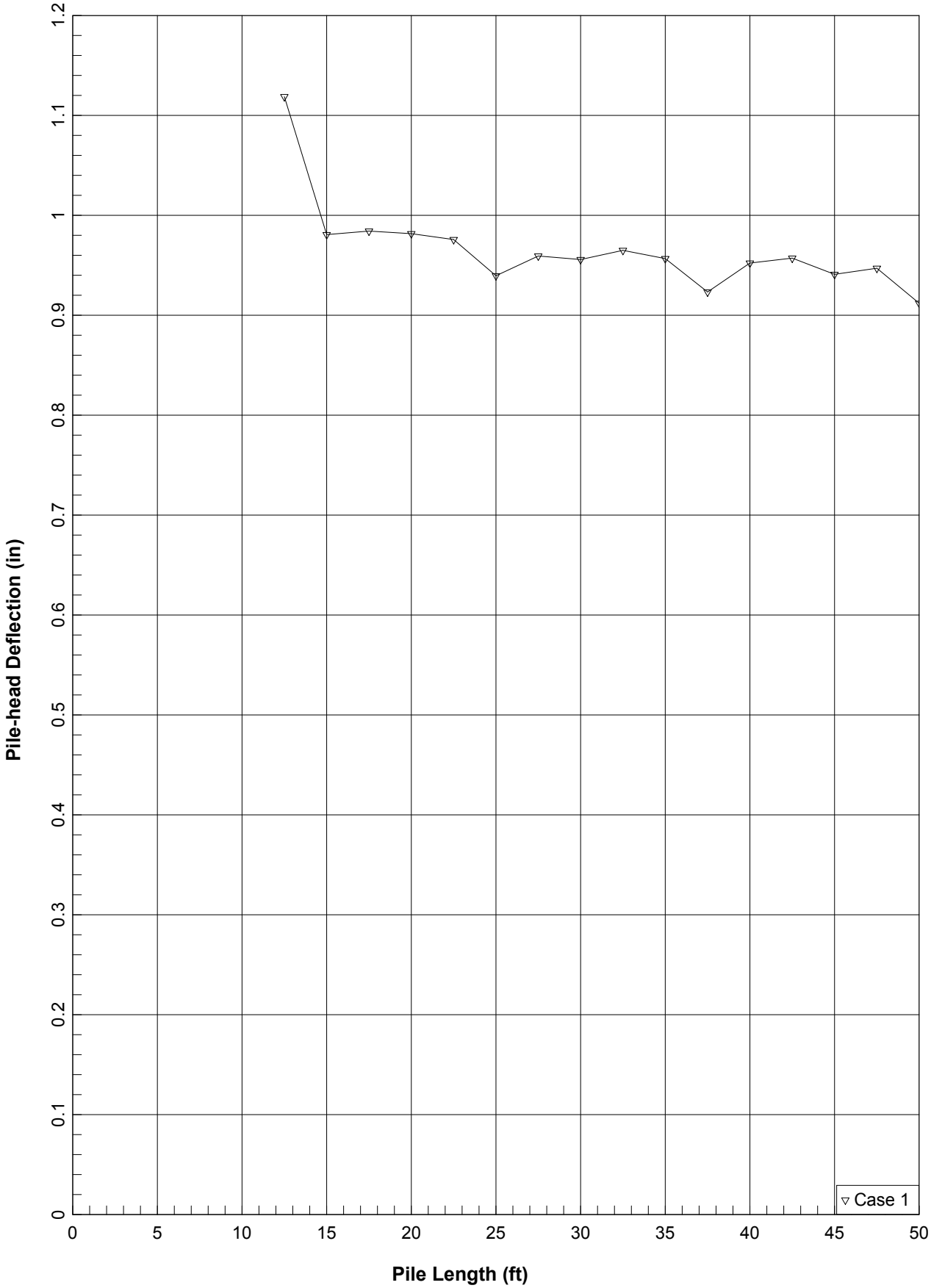
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -2.00 to 0.10 ft = Stiff Clay without Free Water
Layer 2, Depth 0.10 to 3.00 ft = Stiff Clay without Free Water
Layer 3, Depth 3.00 to 8.00 ft = Stiff Clay without Free Water
Layer 4, Depth 8.00 to 13.00 ft = Stiff Clay without Free Water
Layer 5, Depth 13.00 to 18.00 ft = Stiff Clay without Free Water
Layer 6, Depth 18.00 to 23.00 ft = Stiff Clay without Free Water
Layer 7, Depth 23.00 to 28.00 ft = Stiff Clay without Free Water
Layer 8, Depth 28.00 to 80.00 ft = Stiff Clay without Free Water


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

NOTE: LPILE output print shows the undrained shear strength value of individual layers in "psi" - This is an error from LPILE output format.
It should be in "psf" as shown in Summary of Soil Properties (LPILE output)

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1R_long_Critical Length.lp6d
Name of output report file: Abut 1R_long_Critical Length.lp6o
Name of plot output file: Abut 1R_long_Critical Length.lp6p
Name of runtime messeage file: Abut 1R_long_Critical Length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 8:56:30

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections	=	1	
Total Pile Length	=	50.00	ft
Depth of ground surface below top of pile	=	-2.00	ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile	
Cross-sectional Shape	=	Circular	
Section Length	=	50.00000000	ft
Top Width	=	16.00000000	in
Bottom Width	=	16.00000000	in
Top Area	=	201.06192983	in
Bottom Area	=	201.06192983	in
Moment of Inertia at Top	=	1608.49543864	in
Moment of Inertia at Bottom	=	1608.49543864	in
Elastic Modulus	=	3605000.	lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	33.700	degrees
	=	0.588	radians
Pile Batter Angle	=	0.000	degrees
	=	0.000	radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000	ft
Distance from top of pile to bottom of layer	=	0.10000	ft
Effective unit weight at top of layer	=	120.00000	pcf
Effective unit weight at bottom of layer	=	120.00000	pcf
Undrained cohesion at top of layer	=	3500.00000	psi
Undrained cohesion at bottom of layer	=	3500.00000	psi
Epsilon-50 at top of layer	=	0.00700	
Epsilon-50 at bottom of layer	=	0.00700	

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000	ft
Distance from top of pile to bottom of layer	=	3.00000	ft
Effective unit weight at top of layer	=	120.00000	pcf
Effective unit weight at bottom of layer	=	120.00000	pcf
Undrained cohesion at top of layer	=	1500.00000	psi
Undrained cohesion at bottom of layer	=	1500.00000	psi
Epsilon-50 at top of layer	=	0.00700	
Epsilon-50 at bottom of layer	=	0.00700	

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000	ft
Distance from top of pile to bottom of layer	=	8.00000	ft
Effective unit weight at top of layer	=	120.00000	pcf
Effective unit weight at bottom of layer	=	120.00000	pcf
Undrained cohesion at top of layer	=	2500.00000	psi
Undrained cohesion at bottom of layer	=	2500.00000	psi

NOTE: LPILE output print shows the undrained shear strength value of individual layers in "psi" - This is an error from LPILE output format.
It should be in "psf" as shown in Summary of Soil Properties (LPILE output)


```
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 4 is stiff clay without free water

   Distance from top of pile to top of layer           =      8.00000 ft
   Distance from top of pile to bottom of layer        =     13.00000 ft
   Effective unit weight at top of layer               =    120.00000 pcf
   Effective unit weight at bottom of layer            =    120.00000 pcf
   Undrained cohesion at top of layer                  =   1500.00000 psi
   Undrained cohesion at bottom of layer               =   1500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =     13.00000 ft
   Distance from top of pile to bottom of layer        =     18.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   4500.00000 psi
   Undrained cohesion at bottom of layer               =   4500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =     18.00000 ft
   Distance from top of pile to bottom of layer        =     23.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   2500.00000 psi
   Undrained cohesion at bottom of layer               =   2500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 7 is stiff clay without free water

   Distance from top of pile to top of layer           =     23.00000 ft
   Distance from top of pile to bottom of layer        =     28.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   3500.00000 psi
   Undrained cohesion at bottom of layer               =   3500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 8 is stiff clay without free water

   Distance from top of pile to top of layer           =     28.00000 ft
   Distance from top of pile to bottom of layer        =     80.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   4500.00000 psi
   Undrained cohesion at bottom of layer               =   4500.00000 psi
   Epsilon-50 at top of layer                          =      0.00500
   Epsilon-50 at bottom of layer                       =      0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


-------------------------------------------------------------------------------
                        Summary of Soil Properties
-------------------------------------------------------------------------------
```

Layer	Soil Type	Depth	Effective Unit Wt.	Undrained Cohesion	Angle of Friction	Uniaxial Strain	RDQ % or GSI
Num.	(p-y Curve Criteria)	ft	pcf	psf	deg.	psi	
1	Stiff Clay w/o Free Water	-2.000	120.000	3500.000	--	--	--
		0.10000	120.000	3500.000	--	--	--
2	Stiff Clay w/o Free Water	0.10000	120.000	1500.000	--	--	--
		3.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	3.000	120.000	2500.000	--	--	--
		8.000	120.000	2500.000	--	--	--

	0.00700	--	--	--	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water			8.000		120.000		1500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
				13.000		120.000		1500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water			13.000		125.000		4500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
				18.000		125.000		4500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water			18.000		125.000		2500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
				23.000		125.000		2500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
7	Stiff Clay w/o Free Water			23.000		125.000		3500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
				28.000		125.000		3500.000	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
8	Stiff Clay w/o Free Water			28.000		125.000		4500.000	--	--	--
	0.00500	--	--	--	--	--	--	--	--	--	--
				80.000		125.000		4500.000	--	--	--
	0.00500	--	--	--	--	--	--	--	--	--	--

```
-------------------------------------------------------------------------------
                  p-y Modification Factors for Group Action
-------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points
```

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

```
-------------------------------------------------------------------------------
                              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
1	1	V = 24000. lbs	M = 0.0000 in-lbs	154000.	True

```
V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.


-------------------------------------------------------------------------------
    Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
-------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties



-------------------------------------------------------------------------------
                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                              =       24000.000 lbs
Applied moment at pile head                           =           0.000 in-lbs
Axial thrust load on pile head                        =      154000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9121	-3.934E-07	24000.	-0.0136	765.9332	5.799E+09	-598.4165	1968.3203	0.000
6.000	0.8303	145826.	21271.	-0.0136	1491.2109	5.799E+09	-311.1056	2248.2205	0.000
12.000	0.7494	280312.	19385.	-0.0133	2160.0921	5.799E+09	-317.7811	2544.3641	0.000
18.000	0.6702	403091.	17462.	-0.0130	2770.7417	5.799E+09	-323.1819	2893.2084	0.000
24.000	0.5936	513849.	15511.	-0.0125	3321.6091	5.799E+09	-327.2403	3307.8537	0.000
30.000	0.5201	612336.	13539.	-0.0119	3811.4410	5.799E+09	-329.8862	3805.5909	0.000
36.000	0.4504	698361.	11478.	-0.0112	4239.2951	5.799E+09	-357.1429	4757.1758	0.000
42.000	0.3851	770861.	9074.7512	-0.0105	4599.8822	5.799E+09	-443.9904	6917.1283	0.000
48.000	0.3246	826641.	6411.6973	-0.009662	4877.3075	5.799E+09	-443.6942	8201.7836	0.000
54.000	0.2692	865657.	3758.0317	-0.008787	5071.3589	5.799E+09	-440.8610	9826.8689	0.000
60.000	0.2191	887975.	1129.4118	-0.007879	5182.3580	5.799E+09	-435.3457	11919.	0.000
66.000	0.1746	893771.	-1457.5658	-0.006958	5211.1863	5.799E+09	-426.9802	14671.	0.000
72.000	0.1357	883342.	-3985.1898	-0.006038	5159.3140	5.799E+09	-415.5611	18380.	0.000
78.000	0.1022	857107.	-6434.3541	-0.005138	5028.8354	5.799E+09	-400.8270	23539.	0.000
84.000	0.0740	815624.	-8784.0814	-0.004272	4822.5132	5.799E+09	-382.4155	31006.	0.000
90.000	0.0509	759594.	-11011.	-0.003457	4543.8414	5.799E+09	-359.7723	42409.	0.000
96.000	0.0325	689885.	-12840.	-0.002707	4197.1405	5.799E+09	-249.9631	46127.	0.000
102.000	0.0184	610519.	-14107.	-0.002035	3802.4034	5.799E+09	-172.3778	56175.	0.000
108.000	0.008099	524363.	-15059.	-0.001447	3373.8990	5.799E+09	-145.0905	107490.	0.000
114.000	0.001042	432482.	-15764.	-0.000952	2916.9229	5.799E+09	-89.8164	517290.	0.000
120.000	-0.003330	336955.	-15291.	-0.000554	2441.8086	5.799E+09	247.5810	446051.	0.000
126.000	-0.005610	250018.	-13702.	-0.000251	2009.4213	5.799E+09	282.1199	3017709.	0.000
132.000	-0.006338	172999.	-11983.	-3.182E-05	1626.3584	5.799E+09	290.8726	275345.	0.000
138.000	-0.005992	106285.	-10250.	0.000113	1294.5534	5.799E+09	286.8243	287195.	0.000
144.000	-0.004986	49796.	-8567.2199	0.000193	1013.5988	5.799E+09	273.9472	329640.	0.000
150.000	-0.003671	3121.3290	-6984.0968	0.000221	781.4574	5.799E+09	253.7605	414735.	0.000
156.000	-0.002337	-34421.	-4862.8748	0.000205	937.1296	5.799E+09	453.3136	1163996.	0.000
162.000	-0.001216	-55611.	-1770.4302	0.000158	1042.5210	5.799E+09	577.5013	2849802.	0.000
168.000	-0.000440	-55958.	1305.9843	0.000100	1044.2468	5.799E+09	447.9702	6104076.	0.000
174.000	-1.220E-05	-40125.	2697.2012	5.060E-05	965.4977	5.799E+09	15.7688	7756785.	0.000
180.000	0.000167	-23685.	2426.1900	1.758E-05	883.7345	5.799E+09	-106.1058	3816123.	0.000
186.000	0.000199	-11043.	1718.1980	-3.837E-07	820.8568	5.799E+09	-129.8915	3920161.	0.000
192.000	0.000162	-3066.2780	1002.1129	-7.683E-06	781.1836	5.799E+09	-108.8035	4024204.	0.000
198.000	0.000107	996.5008	455.6552	-8.754E-06	770.8894	5.799E+09	-73.3490	4128251.	0.000
204.000	5.717E-05	2417.7622	114.6196	-6.988E-06	777.9581	5.799E+09	-40.3295	4232303.	0.000
210.000	2.275E-05	2384.8495	-55.7007	-4.503E-06	777.7944	5.799E+09	-16.4439	4336359.	0.000
216.000	3.137E-06	1757.6759	-110.3620	-2.360E-06	774.6751	5.799E+09	-1.7765	3397487.	0.000
222.000	-5.566E-06	1064.8666	-103.6997	-8.996E-07	771.2294	5.799E+09	3.9973	4309325.	0.000
228.000	-7.657E-06	514.9416	-75.2088	-8.223E-08	768.4943	5.799E+09	5.4997	4309325.	0.000
234.000	-6.552E-06	162.5133	-44.5917	2.683E-07	766.7414	5.799E+09	4.7060	4309325.	0.000
240.000	-4.438E-06	-20.6549	-20.9109	3.417E-07	766.0359	5.799E+09	3.1876	4309325.	0.000
246.000	-2.452E-06	-89.0483	-6.0638	2.849E-07	766.3761	5.799E+09	1.7614	4309325.	0.000
252.000	-1.019E-06	-93.9468	1.4170	1.902E-07	766.4004	5.799E+09	0.7322	4309325.	0.000
258.000	-1.697E-07	-72.3963	3.9793	1.042E-07	766.2932	5.799E+09	0.1219	4309325.	0.000
264.000	2.305E-07	-46.3876	4.0031	4.271E-08	766.1639	5.799E+09	-0.1140	2967553.	0.000
270.000	3.428E-07	-24.4386	3.1420	6.066E-09	766.0547	5.799E+09	-0.1730	3028544.	0.000
276.000	3.033E-07	-8.6946	2.0645	-1.108E-08	765.9764	5.799E+09	-0.1862	3683003.	0.000
282.000	2.098E-07	0.3557	1.0510	-1.539E-08	765.9349	5.799E+09	-0.1517	4336183.	0.000
288.000	1.186E-07	3.9462	0.3340	-1.316E-08	765.9528	5.799E+09	-0.0873	4418724.	0.000
294.000	5.187E-08	4.3884	-0.0447	-8.853E-09	765.9550	5.799E+09	-0.0389	4501266.	0.000
300.000	1.237E-08	3.4256	-0.1898	-4.810E-09	765.9502	5.799E+09	-0.009452	4583810.	0.000
306.000	-5.854E-09	2.1194	-0.2005	-1.941E-09	765.9437	5.799E+09	0.005886	6033055.	0.000
312.000	-1.092E-08	1.0230	-0.1499	-3.155E-10	765.9383	5.799E+09	0.0110	6033055.	0.000
318.000	-9.640E-09	0.3210	-0.0879	3.798E-10	765.9348	5.799E+09	0.009693	6033055.	0.000
324.000	-6.365E-09	0.0324	-0.0396	5.291E-10	765.9333	5.799E+09	0.006400	6033055.	0.000
330.000	-3.291E-09	-0.1553	-0.0105	4.320E-10	765.9339	5.799E+09	0.003309	6033055.	0.000
336.000	-1.181E-09	-0.1590	0.003674	2.693E-10	765.9340	5.799E+09	0.001411	7165821.	0.000
342.000	-5.891E-11	-0.1118	0.008155	1.292E-10	765.9337	5.799E+09	8.285E-05	8437500.	0.000
348.000	3.695E-10	-0.0614	0.007255	3.964E-11	765.9335	5.799E+09	-0.000383	6216630.	0.000
354.000	4.168E-10	-0.0248	0.004787	-4.945E-12	765.9333	5.799E+09	-0.000440	6329841.	0.000
360.000	3.102E-10	-0.003950	0.002469	-1.981E-11	765.9332	5.799E+09	-0.000333	6443054.	0.000
366.000	1.791E-10	0.004886	0.000882	-1.932E-11	765.9332	5.799E+09	-0.000196	6556269.	0.000
372.000	7.832E-11	0.006673	3.402E-05	-1.334E-11	765.9332	5.799E+09	-8.706E-05	6669485.	0.000
378.000	1.898E-11	0.005319	-0.000292	-7.138E-12	765.9332	5.799E+09	-2.146E-05	6782703.	0.000
384.000	-7.335E-12	0.003187	-0.000325	-2.737E-12	765.9332	5.799E+09	1.032E-05	8437500.	0.000
390.000	-1.386E-11	0.001424	-0.000236	0.000	765.9332	5.799E+09	1.950E-05	8437500.	0.000
396.000	-1.155E-11	0.000362	-0.000128	0.000	765.9332	5.799E+09	1.625E-05	8437500.	0.000
402.000	-6.996E-12	-0.000117	-5.006E-05	0.000	765.9332	5.799E+09	9.838E-06	8437500.	0.000
408.000	-3.163E-12	-0.000240	-7.207E-06	0.000	765.9332	5.799E+09	4.447E-06	8437500.	0.000
414.000	0.000	-0.000204	9.606E-06	0.000	765.9332	5.799E+09	1.157E-06	8437500.	0.000
420.000	0.000	-0.000126	1.213E-05	0.000	765.9332	5.799E+09	-3.165E-07	7575262.	0.000
426.000	0.000	-5.871E-05	9.089E-06	0.000	765.9332	5.799E+09	-6.963E-07	7688489.	0.000
432.000	0.000	-1.670E-05	5.161E-06	0.000	765.9332	5.799E+09	-6.131E-07	7801717.	0.000
438.000	0.000	3.257E-06	2.150E-06	0.000	765.9332	5.799E+09	-3.905E-07	7914946.	0.000
444.000	0.000	9.151E-06	4.131E-07	0.000	765.9332	5.799E+09	-1.884E-07	8028176.	0.000
450.000	0.000	8.254E-06	-3.244E-07	0.000	765.9332	5.799E+09	-5.745E-08	8141407.	0.000
456.000	0.000	5.281E-06	-4.762E-07	0.000	765.9332	5.799E+09	6.837E-09	8437500.	0.000
462.000	0.000	2.549E-06	-3.744E-07	0.000	765.9332	5.799E+09	2.711E-08	8437500.	0.000
468.000	0.000	7.904E-07	-2.176E-07	0.000	765.9332	5.799E+09	2.514E-08	8437500.	0.000
474.000	0.000	-6.391E-08	-9.343E-08	0.000	765.9332	5.799E+09	1.626E-08	8437500.	0.000
480.000	0.000	-3.327E-07	-2.082E-08	0.000	765.9332	5.799E+09	7.943E-09	8437500.	0.000
486.000	0.000	-3.152E-07	1.060E-08	0.000	765.9332	5.799E+09	2.529E-09	8437500.	0.000
492.000	0.000	-2.064E-07	1.779E-08	0.000	765.9332	5.799E+09	-1.319E-10	8437500.	0.000
498.000	0.000	-1.021E-07	1.442E-08	0.000	765.9332	5.799E+09	-9.912E-10	8437500.	0.000
504.000	0.000	-3.342E-08	8.572E-09	0.000	765.9332	5.799E+09	-9.590E-10	8437500.	0.000
510.000	0.000	7.822E-10	3.790E-09	0.000	765.9332	5.799E+09	-6.350E-10	8437500.	0.000

516.000	0.000	1.212E-08	9.310E-10	0.000	765.9332	5.799E+09	-3.179E-10	8437500.	0.000
522.000	0.000	1.201E-08	-3.422E-10	0.000	765.9332	5.799E+09	-1.066E-10	8437500.	0.000
528.000	0.000	8.053E-09	-6.622E-10	0.000	765.9332	5.799E+09	0.000	8437500.	0.000
534.000	0.000	4.081E-09	-5.545E-10	0.000	765.9332	5.799E+09	3.601E-11	8437500.	0.000
540.000	0.000	1.402E-09	-3.370E-10	0.000	765.9332	5.799E+09	3.651E-11	8437500.	0.000
546.000	0.000	3.636E-11	-1.532E-10	0.000	765.9332	5.799E+09	2.476E-11	8437500.	0.000
552.000	0.000	-4.386E-10	-4.086E-11	0.000	765.9332	5.799E+09	1.269E-11	8437500.	0.000
558.000	0.000	-4.562E-10	1.056E-11	0.000	765.9332	5.799E+09	4.452E-12	8437500.	0.000
564.000	0.000	-3.132E-10	2.451E-11	0.000	765.9332	5.799E+09	0.000	8437500.	0.000
570.000	0.000	-1.628E-10	2.113E-11	0.000	765.9332	5.799E+09	-1.323E-12	8437500.	0.000
576.000	0.000	-5.983E-11	1.289E-11	0.000	765.9332	5.799E+09	-1.423E-12	8437500.	0.000
582.000	0.000	-8.050E-12	5.624E-12	0.000	765.9332	5.799E+09	0.000	8437500.	0.000
588.000	0.000	7.757E-12	1.107E-12	0.000	765.9332	5.799E+09	0.000	8437500.	0.000
594.000	0.000	5.331E-12	0.000	0.000	765.9332	5.799E+09	0.000	8437500.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	4218750.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection            =      0.9120718 inches
Computed slope at pile head     =     -0.0136334 radians
Maximum bending moment          =        893771. inch-lbs
Maximum shear force             =         24000. lbs
Depth of maximum bending moment =      66.00000000 inches below pile head
Depth of maximum shear force    =       0.000000 inches below pile head
Number of iterations            =             34
Number of zero deflection points =            13
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear     =          24000. lbs
Moment    =              0. in-lbs
Axial Load =         154000. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
50.000	0.9120718	893771.	24000.
47.500	0.9470066	897793.	24000.
45.000	0.9409146	897654.	24000.
42.500	0.9572321	906528.	24000.
40.000	0.9523236	903814.	24000.
37.500	0.9232317	903733.	24000.
35.000	0.9568154	908207.	24000.
32.500	0.9648989	913965.	24000.
30.000	0.9557677	910097.	24000.
27.500	0.9592670	914088.	24000.
25.000	0.9396384	914848.	24000.
22.500	0.9757770	921933.	24000.
20.000	0.9815498	926476.	24000.
17.500	0.9842665	927683.	24000.
15.000	0.9805971	926757.	24000.
12.500	1.1188632	904015.	24000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 24000.	M = 0.000	154000.	0.91207185	893771.	24000.	-0.01363339

The analysis ended normally.

Abut 1R_long_Critical Length

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1R_long_Ave P.lp6d
Name of output report file: Abut 1R_long_Ave P.lp6o
Name of plot output file: Abut 1R_long_Ave P.lp6p
Name of runtime messeage file: Abut 1R_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 8:58:47

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 33.700 degrees
= 0.588 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 8.00000 ft
Distance from top of pile to bottom of layer = 13.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 1500.00000 psi
Undrained cohesion at bottom of layer = 1500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 13.00000 ft
Distance from top of pile to bottom of layer = 18.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 18.00000 ft
Distance from top of pile to bottom of layer = 23.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 2500.00000 psi
Undrained cohesion at bottom of layer = 2500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 23.00000 ft
Distance from top of pile to bottom of layer = 28.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3500.00000 psi
Undrained cohesion at bottom of layer = 3500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer = 28.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 125.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial qu psi	RQD % or GSI
		Strain Factor Epsilon 50	J Factor	kpy pci	Rock Mass Modulus of Rock Mass Emass psi	krm Initial Modulus Type	Subgrade Reaction Property Mod. pci
1	Stiff Clay w/o Free Water	-2.000	120.000	3500.000	--	--	--
	0.00700	--	--	--	--	--	--
		0.10000	120.000	3500.000	--	--	--
	0.00700	--	--	--	--	--	--
2	Stiff Clay w/o Free Water	0.10000	120.000	1500.000	--	--	--
	0.00700	--	--	--	--	--	--
		3.000	120.000	1500.000	--	--	--
	0.00700	--	--	--	--	--	--
3	Stiff Clay w/o Free Water	3.000	120.000	2500.000	--	--	--
	0.00700	--	--	--	--	--	--
		8.000	120.000	2500.000	--	--	--

	0.00700	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water	8.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		13.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water	13.000	125.000	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		18.000	125.000	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water	18.000	125.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		23.000	125.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
7	Stiff Clay w/o Free Water	23.000	125.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		28.000	125.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
8	Stiff Clay w/o Free Water	28.000	125.000	4500.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--
		80.000	125.000	125.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	154000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	154000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	154000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13327.	-0.004639	765.9332	5.799E+09	-432.9901	5195.8810	0.000
6.000	0.2222	76454.	11357.	-0.004599	1146.1824	5.799E+09	-223.7537	6042.8803	0.000
12.000	0.1948	144779.	10005.	-0.004485	1486.0052	5.799E+09	-226.9100	6988.7838	0.000
18.000	0.1683	204797.	8637.5009	-0.004304	1784.5114	5.799E+09	-228.7942	8154.4354	0.000
24.000	0.1432	256383.	7263.1345	-0.004066	2041.0783	5.799E+09	-229.3279	9611.6145	0.000
30.000	0.1196	299468.	5889.8726	-0.003778	2255.3650	5.799E+09	-228.4261	11463.	0.000
36.000	0.0978	334043.	4473.1609	-0.003450	2427.3282	5.799E+09	-243.8112	14955.	0.000
42.000	0.0782	359522.	2847.6838	-0.003091	2554.0487	5.799E+09	-298.0146	22878.	0.000
48.000	0.0607	373928.	1078.1585	-0.002712	2625.7004	5.799E+09	-291.8272	28835.	0.000
54.000	0.0456	377472.	-645.9873	-0.002323	2643.3224	5.799E+09	-282.8881	37211.	0.000
60.000	0.0328	370470.	-2307.4222	-0.001936	2608.4987	5.799E+09	-270.9235	49489.	0.000
66.000	0.0224	353361.	-3886.8069	-0.001562	2523.4045	5.799E+09	-255.5381	68512.	0.000
72.000	0.0141	326714.	-5361.6644	-0.001210	2390.8762	5.799E+09	-236.0811	100422.	0.000
78.000	0.007860	291256.	-6703.7058	-0.000890	2214.5241	5.799E+09	-211.2661	161267.	0.000
84.000	0.003423	247915.	-7870.5146	-0.000611	1998.9600	5.799E+09	-177.6702	311403.	0.000
90.000	0.000525	197940.	-8751.5062	-0.000381	1750.4053	5.799E+09	-115.9937	1324436.	0.000
96.000	-0.001143	143600.	-8344.7585	-0.000204	1480.1408	5.799E+09	251.5763	1320103.	0.000
102.000	-0.001921	98180.	-6944.1620	-7.877E-05	1254.2379	5.799E+09	215.2892	672486.	0.000
108.000	-0.002089	60416.	-5638.4119	3.280E-06	1066.4156	5.799E+09	219.9608	631860.	0.000
114.000	-0.001881	30512.	-4335.5582	5.032E-05	917.6899	5.799E+09	214.3238	683475.	0.000
120.000	-0.001485	8295.8908	-3086.5655	7.040E-05	807.1935	5.799E+09	202.0071	816287.	0.000
126.000	-0.001037	-6656.3909	-1926.6334	7.125E-05	799.0393	5.799E+09	184.6369	1068638.	0.000
132.000	-0.000630	-14955.	-883.7718	6.007E-05	840.3151	5.799E+09	162.9836	1552630.	0.000
138.000	-0.000316	-17373.	13.5120	4.334E-05	852.3377	5.799E+09	136.1110	2585595.	0.000
144.000	-0.000110	-14873.	563.6969	2.666E-05	839.9070	5.799E+09	47.2840	2585595.	0.000
150.000	4.063E-06	-10658.	702.5277	1.345E-05	818.9395	5.799E+09	-1.0071	1487083.	0.000
156.000	5.169E-05	-6467.8573	638.2329	4.591E-06	798.1016	5.799E+09	-20.4245	2371009.	0.000
162.000	5.915E-05	-3007.2506	470.5994	-3.113E-07	780.8900	5.799E+09	-35.4533	3596104.	0.000
168.000	4.795E-05	-820.0893	275.5284	-2.291E-06	770.0120	5.799E+09	-29.5703	3700132.	0.000
174.000	3.166E-05	303.3244	126.6051	-2.559E-06	767.4418	5.799E+09	-20.0708	3804167.	0.000
180.000	1.724E-05	703.9003	32.6944	-2.038E-06	769.4341	5.799E+09	-11.2328	3908206.	0.000
186.000	7.204E-06	699.4222	-15.4562	-1.312E-06	769.4118	5.799E+09	-4.8174	4012251.	0.000
192.000	1.505E-06	520.8500	-33.0064	-6.803E-07	768.5237	5.799E+09	-1.0327	4116300.	0.000
198.000	-9.598E-07	304.6022	-32.3823	-2.533E-07	767.4481	5.799E+09	1.2408	7756785.	0.000
204.000	-1.534E-06	132.7309	-22.7115	-2.699E-08	766.5933	5.799E+09	1.9828	7756785.	0.000
210.000	-1.284E-06	32.1139	-11.7845	5.829E-08	766.0929	5.799E+09	1.6595	7756785.	0.000
216.000	-8.342E-07	-8.7909	-4.2894	7.036E-08	765.9769	5.799E+09	0.8388	6033055.	0.000
222.000	-4.394E-07	-19.4893	-0.8262	5.573E-08	766.0301	5.799E+09	0.3156	4309325.	0.000
228.000	-1.655E-07	-18.8087	0.4771	3.591E-08	766.0267	5.799E+09	0.1189	4309325.	0.000
234.000	-8.415E-09	-13.8308	0.8518	1.903E-08	766.0020	5.799E+09	0.006044	4309325.	0.000
240.000	6.281E-08	-8.6220	0.7836	7.410E-09	765.9760	5.799E+09	-0.0288	2749764.	0.000
246.000	8.051E-08	-4.4414	0.5841	6.518E-10	765.9553	5.799E+09	-0.0377	2810747.	0.000
252.000	7.063E-08	-1.6142	0.3695	-2.481E-09	765.9412	5.799E+09	-0.0338	2871733.	0.000
258.000	5.074E-08	-0.002461	0.1937	-3.317E-09	765.9332	5.799E+09	-0.0248	2932720.	0.000
264.000	3.082E-08	0.7165	0.0732	-2.948E-09	765.9367	5.799E+09	-0.0154	2993711.	0.000
270.000	1.536E-08	0.8811	0.003579	-2.122E-09	765.9375	5.799E+09	-0.007819	3054703.	0.000
276.000	5.365E-09	0.7634	-0.0297	-1.271E-09	765.9370	5.799E+09	-0.003268	3654708.	0.000
282.000	1.095E-10	0.5273	-0.0397	-6.031E-10	765.9358	5.799E+09	-7.851E-05	4303632.	0.000
288.000	-1.872E-09	0.2878	-0.0343	-1.814E-10	765.9346	5.799E+09	0.001883	6033055.	0.000
294.000	-2.067E-09	0.1159	-0.0224	2.751E-11	765.9337	5.799E+09	0.002078	6033055.	0.000
300.000	-1.542E-09	0.0187	-0.0115	9.713E-11	765.9333	5.799E+09	0.001551	6033055.	0.000
306.000	-9.014E-10	-0.0228	-0.004189	9.501E-11	765.9333	5.799E+09	0.000906	6033055.	0.000
312.000	-4.020E-10	-0.0315	-0.000237	6.693E-11	765.9333	5.799E+09	0.000404	6033055.	0.000
318.000	-9.827E-11	-0.0257	0.001272	3.731E-11	765.9333	5.799E+09	9.881E-05	6033055.	0.000
324.000	4.572E-11	-0.0163	0.001457	1.555E-11	765.9332	5.799E+09	-3.720E-05	4881440.	0.000
330.000	8.831E-11	-0.008267	0.001126	2.822E-12	765.9332	5.799E+09	-7.307E-05	4963989.	0.000
336.000	7.958E-11	-0.002824	0.000703	-2.916E-12	765.9332	5.799E+09	-6.784E-05	5114800.	0.000
342.000	5.332E-11	0.000180	0.000339	-4.284E-12	765.9332	5.799E+09	-5.372E-05	6045109.	0.000
348.000	2.818E-11	0.001249	9.160E-05	-3.545E-12	765.9332	5.799E+09	-2.866E-05	6102121.	0.000
354.000	1.079E-11	0.001286	-2.758E-05	-2.233E-12	765.9332	5.799E+09	-1.107E-05	6157163.	0.000
360.000	1.378E-12	0.000922	-6.506E-05	-1.091E-12	765.9332	5.799E+09	-1.426E-06	6210236.	0.000
366.000	-2.306E-12	0.000507	-6.007E-05	0.000	765.9332	5.799E+09	3.091E-06	8043119.	0.000
372.000	-2.842E-12	0.000202	-3.948E-05	0.000	765.9332	5.799E+09	3.773E-06	7964243.	0.000
378.000	-2.124E-12	3.304E-05	-1.979E-05	0.000	765.9332	5.799E+09	2.792E-06	7885367.	0.000
384.000	-1.201E-12	-3.558E-05	-6.724E-06	0.000	765.9332	5.799E+09	1.563E-06	7806490.	0.000
390.000	0.000	-4.790E-05	-1.085E-07	0.000	765.9332	5.799E+09	6.424E-07	7727614.	0.000
396.000	0.000	-3.705E-05	2.177E-06	0.000	765.9332	5.799E+09	1.196E-07	7648738.	0.000
402.000	0.000	-2.186E-05	2.272E-06	0.000	765.9332	5.799E+09	-8.821E-08	6526577.	0.000
408.000	0.000	-9.822E-06	1.612E-06	0.000	765.9332	5.799E+09	-1.316E-07	6563887.	0.000
414.000	0.000	-2.515E-06	8.926E-07	0.000	765.9332	5.799E+09	-1.084E-07	6599227.	0.000
420.000	0.000	8.910E-07	3.638E-07	0.000	765.9332	5.799E+09	-6.765E-08	6632596.	0.000
426.000	0.000	1.861E-06	6.294E-08	0.000	765.9332	5.799E+09	-3.262E-08	6663994.	0.000
432.000	0.000	1.654E-06	-6.531E-08	0.000	765.9332	5.799E+09	-1.013E-08	6693422.	0.000
438.000	0.000	1.082E-06	-9.241E-08	0.000	765.9332	5.799E+09	1.100E-09	7096605.	0.000
444.000	0.000	5.474E-07	-7.427E-08	0.000	765.9332	5.799E+09	4.946E-09	7017728.	0.000
450.000	0.000	1.907E-07	-4.511E-08	0.000	765.9332	5.799E+09	4.776E-09	6938852.	0.000
456.000	0.000	5.833E-09	-2.102E-08	0.000	765.9332	5.799E+09	3.254E-09	6859976.	0.000
462.000	0.000	-6.192E-08	-6.082E-09	0.000	765.9332	5.799E+09	1.725E-09	6781100.	0.000
468.000	0.000	-6.750E-08	1.075E-09	0.000	765.9332	5.799E+09	6.605E-10	6702224.	0.000
474.000	0.000	-4.924E-08	3.306E-09	0.000	765.9332	5.799E+09	8.297E-11	6623347.	0.000
480.000	0.000	-2.794E-08	3.112E-09	0.000	765.9332	5.799E+09	-1.476E-10	6544471.	0.000
486.000	0.000	-1.193E-08	2.112E-09	0.000	765.9332	5.799E+09	-1.856E-10	6465595.	0.000
492.000	0.000	-2.597E-09	1.124E-09	0.000	765.9332	5.799E+09	-1.439E-10	6386719.	0.000

498.000	0.000	1.563E-09	4.336E-10	0.000	765.9332	5.799E+09	-8.612E-11	6307843.	0.000
504.000	0.000	2.621E-09	5.570E-11	0.000	765.9332	5.799E+09	-3.985E-11	6228966.	0.000
510.000	0.000	2.242E-09	-9.802E-11	0.000	765.9332	5.799E+09	-1.139E-11	6150090.	0.000
516.000	0.000	1.451E-09	-1.254E-10	0.000	765.9332	5.799E+09	2.257E-12	6071214.	0.000
522.000	0.000	7.396E-10	-9.898E-11	0.000	765.9332	5.799E+09	6.561E-12	5992338.	0.000
528.000	0.000	2.638E-10	-6.062E-11	0.000	765.9332	5.799E+09	6.225E-12	5913462.	0.000
534.000	0.000	1.187E-11	-2.903E-11	0.000	765.9332	5.799E+09	4.303E-12	5834585.	0.000
540.000	0.000	-8.519E-11	-9.046E-12	0.000	765.9332	5.799E+09	2.360E-12	5755709.	0.000
546.000	0.000	-9.720E-11	0.000	0.000	765.9332	5.799E+09	0.000	5676833.	0.000
552.000	0.000	-7.423E-11	4.387E-12	0.000	765.9332	5.799E+09	0.000	5597957.	0.000
558.000	0.000	-4.474E-11	4.428E-12	0.000	765.9332	5.799E+09	0.000	5519081.	0.000
564.000	0.000	-2.116E-11	3.189E-12	0.000	765.9332	5.799E+09	0.000	5440204.	0.000
570.000	0.000	-6.486E-12	1.813E-12	0.000	765.9332	5.799E+09	0.000	5361328.	0.000
576.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	5282452.	0.000
582.000	0.000	2.704E-12	0.000	0.000	765.9332	5.799E+09	0.000	5203576.	0.000
588.000	0.000	2.175E-12	0.000	0.000	765.9332	5.799E+09	0.000	5124700.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	5045823.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2483474.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0046390 radians
Maximum bending moment = 377472. inch-lbs
Maximum shear force = 13327. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	18283.	-0.008275	765.9332	5.799E+09	-514.9149	3089.4893	0.000
6.000	0.4504	108076.	15937.	-0.008219	1303.4596	5.799E+09	-266.9855	3557.0267	0.000
12.000	0.4014	206437.	14321.	-0.008056	1792.6685	5.799E+09	-271.8554	4063.8668	0.000
18.000	0.3537	294815.	12679.	-0.007797	2232.2203	5.799E+09	-275.4500	4672.8823	0.000
24.000	0.3078	372994.	11020.	-0.007451	2621.0510	5.799E+09	-277.6960	5412.9374	0.000
30.000	0.2643	440819.	9350.9099	-0.007030	2958.3868	5.799E+09	-278.5160	6323.5843	0.000
36.000	0.2235	498196.	7616.1774	-0.006544	3243.7584	5.799E+09	-299.7282	8048.1535	0.000
42.000	0.1857	544307.	5607.0028	-0.006005	3473.0947	5.799E+09	-369.9967	11953.	0.000
48.000	0.1514	576578.	3396.9865	-0.005425	3633.5952	5.799E+09	-366.6754	14532.	0.000
54.000	0.1206	595097.	1214.8160	-0.004819	3725.7009	5.799E+09	-360.7147	17942.	0.000
60.000	0.0936	600061.	-923.0799	-0.004201	3750.3911	5.799E+09	-351.9173	22568.	0.000
66.000	0.0702	591782.	-2998.9266	-0.003584	3709.2174	5.799E+09	-340.0316	29053.	0.000
72.000	0.0506	570697.	-4993.1574	-0.002983	3604.3471	5.799E+09	-324.7119	38537.	0.000
78.000	0.0344	537376.	-6883.5909	-0.002409	3438.6237	5.799E+09	-305.4325	52225.	0.000
84.000	0.0216	492546.	-8643.7292	-0.001876	3215.6574	5.799E+09	-281.2803	77976.	0.000
90.000	0.0119	437119.	-10239.	-0.001395	2939.9860	5.799E+09	-250.3342	126072.	0.000
96.000	0.004898	372262.	-11457.	-0.000977	2617.4138	5.799E+09	-155.8745	190949.	0.000
102.000	0.000193	301438.	-12038.	-0.000628	2265.1622	5.799E+09	-37.7533	1173411.	0.000
108.000	-0.002640	228966.	-11452.	-0.000354	1904.7175	5.799E+09	233.2384	530014.	0.000
114.000	-0.004052	164672.	-9972.1917	-0.000150	1584.9452	5.799E+09	259.7734	384634.	0.000
120.000	-0.004442	109572.	-8395.7781	-8.237E-06	1310.9020	5.799E+09	265.8312	359084.	0.000
126.000	-0.004151	63938.	-6814.2178	8.153E-05	1083.9348	5.799E+09	261.3556	377763.	0.000
132.000	-0.003463	27651.	-5280.9116	0.000129	903.4590	5.799E+09	249.7465	432655.	0.000
138.000	-0.002604	328.8425	-3834.1683	0.000143	767.5687	5.799E+09	232.5013	535693.	0.000
144.000	-0.001743	-18624.	-2506.0441	0.000134	858.5603	5.799E+09	210.2068	723709.	0.000
150.000	-0.000997	-29991.	-1327.3322	0.000100	915.0971	5.799E+09	182.6972	1099485.	0.000
156.000	-0.000437	-34753.	111.7662	7.528E-05	938.7794	5.799E+09	297.0023	4073684.	0.000
162.000	-9.365E-05	-28789.	1365.9895	4.240E-05	909.1184	5.799E+09	121.0721	7756785.	0.000
168.000	7.141E-05	-18439.	1597.7997	1.797E-05	857.6427	5.799E+09	-43.8021	3680365.	0.000
174.000	0.000122	-9648.7168	1235.5601	3.439E-06	813.9219	5.799E+09	-76.9444	3784397.	0.000
180.000	0.000113	-3618.9209	785.6677	-3.426E-06	783.9322	5.799E+09	-73.0197	3888435.	0.000
186.000	8.088E-05	-214.3742	405.1438	-5.409E-06	766.9994	5.799E+09	-53.8216	3992479.	0.000
192.000	4.777E-05	1252.7998	145.8417	-4.872E-06	772.1641	5.799E+09	-32.6124	4096526.	0.000
198.000	2.243E-05	1544.7286	0.9048	-3.424E-06	773.6160	5.799E+09	-15.6999	4200578.	0.000
204.000	6.675E-06	1269.9852	-60.5612	-1.968E-06	772.2496	5.799E+09	-4.7888	4304634.	0.000
210.000	-1.191E-06	821.6306	-70.3083	-8.859E-07	770.0196	5.799E+09	1.5398	7756785.	0.000
216.000	-3.956E-06	427.9224	-53.7557	-2.394E-07	768.0615	5.799E+09	3.9778	6033055.	0.000
222.000	-4.064E-06	177.0042	-33.0655	7.354E-08	766.8135	5.799E+09	2.9100	4309325.	0.000
228.000	-3.073E-06	31.0000	-17.6863	1.812E-07	766.0873	5.799E+09	2.2074	4309325.	0.000

234.000	-1.890E-06	-35.5660	-6.9909	1.788E-07	766.1101	5.799E+09	1.3577	4309325.	0.000
240.000	-9.280E-07	-53.2214	-0.9184	1.329E-07	766.1979	5.799E+09	0.6665	4309325.	0.000
246.000	-2.961E-07	-46.8317	1.7191	8.109E-08	766.1661	5.799E+09	0.2126	4309325.	0.000
252.000	4.510E-08	-32.7420	2.2928	3.992E-08	766.0960	5.799E+09	-0.0214	2847192.	0.000
258.000	1.830E-07	-19.3915	1.9625	1.295E-08	766.0296	5.799E+09	-0.0887	2908178.	0.000
264.000	2.005E-07	-9.2158	1.3987	-1.849E-09	765.9790	5.799E+09	-0.0992	2969167.	0.000
270.000	1.608E-07	-2.6034	0.8574	-7.964E-09	765.9461	5.799E+09	-0.0812	3030158.	0.000
276.000	1.049E-07	1.0878	0.4215	-8.748E-09	765.9386	5.799E+09	-0.0641	3663729.	0.000
282.000	5.583E-08	2.4709	0.1088	-6.907E-09	765.9455	5.799E+09	-0.0401	4314010.	0.000
288.000	2.206E-08	2.4064	-0.0601	-4.384E-09	765.9451	5.799E+09	-0.0162	4396550.	0.000
294.000	3.228E-09	1.7577	-0.1158	-2.229E-09	765.9419	5.799E+09	-0.002410	4479091.	0.000
300.000	-4.692E-09	1.0206	-0.1089	-7.920E-10	765.9382	5.799E+09	0.004718	6033055.	0.000
306.000	-6.276E-09	0.4524	-0.0758	-2.991E-11	765.9354	5.799E+09	0.006311	6033055.	0.000
312.000	-5.051E-09	0.1109	-0.0416	2.615E-10	765.9337	5.799E+09	0.005079	6033055.	0.000
318.000	-3.138E-09	-0.0478	-0.0169	2.942E-10	765.9334	5.799E+09	0.003155	6033055.	0.000
324.000	-1.521E-09	-0.0929	-0.002887	2.213E-10	765.9336	5.799E+09	0.001530	6033055.	0.000
330.000	-4.819E-10	-0.0829	0.003156	1.304E-10	765.9336	5.799E+09	0.000485	6033055.	0.000
336.000	4.309E-11	-0.0553	0.004500	5.889E-11	765.9334	5.799E+09	-3.675E-05	5118043.	0.000
342.000	2.248E-10	-0.0290	0.003710	1.528E-11	765.9333	5.799E+09	-0.000227	6048862.	0.000
348.000	2.265E-10	-0.0108	0.002339	-5.305E-12	765.9332	5.799E+09	-0.000230	6105841.	0.000
354.000	1.611E-10	-0.000915	0.001151	-1.137E-11	765.9332	5.799E+09	-0.000165	6160851.	0.000
360.000	9.006E-11	0.003022	0.000375	-1.028E-11	765.9332	5.799E+09	-9.327E-05	6213890.	0.000
366.000	3.776E-11	0.003599	-2.343E-05	-6.854E-12	765.9332	5.799E+09	-3.942E-05	6264959.	0.000
372.000	7.802E-12	0.002754	-0.000166	-3.568E-12	765.9332	5.799E+09	-8.211E-06	6314059.	0.000
378.000	-5.057E-12	0.001610	-0.000171	-1.310E-12	765.9332	5.799E+09	6.646E-06	7885367.	0.000
384.000	-7.922E-12	0.000704	-0.000120	0.000	765.9332	5.799E+09	1.031E-05	7806490.	0.000
390.000	-6.420E-12	0.000168	-6.444E-05	0.000	765.9332	5.799E+09	8.268E-06	7727614.	0.000
396.000	-3.875E-12	-7.034E-05	-2.482E-05	0.000	765.9332	5.799E+09	4.939E-06	7648738.	0.000
402.000	-1.766E-12	-0.000131	-3.318E-06	0.000	765.9332	5.799E+09	2.228E-06	7569862.	0.000
408.000	0.000	-0.000111	5.126E-06	0.000	765.9332	5.799E+09	5.860E-07	7490986.	0.000
414.000	0.000	-6.947E-05	6.420E-06	0.000	765.9332	5.799E+09	-1.544E-07	6602585.	0.000
420.000	0.000	-3.376E-05	4.899E-06	0.000	765.9332	5.799E+09	-3.526E-07	6635921.	0.000
426.000	0.000	-1.071E-05	2.883E-06	0.000	765.9332	5.799E+09	-3.196E-07	6667287.	0.000
432.000	0.000	8.543E-07	1.288E-06	0.000	765.9332	5.799E+09	-2.120E-07	6696682.	0.000
438.000	0.000	4.780E-06	3.235E-07	0.000	765.9332	5.799E+09	-1.094E-07	6724106.	0.000
444.000	0.000	4.761E-06	-1.229E-07	0.000	765.9332	5.799E+09	-3.937E-08	6749559.	0.000
450.000	0.000	3.320E-06	-2.475E-07	0.000	765.9332	5.799E+09	-2.147E-09	6773042.	0.000
456.000	0.000	1.798E-06	-2.176E-07	0.000	765.9332	5.799E+09	1.210E-08	6859976.	0.000
462.000	0.000	7.107E-07	-1.409E-07	0.000	765.9332	5.799E+09	1.346E-08	6781100.	0.000
468.000	0.000	1.071E-07	-7.095E-08	0.000	765.9332	5.799E+09	9.855E-09	6702224.	0.000
474.000	0.000	-1.417E-07	-2.459E-08	0.000	765.9332	5.799E+09	5.596E-09	6623347.	0.000
480.000	0.000	-1.890E-07	-6.157E-10	0.000	765.9332	5.799E+09	2.396E-09	6544471.	0.000
486.000	0.000	-1.498E-07	8.177E-09	0.000	765.9332	5.799E+09	5.352E-10	6465595.	0.000
492.000	0.000	-9.123E-08	8.911E-09	0.000	765.9332	5.799E+09	-2.907E-10	6386719.	0.000
498.000	0.000	-4.303E-08	6.536E-09	0.000	765.9332	5.799E+09	-5.009E-10	6307843.	0.000
504.000	0.000	-1.282E-08	3.748E-09	0.000	765.9332	5.799E+09	-4.285E-10	6228966.	0.000
510.000	0.000	1.979E-09	1.634E-09	0.000	765.9332	5.799E+09	-2.761E-10	6150090.	0.000
516.000	0.000	6.834E-09	3.859E-10	0.000	765.9332	5.799E+09	-1.400E-10	6071214.	0.000
522.000	0.000	6.643E-09	-1.830E-10	0.000	765.9332	5.799E+09	-4.964E-11	5992338.	0.000
528.000	0.000	4.659E-09	-3.388E-10	0.000	765.9332	5.799E+09	-2.285E-12	5913462.	0.000
534.000	0.000	2.588E-09	-2.985E-10	0.000	765.9332	5.799E+09	1.570E-11	5834585.	0.000
540.000	0.000	1.080E-09	-1.981E-10	0.000	765.9332	5.799E+09	1.778E-11	5755709.	0.000
546.000	0.000	2.169E-10	-1.044E-10	0.000	765.9332	5.799E+09	1.346E-11	5676833.	0.000
552.000	0.000	-1.739E-10	-3.989E-11	0.000	765.9332	5.799E+09	8.028E-12	5597957.	0.000
558.000	0.000	-2.694E-10	-4.593E-12	0.000	765.9332	5.799E+09	3.739E-12	5519081.	0.000
564.000	0.000	-2.301E-10	9.879E-12	0.000	765.9332	5.799E+09	1.085E-12	5440204.	0.000
570.000	0.000	-1.516E-10	1.249E-11	0.000	765.9332	5.799E+09	0.000	5361328.	0.000
576.000	0.000	-8.062E-11	9.883E-12	0.000	765.9332	5.799E+09	0.000	5282452.	0.000
582.000	0.000	-3.305E-11	6.010E-12	0.000	765.9332	5.799E+09	0.000	5203576.	0.000
588.000	0.000	-8.466E-12	2.735E-12	0.000	765.9332	5.799E+09	0.000	5124700.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	5045823.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2483474.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0082747 radians
Maximum bending moment	=	600061. inch-lbs
Maximum shear force	=	18283. lbs
Depth of maximum bending moment	=	60.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	16
Number of zero deflection points	=	13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	24997.	-0.0147	765.9332	5.799E+09	-612.3405	1837.0214	0.000
6.000	0.9118	152544.	22205.	-0.0146	1524.6245	5.799E+09	-318.4749	2095.6754	0.000
12.000	0.8246	293477.	20273.	-0.0144	2225.5678	5.799E+09	-325.4659	2368.2911	0.000
18.000	0.7391	422413.	18303.	-0.0140	2866.8411	5.799E+09	-331.1849	2688.4291	0.000
24.000	0.6563	539022.	16303.	-0.0135	3446.8074	5.799E+09	-335.5655	3067.6462	0.000
30.000	0.5769	643035.	14281.	-0.0129	3964.1277	5.799E+09	-338.5395	3521.1017	0.000
36.000	0.5014	734246.	12164.	-0.0122	4417.7749	5.799E+09	-366.8412	4389.7015	0.000
42.000	0.4305	811549.	9694.3275	-0.0114	4802.2480	5.799E+09	-456.5286	6362.6751	0.000
48.000	0.3646	871641.	6954.3669	-0.0105	5101.1209	5.799E+09	-456.7916	7516.3305	0.000
54.000	0.3042	914455.	4220.3550	-0.009603	5314.0608	5.799E+09	-454.5457	8965.8757	0.000
60.000	0.2494	940031.	1507.7479	-0.008643	5441.2662	5.799E+09	-449.6567	10817.	0.000
66.000	0.2005	948521.	-1167.1392	-0.007666	5483.4908	5.799E+09	-441.9723	13229.	0.000
72.000	0.1574	940193.	-3786.9960	-0.006689	5442.0701	5.799E+09	-431.3133	16440.	0.000
78.000	0.1202	915439.	-6333.3064	-0.005729	5318.9523	5.799E+09	-417.4568	20839.	0.000
84.000	0.0887	874781.	-8785.9976	-0.004803	5116.7361	5.799E+09	-400.1069	27077.	0.000
90.000	0.0626	818883.	-11123.	-0.003927	4838.7213	5.799E+09	-378.8333	36334.	0.000
96.000	0.0415	748564.	-13057.	-0.003116	4488.9826	5.799E+09	-265.7786	38388.	0.000
102.000	0.0252	667961.	-14413.	-0.002383	4088.0969	5.799E+09	-186.4246	44440.	0.000
108.000	0.0129	580008.	-15462.	-0.001737	3650.6558	5.799E+09	-163.1921	75633.	0.000
114.000	0.004323	485626.	-16336.	-0.001186	3181.2371	5.799E+09	-128.1915	177907.	0.000
120.000	-0.001285	386164.	-16138.	-0.000735	2686.5566	5.799E+09	194.2841	907438.	0.000
126.000	-0.004495	293328.	-14755.	-0.000383	2224.8262	5.799E+09	266.6412	355910.	0.000
132.000	-0.005884	209810.	-13099.	-0.000123	1809.4430	5.799E+09	285.3251	290927.	0.000
138.000	-0.005971	136363.	-11384.	5.608E-05	1444.1493	5.799E+09	286.4076	287785.	0.000
144.000	-0.005211	73097.	-9694.3820	0.000164	1129.4882	5.799E+09	276.8366	318722.	0.000
150.000	-0.003998	19727.	-8086.6347	0.000212	864.0470	5.799E+09	259.0791	388823.	0.000
156.000	-0.002662	-24335.	-5905.3307	0.000210	886.9664	5.799E+09	468.0222	1054966.	0.000
162.000	-0.001477	-51525.	-2683.8765	0.000171	1022.1988	5.799E+09	605.7958	2461192.	0.000
168.000	-0.000612	-56857.	590.9850	0.000115	1048.7188	5.799E+09	485.8247	4765064.	0.000
174.000	-9.962E-05	-44646.	2434.8367	6.225E-05	987.9818	5.799E+09	128.7926	7756785.	0.000
180.000	0.000135	-27754.	2563.0325	2.480E-05	903.9723	5.799E+09	-86.0606	3816123.	0.000
186.000	0.000198	-13935.	1916.8805	3.228E-06	835.2400	5.799E+09	-129.3233	3920161.	0.000
192.000	0.000174	-4757.8212	1178.7101	-6.443E-06	789.5966	5.799E+09	-116.7335	4024204.	0.000
198.000	0.000121	221.4647	579.5348	-8.790E-06	767.0346	5.799E+09	-82.9916	4128251.	0.000
204.000	6.857E-05	2212.8403	185.4598	-7.531E-06	776.9389	5.799E+09	-48.3667	4232303.	0.000
210.000	3.025E-05	2460.8988	-25.2363	-5.112E-06	778.1727	5.799E+09	-21.8653	4336359.	0.000
216.000	7.218E-06	1919.4525	-103.0941	-2.846E-06	775.4797	5.799E+09	-4.0873	3397487.	0.000
222.000	-3.901E-06	1229.0294	-106.9506	-1.217E-06	772.0459	5.799E+09	2.8018	4309325.	0.000
228.000	-7.390E-06	638.2948	-82.6227	-2.512E-07	769.1078	5.799E+09	5.3075	4309325.	0.000
234.000	-6.916E-06	238.0217	-51.7985	2.021E-07	767.1170	5.799E+09	4.9672	4309325.	0.000
240.000	-4.964E-06	16.3396	-26.2005	3.337E-07	766.0144	5.799E+09	3.5655	4309325.	0.000
246.000	-2.911E-06	-77.0006	-9.2312	3.023E-07	766.3161	5.799E+09	2.0909	4309325.	0.000
252.000	-1.336E-06	-94.9936	0.0792	2.134E-07	766.4056	5.799E+09	0.9597	4309325.	0.000
258.000	-3.510E-07	-78.3458	3.5562	1.237E-07	766.3228	5.799E+09	0.2521	4309325.	0.000
264.000	1.479E-07	-52.5480	4.0930	5.596E-08	766.1945	5.799E+09	-0.0731	2967553.	0.000
270.000	3.205E-07	-29.3330	3.3883	1.360E-08	766.0791	5.799E+09	-0.1618	3028544.	0.000
276.000	3.110E-07	-11.9138	2.3302	-7.744E-09	765.9924	5.799E+09	-0.1909	3683003.	0.000
282.000	2.276E-07	-1.3563	1.2641	-1.461E-08	765.9399	5.799E+09	-0.1645	4336183.	0.000
288.000	1.357E-07	3.2819	0.4709	-1.361E-08	765.9495	5.799E+09	-0.0999	4418724.	0.000
294.000	6.421E-08	4.3191	0.0265	-9.681E-09	765.9546	5.799E+09	-0.0482	4501266.	0.000
300.000	1.953E-08	3.6181	-0.1627	-5.575E-09	765.9512	5.799E+09	-0.0149	4583810.	0.000
306.000	-2.689E-09	2.3766	-0.1994	-2.473E-09	765.9450	5.799E+09	0.002703	6033055.	0.000
312.000	-1.015E-08	1.2301	-0.1607	-6.072E-10	765.9393	5.799E+09	0.0102	6033055.	0.000
318.000	-9.975E-09	0.4499	-0.0999	2.619E-10	765.9354	5.799E+09	0.0100	6033055.	0.000
324.000	-7.007E-09	0.0303	-0.0487	5.104E-10	765.9333	5.799E+09	0.007046	6033055.	0.000
330.000	-3.851E-09	-0.1356	-0.0160	4.559E-10	765.9338	5.799E+09	0.003872	6033055.	0.000
336.000	-1.536E-09	-0.1621	0.001159	3.019E-10	765.9340	5.799E+09	0.001835	7165821.	0.000
342.000	-2.282E-10	-0.1223	0.007617	1.548E-10	765.9338	5.799E+09	0.000318	8358624.	0.000
348.000	3.209E-10	-0.0709	0.007591	5.480E-11	765.9335	5.799E+09	-0.000327	6106135.	0.000
354.000	4.295E-10	-0.0313	0.005288	1.908E-12	765.9333	5.799E+09	-0.000441	6161141.	0.000
360.000	3.438E-10	-0.007489	0.002897	-1.816E-11	765.9332	5.799E+09	-0.000356	6214178.	0.000
366.000	2.116E-10	0.003505	0.001166	-2.022E-11	765.9332	5.799E+09	-0.000221	6265245.	0.000
372.000	1.012E-10	0.006541	0.000184	-1.502E-11	765.9332	5.799E+09	-0.000106	6314341.	0.000
378.000	3.136E-11	0.005738	-0.000235	-8.667E-12	765.9332	5.799E+09	-3.325E-05	6361468.	0.000
384.000	-2.834E-12	0.003733	-0.000324	-3.767E-12	765.9332	5.799E+09	3.687E-06	7806490.	0.000
390.000	-1.385E-11	0.001856	-0.000259	0.000	765.9332	5.799E+09	1.784E-05	7727614.	0.000
396.000	-1.335E-11	0.000621	-0.000155	0.000	765.9332	5.799E+09	1.701E-05	7648738.	0.000
402.000	-8.986E-12	-3.325E-06	-6.986E-05	0.000	765.9332	5.799E+09	1.134E-05	7569862.	0.000
408.000	-4.648E-12	-0.000219	-1.844E-05	0.000	765.9332	5.799E+09	5.802E-06	7490986.	0.000
414.000	-1.669E-12	-0.000226	5.155E-06	0.000	765.9332	5.799E+09	2.062E-06	7412109.	0.000
420.000	0.000	-0.000158	1.167E-05	0.000	765.9332	5.799E+09	1.118E-07	7333233.	0.000
426.000	0.000	-8.594E-05	1.032E-05	0.000	765.9332	5.799E+09	-5.619E-07	6667546.	0.000
432.000	0.000	-3.412E-05	6.733E-06	0.000	765.9332	5.799E+09	-6.352E-07	6696938.	0.000
438.000	0.000	-5.130E-06	3.413E-06	0.000	765.9332	5.799E+09	-4.716E-07	6724360.	0.000
444.000	0.000	6.884E-06	1.186E-06	0.000	765.9332	5.799E+09	-2.707E-07	6749811.	0.000
450.000	0.000	9.146E-06	2.376E-08	0.000	765.9332	5.799E+09	-1.165E-07	6773291.	0.000
456.000	0.000	7.203E-06	-4.027E-07	0.000	765.9332	5.799E+09	-2.560E-08	6794801.	0.000
462.000	0.000	4.332E-06	-4.343E-07	0.000	765.9332	5.799E+09	1.504E-08	6781100.	0.000
468.000	0.000	1.998E-06	-3.144E-07	0.000	765.9332	5.799E+09	2.495E-08	6702224.	0.000
474.000	0.000	5.601E-07	-1.768E-07	0.000	765.9332	5.799E+09	2.092E-08	6623347.	0.000
480.000	0.000	-1.251E-07	-7.446E-08	0.000	765.9332	5.799E+09	1.319E-08	6544471.	0.000
486.000	0.000	-3.354E-07	-1.546E-08	0.000	765.9332	5.799E+09	6.476E-09	6465595.	0.000
492.000	0.000	-3.122E-07	1.039E-08	0.000	765.9332	5.799E+09	2.140E-09	6386719.	0.000
498.000	0.000	-2.117E-07	1.665E-08	0.000	765.9332	5.799E+09	-5.297E-11	6307843.	0.000
504.000	0.000	-1.129E-07	1.401E-08	0.000	765.9332	5.799E+09	-8.272E-10	6228966.	0.000
510.000	0.000	-4.376E-08	8.935E-09	0.000	765.9332	5.799E+09	-8.634E-10	6150090.	0.000

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516.000	0.000	-5.659E-09	4.475E-09	0.000	765.9332	5.799E+09	-6.234E-10	6071214.	0.000
522.000	0.000	1.001E-08	1.542E-09	0.000	765.9332	5.799E+09	-3.543E-10	5992338.	0.000
528.000	0.000	1.291E-08	1.917E-11	0.000	765.9332	5.799E+09	-1.533E-10	5913462.	0.000
534.000	0.000	1.029E-08	-5.469E-10	0.000	765.9332	5.799E+09	-3.543E-11	5834585.	0.000
540.000	0.000	6.377E-09	-5.992E-10	0.000	765.9332	5.799E+09	1.800E-11	5755709.	0.000
546.000	0.000	3.108E-09	-4.476E-10	0.000	765.9332	5.799E+09	3.252E-11	5676833.	0.000
552.000	0.000	1.007E-09	-2.642E-10	0.000	765.9332	5.799E+09	2.862E-11	5597957.	0.000
558.000	0.000	-6.503E-11	-1.211E-10	0.000	765.9332	5.799E+09	1.908E-11	5519081.	0.000
564.000	0.000	-4.499E-10	-3.342E-11	0.000	765.9332	5.799E+09	1.016E-11	5440204.	0.000
570.000	0.000	-4.685E-10	9.032E-12	0.000	765.9332	5.799E+09	3.989E-12	5361328.	0.000
576.000	0.000	-3.431E-10	2.267E-11	0.000	765.9332	5.799E+09	0.000	5282452.	0.000
582.000	0.000	-1.974E-10	2.155E-11	0.000	765.9332	5.799E+09	0.000	5203576.	0.000
588.000	0.000	-8.483E-11	1.481E-11	0.000	765.9332	5.799E+09	-1.321E-12	5124700.	0.000
594.000	0.000	-1.976E-11	7.066E-12	0.000	765.9332	5.799E+09	-1.259E-12	5045823.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	-1.096E-12	2483474.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0146990 radians
Maximum bending moment           =        948521. inch-lbs
Maximum shear force              =         24997. lbs
Depth of maximum bending moment  =     66.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             24
Number of zero deflection points =             12
```

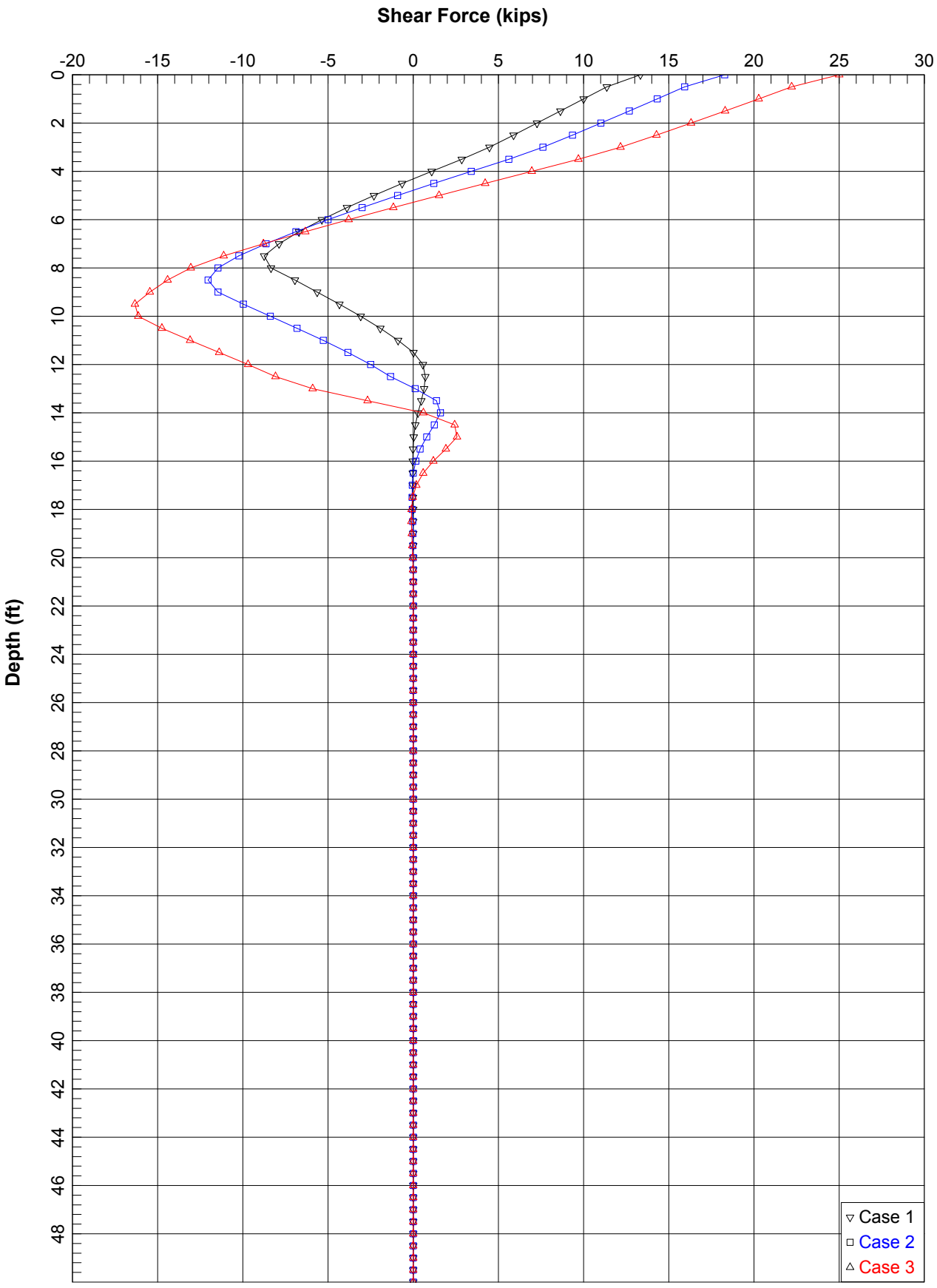
Summary of Pile Response(s)

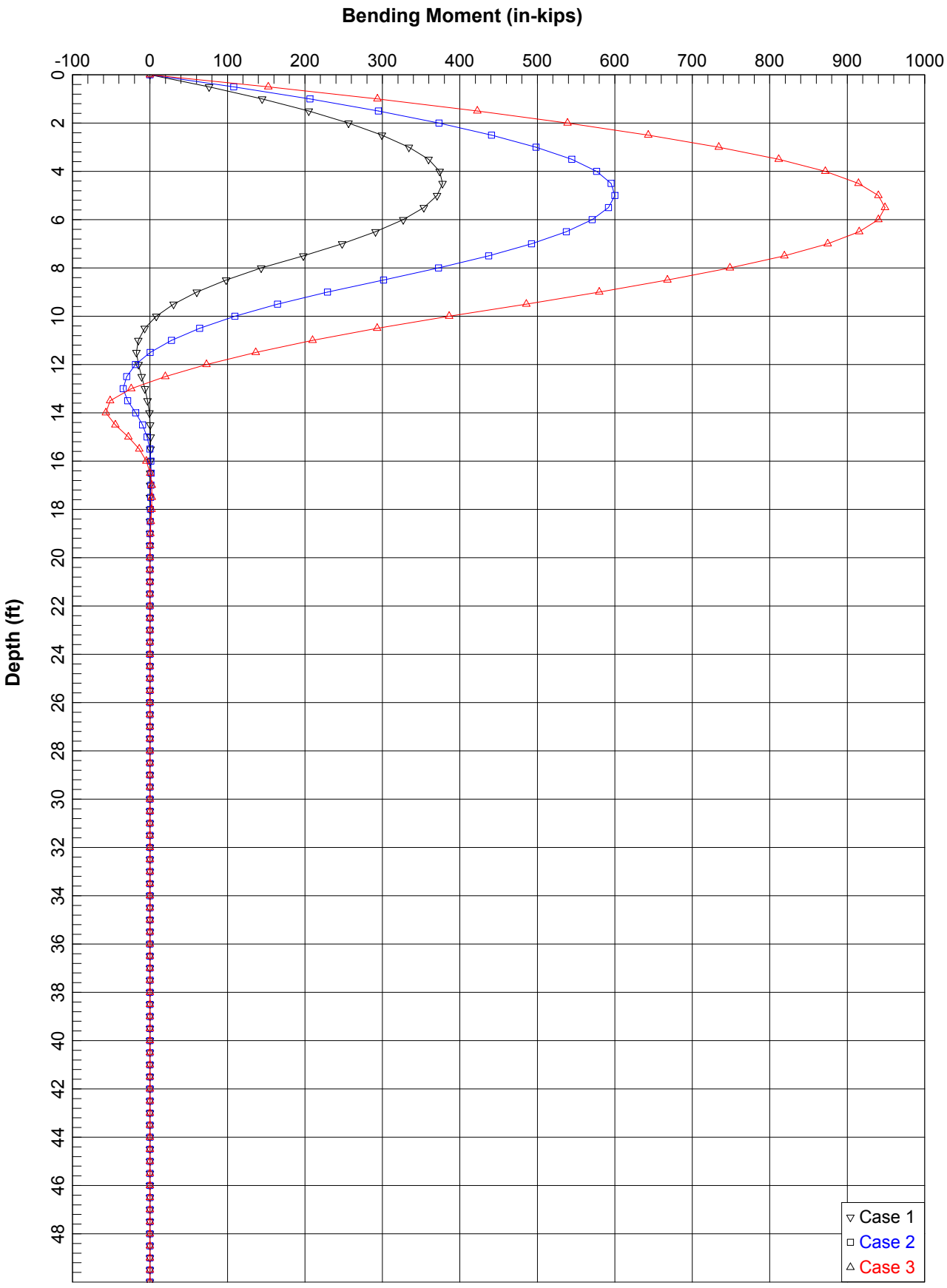
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	154000.	0.25000000	377472.	13327.	-0.00463902
2	4	y = 0.5000	M = 0.000	154000.	0.50000000	600061.	18283.	-0.00827470
3	4	y = 1.0000	M = 0.000	154000.	1.00000000	948521.	24997.	-0.01469901

The analysis ended normally.


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1R_long_Ave P.lp6d
Name of output report file: Abut 1R_long_Ave P.lp6o
Name of plot output file: Abut 1R_long_Ave P.lp6p
Name of runtime messeage file: Abut 1R_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 8:58:47

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 33.700 degrees
= 0.588 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 8.00000 ft
Distance from top of pile to bottom of layer = 13.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 1500.00000 psi
Undrained cohesion at bottom of layer = 1500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 13.00000 ft
Distance from top of pile to bottom of layer = 18.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 18.00000 ft
Distance from top of pile to bottom of layer = 23.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 2500.00000 psi
Undrained cohesion at bottom of layer = 2500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 23.00000 ft
Distance from top of pile to bottom of layer = 28.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3500.00000 psi
Undrained cohesion at bottom of layer = 3500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer = 28.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 125.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial qu psi	RQD % or GSI
		Strain Factor Epsilon 50	J Factor	kpy pci	Rock Mass Modulus of Rock Mass Emass psi	krm Initial Modulus Type	Subgrade Reaction Property Mod. pci
1	Stiff Clay w/o Free Water	-2.000	120.000	3500.000	--	--	--
	0.00700	--	--	--	--	--	--
		0.10000	120.000	3500.000	--	--	--
	0.00700	--	--	--	--	--	--
2	Stiff Clay w/o Free Water	0.10000	120.000	1500.000	--	--	--
	0.00700	--	--	--	--	--	--
		3.000	120.000	1500.000	--	--	--
	0.00700	--	--	--	--	--	--
3	Stiff Clay w/o Free Water	3.000	120.000	2500.000	--	--	--
	0.00700	--	--	--	--	--	--
		8.000	120.000	2500.000	--	--	--

	0.00700	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water	8.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		13.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water	13.000	125.000	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		18.000	125.000	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water	18.000	125.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		23.000	125.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
7	Stiff Clay w/o Free Water	23.000	125.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
		28.000	125.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
8	Stiff Clay w/o Free Water	28.000	125.000	4500.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--
		80.000	125.000	125.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	154000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	154000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	154000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13327.	-0.004639	765.9332	5.799E+09	-432.9901	5195.8810	0.000
6.000	0.2222	76454.	11357.	-0.004599	1146.1824	5.799E+09	-223.7537	6042.8803	0.000
12.000	0.1948	144779.	10005.	-0.004485	1486.0052	5.799E+09	-226.9100	6988.7838	0.000
18.000	0.1683	204797.	8637.5009	-0.004304	1784.5114	5.799E+09	-228.7942	8154.4354	0.000
24.000	0.1432	256383.	7263.1345	-0.004066	2041.0783	5.799E+09	-229.3279	9611.6145	0.000
30.000	0.1196	299468.	5889.8726	-0.003778	2255.3650	5.799E+09	-228.4261	11463.	0.000
36.000	0.0978	334043.	4473.1609	-0.003450	2427.3282	5.799E+09	-243.8112	14955.	0.000
42.000	0.0782	359522.	2847.6838	-0.003091	2554.0487	5.799E+09	-298.0146	22878.	0.000
48.000	0.0607	373928.	1078.1585	-0.002712	2625.7004	5.799E+09	-291.8272	28835.	0.000
54.000	0.0456	377472.	-645.9873	-0.002323	2643.3224	5.799E+09	-282.8881	37211.	0.000
60.000	0.0328	370470.	-2307.4222	-0.001936	2608.4987	5.799E+09	-270.9235	49489.	0.000
66.000	0.0224	353361.	-3886.8069	-0.001562	2523.4045	5.799E+09	-255.5381	68512.	0.000
72.000	0.0141	326714.	-5361.6644	-0.001210	2390.8762	5.799E+09	-236.0811	100422.	0.000
78.000	0.007860	291256.	-6703.7058	-0.000890	2214.5241	5.799E+09	-211.2661	161267.	0.000
84.000	0.003423	247915.	-7870.5146	-0.000611	1998.9600	5.799E+09	-177.6702	311403.	0.000
90.000	0.000525	197940.	-8751.5062	-0.000381	1750.4053	5.799E+09	-115.9937	1324436.	0.000
96.000	-0.001143	143600.	-8344.7585	-0.000204	1480.1408	5.799E+09	251.5763	1320103.	0.000
102.000	-0.001921	98180.	-6944.1620	-7.877E-05	1254.2379	5.799E+09	215.2892	672486.	0.000
108.000	-0.002089	60416.	-5638.4119	3.280E-06	1066.4156	5.799E+09	219.9608	631860.	0.000
114.000	-0.001881	30512.	-4335.5582	5.032E-05	917.6899	5.799E+09	214.3238	683475.	0.000
120.000	-0.001485	8295.8908	-3086.5655	7.040E-05	807.1935	5.799E+09	202.0071	816287.	0.000
126.000	-0.001037	-6656.3909	-1926.6334	7.125E-05	799.0393	5.799E+09	184.6369	1068638.	0.000
132.000	-0.000630	-14955.	-883.7718	6.007E-05	840.3151	5.799E+09	162.9836	1552630.	0.000
138.000	-0.000316	-17373.	13.5120	4.334E-05	852.3377	5.799E+09	136.1110	2585595.	0.000
144.000	-0.000110	-14873.	563.6969	2.666E-05	839.9070	5.799E+09	47.2840	2585595.	0.000
150.000	4.063E-06	-10658.	702.5277	1.345E-05	818.9395	5.799E+09	-1.0071	1487083.	0.000
156.000	5.169E-05	-6467.8573	638.2329	4.591E-06	798.1016	5.799E+09	-20.4245	2371009.	0.000
162.000	5.915E-05	-3007.2506	470.5994	-3.113E-07	780.8900	5.799E+09	-35.4533	3596104.	0.000
168.000	4.795E-05	-820.0893	275.5284	-2.291E-06	770.0120	5.799E+09	-29.5703	3700132.	0.000
174.000	3.166E-05	303.3244	126.6051	-2.559E-06	767.4418	5.799E+09	-20.0708	3804167.	0.000
180.000	1.724E-05	703.9003	32.6944	-2.038E-06	769.4341	5.799E+09	-11.2328	3908206.	0.000
186.000	7.204E-06	699.4222	-15.4562	-1.312E-06	769.4118	5.799E+09	-4.8174	4012251.	0.000
192.000	1.505E-06	520.8500	-33.0064	-6.803E-07	768.5237	5.799E+09	-1.0327	4116300.	0.000
198.000	-9.598E-07	304.6022	-32.3823	-2.533E-07	767.4481	5.799E+09	1.2408	7756785.	0.000
204.000	-1.534E-06	132.7309	-22.7115	-2.699E-08	766.5933	5.799E+09	1.9828	7756785.	0.000
210.000	-1.284E-06	32.1139	-11.7845	5.829E-08	766.0929	5.799E+09	1.6595	7756785.	0.000
216.000	-8.342E-07	-8.7909	-4.2894	7.036E-08	765.9769	5.799E+09	0.8388	6033055.	0.000
222.000	-4.394E-07	-19.4893	-0.8262	5.573E-08	766.0301	5.799E+09	0.3156	4309325.	0.000
228.000	-1.655E-07	-18.8087	0.4771	3.591E-08	766.0267	5.799E+09	0.1189	4309325.	0.000
234.000	-8.415E-09	-13.8308	0.8518	1.903E-08	766.0020	5.799E+09	0.006044	4309325.	0.000
240.000	6.281E-08	-8.6220	0.7836	7.410E-09	765.9760	5.799E+09	-0.0288	2749764.	0.000
246.000	8.051E-08	-4.4414	0.5841	6.518E-10	765.9553	5.799E+09	-0.0377	2810747.	0.000
252.000	7.063E-08	-1.6142	0.3695	-2.481E-09	765.9412	5.799E+09	-0.0338	2871733.	0.000
258.000	5.074E-08	-0.002461	0.1937	-3.317E-09	765.9332	5.799E+09	-0.0248	2932720.	0.000
264.000	3.082E-08	0.7165	0.0732	-2.948E-09	765.9367	5.799E+09	-0.0154	2993711.	0.000
270.000	1.536E-08	0.8811	0.003579	-2.122E-09	765.9375	5.799E+09	-0.007819	3054703.	0.000
276.000	5.365E-09	0.7634	-0.0297	-1.271E-09	765.9370	5.799E+09	-0.003268	3654708.	0.000
282.000	1.095E-10	0.5273	-0.0397	-6.031E-10	765.9358	5.799E+09	-7.851E-05	4303632.	0.000
288.000	-1.872E-09	0.2878	-0.0343	-1.814E-10	765.9346	5.799E+09	0.001883	6033055.	0.000
294.000	-2.067E-09	0.1159	-0.0224	2.751E-11	765.9337	5.799E+09	0.002078	6033055.	0.000
300.000	-1.542E-09	0.0187	-0.0115	9.713E-11	765.9333	5.799E+09	0.001551	6033055.	0.000
306.000	-9.014E-10	-0.0228	-0.004189	9.501E-11	765.9333	5.799E+09	0.000906	6033055.	0.000
312.000	-4.020E-10	-0.0315	-0.000237	6.693E-11	765.9333	5.799E+09	0.000404	6033055.	0.000
318.000	-9.827E-11	-0.0257	0.001272	3.731E-11	765.9333	5.799E+09	9.881E-05	6033055.	0.000
324.000	4.572E-11	-0.0163	0.001457	1.555E-11	765.9332	5.799E+09	-3.720E-05	4881440.	0.000
330.000	8.831E-11	-0.008267	0.001126	2.822E-12	765.9332	5.799E+09	-7.307E-05	4963989.	0.000
336.000	7.958E-11	-0.002824	0.000703	-2.916E-12	765.9332	5.799E+09	-6.784E-05	5114800.	0.000
342.000	5.332E-11	0.000180	0.000339	-4.284E-12	765.9332	5.799E+09	-5.372E-05	6045109.	0.000
348.000	2.818E-11	0.001249	9.160E-05	-3.545E-12	765.9332	5.799E+09	-2.866E-05	6102121.	0.000
354.000	1.079E-11	0.001286	-2.758E-05	-2.233E-12	765.9332	5.799E+09	-1.107E-05	6157163.	0.000
360.000	1.378E-12	0.000922	-6.506E-05	-1.091E-12	765.9332	5.799E+09	-1.426E-06	6210236.	0.000
366.000	-2.306E-12	0.000507	-6.007E-05	0.000	765.9332	5.799E+09	3.091E-06	8043119.	0.000
372.000	-2.842E-12	0.000202	-3.948E-05	0.000	765.9332	5.799E+09	3.773E-06	7964243.	0.000
378.000	-2.124E-12	3.304E-05	-1.979E-05	0.000	765.9332	5.799E+09	2.792E-06	7885367.	0.000
384.000	-1.201E-12	-3.558E-05	-6.724E-06	0.000	765.9332	5.799E+09	1.563E-06	7806490.	0.000
390.000	0.000	-4.790E-05	-1.085E-07	0.000	765.9332	5.799E+09	6.424E-07	7727614.	0.000
396.000	0.000	-3.705E-05	2.177E-06	0.000	765.9332	5.799E+09	1.196E-07	7648738.	0.000
402.000	0.000	-2.186E-05	2.272E-06	0.000	765.9332	5.799E+09	-8.821E-08	6526577.	0.000
408.000	0.000	-9.822E-06	1.612E-06	0.000	765.9332	5.799E+09	-1.316E-07	6563887.	0.000
414.000	0.000	-2.515E-06	8.926E-07	0.000	765.9332	5.799E+09	-1.084E-07	6599227.	0.000
420.000	0.000	8.910E-07	3.638E-07	0.000	765.9332	5.799E+09	-6.765E-08	6632596.	0.000
426.000	0.000	1.861E-06	6.294E-08	0.000	765.9332	5.799E+09	-3.262E-08	6663994.	0.000
432.000	0.000	1.654E-06	-6.531E-08	0.000	765.9332	5.799E+09	-1.013E-08	6693422.	0.000
438.000	0.000	1.082E-06	-9.241E-08	0.000	765.9332	5.799E+09	1.100E-09	7096605.	0.000
444.000	0.000	5.474E-07	-7.427E-08	0.000	765.9332	5.799E+09	4.946E-09	7017728.	0.000
450.000	0.000	1.907E-07	-4.511E-08	0.000	765.9332	5.799E+09	4.776E-09	6938852.	0.000
456.000	0.000	5.833E-09	-2.102E-08	0.000	765.9332	5.799E+09	3.254E-09	6859976.	0.000
462.000	0.000	-6.192E-08	-6.082E-09	0.000	765.9332	5.799E+09	1.725E-09	6781100.	0.000
468.000	0.000	-6.750E-08	1.075E-09	0.000	765.9332	5.799E+09	6.605E-10	6702224.	0.000
474.000	0.000	-4.924E-08	3.306E-09	0.000	765.9332	5.799E+09	8.297E-11	6623347.	0.000
480.000	0.000	-2.794E-08	3.112E-09	0.000	765.9332	5.799E+09	-1.476E-10	6544471.	0.000
486.000	0.000	-1.193E-08	2.112E-09	0.000	765.9332	5.799E+09	-1.856E-10	6465595.	0.000
492.000	0.000	-2.597E-09	1.124E-09	0.000	765.9332	5.799E+09	-1.439E-10	6386719.	0.000

498.000	0.000	1.563E-09	4.336E-10	0.000	765.9332	5.799E+09	-8.612E-11	6307843.	0.000
504.000	0.000	2.621E-09	5.570E-11	0.000	765.9332	5.799E+09	-3.985E-11	6228966.	0.000
510.000	0.000	2.242E-09	-9.802E-11	0.000	765.9332	5.799E+09	-1.139E-11	6150090.	0.000
516.000	0.000	1.451E-09	-1.254E-10	0.000	765.9332	5.799E+09	2.257E-12	6071214.	0.000
522.000	0.000	7.396E-10	-9.898E-11	0.000	765.9332	5.799E+09	6.561E-12	5992338.	0.000
528.000	0.000	2.638E-10	-6.062E-11	0.000	765.9332	5.799E+09	6.225E-12	5913462.	0.000
534.000	0.000	1.187E-11	-2.903E-11	0.000	765.9332	5.799E+09	4.303E-12	5834585.	0.000
540.000	0.000	-8.519E-11	-9.046E-12	0.000	765.9332	5.799E+09	2.360E-12	5755709.	0.000
546.000	0.000	-9.720E-11	0.000	0.000	765.9332	5.799E+09	0.000	5676833.	0.000
552.000	0.000	-7.423E-11	4.387E-12	0.000	765.9332	5.799E+09	0.000	5597957.	0.000
558.000	0.000	-4.474E-11	4.428E-12	0.000	765.9332	5.799E+09	0.000	5519081.	0.000
564.000	0.000	-2.116E-11	3.189E-12	0.000	765.9332	5.799E+09	0.000	5440204.	0.000
570.000	0.000	-6.486E-12	1.813E-12	0.000	765.9332	5.799E+09	0.000	5361328.	0.000
576.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	5282452.	0.000
582.000	0.000	2.704E-12	0.000	0.000	765.9332	5.799E+09	0.000	5203576.	0.000
588.000	0.000	2.175E-12	0.000	0.000	765.9332	5.799E+09	0.000	5124700.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	5045823.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2483474.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0046390 radians
Maximum bending moment = 377472. inch-lbs
Maximum shear force = 13327. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	18283.	-0.008275	765.9332	5.799E+09	-514.9149	3089.4893	0.000
6.000	0.4504	108076.	15937.	-0.008219	1303.4596	5.799E+09	-266.9855	3557.0267	0.000
12.000	0.4014	206437.	14321.	-0.008056	1792.6685	5.799E+09	-271.8554	4063.8668	0.000
18.000	0.3537	294815.	12679.	-0.007797	2232.2203	5.799E+09	-275.4500	4672.8823	0.000
24.000	0.3078	372994.	11020.	-0.007451	2621.0510	5.799E+09	-277.6960	5412.9374	0.000
30.000	0.2643	440819.	9350.9099	-0.007030	2958.3868	5.799E+09	-278.5160	6323.5843	0.000
36.000	0.2235	498196.	7616.1774	-0.006544	3243.7584	5.799E+09	-299.7282	8048.1535	0.000
42.000	0.1857	544307.	5607.0028	-0.006005	3473.0947	5.799E+09	-369.9967	11953.	0.000
48.000	0.1514	576578.	3396.9865	-0.005425	3633.5952	5.799E+09	-366.6754	14532.	0.000
54.000	0.1206	595097.	1214.8160	-0.004819	3725.7009	5.799E+09	-360.7147	17942.	0.000
60.000	0.0936	600061.	-923.0799	-0.004201	3750.3911	5.799E+09	-351.9173	22568.	0.000
66.000	0.0702	591782.	-2998.9266	-0.003584	3709.2174	5.799E+09	-340.0316	29053.	0.000
72.000	0.0506	570697.	-4993.1574	-0.002983	3604.3471	5.799E+09	-324.7119	38537.	0.000
78.000	0.0344	537376.	-6883.5909	-0.002409	3438.6237	5.799E+09	-305.4325	52225.	0.000
84.000	0.0216	492546.	-8643.7292	-0.001876	3215.6574	5.799E+09	-281.2803	77976.	0.000
90.000	0.0119	437119.	-10239.	-0.001395	2939.9860	5.799E+09	-250.3342	126072.	0.000
96.000	0.004898	372262.	-11457.	-0.000977	2617.4138	5.799E+09	-155.8745	190949.	0.000
102.000	0.000193	301438.	-12038.	-0.000628	2265.1622	5.799E+09	-37.7533	1173411.	0.000
108.000	-0.002640	228966.	-11452.	-0.000354	1904.7175	5.799E+09	233.2384	530014.	0.000
114.000	-0.004052	164672.	-9972.1917	-0.000150	1584.9452	5.799E+09	259.7734	384634.	0.000
120.000	-0.004442	109572.	-8395.7781	-8.237E-06	1310.9020	5.799E+09	265.8312	359084.	0.000
126.000	-0.004151	63938.	-6814.2178	8.153E-05	1083.9348	5.799E+09	261.3556	377763.	0.000
132.000	-0.003463	27651.	-5280.9116	0.000129	903.4590	5.799E+09	249.7465	432655.	0.000
138.000	-0.002604	328.8425	-3834.1683	0.000143	767.5687	5.799E+09	232.5013	535693.	0.000
144.000	-0.001743	-18624.	-2506.0441	0.000134	858.5603	5.799E+09	210.2068	723709.	0.000
150.000	-0.000997	-29991.	-1327.3322	0.000100	915.0971	5.799E+09	182.6972	1099485.	0.000
156.000	-0.000437	-34753.	111.7662	7.528E-05	938.7794	5.799E+09	297.0023	4073684.	0.000
162.000	-9.365E-05	-28789.	1365.9895	4.240E-05	909.1184	5.799E+09	121.0721	7756785.	0.000
168.000	7.141E-05	-18439.	1597.7997	1.797E-05	857.6427	5.799E+09	-43.8021	3680365.	0.000
174.000	0.000122	-9648.7168	1235.5601	3.439E-06	813.9219	5.799E+09	-76.9444	3784397.	0.000
180.000	0.000113	-3618.9209	785.6677	-3.426E-06	783.9322	5.799E+09	-73.0197	3888435.	0.000
186.000	8.088E-05	-214.3742	405.1438	-5.409E-06	766.9994	5.799E+09	-53.8216	3992479.	0.000
192.000	4.777E-05	1252.7998	145.8417	-4.872E-06	772.1641	5.799E+09	-32.6124	4096526.	0.000
198.000	2.243E-05	1544.7286	0.9048	-3.424E-06	773.6160	5.799E+09	-15.6999	4200578.	0.000
204.000	6.675E-06	1269.9852	-60.5612	-1.968E-06	772.2496	5.799E+09	-4.7888	4304634.	0.000
210.000	-1.191E-06	821.6306	-70.3083	-8.859E-07	770.0196	5.799E+09	1.5398	7756785.	0.000
216.000	-3.956E-06	427.9224	-53.7557	-2.394E-07	768.0615	5.799E+09	3.9778	6033055.	0.000
222.000	-4.064E-06	177.0042	-33.0655	7.354E-08	766.8135	5.799E+09	2.9100	4309325.	0.000
228.000	-3.073E-06	31.0000	-17.6863	1.812E-07	766.0873	5.799E+09	2.2074	4309325.	0.000

234.000	-1.890E-06	-35.5660	-6.9909	1.788E-07	766.1101	5.799E+09	1.3577	4309325.	0.000
240.000	-9.280E-07	-53.2214	-0.9184	1.329E-07	766.1979	5.799E+09	0.6665	4309325.	0.000
246.000	-2.961E-07	-46.8317	1.7191	8.109E-08	766.1661	5.799E+09	0.2126	4309325.	0.000
252.000	4.510E-08	-32.7420	2.2928	3.992E-08	766.0960	5.799E+09	-0.0214	2847192.	0.000
258.000	1.830E-07	-19.3915	1.9625	1.295E-08	766.0296	5.799E+09	-0.0887	2908178.	0.000
264.000	2.005E-07	-9.2158	1.3987	-1.849E-09	765.9790	5.799E+09	-0.0992	2969167.	0.000
270.000	1.608E-07	-2.6034	0.8574	-7.964E-09	765.9461	5.799E+09	-0.0812	3030158.	0.000
276.000	1.049E-07	1.0878	0.4215	-8.748E-09	765.9386	5.799E+09	-0.0641	3663729.	0.000
282.000	5.583E-08	2.4709	0.1088	-6.907E-09	765.9455	5.799E+09	-0.0401	4314010.	0.000
288.000	2.206E-08	2.4064	-0.0601	-4.384E-09	765.9451	5.799E+09	-0.0162	4396550.	0.000
294.000	3.228E-09	1.7577	-0.1158	-2.229E-09	765.9419	5.799E+09	-0.002410	4479091.	0.000
300.000	-4.692E-09	1.0206	-0.1089	-7.920E-10	765.9382	5.799E+09	0.004718	6033055.	0.000
306.000	-6.276E-09	0.4524	-0.0758	-2.991E-11	765.9354	5.799E+09	0.006311	6033055.	0.000
312.000	-5.051E-09	0.1109	-0.0416	2.615E-10	765.9337	5.799E+09	0.005079	6033055.	0.000
318.000	-3.138E-09	-0.0478	-0.0169	2.942E-10	765.9334	5.799E+09	0.003155	6033055.	0.000
324.000	-1.521E-09	-0.0929	-0.002887	2.213E-10	765.9336	5.799E+09	0.001530	6033055.	0.000
330.000	-4.819E-10	-0.0829	0.003156	1.304E-10	765.9336	5.799E+09	0.000485	6033055.	0.000
336.000	4.309E-11	-0.0553	0.004500	5.889E-11	765.9334	5.799E+09	-3.675E-05	5118043.	0.000
342.000	2.248E-10	-0.0290	0.003710	1.528E-11	765.9333	5.799E+09	-0.000227	6048862.	0.000
348.000	2.265E-10	-0.0108	0.002339	-5.305E-12	765.9332	5.799E+09	-0.000230	6105841.	0.000
354.000	1.611E-10	-0.000915	0.001151	-1.137E-11	765.9332	5.799E+09	-0.000165	6160851.	0.000
360.000	9.006E-11	0.003022	0.000375	-1.028E-11	765.9332	5.799E+09	-9.327E-05	6213890.	0.000
366.000	3.776E-11	0.003599	-2.343E-05	-6.854E-12	765.9332	5.799E+09	-3.942E-05	6264959.	0.000
372.000	7.802E-12	0.002754	-0.000166	-3.568E-12	765.9332	5.799E+09	-8.211E-06	6314059.	0.000
378.000	-5.057E-12	0.001610	-0.000171	-1.310E-12	765.9332	5.799E+09	6.646E-06	7885367.	0.000
384.000	-7.922E-12	0.000704	-0.000120	0.000	765.9332	5.799E+09	1.031E-05	7806490.	0.000
390.000	-6.420E-12	0.000168	-6.444E-05	0.000	765.9332	5.799E+09	8.268E-06	7727614.	0.000
396.000	-3.875E-12	-7.034E-05	-2.482E-05	0.000	765.9332	5.799E+09	4.939E-06	7648738.	0.000
402.000	-1.766E-12	-0.000131	-3.318E-06	0.000	765.9332	5.799E+09	2.228E-06	7569862.	0.000
408.000	0.000	-0.000111	5.126E-06	0.000	765.9332	5.799E+09	5.860E-07	7490986.	0.000
414.000	0.000	-6.947E-05	6.420E-06	0.000	765.9332	5.799E+09	-1.544E-07	6602585.	0.000
420.000	0.000	-3.376E-05	4.899E-06	0.000	765.9332	5.799E+09	-3.526E-07	6635921.	0.000
426.000	0.000	-1.071E-05	2.883E-06	0.000	765.9332	5.799E+09	-3.196E-07	6667287.	0.000
432.000	0.000	8.543E-07	1.288E-06	0.000	765.9332	5.799E+09	-2.120E-07	6696682.	0.000
438.000	0.000	4.780E-06	3.235E-07	0.000	765.9332	5.799E+09	-1.094E-07	6724106.	0.000
444.000	0.000	4.761E-06	-1.229E-07	0.000	765.9332	5.799E+09	-3.937E-08	6749559.	0.000
450.000	0.000	3.320E-06	-2.475E-07	0.000	765.9332	5.799E+09	-2.147E-09	6773042.	0.000
456.000	0.000	1.798E-06	-2.176E-07	0.000	765.9332	5.799E+09	1.210E-08	6859976.	0.000
462.000	0.000	7.107E-07	-1.409E-07	0.000	765.9332	5.799E+09	1.346E-08	6781100.	0.000
468.000	0.000	1.071E-07	-7.095E-08	0.000	765.9332	5.799E+09	9.855E-09	6702224.	0.000
474.000	0.000	-1.417E-07	-2.459E-08	0.000	765.9332	5.799E+09	5.596E-09	6623347.	0.000
480.000	0.000	-1.890E-07	-6.157E-10	0.000	765.9332	5.799E+09	2.396E-09	6544471.	0.000
486.000	0.000	-1.498E-07	8.177E-09	0.000	765.9332	5.799E+09	5.352E-10	6465595.	0.000
492.000	0.000	-9.123E-08	8.911E-09	0.000	765.9332	5.799E+09	-2.907E-10	6386719.	0.000
498.000	0.000	-4.303E-08	6.536E-09	0.000	765.9332	5.799E+09	-5.009E-10	6307843.	0.000
504.000	0.000	-1.282E-08	3.748E-09	0.000	765.9332	5.799E+09	-4.285E-10	6228966.	0.000
510.000	0.000	1.979E-09	1.634E-09	0.000	765.9332	5.799E+09	-2.761E-10	6150090.	0.000
516.000	0.000	6.834E-09	3.859E-10	0.000	765.9332	5.799E+09	-1.400E-10	6071214.	0.000
522.000	0.000	6.643E-09	-1.830E-10	0.000	765.9332	5.799E+09	-4.964E-11	5992338.	0.000
528.000	0.000	4.659E-09	-3.388E-10	0.000	765.9332	5.799E+09	-2.285E-12	5913462.	0.000
534.000	0.000	2.588E-09	-2.985E-10	0.000	765.9332	5.799E+09	1.570E-11	5834585.	0.000
540.000	0.000	1.080E-09	-1.981E-10	0.000	765.9332	5.799E+09	1.778E-11	5755709.	0.000
546.000	0.000	2.169E-10	-1.044E-10	0.000	765.9332	5.799E+09	1.346E-11	5676833.	0.000
552.000	0.000	-1.739E-10	-3.989E-11	0.000	765.9332	5.799E+09	8.028E-12	5597957.	0.000
558.000	0.000	-2.694E-10	-4.593E-12	0.000	765.9332	5.799E+09	3.739E-12	5519081.	0.000
564.000	0.000	-2.301E-10	9.879E-12	0.000	765.9332	5.799E+09	1.085E-12	5440204.	0.000
570.000	0.000	-1.516E-10	1.249E-11	0.000	765.9332	5.799E+09	0.000	5361328.	0.000
576.000	0.000	-8.062E-11	9.883E-12	0.000	765.9332	5.799E+09	0.000	5282452.	0.000
582.000	0.000	-3.305E-11	6.010E-12	0.000	765.9332	5.799E+09	0.000	5203576.	0.000
588.000	0.000	-8.466E-12	2.735E-12	0.000	765.9332	5.799E+09	0.000	5124700.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	5045823.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2483474.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0082747 radians
Maximum bending moment	=	600061. inch-lbs
Maximum shear force	=	18283. lbs
Depth of maximum bending moment	=	60.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	16
Number of zero deflection points	=	13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	24997.	-0.0147	765.9332	5.799E+09	-612.3405	1837.0214	0.000
6.000	0.9118	152544.	22205.	-0.0146	1524.6245	5.799E+09	-318.4749	2095.6754	0.000
12.000	0.8246	293477.	20273.	-0.0144	2225.5678	5.799E+09	-325.4659	2368.2911	0.000
18.000	0.7391	422413.	18303.	-0.0140	2866.8411	5.799E+09	-331.1849	2688.4291	0.000
24.000	0.6563	539022.	16303.	-0.0135	3446.8074	5.799E+09	-335.5655	3067.6462	0.000
30.000	0.5769	643035.	14281.	-0.0129	3964.1277	5.799E+09	-338.5395	3521.1017	0.000
36.000	0.5014	734246.	12164.	-0.0122	4417.7749	5.799E+09	-366.8412	4389.7015	0.000
42.000	0.4305	811549.	9694.3275	-0.0114	4802.2480	5.799E+09	-456.5286	6362.6751	0.000
48.000	0.3646	871641.	6954.3669	-0.0105	5101.1209	5.799E+09	-456.7916	7516.3305	0.000
54.000	0.3042	914455.	4220.3550	-0.009603	5314.0608	5.799E+09	-454.5457	8965.8757	0.000
60.000	0.2494	940031.	1507.7479	-0.008643	5441.2662	5.799E+09	-449.6567	10817.	0.000
66.000	0.2005	948521.	-1167.1392	-0.007666	5483.4908	5.799E+09	-441.9723	13229.	0.000
72.000	0.1574	940193.	-3786.9960	-0.006689	5442.0701	5.799E+09	-431.3133	16440.	0.000
78.000	0.1202	915439.	-6333.3064	-0.005729	5318.9523	5.799E+09	-417.4568	20839.	0.000
84.000	0.0887	874781.	-8785.9976	-0.004803	5116.7361	5.799E+09	-400.1069	27077.	0.000
90.000	0.0626	818883.	-11123.	-0.003927	4838.7213	5.799E+09	-378.8333	36334.	0.000
96.000	0.0415	748564.	-13057.	-0.003116	4488.9826	5.799E+09	-265.7786	38388.	0.000
102.000	0.0252	667961.	-14413.	-0.002383	4088.0969	5.799E+09	-186.4246	44440.	0.000
108.000	0.0129	580008.	-15462.	-0.001737	3650.6558	5.799E+09	-163.1921	75633.	0.000
114.000	0.004323	485626.	-16336.	-0.001186	3181.2371	5.799E+09	-128.1915	177907.	0.000
120.000	-0.001285	386164.	-16138.	-0.000735	2686.5566	5.799E+09	194.2841	907438.	0.000
126.000	-0.004495	293328.	-14755.	-0.000383	2224.8262	5.799E+09	266.6412	355910.	0.000
132.000	-0.005884	209810.	-13099.	-0.000123	1809.4430	5.799E+09	285.3251	290927.	0.000
138.000	-0.005971	136363.	-11384.	5.608E-05	1444.1493	5.799E+09	286.4076	287785.	0.000
144.000	-0.005211	73097.	-9694.3820	0.000164	1129.4882	5.799E+09	276.8366	318722.	0.000
150.000	-0.003998	19727.	-8086.6347	0.000212	864.0470	5.799E+09	259.0791	388823.	0.000
156.000	-0.002662	-24335.	-5905.3307	0.000210	886.9664	5.799E+09	468.0222	1054966.	0.000
162.000	-0.001477	-51525.	-2683.8765	0.000171	1022.1988	5.799E+09	605.7958	2461192.	0.000
168.000	-0.000612	-56857.	590.9850	0.000115	1048.7188	5.799E+09	485.8247	4765064.	0.000
174.000	-9.962E-05	-44646.	2434.8367	6.225E-05	987.9818	5.799E+09	128.7926	7756785.	0.000
180.000	0.000135	-27754.	2563.0325	2.480E-05	903.9723	5.799E+09	-86.0606	3816123.	0.000
186.000	0.000198	-13935.	1916.8805	3.228E-06	835.2400	5.799E+09	-129.3233	3920161.	0.000
192.000	0.000174	-4757.8212	1178.7101	-6.443E-06	789.5966	5.799E+09	-116.7335	4024204.	0.000
198.000	0.000121	221.4647	579.5348	-8.790E-06	767.0346	5.799E+09	-82.9916	4128251.	0.000
204.000	6.857E-05	2212.8403	185.4598	-7.531E-06	776.9389	5.799E+09	-48.3667	4232303.	0.000
210.000	3.025E-05	2460.8988	-25.2363	-5.112E-06	778.1727	5.799E+09	-21.8653	4336359.	0.000
216.000	7.218E-06	1919.4525	-103.0941	-2.846E-06	775.4797	5.799E+09	-4.0873	3397487.	0.000
222.000	-3.901E-06	1229.0294	-106.9506	-1.217E-06	772.0459	5.799E+09	2.8018	4309325.	0.000
228.000	-7.390E-06	638.2948	-82.6227	-2.512E-07	769.1078	5.799E+09	5.3075	4309325.	0.000
234.000	-6.916E-06	238.0217	-51.7985	2.021E-07	767.1170	5.799E+09	4.9672	4309325.	0.000
240.000	-4.964E-06	16.3396	-26.2005	3.337E-07	766.0144	5.799E+09	3.5655	4309325.	0.000
246.000	-2.911E-06	-77.0006	-9.2312	3.023E-07	766.3161	5.799E+09	2.0909	4309325.	0.000
252.000	-1.336E-06	-94.9936	0.0792	2.134E-07	766.4056	5.799E+09	0.9597	4309325.	0.000
258.000	-3.510E-07	-78.3458	3.5562	1.237E-07	766.3228	5.799E+09	0.2521	4309325.	0.000
264.000	1.479E-07	-52.5480	4.0930	5.596E-08	766.1945	5.799E+09	-0.0731	2967553.	0.000
270.000	3.205E-07	-29.3330	3.3883	1.360E-08	766.0791	5.799E+09	-0.1618	3028544.	0.000
276.000	3.110E-07	-11.9138	2.3302	-7.744E-09	765.9924	5.799E+09	-0.1909	3683003.	0.000
282.000	2.276E-07	-1.3563	1.2641	-1.461E-08	765.9399	5.799E+09	-0.1645	4336183.	0.000
288.000	1.357E-07	3.2819	0.4709	-1.361E-08	765.9495	5.799E+09	-0.0999	4418724.	0.000
294.000	6.421E-08	4.3191	0.0265	-9.681E-09	765.9546	5.799E+09	-0.0482	4501266.	0.000
300.000	1.953E-08	3.6181	-0.1627	-5.575E-09	765.9512	5.799E+09	-0.0149	4583810.	0.000
306.000	-2.689E-09	2.3766	-0.1994	-2.473E-09	765.9450	5.799E+09	0.002703	6033055.	0.000
312.000	-1.015E-08	1.2301	-0.1607	-6.072E-10	765.9393	5.799E+09	0.0102	6033055.	0.000
318.000	-9.975E-09	0.4499	-0.0999	2.619E-10	765.9354	5.799E+09	0.0100	6033055.	0.000
324.000	-7.007E-09	0.0303	-0.0487	5.104E-10	765.9333	5.799E+09	0.007046	6033055.	0.000
330.000	-3.851E-09	-0.1356	-0.0160	4.559E-10	765.9338	5.799E+09	0.003872	6033055.	0.000
336.000	-1.536E-09	-0.1621	0.001159	3.019E-10	765.9340	5.799E+09	0.001835	7165821.	0.000
342.000	-2.282E-10	-0.1223	0.007617	1.548E-10	765.9338	5.799E+09	0.000318	8358624.	0.000
348.000	3.209E-10	-0.0709	0.007591	5.480E-11	765.9335	5.799E+09	-0.000327	6106135.	0.000
354.000	4.295E-10	-0.0313	0.005288	1.908E-12	765.9333	5.799E+09	-0.000441	6161141.	0.000
360.000	3.438E-10	-0.007489	0.002897	-1.816E-11	765.9332	5.799E+09	-0.000356	6214178.	0.000
366.000	2.116E-10	0.003505	0.001166	-2.022E-11	765.9332	5.799E+09	-0.000221	6265245.	0.000
372.000	1.012E-10	0.006541	0.000184	-1.502E-11	765.9332	5.799E+09	-0.000106	6314341.	0.000
378.000	3.136E-11	0.005738	-0.000235	-8.667E-12	765.9332	5.799E+09	-3.325E-05	6361468.	0.000
384.000	-2.834E-12	0.003733	-0.000324	-3.767E-12	765.9332	5.799E+09	3.687E-06	7806490.	0.000
390.000	-1.385E-11	0.001856	-0.000259	0.000	765.9332	5.799E+09	1.784E-05	7727614.	0.000
396.000	-1.335E-11	0.000621	-0.000155	0.000	765.9332	5.799E+09	1.701E-05	7648738.	0.000
402.000	-8.986E-12	-3.325E-06	-6.986E-05	0.000	765.9332	5.799E+09	1.134E-05	7569862.	0.000
408.000	-4.648E-12	-0.000219	-1.844E-05	0.000	765.9332	5.799E+09	5.802E-06	7490986.	0.000
414.000	-1.669E-12	-0.000226	5.155E-06	0.000	765.9332	5.799E+09	2.062E-06	7412109.	0.000
420.000	0.000	-0.000158	1.167E-05	0.000	765.9332	5.799E+09	1.118E-07	7333233.	0.000
426.000	0.000	-8.594E-05	1.032E-05	0.000	765.9332	5.799E+09	-5.619E-07	6667546.	0.000
432.000	0.000	-3.412E-05	6.733E-06	0.000	765.9332	5.799E+09	-6.352E-07	6696938.	0.000
438.000	0.000	-5.130E-06	3.413E-06	0.000	765.9332	5.799E+09	-4.716E-07	6724360.	0.000
444.000	0.000	6.884E-06	1.186E-06	0.000	765.9332	5.799E+09	-2.707E-07	6749811.	0.000
450.000	0.000	9.146E-06	2.376E-08	0.000	765.9332	5.799E+09	-1.165E-07	6773291.	0.000
456.000	0.000	7.203E-06	-4.027E-07	0.000	765.9332	5.799E+09	-2.560E-08	6794801.	0.000
462.000	0.000	4.332E-06	-4.343E-07	0.000	765.9332	5.799E+09	1.504E-08	6781100.	0.000
468.000	0.000	1.998E-06	-3.144E-07	0.000	765.9332	5.799E+09	2.495E-08	6702224.	0.000
474.000	0.000	5.601E-07	-1.768E-07	0.000	765.9332	5.799E+09	2.092E-08	6623347.	0.000
480.000	0.000	-1.251E-07	-7.446E-08	0.000	765.9332	5.799E+09	1.319E-08	6544471.	0.000
486.000	0.000	-3.354E-07	-1.546E-08	0.000	765.9332	5.799E+09	6.476E-09	6465595.	0.000
492.000	0.000	-3.122E-07	1.039E-08	0.000	765.9332	5.799E+09	2.140E-09	6386719.	0.000
498.000	0.000	-2.117E-07	1.665E-08	0.000	765.9332	5.799E+09	-5.297E-11	6307843.	0.000
504.000	0.000	-1.129E-07	1.401E-08	0.000	765.9332	5.799E+09	-8.272E-10	6228966.	0.000
510.000	0.000	-4.376E-08	8.935E-09	0.000	765.9332	5.799E+09	-8.634E-10	6150090.	0.000

Abut 1R_long_Ave P

516.000	0.000	-5.659E-09	4.475E-09	0.000	765.9332	5.799E+09	-6.234E-10	6071214.	0.000
522.000	0.000	1.001E-08	1.542E-09	0.000	765.9332	5.799E+09	-3.543E-10	5992338.	0.000
528.000	0.000	1.291E-08	1.917E-11	0.000	765.9332	5.799E+09	-1.533E-10	5913462.	0.000
534.000	0.000	1.029E-08	-5.469E-10	0.000	765.9332	5.799E+09	-3.543E-11	5834585.	0.000
540.000	0.000	6.377E-09	-5.992E-10	0.000	765.9332	5.799E+09	1.800E-11	5755709.	0.000
546.000	0.000	3.108E-09	-4.476E-10	0.000	765.9332	5.799E+09	3.252E-11	5676833.	0.000
552.000	0.000	1.007E-09	-2.642E-10	0.000	765.9332	5.799E+09	2.862E-11	5597957.	0.000
558.000	0.000	-6.503E-11	-1.211E-10	0.000	765.9332	5.799E+09	1.908E-11	5519081.	0.000
564.000	0.000	-4.499E-10	-3.342E-11	0.000	765.9332	5.799E+09	1.016E-11	5440204.	0.000
570.000	0.000	-4.685E-10	9.032E-12	0.000	765.9332	5.799E+09	3.989E-12	5361328.	0.000
576.000	0.000	-3.431E-10	2.267E-11	0.000	765.9332	5.799E+09	0.000	5282452.	0.000
582.000	0.000	-1.974E-10	2.155E-11	0.000	765.9332	5.799E+09	0.000	5203576.	0.000
588.000	0.000	-8.483E-11	1.481E-11	0.000	765.9332	5.799E+09	-1.321E-12	5124700.	0.000
594.000	0.000	-1.976E-11	7.066E-12	0.000	765.9332	5.799E+09	-1.259E-12	5045823.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	-1.096E-12	2483474.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0146990 radians
Maximum bending moment           =        948521. inch-lbs
Maximum shear force              =         24997. lbs
Depth of maximum bending moment  =     66.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             24
Number of zero deflection points =             12
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

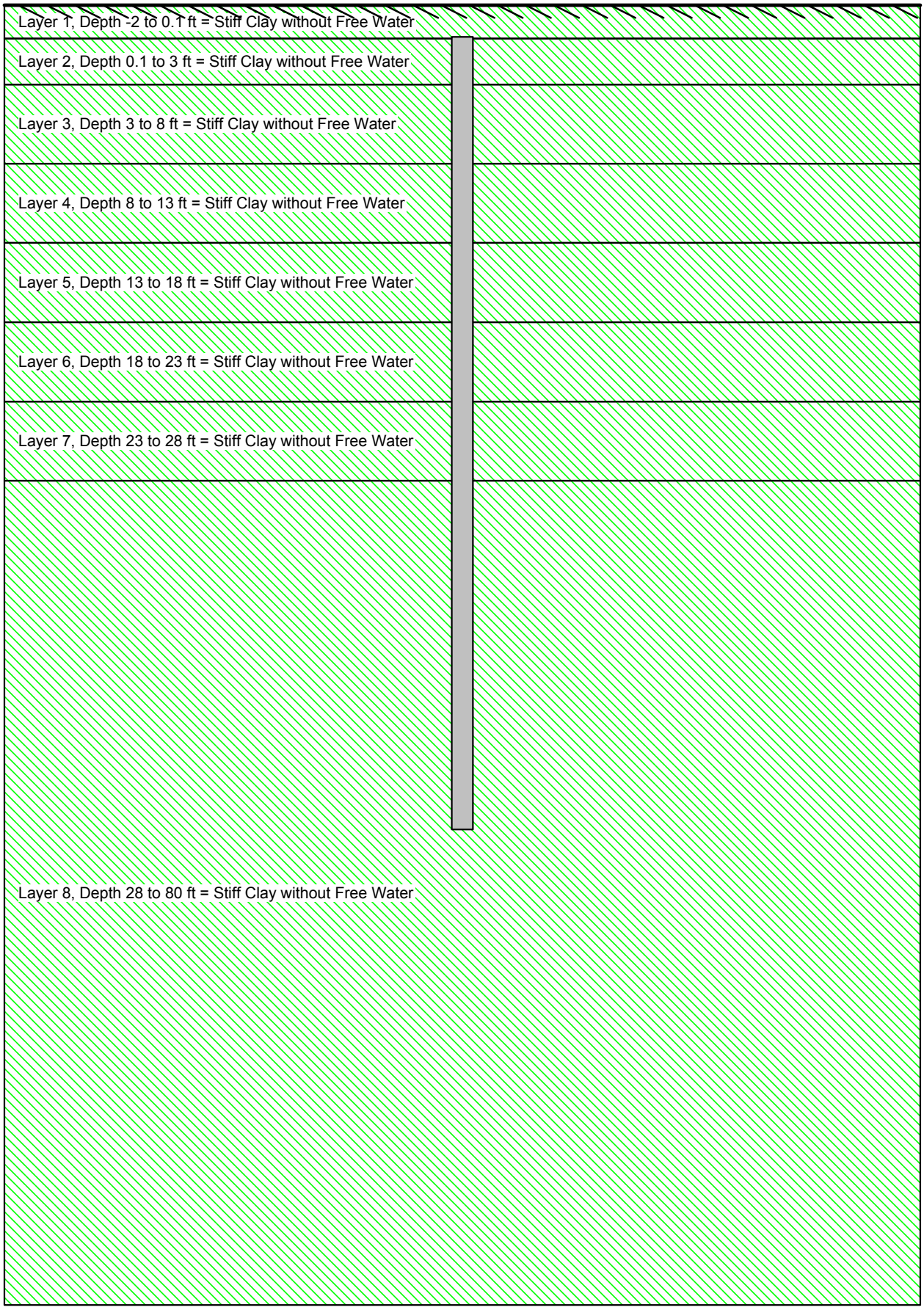
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	154000.	0.25000000	377472.	13327.	-0.00463902
2	4	y = 0.5000	M = 0.000	154000.	0.50000000	600061.	18283.	-0.00827470
3	4	y = 1.0000	M = 0.000	154000.	1.00000000	948521.	24997.	-0.01469901

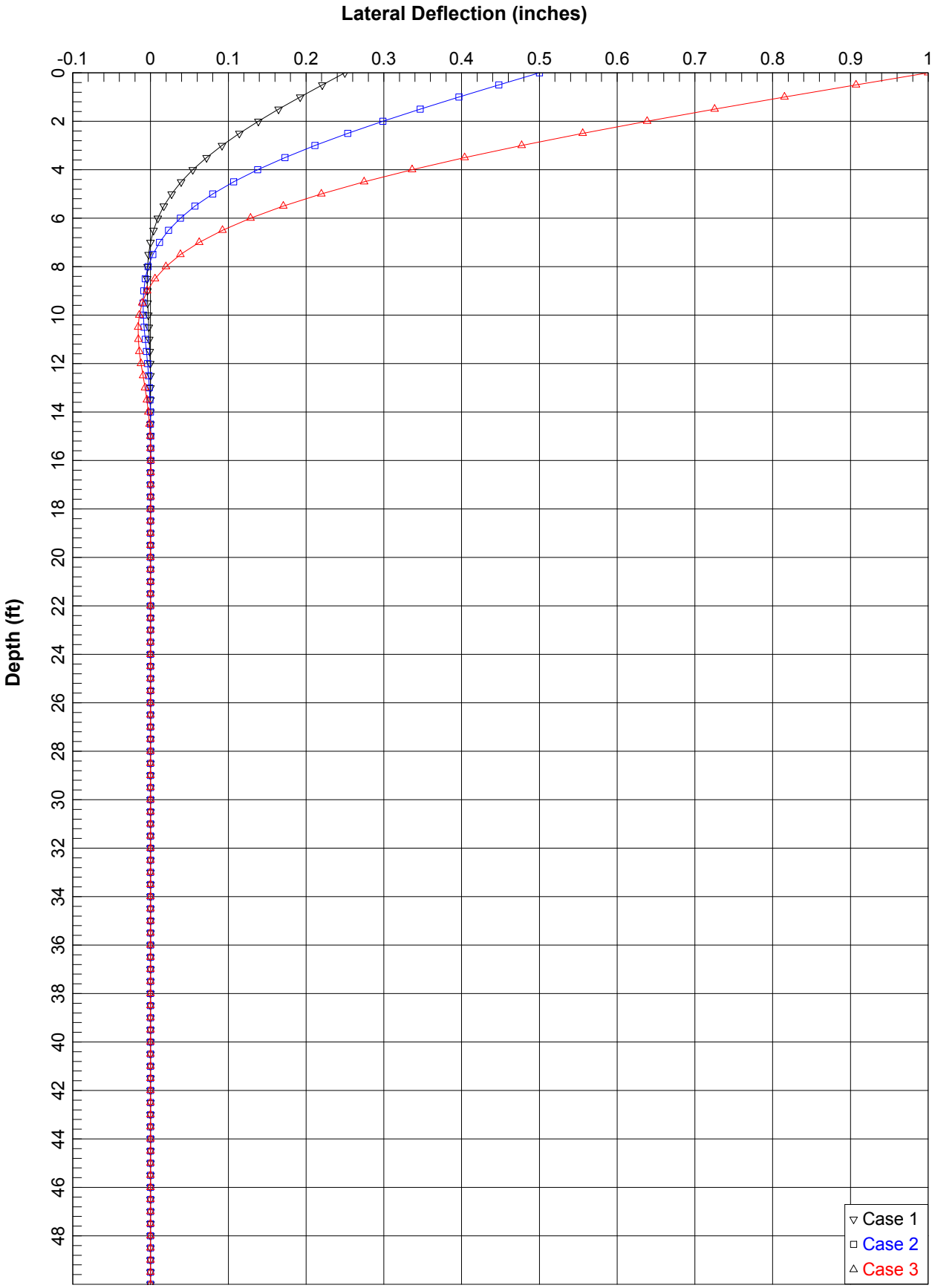
The analysis ended normally.

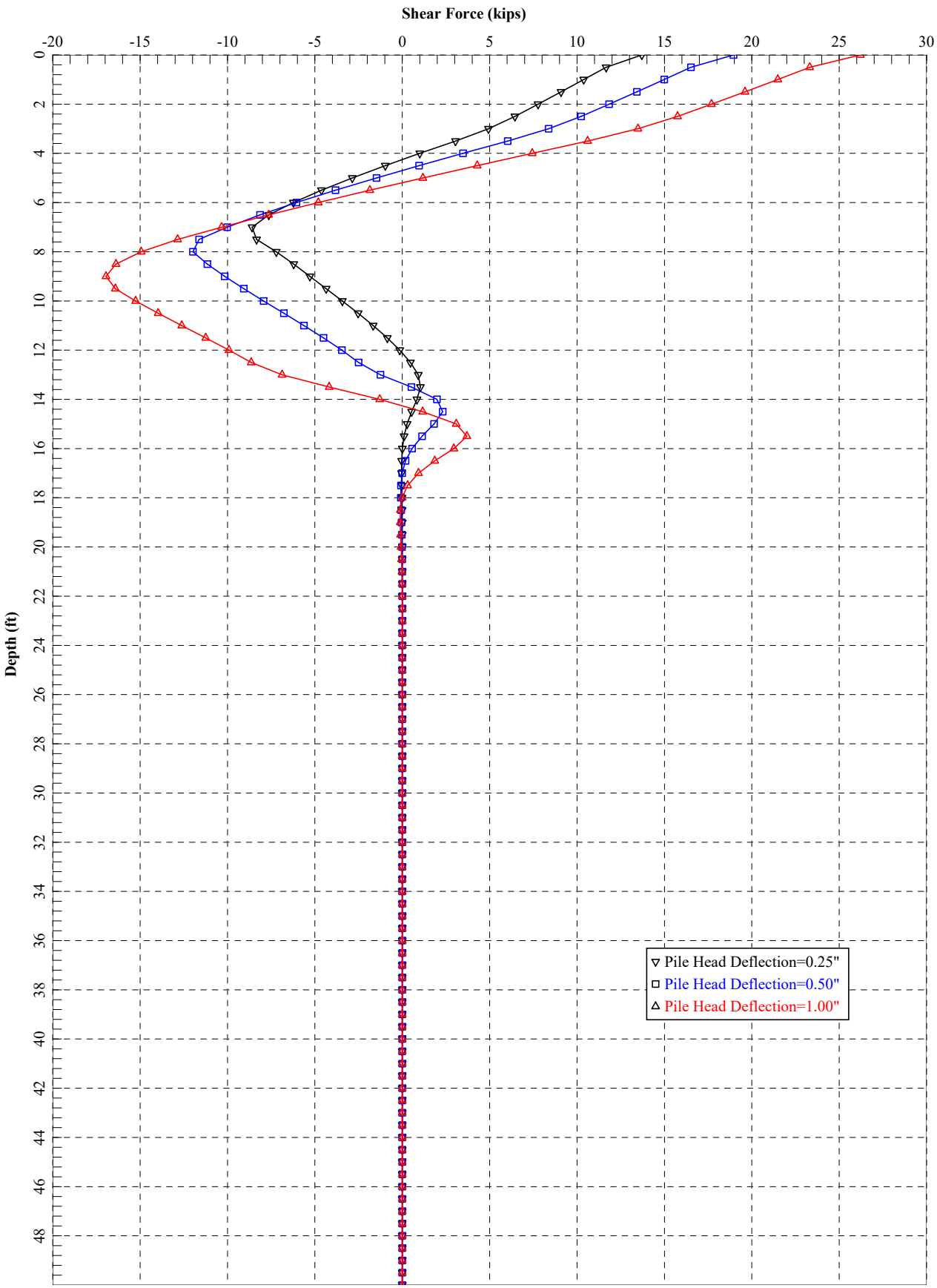
SUPPORT: **ABUTMENT 1R**

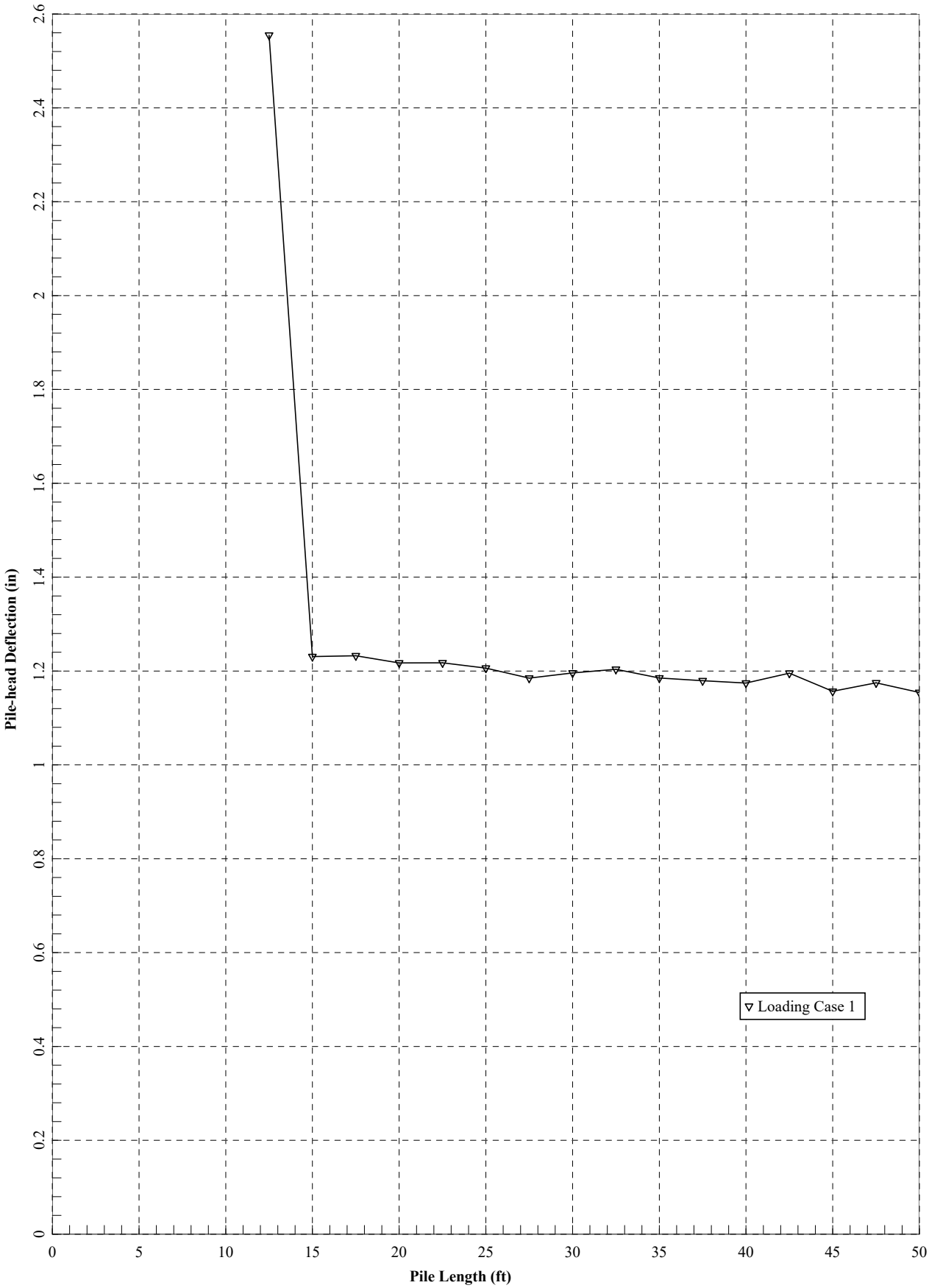
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE




Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Pile Head Deflection=0.25"
Pile Head Deflection=0.50"
Pile Head Deflection=1.00"


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
Pile Length (ft)
0
5
10
15
20
25
30
35
40
45
50
Loading Case 1

LPile for Windows, Version 2016-09.010

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

This copy of LPile is being used by:

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is a violation of the software license agreement.

Files Used for Analysis

Path to file locations:
\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated 08-24-17\

Name of input data file:
Abut 1R_transv_Critical Length.lp9d

Name of output report file:
Abut 1R_transv_Critical Length.lp9o

Name of plot output file:
Abut 1R_transv_Critical Length.lp9p

Name of runtime message file:
Abut 1R_transv_Critical Length.lp9r

Date and Time of Analysis

Date: August 24, 2017 Time: 11:13:12

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (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 = 100
- 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

- Analysis uses p-y modification factors for p-y curves
- 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
- 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 = 50.000 ft
Depth of ground surface below top of pile = -2.0000 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	16.0000
2	50.000	16.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile

Cross-sectional Shape	=	Circular Pile
Length of section	=	50.000000 ft
Width of top of section	=	16.000000 in
Width of bottom of section	=	16.000000 in
Top Area	=	201.061930 sq. in
Bottom Area	=	201.061930 sq. in
Moment of Inertia at Top	=	1608. in^4
Moment of Inertia at Bottom	=	1608. in^4
Elastic Modulus	=	3605000. psi

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.000000 ft
Distance from top of pile to bottom of layer	=	0.100000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.100000 ft
Distance from top of pile to bottom of layer	=	3.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.000000 ft
Distance from top of pile to bottom of layer	=	8.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000

Epsilon-50 at bottom of layer	=	0.007000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	8.000000 ft
Distance from top of pile to bottom of layer	=	13.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer	=	13.000000 ft
Distance from top of pile to bottom of layer	=	18.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer	=	18.000000 ft
Distance from top of pile to bottom of layer	=	23.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer	=	23.000000 ft
Distance from top of pile to bottom of layer	=	28.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer	=	28.000000 ft
Distance from top of pile to bottom of layer	=	80.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

(Depth of the lowest soil layer extends 30.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	E50 or krm
1	Stiff Clay	-2.0000	120.0000	3500.	0.00700
	w/o Free Water	0.10000	120.0000	3500.	0.00700
2	Stiff Clay	0.10000	120.0000	1500.	0.00700
	w/o Free Water	3.0000	120.0000	1500.	0.00700
3	Stiff Clay	3.0000	120.0000	2500.	0.00700
	w/o Free Water	8.0000	120.0000	2500.	0.00700
4	Stiff Clay	8.0000	120.0000	1500.	0.00700
	w/o Free Water	13.0000	120.0000	1500.	0.00700
5	Stiff Clay	13.0000	125.0000	4500.	0.00700
	w/o Free Water	18.0000	125.0000	4500.	0.00700
6	Stiff Clay	18.0000	125.0000	2500.	0.00700
	w/o Free Water	23.0000	125.0000	2500.	0.00700
7	Stiff Clay	23.0000	125.0000	3500.	0.00700
	w/o Free Water	28.0000	125.0000	3500.	0.00700
8	Stiff Clay	28.0000	125.0000	4500.	0.00500
	w/o Free Water	80.0000	125.0000	4500.	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6500	1.0000
2	50.000	0.6500	1.0000

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
1	1	V = 28000. lbs	M = 0.0000 in-lbs	154000.	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

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent 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	-2.0000	0.00	N.A.	No	0.00	1790.
2	0.1000	2.1000	Yes	No	1790.	25921.
3	3.0000	5.0000	Yes	No	27711.	101146.
4	8.0000	10.0000	Yes	No	128856.	84678.
5	13.0000	15.0000	Yes	No	213535.	269497.
6	18.0000	20.0000	Yes	No	483031.	150300.
7	23.0000	25.0000	Yes	No	633331.	210000.
8	28.0000	30.0000	Yes	No	843331.	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 = 28000.0 lbs
Applied moment at pile head = 0.0 in-lbs
Axial thrust load on pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.1543	5.01E-07	28000.	-0.01706	765.9332	5.80E+09	-687.7017	1787.	0.00
0.5000	1.0519	171385.	25001.	-0.01697	1618.	5.80E+09	-312.0168	1780.	0.00
1.0000	0.9506	331374.	23102.	-0.01671	2414.	5.80E+09	-320.9448	2026.	0.00
1.5000	0.8514	479493.	21154.	-0.01629	3151.	5.80E+09	-328.4915	2315.	0.00
2.0000	0.7551	615327.	19164.	-0.01573	3826.	5.80E+09	-334.5756	2659.	0.00
2.5000	0.6627	738528.	17143.	-0.01503	4439.	5.80E+09	-339.1131	3070.	0.00
3.0000	0.5748	848814.	14784.	-0.01420	4988.	5.80E+09	-447.3773	4670.	0.00
3.5000	0.4922	942184.	11781.	-0.01328	5452.	5.80E+09	-553.6993	6750.	0.00
4.0000	0.4155	1014720.	8464.	-0.01227	5813.	5.80E+09	-551.8007	7969.	0.00

4.5000	0.3450	1066420.	5168.	-0.01119	6070.	5.80E+09	-546.8755	9510.	0.00
5.0000	0.2812	1097414.	1911.	-0.01007	6224.	5.80E+09	-538.7296	11495.	0.00
5.5000	0.2242	1107964.	-1286.	-0.00893	6276.	5.80E+09	-527.1270	14107.	0.00
6.0000	0.1741	1098478.	-4403.	-0.00779	6229.	5.80E+09	-511.7646	17640.	0.00
6.5000	0.1308	1069519.	-7415.	-0.00666	6085.	5.80E+09	-492.2255	22587.	0.00
7.0000	0.09409	1021817.	-10295.	-0.00558	5848.	5.80E+09	-467.8873	29838.	0.00
7.5000	0.06376	956293.	-13012.	-0.00456	5522.	5.80E+09	-437.7144	41190.	0.00
8.0000	0.03937	874098.	-15300.	-0.00361	5113.	5.80E+09	-325.0803	49540.	0.00
8.5000	0.02041	779365.	-16932.	-0.00276	4642.	5.80E+09	-218.9211	64357.	0.00
9.0000	0.00629	676005.	-18093.	-0.00200	4128.	5.80E+09	-167.8952	160236.	0.00
9.5000	-0.00364	565954.	-18145.	-0.00136	3581.	5.80E+09	150.5028	248106.	0.00
10.0000	-0.01005	460780.	-17095.	-8.30E-04	3058.	5.80E+09	199.4431	119042.	0.00
10.5000	-0.01360	362346.	-15834.	-4.05E-04	2568.	5.80E+09	220.9117	97429.	0.00
11.0000	-0.01491	271518.	-14476.	-7.66E-05	2116.	5.80E+09	231.9429	93356.	0.00
11.5000	-0.01452	188781.	-13082.	1.62E-04	1705.	5.80E+09	232.6373	96105.	0.00
12.0000	-0.01297	114238.	-11705.	3.18E-04	1334.	5.80E+09	226.1439	104626.	0.00
12.5000	-0.01070	47727.	-10380.	4.02E-04	1003.	5.80E+09	215.5515	120821.	0.00
13.0000	-0.00814	-11070.	-8526.	4.21E-04	820.9903	5.80E+09	402.6196	296640.	0.00
13.5000	-0.00565	-55362.	-5664.	3.87E-04	1041.	5.80E+09	551.2180	585198.	0.00
14.0000	-0.00350	-79757.	-2543.	3.17E-04	1163.	5.80E+09	489.0995	837661.	0.00
14.5000	-0.00185	-86468.	174.7048	2.31E-04	1196.	5.80E+09	416.9421	1352101.	0.00
15.0000	-7.34E-04	-78087.	2418.	1.46E-04	1154.	5.80E+09	330.8773	2705091.	0.00
15.5000	-1.02E-04	-57719.	3669.	7.54E-05	1053.	5.80E+09	86.0432	5041911.	0.00
16.0000	1.71E-04	-34199.	3497.	2.78E-05	936.0261	5.80E+09	-143.4997	5041911.	0.00
16.5000	2.32E-04	-15812.	2482.	1.96E-06	844.5769	5.80E+09	-194.6250	5041911.	0.00
17.0000	1.94E-04	-4417.	1409.	-8.51E-06	787.8999	5.80E+09	-163.2578	5041911.	0.00
17.5000	1.30E-04	1106.	592.2124	-1.02E-05	771.4332	5.80E+09	-108.8488	5041911.	0.00
18.0000	7.17E-05	2709.	125.1782	-8.25E-06	779.4055	5.80E+09	-46.8293	3921486.	0.00
18.5000	3.06E-05	2623.	-58.1445	-5.49E-06	778.9801	5.80E+09	-14.2783	2801061.	0.00
19.0000	5.81E-06	2021.	-109.1099	-3.08E-06	775.9856	5.80E+09	-2.7102	2801061.	0.00
19.5000	-6.43E-06	1320.	-108.2405	-1.36E-06	772.4964	5.80E+09	3.0000	2801061.	0.00
20.0000	-1.05E-05	724.7919	-84.5843	-2.98E-07	769.5380	5.80E+09	4.8854	2801061.	0.00
20.5000	-1.00E-05	305.1522	-55.9177	2.35E-07	767.4509	5.80E+09	4.6702	2801061.	0.00
21.0000	-7.65E-06	53.3463	-31.1958	4.20E-07	766.1985	5.80E+09	3.5705	2801061.	0.00
21.5000	-4.96E-06	-69.9738	-13.5359	4.12E-07	766.2812	5.80E+09	2.3162	2801061.	0.00
22.0000	-2.71E-06	-109.8448	-2.7933	3.19E-07	766.4795	5.80E+09	1.2647	2801061.	0.00
22.5000	-1.14E-06	-104.0826	2.5953	2.08E-07	766.4508	5.80E+09	0.5315	2801061.	0.00
23.0000	-2.14E-07	-79.0852	4.5503	1.13E-07	766.3265	5.80E+09	0.1201	3361274.	0.00
23.5000	2.19E-07	-49.6884	4.4815	4.65E-08	766.1803	5.80E+09	-0.1430	3921486.	0.00
24.0000	3.44E-07	-25.3928	3.3788	7.65E-09	766.0595	5.80E+09	-0.2245	3921486.	0.00
24.5000	3.11E-07	-9.1565	2.0961	-1.02E-08	765.9787	5.80E+09	-0.2030	3921486.	0.00
25.0000	2.21E-07	-0.2205	1.0539	-1.51E-08	765.9343	5.80E+09	-0.1444	3921486.	0.00
25.5000	1.30E-07	3.5186	0.3664	-1.34E-08	765.9507	5.80E+09	-0.08480	3921486.	0.00
26.0000	6.05E-08	4.2015	-0.00652	-9.37E-09	765.9541	5.80E+09	-0.03952	3921486.	0.00
26.5000	1.73E-08	3.4577	-0.1589	-5.41E-09	765.9504	5.80E+09	-0.01128	3921486.	0.00
27.0000	-4.47E-09	2.3043	-0.1840	-2.43E-09	765.9446	5.80E+09	0.00292	3921486.	0.00
27.5000	-1.19E-08	1.2540	-0.1519	-5.89E-10	765.9394	5.80E+09	0.00778	3921486.	0.00
28.0000	-1.15E-08	0.4824	-0.1017	3.09E-10	765.9356	5.80E+09	0.00896	4657784.	0.00
28.5000	-8.19E-09	0.03292	-0.05237	5.76E-10	765.9333	5.80E+09	0.00749	5484375.	0.00
29.0000	-4.63E-09	-0.1471	-0.01721	5.17E-10	765.9339	5.80E+09	0.00423	5484375.	0.00
29.5000	-1.99E-09	-0.1746	9.52E-04	3.50E-10	765.9340	5.80E+09	0.00182	5484375.	0.00
30.0000	-4.31E-10	-0.1363	0.00759	1.89E-10	765.9338	5.80E+09	3.94E-04	5484375.	0.00
30.5000	2.82E-10	-0.08382	0.00800	7.54E-11	765.9336	5.80E+09	-2.58E-04	5484375.	0.00
31.0000	4.74E-10	-0.04050	0.00593	1.11E-11	765.9334	5.80E+09	-4.34E-04	5484375.	0.00
31.5000	4.15E-10	-0.01274	0.00349	-1.64E-11	765.9332	5.80E+09	-3.80E-04	5484375.	0.00
32.0000	2.77E-10	0.00136	0.00159	-2.23E-11	765.9332	5.80E+09	-2.53E-04	5484375.	0.00
32.5000	1.47E-10	0.00634	4.23E-04	-1.83E-11	765.9332	5.80E+09	-1.35E-04	5484375.	0.00
33.0000	5.70E-11	0.00647	-1.37E-04	-1.17E-11	765.9332	5.80E+09	-5.21E-05	5484375.	0.00
33.5000	6.74E-12	0.00471	-3.12E-04	-5.93E-12	765.9332	5.80E+09	-6.16E-06	5484375.	0.00
34.0000	-1.42E-11	0.00273	-2.92E-04	-2.08E-12	765.9332	5.80E+09	1.30E-05	5484375.	0.00
34.5000	-1.82E-11	0.00122	-2.02E-04	0.00	765.9332	5.80E+09	1.67E-05	5484375.	0.00
35.0000	-1.47E-11	3.03E-04	-1.12E-04	0.00	765.9332	5.80E+09	1.34E-05	5484375.	0.00
35.5000	-9.24E-12	-1.29E-04	-4.66E-05	0.00	765.9332	5.80E+09	8.44E-06	5484375.	0.00
36.0000	-4.59E-12	-2.57E-04	-8.69E-06	0.00	765.9332	5.80E+09	4.20E-06	5484375.	0.00
36.5000	-1.55E-12	-2.35E-04	8.14E-06	0.00	765.9332	5.80E+09	1.41E-06	5484375.	0.00
37.0000	0.00	-1.60E-04	1.23E-05	0.00	765.9332	5.80E+09	-3.76E-08	5484375.	0.00
37.5000	0.00	-8.76E-05	1.04E-05	0.00	765.9332	5.80E+09	-5.79E-07	5484375.	0.00
38.0000	0.00	-3.55E-05	6.82E-06	0.00	765.9332	5.80E+09	-6.24E-07	5484375.	0.00

38.5000	0.00	-5.78E-06	3.54E-06	0.00	765.9332	5.80E+09	-4.67E-07	5484375.	0.00
39.0000	0.00	7.12E-06	1.31E-06	0.00	765.9332	5.80E+09	-2.77E-07	5484375.	0.00
39.5000	0.00	1.00E-05	9.94E-08	0.00	765.9332	5.80E+09	-1.28E-07	5484375.	0.00
40.0000	0.00	8.35E-06	-3.90E-07	0.00	765.9332	5.80E+09	-3.54E-08	5484375.	0.00
40.5000	0.00	5.38E-06	-4.67E-07	0.00	765.9332	5.80E+09	9.59E-09	5484375.	0.00
41.0000	0.00	2.75E-06	-3.66E-07	0.00	765.9332	5.80E+09	2.40E-08	5484375.	0.00
41.5000	0.00	9.87E-07	-2.26E-07	0.00	765.9332	5.80E+09	2.28E-08	5484375.	0.00
42.0000	0.00	4.08E-08	-1.10E-07	0.00	765.9332	5.80E+09	1.60E-08	5484375.	0.00
42.5000	0.00	-3.30E-07	-3.49E-08	0.00	765.9332	5.80E+09	8.94E-09	5484375.	0.00
43.0000	0.00	-3.79E-07	3.29E-09	0.00	765.9332	5.80E+09	3.77E-09	5484375.	0.00
43.5000	0.00	-2.92E-07	1.69E-08	0.00	765.9332	5.80E+09	7.55E-10	5484375.	0.00
44.0000	0.00	-1.78E-07	1.73E-08	0.00	765.9332	5.80E+09	-6.02E-10	5484375.	0.00
44.5000	0.00	-8.47E-08	1.27E-08	0.00	765.9332	5.80E+09	-9.50E-10	5484375.	0.00
45.0000	0.00	-2.57E-08	7.37E-09	0.00	765.9332	5.80E+09	-8.18E-10	5484375.	0.00
45.5000	0.00	3.88E-09	3.30E-09	0.00	765.9332	5.80E+09	-5.39E-10	5484375.	0.00
46.0000	0.00	1.40E-08	8.35E-10	0.00	765.9332	5.80E+09	-2.83E-10	5484375.	0.00
46.5000	0.00	1.40E-08	-3.35E-10	0.00	765.9332	5.80E+09	-1.07E-10	5484375.	0.00
47.0000	0.00	1.01E-08	-6.84E-10	0.00	765.9332	5.80E+09	-9.66E-12	5484375.	0.00
47.5000	0.00	5.79E-09	-6.22E-10	0.00	765.9332	5.80E+09	3.04E-11	5484375.	0.00
48.0000	0.00	2.61E-09	-4.18E-10	0.00	765.9332	5.80E+09	3.76E-11	5484375.	0.00
48.5000	0.00	7.71E-10	-2.16E-10	0.00	765.9332	5.80E+09	2.99E-11	5484375.	0.00
49.0000	0.00	1.30E-11	-7.22E-11	0.00	765.9332	5.80E+09	1.79E-11	5484375.	0.00
49.5000	0.00	-9.93E-11	0.00	0.00	765.9332	5.80E+09	5.88E-12	5484375.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	-5.63E-12	2742188.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =     1.15427647 inches
Computed slope at pile head      =    -0.01706068 radians
Maximum bending moment           =       1107964. inch-lbs
Maximum shear force              =         28000. lbs
Depth of maximum bending moment  =     5.50000000 feet below pile head
Depth of maximum shear force     =       0.000000 feet below pile head
Number of iterations             =             36
Number of zero deflection points =             12
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          28000. lbs
Moment     =              0. in-lbs
Axial Load =         154000. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.00000	1.15427647	1107964.	28000.
47.50000	1.17483540	1115383.	28000.
45.00000	1.15690853	1109761.	28000.
42.50000	1.19554576	1129389.	28000.
40.00000	1.17438309	1121791.	28000.
37.50000	1.17938414	1124112.	28000.
35.00000	1.18516161	1125914.	28000.
32.50000	1.20366318	1136546.	28000.
30.00000	1.19583621	1133758.	28000.
27.50000	1.18501673	1131191.	28000.
25.00000	1.20629924	1141178.	28000.
22.50000	1.21744172	1146869.	28000.

20.00000	1.21727646	1147967.	28000.	
17.50000	1.23258829	1155301.	28000.	
15.00000	1.23068707	1155212.	28000.	
12.50000	2.55492662	1124242.	28000.	

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	Pile-head Load 1	Load Type 2	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	28000.	M, in-lb	0.00	154000.	1.1543	-0.01706	28000.	1107964.

Maximum pile-head deflection = 1.1542764728 inches
Maximum pile-head rotation = -0.0170606763 radians = -0.977505 deg.

The analysis ended normally.

LPile for Windows, Version 2016-09.010

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

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Files Used for Analysis

Path to file locations:
\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated 08-24-17\

Name of input data file:
Abut 1R_transv_Ave P.lp9d

Name of output report file:
Abut 1R_transv_Ave P.lp9o

Name of plot output file:
Abut 1R_transv_Ave P.lp9p

Name of runtime message file:
Abut 1R_transv_Ave P.lp9r

Date and Time of Analysis

Date: August 24, 2017 Time: 11:10:15

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (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 = 100
- 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

- Analysis uses p-y modification factors for p-y curves
- 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
- 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 = 50.000 ft
Depth of ground surface below top of pile = -2.0000 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	16.0000
2	50.000	16.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile		
Cross-sectional Shape	=	Circular Pile
Length of section	=	50.000000 ft
Width of top of section	=	16.000000 in
Width of bottom of section	=	16.000000 in
Top Area	=	201.061930 sq. in
Bottom Area	=	201.061930 sq. in
Moment of Inertia at Top	=	1608. in^4
Moment of Inertia at Bottom	=	1608. in^4
Elastic Modulus	=	3605000. psi

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.000000 ft
Distance from top of pile to bottom of layer	=	0.100000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.100000 ft
Distance from top of pile to bottom of layer	=	3.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.000000 ft
Distance from top of pile to bottom of layer	=	8.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000

Epsilon-50 at bottom of layer	=	0.007000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	8.000000 ft
Distance from top of pile to bottom of layer	=	13.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer	=	13.000000 ft
Distance from top of pile to bottom of layer	=	18.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer	=	18.000000 ft
Distance from top of pile to bottom of layer	=	23.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer	=	23.000000 ft
Distance from top of pile to bottom of layer	=	28.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer	=	28.000000 ft
Distance from top of pile to bottom of layer	=	80.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

(Depth of the lowest soil layer extends 30.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	E50 or krm
1	Stiff Clay	-2.0000	120.0000	3500.	0.00700
	w/o Free Water	0.10000	120.0000	3500.	0.00700
2	Stiff Clay	0.10000	120.0000	1500.	0.00700
	w/o Free Water	3.0000	120.0000	1500.	0.00700
3	Stiff Clay	3.0000	120.0000	2500.	0.00700
	w/o Free Water	8.0000	120.0000	2500.	0.00700
4	Stiff Clay	8.0000	120.0000	1500.	0.00700
	w/o Free Water	13.0000	120.0000	1500.	0.00700
5	Stiff Clay	13.0000	125.0000	4500.	0.00700
	w/o Free Water	18.0000	125.0000	4500.	0.00700
6	Stiff Clay	18.0000	125.0000	2500.	0.00700
	w/o Free Water	23.0000	125.0000	2500.	0.00700
7	Stiff Clay	23.0000	125.0000	3500.	0.00700
	w/o Free Water	28.0000	125.0000	3500.	0.00700
8	Stiff Clay	28.0000	125.0000	4500.	0.00500
	w/o Free Water	80.0000	125.0000	4500.	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6500	1.0000
2	50.000	0.6500	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.250000 in	M = 0.0000 in-lbs	154000.	N.A.
2	4	y = 0.500000 in	M = 0.0000 in-lbs	154000.	N.A.
3	4	y = 1.000000 in	M = 0.0000 in-lbs	154000.	N.A.

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

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent 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	-2.0000	0.00	N.A.	No	0.00	1790.
2	0.1000	2.1000	Yes	No	1790.	25921.
3	3.0000	5.0000	Yes	No	27711.	101146.
4	8.0000	10.0000	Yes	No	128856.	84678.
5	13.0000	15.0000	Yes	No	213535.	269497.
6	18.0000	20.0000	Yes	No	483031.	150300.
7	23.0000	25.0000	Yes	No	633331.	210000.
8	28.0000	30.0000	Yes	No	843331.	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 Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.0 in-lbs
Axial load at pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.00	13707.	-0.00474	765.9332	5.80E+09	-469.1431	5630.	0.00
0.5000	0.2215	78179.	11665.	-0.00470	1155.	5.80E+09	-211.3709	5725.	0.00
1.0000	0.1936	148674.	10384.	-0.00459	1505.	5.80E+09	-215.5942	6683.	0.00
1.5000	0.1665	211266.	9082.	-0.00440	1817.	5.80E+09	-218.4539	7872.	0.00
2.0000	0.1408	265791.	7767.	-0.00415	2088.	5.80E+09	-219.8509	9370.	0.00
2.5000	0.1167	312147.	6449.	-0.00385	2318.	5.80E+09	-219.6763	11296.	0.00
3.0000	0.09453	350297.	4935.	-0.00351	2508.	5.80E+09	-284.9063	18083.	0.00
3.5000	0.07455	377855.	3044.	-0.00313	2645.	5.80E+09	-345.4401	27801.	0.00

4.0000	0.05692	392616.	1000.	-0.00274	2719.	5.80E+09	-335.7326	35389.	0.00
4.5000	0.04173	394915.	-974.3551	-0.00233	2730.	5.80E+09	-322.5266	46376.	0.00
5.0000	0.02899	385226.	-2858.	-0.00192	2682.	5.80E+09	-305.2835	63194.	0.00
5.5000	0.01863	364178.	-4623.	-0.00154	2577.	5.80E+09	-283.0688	91142.	0.00
6.0000	0.01055	332592.	-6234.	-0.00118	2420.	5.80E+09	-253.9291	144480.	0.00
6.5000	0.00452	291546.	-7632.	-8.53E-04	2216.	5.80E+09	-212.2633	281742.	0.00
7.0000	3.06E-04	242579.	-8593.	-5.77E-04	1972.	5.80E+09	-107.8994	2118536.	0.00
7.5000	-0.00240	189497.	-8337.	-3.53E-04	1708.	5.80E+09	193.0403	481961.	0.00
8.0000	-0.00394	143183.	-7210.	-1.81E-04	1478.	5.80E+09	182.9491	278922.	0.00
8.5000	-0.00458	103318.	-6208.	-5.38E-05	1280.	5.80E+09	150.8173	197626.	0.00
9.0000	-0.00458	68784.	-5290.	3.53E-05	1108.	5.80E+09	155.2824	203391.	0.00
9.5000	-0.00416	39774.	-4356.	9.14E-05	963.7519	5.80E+09	155.9049	225095.	0.00
10.0000	-0.00348	16339.	-3429.	1.20E-04	847.1943	5.80E+09	153.3682	264148.	0.00
10.5000	-0.00271	-1591.	-2524.	1.28E-04	773.8469	5.80E+09	147.9979	327644.	0.00
11.0000	-0.00195	-14191.	-1661.	1.20E-04	836.5153	5.80E+09	139.9270	431288.	0.00
11.5000	-0.00127	-21741.	-859.4858	1.01E-04	874.0624	5.80E+09	127.1305	600067.	0.00
12.0000	-7.31E-04	-24692.	-145.4282	7.73E-05	888.7434	5.80E+09	110.8887	910593.	0.00
12.5000	-3.43E-04	-23629.	463.5424	5.23E-05	883.4525	5.80E+09	92.1015	1608974.	0.00
13.0000	-1.03E-04	-19227.	912.8618	3.01E-05	861.5586	5.80E+09	57.6716	3361274.	0.00
13.5000	1.82E-05	-12730.	1040.	1.36E-05	829.2471	5.80E+09	-15.2908	5041911.	0.00
14.0000	6.03E-05	-6772.	842.1027	3.51E-06	799.6129	5.80E+09	-50.6764	5041911.	0.00
14.5000	6.04E-05	-2631.	537.8719	-1.35E-06	779.0201	5.80E+09	-50.7339	5041911.	0.00
15.0000	4.41E-05	-314.7622	274.4784	-2.87E-06	767.4987	5.80E+09	-37.0639	5041911.	0.00
15.5000	2.59E-05	667.7635	98.0310	-2.69E-06	769.2543	5.80E+09	-21.7519	5041911.	0.00
16.0000	1.18E-05	866.5835	3.0048	-1.90E-06	770.2432	5.80E+09	-9.9235	5041911.	0.00
16.5000	3.11E-06	707.3278	-34.6143	-1.08E-06	769.4511	5.80E+09	-2.6162	5041911.	0.00
17.0000	-1.19E-06	453.2141	-39.4595	-4.83E-07	768.1873	5.80E+09	1.0011	5041911.	0.00
17.5000	-2.68E-06	234.7058	-29.6947	-1.27E-07	767.1005	5.80E+09	2.2539	5041911.	0.00
18.0000	-2.72E-06	97.1131	-17.6077	4.46E-08	766.4162	5.80E+09	1.7751	3921486.	0.00
18.5000	-2.15E-06	23.3304	-9.2759	1.07E-07	766.0492	5.80E+09	1.0022	2801061.	0.00
19.0000	-1.43E-06	-14.3955	-4.2627	1.12E-07	766.0048	5.80E+09	0.6689	2801061.	0.00
19.5000	-8.08E-07	-28.0284	-1.1244	8.96E-08	766.0726	5.80E+09	0.3773	2801061.	0.00
20.0000	-3.57E-07	-28.0534	0.5080	6.06E-08	766.0727	5.80E+09	0.1669	2801061.	0.00
20.5000	-8.10E-08	-22.0438	1.1221	3.47E-08	766.0428	5.80E+09	0.03781	2801061.	0.00
21.0000	5.86E-08	-14.6519	1.1535	1.57E-08	766.0060	5.80E+09	-0.02736	2801061.	0.00
21.5000	1.07E-07	-8.2310	0.9212	3.85E-09	765.9741	5.80E+09	-0.05007	2801061.	0.00
22.0000	1.05E-07	-3.6048	0.6242	-2.27E-09	765.9511	5.80E+09	-0.04893	2801061.	0.00
22.5000	8.00E-08	-0.7365	0.3654	-4.52E-09	765.9368	5.80E+09	-0.03733	2801061.	0.00
23.0000	5.06E-08	0.7885	0.1685	-4.49E-09	765.9371	5.80E+09	-0.02832	3361274.	0.00
23.5000	2.60E-08	1.2932	0.03242	-3.42E-09	765.9396	5.80E+09	-0.01702	3921486.	0.00
24.0000	9.56E-09	1.1839	-0.03739	-2.13E-09	765.9391	5.80E+09	-0.00625	3921486.	0.00
24.5000	4.27E-10	0.8485	-0.05697	-1.08E-09	765.9374	5.80E+09	-2.79E-04	3921486.	0.00
25.0000	-3.44E-09	0.5022	-0.05107	-3.85E-10	765.9357	5.80E+09	0.00225	3921486.	0.00
25.5000	-4.19E-09	0.2364	-0.03611	-2.42E-12	765.9343	5.80E+09	0.00274	3921486.	0.00
26.0000	-3.47E-09	0.06884	-0.02110	1.55E-10	765.9335	5.80E+09	0.00227	3921486.	0.00
26.5000	-2.32E-09	-0.01715	-0.00975	1.82E-10	765.9332	5.80E+09	0.00152	3921486.	0.00
27.0000	-1.28E-09	-0.04850	-0.00269	1.48E-10	765.9334	5.80E+09	8.38E-04	3921486.	0.00
27.5000	-5.42E-10	-0.04966	8.90E-04	9.75E-11	765.9334	5.80E+09	3.54E-04	3921486.	0.00
28.0000	-1.12E-10	-0.03800	0.00221	5.21E-11	765.9334	5.80E+09	8.66E-05	4657784.	0.00
28.5000	8.33E-11	-0.02319	0.00225	2.05E-11	765.9333	5.80E+09	-7.61E-05	5484375.	0.00
29.0000	1.34E-10	-0.01110	0.00165	2.74E-12	765.9332	5.80E+09	-1.23E-04	5484375.	0.00
29.5000	1.16E-10	-0.00341	9.63E-04	-4.77E-12	765.9332	5.80E+09	-1.06E-04	5484375.	0.00
30.0000	7.69E-11	4.64E-04	4.34E-04	-6.29E-12	765.9332	5.80E+09	-7.03E-05	5484375.	0.00
30.5000	4.05E-11	0.00181	1.12E-04	-5.12E-12	765.9332	5.80E+09	-3.71E-05	5484375.	0.00
31.0000	1.54E-11	0.00181	-4.18E-05	-3.25E-12	765.9332	5.80E+09	-1.41E-05	5484375.	0.00
31.5000	1.59E-12	0.00131	-8.85E-05	-1.63E-12	765.9332	5.80E+09	-1.46E-06	5484375.	0.00
32.0000	-4.11E-12	7.55E-04	-8.16E-05	0.00	765.9332	5.80E+09	3.76E-06	5484375.	0.00
32.5000	-5.14E-12	3.33E-04	-5.62E-05	0.00	765.9332	5.80E+09	4.70E-06	5484375.	0.00
33.0000	-4.09E-12	7.97E-05	-3.09E-05	0.00	765.9332	5.80E+09	3.74E-06	5484375.	0.00
33.5000	-2.56E-12	-3.87E-05	-1.27E-05	0.00	765.9332	5.80E+09	2.34E-06	5484375.	0.00
34.0000	-1.26E-12	-7.29E-05	-2.21E-06	0.00	765.9332	5.80E+09	1.15E-06	5484375.	0.00
34.5000	0.00	-6.56E-05	2.38E-06	0.00	765.9332	5.80E+09	3.80E-07	5484375.	0.00
35.0000	0.00	-4.46E-05	3.47E-06	0.00	765.9332	5.80E+09	-1.91E-08	5484375.	0.00
35.5000	0.00	-2.41E-05	2.91E-06	0.00	765.9332	5.80E+09	-1.66E-07	5484375.	0.00
36.0000	0.00	-9.64E-06	1.89E-06	0.00	765.9332	5.80E+09	-1.75E-07	5484375.	0.00
36.5000	0.00	-1.45E-06	9.75E-07	0.00	765.9332	5.80E+09	-1.30E-07	5484375.	0.00
37.0000	0.00	2.07E-06	3.55E-07	0.00	765.9332	5.80E+09	-7.66E-08	5484375.	0.00
37.5000	0.00	2.83E-06	2.07E-08	0.00	765.9332	5.80E+09	-3.49E-08	5484375.	0.00

38.0000	0.00	2.33E-06	-1.12E-07	0.00	765.9332	5.80E+09	-9.37E-09	5484375.	0.00
38.5000	0.00	1.49E-06	-1.31E-07	0.00	765.9332	5.80E+09	2.95E-09	5484375.	0.00
39.0000	0.00	7.57E-07	-1.02E-07	0.00	765.9332	5.80E+09	6.82E-09	5484375.	0.00
39.5000	0.00	2.66E-07	-6.25E-08	0.00	765.9332	5.80E+09	6.38E-09	5484375.	0.00
40.0000	0.00	5.86E-09	-3.01E-08	0.00	765.9332	5.80E+09	4.44E-09	5484375.	0.00
40.5000	0.00	-9.48E-08	-9.33E-09	0.00	765.9332	5.80E+09	2.47E-09	5484375.	0.00
41.0000	0.00	-1.07E-07	1.15E-09	0.00	765.9332	5.80E+09	1.03E-09	5484375.	0.00
41.5000	0.00	-8.15E-08	4.81E-09	0.00	765.9332	5.80E+09	1.94E-10	5484375.	0.00
42.0000	0.00	-4.92E-08	4.86E-09	0.00	765.9332	5.80E+09	-1.77E-10	5484375.	0.00
42.5000	0.00	-2.32E-08	3.53E-09	0.00	765.9332	5.80E+09	-2.68E-10	5484375.	0.00
43.0000	0.00	-6.85E-09	2.04E-09	0.00	765.9332	5.80E+09	-2.28E-10	5484375.	0.00
43.5000	0.00	1.27E-09	9.02E-10	0.00	765.9332	5.80E+09	-1.50E-10	5484375.	0.00
44.0000	0.00	4.00E-09	2.20E-10	0.00	765.9332	5.80E+09	-7.79E-11	5484375.	0.00
44.5000	0.00	3.92E-09	-1.01E-10	0.00	765.9332	5.80E+09	-2.90E-11	5484375.	0.00
45.0000	0.00	2.80E-09	-1.95E-10	0.00	765.9332	5.80E+09	-2.29E-12	5484375.	0.00
45.5000	0.00	1.59E-09	-1.76E-10	0.00	765.9332	5.80E+09	8.49E-12	5484375.	0.00
46.0000	0.00	6.91E-10	-1.20E-10	0.00	765.9332	5.80E+09	1.02E-11	5484375.	0.00
46.5000	0.00	1.55E-10	-6.51E-11	0.00	765.9332	5.80E+09	8.04E-12	5484375.	0.00
47.0000	0.00	-9.14E-11	-2.61E-11	0.00	765.9332	5.80E+09	4.98E-12	5484375.	0.00
47.5000	0.00	-1.59E-10	-3.81E-12	0.00	765.9332	5.80E+09	2.43E-12	5484375.	0.00
48.0000	0.00	-1.38E-10	5.86E-12	0.00	765.9332	5.80E+09	0.00	5484375.	0.00
48.5000	0.00	-8.87E-11	8.00E-12	0.00	765.9332	5.80E+09	0.00	5484375.	0.00
49.0000	0.00	-4.21E-11	6.48E-12	0.00	765.9332	5.80E+09	0.00	5484375.	0.00
49.5000	0.00	-1.10E-11	3.51E-12	0.00	765.9332	5.80E+09	0.00	5484375.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	0.00	2742188.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =     0.25000000 inches
Computed slope at pile head      =    -0.00474337 radians
Maximum bending moment           =        394915. inch-lbs
Maximum shear force              =         13707. lbs
Depth of maximum bending moment  =     4.50000000 feet below pile head
Depth of maximum shear force     =      0.000000 feet below pile head
Number of iterations             =             11
Number of zero deflection points =             12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.0 in-lbs
Axial load at pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.00	18949.	-0.00848	765.9332	5.80E+09	-557.9083	3347.	0.00
0.5000	0.4491	111488.	16519.	-0.00842	1320.	5.80E+09	-252.2174	3369.	0.00
1.0000	0.3990	213789.	14987.	-0.00825	1829.	5.80E+09	-258.3213	3885.	0.00
1.5000	0.3501	306586.	13423.	-0.00798	2291.	5.80E+09	-263.0545	4508.	0.00
2.0000	0.3032	389621.	11835.	-0.00762	2704.	5.80E+09	-266.3262	5271.	0.00
2.5000	0.2586	462695.	10232.	-0.00718	3067.	5.80E+09	-268.0397	6218.	0.00
3.0000	0.2170	525677.	8376.	-0.00667	3380.	5.80E+09	-350.6783	9697.	0.00
3.5000	0.1786	575532.	6035.	-0.00610	3628.	5.80E+09	-429.7484	14437.	0.00
4.0000	0.1438	609366.	3476.	-0.00549	3797.	5.80E+09	-423.2399	17662.	0.00
4.5000	0.1127	627381.	965.4597	-0.00485	3886.	5.80E+09	-413.4967	22004.	0.00
5.0000	0.08561	629910.	-1476.	-0.00420	3899.	5.80E+09	-400.1976	28047.	0.00
5.5000	0.06238	617430.	-3825.	-0.00355	3837.	5.80E+09	-382.8827	36825.	0.00

6.0000	0.04299	590575.	-6056.	-0.00293	3703.	5.80E+09	-360.8225	50358.	0.00
6.5000	0.02726	550167.	-8137.	-0.00234	3502.	5.80E+09	-332.6893	73217.	0.00
7.0000	0.01495	497255.	-10021.	-0.00179	3239.	5.80E+09	-295.5360	118597.	0.00
7.5000	0.00573	433229.	-11627.	-0.00131	2921.	5.80E+09	-239.8884	251327.	0.00
8.0000	-8.08E-04	360153.	-11981.	-9.03E-04	2557.	5.80E+09	122.0854	906489.	0.00
8.5000	-0.00511	291127.	-11151.	-5.66E-04	2214.	5.80E+09	154.6383	181674.	0.00
9.0000	-0.00760	227390.	-10159.	-2.98E-04	1897.	5.80E+09	175.8609	138861.	0.00
9.5000	-0.00868	169766.	-9071.	-9.22E-05	1610.	5.80E+09	186.9953	129280.	0.00
10.0000	-0.00870	118713.	-7933.	5.71E-05	1356.	5.80E+09	192.3184	132564.	0.00
10.5000	-0.00799	74469.	-6776.	1.57E-04	1136.	5.80E+09	193.3320	145117.	0.00
11.0000	-0.00682	37113.	-5624.	2.15E-04	950.5203	5.80E+09	190.6755	167748.	0.00
11.5000	-0.00542	6587.	-4507.	2.37E-04	798.6947	5.80E+09	181.7135	201298.	0.00
12.0000	-0.00397	-17404.	-3457.	2.32E-04	852.4930	5.80E+09	168.1465	254027.	0.00
12.5000	-0.00263	-35325.	-2497.	2.05E-04	941.6250	5.80E+09	151.7444	345545.	0.00
13.0000	-0.00152	-47749.	-1249.	1.62E-04	1003.	5.80E+09	264.3580	1045229.	0.00
13.5000	-6.97E-04	-50611.	523.0834	1.11E-04	1018.	5.80E+09	326.3347	2810809.	0.00
14.0000	-1.90E-04	-41677.	1981.	6.29E-05	973.2169	5.80E+09	159.5764	5041911.	0.00
14.5000	5.81E-05	-26958.	2313.	2.74E-05	900.0102	5.80E+09	-48.7840	5041911.	0.00
15.0000	1.39E-04	-13969.	1817.	6.20E-06	835.4100	5.80E+09	-116.5056	5041911.	0.00
15.5000	1.33E-04	-5161.	1134.	-3.69E-06	791.6036	5.80E+09	-111.3501	5041911.	0.00
16.0000	9.43E-05	-357.2228	561.9041	-6.55E-06	767.7098	5.80E+09	-79.2678	5041911.	0.00
16.5000	5.39E-05	1594.	188.1350	-5.91E-06	773.8591	5.80E+09	-45.3219	5041911.	0.00
17.0000	2.34E-05	1911.	-6.9000	-4.09E-06	775.4393	5.80E+09	-19.6898	5041911.	0.00
17.5000	4.79E-06	1518.	-78.0565	-2.32E-06	773.4849	5.80E+09	-4.0290	5041911.	0.00
18.0000	-4.42E-06	978.9262	-81.4861	-1.03E-06	770.8019	5.80E+09	2.8858	3921486.	0.00
18.5000	-7.55E-06	542.4367	-62.2575	-2.41E-07	768.6310	5.80E+09	3.5237	2801061.	0.00
19.0000	-7.31E-06	232.2827	-41.4444	1.59E-07	767.0884	5.80E+09	3.4140	2801061.	0.00
19.5000	-5.64E-06	44.8096	-23.3095	3.03E-07	766.1560	5.80E+09	2.6310	2801061.	0.00
20.0000	-3.68E-06	-47.9910	-10.2622	3.01E-07	766.1719	5.80E+09	1.7181	2801061.	0.00
20.5000	-2.02E-06	-78.8932	-2.2747	2.35E-07	766.3255	5.80E+09	0.9444	2801061.	0.00
21.0000	-8.55E-07	-75.7231	1.7561	1.55E-07	766.3098	5.80E+09	0.3993	2801061.	0.00
21.5000	-1.58E-07	-58.1073	3.1747	8.62E-08	766.2222	5.80E+09	0.07362	2801061.	0.00
22.0000	1.79E-07	-37.7857	3.1448	3.66E-08	766.1211	5.80E+09	-0.08360	2801061.	0.00
22.5000	2.81E-07	-20.4376	2.5001	6.46E-09	766.0348	5.80E+09	-0.1313	2801061.	0.00
23.0000	2.57E-07	-7.7969	1.6750	-8.15E-09	765.9719	5.80E+09	-0.1437	3361274.	0.00
23.5000	1.83E-07	-0.3231	0.8840	-1.24E-08	765.9348	5.80E+09	-0.1199	3921486.	0.00
24.0000	1.08E-07	2.8345	0.3119	-1.11E-08	765.9473	5.80E+09	-0.07082	3921486.	0.00
24.5000	5.08E-08	3.4399	-2.46E-04	-7.81E-09	765.9503	5.80E+09	-0.03323	3921486.	0.00
25.0000	1.47E-08	2.8459	-0.1287	-4.55E-09	765.9473	5.80E+09	-0.00960	3921486.	0.00
25.5000	-3.80E-09	1.9038	-0.1500	-2.10E-09	765.9426	5.80E+09	0.00249	3921486.	0.00
26.0000	-1.05E-08	1.0493	-0.1220	-5.68E-10	765.9384	5.80E+09	0.00684	3921486.	0.00
26.5000	-1.06E-08	0.4403	-0.08068	2.02E-10	765.9354	5.80E+09	0.00694	3921486.	0.00
27.0000	-8.05E-09	0.08079	-0.04407	4.72E-10	765.9336	5.80E+09	0.00526	3921486.	0.00
27.5000	-4.96E-09	-0.08945	-0.01856	4.67E-10	765.9336	5.80E+09	0.00324	3921486.	0.00
28.0000	-2.44E-09	-0.1428	-0.00315	3.47E-10	765.9339	5.80E+09	0.00189	4657784.	0.00
28.5000	-7.98E-10	-0.1279	0.00472	2.07E-10	765.9338	5.80E+09	7.30E-04	5484375.	0.00
29.0000	4.75E-11	-0.08657	0.00678	9.62E-11	765.9336	5.80E+09	-4.34E-05	5484375.	0.00
29.5000	3.56E-10	-0.04675	0.00567	2.72E-11	765.9334	5.80E+09	-3.25E-04	5484375.	0.00
30.0000	3.74E-10	-0.01858	0.00367	-6.61E-12	765.9333	5.80E+09	-3.42E-04	5484375.	0.00
30.5000	2.76E-10	-0.00269	0.00189	-1.76E-11	765.9332	5.80E+09	-2.53E-04	5484375.	0.00
31.0000	1.62E-10	0.00409	6.83E-04	-1.69E-11	765.9332	5.80E+09	-1.48E-04	5484375.	0.00
31.5000	7.38E-11	0.00553	3.52E-05	-1.19E-11	765.9332	5.80E+09	-6.75E-05	5484375.	0.00
32.0000	1.96E-11	0.00454	-2.21E-04	-6.69E-12	765.9332	5.80E+09	-1.79E-05	5484375.	0.00
32.5000	-6.51E-12	0.00290	-2.57E-04	-2.85E-12	765.9332	5.80E+09	5.95E-06	5484375.	0.00
33.0000	-1.46E-11	0.00146	-1.99E-04	0.00	765.9332	5.80E+09	1.34E-05	5484375.	0.00
33.5000	-1.36E-11	5.12E-04	-1.21E-04	0.00	765.9332	5.80E+09	1.24E-05	5484375.	0.00
34.0000	-9.44E-12	7.39E-06	-5.81E-05	0.00	765.9332	5.80E+09	8.63E-06	5484375.	0.00
34.5000	-5.23E-12	-1.87E-04	-1.79E-05	0.00	765.9332	5.80E+09	4.78E-06	5484375.	0.00
35.0000	-2.17E-12	-2.08E-04	2.40E-06	0.00	765.9332	5.80E+09	1.98E-06	5484375.	0.00
35.5000	0.00	-1.58E-04	9.44E-06	0.00	765.9332	5.80E+09	3.66E-07	5484375.	0.00
36.0000	0.00	-9.54E-05	9.48E-06	0.00	765.9332	5.80E+09	-3.50E-07	5484375.	0.00
36.5000	0.00	-4.48E-05	6.86E-06	0.00	765.9332	5.80E+09	-5.25E-07	5484375.	0.00
37.0000	0.00	-1.31E-05	3.95E-06	0.00	765.9332	5.80E+09	-4.45E-07	5484375.	0.00
37.5000	0.00	2.59E-06	1.74E-06	0.00	765.9332	5.80E+09	-2.91E-07	5484375.	0.00
38.0000	0.00	7.84E-06	4.18E-07	0.00	765.9332	5.80E+09	-1.51E-07	5484375.	0.00
38.5000	0.00	7.65E-06	-2.02E-07	0.00	765.9332	5.80E+09	-5.58E-08	5484375.	0.00
39.0000	0.00	5.45E-06	-3.81E-07	0.00	765.9332	5.80E+09	-4.06E-09	5484375.	0.00
39.5000	0.00	3.09E-06	-3.43E-07	0.00	765.9332	5.80E+09	1.67E-08	5484375.	0.00

40.0000	0.00	1.33E-06	-2.33E-07	0.00	765.9332	5.80E+09	2.00E-08	5484375.	0.00
40.5000	0.00	2.95E-07	-1.26E-07	0.00	765.9332	5.80E+09	1.56E-08	5484375.	0.00
41.0000	0.00	-1.83E-07	-5.05E-08	0.00	765.9332	5.80E+09	9.63E-09	5484375.	0.00
41.5000	0.00	-3.13E-07	-7.62E-09	0.00	765.9332	5.80E+09	4.66E-09	5484375.	0.00
42.0000	0.00	-2.76E-07	1.08E-08	0.00	765.9332	5.80E+09	1.48E-09	5484375.	0.00
42.5000	0.00	-1.84E-07	1.48E-08	0.00	765.9332	5.80E+09	-1.46E-10	5484375.	0.00
43.0000	0.00	-9.84E-08	1.22E-08	0.00	765.9332	5.80E+09	-7.22E-10	5484375.	0.00
43.5000	0.00	-3.83E-08	7.80E-09	0.00	765.9332	5.80E+09	-7.40E-10	5484375.	0.00
44.0000	0.00	-4.75E-09	3.96E-09	0.00	765.9332	5.80E+09	-5.41E-10	5484375.	0.00
44.5000	0.00	9.32E-09	1.40E-09	0.00	765.9332	5.80E+09	-3.14E-10	5484375.	0.00
45.0000	0.00	1.21E-08	3.22E-11	0.00	765.9332	5.80E+09	-1.41E-10	5484375.	0.00
45.5000	0.00	9.75E-09	-4.95E-10	0.00	765.9332	5.80E+09	-3.53E-11	5484375.	0.00
46.0000	0.00	6.15E-09	-5.58E-10	0.00	765.9332	5.80E+09	1.45E-11	5484375.	0.00
46.5000	0.00	3.07E-09	-4.26E-10	0.00	765.9332	5.80E+09	2.95E-11	5484375.	0.00
47.0000	0.00	1.04E-09	-2.56E-10	0.00	765.9332	5.80E+09	2.71E-11	5484375.	0.00
47.5000	0.00	-7.18E-12	-1.19E-10	0.00	765.9332	5.80E+09	1.87E-11	5484375.	0.00
48.0000	0.00	-3.85E-10	-3.16E-11	0.00	765.9332	5.80E+09	1.04E-11	5484375.	0.00
48.5000	0.00	-3.88E-10	1.23E-11	0.00	765.9332	5.80E+09	4.24E-12	5484375.	0.00
49.0000	0.00	-2.39E-10	2.59E-11	0.00	765.9332	5.80E+09	0.00	5484375.	0.00
49.5000	0.00	-7.88E-11	2.00E-11	0.00	765.9332	5.80E+09	-2.27E-12	5484375.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	-4.40E-12	2742188.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 2:

```
Pile-head deflection             =     0.50000000 inches
Computed slope at pile head      =    -0.00847785 radians
Maximum bending moment           =        629910. inch-lbs
Maximum shear force              =         18949. lbs
Depth of maximum bending moment  =     5.00000000 feet below pile head
Depth of maximum shear force     =      0.000000 feet below pile head
Number of iterations             =             19
Number of zero deflection points =             12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.0 in-lbs
Axial load at pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.00	26207.	-0.01515	765.9332	5.80E+09	-663.4685	1990.	0.00
0.5000	0.9091	159294.	23314.	-0.01506	1558.	5.80E+09	-300.8409	1985.	0.00
1.0000	0.8192	307605.	21484.	-0.01482	2296.	5.80E+09	-309.2292	2265.	0.00
1.5000	0.7313	444490.	19607.	-0.01443	2977.	5.80E+09	-316.2363	2595.	0.00
2.0000	0.6461	569565.	17693.	-0.01391	3599.	5.80E+09	-321.7791	2988.	0.00
2.5000	0.5644	682512.	15751.	-0.01326	4160.	5.80E+09	-325.7709	3463.	0.00
3.0000	0.4869	783079.	13486.	-0.01250	4661.	5.80E+09	-429.2012	5289.	0.00
3.5000	0.4143	867445.	10607.	-0.01165	5080.	5.80E+09	-530.3694	7680.	0.00
4.0000	0.3472	931889.	7433.	-0.01072	5401.	5.80E+09	-527.5693	9118.	0.00
4.5000	0.2857	976450.	4285.	-0.00973	5622.	5.80E+09	-521.7013	10955.	0.00
5.0000	0.2304	1001295.	1183.	-0.00871	5746.	5.80E+09	-512.5515	13348.	0.00
5.5000	0.1813	1006732.	-1855.	-0.00767	5773.	5.80E+09	-499.8523	16545.	0.00
6.0000	0.1384	993211.	-4804.	-0.00663	5706.	5.80E+09	-483.2479	20952.	0.00
6.5000	0.1017	961344.	-7640.	-0.00562	5547.	5.80E+09	-462.2277	27277.	0.00
7.0000	0.07093	911917.	-10335.	-0.00465	5301.	5.80E+09	-435.9849	36882.	0.00
7.5000	0.04584	845924.	-12852.	-0.00374	4973.	5.80E+09	-403.0740	52756.	0.00

8.0000	0.02601	764610.	-14941.	-0.00291	4569.	5.80E+09	-293.0946	67614.	0.00
8.5000	0.01092	672014.	-16382.	-0.00217	4108.	5.80E+09	-187.2874	102876.	0.00
9.0000	9.44E-06	572034.	-16951.	-0.00152	3611.	5.80E+09	-2.3530	1494833.	0.00
9.5000	-0.00735	471422.	-16419.	-9.83E-04	3111.	5.80E+09	179.4124	146403.	0.00
10.0000	-0.01179	376817.	-15259.	-5.44E-04	2640.	5.80E+09	207.4972	105611.	0.00
10.5000	-0.01388	289323.	-13970.	-2.00E-04	2205.	5.80E+09	221.9808	95926.	0.00
11.0000	-0.01418	209543.	-12617.	5.84E-05	1808.	5.80E+09	229.0090	96871.	0.00
11.5000	-0.01318	137807.	-11249.	2.38E-04	1451.	5.80E+09	226.9894	103308.	0.00
12.0000	-0.01133	74111.	-9913.	3.48E-04	1135.	5.80E+09	218.5198	115755.	0.00
12.5000	-0.00901	18211.	-8638.	3.96E-04	856.5079	5.80E+09	206.3452	137411.	0.00
13.0000	-0.00658	-30278.	-6875.	3.89E-04	916.5234	5.80E+09	381.4390	347806.	0.00
13.5000	-0.00434	-65006.	-4184.	3.40E-04	1089.	5.80E+09	515.4262	712833.	0.00
14.0000	-0.00250	-81117.	-1291.	2.64E-04	1169.	5.80E+09	448.8690	1077205.	0.00
14.5000	-0.00117	-80991.	1167.	1.81E-04	1169.	5.80E+09	370.5461	1907444.	0.00
15.0000	-3.34E-04	-67448.	3089.	1.04E-04	1101.	5.80E+09	270.1843	4856604.	0.00
15.5000	7.92E-05	-44114.	3700.	4.60E-05	985.3377	5.80E+09	-66.5938	5041911.	0.00
16.0000	2.18E-04	-23135.	2949.	1.12E-05	880.9967	5.80E+09	-183.5384	5041911.	0.00
16.5000	2.14E-04	-8741.	1859.	-5.27E-06	809.4082	5.80E+09	-179.7882	5041911.	0.00
17.0000	1.55E-04	-811.4449	928.8072	-1.02E-05	769.9690	5.80E+09	-130.4352	5041911.	0.00
17.5000	9.15E-05	2423.	306.9549	-9.37E-06	777.9861	5.80E+09	-76.8489	5041911.	0.00
18.0000	4.27E-05	2889.	-7.3713	-6.63E-06	780.3035	5.80E+09	-27.9265	3921486.	0.00
18.5000	1.19E-05	2347.	-107.8768	-3.92E-06	777.6071	5.80E+09	-5.5754	2801061.	0.00
19.0000	-4.27E-06	1602.	-118.6214	-1.87E-06	773.9011	5.80E+09	1.9938	2801061.	0.00
19.5000	-1.05E-05	927.1798	-97.8808	-5.65E-07	770.5446	5.80E+09	4.9197	2801061.	0.00
20.0000	-1.10E-05	428.5290	-67.6465	1.37E-07	768.0645	5.80E+09	5.1584	2801061.	0.00
20.5000	-8.90E-06	115.1693	-39.7066	4.18E-07	766.5060	5.80E+09	4.1550	2801061.	0.00
21.0000	-6.04E-06	-48.7221	-18.7884	4.52E-07	766.1755	5.80E+09	2.8178	2801061.	0.00
21.5000	-3.47E-06	-111.1273	-5.4698	3.69E-07	766.4859	5.80E+09	1.6218	2801061.	0.00
22.0000	-1.60E-06	-115.0422	1.6392	2.52E-07	766.5053	5.80E+09	0.7479	2801061.	0.00
22.5000	-4.44E-07	-91.9233	4.5051	1.45E-07	766.3904	5.80E+09	0.2074	2801061.	0.00
23.0000	1.43E-07	-61.2494	4.8875	6.61E-08	766.2378	5.80E+09	-0.07995	3361274.	0.00
23.5000	3.49E-07	-33.3951	3.9625	1.72E-08	766.0993	5.80E+09	-0.2284	3921486.	0.00
24.0000	3.49E-07	-13.7313	2.5932	-7.20E-09	766.0015	5.80E+09	-0.2280	3921486.	0.00
24.5000	2.63E-07	-2.2632	1.3934	-1.55E-08	765.9444	5.80E+09	-0.1719	3921486.	0.00
25.0000	1.63E-07	3.0176	0.5576	-1.51E-08	765.9482	5.80E+09	-0.1067	3921486.	0.00
25.5000	8.20E-08	4.4561	0.07681	-1.12E-08	765.9553	5.80E+09	-0.05362	3921486.	0.00
26.0000	2.86E-08	3.9601	-0.1400	-6.86E-09	765.9529	5.80E+09	-0.01866	3921486.	0.00
26.5000	-3.36E-10	2.7884	-0.1954	-3.37E-09	765.9470	5.80E+09	2.19E-04	3921486.	0.00
27.0000	-1.19E-08	1.6219	-0.1713	-1.09E-09	765.9412	5.80E+09	0.00779	3921486.	0.00
27.5000	-1.34E-08	0.7343	-0.1216	1.28E-10	765.9368	5.80E+09	0.00878	3921486.	0.00
28.0000	-1.04E-08	0.1620	-0.07112	5.91E-10	765.9340	5.80E+09	0.00806	4657784.	0.00
28.5000	-6.33E-09	-0.1203	-0.02958	6.13E-10	765.9338	5.80E+09	0.00579	5484375.	0.00
29.0000	-3.03E-09	-0.1941	-0.00391	4.50E-10	765.9341	5.80E+09	0.00277	5484375.	0.00
29.5000	-9.28E-10	-0.1680	0.00694	2.63E-10	765.9340	5.80E+09	8.48E-04	5484375.	0.00
30.0000	1.29E-10	-0.1113	0.00913	1.19E-10	765.9337	5.80E+09	-1.18E-04	5484375.	0.00
30.5000	4.95E-10	-0.05873	0.00742	3.06E-11	765.9335	5.80E+09	-4.52E-04	5484375.	0.00
31.0000	4.96E-10	-0.02237	0.00470	-1.14E-11	765.9333	5.80E+09	-4.53E-04	5484375.	0.00
31.5000	3.58E-10	-0.00232	0.00236	-2.42E-11	765.9332	5.80E+09	-3.27E-04	5484375.	0.00
32.0000	2.06E-10	0.00595	8.10E-04	-2.23E-11	765.9332	5.80E+09	-1.88E-04	5484375.	0.00
32.5000	9.07E-11	0.00744	-4.17E-06	-1.54E-11	765.9332	5.80E+09	-8.29E-05	5484375.	0.00
33.0000	2.16E-11	0.00593	-3.12E-04	-8.45E-12	765.9332	5.80E+09	-1.98E-05	5484375.	0.00
33.5000	-1.07E-11	0.00370	-3.42E-04	-3.47E-12	765.9332	5.80E+09	9.74E-06	5484375.	0.00
34.0000	-2.00E-11	0.00183	-2.58E-04	0.00	765.9332	5.80E+09	1.82E-05	5484375.	0.00
34.5000	-1.79E-11	6.03E-04	-1.54E-04	0.00	765.9332	5.80E+09	1.64E-05	5484375.	0.00
35.0000	-1.22E-11	-2.98E-05	-7.19E-05	0.00	765.9332	5.80E+09	1.11E-05	5484375.	0.00
35.5000	-6.59E-12	-2.62E-04	-2.05E-05	0.00	765.9332	5.80E+09	6.02E-06	5484375.	0.00
36.0000	-2.63E-12	-2.77E-04	4.76E-06	0.00	765.9332	5.80E+09	2.40E-06	5484375.	0.00
36.5000	0.00	-2.06E-04	1.30E-05	0.00	765.9332	5.80E+09	3.57E-07	5484375.	0.00
37.0000	0.00	-1.21E-04	1.26E-05	0.00	765.9332	5.80E+09	-5.20E-07	5484375.	0.00
37.5000	0.00	-5.54E-05	8.87E-06	0.00	765.9332	5.80E+09	-7.08E-07	5484375.	0.00
38.0000	0.00	-1.49E-05	5.00E-06	0.00	765.9332	5.80E+09	-5.82E-07	5484375.	0.00
38.5000	0.00	4.66E-06	2.13E-06	0.00	765.9332	5.80E+09	-3.72E-07	5484375.	0.00
39.0000	0.00	1.08E-05	4.50E-07	0.00	765.9332	5.80E+09	-1.89E-07	5484375.	0.00
39.5000	0.00	1.01E-05	-3.15E-07	0.00	765.9332	5.80E+09	-6.63E-08	5484375.	0.00
40.0000	0.00	7.04E-06	-5.18E-07	0.00	765.9332	5.80E+09	-1.32E-09	5484375.	0.00
40.5000	0.00	3.91E-06	-4.51E-07	0.00	765.9332	5.80E+09	2.38E-08	5484375.	0.00
41.0000	0.00	1.63E-06	-3.00E-07	0.00	765.9332	5.80E+09	2.67E-08	5484375.	0.00
41.5000	0.00	3.08E-07	-1.59E-07	0.00	765.9332	5.80E+09	2.03E-08	5484375.	0.00

42.0000	0.00	-2.79E-07	-6.09E-08	0.00	765.9332	5.80E+09	1.23E-08	5484375.	0.00
42.5000	0.00	-4.25E-07	-6.72E-09	0.00	765.9332	5.80E+09	5.78E-09	5484375.	0.00
43.0000	0.00	-3.62E-07	1.57E-08	0.00	765.9332	5.80E+09	1.70E-09	5484375.	0.00
43.5000	0.00	-2.37E-07	1.99E-08	0.00	765.9332	5.80E+09	-3.21E-10	5484375.	0.00
44.0000	0.00	-1.23E-07	1.59E-08	0.00	765.9332	5.80E+09	-1.00E-09	5484375.	0.00
44.5000	0.00	-4.59E-08	9.98E-09	0.00	765.9332	5.80E+09	-9.81E-10	5484375.	0.00
45.0000	0.00	-3.67E-09	4.94E-09	0.00	765.9332	5.80E+09	-7.00E-10	5484375.	0.00
45.5000	0.00	1.34E-08	1.65E-09	0.00	765.9332	5.80E+09	-3.98E-10	5484375.	0.00
46.0000	0.00	1.62E-08	-6.46E-11	0.00	765.9332	5.80E+09	-1.72E-10	5484375.	0.00
46.5000	0.00	1.27E-08	-6.96E-10	0.00	765.9332	5.80E+09	-3.82E-11	5484375.	0.00
47.0000	0.00	7.85E-09	-7.40E-10	0.00	765.9332	5.80E+09	2.37E-11	5484375.	0.00
47.5000	0.00	3.84E-09	-5.46E-10	0.00	765.9332	5.80E+09	4.10E-11	5484375.	0.00
48.0000	0.00	1.31E-09	-3.13E-10	0.00	765.9332	5.80E+09	3.65E-11	5484375.	0.00
48.5000	0.00	8.09E-11	-1.30E-10	0.00	765.9332	5.80E+09	2.46E-11	5484375.	0.00
49.0000	0.00	-2.57E-10	-1.92E-11	0.00	765.9332	5.80E+09	1.23E-11	5484375.	0.00
49.5000	0.00	-1.54E-10	2.17E-11	0.00	765.9332	5.80E+09	1.38E-12	5484375.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	-8.63E-12	2742188.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =     1.00000000 inches
Computed slope at pile head      =    -0.01514560 radians
Maximum bending moment           =       1006732. inch-lbs
Maximum shear force              =         26207. lbs
Depth of maximum bending moment  =     5.50000000 feet below pile head
Depth of maximum shear force     =      0.000000 feet below pile head
Number of iterations             =             14
Number of zero deflection points =             12
```

Summary of Pile-head Responses for Conventional Analyses

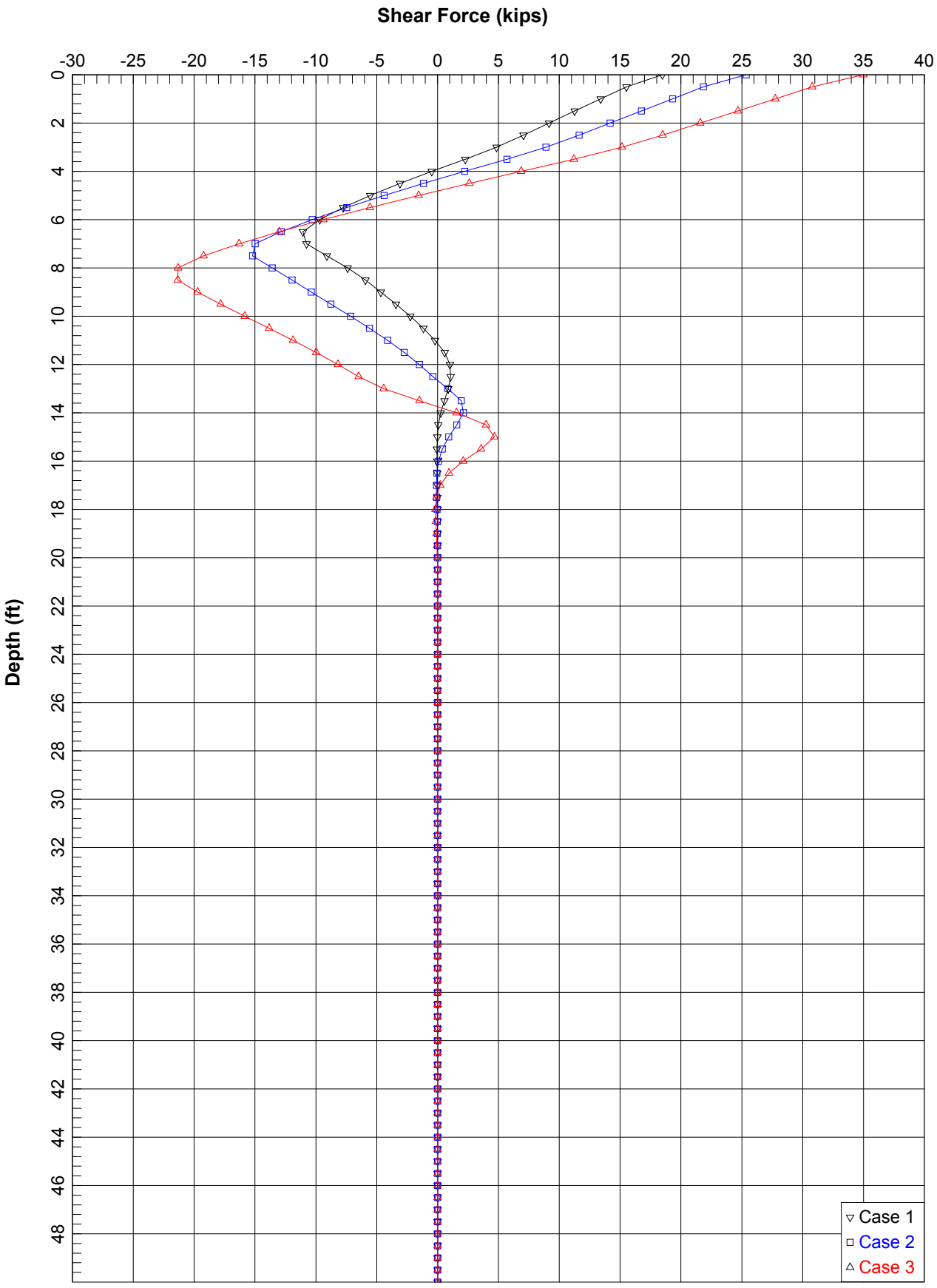
Definitions of Pile-head Loading Conditions:

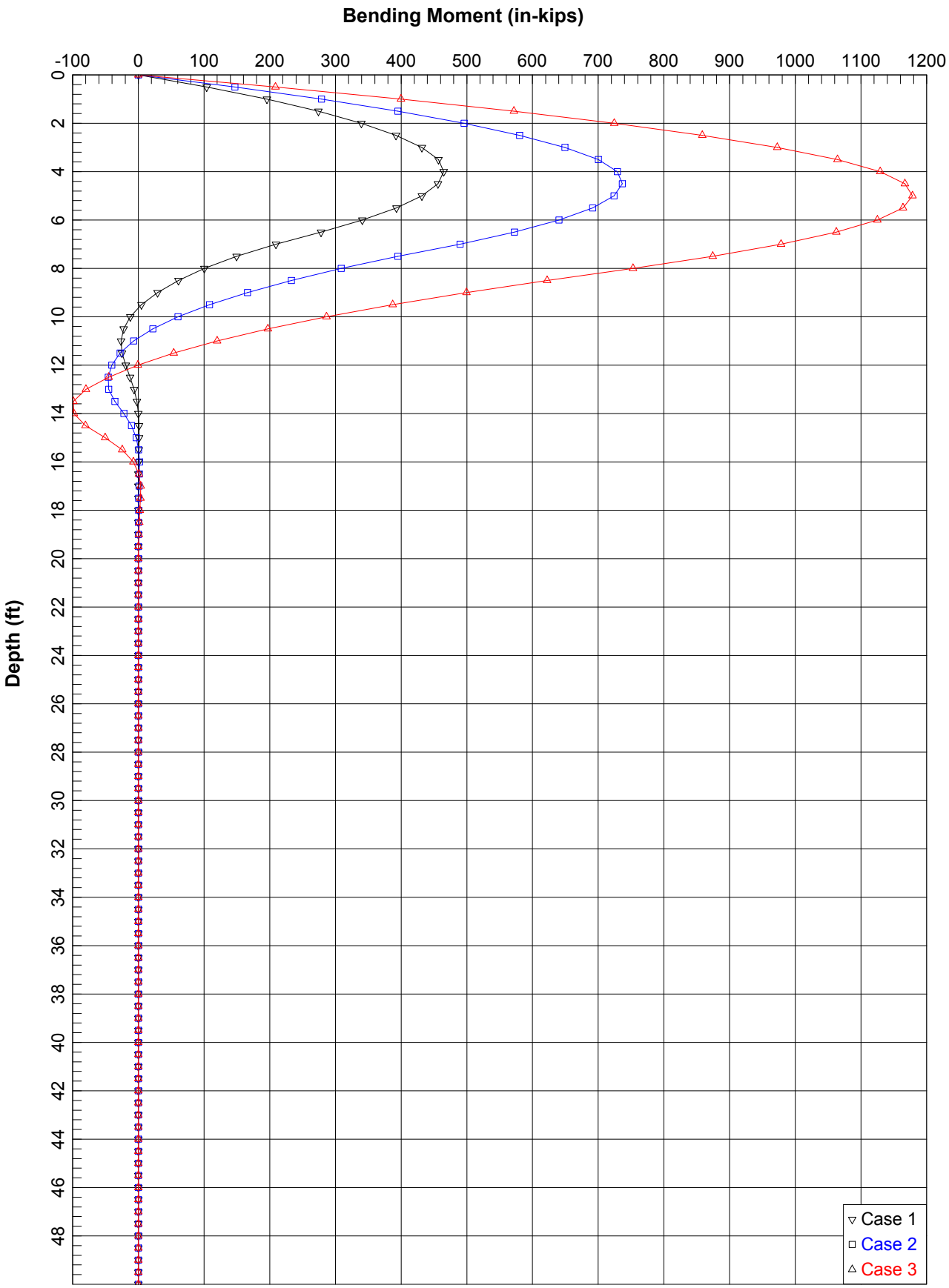
```
Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs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

Load Case No.	Load Type	Pile-head Load 1	Load Type	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	y, in	0.2500	M, in-lb	0.00	154000.	0.2500	-0.00474	13707.	394915.
2	y, in	0.5000	M, in-lb	0.00	154000.	0.5000	-0.00848	18949.	629910.
3	y, in	1.0000	M, in-lb	0.00	154000.	1.0000	-0.01515	26207.	1006732.

Maximum pile-head deflection = 1.0000000000 inches
Maximum pile-head rotation = -0.0151455973 radians = -0.867779 deg.

The analysis ended normally.


Shear Force (kips)
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1R_transv_Max P.lp6d
Name of output report file: Abut 1R_transv_Max P.lp6o
Name of plot output file: Abut 1R_transv_Max P.lp6p
Name of runtime messeage file: Abut 1R_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 9:25:27

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 8.00000 ft
Distance from top of pile to bottom of layer = 13.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 1500.00000 psi
Undrained cohesion at bottom of layer = 1500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 13.00000 ft
Distance from top of pile to bottom of layer = 18.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 18.00000 ft
Distance from top of pile to bottom of layer = 23.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 2500.00000 psi
Undrained cohesion at bottom of layer = 2500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 23.00000 ft
Distance from top of pile to bottom of layer = 28.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3500.00000 psi
Undrained cohesion at bottom of layer = 3500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer = 28.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial Strain Epsilon 50	RQD % or GSI
1	Stiff Clay w/o Free Water	-2.000	120.000	3500.000	--	--	--
		0.10000	120.000	3500.000	--	--	--
2	Stiff Clay w/o Free Water	0.10000	120.000	1500.000	--	--	--
		3.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	3.000	120.000	2500.000	--	--	--
		8.000	120.000	2500.000	--	--	--

	0.00700	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water		8.000	120.000	1500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
			13.000	120.000	1500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water		13.000	125.000	4500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
			18.000	125.000	4500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water		18.000	125.000	2500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
			23.000	125.000	2500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
7	Stiff Clay w/o Free Water		23.000	125.000	3500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
			28.000	125.000	3500.000	--	--	--
	0.00700	--	--	--	--	--	--	--
8	Stiff Clay w/o Free Water		28.000	125.000	4500.000	--	--	--
	0.00500	--	--	--	--	--	--	--
			80.000	125.000	4500.000	--	--	--
	0.00500	--	--	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.8800	1.0000
2	50.000	0.8800	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	154000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	154000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	154000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	18474.	-0.005164	765.9332	5.799E+09	-635.1475	7621.7706	0.000
6.000	0.2190	104181.	15513.	-0.005110	1284.0846	5.799E+09	-351.8323	9638.4432	0.000
12.000	0.1887	195595.	13395.	-0.004955	1738.7452	5.799E+09	-354.0776	11259.	0.000
18.000	0.1596	274077.	11271.	-0.004712	2129.0784	5.799E+09	-354.0427	13313.	0.000
24.000	0.1321	339550.	9153.7871	-0.004394	2454.7172	5.799E+09	-351.5721	15963.	0.000
30.000	0.1068	392043.	7059.6083	-0.004016	2715.7927	5.799E+09	-346.4876	19460.	0.000
36.000	0.0840	431686.	4848.9039	-0.003590	2912.9656	5.799E+09	-390.4139	27902.	0.000
42.000	0.0638	456863.	2274.0805	-0.003130	3038.1823	5.799E+09	-467.8606	44028.	0.000
48.000	0.0464	464759.	-475.3957	-0.002653	3077.4565	5.799E+09	-448.6315	58016.	0.000
54.000	0.0319	456061.	-3092.2067	-0.002177	3034.1935	5.799E+09	-423.6389	79627.	0.000
60.000	0.0203	431675.	-5538.1103	-0.001717	2912.9096	5.799E+09	-391.6623	115888.	0.000
66.000	0.0113	392777.	-7763.6286	-0.001291	2719.4461	5.799E+09	-350.1771	185705.	0.000
72.000	0.004789	340897.	-9690.1900	-0.000911	2461.4160	5.799E+09	-292.0100	365883.	0.000
78.000	0.000380	278179.	-11053.	-0.000591	2149.4806	5.799E+09	-162.2468	2564674.	0.000
84.000	-0.002302	209354.	-10766.	-0.000339	1807.1722	5.799E+09	257.7792	671766.	0.000
90.000	-0.003685	149608.	-9096.1155	-0.000153	1510.0235	5.799E+09	298.9699	486838.	0.000
96.000	-0.004138	100483.	-7385.1641	-2.358E-05	1265.6938	5.799E+09	271.3472	393443.	0.000
102.000	-0.003968	61030.	-5932.3682	5.998E-05	1069.4708	5.799E+09	212.9181	321984.	0.000
108.000	-0.003418	29184.	-4661.6181	0.000107	911.0804	5.799E+09	210.6653	369773.	0.000
114.000	-0.002688	4893.3434	-3418.9016	0.000124	790.2707	5.799E+09	203.5735	454442.	0.000
120.000	-0.001927	-12073.	-2238.7276	0.000121	825.9789	5.799E+09	189.8178	591057.	0.000
126.000	-0.001241	-22194.	-1159.2605	0.000103	876.3180	5.799E+09	170.0045	821962.	0.000
132.000	-0.000693	-26174.	-208.5484	7.782E-05	896.1124	5.799E+09	146.8995	1272179.	0.000
138.000	-0.000307	-24841.	581.6182	5.142E-05	889.4801	5.799E+09	116.4893	2275324.	0.000
144.000	-7.576E-05	-19290.	1017.2717	2.859E-05	861.8723	5.799E+09	28.7285	2275324.	0.000
150.000	3.591E-05	-12686.	1062.6040	1.205E-05	829.0289	5.799E+09	-13.6178	2275324.	0.000
156.000	6.882E-05	-6560.7198	884.4341	2.090E-06	798.5635	5.799E+09	-45.7722	3990821.	0.000
162.000	6.099E-05	-2076.8097	563.5445	-2.379E-06	776.2624	5.799E+09	-61.1910	6019661.	0.000
168.000	4.027E-05	206.2098	255.6841	-3.346E-06	766.9588	5.799E+09	-41.4291	6172320.	0.000
174.000	2.083E-05	997.5832	65.5090	-2.724E-06	770.8947	5.799E+09	-21.9626	6324985.	0.000
180.000	7.589E-06	997.3509	-24.9582	-1.692E-06	770.8936	5.799E+09	-8.1932	6477655.	0.000
186.000	5.359E-07	701.2102	-51.3144	-8.127E-07	769.4207	5.799E+09	-0.5922	6630328.	0.000
192.000	-2.164E-06	383.0797	-45.7523	-2.518E-07	767.8384	5.799E+09	2.4462	6783005.	0.000
198.000	-2.485E-06	152.6480	-29.9312	2.540E-08	766.6924	5.799E+09	2.8275	6825971.	0.000
204.000	-1.859E-06	23.8589	-15.1037	1.167E-07	766.0518	5.799E+09	2.1150	6825971.	0.000
210.000	-1.085E-06	-28.8122	-5.0564	1.142E-07	766.0765	5.799E+09	1.2341	6825971.	0.000
216.000	-4.893E-07	-37.0293	-0.0555	8.009E-08	766.1173	5.799E+09	0.4329	5309089.	0.000
222.000	-1.237E-07	-29.6258	1.4778	4.560E-08	766.0805	5.799E+09	0.0782	3792206.	0.000
228.000	5.798E-08	-19.3799	1.6024	2.025E-08	766.0296	5.799E+09	-0.0366	3792206.	0.000
234.000	1.193E-07	-10.4347	1.2662	4.825E-09	765.9852	5.799E+09	-0.0754	3792206.	0.000
240.000	1.159E-07	-4.1945	0.8202	-2.744E-09	765.9540	5.799E+09	-0.0732	3792206.	0.000
246.000	8.640E-08	-0.5871	0.4367	-5.217E-09	765.9361	5.799E+09	-0.0546	3792206.	0.000
252.000	5.327E-08	1.0551	0.1718	-4.975E-09	765.9384	5.799E+09	-0.0337	3792206.	0.000
258.000	2.670E-08	1.4842	0.0202	-3.662E-09	765.9405	5.799E+09	-0.0169	3792206.	0.000
264.000	9.333E-09	1.3044	-0.0481	-2.219E-09	765.9397	5.799E+09	-0.005899	3792206.	0.000
270.000	6.939E-11	0.9111	-0.0659	-1.073E-09	765.9377	5.799E+09	-4.385E-05	3792206.	0.000
276.000	-3.538E-09	0.5153	-0.0580	-3.346E-10	765.9357	5.799E+09	0.002683	4550647.	0.000
282.000	-3.946E-09	0.2156	-0.0395	4.347E-11	765.9342	5.799E+09	0.003492	5309089.	0.000
288.000	-3.016E-09	0.0414	-0.0210	1.764E-10	765.9334	5.799E+09	0.002669	5309089.	0.000
294.000	-1.830E-09	-0.0368	-0.008138	1.788E-10	765.9333	5.799E+09	0.001619	5309089.	0.000
300.000	-8.711E-10	-0.0566	-0.000969	1.305E-10	765.9334	5.799E+09	0.000771	5309089.	0.000
306.000	-2.640E-10	-0.0486	0.002044	7.601E-11	765.9334	5.799E+09	0.000234	5309089.	0.000
312.000	4.105E-11	-0.0322	0.002636	3.417E-11	765.9333	5.799E+09	-3.632E-05	5309089.	0.000
318.000	1.460E-10	-0.0171	0.002139	8.662E-12	765.9332	5.799E+09	-0.000129	5309089.	0.000
324.000	1.450E-10	-0.006570	0.001367	-3.573E-12	765.9332	5.799E+09	-0.000128	5309089.	0.000
330.000	1.032E-10	-0.000673	0.000708	-7.321E-12	765.9332	5.799E+09	-9.128E-05	5309089.	0.000
336.000	5.714E-11	0.001939	0.000254	-6.665E-12	765.9332	5.799E+09	-6.006E-05	6305922.	0.000
342.000	2.317E-11	0.002387	-1.225E-05	-4.427E-12	765.9332	5.799E+09	-2.867E-05	7425000.	0.000
348.000	4.014E-12	0.001800	-0.000113	-2.261E-12	765.9332	5.799E+09	-4.967E-06	7425000.	0.000
354.000	-3.966E-12	0.001033	-0.000113	0.000	765.9332	5.799E+09	4.908E-06	7425000.	0.000
360.000	-5.533E-12	0.000442	-7.807E-05	0.000	765.9332	5.799E+09	6.847E-06	7425000.	0.000
366.000	-4.359E-12	9.613E-05	-4.135E-05	0.000	765.9332	5.799E+09	5.394E-06	7425000.	0.000
372.000	-2.588E-12	-5.515E-05	-1.556E-05	0.000	765.9332	5.799E+09	3.202E-06	7425000.	0.000
378.000	-1.159E-12	-9.110E-05	-1.653E-06	0.000	765.9332	5.799E+09	1.434E-06	7425000.	0.000
384.000	0.000	-7.534E-05	3.749E-06	0.000	765.9332	5.799E+09	3.661E-07	7425000.	0.000
390.000	0.000	-4.631E-05	4.477E-06	0.000	765.9332	5.799E+09	-1.232E-07	7425000.	0.000
396.000	0.000	-2.168E-05	3.338E-06	0.000	765.9332	5.799E+09	-2.567E-07	7425000.	0.000
402.000	0.000	-6.274E-06	1.897E-06	0.000	765.9332	5.799E+09	-2.236E-07	7425000.	0.000
408.000	0.000	1.095E-06	7.997E-07	0.000	765.9332	5.799E+09	-1.422E-07	7425000.	0.000
414.000	0.000	3.342E-06	1.656E-07	0.000	765.9332	5.799E+09	-6.934E-08	7425000.	0.000
420.000	0.000	3.090E-06	-1.094E-07	0.000	765.9332	5.799E+09	-2.212E-08	7425000.	0.000
426.000	0.000	2.038E-06	-1.717E-07	0.000	765.9332	5.799E+09	1.361E-09	7425000.	0.000
432.000	0.000	1.033E-06	-1.401E-07	0.000	765.9332	5.799E+09	9.186E-09	7425000.	0.000
438.000	0.000	3.583E-07	-8.529E-08	0.000	765.9332	5.799E+09	9.071E-09	7425000.	0.000
444.000	0.000	9.529E-09	-3.946E-08	0.000	765.9332	5.799E+09	6.203E-09	7425000.	0.000
450.000	0.000	-1.160E-07	-1.107E-08	0.000	765.9332	5.799E+09	3.262E-09	7425000.	0.000
456.000	0.000	-1.239E-07	2.357E-09	0.000	765.9332	5.799E+09	1.212E-09	7425000.	0.000
462.000	0.000	-8.807E-08	6.338E-09	0.000	765.9332	5.799E+09	1.145E-10	7425000.	0.000
468.000	0.000	-4.803E-08	5.761E-09	0.000	765.9332	5.799E+09	-3.069E-10	7425000.	0.000
474.000	0.000	-1.900E-08	3.763E-09	0.000	765.9332	5.799E+09	-3.593E-10	7425000.	0.000
480.000	0.000	-2.876E-09	1.888E-09	0.000	765.9332	5.799E+09	-2.657E-10	7425000.	0.000
486.000	0.000	3.683E-09	6.408E-10	0.000	765.9332	5.799E+09	-1.500E-10	7425000.	0.000
492.000	0.000	4.839E-09	3.052E-12	0.000	765.9332	5.799E+09	-6.260E-11	7425000.	0.000

498.000	0.000	3.737E-09	-2.219E-10	0.000	765.9332	5.799E+09	-1.239E-11	7425000.	0.000
504.000	0.000	2.185E-09	-2.318E-10	0.000	765.9332	5.799E+09	9.107E-12	7425000.	0.000
510.000	0.000	9.587E-10	-1.630E-10	0.000	765.9332	5.799E+09	1.382E-11	7425000.	0.000
516.000	0.000	2.292E-10	-8.803E-11	0.000	765.9332	5.799E+09	1.117E-11	7425000.	0.000
522.000	0.000	-9.853E-11	-3.426E-11	0.000	765.9332	5.799E+09	6.756E-12	7425000.	0.000
528.000	0.000	-1.829E-10	-4.691E-12	0.000	765.9332	5.799E+09	3.100E-12	7425000.	0.000
534.000	0.000	-1.556E-10	7.157E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
540.000	0.000	-9.745E-11	9.088E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
546.000	0.000	-4.667E-11	6.933E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
552.000	0.000	-1.428E-11	4.015E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
558.000	0.000	1.541E-12	1.738E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
564.000	0.000	6.613E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
570.000	0.000	6.326E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
576.000	0.000	4.247E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
582.000	0.000	2.195E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
588.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	3712500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0051636 radians
Maximum bending moment = 464759. inch-lbs
Maximum shear force = 18474. lbs
Depth of maximum bending moment = 48.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	25365.	-0.009201	765.9332	5.799E+09	-755.3220	4531.9319	0.000
6.000	0.4448	147096.	21839.	-0.009125	1497.5306	5.799E+09	-420.0048	5665.6382	0.000
12.000	0.3905	278932.	19305.	-0.008905	2153.2270	5.799E+09	-424.6861	6525.3222	0.000
18.000	0.3379	395212.	16750.	-0.008556	2731.5573	5.799E+09	-427.0985	7583.1272	0.000
24.000	0.2878	495739.	14187.	-0.008095	3231.5365	5.799E+09	-427.1007	8903.3860	0.000
30.000	0.2408	580416.	11632.	-0.007538	3652.6864	5.799E+09	-424.5370	10579.	0.000
36.000	0.1974	649255.	8908.2478	-0.006902	3995.0632	5.799E+09	-483.4141	14696.	0.000
42.000	0.1580	700070.	5697.1332	-0.006204	4247.7977	5.799E+09	-586.9574	22294.	0.000
48.000	0.1229	729086.	2219.2955	-0.005465	4392.1089	5.799E+09	-572.3218	27938.	0.000
54.000	0.0924	736801.	-1155.1767	-0.004706	4430.4793	5.799E+09	-552.5023	35881.	0.000
60.000	0.0664	723921.	-4393.2111	-0.003951	4366.4210	5.799E+09	-526.8425	47579.	0.000
66.000	0.0450	691383.	-7456.6091	-0.003218	4204.5895	5.799E+09	-494.2901	65932.	0.000
72.000	0.0278	640389.	-10298.	-0.002529	3950.9680	5.799E+09	-452.8895	97683.	0.000
78.000	0.0146	572479.	-12851.	-0.001902	3613.2118	5.799E+09	-398.1212	163280.	0.000
84.000	0.004996	489690.	-14988.	-0.001352	3201.4499	5.799E+09	-314.0580	377204.	0.000
90.000	-0.001598	395126.	-15204.	-0.000895	2731.1277	5.799E+09	242.0290	908576.	0.000
96.000	-0.005739	308897.	-13594.	-0.000530	2302.2617	5.799E+09	294.5232	307914.	0.000
102.000	-0.007962	232976.	-11950.	-0.000250	1924.6610	5.799E+09	253.5365	191058.	0.000
108.000	-0.008739	165960.	-10390.	-4.358E-05	1591.3480	5.799E+09	266.5434	183009.	0.000
114.000	-0.008485	108380.	-8775.4297	9.836E-05	1304.9702	5.799E+09	271.5564	192026.	0.000
120.000	-0.007558	60473.	-7158.6258	0.000186	1066.6991	5.799E+09	267.3783	212249.	0.000
126.000	-0.006256	22133.	-5591.3961	0.000228	876.0143	5.799E+09	255.0316	244579.	0.000
132.000	-0.004817	-7046.3542	-4109.6407	0.000236	800.9789	5.799E+09	238.8868	297555.	0.000
138.000	-0.003421	-27619.	-2735.1048	0.000218	903.2996	5.799E+09	219.2918	384573.	0.000
144.000	-0.002197	-40271.	-1488.3580	0.000183	966.2251	5.799E+09	196.2905	536039.	0.000
150.000	-0.001223	-45818.	-390.9214	0.000130	993.8133	5.799E+09	169.5217	831712.	0.000
156.000	-0.000533	-45218.	842.2787	9.156E-05	990.8309	5.799E+09	241.5451	2718043.	0.000
162.000	-0.000124	-35880.	1940.7463	4.960E-05	944.3850	5.799E+09	124.6108	6019661.	0.000
168.000	6.204E-05	-22021.	2123.1118	1.965E-05	875.4571	5.799E+09	-63.8223	6172320.	0.000
174.000	0.000112	-10439.	1578.8063	2.854E-06	817.8517	5.799E+09	-117.6129	6324985.	0.000
180.000	9.629E-05	-3080.6853	914.0981	-4.140E-06	781.2552	5.799E+09	-103.9565	6477655.	0.000
186.000	6.189E-05	537.9845	397.0664	-5.456E-06	768.6089	5.799E+09	-68.3874	6630328.	0.000
192.000	3.082E-05	1694.1937	87.3744	-4.301E-06	774.3594	5.799E+09	-34.8433	6783005.	0.000
198.000	1.027E-05	1594.4258	-52.2216	-2.600E-06	773.8632	5.799E+09	-11.6887	6825971.	0.000
204.000	-3.736E-07	1072.3389	-86.0127	-1.220E-06	771.2665	5.799E+09	0.4250	6825971.	0.000
210.000	-4.364E-06	564.5277	-69.8431	-3.730E-07	768.7409	5.799E+09	4.9648	6825971.	0.000
216.000	-4.850E-06	234.9107	-42.0748	4.059E-08	767.1015	5.799E+09	4.2913	5309089.	0.000
222.000	-3.877E-06	59.5555	-21.8497	1.929E-07	766.2294	5.799E+09	2.4504	3792206.	0.000
228.000	-2.535E-06	-27.6421	-9.6927	2.094E-07	766.0706	5.799E+09	1.6019	3792206.	0.000

234.000	-1.364E-06	-57.1445	-2.3014	1.656E-07	766.2174	5.799E+09	0.8619	3792206.	0.000
240.000	-5.476E-07	-55.5644	1.3226	1.073E-07	766.2095	5.799E+09	0.3461	3792206.	0.000
246.000	-7.645E-08	-41.4720	2.5058	5.707E-08	766.1394	5.799E+09	0.0483	3792206.	0.000
252.000	1.372E-07	-25.6005	2.3906	2.236E-08	766.0605	5.799E+09	-0.0867	3792206.	0.000
258.000	1.910E-07	-12.8264	1.7665	2.483E-09	765.9970	5.799E+09	-0.1213	3792206.	0.000
264.000	1.670E-07	-4.4068	1.0860	-6.432E-09	765.9551	5.799E+09	-0.1056	3792206.	0.000
270.000	1.147E-07	0.2170	0.5518	-8.600E-09	765.9342	5.799E+09	-0.0725	3792206.	0.000
276.000	6.381E-08	2.2301	0.1890	-7.334E-09	765.9443	5.799E+09	-0.0484	4550647.	0.000
282.000	2.673E-08	2.4989	-0.0271	-4.887E-09	765.9456	5.799E+09	-0.0236	5309889.	0.000
288.000	5.159E-09	1.9140	-0.1117	-2.604E-09	765.9427	5.799E+09	-0.004565	5309889.	0.000
294.000	-4.526E-09	1.1629	-0.1134	-1.012E-09	765.9389	5.799E+09	0.004005	5309889.	0.000
300.000	-6.990E-09	0.5549	-0.0828	-1.237E-10	765.9359	5.799E+09	0.006185	5309889.	0.000
306.000	-6.010E-09	0.1690	-0.0483	2.508E-10	765.9340	5.799E+09	0.005318	5309889.	0.000
312.000	-3.981E-09	-0.0256	-0.0218	3.250E-10	765.9333	5.799E+09	0.003522	5309889.	0.000
318.000	-2.110E-09	-0.0934	-0.005643	2.634E-10	765.9336	5.799E+09	0.001867	5309889.	0.000
324.000	-8.196E-10	-0.0938	0.002135	1.666E-10	765.9336	5.799E+09	0.000725	5309889.	0.000
330.000	-1.111E-10	-0.0680	0.004606	8.288E-11	765.9335	5.799E+09	9.835E-05	5309889.	0.000
336.000	1.749E-10	-0.0387	0.004350	2.767E-11	765.9334	5.799E+09	-0.000184	6305922.	0.000
342.000	2.209E-10	-0.0159	0.002978	0.000	765.9332	5.799E+09	-0.000273	7425000.	0.000
348.000	1.682E-10	-0.002937	0.001534	-1.030E-11	765.9332	5.799E+09	-0.000208	7425000.	0.000
354.000	9.725E-11	0.002530	0.000548	-1.051E-11	765.9332	5.799E+09	-0.000120	7425000.	0.000
360.000	4.202E-11	0.003662	3.120E-05	-7.311E-12	765.9332	5.799E+09	-5.200E-05	7425000.	0.000
366.000	9.521E-12	0.002918	-0.000160	-3.907E-12	765.9332	5.799E+09	-1.178E-05	7425000.	0.000
372.000	-4.862E-12	0.001747	-0.000177	-1.493E-12	765.9332	5.799E+09	6.017E-06	7425000.	0.000
378.000	-8.399E-12	0.000791	-0.000128	0.000	765.9332	5.799E+09	1.039E-05	7425000.	0.000
384.000	-7.024E-12	0.000209	-7.095E-05	0.000	765.9332	5.799E+09	8.692E-06	7425000.	0.000
390.000	-4.351E-12	-6.080E-05	-2.872E-05	0.000	765.9332	5.799E+09	5.385E-06	7425000.	0.000
396.000	-2.056E-12	-0.000137	-4.938E-06	0.000	765.9332	5.799E+09	2.544E-06	7425000.	0.000
402.000	0.000	-0.000121	4.957E-06	0.000	765.9332	5.799E+09	7.538E-07	7425000.	0.000
408.000	0.000	-7.742E-05	6.888E-06	0.000	765.9332	5.799E+09	-1.102E-07	7425000.	0.000
414.000	0.000	-3.812E-05	5.419E-06	0.000	765.9332	5.799E+09	-3.793E-07	7425000.	0.000
420.000	0.000	-1.243E-05	3.214E-06	0.000	765.9332	5.799E+09	-3.556E-07	7425000.	0.000
426.000	0.000	4.699E-07	1.438E-06	0.000	765.9332	5.799E+09	-2.365E-07	7425000.	0.000
432.000	0.000	4.854E-06	3.656E-07	0.000	765.9332	5.799E+09	-1.209E-07	7425000.	0.000
438.000	0.000	4.881E-06	-1.250E-07	0.000	765.9332	5.799E+09	-4.262E-08	7425000.	0.000
444.000	0.000	3.369E-06	-2.583E-07	0.000	765.9332	5.799E+09	-1.836E-09	7425000.	0.000
450.000	0.000	1.788E-06	-2.247E-07	0.000	765.9332	5.799E+09	1.306E-08	7425000.	0.000
456.000	0.000	6.751E-07	-1.428E-07	0.000	765.9332	5.799E+09	1.422E-08	7425000.	0.000
462.000	0.000	7.385E-08	-6.954E-08	0.000	765.9332	5.799E+09	1.020E-08	7425000.	0.000
468.000	0.000	-1.604E-07	-2.213E-08	0.000	765.9332	5.799E+09	5.605E-09	7425000.	0.000
474.000	0.000	-1.927E-07	1.423E-09	0.000	765.9332	5.799E+09	2.245E-09	7425000.	0.000
480.000	0.000	-1.440E-07	9.252E-09	0.000	765.9332	5.799E+09	3.648E-10	7425000.	0.000
486.000	0.000	-8.197E-08	9.118E-09	0.000	765.9332	5.799E+09	-4.094E-10	7425000.	0.000
492.000	0.000	-3.465E-08	6.229E-09	0.000	765.9332	5.799E+09	-5.537E-10	7425000.	0.000
498.000	0.000	-7.227E-09	3.273E-09	0.000	765.9332	5.799E+09	-4.318E-10	7425000.	0.000
504.000	0.000	4.659E-09	1.214E-09	0.000	765.9332	5.799E+09	-2.544E-10	7425000.	0.000
510.000	0.000	7.382E-09	1.125E-10	0.000	765.9332	5.799E+09	-1.128E-10	7425000.	0.000
516.000	0.000	6.037E-09	-3.095E-10	0.000	765.9332	5.799E+09	-2.789E-11	7425000.	0.000
522.000	0.000	3.683E-09	-3.613E-10	0.000	765.9332	5.799E+09	1.063E-11	7425000.	0.000
528.000	0.000	1.708E-09	-2.668E-10	0.000	765.9332	5.799E+09	2.084E-11	7425000.	0.000
534.000	0.000	4.821E-10	-1.505E-10	0.000	765.9332	5.799E+09	1.794E-11	7425000.	0.000
540.000	0.000	-9.888E-11	-6.272E-11	0.000	765.9332	5.799E+09	1.132E-11	7425000.	0.000
546.000	0.000	-2.721E-10	-1.233E-11	0.000	765.9332	5.799E+09	5.472E-12	7425000.	0.000
552.000	0.000	-2.481E-10	9.212E-12	0.000	765.9332	5.799E+09	1.710E-12	7425000.	0.000
558.000	0.000	-1.622E-10	1.390E-11	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
564.000	0.000	-8.154E-11	1.120E-11	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
570.000	0.000	-2.798E-11	6.709E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
576.000	0.000	-1.000E-12	2.969E-12	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
582.000	0.000	7.711E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
588.000	0.000	6.766E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
594.000	0.000	2.656E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	3712500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0092014 radians
Maximum bending moment	=	736801. inch-lbs
Maximum shear force	=	25365. lbs
Depth of maximum bending moment	=	54.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	21
Number of zero deflection points	=	13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	34979.	-0.0165	765.9332	5.799E+09	-898.2343	2694.7028	0.000
6.000	0.9011	208928.	30781.	-0.0164	1805.0544	5.799E+09	-501.0870	3336.3400	0.000
12.000	0.8036	399617.	27751.	-0.0161	2753.4628	5.799E+09	-508.6517	3797.8702	0.000
18.000	0.7085	571612.	24684.	-0.0156	3608.8973	5.799E+09	-513.9305	4352.2297	0.000
24.000	0.6170	724559.	21592.	-0.0149	4369.5947	5.799E+09	-516.7888	5025.6845	0.000
30.000	0.5299	858209.	18498.	-0.0141	5034.3160	5.799E+09	-517.0813	5854.3455	0.000
36.000	0.4482	972424.	15158.	-0.0131	5602.3733	5.799E+09	-593.4376	7943.5131	0.000
42.000	0.3726	1064345.	11196.	-0.0121	6059.5520	5.799E+09	-727.3799	11714.	0.000
48.000	0.3035	1129063.	6861.5748	-0.0109	6381.4326	5.799E+09	-717.4204	14182.	0.000
54.000	0.2415	1166874.	2601.9103	-0.009738	6569.4907	5.799E+09	-702.4678	17455.	0.000
60.000	0.1867	1178281.	-1551.6355	-0.008524	6626.2237	5.799E+09	-682.0475	21923.	0.000
66.000	0.1392	1164008.	-5564.2652	-0.007313	6555.2336	5.799E+09	-655.4958	28259.	0.000
72.000	0.0989	1125024.	-9396.1469	-0.006128	6361.3424	5.799E+09	-621.7981	37717.	0.000
78.000	0.0656	1062579.	-12999.	-0.004997	6050.7689	5.799E+09	-579.2111	52945.	0.000
84.000	0.0390	978267.	-16309.	-0.003941	5631.4353	5.799E+09	-524.2083	80734.	0.000
90.000	0.0184	874148.	-19224.	-0.002982	5113.5908	5.799E+09	-447.4298	146292.	0.000
96.000	0.003171	753086.	-21330.	-0.002140	4511.4774	5.799E+09	-254.6186	481837.	0.000
102.000	-0.007334	622138.	-21349.	-0.001429	3860.1938	5.799E+09	248.3853	203201.	0.000
108.000	-0.01440	499537.	-19705.	-0.000849	3250.4240	5.799E+09	299.8212	128711.	0.000
114.000	-0.0175	387251.	-17828.	-0.000390	2691.9635	5.799E+09	325.6045	111524.	0.000
120.000	-0.0187	286318.	-15846.	-4.134E-05	2189.9598	5.799E+09	335.2349	107825.	0.000
126.000	-0.0180	197178.	-13843.	0.000209	1746.6183	5.799E+09	332.3230	110691.	0.000
132.000	-0.0161	119814.	-11876.	0.000373	1361.8413	5.799E+09	323.3668	120146.	0.000
138.000	-0.0135	53977.	-9977.6445	0.000463	1034.3932	5.799E+09	309.4298	137119.	0.000
144.000	-0.0106	-772.4026	-8176.2673	0.000490	769.7748	5.799E+09	291.6293	164795.	0.000
150.000	-0.007657	-45044.	-6498.2210	0.000467	989.9641	5.799E+09	268.3195	210256.	0.000
156.000	-0.004998	-79613.	-4424.3097	0.000402	1161.8969	5.799E+09	422.9843	507834.	0.000
162.000	-0.002832	-98879.	-1494.7579	0.000310	1257.7160	5.799E+09	553.5330	1172592.	0.000
168.000	-0.001281	-98123.	1561.9390	0.000208	1253.9552	5.799E+09	465.3660	2179576.	0.000
174.000	-0.000339	-80520.	3983.3992	0.000115	1166.4044	5.799E+09	341.7874	6049834.	0.000
180.000	0.000103	-50535.	4674.4034	4.756E-05	1017.2738	5.799E+09	-111.4526	6477655.	0.000
186.000	0.000232	-24515.	3571.9206	8.728E-06	887.8586	5.799E+09	-256.0416	6630328.	0.000
192.000	0.000208	-7688.1256	2098.4606	-7.932E-06	804.1708	5.799E+09	-235.1117	6783005.	0.000
198.000	0.000137	681.6322	927.2141	-1.156E-05	769.3233	5.799E+09	-155.3038	6825971.	0.000
204.000	6.928E-05	3459.8020	224.8398	-9.415E-06	783.1408	5.799E+09	-78.8210	6825971.	0.000
210.000	2.353E-05	3397.1083	-91.9477	-5.867E-06	782.8290	5.799E+09	-26.7749	6825971.	0.000
216.000	-1.123E-06	2367.2720	-169.2916	-2.885E-06	777.7070	5.799E+09	0.9936	5309089.	0.000
222.000	-1.108E-05	1370.9406	-145.2949	-9.509E-07	772.7517	5.799E+09	7.0053	3792206.	0.000
228.000	-1.253E-05	625.4909	-100.5141	8.200E-08	769.0441	5.799E+09	7.9216	3792206.	0.000
234.000	-1.010E-05	164.6198	-57.5991	4.908E-07	766.7519	5.799E+09	6.3834	3792206.	0.000
240.000	-6.644E-06	-66.6050	-25.8507	5.415E-07	766.2644	5.799E+09	4.1993	3792206.	0.000
246.000	-3.602E-06	-146.5898	-6.4229	4.312E-07	766.6622	5.799E+09	2.2766	3792206.	0.000
252.000	-1.470E-06	-144.4766	3.1941	2.806E-07	766.6517	5.799E+09	0.9291	3792206.	0.000
258.000	-2.349E-07	-108.7790	6.4266	1.496E-07	766.4742	5.799E+09	0.1484	3792206.	0.000
264.000	3.249E-07	-67.6333	6.2560	5.830E-08	766.2695	5.799E+09	-0.2053	3792206.	0.000
270.000	4.648E-07	-33.8153	4.7587	5.816E-09	766.1013	5.799E+09	-0.2937	3792206.	0.000
276.000	3.947E-07	-10.5396	2.9794	-1.713E-08	765.9856	5.799E+09	-0.2993	4550647.	0.000
282.000	2.592E-07	1.9697	1.3934	-2.157E-08	765.9430	5.799E+09	-0.2293	5309089.	0.000
288.000	1.359E-07	6.2213	0.3447	-1.733E-08	765.9641	5.799E+09	-0.1202	5309089.	0.000
294.000	5.124E-08	6.1380	-0.1521	-1.093E-08	765.9637	5.799E+09	-0.0453	5309089.	0.000
300.000	4.697E-09	4.4165	-0.3006	-5.473E-09	765.9551	5.799E+09	-0.004156	5309089.	0.000
306.000	-1.443E-08	2.5411	-0.2747	-1.873E-09	765.9458	5.799E+09	0.0128	5309089.	0.000
312.000	-1.778E-08	1.1230	-0.1892	2.253E-11	765.9387	5.799E+09	0.0157	5309089.	0.000
318.000	-1.416E-08	0.2702	-0.1045	7.433E-10	765.9345	5.799E+09	0.0125	5309089.	0.000
324.000	-8.861E-09	-0.1319	-0.0434	8.148E-10	765.9338	5.799E+09	0.007841	5309089.	0.000
330.000	-4.382E-09	-0.2516	-0.008197	6.164E-10	765.9344	5.799E+09	0.003877	5309089.	0.000
336.000	-1.464E-09	-0.2314	0.008049	3.666E-10	765.9343	5.799E+09	0.001538	6305922.	0.000
342.000	1.745E-11	-0.1556	0.0126	1.663E-10	765.9339	5.799E+09	-2.160E-05	7425000.	0.000
348.000	5.323E-10	-0.0805	0.0106	4.415E-11	765.9336	5.799E+09	-0.000659	7425000.	0.000
354.000	5.472E-10	-0.0290	0.006550	-1.253E-11	765.9333	5.799E+09	-0.000677	7425000.	0.000
360.000	3.819E-10	-0.001899	0.003101	-2.854E-11	765.9332	5.799E+09	-0.000473	7425000.	0.000
366.000	2.048E-10	0.008225	0.000922	-2.526E-11	765.9332	5.799E+09	-0.000253	7425000.	0.000
372.000	7.875E-11	0.009218	-0.000130	-1.624E-11	765.9332	5.799E+09	-9.745E-05	7425000.	0.000
378.000	9.924E-12	0.006693	-0.000459	-8.008E-12	765.9332	5.799E+09	-1.228E-05	7425000.	0.000
384.000	-1.734E-11	0.003720	-0.000432	-2.620E-12	765.9332	5.799E+09	2.146E-05	7425000.	0.000
390.000	-2.152E-11	0.001516	-0.000288	0.000	765.9332	5.799E+09	2.663E-05	7425000.	0.000
396.000	-1.628E-11	0.000269	-0.000147	1.013E-12	765.9332	5.799E+09	2.014E-05	7425000.	0.000
402.000	-9.362E-12	-0.000252	-5.206E-05	1.022E-12	765.9332	5.799E+09	1.158E-05	7425000.	0.000
408.000	-4.015E-12	-0.000357	-2.400E-06	0.000	765.9332	5.799E+09	4.968E-06	7425000.	0.000
414.000	0.000	-0.000283	1.579E-05	0.000	765.9332	5.799E+09	1.096E-06	7425000.	0.000
420.000	0.000	-0.000168	1.726E-05	0.000	765.9332	5.799E+09	-6.063E-07	7425000.	0.000
426.000	0.000	-7.571E-05	1.240E-05	0.000	765.9332	5.799E+09	-1.015E-06	7425000.	0.000
432.000	0.000	-1.958E-05	6.823E-06	0.000	765.9332	5.799E+09	-0.423E-07	7425000.	0.000
438.000	0.000	6.236E-06	2.739E-06	0.000	765.9332	5.799E+09	-5.191E-07	7425000.	0.000
444.000	0.000	1.336E-05	4.507E-07	0.000	765.9332	5.799E+09	-2.437E-07	7425000.	0.000
450.000	0.000	1.170E-05	-4.937E-07	0.000	765.9332	5.799E+09	-7.104E-08	7425000.	0.000
456.000	0.000	7.469E-06	-6.715E-07	0.000	765.9332	5.799E+09	1.176E-08	7425000.	0.000
462.000	0.000	3.655E-06	-5.247E-07	0.000	765.9332	5.799E+09	3.718E-08	7425000.	0.000
468.000	0.000	1.176E-06	-3.096E-07	0.000	765.9332	5.799E+09	3.452E-08	7425000.	0.000
474.000	0.000	-6.139E-08	-1.375E-07	0.000	765.9332	5.799E+09	2.283E-08	7425000.	0.000
480.000	0.000	-4.769E-07	-3.421E-08	0.000	765.9332	5.799E+09	1.160E-08	7425000.	0.000
486.000	0.000	-4.742E-07	1.274E-08	0.000	765.9332	5.799E+09	4.045E-09	7425000.	0.000
492.000	0.000	-3.255E-07	2.526E-08	0.000	765.9332	5.799E+09	1.286E-10	7425000.	0.000
498.000	0.000	-1.718E-07	2.178E-08	0.000	765.9332	5.799E+09	-1.287E-09	7425000.	0.000
504.000	0.000	-6.423E-08	1.377E-08	0.000	765.9332	5.799E+09	-1.383E-09	7425000.	0.000
510.000	0.000	-6.441E-09	6.666E-09	0.000	765.9332	5.799E+09	-9.858E-10	7425000.	0.000

516.000	0.000	1.587E-08	2.092E-09	0.000	765.9332	5.799E+09	-5.390E-10	7425000.	0.000
522.000	0.000	1.876E-08	-1.670E-10	0.000	765.9332	5.799E+09	-2.140E-10	7425000.	0.000
528.000	0.000	1.393E-08	-9.084E-10	0.000	765.9332	5.799E+09	-3.314E-11	7425000.	0.000
534.000	0.000	7.888E-09	-8.857E-10	0.000	765.9332	5.799E+09	4.072E-11	7425000.	0.000
540.000	0.000	3.309E-09	-6.016E-10	0.000	765.9332	5.799E+09	5.397E-11	7425000.	0.000
546.000	0.000	6.690E-10	-3.143E-10	0.000	765.9332	5.799E+09	4.180E-11	7425000.	0.000
552.000	0.000	-4.665E-10	-1.154E-10	0.000	765.9332	5.799E+09	2.450E-11	7425000.	0.000
558.000	0.000	-7.196E-10	-9.567E-12	0.000	765.9332	5.799E+09	1.078E-11	7425000.	0.000
564.000	0.000	-5.841E-10	3.052E-11	0.000	765.9332	5.799E+09	2.584E-12	7425000.	0.000
570.000	0.000	-3.549E-10	3.490E-11	0.000	765.9332	5.799E+09	-1.122E-12	7425000.	0.000
576.000	0.000	-1.658E-10	2.524E-11	0.000	765.9332	5.799E+09	-2.101E-12	7425000.	0.000
582.000	0.000	-5.217E-11	1.352E-11	0.000	765.9332	5.799E+09	-1.806E-12	7425000.	0.000
588.000	0.000	-3.495E-12	4.769E-12	0.000	765.9332	5.799E+09	-1.110E-12	7425000.	0.000
594.000	0.000	5.227E-12	0.000	0.000	765.9332	5.799E+09	0.000	7425000.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	3712500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0164760 radians
Maximum bending moment           =       1178281. inch-lbs
Maximum shear force              =         34979. lbs
Depth of maximum bending moment  =     60.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             24
Number of zero deflection points =             13
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

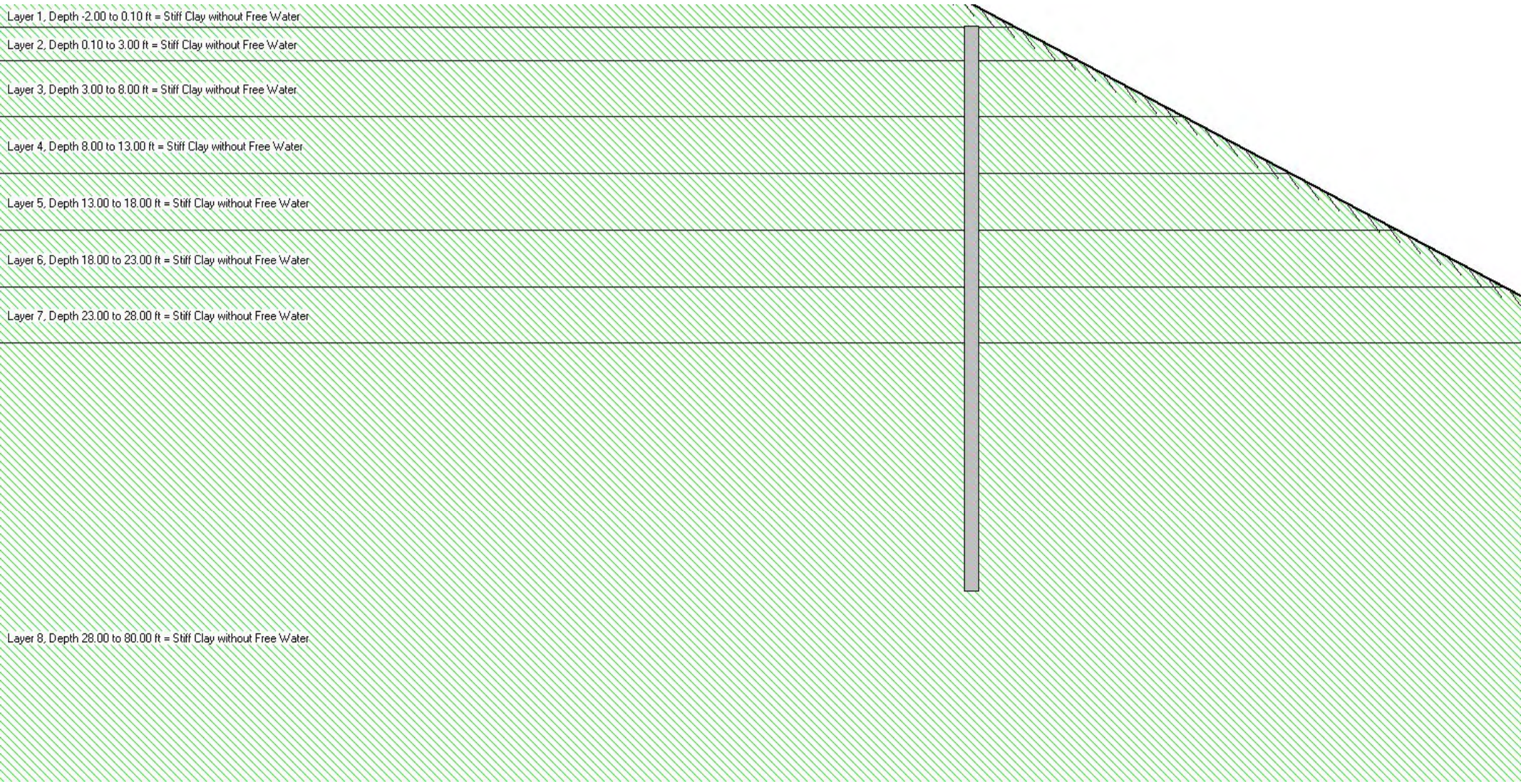
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	154000.	0.25000000	464759.	18474.	-0.00516364
2	4	y = 0.5000	M = 0.000	154000.	0.50000000	736801.	25365.	-0.00920138
3	4	y = 1.0000	M = 0.000	154000.	1.00000000	1178281.	34979.	-0.01647604

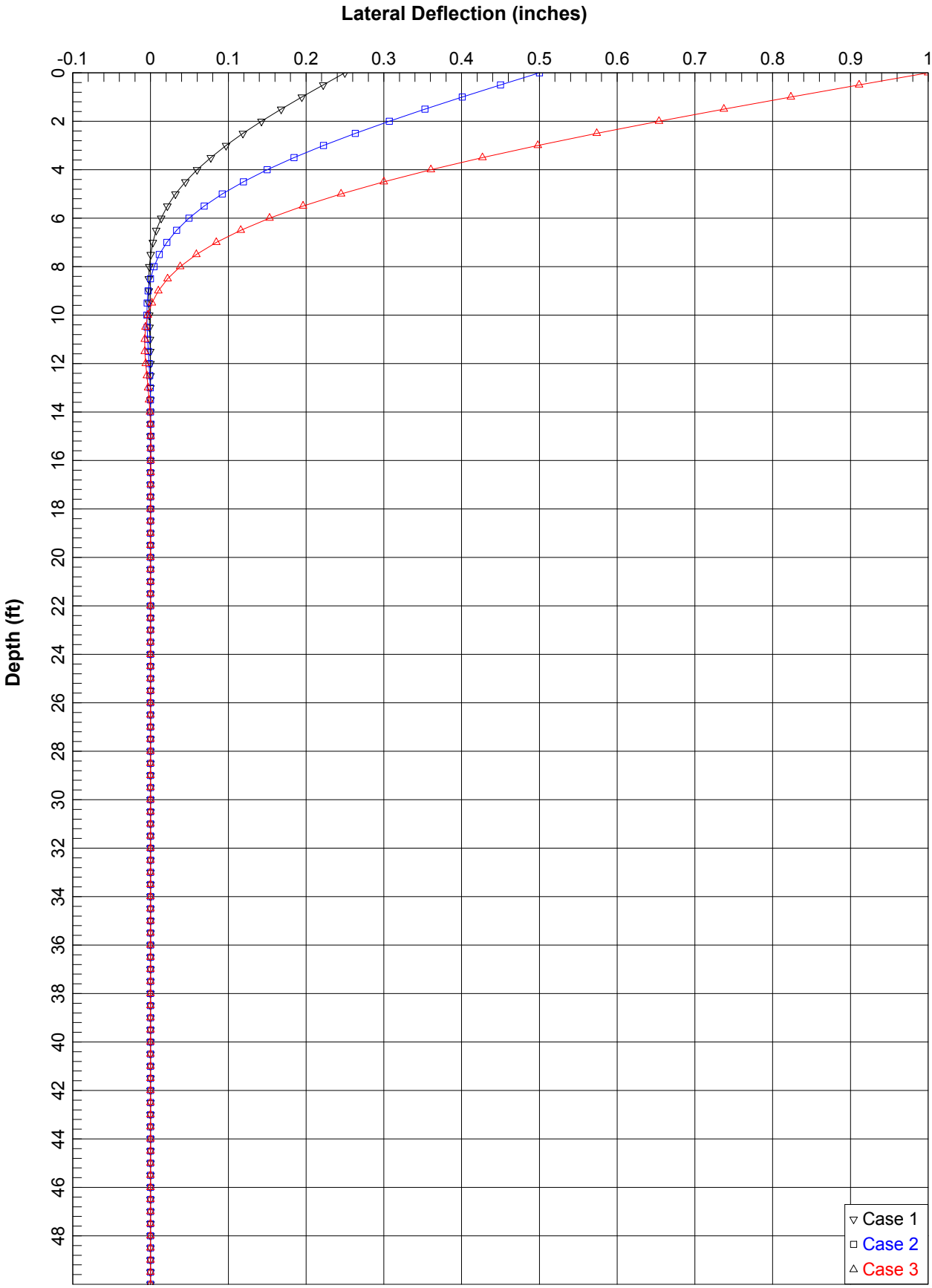
The analysis ended normally.

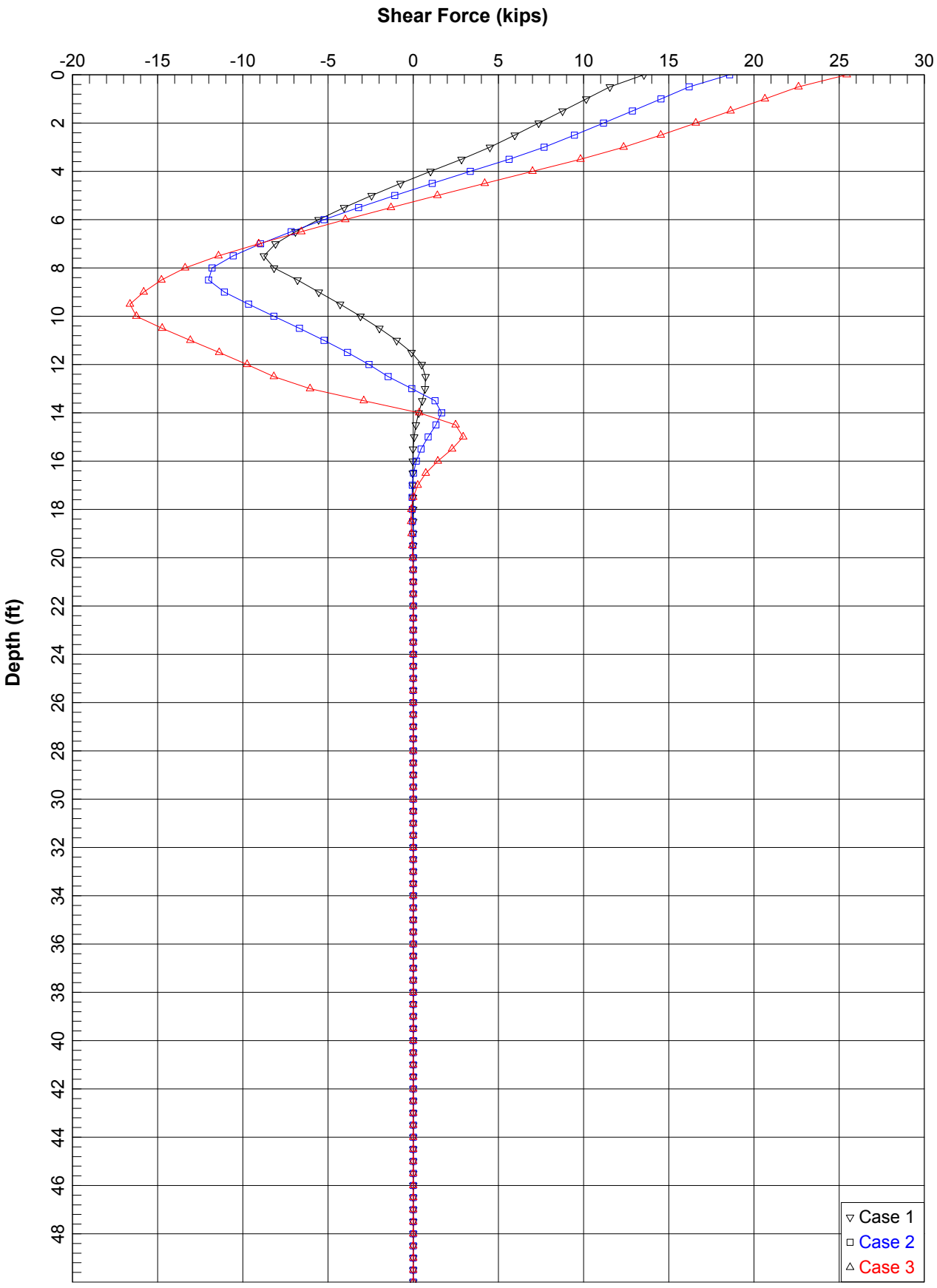
SUPPORT: **ABUTMENT 1L**

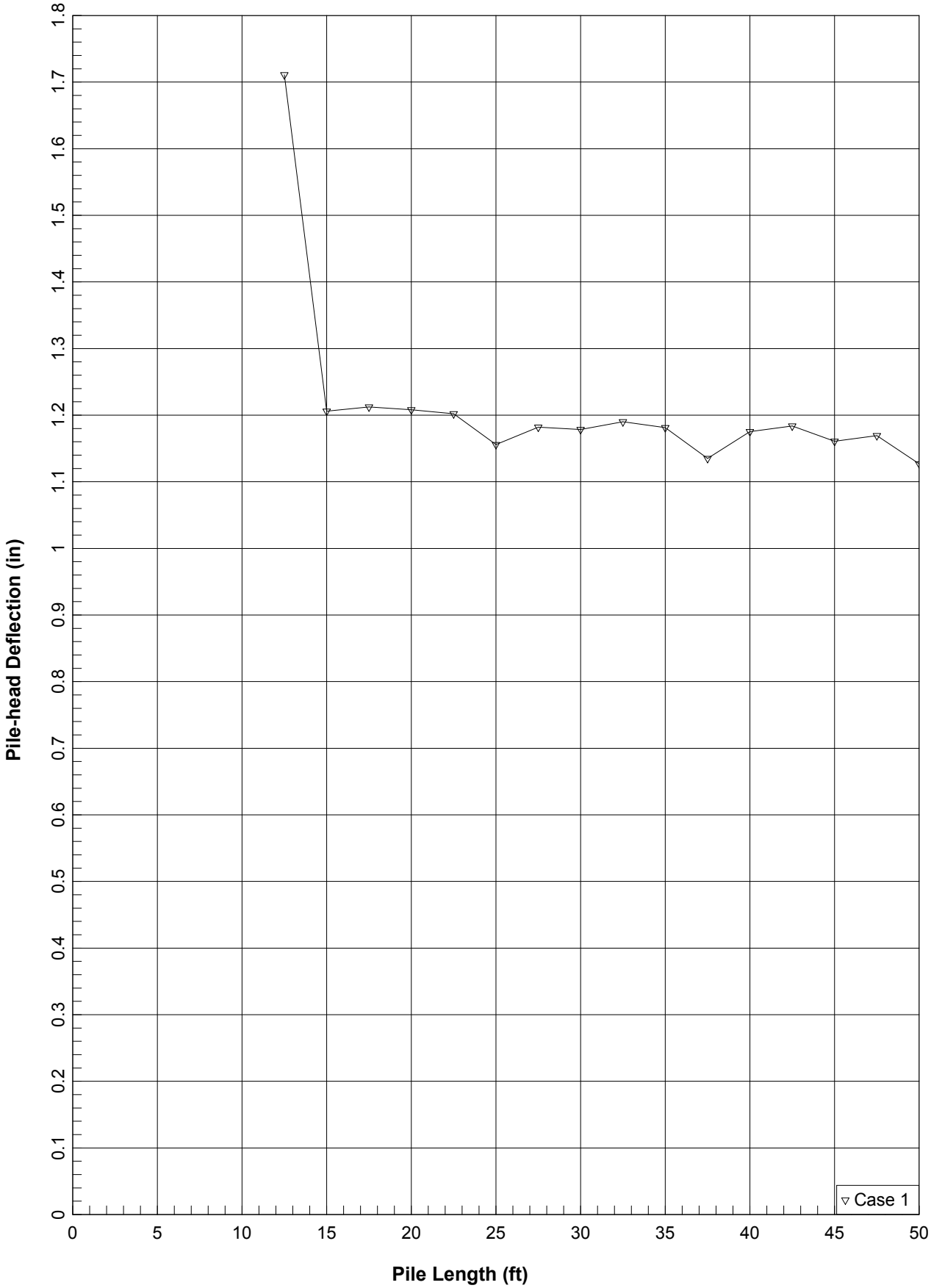
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -2.00 to 0.10 ft = Stiff Clay without Free Water
Layer 2, Depth 0.10 to 3.00 ft = Stiff Clay without Free Water
Layer 3, Depth 3.00 to 8.00 ft = Stiff Clay without Free Water
Layer 4, Depth 8.00 to 13.00 ft = Stiff Clay without Free Water
Layer 5, Depth 13.00 to 18.00 ft = Stiff Clay without Free Water
Layer 6, Depth 18.00 to 23.00 ft = Stiff Clay without Free Water
Layer 7, Depth 23.00 to 28.00 ft = Stiff Clay without Free Water
Layer 8, Depth 28.00 to 80.00 ft = Stiff Clay without Free Water


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1L_long_Critical Length.lp6d
Name of output report file: Abut 1L_long_Critical Length.lp6o
Name of plot output file: Abut 1L_long_Critical Length.lp6p
Name of runtime messeage file: Abut 1L_long_Critical Length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:47:49

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 33.700 degrees
= 0.588 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

```
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 4 is stiff clay without free water

   Distance from top of pile to top of layer           =      8.00000 ft
   Distance from top of pile to bottom of layer        =     13.00000 ft
   Effective unit weight at top of layer               =    120.00000 pcf
   Effective unit weight at bottom of layer            =    120.00000 pcf
   Undrained cohesion at top of layer                  =   1500.00000 psi
   Undrained cohesion at bottom of layer               =   1500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =     13.00000 ft
   Distance from top of pile to bottom of layer        =     18.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   4500.00000 psi
   Undrained cohesion at bottom of layer               =   4500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =     18.00000 ft
   Distance from top of pile to bottom of layer        =     23.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   2500.00000 psi
   Undrained cohesion at bottom of layer               =   2500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 7 is stiff clay without free water

   Distance from top of pile to top of layer           =     23.00000 ft
   Distance from top of pile to bottom of layer        =     28.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   3500.00000 psi
   Undrained cohesion at bottom of layer               =   3500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 8 is stiff clay without free water

   Distance from top of pile to top of layer           =     28.00000 ft
   Distance from top of pile to bottom of layer        =     80.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   4500.00000 psi
   Undrained cohesion at bottom of layer               =   4500.00000 psi
   Epsilon-50 at top of layer                          =      0.00500
   Epsilon-50 at bottom of layer                       =      0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


-------------------------------------------------------------------------------
                        Summary of Soil Properties
-------------------------------------------------------------------------------
```

Layer	Soil Type	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial qu psi	RQD % or GSI
Strain Factor Num. Epsilon 50	(p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm Property	Test Type	Subgrade Mod. pci
1	Stiff Clay w/o Free Water	-2.000	120.000	3500.000	--	--	--
0.00700	--	--	--	--	--	--	
		0.10000	120.000	3500.000	--	--	--
0.00700	--	--	--	--	--	--	
2	Stiff Clay w/o Free Water	0.10000	120.000	1500.000	--	--	--
0.00700	--	--	--	--	--	--	
		3.000	120.000	1500.000	--	--	--
0.00700	--	--	--	--	--	--	
3	Stiff Clay w/o Free Water	3.000	120.000	2500.000	--	--	--
0.00700	--	--	--	--	--	--	
		8.000	120.000	2500.000	--	--	--

0.00700	--	--	--	--	--	--	--
4 Stiff Clay w/o Free Water		8.000	120.000	1500.000	--	--	--
0.00700	--	--	--	--	--	--	
		13.000	120.000	1500.000	--	--	--
0.00700	--	--	--	--	--	--	
5 Stiff Clay w/o Free Water		13.000	125.000	4500.000	--	--	--
0.00700	--	--	--	--	--	--	
		18.000	125.000	4500.000	--	--	--
0.00700	--	--	--	--	--	--	
6 Stiff Clay w/o Free Water		18.000	125.000	2500.000	--	--	--
0.00700	--	--	--	--	--	--	
		23.000	125.000	2500.000	--	--	--
0.00700	--	--	--	--	--	--	
7 Stiff Clay w/o Free Water		23.000	125.000	3500.000	--	--	--
0.00700	--	--	--	--	--	--	
		28.000	125.000	3500.000	--	--	--
0.00700	--	--	--	--	--	--	
8 Stiff Clay w/o Free Water		28.000	125.000	4500.000	--	--	--
0.00500	--	--	--	--	--	--	
		80.000	125.000	4500.000	--	--	--
0.00500	--	--	--	--	--	--	

```
-------------------------------------------------------------------------------
                  p-y Modification Factors for Group Action
-------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points
```

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.9300	1.0000
2	50.000	0.9300	1.0000

```
-------------------------------------------------------------------------------
                                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
1	1	V = 25000. lbs	M = 0.0000 in-lbs	154000.	True

```
V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.


-------------------------------------------------------------------------------
    Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
-------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties




-------------------------------------------------------------------------------
                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                              =       25000.000 lbs
Applied moment at pile head                           =           0.000 in-lbs
Axial thrust load on pile head                        =      154000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.1270	7.153E-08	25000.	-0.0160	765.9332	5.799E+09	-586.7597	1561.9041	0.000
6.000	1.0312	154188.	22323.	-0.0159	1532.8008	5.799E+09	-305.4386	1777.1286	0.000
12.000	0.9364	297233.	20470.	-0.0156	2244.2467	5.799E+09	-312.4654	2002.1004	0.000
18.000	0.8434	428744.	18577.	-0.0153	2898.3324	5.799E+09	-318.3375	2264.5679	0.000
24.000	0.7531	548386.	16653.	-0.0148	3493.3813	5.799E+09	-322.9965	2573.2429	0.000
30.000	0.6662	655875.	14705.	-0.0141	4027.9902	5.799E+09	-326.3826	2939.4141	0.000
36.000	0.5834	750988.	12663.	-0.0134	4501.0417	5.799E+09	-354.3246	3644.1637	0.000
42.000	0.5052	832627.	10274.	-0.0126	4907.0806	5.799E+09	-441.8995	5248.0978	0.000
48.000	0.4322	897562.	7618.8795	-0.0117	5230.0383	5.799E+09	-443.2578	6153.4058	0.000
54.000	0.3648	945681.	4962.0144	-0.0107	5469.3630	5.799E+09	-442.3639	7276.2048	0.000
60.000	0.3032	976970.	2317.6024	-0.009755	5624.9858	5.799E+09	-439.1067	8689.0024	0.000
66.000	0.2477	991518.	-299.8071	-0.008736	5697.3411	5.799E+09	-433.3631	10496.	0.000
72.000	0.1984	989517.	-2874.8743	-0.007711	5687.3883	5.799E+09	-424.9926	12854.	0.000
78.000	0.1552	971270.	-5391.3368	-0.006697	5596.6354	5.799E+09	-413.8282	16000.	0.000
84.000	0.1180	937197.	-7831.7995	-0.005709	5427.1684	5.799E+09	-399.6594	20318.	0.000
90.000	0.0867	887840.	-10177.	-0.004765	5181.6860	5.799E+09	-382.2011	26458.	0.000
96.000	0.0608	823875.	-12140.	-0.003880	4863.5489	5.799E+09	-271.8741	26813.	0.000
102.000	0.0401	749334.	-13540.	-0.003066	4492.8153	5.799E+09	-194.7589	29129.	0.000
108.000	0.0240	667066.	-14655.	-0.002333	4083.6471	5.799E+09	-177.1015	44187.	0.000
114.000	0.0121	577784.	-15649.	-0.001689	3639.5969	5.799E+09	-154.0575	76260.	0.000
120.000	0.003781	482404.	-16467.	-0.001140	3165.2153	5.799E+09	-118.7691	188471.	0.000
126.000	-0.001564	382287.	-16252.	-0.000693	2667.2743	5.799E+09	190.5274	730976.	0.000
132.000	-0.004535	288664.	-14934.	-0.000346	2201.6292	5.799E+09	248.7755	329109.	0.000
138.000	-0.005715	203720.	-13397.	-9.117E-05	1779.1546	5.799E+09	263.5960	276749.	0.000
144.000	-0.005629	128071.	-11818.	8.049E-05	1402.9079	5.799E+09	262.6135	279898.	0.000
150.000	-0.004749	61754.	-10275.	0.000179	1073.0729	5.799E+09	251.6835	317982.	0.000
156.000	-0.003485	4438.4340	-8122.4889	0.000213	788.0081	5.799E+09	465.8952	802079.	0.000
162.000	-0.002194	-36109.	-4857.4134	0.000197	945.5259	5.799E+09	622.4633	1702474.	0.000
168.000	-0.001126	-54214.	-1409.3001	0.000150	1035.5703	5.799E+09	526.9079	2806439.	0.000
174.000	-0.000396	-53298.	1388.3294	9.420E-05	1031.0144	5.799E+09	405.6353	6148505.	0.000
180.000	3.930E-06	-37728.	2598.3259	4.711E-05	953.5763	5.799E+09	-2.3032	3516312.	0.000
186.000	0.000169	-22205.	2285.2647	1.610E-05	876.3712	5.799E+09	-102.0506	3613065.	0.000
192.000	0.000197	-10334.	1613.4126	-7.328E-07	817.3326	5.799E+09	-121.9001	3709823.	0.000
198.000	0.000161	-2842.5824	941.8999	-7.550E-06	780.0710	5.799E+09	-101.9375	3806585.	0.000
204.000	0.000107	982.2775	428.1351	-8.513E-06	770.8186	5.799E+09	-69.3175	3903351.	0.000
210.000	5.852E-05	2310.7700	103.1307	-6.809E-06	777.4260	5.799E+09	-39.0173	4000121.	0.000
216.000	2.484E-05	2232.4293	-52.9137	-4.458E-06	777.0364	5.799E+09	-12.9975	3138995.	0.000
222.000	5.023E-06	1684.0452	-97.8023	-2.432E-06	774.3089	5.799E+09	-1.9654	2347575.	0.000
228.000	-4.342E-06	1063.2958	-94.9977	-1.011E-06	771.2216	5.799E+09	2.9003	4007672.	0.000
234.000	-7.106E-06	545.9412	-72.0570	-1.782E-07	768.6485	5.799E+09	4.7466	4007672.	0.000
240.000	-6.481E-06	198.9417	-44.8305	2.071E-07	766.9226	5.799E+09	4.3289	4007672.	0.000
246.000	-4.621E-06	7.5929	-22.5849	3.140E-07	765.9709	5.799E+09	3.0863	4007672.	0.000
252.000	-2.713E-06	-72.6576	-7.8897	2.803E-07	766.2945	5.799E+09	1.8121	4007672.	0.000
258.000	-1.257E-06	-87.6019	0.0645	1.974E-07	766.3689	5.799E+09	0.8393	4007672.	0.000
264.000	-3.439E-07	-72.2480	3.2716	1.147E-07	766.2925	5.799E+09	0.2297	4007672.	0.000
270.000	1.201E-07	-48.5548	3.7925	5.222E-08	766.1747	5.799E+09	-0.0561	2801274.	0.000
276.000	2.827E-07	-26.8341	3.1437	1.322E-08	766.0666	5.799E+09	-0.1602	3399399.	0.000
282.000	2.787E-07	-10.8544	2.1053	-6.280E-09	765.9871	5.799E+09	-0.1860	4002977.	0.000
288.000	2.074E-07	-1.5592	1.1244	-1.270E-08	765.9409	5.799E+09	-0.1410	4079738.	0.000
294.000	1.263E-07	2.6614	0.4389	-1.213E-08	765.9464	5.799E+09	-0.0875	4156502.	0.000
300.000	6.178E-08	3.7295	0.0456	-8.826E-09	765.9517	5.799E+09	-0.0436	4233266.	0.000
306.000	2.040E-08	3.2248	-0.1291	-5.228E-09	765.9492	5.799E+09	-0.0147	4310032.	0.000
312.000	-9.573E-10	2.1894	-0.1704	-2.427E-09	765.9441	5.799E+09	0.000895	5610741.	0.000
318.000	-8.722E-09	1.1842	-0.1433	-6.815E-10	765.9391	5.799E+09	0.008157	5610741.	0.000
324.000	-9.136E-09	0.4715	-0.0932	1.751E-10	765.9355	5.799E+09	0.008543	5610741.	0.000
330.000	-6.621E-09	0.0659	-0.0490	4.531E-10	765.9335	5.799E+09	0.006192	5610741.	0.000
336.000	-3.698E-09	-0.1169	-0.0181	4.268E-10	765.9337	5.799E+09	0.004107	6664213.	0.000
342.000	-1.500E-09	-0.1517	0.000142	2.878E-10	765.9339	5.799E+09	0.001962	7846875.	0.000
348.000	-2.442E-10	-0.1157	0.006987	1.495E-10	765.9337	5.799E+09	0.000319	7846875.	0.000
354.000	2.934E-10	-0.0681	0.007089	5.437E-11	765.9335	5.799E+09	-0.000285	5832709.	0.000
360.000	4.082E-10	-0.0307	0.005021	3.232E-12	765.9333	5.799E+09	-0.000404	5937096.	0.000
366.000	3.322E-10	-0.007865	0.002806	-1.674E-11	765.9332	5.799E+09	-0.000335	6043284.	0.000
372.000	2.074E-10	0.002965	0.001164	-1.927E-11	765.9332	5.799E+09	-0.000213	6148575.	0.000
378.000	1.010E-10	0.006141	0.000211	-1.456E-11	765.9332	5.799E+09	-0.000105	6253866.	0.000
384.000	3.265E-11	0.005523	-0.000209	-8.527E-12	765.9332	5.799E+09	-3.461E-05	6359159.	0.000
390.000	-1.365E-12	0.003653	-0.000307	-3.779E-12	765.9332	5.799E+09	1.785E-06	7846875.	0.000
396.000	-1.270E-11	0.001845	-0.000252	0.000	765.9332	5.799E+09	1.661E-05	7846875.	0.000
402.000	-1.258E-11	0.000632	-0.000153	0.000	765.9332	5.799E+09	1.646E-05	7846875.	0.000
408.000	-8.542E-12	1.196E-05	-6.979E-05	0.000	765.9332	5.799E+09	1.117E-05	7846875.	0.000
414.000	-4.424E-12	-0.000206	-1.892E-05	0.000	765.9332	5.799E+09	5.786E-06	7846875.	0.000
420.000	-1.589E-12	-0.000216	4.669E-06	0.000	765.9332	5.799E+09	2.077E-06	7846875.	0.000
426.000	0.000	-0.000151	1.127E-05	0.000	765.9332	5.799E+09	1.239E-07	7846875.	0.000
432.000	0.000	-8.121E-05	9.983E-06	0.000	765.9332	5.799E+09	-5.540E-07	7201541.	0.000
438.000	0.000	-3.130E-05	6.444E-06	0.000	765.9332	5.799E+09	-6.256E-07	7306844.	0.000
444.000	0.000	-3.871E-06	3.190E-06	0.000	765.9332	5.799E+09	-4.590E-07	7412147.	0.000
450.000	0.000	7.034E-06	1.042E-06	0.000	765.9332	5.799E+09	-2.572E-07	7517451.	0.000
456.000	0.000	8.673E-06	-4.562E-08	0.000	765.9332	5.799E+09	-1.052E-07	7622755.	0.000
462.000	0.000	6.516E-06	-4.155E-07	0.000	765.9332	5.799E+09	-1.813E-08	7728061.	0.000
468.000	0.000	3.702E-06	-4.143E-07	0.000	765.9332	5.799E+09	1.854E-08	7846875.	0.000
474.000	0.000	1.550E-06	-2.824E-07	0.000	765.9332	5.799E+09	2.542E-08	7846875.	0.000
480.000	0.000	3.131E-07	-1.470E-07	0.000	765.9332	5.799E+09	1.972E-08	7846875.	0.000
486.000	0.000	-2.146E-07	-5.336E-08	0.000	765.9332	5.799E+09	1.148E-08	7846875.	0.000
492.000	0.000	-3.289E-07	-4.007E-09	0.000	765.9332	5.799E+09	4.974E-09	7846875.	0.000
498.000	0.000	-2.639E-07	1.434E-08	0.000	765.9332	5.799E+09	1.143E-09	7846875.	0.000
504.000	0.000	-1.575E-07	1.613E-08	0.000	765.9332	5.799E+09	-5.466E-10	7846875.	0.000
510.000	0.000	-7.056E-08	1.162E-08	0.000	765.9332	5.799E+09	-9.572E-10	7846875.	0.000

516.000	0.000	-1.806E-08	6.363E-09	0.000	765.9332	5.799E+09	-7.948E-10	7846875.	0.000
522.000	0.000	5.853E-09	2.521E-09	0.000	765.9332	5.799E+09	-4.859E-10	7846875.	0.000
528.000	0.000	1.226E-08	3.900E-10	0.000	765.9332	5.799E+09	-2.245E-10	7846875.	0.000
534.000	0.000	1.058E-08	-4.714E-10	0.000	765.9332	5.799E+09	-6.265E-11	7846875.	0.000
540.000	0.000	6.635E-09	-6.195E-10	0.000	765.9332	5.799E+09	1.327E-11	7846875.	0.000
546.000	0.000	3.159E-09	-4.738E-10	0.000	765.9332	5.799E+09	3.532E-11	7846875.	0.000
552.000	0.000	9.520E-10	-2.726E-10	0.000	765.9332	5.799E+09	3.172E-11	7846875.	0.000
558.000	0.000	-1.142E-10	-1.163E-10	0.000	765.9332	5.799E+09	2.039E-11	7846875.	0.000
564.000	0.000	-4.464E-10	-2.523E-11	0.000	765.9332	5.799E+09	9.979E-12	7846875.	0.000
570.000	0.000	-4.190E-10	1.430E-11	0.000	765.9332	5.799E+09	3.198E-12	7846875.	0.000
576.000	0.000	-2.760E-10	2.335E-11	0.000	765.9332	5.799E+09	0.000	7846875.	0.000
582.000	0.000	-1.393E-10	1.885E-11	0.000	765.9332	5.799E+09	-1.319E-12	7846875.	0.000
588.000	0.000	-4.999E-11	1.091E-11	0.000	765.9332	5.799E+09	-1.326E-12	7846875.	0.000
594.000	0.000	-8.325E-12	4.158E-12	0.000	765.9332	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection            =      1.1270083 inches
Computed slope at pile head     =     -0.0159627 radians
Maximum bending moment          =         991518. inch-lbs
Maximum shear force             =          25000. lbs
Depth of maximum bending moment =     66.00000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =             36
Number of zero deflection points =            13
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear     =          25000. lbs
Moment    =              0. in-lbs
Axial Load =         154000. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
50.000	1.1270083	991518.	25000.
47.500	1.1693930	1000265.	25000.
45.000	1.1606853	998628.	25000.
42.500	1.1837858	1006844.	25000.
40.000	1.1751344	1004577.	25000.
37.500	1.1350696	1004647.	25000.
35.000	1.1811671	1008710.	25000.
32.500	1.1900484	1015567.	25000.
30.000	1.1786059	1011206.	25000.
27.500	1.1821172	1015369.	25000.
25.000	1.1559608	1014713.	25000.
22.500	1.2019535	1024145.	25000.
20.000	1.2082282	1028989.	25000.
17.500	1.2121956	1029988.	25000.
15.000	1.2060616	1028756.	25000.
12.500	1.7110827	986252.	25000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 25000.	M = 0.000	154000.	1.12700834	991518.	25000.	-0.01596273

The analysis ended normally.

Abut 1L_long_Critical Length

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1L_long_Ave P.lp6d
Name of output report file: Abut 1L_long_Ave P.lp6o
Name of plot output file: Abut 1L_long_Ave P.lp6p
Name of runtime messeage file: Abut 1L_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:44:57

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 28.000 degrees
= 0.489 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 8.00000 ft
Distance from top of pile to bottom of layer = 13.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 1500.00000 psi
Undrained cohesion at bottom of layer = 1500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 13.00000 ft
Distance from top of pile to bottom of layer = 18.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 18.00000 ft
Distance from top of pile to bottom of layer = 23.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 2500.00000 psi
Undrained cohesion at bottom of layer = 2500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 23.00000 ft
Distance from top of pile to bottom of layer = 28.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3500.00000 psi
Undrained cohesion at bottom of layer = 3500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer = 28.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 125.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Epsilon 50	J Factor	kpy pci	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial qu psi	RQD % or GSI
					Rock Mass Rock Emass psi	krm	Soil Type	In-situ Test Property	In-situ Test Mod. pci	Elastic Subgrade
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	3500.000	--	--	--
		0.00700	--	--	0.10000	120.000	3500.000	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	3.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	3.000	120.000	2500.000	--	--	--
					8.000	120.000	2500.000	--	--	--

	0.00700	--	--		--	--	--	--	--	--
4	Stiff Clay w/o Free Water				8.000	120.000	1500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					13.000	120.000	1500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
5	Stiff Clay w/o Free Water				13.000	125.000	4500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					18.000	125.000	4500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
6	Stiff Clay w/o Free Water				18.000	125.000	2500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					23.000	125.000	2500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
7	Stiff Clay w/o Free Water				23.000	125.000	3500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					28.000	125.000	3500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
8	Stiff Clay w/o Free Water				28.000	125.000	4500.000	--	--	--
	0.00500	--	--		--	--	--	--	--	--
					80.000	125.000	125.000	--	--	--
	0.00500	--	--		--	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.9300	1.0000
2	50.000	0.9300	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs		154000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs		154000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs		154000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13537.	-0.004665	765.9332	5.799E+09	-438.2264	5258.7165	0.000
6.000	0.2220	77643.	11536.	-0.004625	1152.0983	5.799E+09	-228.7669	6182.6182	0.000
12.000	0.1945	146976.	10154.	-0.004580	1496.9336	5.799E+09	-231.8345	7151.6533	0.000
18.000	0.1679	207823.	8757.6993	-0.004325	1799.5603	5.799E+09	-233.5973	8347.4494	0.000
24.000	0.1426	260062.	7354.9837	-0.004083	2059.3732	5.799E+09	-233.9746	9844.6465	0.000
30.000	0.1189	303628.	5954.4244	-0.003791	2276.0566	5.799E+09	-232.8785	11751.	0.000
36.000	0.0971	338521.	4503.4212	-0.003459	2449.5994	5.799E+09	-250.7892	15496.	0.000
42.000	0.0774	364062.	2832.9601	-0.003096	2576.6288	5.799E+09	-306.0312	23724.	0.000
48.000	0.0600	378238.	1017.1457	-0.002712	2647.1324	5.799E+09	-299.2403	29947.	0.000
54.000	0.0449	381279.	-749.3716	-0.002319	2662.2586	5.799E+09	-289.5988	38735.	0.000
60.000	0.0321	373530.	-2448.5911	-0.001928	2623.7193	5.799E+09	-276.8077	51691.	0.000
66.000	0.0217	355459.	-4060.2853	-0.001551	2533.8415	5.799E+09	-260.4237	71938.	0.000
72.000	0.0135	327673.	-5560.6317	-0.001198	2395.6448	5.799E+09	-239.6918	106390.	0.000
78.000	0.007349	290945.	-6918.8474	-0.000878	2212.9733	5.799E+09	-213.0468	173936.	0.000
84.000	0.002987	246269.	-8085.8867	-0.000600	1990.7725	5.799E+09	-175.9663	353476.	0.000
90.000	0.000154	195022.	-8763.2691	-0.000371	1735.8939	5.799E+09	-49.8278	1946873.	0.000
96.000	-0.001469	141796.	-8163.9032	-0.000197	1471.1663	5.799E+09	249.6164	1019532.	0.000
102.000	-0.002211	97420.	-6792.4673	-7.331E-05	1250.4581	5.799E+09	207.5289	563107.	0.000
108.000	-0.002349	60421.	-5537.8033	8.354E-06	1066.4445	5.799E+09	210.6924	538238.	0.000
114.000	-0.002111	30950.	-4290.3967	5.563E-05	919.8680	5.799E+09	205.1098	582973.	0.000
120.000	-0.001681	8833.8394	-3093.9866	7.621E-05	809.8691	5.799E+09	193.6935	691282.	0.000
126.000	-0.001196	-6318.2379	-1979.4794	7.751E-05	797.3575	5.799E+09	177.8089	891653.	0.000
132.000	-0.000751	-15063.	-971.6429	6.645E-05	840.8511	5.799E+09	158.1366	1263349.	0.000
138.000	-0.000399	-18101.	-92.7281	4.929E-05	855.9589	5.799E+09	134.8350	2027093.	0.000
144.000	-0.000160	-16267.	503.5901	3.151E-05	846.8385	5.799E+09	63.9378	2404603.	0.000
150.000	-2.097E-05	-12116.	720.6151	1.683E-05	826.1927	5.799E+09	8.4039	2404603.	0.000
156.000	4.238E-05	-7650.6965	693.4149	6.600E-06	803.9846	5.799E+09	-17.4706	2473460.	0.000
162.000	5.823E-05	-3807.1196	531.9174	6.721E-07	784.8682	5.799E+09	-36.3618	3746714.	0.000
168.000	5.044E-05	-1268.9292	325.6755	-1.954E-06	772.2443	5.799E+09	-32.3855	3852009.	0.000
174.000	3.478E-05	104.5970	159.6991	-2.556E-06	766.4534	5.799E+09	-22.9400	3957309.	0.000
180.000	1.977E-05	652.1841	50.7260	-2.165E-06	769.1769	5.799E+09	-13.3844	4062615.	0.000
186.000	8.802E-06	717.3100	-7.7704	-1.456E-06	769.5008	5.799E+09	-6.1144	4167925.	0.000
192.000	2.290E-06	561.6306	-31.0075	-7.947E-07	768.7265	5.799E+09	-1.6313	4273240.	0.000
198.000	-7.345E-07	346.6891	-33.2520	-3.248E-07	767.6575	5.799E+09	0.8831	7213810.	0.000
204.000	-1.607E-06	163.2063	-24.8066	-6.098E-08	766.7449	5.799E+09	1.9321	7213810.	0.000
210.000	-1.466E-06	49.1224	-13.7217	4.887E-08	766.1775	5.799E+09	1.7629	7213810.	0.000
216.000	-1.021E-06	-1.5443	-5.5700	7.348E-08	765.9408	5.799E+09	0.9544	5610741.	0.000
222.000	-5.845E-07	-17.8528	-1.5357	6.345E-08	766.0220	5.799E+09	0.3904	4007672.	0.000
228.000	-2.592E-07	-20.0904	0.1548	4.382E-08	766.0331	5.799E+09	0.1731	4007672.	0.000
234.000	-5.864E-08	-16.0765	0.7916	2.511E-08	766.0138	5.799E+09	0.0392	4007672.	0.000
240.000	4.210E-08	-10.6372	0.8490	1.129E-08	765.9861	5.799E+09	-0.0200	2856937.	0.000
246.000	7.679E-08	-5.9092	0.6768	2.725E-09	765.9626	5.799E+09	-0.0374	2918663.	0.000
252.000	7.480E-08	-2.5204	0.4533	-1.636E-09	765.9457	5.799E+09	-0.0372	2980391.	0.000
258.000	5.716E-08	-0.4667	0.2549	-3.181E-09	765.9355	5.799E+09	-0.0290	3042121.	0.000
264.000	3.663E-08	0.5440	0.1111	-3.141E-09	765.9359	5.799E+09	-0.0189	3103853.	0.000
270.000	1.947E-08	0.8722	0.0234	-2.408E-09	765.9375	5.799E+09	-0.0103	3165588.	0.000
276.000	7.724E-09	0.8298	-0.0222	-1.528E-09	765.9373	5.799E+09	-0.004927	3827290.	0.000
282.000	1.132E-09	0.6092	-0.0395	-7.834E-10	765.9362	5.799E+09	-0.000850	4503372.	0.000
288.000	-1.678E-09	0.3575	-0.0373	-2.833E-10	765.9349	5.799E+09	0.001569	5610741.	0.000
294.000	-2.268E-09	0.1618	-0.0263	-1.467E-11	765.9340	5.799E+09	0.002121	5610741.	0.000
300.000	-1.854E-09	0.0424	-0.0147	9.161E-11	765.9334	5.799E+09	0.001733	5610741.	0.000
306.000	-1.176E-09	-0.0146	-0.006193	1.054E-10	765.9333	5.799E+09	0.001100	5610741.	0.000
312.000	-5.889E-10	-0.0321	-0.001242	8.123E-11	765.9333	5.799E+09	0.000551	5610741.	0.000
318.000	-2.011E-10	-0.0297	0.000974	4.928E-11	765.9333	5.799E+09	0.000188	5610741.	0.000
324.000	2.401E-12	-0.0205	0.001532	2.332E-11	765.9333	5.799E+09	-2.036E-06	5088204.	0.000
330.000	7.875E-11	-0.0113	0.001323	6.861E-12	765.9332	5.799E+09	-6.788E-05	5171756.	0.000
336.000	8.473E-11	-0.004623	0.000893	-1.396E-12	765.9332	5.799E+09	-7.539E-05	5338917.	0.000
342.000	6.200E-11	-0.000620	0.000471	-4.108E-12	765.9332	5.799E+09	-6.517E-05	6306023.	0.000
348.000	3.543E-11	0.001038	0.000163	-3.892E-12	765.9332	5.799E+09	-3.757E-05	6362077.	0.000
354.000	1.530E-11	0.001342	1.123E-06	-2.661E-12	765.9332	5.799E+09	-1.636E-05	6416138.	0.000
360.000	3.502E-12	0.001056	-5.929E-05	-1.420E-12	765.9332	5.799E+09	-3.776E-06	6468205.	0.000
366.000	-1.737E-12	0.000633	-6.412E-05	0.000	765.9332	5.799E+09	2.165E-06	7480101.	0.000
372.000	-3.044E-12	0.000288	-4.635E-05	0.000	765.9332	5.799E+09	3.757E-06	7406746.	0.000
378.000	-2.563E-12	7.737E-05	-2.568E-05	0.000	765.9332	5.799E+09	3.132E-06	7333391.	0.000
384.000	-1.601E-12	-2.049E-05	-1.047E-05	0.000	765.9332	5.799E+09	1.938E-06	7260036.	0.000
390.000	0.000	-4.857E-05	-1.902E-06	0.000	765.9332	5.799E+09	9.191E-07	7186681.	0.000
396.000	0.000	-4.352E-05	1.690E-06	0.000	765.9332	5.799E+09	2.784E-07	7113326.	0.000
402.000	0.000	-2.841E-05	2.432E-06	0.000	765.9332	5.799E+09	-3.110E-08	6776837.	0.000
408.000	0.000	-1.439E-05	1.952E-06	0.000	765.9332	5.799E+09	-1.289E-07	6812950.	0.000
414.000	0.000	-4.997E-06	1.189E-06	0.000	765.9332	5.799E+09	-1.256E-07	6847069.	0.000
420.000	0.000	-1.206E-07	5.538E-07	0.000	765.9332	5.799E+09	-8.601E-08	6819907.	0.000
426.000	0.000	1.659E-06	1.591E-07	0.000	765.9332	5.799E+09	-4.554E-08	6746552.	0.000
432.000	0.000	1.798E-06	-2.968E-08	0.000	765.9332	5.799E+09	-1.739E-08	6673197.	0.000
438.000	0.000	1.309E-06	-8.827E-08	0.000	765.9332	5.799E+09	-2.135E-09	6599842.	0.000
444.000	0.000	7.419E-07	-8.283E-08	0.000	765.9332	5.799E+09	3.950E-09	6526487.	0.000
450.000	0.000	3.162E-07	-5.614E-08	0.000	765.9332	5.799E+09	4.944E-09	6453133.	0.000
456.000	0.000	6.820E-08	-2.983E-08	0.000	765.9332	5.799E+09	3.827E-09	6379778.	0.000
462.000	0.000	-4.213E-08	-1.148E-08	0.000	765.9332	5.799E+09	2.289E-09	6306423.	0.000
468.000	0.000	-7.001E-08	-1.444E-09	0.000	765.9332	5.799E+09	1.058E-09	6233068.	0.000
474.000	0.000	-5.975E-08	2.632E-09	0.000	765.9332	5.799E+09	3.010E-10	6159713.	0.000
480.000	0.000	-3.859E-08	3.350E-09	0.000	765.9332	5.799E+09	-6.172E-11	6086358.	0.000
486.000	0.000	-1.963E-08	2.638E-09	0.000	765.9332	5.799E+09	-1.757E-10	6013003.	0.000
492.000	0.000	-6.960E-09	1.612E-09	0.000	765.9332	5.799E+09	-1.662E-10	5939648.	0.000

498.000	0.000	-2.711E-10	7.697E-10	0.000	765.9332	5.799E+09	-1.146E-10	5866294.	0.000
504.000	0.000	2.291E-09	2.377E-10	0.000	765.9332	5.799E+09	-6.270E-11	5792939.	0.000
510.000	0.000	2.595E-09	-2.728E-11	0.000	765.9332	5.799E+09	-2.561E-11	5719584.	0.000
516.000	0.000	1.973E-09	-1.179E-10	0.000	765.9332	5.799E+09	-4.607E-12	5646229.	0.000
522.000	0.000	1.184E-09	-1.183E-10	0.000	765.9332	5.799E+09	4.478E-12	5572874.	0.000
528.000	0.000	5.554E-10	-8.512E-11	0.000	765.9332	5.799E+09	6.587E-12	5499519.	0.000
534.000	0.000	1.631E-10	-4.881E-11	0.000	765.9332	5.799E+09	5.519E-12	5426164.	0.000
540.000	0.000	-3.076E-11	-2.153E-11	0.000	765.9332	5.799E+09	3.575E-12	5352809.	0.000
546.000	0.000	-9.587E-11	-5.255E-12	0.000	765.9332	5.799E+09	1.849E-12	5279455.	0.000
552.000	0.000	-9.431E-11	2.355E-12	0.000	765.9332	5.799E+09	0.000	5206100.	0.000
558.000	0.000	-6.792E-11	4.592E-12	0.000	765.9332	5.799E+09	0.000	5132745.	0.000
564.000	0.000	-3.937E-11	4.173E-12	0.000	765.9332	5.799E+09	0.000	5059390.	0.000
570.000	0.000	-1.790E-11	2.851E-12	0.000	765.9332	5.799E+09	0.000	4986035.	0.000
576.000	0.000	-5.163E-12	1.534E-12	0.000	765.9332	5.799E+09	0.000	4912680.	0.000
582.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	4839325.	0.000
588.000	0.000	1.738E-12	0.000	0.000	765.9332	5.799E+09	0.000	4765971.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	4692616.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2309630.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0046651 radians
Maximum bending moment = 381279. inch-lbs
Maximum shear force = 13537. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	18573.	-0.008317	765.9332	5.799E+09	-521.1419	3126.8516	0.000
6.000	0.4501	109743.	16191.	-0.008260	1311.7498	5.799E+09	-272.9778	3638.8894	0.000
12.000	0.4009	209554.	14539.	-0.008095	1808.1682	5.799E+09	-277.7802	4157.5257	0.000
18.000	0.3530	299164.	12861.	-0.007831	2253.8537	5.799E+09	-281.2768	4781.3690	0.000
24.000	0.3069	378363.	11167.	-0.007481	2647.7542	5.799E+09	-283.3929	5540.3106	0.000
30.000	0.2632	446997.	9465.0326	-0.007054	2989.1142	5.799E+09	-284.0491	6475.3833	0.000
36.000	0.2223	504978.	7687.4757	-0.006561	3277.4898	5.799E+09	-308.4699	8327.2530	0.000
42.000	0.1845	551372.	5621.3596	-0.006015	3508.2329	5.799E+09	-380.2355	12368.	0.000
48.000	0.1501	583550.	3351.4806	-0.005428	3668.2732	5.799E+09	-376.3909	15047.	0.000
54.000	0.1193	601620.	1112.8029	-0.004814	3758.1461	5.799E+09	-369.8350	18596.	0.000
60.000	0.0923	605801.	-1077.7922	-0.004190	3778.9394	5.799E+09	-360.3633	23423.	0.000
66.000	0.0691	596429.	-3202.0194	-0.003568	3732.3293	5.799E+09	-347.7124	30213.	0.000
72.000	0.0495	573970.	-5239.7028	-0.002962	3620.6253	5.799E+09	-331.5154	40187.	0.000
78.000	0.0335	539027.	-7167.8672	-0.002386	3446.8344	5.799E+09	-311.2060	55732.	0.000
84.000	0.0209	492366.	-8958.8195	-0.001853	3214.7591	5.799E+09	-285.7781	82205.	0.000
90.000	0.0113	434945.	-10575.	-0.001373	2929.1741	5.799E+09	-253.0476	134723.	0.000
96.000	0.004381	368000.	-11810.	-0.000958	2596.2129	5.799E+09	-158.4969	217054.	0.000
102.000	-0.000222	294996.	-12018.	-0.000615	2233.1230	5.799E+09	89.1257	2404603.	0.000
108.000	-0.002995	224919.	-11079.	-0.000346	1884.5883	5.799E+09	223.9268	448654.	0.000
114.000	-0.004371	162688.	-9668.4272	-0.000145	1575.0779	5.799E+09	246.2262	338027.	0.000
120.000	-0.004736	109166.	-8176.0593	-4.497E-06	1308.8806	5.799E+09	251.2297	318256.	0.000
126.000	-0.004424	64584.	-6681.4927	8.540E-05	1087.1467	5.799E+09	246.9591	334899.	0.000
132.000	-0.003712	28830.	-5231.7208	0.000134	909.3235	5.799E+09	236.2982	381985.	0.000
138.000	-0.002820	1556.0323	-3861.2016	0.000149	773.6722	5.799E+09	220.5416	469273.	0.000
144.000	-0.001918	-17780.	-2598.9641	0.000141	854.3649	5.799E+09	200.2042	626197.	0.000
150.000	-0.001127	-29892.	-1472.8549	0.000116	914.6048	5.799E+09	175.1655	932417.	0.000
156.000	-0.000522	-35670.	-81.5838	8.247E-05	943.3392	5.799E+09	288.5915	3319451.	0.000
162.000	-0.000138	-31024.	1280.3324	4.796E-05	920.2319	5.799E+09	165.3805	7213810.	0.000
168.000	5.392E-05	-20394.	1673.2388	2.136E-05	867.3658	5.799E+09	-34.4118	3828868.	0.000
174.000	0.000119	-10984.	1336.3382	5.128E-06	820.5642	5.799E+09	-77.8884	3934166.	0.000
180.000	0.000115	-4367.6674	869.4812	-2.815E-06	787.6562	5.799E+09	-77.7306	4039470.	0.000
186.000	8.501E-05	-545.2422	460.1167	-5.357E-06	768.6450	5.799E+09	-58.7242	4144779.	0.000
192.000	5.118E-05	1163.6317	175.1900	-5.037E-06	771.7206	5.799E+09	-36.2513	4250092.	0.000
198.000	2.457E-05	1566.3450	12.9313	-3.624E-06	773.7235	5.799E+09	-17.8349	4355409.	0.000
204.000	7.686E-06	1325.5053	-57.7153	-2.128E-06	772.5257	5.799E+09	-5.7140	4460729.	0.000
210.000	-9.685E-07	877.6938	-71.3640	-9.883E-07	770.2985	5.799E+09	1.1645	7213810.	0.000
216.000	-4.174E-06	470.9642	-56.1615	-2.905E-07	768.2755	5.799E+09	3.9030	5610741.	0.000
222.000	-4.455E-06	204.2927	-35.5251	5.880E-08	766.9492	5.799E+09	2.9758	4007672.	0.000
228.000	-3.468E-06	44.5539	-19.6482	1.875E-07	766.1548	5.799E+09	2.3165	4007672.	0.000

234.000	-2.205E-06	-31.8326	-8.2811	1.941E-07	766.0915	5.799E+09	1.4725	4007672.	0.000
240.000	-1.139E-06	-55.1784	-1.5821	1.491E-07	766.2076	5.799E+09	0.7605	4007672.	0.000
246.000	-4.152E-07	-51.0933	1.5313	9.413E-08	766.1873	5.799E+09	0.2773	4007672.	0.000
252.000	-8.969E-09	-36.9764	2.3812	4.857E-08	766.1171	5.799E+09	0.005991	4007672.	0.000
258.000	1.677E-07	-22.6084	2.1460	1.774E-08	766.0456	5.799E+09	-0.0844	3020392.	0.000
264.000	2.039E-07	-11.2573	1.5785	2.210E-10	765.9892	5.799E+09	-0.1048	3082123.	0.000
270.000	1.703E-07	-3.6667	0.9965	-7.500E-09	765.9514	5.799E+09	-0.0892	3143855.	0.000
276.000	1.139E-07	0.7147	0.5097	-9.027E-09	765.9367	5.799E+09	-0.0730	3846397.	0.000
282.000	6.199E-08	2.4662	0.1503	-7.382E-09	765.9454	5.799E+09	-0.0468	4525353.	0.000
288.000	2.535E-08	2.5321	-0.0484	-4.796E-09	765.9458	5.799E+09	-0.0195	4608897.	0.000
294.000	4.437E-09	1.8946	-0.1172	-2.500E-09	765.9426	5.799E+09	-0.003470	4692443.	0.000
300.000	-4.715E-09	1.1304	-0.1144	-9.404E-10	765.9388	5.799E+09	0.004409	5610741.	0.000
306.000	-6.848E-09	0.5238	-0.0819	-8.459E-11	765.9358	5.799E+09	0.006404	5610741.	0.000
312.000	-5.730E-09	0.1473	-0.0467	2.626E-10	765.9339	5.799E+09	0.005358	5610741.	0.000
318.000	-3.697E-09	-0.0365	-0.0202	3.199E-10	765.9333	5.799E+09	0.003457	5610741.	0.000
324.000	-1.891E-09	-0.0958	-0.004536	2.514E-10	765.9336	5.799E+09	0.001768	5610741.	0.000
330.000	-6.795E-10	-0.0914	0.002674	1.546E-10	765.9336	5.799E+09	0.000635	5610741.	0.000
336.000	-3.598E-11	-0.0640	0.004701	7.413E-11	765.9335	5.799E+09	3.997E-05	6664213.	0.000
342.000	2.100E-10	-0.0351	0.004157	2.282E-11	765.9333	5.799E+09	-0.000221	6315929.	0.000
348.000	2.378E-10	-0.0142	0.002736	-2.707E-12	765.9332	5.799E+09	-0.000253	6371896.	0.000
354.000	1.776E-10	-0.002307	0.001408	-1.124E-11	765.9332	5.799E+09	-0.000190	6425870.	0.000
360.000	1.029E-10	0.002731	0.000504	-1.102E-11	765.9332	5.799E+09	-0.000111	6477850.	0.000
366.000	4.530E-11	0.003764	2.296E-05	-7.661E-12	765.9332	5.799E+09	-4.928E-05	6527836.	0.000
372.000	1.102E-11	0.003020	-0.000161	-4.151E-12	765.9332	5.799E+09	-1.208E-05	6575828.	0.000
378.000	-4.508E-12	0.001839	-0.000181	-1.637E-12	765.9332	5.799E+09	5.510E-06	7333391.	0.000
384.000	-8.620E-12	0.000854	-0.000133	0.000	765.9332	5.799E+09	1.043E-05	7260036.	0.000
390.000	-7.431E-12	0.000243	-7.500E-05	0.000	765.9332	5.799E+09	8.900E-06	7186681.	0.000
396.000	-4.731E-12	-4.691E-05	-3.147E-05	0.000	765.9332	5.799E+09	5.609E-06	7113326.	0.000
402.000	-2.323E-12	-0.000135	-6.467E-06	0.000	765.9332	5.799E+09	2.726E-06	7039971.	0.000
408.000	0.000	-0.000125	4.338E-06	0.000	765.9332	5.799E+09	8.756E-07	6966617.	0.000
414.000	0.000	-8.346E-05	6.834E-06	0.000	765.9332	5.799E+09	-4.353E-08	6855932.	0.000
420.000	0.000	-4.329E-05	5.639E-06	0.000	765.9332	5.799E+09	-3.548E-07	6819907.	0.000
426.000	0.000	-1.584E-05	3.503E-06	0.000	765.9332	5.799E+09	-3.570E-07	6746552.	0.000
432.000	0.000	-1.233E-06	1.683E-06	0.000	765.9332	5.799E+09	-2.496E-07	6673197.	0.000
438.000	0.000	4.389E-06	5.261E-07	0.000	765.9332	5.799E+09	-1.361E-07	6599842.	0.000
444.000	0.000	5.107E-06	-4.662E-08	0.000	765.9332	5.799E+09	-5.475E-08	6526487.	0.000
450.000	0.000	3.848E-06	-2.387E-07	0.000	765.9332	5.799E+09	-9.257E-09	6453133.	0.000
456.000	0.000	2.252E-06	-2.370E-07	0.000	765.9332	5.799E+09	9.820E-09	6379778.	0.000
462.000	0.000	1.008E-06	-1.662E-07	0.000	765.9332	5.799E+09	1.377E-08	6306423.	0.000
468.000	0.000	2.578E-07	-9.154E-08	0.000	765.9332	5.799E+09	1.112E-08	6233068.	0.000
474.000	0.000	-9.193E-08	-3.751E-08	0.000	765.9332	5.799E+09	6.889E-09	6159713.	0.000
480.000	0.000	-1.935E-07	-6.837E-09	0.000	765.9332	5.799E+09	3.335E-09	6086358.	0.000
486.000	0.000	-1.748E-07	6.377E-09	0.000	765.9332	5.799E+09	1.069E-09	6013003.	0.000
492.000	0.000	-1.175E-07	9.378E-09	0.000	765.9332	5.799E+09	-6.848E-11	5939648.	0.000
498.000	0.000	-6.254E-08	7.778E-09	0.000	765.9332	5.799E+09	-4.649E-10	5866294.	0.000
504.000	0.000	-2.424E-08	4.954E-09	0.000	765.9332	5.799E+09	-4.764E-10	5792939.	0.000
510.000	0.000	-3.074E-09	2.493E-09	0.000	765.9332	5.799E+09	-3.441E-10	5719584.	0.000
516.000	0.000	5.710E-09	8.691E-10	0.000	765.9332	5.799E+09	-1.970E-10	5646229.	0.000
522.000	0.000	7.396E-09	1.811E-11	0.000	765.9332	5.799E+09	-8.661E-11	5572874.	0.000
528.000	0.000	5.956E-09	-3.051E-10	0.000	765.9332	5.799E+09	-2.111E-11	5499519.	0.000
534.000	0.000	3.751E-09	-3.407E-10	0.000	765.9332	5.799E+09	9.233E-12	5426164.	0.000
540.000	0.000	1.875E-09	-2.590E-10	0.000	765.9332	5.799E+09	1.799E-11	5352809.	0.000
546.000	0.000	6.440E-10	-1.563E-10	0.000	765.9332	5.799E+09	1.626E-11	5279455.	0.000
552.000	0.000	-1.960E-12	-7.422E-11	0.000	765.9332	5.799E+09	1.110E-11	5206100.	0.000
558.000	0.000	-2.483E-10	-2.264E-11	0.000	765.9332	5.799E+09	6.092E-12	5132745.	0.000
564.000	0.000	-2.751E-10	3.203E-12	0.000	765.9332	5.799E+09	2.522E-12	5059390.	0.000
570.000	0.000	-2.109E-10	1.219E-11	0.000	765.9332	5.799E+09	0.000	4986035.	0.000
576.000	0.000	-1.294E-10	1.227E-11	0.000	765.9332	5.799E+09	0.000	4912680.	0.000
582.000	0.000	-6.384E-11	8.875E-12	0.000	765.9332	5.799E+09	0.000	4839325.	0.000
588.000	0.000	-2.296E-11	4.988E-12	0.000	765.9332	5.799E+09	0.000	4765971.	0.000
594.000	0.000	-3.940E-12	1.907E-12	0.000	765.9332	5.799E+09	0.000	4692616.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2309630.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =      0.5000000 inches
Computed slope at pile head     =     -0.0083165 radians
Maximum bending moment          =         605801. inch-lbs
Maximum shear force             =          18573. lbs
Depth of maximum bending moment =     60.0000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =             18
Number of zero deflection points =            12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

```
Displacement of pile head                    =       1.000000 inches
Moment at pile head                          =          0.000 in-lbs
Axial load at pile head                      =     154000.000 lbs
```


Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	25448.	-0.0148	765.9332	5.799E+09	-619.7457	1859.2371	0.000
6.000	0.9111	155216.	22612.	-0.0147	1537.9149	5.799E+09	-325.6093	2144.1682	0.000
12.000	0.8233	298562.	20638.	-0.0145	2250.8585	5.799E+09	-332.5296	2423.5057	0.000
18.000	0.7372	429651.	18626.	-0.0141	2902.8431	5.799E+09	-338.1422	2752.0072	0.000
24.000	0.6539	548157.	16584.	-0.0136	3492.2405	5.799E+09	-342.3783	3141.7577	0.000
30.000	0.5739	653812.	14521.	-0.0130	4017.7288	5.799E+09	-345.1665	3608.6629	0.000
36.000	0.4980	746417.	12354.	-0.0123	4478.3062	5.799E+09	-377.3968	4547.0221	0.000
42.000	0.4267	824722.	9814.7156	-0.0115	4867.7616	5.799E+09	-468.9289	6593.4634	0.000
48.000	0.3606	885356.	7002.1500	-0.0106	5169.3339	5.799E+09	-468.5930	7797.5081	0.000
54.000	0.2999	928275.	4199.4149	-0.009629	5382.7949	5.799E+09	-465.6520	9315.5953	0.000
60.000	0.2450	953543.	1422.5852	-0.008655	5508.4672	5.799E+09	-459.9579	11263.	0.000
66.000	0.1961	961341.	-1311.3049	-0.007664	5547.2500	5.799E+09	-451.3389	13813.	0.000
72.000	0.1531	951971.	-3984.0824	-0.006675	5500.6495	5.799E+09	-439.5870	17233.	0.000
78.000	0.1160	925866.	-6576.1485	-0.005703	5370.8145	5.799E+09	-424.4351	21961.	0.000
84.000	0.0846	883597.	-9065.9952	-0.004767	5160.5819	5.799E+09	-405.5138	28754.	0.000
90.000	0.0588	825884.	-11429.	-0.003882	4873.5408	5.799E+09	-382.2610	39033.	0.000
96.000	0.0380	753619.	-13392.	-0.003065	4514.1288	5.799E+09	-271.8097	42884.	0.000
102.000	0.0220	670850.	-14772.	-0.002328	4102.4659	5.799E+09	-188.3316	51417.	0.000
108.000	0.0101	580659.	-15817.	-0.001681	3653.8923	5.799E+09	-160.0840	95196.	0.000
114.000	0.001807	484149.	-16620.	-0.001130	3173.8947	5.799E+09	-107.6467	357338.	0.000
120.000	-0.003469	383302.	-16246.	-0.000681	2672.3208	5.799E+09	232.4029	401960.	0.000
126.000	-0.006366	290455.	-14737.	-0.000333	2210.5357	5.799E+09	270.6696	255112.	0.000
132.000	-0.007459	207074.	-13080.	-7.513E-05	1795.8328	5.799E+09	281.6570	226549.	0.000
138.000	-0.007267	133634.	-11395.	0.000101	1430.5756	5.799E+09	279.8432	231037.	0.000
144.000	-0.006246	70142.	-9747.5568	0.000207	1114.7887	5.799E+09	269.4472	258841.	0.000
150.000	-0.004789	16282.	-8182.8226	0.000251	846.9126	5.799E+09	252.1309	315905.	0.000
156.000	-0.003231	-28517.	-6055.4733	0.000245	907.7634	5.799E+09	456.9855	848746.	0.000
162.000	-0.001849	-56836.	-2895.8948	0.000201	1048.6145	5.799E+09	596.2073	1934276.	0.000
168.000	-0.000821	-63638.	352.5193	0.000138	1082.4449	5.799E+09	486.5974	3555663.	0.000
174.000	-0.000188	-52862.	2490.0857	7.818E-05	1028.8477	5.799E+09	225.9248	7213810.	0.000
180.000	0.000117	-33902.	2937.0102	3.330E-05	934.5474	5.799E+09	-76.9499	3942764.	0.000
186.000	0.000212	-17680.	2277.8028	6.609E-06	853.8638	5.799E+09	-142.7859	4048066.	0.000
192.000	0.000196	-6580.4888	1441.5633	-5.942E-06	798.6618	5.799E+09	-135.9607	4153372.	0.000
198.000	0.000140	-369.7645	734.8703	-9.538E-06	767.7722	5.799E+09	-99.6037	4258683.	0.000
204.000	8.195E-05	2255.5810	257.2339	-8.562E-06	777.1515	5.799E+09	-59.6085	4363998.	0.000
210.000	3.758E-05	2732.8650	-5.5766	-5.981E-06	779.5253	5.799E+09	-27.9950	4469316.	0.000
216.000	1.018E-05	2199.7160	-107.4959	-3.429E-06	776.8737	5.799E+09	-5.9781	3524252.	0.000
222.000	-3.571E-06	1449.2524	-118.2745	-1.542E-06	773.1412	5.799E+09	2.3852	4007672.	0.000
228.000	-8.322E-06	783.2716	-94.4425	-3.866E-07	769.8288	5.799E+09	5.5587	4007672.	0.000
234.000	-8.210E-06	316.6566	-61.3139	1.824E-07	767.5081	5.799E+09	5.4841	4007672.	0.000
240.000	-6.133E-06	47.1680	-32.5722	3.707E-07	766.1678	5.799E+09	4.0964	4007672.	0.000
246.000	-3.762E-06	-74.8947	-12.7437	3.563E-07	766.3057	5.799E+09	2.5131	4007672.	0.000
252.000	-1.857E-06	-106.4144	1.4834	2.625E-07	766.4624	5.799E+09	1.2403	4007672.	0.000
258.000	-6.121E-07	-93.1800	3.4643	1.593E-07	766.3966	5.799E+09	0.4089	4007672.	0.000
264.000	5.416E-08	-65.1368	4.6079	7.735E-08	766.2571	5.799E+09	-0.0277	3066747.	0.000
270.000	3.161E-07	-38.0280	4.0304	2.398E-08	766.1223	5.799E+09	-0.1648	3128479.	0.000
276.000	3.419E-07	-16.8159	2.8822	-4.396E-09	766.0168	5.799E+09	-0.2179	3824599.	0.000
282.000	2.633E-07	-3.4336	1.6358	-1.487E-08	765.9502	5.799E+09	-0.1975	4500276.	0.000
288.000	1.634E-07	2.8415	0.6687	-1.518E-08	765.9473	5.799E+09	-0.1249	4583819.	0.000
294.000	8.119E-08	4.6187	0.1046	-1.132E-08	765.9561	5.799E+09	-0.0632	4667364.	0.000
300.000	2.762E-08	4.1177	-0.1505	-6.799E-09	765.9536	5.799E+09	-0.0219	4750910.	0.000
306.000	-3.894E-10	2.8255	-0.2150	-3.206E-09	765.9472	5.799E+09	0.000364	5610741.	0.000
312.000	-1.086E-08	1.5436	-0.1835	-9.461E-10	765.9408	5.799E+09	0.0102	5610741.	0.000
318.000	-1.174E-08	0.6258	-0.1201	1.763E-10	765.9363	5.799E+09	0.0110	5610741.	0.000
324.000	-8.741E-09	0.1027	-0.0626	5.533E-10	765.9337	5.799E+09	0.000174	5610741.	0.000
330.000	-5.103E-09	-0.1262	-0.0237	5.411E-10	765.9338	5.799E+09	0.004772	5610741.	0.000
336.000	-2.248E-09	-0.1833	-0.001941	3.810E-10	765.9341	5.799E+09	0.002497	6664213.	0.000
342.000	-5.314E-10	-0.1502	0.007616	2.084E-10	765.9339	5.799E+09	0.000688	7773520.	0.000
348.000	2.529E-10	-0.0923	0.008881	8.297E-11	765.9336	5.799E+09	-0.000267	6329938.	0.000
354.000	4.643E-10	-0.0438	0.006598	1.257E-11	765.9334	5.799E+09	-0.000494	6384283.	0.000
360.000	4.038E-10	-0.0131	0.003817	-1.687E-11	765.9332	5.799E+09	-0.000433	6436634.	0.000
366.000	2.618E-10	0.002017	0.001668	-2.261E-11	765.9332	5.799E+09	-0.000283	6486992.	0.000
372.000	1.324E-10	0.006948	0.000386	-1.797E-11	765.9332	5.799E+09	-0.000144	6535355.	0.000
378.000	4.613E-11	0.006681	-0.000199	-1.092E-11	765.9332	5.799E+09	-5.061E-05	6581724.	0.000
384.000	1.334E-12	0.004586	-0.000355	-5.094E-12	765.9332	5.799E+09	-1.473E-06	6626099.	0.000
390.000	-1.500E-11	0.002433	-0.000305	-1.463E-12	765.9332	5.799E+09	1.796E-05	7186681.	0.000
396.000	-1.622E-11	0.000924	-0.000194	0.000	765.9332	5.799E+09	1.922E-05	7113326.	0.000
402.000	-1.171E-11	0.000107	-9.484E-05	0.000	765.9332	5.799E+09	1.374E-05	7039971.	0.000
408.000	-6.536E-12	-0.000215	-3.085E-05	0.000	765.9332	5.799E+09	7.589E-06	6966617.	0.000
414.000	-2.697E-12	-0.000264	1.214E-06	0.000	765.9332	5.799E+09	3.099E-06	6893262.	0.000
420.000	0.000	-0.000202	1.222E-05	0.000	765.9332	5.799E+09	5.686E-07	6819907.	0.000
426.000	0.000	-0.000118	1.242E-05	0.000	765.9332	5.799E+09	-4.994E-07	6746552.	0.000
432.000	0.000	-5.284E-05	9.744E-06	0.000	765.9332	5.799E+09	-7.270E-07	6673197.	0.000
438.000	0.000	-1.344E-05	4.797E-06	0.000	765.9332	5.799E+09	-5.886E-07	6599842.	0.000
444.000	0.000	4.779E-06	1.944E-06	0.000	765.9332	5.799E+09	-3.624E-07	6526487.	0.000
450.000	0.000	9.947E-06	3.379E-07	0.000	765.9332	5.799E+09	-1.730E-07	6453133.	0.000
456.000	0.000	8.877E-06	-3.419E-07	0.000	765.9332	5.799E+09	-5.354E-08	6379778.	0.000
462.000	0.000	5.870E-06	-4.865E-07	0.000	765.9332	5.799E+09	5.332E-09	6306423.	0.000
468.000	0.000	3.050E-06	-3.955E-07	0.000	765.9332	5.799E+09	2.499E-08	6233068.	0.000
474.000	0.000	1.127E-06	-2.463E-07	0.000	765.9332	5.799E+09	2.474E-08	6159713.	0.000
480.000	0.000	9.279E-08	-1.199E-07	0.000	765.9332	5.799E+09	1.740E-08	6086358.	0.000
486.000	0.000	-3.146E-07	-3.876E-08	0.000	765.9332	5.799E+09	9.651E-09	6013003.	0.000
492.000	0.000	-3.743E-07	2.254E-09	0.000	765.9332	5.799E+09	4.019E-09	5939648.	0.000
498.000	0.000	-2.889E-07	1.670E-08	0.000	765.9332	5.799E+09	7.958E-10	5866294.	0.000
504.000	0.000	-1.746E-07	1.724E-08	0.000	765.9332	5.799E+09	-6.163E-10	5792939.	0.000
510.000	0.000	-8.237E-08	1.251E-08	0.000	765.9332	5.799E+09	-9.594E-10	5719584.	0.000

Abut 1L_long_Ave P

516.000	0.000	-2.455E-08	7.196E-09	0.000	765.9332	5.799E+09	-8.122E-10	5646229.	0.000
522.000	0.000	4.051E-09	3.178E-09	0.000	765.9332	5.799E+09	-5.270E-10	5572874.	0.000
528.000	0.000	1.368E-08	7.810E-10	0.000	765.9332	5.799E+09	-2.721E-10	5499519.	0.000
534.000	0.000	1.349E-08	-3.369E-10	0.000	765.9332	5.799E+09	-1.005E-10	5426164.	0.000
540.000	0.000	9.678E-09	-6.634E-10	0.000	765.9332	5.799E+09	-8.286E-12	5352809.	0.000
546.000	0.000	5.554E-09	-6.024E-10	0.000	765.9332	5.799E+09	2.862E-11	5279455.	0.000
552.000	0.000	2.456E-09	-4.129E-10	0.000	765.9332	5.799E+09	3.458E-11	5206100.	0.000
558.000	0.000	5.999E-10	-2.272E-10	0.000	765.9332	5.799E+09	2.732E-11	5132745.	0.000
564.000	0.000	-2.732E-10	-9.391E-11	0.000	765.9332	5.799E+09	1.711E-11	5059390.	0.000
570.000	0.000	-5.303E-10	-1.682E-11	0.000	765.9332	5.799E+09	8.591E-12	4986035.	0.000
576.000	0.000	-4.776E-10	1.800E-11	0.000	765.9332	5.799E+09	3.016E-12	4912680.	0.000
582.000	0.000	-3.159E-10	2.703E-11	0.000	765.9332	5.799E+09	0.000	4839325.	0.000
588.000	0.000	-1.541E-10	2.288E-11	0.000	765.9332	5.799E+09	-1.379E-12	4765971.	0.000
594.000	0.000	-4.177E-11	1.286E-11	0.000	765.9332	5.799E+09	-1.961E-12	4692616.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	-2.325E-12	2309630.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0148086 radians
Maximum bending moment           =        961341. inch-lbs
Maximum shear force              =         25448. lbs
Depth of maximum bending moment  =     66.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             24
Number of zero deflection points =             12
```

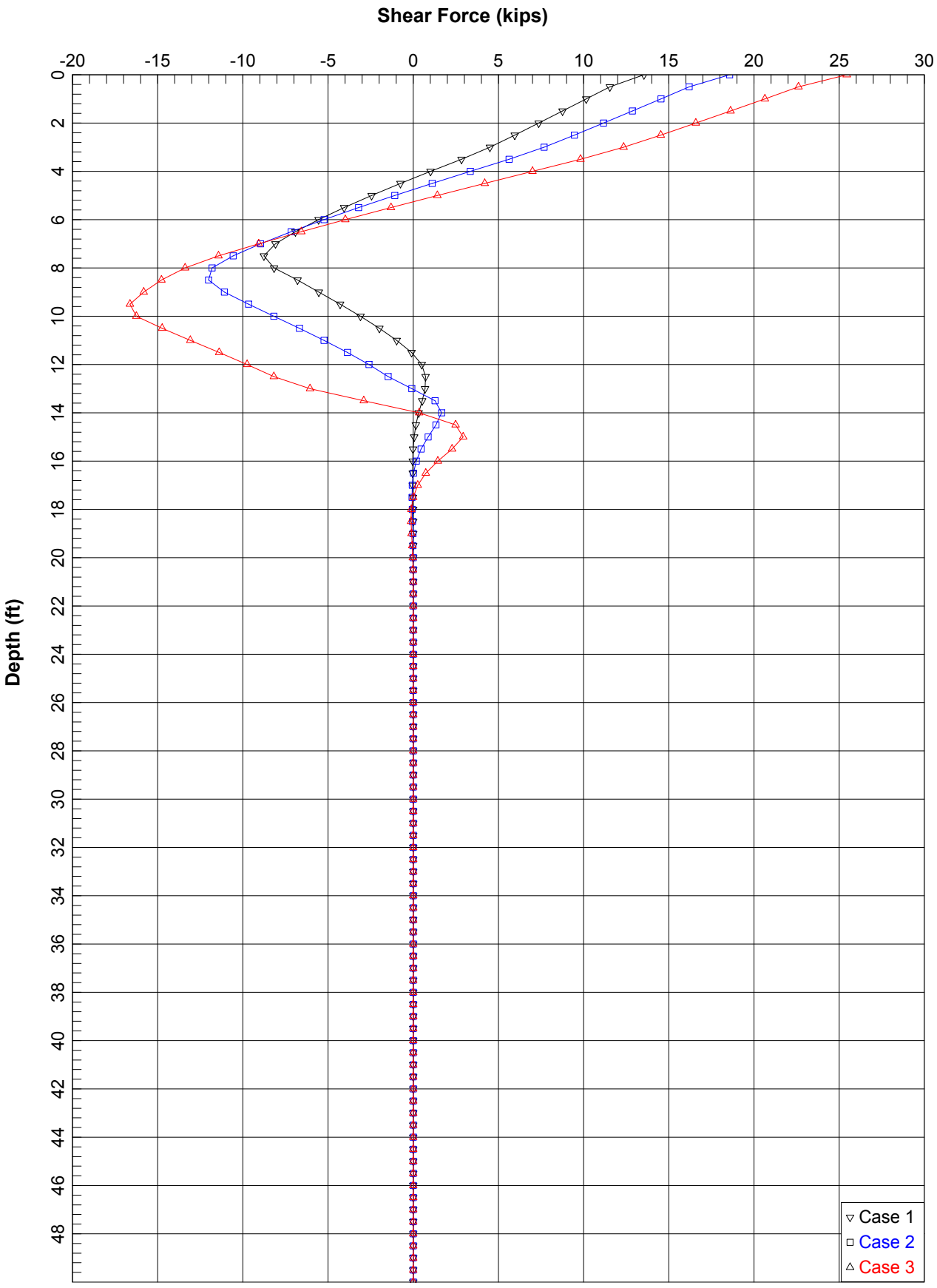
Summary of Pile Response(s)

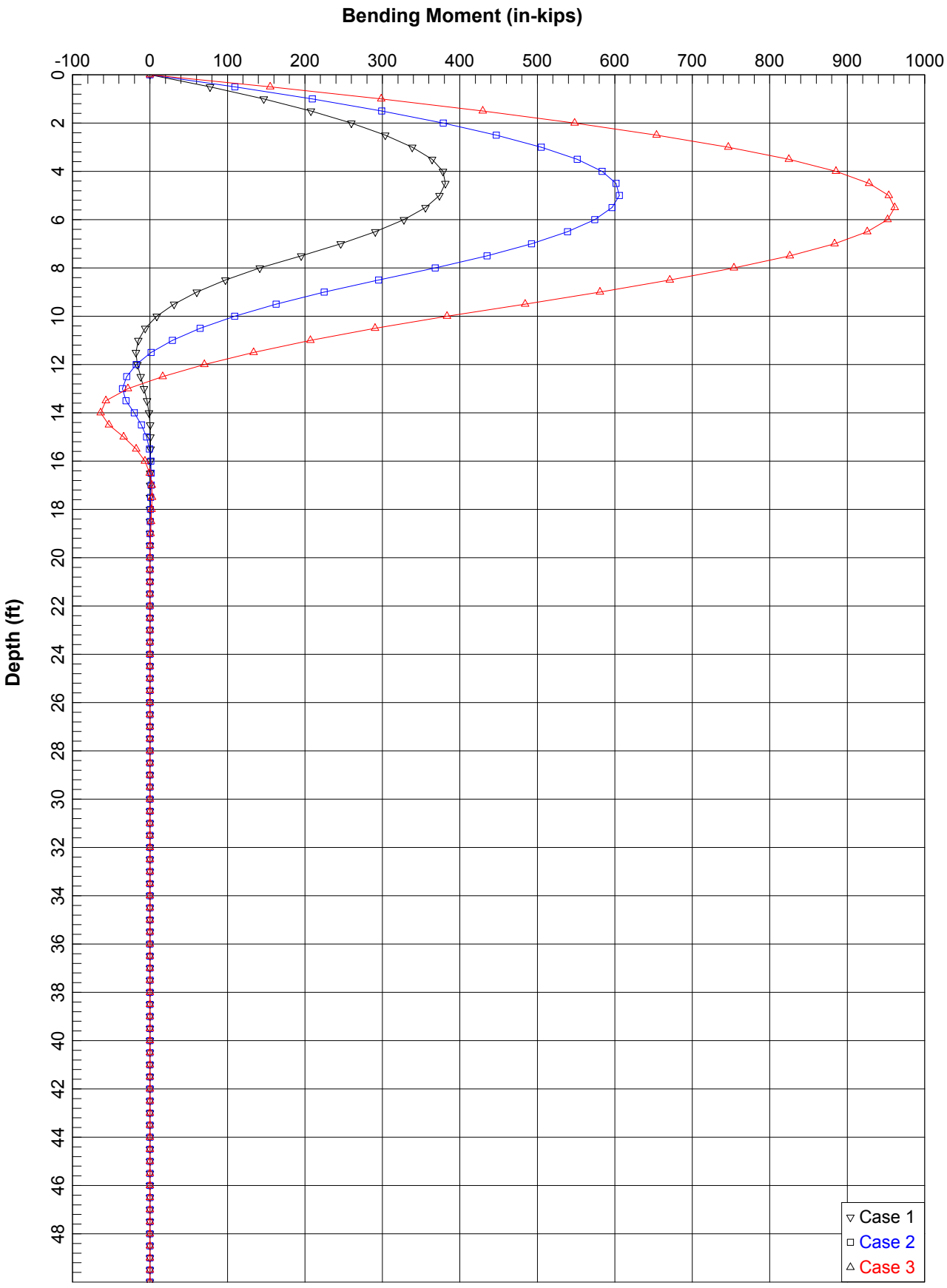
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	154000.	0.25000000	381279.	13537.	-0.00466505
2	4	y = 0.5000	M = 0.000	154000.	0.50000000	605801.	18573.	-0.00831653
3	4	y = 1.0000	M = 0.000	154000.	1.00000000	961341.	25448.	-0.01480856

The analysis ended normally.


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1L_long_Ave P.lp6d
Name of output report file: Abut 1L_long_Ave P.lp6o
Name of plot output file: Abut 1L_long_Ave P.lp6p
Name of runtime messeage file: Abut 1L_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:44:57

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 28.000 degrees
= 0.489 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 8.00000 ft
Distance from top of pile to bottom of layer = 13.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 1500.00000 psi
Undrained cohesion at bottom of layer = 1500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 13.00000 ft
Distance from top of pile to bottom of layer = 18.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 18.00000 ft
Distance from top of pile to bottom of layer = 23.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 2500.00000 psi
Undrained cohesion at bottom of layer = 2500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 23.00000 ft
Distance from top of pile to bottom of layer = 28.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3500.00000 psi
Undrained cohesion at bottom of layer = 3500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer = 28.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 125.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Epsilon 50	J Factor	kpy pci	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial qu psi	RQD % or GSI
					Rock Mass Rock Emass psi	krm	Soil Type	In-situ Test Property	In-situ Test Mod. pci	Elastic Subgrade
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	3500.000	--	--	--
		0.00700	--	--	0.10000	120.000	3500.000	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	3.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	3.000	120.000	2500.000	--	--	--
					8.000	120.000	2500.000	--	--	--

	0.00700	--	--		--	--	--	--	--	--
4	Stiff Clay w/o Free Water				8.000	120.000	1500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					13.000	120.000	1500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
5	Stiff Clay w/o Free Water				13.000	125.000	4500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					18.000	125.000	4500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
6	Stiff Clay w/o Free Water				18.000	125.000	2500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					23.000	125.000	2500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
7	Stiff Clay w/o Free Water				23.000	125.000	3500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
					28.000	125.000	3500.000	--	--	--
	0.00700	--	--		--	--	--	--	--	--
8	Stiff Clay w/o Free Water				28.000	125.000	4500.000	--	--	--
	0.00500	--	--		--	--	--	--	--	--
					80.000	125.000	125.000	--	--	--
	0.00500	--	--		--	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.9300	1.0000
2	50.000	0.9300	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs		154000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs		154000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs		154000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13537.	-0.004665	765.9332	5.799E+09	-438.2264	5258.7165	0.000
6.000	0.2220	77643.	11536.	-0.004625	1152.0983	5.799E+09	-228.7669	6182.6182	0.000
12.000	0.1945	146976.	10154.	-0.004580	1496.9336	5.799E+09	-231.8345	7151.6533	0.000
18.000	0.1679	207823.	8757.6993	-0.004325	1799.5603	5.799E+09	-233.5973	8347.4494	0.000
24.000	0.1426	260062.	7354.9837	-0.004083	2059.3732	5.799E+09	-233.9746	9844.6465	0.000
30.000	0.1189	303628.	5954.4244	-0.003791	2276.0566	5.799E+09	-232.8785	11751.	0.000
36.000	0.0971	338521.	4503.4212	-0.003459	2449.5994	5.799E+09	-250.7892	15496.	0.000
42.000	0.0774	364062.	2832.9601	-0.003096	2576.6288	5.799E+09	-306.0312	23724.	0.000
48.000	0.0600	378238.	1017.1457	-0.002712	2647.1324	5.799E+09	-299.2403	29947.	0.000
54.000	0.0449	381279.	-749.3716	-0.002319	2662.2586	5.799E+09	-289.5988	38735.	0.000
60.000	0.0321	373530.	-2448.5911	-0.001928	2623.7193	5.799E+09	-276.8077	51691.	0.000
66.000	0.0217	355459.	-4060.2853	-0.001551	2533.8415	5.799E+09	-260.4237	71938.	0.000
72.000	0.0135	327673.	-5560.6317	-0.001198	2395.6448	5.799E+09	-239.6918	106390.	0.000
78.000	0.007349	290945.	-6918.8474	-0.000878	2212.9733	5.799E+09	-213.0468	173936.	0.000
84.000	0.002987	246269.	-8085.8867	-0.000600	1990.7725	5.799E+09	-175.9663	353476.	0.000
90.000	0.000154	195022.	-8763.2691	-0.000371	1735.8939	5.799E+09	-49.8278	1946873.	0.000
96.000	-0.001469	141796.	-8163.9032	-0.000197	1471.1663	5.799E+09	249.6164	1019532.	0.000
102.000	-0.002211	97420.	-6792.4673	-7.331E-05	1250.4581	5.799E+09	207.5289	563107.	0.000
108.000	-0.002349	60421.	-5537.8033	8.354E-06	1066.4445	5.799E+09	210.6924	538238.	0.000
114.000	-0.002111	30950.	-4290.3967	5.563E-05	919.8680	5.799E+09	205.1098	582973.	0.000
120.000	-0.001681	8833.8394	-3093.9866	7.621E-05	809.8691	5.799E+09	193.6935	691282.	0.000
126.000	-0.001196	-6318.2379	-1979.4794	7.751E-05	797.3575	5.799E+09	177.8089	891653.	0.000
132.000	-0.000751	-15063.	-971.6429	6.645E-05	840.8511	5.799E+09	158.1366	1263349.	0.000
138.000	-0.000399	-18101.	-92.7281	4.929E-05	855.9589	5.799E+09	134.8350	2027093.	0.000
144.000	-0.000160	-16267.	503.5901	3.151E-05	846.8385	5.799E+09	63.9378	2404603.	0.000
150.000	-2.097E-05	-12116.	720.6151	1.683E-05	826.1927	5.799E+09	8.4039	2404603.	0.000
156.000	4.238E-05	-7650.6965	693.4149	6.600E-06	803.9846	5.799E+09	-17.4706	2473460.	0.000
162.000	5.823E-05	-3807.1196	531.9174	6.721E-07	784.8682	5.799E+09	-36.3618	3746714.	0.000
168.000	5.044E-05	-1268.9292	325.6755	-1.954E-06	772.2443	5.799E+09	-32.3855	3852009.	0.000
174.000	3.478E-05	104.5970	159.6991	-2.556E-06	766.4534	5.799E+09	-22.9400	3957309.	0.000
180.000	1.977E-05	652.1841	50.7260	-2.165E-06	769.1769	5.799E+09	-13.3844	4062615.	0.000
186.000	8.802E-06	717.3100	-7.7704	-1.456E-06	769.5008	5.799E+09	-6.1144	4167925.	0.000
192.000	2.290E-06	561.6306	-31.0075	-7.947E-07	768.7265	5.799E+09	-1.6313	4273240.	0.000
198.000	-7.345E-07	346.6891	-33.2520	-3.248E-07	767.6575	5.799E+09	0.8831	7213810.	0.000
204.000	-1.607E-06	163.2063	-24.8066	-6.098E-08	766.7449	5.799E+09	1.9321	7213810.	0.000
210.000	-1.466E-06	49.1224	-13.7217	4.887E-08	766.1775	5.799E+09	1.7629	7213810.	0.000
216.000	-1.021E-06	-1.5443	-5.5700	7.348E-08	765.9408	5.799E+09	0.9544	5610741.	0.000
222.000	-5.845E-07	-17.8528	-1.5357	6.345E-08	766.0220	5.799E+09	0.3904	4007672.	0.000
228.000	-2.592E-07	-20.0904	0.1548	4.382E-08	766.0331	5.799E+09	0.1731	4007672.	0.000
234.000	-5.864E-08	-16.0765	0.7916	2.511E-08	766.0138	5.799E+09	0.0392	4007672.	0.000
240.000	4.210E-08	-10.6372	0.8490	1.129E-08	765.9861	5.799E+09	-0.0200	2856937.	0.000
246.000	7.679E-08	-5.9092	0.6768	2.725E-09	765.9626	5.799E+09	-0.0374	2918663.	0.000
252.000	7.480E-08	-2.5204	0.4533	-1.636E-09	765.9457	5.799E+09	-0.0372	2980391.	0.000
258.000	5.716E-08	-0.4667	0.2549	-3.181E-09	765.9355	5.799E+09	-0.0290	3042121.	0.000
264.000	3.663E-08	0.5440	0.1111	-3.141E-09	765.9359	5.799E+09	-0.0189	3103853.	0.000
270.000	1.947E-08	0.8722	0.0234	-2.408E-09	765.9375	5.799E+09	-0.0103	3165588.	0.000
276.000	7.724E-09	0.8298	-0.0222	-1.528E-09	765.9373	5.799E+09	-0.004927	3827290.	0.000
282.000	1.132E-09	0.6092	-0.0395	-7.834E-10	765.9362	5.799E+09	-0.000850	4503372.	0.000
288.000	-1.678E-09	0.3575	-0.0373	-2.833E-10	765.9349	5.799E+09	0.001569	5610741.	0.000
294.000	-2.268E-09	0.1618	-0.0263	-1.467E-11	765.9340	5.799E+09	0.002121	5610741.	0.000
300.000	-1.854E-09	0.0424	-0.0147	9.161E-11	765.9334	5.799E+09	0.001733	5610741.	0.000
306.000	-1.176E-09	-0.0146	-0.006193	1.054E-10	765.9333	5.799E+09	0.001100	5610741.	0.000
312.000	-5.889E-10	-0.0321	-0.001242	8.123E-11	765.9333	5.799E+09	0.000551	5610741.	0.000
318.000	-2.011E-10	-0.0297	0.000974	4.928E-11	765.9333	5.799E+09	0.000188	5610741.	0.000
324.000	2.401E-12	-0.0205	0.001532	2.332E-11	765.9333	5.799E+09	-2.036E-06	5088204.	0.000
330.000	7.875E-11	-0.0113	0.001323	6.861E-12	765.9332	5.799E+09	-6.788E-05	5171756.	0.000
336.000	8.473E-11	-0.004623	0.000893	-1.396E-12	765.9332	5.799E+09	-7.539E-05	5338917.	0.000
342.000	6.200E-11	-0.000620	0.000471	-4.108E-12	765.9332	5.799E+09	-6.517E-05	6306023.	0.000
348.000	3.543E-11	0.001038	0.000163	-3.892E-12	765.9332	5.799E+09	-3.757E-05	6362077.	0.000
354.000	1.530E-11	0.001342	1.123E-06	-2.661E-12	765.9332	5.799E+09	-1.636E-05	6416138.	0.000
360.000	3.502E-12	0.001056	-5.929E-05	-1.420E-12	765.9332	5.799E+09	-3.776E-06	6468205.	0.000
366.000	-1.737E-12	0.000633	-6.412E-05	0.000	765.9332	5.799E+09	2.165E-06	7480101.	0.000
372.000	-3.044E-12	0.000288	-4.635E-05	0.000	765.9332	5.799E+09	3.757E-06	7406746.	0.000
378.000	-2.563E-12	7.737E-05	-2.568E-05	0.000	765.9332	5.799E+09	3.132E-06	7333391.	0.000
384.000	-1.601E-12	-2.049E-05	-1.047E-05	0.000	765.9332	5.799E+09	1.938E-06	7260036.	0.000
390.000	0.000	-4.857E-05	-1.902E-06	0.000	765.9332	5.799E+09	9.191E-07	7186681.	0.000
396.000	0.000	-4.352E-05	1.690E-06	0.000	765.9332	5.799E+09	2.784E-07	7113326.	0.000
402.000	0.000	-2.841E-05	2.432E-06	0.000	765.9332	5.799E+09	-3.110E-08	6776837.	0.000
408.000	0.000	-1.439E-05	1.952E-06	0.000	765.9332	5.799E+09	-1.289E-07	6812950.	0.000
414.000	0.000	-4.997E-06	1.189E-06	0.000	765.9332	5.799E+09	-1.256E-07	6847069.	0.000
420.000	0.000	-1.206E-07	5.538E-07	0.000	765.9332	5.799E+09	-8.601E-08	6819907.	0.000
426.000	0.000	1.659E-06	1.591E-07	0.000	765.9332	5.799E+09	-4.554E-08	6746552.	0.000
432.000	0.000	1.798E-06	-2.968E-08	0.000	765.9332	5.799E+09	-1.739E-08	6673197.	0.000
438.000	0.000	1.309E-06	-8.827E-08	0.000	765.9332	5.799E+09	-2.135E-09	6599842.	0.000
444.000	0.000	7.419E-07	-8.283E-08	0.000	765.9332	5.799E+09	3.950E-09	6526487.	0.000
450.000	0.000	3.162E-07	-5.614E-08	0.000	765.9332	5.799E+09	4.944E-09	6453133.	0.000
456.000	0.000	6.820E-08	-2.983E-08	0.000	765.9332	5.799E+09	3.827E-09	6379778.	0.000
462.000	0.000	-4.213E-08	-1.148E-08	0.000	765.9332	5.799E+09	2.289E-09	6306423.	0.000
468.000	0.000	-7.001E-08	-1.444E-09	0.000	765.9332	5.799E+09	1.058E-09	6233068.	0.000
474.000	0.000	-5.975E-08	2.632E-09	0.000	765.9332	5.799E+09	3.010E-10	6159713.	0.000
480.000	0.000	-3.859E-08	3.350E-09	0.000	765.9332	5.799E+09	-6.172E-11	6086358.	0.000
486.000	0.000	-1.963E-08	2.638E-09	0.000	765.9332	5.799E+09	-1.757E-10	6013003.	0.000
492.000	0.000	-6.960E-09	1.612E-09	0.000	765.9332	5.799E+09	-1.662E-10	5939648.	0.000

498.000	0.000	-2.711E-10	7.697E-10	0.000	765.9332	5.799E+09	-1.146E-10	5866294.	0.000
504.000	0.000	2.291E-09	2.377E-10	0.000	765.9332	5.799E+09	-6.270E-11	5792939.	0.000
510.000	0.000	2.595E-09	-2.728E-11	0.000	765.9332	5.799E+09	-2.561E-11	5719584.	0.000
516.000	0.000	1.973E-09	-1.179E-10	0.000	765.9332	5.799E+09	-4.607E-12	5646229.	0.000
522.000	0.000	1.184E-09	-1.183E-10	0.000	765.9332	5.799E+09	4.478E-12	5572874.	0.000
528.000	0.000	5.554E-10	-8.512E-11	0.000	765.9332	5.799E+09	6.587E-12	5499519.	0.000
534.000	0.000	1.631E-10	-4.881E-11	0.000	765.9332	5.799E+09	5.519E-12	5426164.	0.000
540.000	0.000	-3.076E-11	-2.153E-11	0.000	765.9332	5.799E+09	3.575E-12	5352809.	0.000
546.000	0.000	-9.587E-11	-5.255E-12	0.000	765.9332	5.799E+09	1.849E-12	5279455.	0.000
552.000	0.000	-9.431E-11	2.355E-12	0.000	765.9332	5.799E+09	0.000	5206100.	0.000
558.000	0.000	-6.792E-11	4.592E-12	0.000	765.9332	5.799E+09	0.000	5132745.	0.000
564.000	0.000	-3.937E-11	4.173E-12	0.000	765.9332	5.799E+09	0.000	5059390.	0.000
570.000	0.000	-1.790E-11	2.851E-12	0.000	765.9332	5.799E+09	0.000	4986035.	0.000
576.000	0.000	-5.163E-12	1.534E-12	0.000	765.9332	5.799E+09	0.000	4912680.	0.000
582.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	4839325.	0.000
588.000	0.000	1.738E-12	0.000	0.000	765.9332	5.799E+09	0.000	4765971.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	4692616.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2309630.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0046651 radians
Maximum bending moment = 381279. inch-lbs
Maximum shear force = 13537. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	18573.	-0.008317	765.9332	5.799E+09	-521.1419	3126.8516	0.000
6.000	0.4501	109743.	16191.	-0.008260	1311.7498	5.799E+09	-272.9778	3638.8894	0.000
12.000	0.4009	209554.	14539.	-0.008095	1808.1682	5.799E+09	-277.7802	4157.5257	0.000
18.000	0.3530	299164.	12861.	-0.007831	2253.8537	5.799E+09	-281.2768	4781.3690	0.000
24.000	0.3069	378363.	11167.	-0.007481	2647.7542	5.799E+09	-283.3929	5540.3106	0.000
30.000	0.2632	446997.	9465.0326	-0.007054	2989.1142	5.799E+09	-284.0491	6475.3833	0.000
36.000	0.2223	504978.	7687.4757	-0.006561	3277.4898	5.799E+09	-308.4699	8327.2530	0.000
42.000	0.1845	551372.	5621.3596	-0.006015	3508.2329	5.799E+09	-380.2355	12368.	0.000
48.000	0.1501	583550.	3351.4806	-0.005428	3668.2732	5.799E+09	-376.3909	15047.	0.000
54.000	0.1193	601620.	1112.8029	-0.004814	3758.1461	5.799E+09	-369.8350	18596.	0.000
60.000	0.0923	605801.	-1077.7922	-0.004190	3778.9394	5.799E+09	-360.3633	23423.	0.000
66.000	0.0691	596429.	-3202.0194	-0.003568	3732.3293	5.799E+09	-347.7124	30213.	0.000
72.000	0.0495	573970.	-5239.7028	-0.002962	3620.6253	5.799E+09	-331.5154	40187.	0.000
78.000	0.0335	539027.	-7167.8672	-0.002386	3446.8344	5.799E+09	-311.2060	55732.	0.000
84.000	0.0209	492366.	-8958.8195	-0.001853	3214.7591	5.799E+09	-285.7781	82205.	0.000
90.000	0.0113	434945.	-10575.	-0.001373	2929.1741	5.799E+09	-253.0476	134723.	0.000
96.000	0.004381	368000.	-11810.	-0.000958	2596.2129	5.799E+09	-158.4969	217054.	0.000
102.000	-0.000222	294996.	-12018.	-0.000615	2233.1230	5.799E+09	89.1257	2404603.	0.000
108.000	-0.002995	224919.	-11079.	-0.000346	1884.5883	5.799E+09	223.9268	448654.	0.000
114.000	-0.004371	162688.	-9668.4272	-0.000145	1575.0779	5.799E+09	246.2262	338027.	0.000
120.000	-0.004736	109166.	-8176.0593	-4.497E-06	1308.8806	5.799E+09	251.2297	318256.	0.000
126.000	-0.004424	64584.	-6681.4927	8.540E-05	1087.1467	5.799E+09	246.9591	334899.	0.000
132.000	-0.003712	28830.	-5231.7208	0.000134	909.3235	5.799E+09	236.2982	381985.	0.000
138.000	-0.002820	1556.0323	-3861.2016	0.000149	773.6722	5.799E+09	220.5416	469273.	0.000
144.000	-0.001918	-17780.	-2598.9641	0.000141	854.3649	5.799E+09	200.2042	626197.	0.000
150.000	-0.001127	-29892.	-1472.8549	0.000116	914.6048	5.799E+09	175.1655	932417.	0.000
156.000	-0.000522	-35670.	-81.5838	8.247E-05	943.3392	5.799E+09	288.5915	3319451.	0.000
162.000	-0.000138	-31024.	1280.3324	4.796E-05	920.2319	5.799E+09	165.3805	7213810.	0.000
168.000	5.392E-05	-20394.	1673.2388	2.136E-05	867.3658	5.799E+09	-34.4118	3828868.	0.000
174.000	0.000119	-10984.	1336.3382	5.128E-06	820.5642	5.799E+09	-77.8884	3934166.	0.000
180.000	0.000115	-4367.6674	869.4812	-2.815E-06	787.6562	5.799E+09	-77.7306	4039470.	0.000
186.000	8.501E-05	-545.2422	460.1167	-5.357E-06	768.6450	5.799E+09	-58.7242	4144779.	0.000
192.000	5.118E-05	1163.6317	175.1900	-5.037E-06	771.7206	5.799E+09	-36.2513	4250092.	0.000
198.000	2.457E-05	1566.3450	12.9313	-3.624E-06	773.7235	5.799E+09	-17.8349	4355409.	0.000
204.000	7.686E-06	1325.5053	-57.7153	-2.128E-06	772.5257	5.799E+09	-5.7140	4460729.	0.000
210.000	-9.685E-07	877.6938	-71.3640	-9.883E-07	770.2985	5.799E+09	1.1645	7213810.	0.000
216.000	-4.174E-06	470.9642	-56.1615	-2.905E-07	768.2755	5.799E+09	3.9030	5610741.	0.000
222.000	-4.455E-06	204.2927	-35.5251	5.880E-08	766.9492	5.799E+09	2.9758	4007672.	0.000
228.000	-3.468E-06	44.5539	-19.6482	1.875E-07	766.1548	5.799E+09	2.3165	4007672.	0.000

234.000	-2.205E-06	-31.8326	-8.2811	1.941E-07	766.0915	5.799E+09	1.4725	4007672.	0.000
240.000	-1.139E-06	-55.1784	-1.5821	1.491E-07	766.2076	5.799E+09	0.7605	4007672.	0.000
246.000	-4.152E-07	-51.0933	1.5313	9.413E-08	766.1873	5.799E+09	0.2773	4007672.	0.000
252.000	-8.969E-09	-36.9764	2.3812	4.857E-08	766.1171	5.799E+09	0.005991	4007672.	0.000
258.000	1.677E-07	-22.6084	2.1460	1.774E-08	766.0456	5.799E+09	-0.0844	3020392.	0.000
264.000	2.039E-07	-11.2573	1.5785	2.210E-10	765.9892	5.799E+09	-0.1048	3082123.	0.000
270.000	1.703E-07	-3.6667	0.9965	-7.500E-09	765.9514	5.799E+09	-0.0892	3143855.	0.000
276.000	1.139E-07	0.7147	0.5097	-9.027E-09	765.9367	5.799E+09	-0.0730	3846397.	0.000
282.000	6.199E-08	2.4662	0.1503	-7.382E-09	765.9454	5.799E+09	-0.0468	4525353.	0.000
288.000	2.535E-08	2.5321	-0.0484	-4.796E-09	765.9458	5.799E+09	-0.0195	4608897.	0.000
294.000	4.437E-09	1.8946	-0.1172	-2.500E-09	765.9426	5.799E+09	-0.003470	4692443.	0.000
300.000	-4.715E-09	1.1304	-0.1144	-9.404E-10	765.9388	5.799E+09	0.004409	5610741.	0.000
306.000	-6.848E-09	0.5238	-0.0819	-8.459E-11	765.9358	5.799E+09	0.006404	5610741.	0.000
312.000	-5.730E-09	0.1473	-0.0467	2.626E-10	765.9339	5.799E+09	0.005358	5610741.	0.000
318.000	-3.697E-09	-0.0365	-0.0202	3.199E-10	765.9333	5.799E+09	0.003457	5610741.	0.000
324.000	-1.891E-09	-0.0958	-0.004536	2.514E-10	765.9336	5.799E+09	0.001768	5610741.	0.000
330.000	-6.795E-10	-0.0914	0.002674	1.546E-10	765.9336	5.799E+09	0.000635	5610741.	0.000
336.000	-3.598E-11	-0.0640	0.004701	7.413E-11	765.9335	5.799E+09	3.997E-05	6664213.	0.000
342.000	2.100E-10	-0.0351	0.004157	2.282E-11	765.9333	5.799E+09	-0.000221	6315929.	0.000
348.000	2.378E-10	-0.0142	0.002736	-2.707E-12	765.9332	5.799E+09	-0.000253	6371896.	0.000
354.000	1.776E-10	-0.002307	0.001408	-1.124E-11	765.9332	5.799E+09	-0.000190	6425870.	0.000
360.000	1.029E-10	0.002731	0.000504	-1.102E-11	765.9332	5.799E+09	-0.000111	6477850.	0.000
366.000	4.530E-11	0.003764	2.296E-05	-7.661E-12	765.9332	5.799E+09	-4.928E-05	6527836.	0.000
372.000	1.102E-11	0.003020	-0.000161	-4.151E-12	765.9332	5.799E+09	-1.208E-05	6575828.	0.000
378.000	-4.508E-12	0.001839	-0.000181	-1.637E-12	765.9332	5.799E+09	5.510E-06	7333391.	0.000
384.000	-8.620E-12	0.000854	-0.000133	0.000	765.9332	5.799E+09	1.043E-05	7260036.	0.000
390.000	-7.431E-12	0.000243	-7.500E-05	0.000	765.9332	5.799E+09	8.900E-06	7186681.	0.000
396.000	-4.731E-12	-4.691E-05	-3.147E-05	0.000	765.9332	5.799E+09	5.609E-06	7113326.	0.000
402.000	-2.323E-12	-0.000135	-6.467E-06	0.000	765.9332	5.799E+09	2.726E-06	7039971.	0.000
408.000	0.000	-0.000125	4.338E-06	0.000	765.9332	5.799E+09	8.756E-07	6966617.	0.000
414.000	0.000	-8.346E-05	6.834E-06	0.000	765.9332	5.799E+09	-4.353E-08	6855932.	0.000
420.000	0.000	-4.329E-05	5.639E-06	0.000	765.9332	5.799E+09	-3.548E-07	6819907.	0.000
426.000	0.000	-1.584E-05	3.503E-06	0.000	765.9332	5.799E+09	-3.570E-07	6746552.	0.000
432.000	0.000	-1.233E-06	1.683E-06	0.000	765.9332	5.799E+09	-2.496E-07	6673197.	0.000
438.000	0.000	4.389E-06	5.261E-07	0.000	765.9332	5.799E+09	-1.361E-07	6599842.	0.000
444.000	0.000	5.107E-06	-4.662E-08	0.000	765.9332	5.799E+09	-5.475E-08	6526487.	0.000
450.000	0.000	3.848E-06	-2.387E-07	0.000	765.9332	5.799E+09	-9.257E-09	6453133.	0.000
456.000	0.000	2.252E-06	-2.370E-07	0.000	765.9332	5.799E+09	9.820E-09	6379778.	0.000
462.000	0.000	1.008E-06	-1.662E-07	0.000	765.9332	5.799E+09	1.377E-08	6306423.	0.000
468.000	0.000	2.578E-07	-9.154E-08	0.000	765.9332	5.799E+09	1.112E-08	6233068.	0.000
474.000	0.000	-9.193E-08	-3.751E-08	0.000	765.9332	5.799E+09	6.889E-09	6159713.	0.000
480.000	0.000	-1.935E-07	-6.837E-09	0.000	765.9332	5.799E+09	3.335E-09	6086358.	0.000
486.000	0.000	-1.748E-07	6.377E-09	0.000	765.9332	5.799E+09	1.069E-09	6013003.	0.000
492.000	0.000	-1.175E-07	9.378E-09	0.000	765.9332	5.799E+09	-6.848E-11	5939648.	0.000
498.000	0.000	-6.254E-08	7.778E-09	0.000	765.9332	5.799E+09	-4.649E-10	5866294.	0.000
504.000	0.000	-2.424E-08	4.954E-09	0.000	765.9332	5.799E+09	-4.764E-10	5792939.	0.000
510.000	0.000	-3.074E-09	2.493E-09	0.000	765.9332	5.799E+09	-3.441E-10	5719584.	0.000
516.000	0.000	5.710E-09	8.691E-10	0.000	765.9332	5.799E+09	-1.970E-10	5646229.	0.000
522.000	0.000	7.396E-09	1.811E-11	0.000	765.9332	5.799E+09	-8.661E-11	5572874.	0.000
528.000	0.000	5.956E-09	-3.051E-10	0.000	765.9332	5.799E+09	-2.111E-11	5499519.	0.000
534.000	0.000	3.751E-09	-3.407E-10	0.000	765.9332	5.799E+09	9.233E-12	5426164.	0.000
540.000	0.000	1.875E-09	-2.590E-10	0.000	765.9332	5.799E+09	1.799E-11	5352809.	0.000
546.000	0.000	6.440E-10	-1.563E-10	0.000	765.9332	5.799E+09	1.626E-11	5279455.	0.000
552.000	0.000	-1.960E-12	-7.422E-11	0.000	765.9332	5.799E+09	1.110E-11	5206100.	0.000
558.000	0.000	-2.483E-10	-2.264E-11	0.000	765.9332	5.799E+09	6.092E-12	5132745.	0.000
564.000	0.000	-2.751E-10	3.203E-12	0.000	765.9332	5.799E+09	2.522E-12	5059390.	0.000
570.000	0.000	-2.109E-10	1.219E-11	0.000	765.9332	5.799E+09	0.000	4986035.	0.000
576.000	0.000	-1.294E-10	1.227E-11	0.000	765.9332	5.799E+09	0.000	4912680.	0.000
582.000	0.000	-6.384E-11	8.875E-12	0.000	765.9332	5.799E+09	0.000	4839325.	0.000
588.000	0.000	-2.296E-11	4.988E-12	0.000	765.9332	5.799E+09	0.000	4765971.	0.000
594.000	0.000	-3.940E-12	1.907E-12	0.000	765.9332	5.799E+09	0.000	4692616.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	2309630.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =      0.5000000 inches
Computed slope at pile head     =     -0.0083165 radians
Maximum bending moment          =         605801. inch-lbs
Maximum shear force             =          18573. lbs
Depth of maximum bending moment =     60.0000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =             18
Number of zero deflection points =            12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

```
Displacement of pile head                    =       1.000000 inches
Moment at pile head                          =          0.000 in-lbs
Axial load at pile head                      =     154000.000 lbs
```


Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	25448.	-0.0148	765.9332	5.799E+09	-619.7457	1859.2371	0.000
6.000	0.9111	155216.	22612.	-0.0147	1537.9149	5.799E+09	-325.6093	2144.1682	0.000
12.000	0.8233	298562.	20638.	-0.0145	2250.8585	5.799E+09	-332.5296	2423.5057	0.000
18.000	0.7372	429651.	18626.	-0.0141	2902.8431	5.799E+09	-338.1422	2752.0072	0.000
24.000	0.6539	548157.	16584.	-0.0136	3492.2405	5.799E+09	-342.3783	3141.7577	0.000
30.000	0.5739	653812.	14521.	-0.0130	4017.7288	5.799E+09	-345.1665	3608.6629	0.000
36.000	0.4980	746417.	12354.	-0.0123	4478.3062	5.799E+09	-377.3968	4547.0221	0.000
42.000	0.4267	824722.	9814.7156	-0.0115	4867.7616	5.799E+09	-468.9289	6593.4634	0.000
48.000	0.3606	885356.	7002.1500	-0.0106	5169.3339	5.799E+09	-468.5930	7797.5081	0.000
54.000	0.2999	928275.	4199.4149	-0.009629	5382.7949	5.799E+09	-465.6520	9315.5953	0.000
60.000	0.2450	953543.	1422.5852	-0.008655	5508.4672	5.799E+09	-459.9579	11263.	0.000
66.000	0.1961	961341.	-1311.3049	-0.007664	5547.2500	5.799E+09	-451.3389	13813.	0.000
72.000	0.1531	951971.	-3984.0824	-0.006675	5500.6495	5.799E+09	-439.5870	17233.	0.000
78.000	0.1160	925866.	-6576.1485	-0.005703	5370.8145	5.799E+09	-424.4351	21961.	0.000
84.000	0.0846	883597.	-9065.9952	-0.004767	5160.5819	5.799E+09	-405.5138	28754.	0.000
90.000	0.0588	825884.	-11429.	-0.003882	4873.5408	5.799E+09	-382.2610	39033.	0.000
96.000	0.0380	753619.	-13392.	-0.003065	4514.1288	5.799E+09	-271.8097	42884.	0.000
102.000	0.0220	670850.	-14772.	-0.002328	4102.4659	5.799E+09	-188.3316	51417.	0.000
108.000	0.0101	580659.	-15817.	-0.001681	3653.8923	5.799E+09	-160.0840	95196.	0.000
114.000	0.001807	484149.	-16620.	-0.001130	3173.8947	5.799E+09	-107.6467	357338.	0.000
120.000	-0.003469	383302.	-16246.	-0.000681	2672.3208	5.799E+09	232.4029	401960.	0.000
126.000	-0.006366	290455.	-14737.	-0.000333	2210.5357	5.799E+09	270.6696	255112.	0.000
132.000	-0.007459	207074.	-13080.	-7.513E-05	1795.8328	5.799E+09	281.6570	226549.	0.000
138.000	-0.007267	133634.	-11395.	0.000101	1430.5756	5.799E+09	279.8432	231037.	0.000
144.000	-0.006246	70142.	-9747.5568	0.000207	1114.7887	5.799E+09	269.4472	258841.	0.000
150.000	-0.004789	16282.	-8182.8226	0.000251	846.9126	5.799E+09	252.1309	315905.	0.000
156.000	-0.003231	-28517.	-6055.4733	0.000245	907.7634	5.799E+09	456.9855	848746.	0.000
162.000	-0.001849	-56836.	-2895.8948	0.000201	1048.6145	5.799E+09	596.2073	1934276.	0.000
168.000	-0.000821	-63638.	352.5193	0.000138	1082.4449	5.799E+09	486.5974	3555663.	0.000
174.000	-0.000188	-52862.	2490.0857	7.818E-05	1028.8477	5.799E+09	225.9248	7213810.	0.000
180.000	0.000117	-33902.	2937.0102	3.330E-05	934.5474	5.799E+09	-76.9499	3942764.	0.000
186.000	0.000212	-17680.	2277.8028	6.609E-06	853.8638	5.799E+09	-142.7859	4048066.	0.000
192.000	0.000196	-6580.4888	1441.5633	-5.942E-06	798.6618	5.799E+09	-135.9607	4153372.	0.000
198.000	0.000140	-369.7645	734.8703	-9.538E-06	767.7722	5.799E+09	-99.6037	4258683.	0.000
204.000	8.195E-05	2255.5810	257.2339	-8.562E-06	777.1515	5.799E+09	-59.6085	4363998.	0.000
210.000	3.758E-05	2732.8650	-5.5766	-5.981E-06	779.5253	5.799E+09	-27.9950	4469316.	0.000
216.000	1.018E-05	2199.7160	-107.4959	-3.429E-06	776.8737	5.799E+09	-5.9781	3524252.	0.000
222.000	-3.571E-06	1449.2524	-118.2745	-1.542E-06	773.1412	5.799E+09	2.3852	4007672.	0.000
228.000	-8.322E-06	783.2716	-94.4425	-3.866E-07	769.8288	5.799E+09	5.5587	4007672.	0.000
234.000	-8.210E-06	316.6566	-61.3139	1.824E-07	767.5081	5.799E+09	5.4841	4007672.	0.000
240.000	-6.133E-06	47.1680	-32.5722	3.707E-07	766.1678	5.799E+09	4.0964	4007672.	0.000
246.000	-3.762E-06	-74.8947	-12.7437	3.563E-07	766.3057	5.799E+09	2.5131	4007672.	0.000
252.000	-1.857E-06	-106.4144	1.4834	2.625E-07	766.4624	5.799E+09	1.2403	4007672.	0.000
258.000	-6.121E-07	-93.1800	3.4643	1.593E-07	766.3966	5.799E+09	0.4089	4007672.	0.000
264.000	5.416E-08	-65.1368	4.6079	7.735E-08	766.2571	5.799E+09	-0.0277	3066747.	0.000
270.000	3.161E-07	-38.0280	4.0304	2.398E-08	766.1223	5.799E+09	-0.1648	3128479.	0.000
276.000	3.419E-07	-16.8159	2.8822	-4.396E-09	766.0168	5.799E+09	-0.2179	3824599.	0.000
282.000	2.633E-07	-3.4336	1.6358	-1.487E-08	765.9502	5.799E+09	-0.1975	4500276.	0.000
288.000	1.634E-07	2.8415	0.6687	-1.518E-08	765.9473	5.799E+09	-0.1249	4583819.	0.000
294.000	8.119E-08	4.6187	0.1046	-1.132E-08	765.9561	5.799E+09	-0.0632	4667364.	0.000
300.000	2.762E-08	4.1177	-0.1505	-6.799E-09	765.9536	5.799E+09	-0.0219	4750910.	0.000
306.000	-3.894E-10	2.8255	-0.2150	-3.206E-09	765.9472	5.799E+09	0.000364	5610741.	0.000
312.000	-1.086E-08	1.5436	-0.1835	-9.461E-10	765.9408	5.799E+09	0.0102	5610741.	0.000
318.000	-1.174E-08	0.6258	-0.1201	1.763E-10	765.9363	5.799E+09	0.0110	5610741.	0.000
324.000	-8.741E-09	0.1027	-0.0626	5.533E-10	765.9337	5.799E+09	0.000174	5610741.	0.000
330.000	-5.103E-09	-0.1262	-0.0237	5.411E-10	765.9338	5.799E+09	0.004772	5610741.	0.000
336.000	-2.248E-09	-0.1833	-0.001941	3.810E-10	765.9341	5.799E+09	0.002497	6664213.	0.000
342.000	-5.314E-10	-0.1502	0.007616	2.084E-10	765.9339	5.799E+09	0.000688	7773520.	0.000
348.000	2.529E-10	-0.0923	0.008881	8.297E-11	765.9336	5.799E+09	-0.000267	6329938.	0.000
354.000	4.643E-10	-0.0438	0.006598	1.257E-11	765.9334	5.799E+09	-0.000494	6384283.	0.000
360.000	4.038E-10	-0.0131	0.003817	-1.687E-11	765.9332	5.799E+09	-0.000433	6436634.	0.000
366.000	2.618E-10	0.002017	0.001668	-2.261E-11	765.9332	5.799E+09	-0.000283	6486992.	0.000
372.000	1.324E-10	0.006948	0.000386	-1.797E-11	765.9332	5.799E+09	-0.000144	6535355.	0.000
378.000	4.613E-11	0.006681	-0.000199	-1.092E-11	765.9332	5.799E+09	-5.061E-05	6581724.	0.000
384.000	1.334E-12	0.004586	-0.000355	-5.094E-12	765.9332	5.799E+09	-1.473E-06	6626099.	0.000
390.000	-1.500E-11	0.002433	-0.000305	-1.463E-12	765.9332	5.799E+09	1.796E-05	7186681.	0.000
396.000	-1.622E-11	0.000924	-0.000194	0.000	765.9332	5.799E+09	1.922E-05	7113326.	0.000
402.000	-1.171E-11	0.000107	-9.484E-05	0.000	765.9332	5.799E+09	1.374E-05	7039971.	0.000
408.000	-6.536E-12	-0.000215	-3.085E-05	0.000	765.9332	5.799E+09	7.589E-06	6966617.	0.000
414.000	-2.697E-12	-0.000264	1.214E-06	0.000	765.9332	5.799E+09	3.099E-06	6893262.	0.000
420.000	0.000	-0.000202	1.222E-05	0.000	765.9332	5.799E+09	5.686E-07	6819907.	0.000
426.000	0.000	-0.000118	1.242E-05	0.000	765.9332	5.799E+09	-4.994E-07	6746552.	0.000
432.000	0.000	-5.284E-05	9.744E-06	0.000	765.9332	5.799E+09	-7.270E-07	6673197.	0.000
438.000	0.000	-1.344E-05	4.797E-06	0.000	765.9332	5.799E+09	-5.886E-07	6599842.	0.000
444.000	0.000	4.779E-06	1.944E-06	0.000	765.9332	5.799E+09	-3.624E-07	6526487.	0.000
450.000	0.000	9.947E-06	3.379E-07	0.000	765.9332	5.799E+09	-1.730E-07	6453133.	0.000
456.000	0.000	8.877E-06	-3.419E-07	0.000	765.9332	5.799E+09	-5.354E-08	6379778.	0.000
462.000	0.000	5.870E-06	-4.865E-07	0.000	765.9332	5.799E+09	5.332E-09	6306423.	0.000
468.000	0.000	3.050E-06	-3.955E-07	0.000	765.9332	5.799E+09	2.499E-08	6233068.	0.000
474.000	0.000	1.127E-06	-2.463E-07	0.000	765.9332	5.799E+09	2.474E-08	6159713.	0.000
480.000	0.000	9.279E-08	-1.199E-07	0.000	765.9332	5.799E+09	1.740E-08	6086358.	0.000
486.000	0.000	-3.146E-07	-3.876E-08	0.000	765.9332	5.799E+09	9.651E-09	6013003.	0.000
492.000	0.000	-3.743E-07	2.254E-09	0.000	765.9332	5.799E+09	4.019E-09	5939648.	0.000
498.000	0.000	-2.889E-07	1.670E-08	0.000	765.9332	5.799E+09	7.958E-10	5866294.	0.000
504.000	0.000	-1.746E-07	1.724E-08	0.000	765.9332	5.799E+09	-6.163E-10	5792939.	0.000
510.000	0.000	-8.237E-08	1.251E-08	0.000	765.9332	5.799E+09	-9.594E-10	5719584.	0.000

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516.000	0.000	-2.455E-08	7.196E-09	0.000	765.9332	5.799E+09	-8.122E-10	5646229.	0.000
522.000	0.000	4.051E-09	3.178E-09	0.000	765.9332	5.799E+09	-5.270E-10	5572874.	0.000
528.000	0.000	1.368E-08	7.810E-10	0.000	765.9332	5.799E+09	-2.721E-10	5499519.	0.000
534.000	0.000	1.349E-08	-3.369E-10	0.000	765.9332	5.799E+09	-1.005E-10	5426164.	0.000
540.000	0.000	9.678E-09	-6.634E-10	0.000	765.9332	5.799E+09	-8.286E-12	5352809.	0.000
546.000	0.000	5.554E-09	-6.024E-10	0.000	765.9332	5.799E+09	2.862E-11	5279455.	0.000
552.000	0.000	2.456E-09	-4.129E-10	0.000	765.9332	5.799E+09	3.458E-11	5206100.	0.000
558.000	0.000	5.999E-10	-2.272E-10	0.000	765.9332	5.799E+09	2.732E-11	5132745.	0.000
564.000	0.000	-2.732E-10	-9.391E-11	0.000	765.9332	5.799E+09	1.711E-11	5059390.	0.000
570.000	0.000	-5.303E-10	-1.682E-11	0.000	765.9332	5.799E+09	8.591E-12	4986035.	0.000
576.000	0.000	-4.776E-10	1.800E-11	0.000	765.9332	5.799E+09	3.016E-12	4912680.	0.000
582.000	0.000	-3.159E-10	2.703E-11	0.000	765.9332	5.799E+09	0.000	4839325.	0.000
588.000	0.000	-1.541E-10	2.288E-11	0.000	765.9332	5.799E+09	-1.379E-12	4765971.	0.000
594.000	0.000	-4.177E-11	1.286E-11	0.000	765.9332	5.799E+09	-1.961E-12	4692616.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	-2.325E-12	2309630.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0148086 radians
Maximum bending moment           =        961341. inch-lbs
Maximum shear force              =         25448. lbs
Depth of maximum bending moment  =     66.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             24
Number of zero deflection points =             12
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

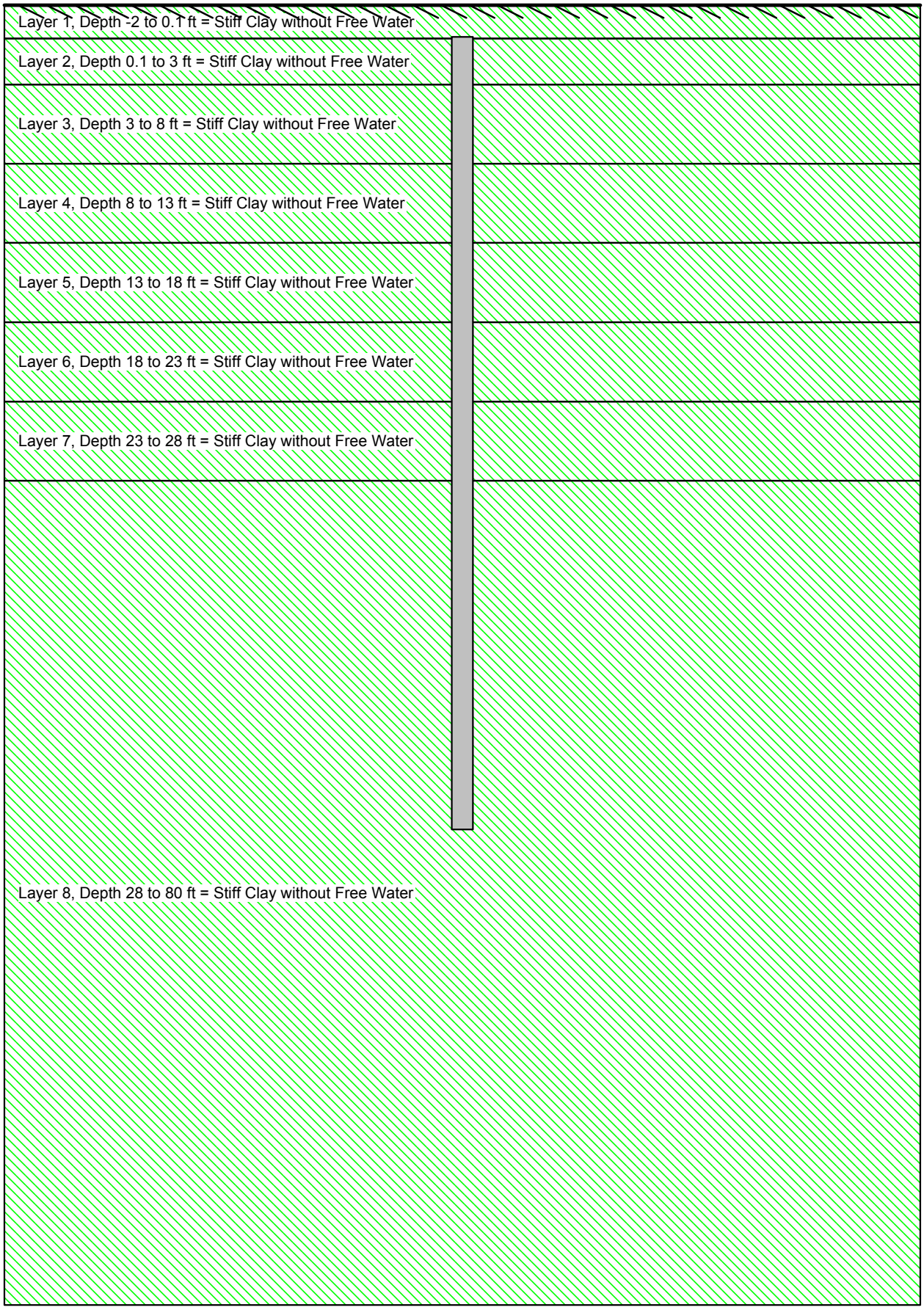
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	154000.	0.25000000	381279.	13537.	-0.00466505
2	4	y = 0.5000	M = 0.000	154000.	0.50000000	605801.	18573.	-0.00831653
3	4	y = 1.0000	M = 0.000	154000.	1.00000000	961341.	25448.	-0.01480856

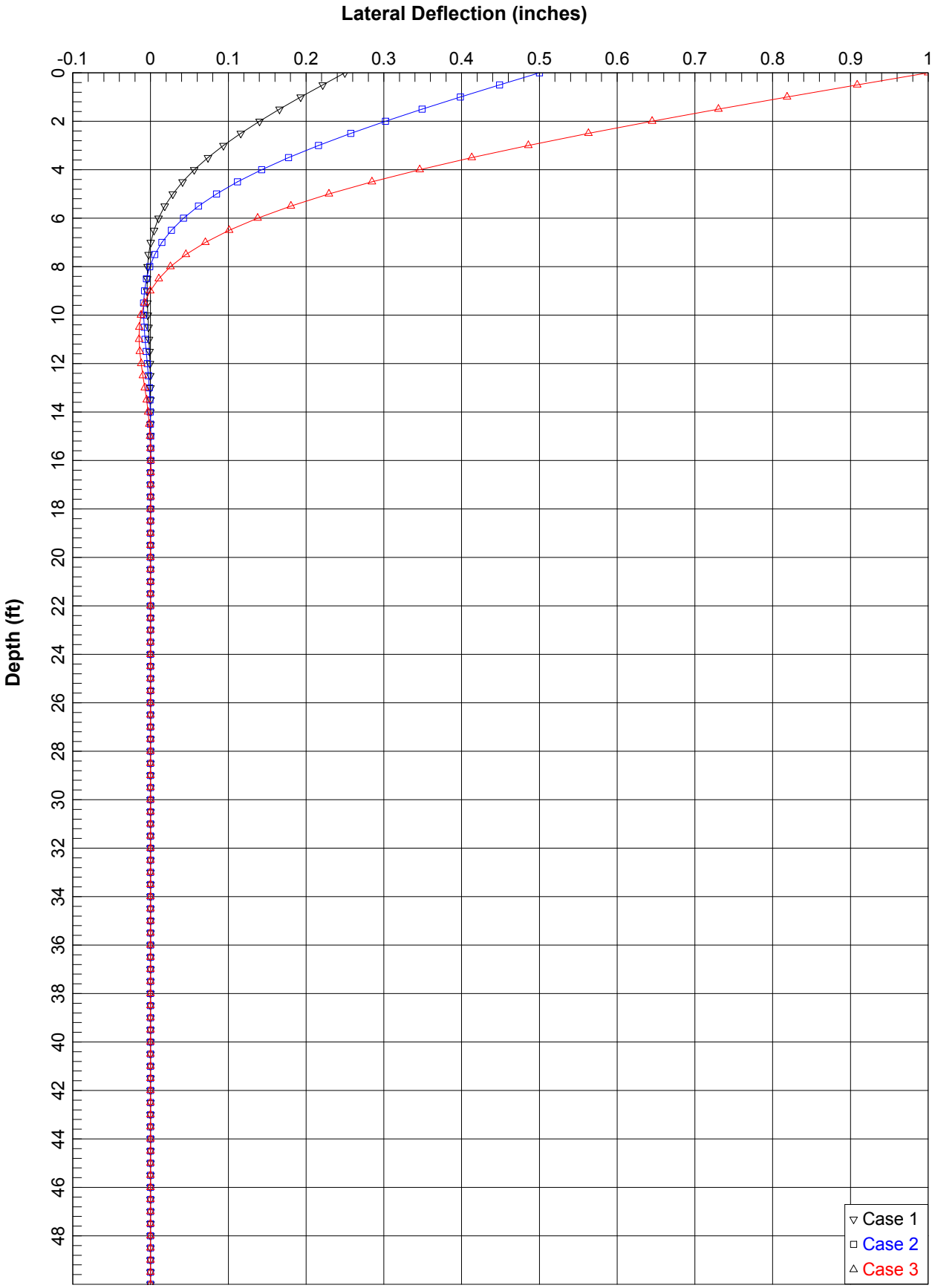
The analysis ended normally.

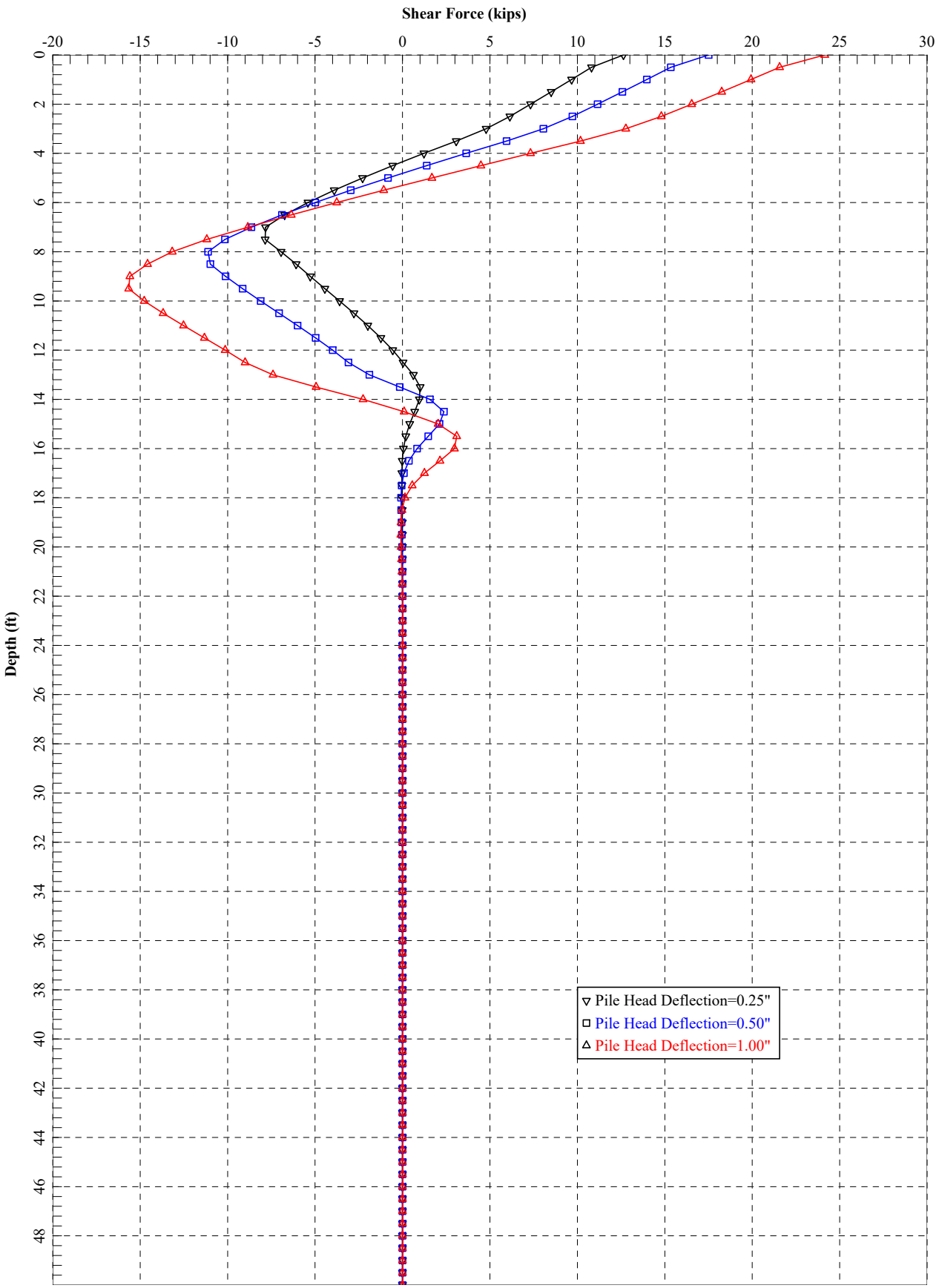
SUPPORT: **ABUTMENT 1L**

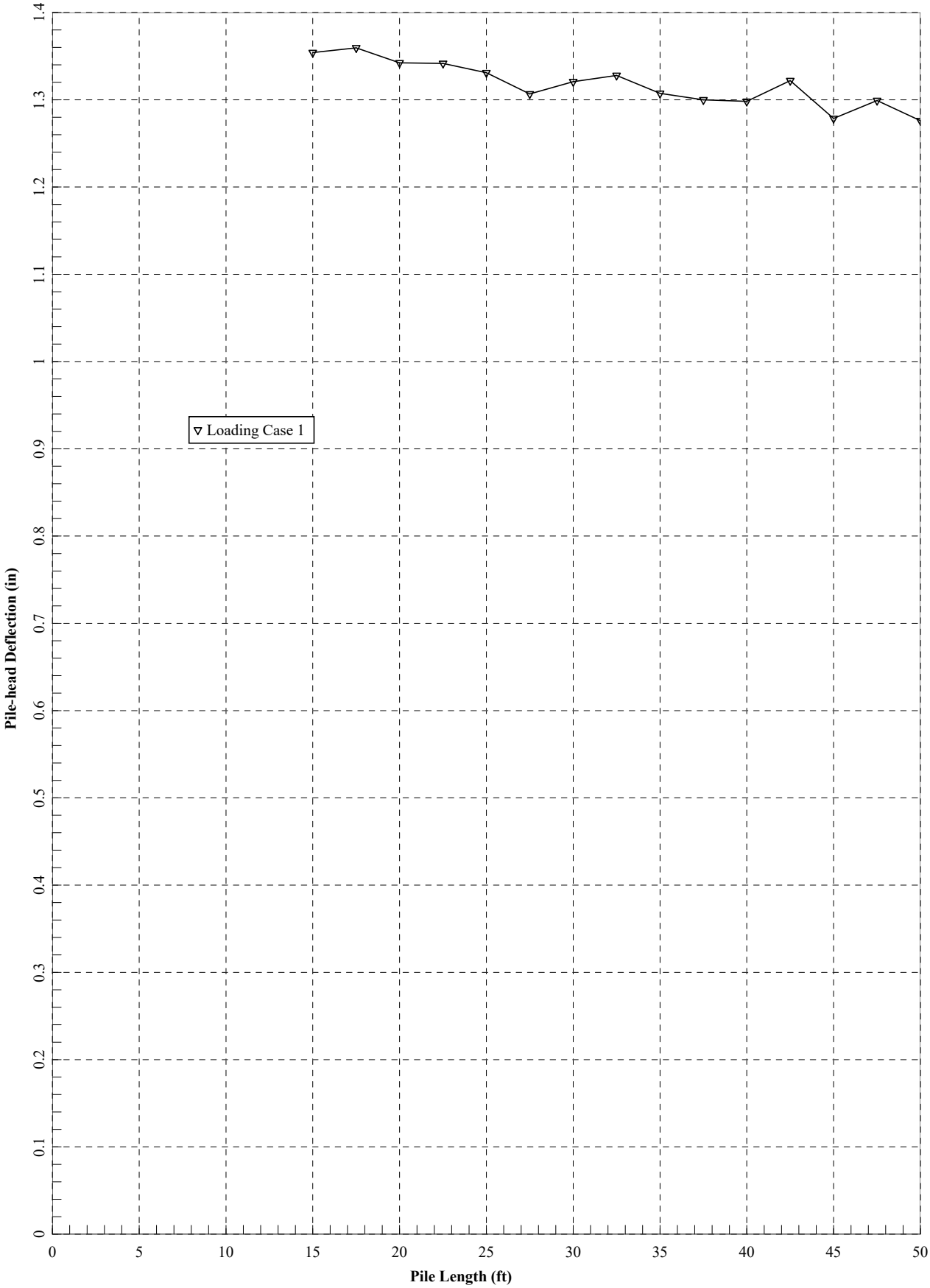
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE




Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Pile Head Deflection=0.25"
Pile Head Deflection=0.50"
Pile Head Deflection=1.00"


Loading Case 1
Pile-head Deflection (in)
Pile Length (ft)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
0
5
10
15
20
25
30
35
40
45
50

LPile for Windows, Version 2016-09.010

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

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Files Used for Analysis

Path to file locations:
\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated 08-24-17\

Name of input data file:
Abut 1L_transv_Critical Length.lp9d

Name of output report file:
Abut 1L_transv_Critical Length.lp9o

Name of plot output file:
Abut 1L_transv_Critical Length.lp9p

Name of runtime message file:
Abut 1L_transv_Critical Length.lp9r

Date and Time of Analysis

Date: August 24, 2017 Time: 10:43:53

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (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 = 100
- 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

- Analysis uses p-y modification factors for p-y curves
- 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
- 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 = 50.000 ft
Depth of ground surface below top of pile = -2.0000 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	16.0000
2	50.000	16.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile

Cross-sectional Shape	=	Circular Pile
Length of section	=	50.000000 ft
Width of top of section	=	16.000000 in
Width of bottom of section	=	16.000000 in
Top Area	=	201.061930 sq. in
Bottom Area	=	201.061930 sq. in
Moment of Inertia at Top	=	1608. in^4
Moment of Inertia at Bottom	=	1608. in^4
Elastic Modulus	=	3605000. psi

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.000000 ft
Distance from top of pile to bottom of layer	=	0.100000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.100000 ft
Distance from top of pile to bottom of layer	=	3.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.000000 ft
Distance from top of pile to bottom of layer	=	8.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000

Epsilon-50 at bottom of layer	=	0.007000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	8.000000 ft
Distance from top of pile to bottom of layer	=	13.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer	=	13.000000 ft
Distance from top of pile to bottom of layer	=	18.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer	=	18.000000 ft
Distance from top of pile to bottom of layer	=	23.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer	=	23.000000 ft
Distance from top of pile to bottom of layer	=	28.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer	=	28.000000 ft
Distance from top of pile to bottom of layer	=	80.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

(Depth of the lowest soil layer extends 30.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	E50 or krm
1	Stiff Clay	-2.0000	120.0000	3500.	0.00700
	w/o Free Water	0.10000	120.0000	3500.	0.00700
2	Stiff Clay	0.10000	120.0000	1500.	0.00700
	w/o Free Water	3.0000	120.0000	1500.	0.00700
3	Stiff Clay	3.0000	120.0000	2500.	0.00700
	w/o Free Water	8.0000	120.0000	2500.	0.00700
4	Stiff Clay	8.0000	120.0000	1500.	0.00700
	w/o Free Water	13.0000	120.0000	1500.	0.00700
5	Stiff Clay	13.0000	125.0000	4500.	0.00700
	w/o Free Water	18.0000	125.0000	4500.	0.00700
6	Stiff Clay	18.0000	125.0000	2500.	0.00700
	w/o Free Water	23.0000	125.0000	2500.	0.00700
7	Stiff Clay	23.0000	125.0000	3500.	0.00700
	w/o Free Water	28.0000	125.0000	3500.	0.00700
8	Stiff Clay	28.0000	125.0000	4500.	0.00500
	w/o Free Water	80.0000	125.0000	4500.	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.5800	1.0000
2	50.000	0.5800	1.0000

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
1	1	V = 27000. lbs	M = 0.0000 in-lbs	154000.	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

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent 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	-2.0000	0.00	N.A.	No	0.00	1790.
2	0.1000	2.1000	Yes	No	1790.	25921.
3	3.0000	5.0000	Yes	No	27711.	101146.
4	8.0000	10.0000	Yes	No	128856.	84678.
5	13.0000	15.0000	Yes	No	213535.	269497.
6	18.0000	20.0000	Yes	No	483031.	150300.
7	23.0000	25.0000	Yes	No	633331.	210000.
8	28.0000	30.0000	Yes	No	843331.	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 = 27000.0 lbs
Applied moment at pile head = 0.0 in-lbs
Axial thrust load on pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.2760	7.15E-08	27000.	-0.01806	765.9332	5.80E+09	-629.2200	1479.	0.00
0.5000	1.1676	167365.	24255.	-0.01798	1598.	5.80E+09	-285.7758	1468.	0.00
1.0000	1.0603	324283.	22515.	-0.01772	2379.	5.80E+09	-294.3075	1665.	0.00
1.5000	0.9550	470295.	20727.	-0.01731	3105.	5.80E+09	-301.6521	1895.	0.00
2.0000	0.8526	604998.	18899.	-0.01676	3775.	5.80E+09	-307.7428	2166.	0.00
2.5000	0.7539	728044.	17038.	-0.01607	4387.	5.80E+09	-312.5109	2487.	0.00
3.0000	0.6598	839143.	14861.	-0.01526	4939.	5.80E+09	-413.1967	3758.	0.00
3.5000	0.5708	934565.	12083.	-0.01434	5414.	5.80E+09	-512.7193	5389.	0.00
4.0000	0.4877	1010636.	9007.	-0.01333	5792.	5.80E+09	-512.5120	6305.	0.00

4.5000	0.4109	1067290.	5941.	-0.01226	6074.	5.80E+09	-509.7588	7444.	0.00
5.0000	0.3406	1104572.	2898.	-0.01113	6260.	5.80E+09	-504.3171	8883.	0.00
5.5000	0.2773	1122642.	-102.6787	-0.00998	6349.	5.80E+09	-496.0205	10734.	0.00
6.0000	0.2209	1121783.	-3045.	-0.00882	6345.	5.80E+09	-484.6662	13166.	0.00
6.5000	0.1714	1102403.	-5909.	-0.00767	6249.	5.80E+09	-469.9939	16449.	0.00
7.0000	0.1289	1065050.	-8674.	-0.00655	6063.	5.80E+09	-451.6454	21031.	0.00
7.5000	0.09288	1010418.	-11316.	-0.00547	5791.	5.80E+09	-429.0851	27719.	0.00
8.0000	0.06318	939374.	-13582.	-0.00446	5438.	5.80E+09	-326.4678	31006.	0.00
8.5000	0.03930	855679.	-15252.	-0.00354	5022.	5.80E+09	-230.1112	35127.	0.00
9.0000	0.02075	762881.	-16548.	-0.00270	4560.	5.80E+09	-201.8852	58386.	0.00
9.5000	0.00692	662087.	-17627.	-0.00196	4059.	5.80E+09	-157.8407	136765.	0.00
10.0000	-0.00279	554977.	-17714.	-0.00133	3526.	5.80E+09	129.0689	277870.	0.00
10.5000	-0.00905	451983.	-16792.	-8.11E-04	3014.	5.80E+09	178.0216	117986.	0.00
11.0000	-0.01251	354966.	-15664.	-3.93E-04	2531.	5.80E+09	198.0936	94986.	0.00
11.5000	-0.01377	264740.	-14455.	-7.24E-05	2083.	5.80E+09	204.8282	89254.	0.00
12.0000	-0.01338	181635.	-13231.	1.59E-04	1669.	5.80E+09	203.3746	91186.	0.00
12.5000	-0.01187	105679.	-12029.	3.07E-04	1292.	5.80E+09	197.3576	99785.	0.00
13.0000	-0.00970	36726.	-10311.	3.81E-04	948.5911	5.80E+09	375.2720	232226.	0.00
13.5000	-0.00730	-18753.	-7612.	3.90E-04	859.2019	5.80E+09	524.2908	431116.	0.00
14.0000	-0.00501	-55339.	-4607.	3.52E-04	1041.	5.80E+09	477.3477	571211.	0.00
14.5000	-0.00307	-74687.	-1908.	2.85E-04	1137.	5.80E+09	422.4175	824246.	0.00
15.0000	-0.00160	-78757.	435.7187	2.05E-04	1158.	5.80E+09	358.7322	1345664.	0.00
15.5000	-6.13E-04	-69838.	2359.	1.28E-04	1113.	5.80E+09	282.2426	2762466.	0.00
16.0000	-6.01E-05	-50691.	3341.	6.59E-05	1018.	5.80E+09	45.0810	4498936.	0.00
16.5000	1.78E-04	-29872.	3075.	2.42E-05	914.5055	5.80E+09	-133.5226	4498936.	0.00
17.0000	2.31E-04	-13832.	2156.	1.63E-06	834.7281	5.80E+09	-173.0657	4498936.	0.00
17.5000	1.98E-04	-4009.	1192.	-7.60E-06	785.8722	5.80E+09	-148.2182	4498936.	0.00
18.0000	1.40E-04	482.0672	502.6982	-9.42E-06	768.3308	5.80E+09	-81.4398	3499172.	0.00
18.5000	8.46E-05	2041.	152.6414	-8.12E-06	776.0833	5.80E+09	-35.2458	2499409.	0.00
19.0000	4.22E-05	2329.	-5.8911	-5.86E-06	777.5155	5.80E+09	-17.5983	2499409.	0.00
19.5000	1.43E-05	1981.	-76.6066	-3.63E-06	775.7856	5.80E+09	-5.9735	2499409.	0.00
20.0000	-1.27E-06	1416.	-92.9426	-1.87E-06	772.9767	5.80E+09	0.5282	2499409.	0.00
20.5000	-8.08E-06	869.0857	-81.2561	-6.86E-07	770.2556	5.80E+09	3.3673	2499409.	0.00
21.0000	-9.50E-06	442.3796	-59.2776	-7.79E-09	768.1334	5.80E+09	3.9588	2499409.	0.00
21.5000	-8.18E-06	157.7685	-37.1824	3.03E-07	766.7178	5.80E+09	3.4063	2499409.	0.00
22.0000	-5.87E-06	-4.3685	-19.6267	3.82E-07	765.9549	5.80E+09	2.4457	2499409.	0.00
22.5000	-3.59E-06	-78.4578	-7.8007	3.39E-07	766.3234	5.80E+09	1.4963	2499409.	0.00
23.0000	-1.80E-06	-98.6035	-0.6118	2.48E-07	766.4236	5.80E+09	0.8999	2999290.	0.00
23.5000	-6.21E-07	-86.2570	3.1740	1.52E-07	766.3622	5.80E+09	0.3620	3499172.	0.00
24.0000	2.34E-08	-60.7962	4.2191	7.59E-08	766.2355	5.80E+09	-0.01364	3499172.	0.00
24.5000	2.90E-07	-35.7682	3.6708	2.59E-08	766.1111	5.80E+09	-0.1691	3499172.	0.00
25.0000	3.35E-07	-16.7950	2.5779	-1.26E-09	766.0167	5.80E+09	-0.1951	3499172.	0.00
25.5000	2.75E-07	-4.8309	1.5115	-1.24E-08	765.9572	5.80E+09	-0.1603	3499172.	0.00
26.0000	1.85E-07	1.3659	0.7064	-1.42E-08	765.9400	5.80E+09	-0.1080	3499172.	0.00
26.5000	1.04E-07	3.6722	0.2003	-1.16E-08	765.9514	5.80E+09	-0.06068	3499172.	0.00
27.0000	4.56E-08	3.7906	-0.06161	-7.77E-09	765.9520	5.80E+09	-0.02662	3499172.	0.00
27.5000	1.08E-08	2.9472	-0.1603	-4.29E-09	765.9478	5.80E+09	-0.00628	3499172.	0.00
28.0000	-5.79E-09	1.8747	-0.1671	-1.79E-09	765.9425	5.80E+09	0.00401	4156176.	0.00
28.5000	-1.07E-08	0.9449	-0.1288	-3.33E-10	765.9379	5.80E+09	0.00875	4893750.	0.00
29.0000	-9.79E-09	0.3292	-0.07865	3.26E-10	765.9348	5.80E+09	0.00799	4893750.	0.00
29.5000	-6.81E-09	5.84E-04	-0.03803	4.97E-10	765.9332	5.80E+09	0.00556	4893750.	0.00
30.0000	-3.83E-09	-0.1280	-0.01199	4.31E-10	765.9338	5.80E+09	0.00312	4893750.	0.00
30.5000	-1.64E-09	-0.1441	0.00138	2.90E-10	765.9339	5.80E+09	0.00134	4893750.	0.00
31.0000	-3.47E-10	-0.1120	0.00625	1.58E-10	765.9337	5.80E+09	2.83E-04	4893750.	0.00
31.5000	2.51E-10	-0.06949	0.00648	6.37E-11	765.9335	5.80E+09	-2.05E-04	4893750.	0.00
32.0000	4.18E-10	-0.03433	0.00484	1.00E-11	765.9333	5.80E+09	-3.41E-04	4893750.	0.00
32.5000	3.72E-10	-0.01142	0.00291	-1.37E-11	765.9332	5.80E+09	-3.03E-04	4893750.	0.00
33.0000	2.54E-10	5.81E-04	0.00138	-1.93E-11	765.9332	5.80E+09	-2.07E-04	4893750.	0.00
33.5000	1.41E-10	0.00512	4.10E-04	-1.63E-11	765.9332	5.80E+09	-1.15E-04	4893750.	0.00
34.0000	5.85E-11	0.00553	-7.74E-05	-1.08E-11	765.9332	5.80E+09	-4.77E-05	4893750.	0.00
34.5000	1.08E-11	0.00421	-2.47E-04	-5.77E-12	765.9332	5.80E+09	-8.85E-06	4893750.	0.00
35.0000	-1.07E-11	0.00257	-2.48E-04	-2.26E-12	765.9332	5.80E+09	8.72E-06	4893750.	0.00
35.5000	-1.63E-11	0.00124	-1.82E-04	0.00	765.9332	5.80E+09	1.33E-05	4893750.	0.00
36.0000	-1.41E-11	3.94E-04	-1.07E-04	0.00	765.9332	5.80E+09	1.15E-05	4893750.	0.00
36.5000	-9.48E-12	-4.42E-05	-4.97E-05	0.00	765.9332	5.80E+09	7.73E-06	4893750.	0.00
37.0000	-5.15E-12	-2.04E-04	-1.39E-05	0.00	765.9332	5.80E+09	4.20E-06	4893750.	0.00
37.5000	-2.08E-12	-2.12E-04	3.85E-06	0.00	765.9332	5.80E+09	1.70E-06	4893750.	0.00
38.0000	0.00	-1.58E-04	9.74E-06	0.00	765.9332	5.80E+09	2.66E-07	4893750.	0.00

38.5000	0.00	-9.51E-05	9.44E-06	0.00	765.9332	5.80E+09	-3.65E-07	4893750.	0.00
39.0000	0.00	-4.50E-05	6.80E-06	0.00	765.9332	5.80E+09	-5.14E-07	4893750.	0.00
39.5000	0.00	-1.35E-05	3.96E-06	0.00	765.9332	5.80E+09	-4.35E-07	4893750.	0.00
40.0000	0.00	2.49E-06	1.79E-06	0.00	765.9332	5.80E+09	-2.88E-07	4893750.	0.00
40.5000	0.00	8.06E-06	4.63E-07	0.00	765.9332	5.80E+09	-1.54E-07	4893750.	0.00
41.0000	0.00	8.08E-06	-1.79E-07	0.00	765.9332	5.80E+09	-6.02E-08	4893750.	0.00
41.5000	0.00	5.94E-06	-3.82E-07	0.00	765.9332	5.80E+09	-7.52E-09	4893750.	0.00
42.0000	0.00	3.51E-06	-3.60E-07	0.00	765.9332	5.80E+09	1.51E-08	4893750.	0.00
42.5000	0.00	1.63E-06	-2.55E-07	0.00	765.9332	5.80E+09	1.99E-08	4893750.	0.00
43.0000	0.00	4.55E-07	-1.46E-07	0.00	765.9332	5.80E+09	1.65E-08	4893750.	0.00
43.5000	0.00	-1.24E-07	-6.42E-08	0.00	765.9332	5.80E+09	1.07E-08	4893750.	0.00
44.0000	0.00	-3.18E-07	-1.52E-08	0.00	765.9332	5.80E+09	5.62E-09	4893750.	0.00
44.5000	0.00	-3.08E-07	8.01E-09	0.00	765.9332	5.80E+09	2.12E-09	4893750.	0.00
45.0000	0.00	-2.22E-07	1.50E-08	0.00	765.9332	5.80E+09	1.90E-10	4893750.	0.00
45.5000	0.00	-1.29E-07	1.37E-08	0.00	765.9332	5.80E+09	-6.16E-10	4893750.	0.00
46.0000	0.00	-5.85E-08	9.52E-09	0.00	765.9332	5.80E+09	-7.68E-10	4893750.	0.00
46.5000	0.00	-1.52E-08	5.35E-09	0.00	765.9332	5.80E+09	-6.22E-10	4893750.	0.00
47.0000	0.00	5.76E-09	2.28E-09	0.00	765.9332	5.80E+09	-4.00E-10	4893750.	0.00
47.5000	0.00	1.23E-08	4.60E-10	0.00	765.9332	5.80E+09	-2.07E-10	4893750.	0.00
48.0000	0.00	1.13E-08	-3.93E-10	0.00	765.9332	5.80E+09	-7.67E-11	4893750.	0.00
48.5000	0.00	7.61E-09	-6.33E-10	0.00	765.9332	5.80E+09	-3.39E-12	4893750.	0.00
49.0000	0.00	3.76E-09	-5.49E-10	0.00	765.9332	5.80E+09	3.14E-11	4893750.	0.00
49.5000	0.00	1.03E-09	-3.14E-10	0.00	765.9332	5.80E+09	4.71E-11	4893750.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	5.75E-11	2446875.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =     1.27602765 inches
Computed slope at pile head      =    -0.01806405 radians
Maximum bending moment           =      1122642. inch-lbs
Maximum shear force              =        27000. lbs
Depth of maximum bending moment  =     5.50000000 feet below pile head
Depth of maximum shear force     =       0.000000 feet below pile head
Number of iterations             =             36
Number of zero deflection points =             11
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          27000. lbs
Moment     =              0. in-lbs
Axial Load =         154000. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.00000	1.27602765	1122642.	27000.
47.50000	1.29912376	1132974.	27000.
45.00000	1.27860541	1125667.	27000.
42.50000	1.32189900	1144686.	27000.
40.00000	1.29822393	1137050.	27000.
37.50000	1.30000466	1140479.	27000.
35.00000	1.30734260	1141629.	27000.
32.50000	1.32788006	1152484.	27000.
30.00000	1.32078208	1149928.	27000.
27.50000	1.30662865	1146715.	27000.
25.00000	1.33095858	1156671.	27000.
22.50000	1.34169284	1162479.	27000.

```
   20.00000    1.34232153      1163216.        27000.
   17.50000    1.35947377      1170485.        27000.
   15.00000    1.35411979      1170411.        27000.
```

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	Pile-head Load 1	Load Type 2	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	27000.	M, in-lb	0.00	154000.	1.2760	-0.01806	27000.	1122642.

Maximum pile-head deflection = 1.2760276469 inches
Maximum pile-head rotation   = -0.0180640519 radians = -1.034994 deg.

The analysis ended normally.

==========

LPile for Windows, Version 2016-09.010

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

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Files Used for Analysis

Path to file locations:
\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated 08-24-17\

Name of input data file:
Abut 1L_transv_Ave P.lp9d

Name of output report file:
Abut 1L_transv_Ave P.lp9o

Name of plot output file:
Abut 1L_transv_Ave P.lp9p

Name of runtime message file:
Abut 1L_transv_Ave P.lp9r

Date and Time of Analysis

Date: August 24, 2017 Time: 10:14:14

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

---

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (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 = 100
- 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

- Analysis uses p-y modification factors for p-y curves
- 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
- 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 = 50.000 ft
Depth of ground surface below top of pile = -2.0000 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	16.0000
2	50.000	16.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is an elastic pile

Cross-sectional Shape	=	Circular Pile
Length of section	=	50.000000 ft
Width of top of section	=	16.000000 in
Width of bottom of section	=	16.000000 in
Top Area	=	201.061930 sq. in
Bottom Area	=	201.061930 sq. in
Moment of Inertia at Top	=	1608. in^4
Moment of Inertia at Bottom	=	1608. in^4
Elastic Modulus	=	3605000. psi

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.000000 ft
Distance from top of pile to bottom of layer	=	0.100000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.100000 ft
Distance from top of pile to bottom of layer	=	3.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.000000 ft
Distance from top of pile to bottom of layer	=	8.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000

Epsilon-50 at bottom of layer	=	0.007000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	8.000000 ft
Distance from top of pile to bottom of layer	=	13.000000 ft
Effective unit weight at top of layer	=	120.000000 pcf
Effective unit weight at bottom of layer	=	120.000000 pcf
Undrained cohesion at top of layer	=	1500. psf
Undrained cohesion at bottom of layer	=	1500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer	=	13.000000 ft
Distance from top of pile to bottom of layer	=	18.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer	=	18.000000 ft
Distance from top of pile to bottom of layer	=	23.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	2500. psf
Undrained cohesion at bottom of layer	=	2500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer	=	23.000000 ft
Distance from top of pile to bottom of layer	=	28.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.007000
Epsilon-50 at bottom of layer	=	0.007000

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer	=	28.000000 ft
Distance from top of pile to bottom of layer	=	80.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

(Depth of the lowest soil layer extends 30.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	E50 or krm
1	Stiff Clay	-2.0000	120.0000	3500.	0.00700
	w/o Free Water	0.10000	120.0000	3500.	0.00700
2	Stiff Clay	0.10000	120.0000	1500.	0.00700
	w/o Free Water	3.0000	120.0000	1500.	0.00700
3	Stiff Clay	3.0000	120.0000	2500.	0.00700
	w/o Free Water	8.0000	120.0000	2500.	0.00700
4	Stiff Clay	8.0000	120.0000	1500.	0.00700
	w/o Free Water	13.0000	120.0000	1500.	0.00700
5	Stiff Clay	13.0000	125.0000	4500.	0.00700
	w/o Free Water	18.0000	125.0000	4500.	0.00700
6	Stiff Clay	18.0000	125.0000	2500.	0.00700
	w/o Free Water	23.0000	125.0000	2500.	0.00700
7	Stiff Clay	23.0000	125.0000	3500.	0.00700
	w/o Free Water	28.0000	125.0000	3500.	0.00700
8	Stiff Clay	28.0000	125.0000	4500.	0.00500
	w/o Free Water	80.0000	125.0000	4500.	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.5800	1.0000
2	50.000	0.5800	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.250000 in	M = 0.0000 in-lbs	154000.	N.A.
2	4	y = 0.500000 in	M = 0.0000 in-lbs	154000.	N.A.
3	4	y = 1.000000 in	M = 0.0000 in-lbs	154000.	N.A.

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

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent 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	-2.0000	0.00	N.A.	No	0.00	1790.
2	0.1000	2.1000	Yes	No	1790.	25921.
3	3.0000	5.0000	Yes	No	27711.	101146.
4	8.0000	10.0000	Yes	No	128856.	84678.
5	13.0000	15.0000	Yes	No	213535.	269497.
6	18.0000	20.0000	Yes	No	483031.	150300.
7	23.0000	25.0000	Yes	No	633331.	210000.
8	28.0000	30.0000	Yes	No	843331.	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 Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.0 in-lbs
Axial load at pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.00	12633.	-0.00462	765.9332	5.80E+09	-418.6200	5023.	0.00
0.5000	0.2223	72536.	10811.	-0.00459	1127.	5.80E+09	-188.7602	5096.	0.00
1.0000	0.1950	138207.	9666.	-0.00448	1453.	5.80E+09	-192.7229	5931.	0.00
1.5000	0.1685	196808.	8502.	-0.00430	1745.	5.80E+09	-195.5153	6961.	0.00
2.0000	0.1433	248182.	7324.	-0.00407	2000.	5.80E+09	-197.0546	8250.	0.00
2.5000	0.1196	292226.	6141.	-0.00379	2219.	5.80E+09	-197.2507	9892.	0.00
3.0000	0.09778	328888.	4780.	-0.00347	2402.	5.80E+09	-256.3853	15732.	0.00
3.5000	0.07797	356006.	3076.	-0.00312	2537.	5.80E+09	-311.7128	23989.	0.00

4.0000	0.06036	371563.	1229.	-0.00274	2614.	5.80E+09	-304.0105	30220.	0.00
4.5000	0.04506	375819.	-563.4188	-0.00236	2635.	5.80E+09	-293.3904	39067.	0.00
5.0000	0.03209	369155.	-2282.	-0.00197	2602.	5.80E+09	-279.4613	52247.	0.00
5.5000	0.02142	352076.	-3905.	-0.00160	2517.	5.80E+09	-261.5833	73278.	0.00
6.0000	0.01293	325245.	-5405.	-0.00125	2384.	5.80E+09	-238.5295	110691.	0.00
6.5000	0.00646	289515.	-6743.	-9.28E-04	2206.	5.80E+09	-207.3042	192544.	0.00
7.0000	0.00179	246045.	-7832.	-6.51E-04	1990.	5.80E+09	-155.6370	522321.	0.00
7.5000	-0.00136	196737.	-7853.	-4.22E-04	1744.	5.80E+09	148.4020	656274.	0.00
8.0000	-0.00328	152584.	-6942.	-2.42E-04	1525.	5.80E+09	155.5152	284483.	0.00
8.5000	-0.00426	113883.	-6080.	-1.04E-04	1332.	5.80E+09	131.8005	185816.	0.00
9.0000	-0.00452	79818.	-5271.	-3.51E-06	1163.	5.80E+09	137.7788	182703.	0.00
9.5000	-0.00430	50637.	-4438.	6.40E-05	1018.	5.80E+09	139.8977	195296.	0.00
10.0000	-0.00376	26444.	-3601.	1.04E-04	897.4538	5.80E+09	139.0116	222007.	0.00
10.5000	-0.00305	7230.	-2778.	1.21E-04	801.8908	5.80E+09	135.5171	266440.	0.00
11.0000	-0.00230	-7113.	-1982.	1.21E-04	801.3087	5.80E+09	129.5890	337821.	0.00
11.5000	-0.00160	-16783.	-1236.	1.09E-04	849.4052	5.80E+09	119.3649	448835.	0.00
12.0000	-9.94E-04	-22140.	-559.3381	8.88E-05	876.0497	5.80E+09	106.0274	640067.	0.00
12.5000	-5.30E-04	-23659.	30.4513	6.51E-05	883.6047	5.80E+09	90.5690	1026087.	0.00
13.0000	-2.12E-04	-21895.	620.3523	4.16E-05	874.8310	5.80E+09	106.0646	2999290.	0.00
13.5000	-3.07E-05	-16292.	1008.	2.18E-05	846.9623	5.80E+09	23.0149	4498936.	0.00
14.0000	4.96E-05	-9844.	964.9593	8.30E-06	814.8954	5.80E+09	-37.2255	4498936.	0.00
14.5000	6.89E-05	-4728.	698.3675	7.58E-07	789.4468	5.80E+09	-51.6384	4498936.	0.00
15.0000	5.87E-05	-1465.	411.3229	-2.45E-06	773.2216	5.80E+09	-44.0431	4498936.	0.00
15.5000	3.95E-05	212.6972	190.3160	-3.09E-06	766.9910	5.80E+09	-29.6259	4498936.	0.00
16.0000	2.16E-05	824.0841	52.8415	-2.56E-06	770.0318	5.80E+09	-16.1989	4498936.	0.00
16.5000	8.81E-06	851.5230	-15.5795	-1.69E-06	770.1683	5.80E+09	-6.6081	4498936.	0.00
17.0000	1.31E-06	640.2552	-38.3479	-9.19E-07	769.1175	5.80E+09	-0.9813	4498936.	0.00
17.5000	-2.22E-06	393.0469	-36.2972	-3.85E-07	767.8880	5.80E+09	1.6649	4498936.	0.00
18.0000	-3.31E-06	205.4003	-25.5122	-7.52E-08	766.9547	5.80E+09	1.9301	3499172.	0.00
18.5000	-3.12E-06	87.0398	-15.8188	7.61E-08	766.3661	5.80E+09	1.3011	2499409.	0.00
19.0000	-2.40E-06	15.4343	-8.9204	1.29E-07	766.0099	5.80E+09	0.9984	2499409.	0.00
19.5000	-1.57E-06	-20.2432	-3.9576	1.27E-07	766.0338	5.80E+09	0.6558	2499409.	0.00
20.0000	-8.78E-07	-32.2912	-0.8933	9.94E-08	766.0938	5.80E+09	0.3656	2499409.	0.00
20.5000	-3.81E-07	-31.1462	0.6803	6.66E-08	766.0881	5.80E+09	0.1589	2499409.	0.00
21.0000	-7.86E-08	-24.2507	1.2553	3.79E-08	766.0538	5.80E+09	0.03275	2499409.	0.00
21.5000	7.37E-08	-16.1529	1.2615	1.70E-08	766.0135	5.80E+09	-0.03069	2499409.	0.00
22.0000	1.26E-07	-9.1445	1.0123	3.94E-09	765.9786	5.80E+09	-0.05235	2499409.	0.00
22.5000	1.21E-07	-4.0122	0.7042	-2.87E-09	765.9531	5.80E+09	-0.05037	2499409.	0.00
23.0000	9.12E-08	-0.6893	0.4162	-5.30E-09	765.9366	5.80E+09	-0.04561	2999290.	0.00
23.5000	5.73E-08	0.9922	0.1791	-5.15E-09	765.9381	5.80E+09	-0.03341	3499172.	0.00
24.0000	2.95E-08	1.4699	0.02729	-3.87E-09	765.9405	5.80E+09	-0.01720	3499172.	0.00
24.5000	1.08E-08	1.3268	-0.04327	-2.42E-09	765.9398	5.80E+09	-0.00632	3499172.	0.00
25.0000	4.03E-10	0.9551	-0.06293	-1.24E-09	765.9379	5.80E+09	-2.35E-04	3499172.	0.00
25.5000	-4.10E-09	0.5740	-0.05647	-4.53E-10	765.9360	5.80E+09	0.00239	3499172.	0.00
26.0000	-5.03E-09	0.2783	-0.04050	-1.20E-11	765.9345	5.80E+09	0.00293	3499172.	0.00
26.5000	-4.24E-09	0.08804	-0.02427	1.78E-10	765.9336	5.80E+09	0.00247	3499172.	0.00
27.0000	-2.90E-09	-0.01328	-0.01177	2.16E-10	765.9332	5.80E+09	0.00169	3499172.	0.00
27.5000	-1.65E-09	-0.05365	-0.00382	1.82E-10	765.9334	5.80E+09	9.60E-04	3499172.	0.00
28.0000	-7.24E-10	-0.05940	5.70E-04	1.23E-10	765.9335	5.80E+09	5.01E-04	4156176.	0.00
28.5000	-1.70E-10	-0.04704	0.00249	6.80E-11	765.9334	5.80E+09	1.39E-04	4893750.	0.00
29.0000	9.21E-11	-0.02965	0.00268	2.83E-11	765.9333	5.80E+09	-7.51E-05	4893750.	0.00
29.5000	1.70E-10	-0.01494	0.00204	5.24E-12	765.9332	5.80E+09	-1.39E-04	4893750.	0.00
30.0000	1.55E-10	-0.00520	0.00124	-5.18E-12	765.9332	5.80E+09	-1.26E-04	4893750.	0.00
30.5000	1.08E-10	-2.56E-06	6.01E-04	-7.87E-12	765.9332	5.80E+09	-8.79E-05	4893750.	0.00
31.0000	6.05E-11	0.00203	1.89E-04	-6.82E-12	765.9332	5.80E+09	-4.94E-05	4893750.	0.00
31.5000	2.59E-11	0.00228	-2.22E-05	-4.59E-12	765.9332	5.80E+09	-2.11E-05	4893750.	0.00
32.0000	5.46E-12	0.00177	-9.90E-05	-2.49E-12	765.9332	5.80E+09	-4.45E-06	4893750.	0.00
32.5000	-3.99E-12	0.00110	-1.03E-04	-1.01E-12	765.9332	5.80E+09	3.26E-06	4893750.	0.00
33.0000	-6.62E-12	5.43E-04	-7.66E-05	0.00	765.9332	5.80E+09	5.40E-06	4893750.	0.00
33.5000	-5.88E-12	1.80E-04	-4.60E-05	0.00	765.9332	5.80E+09	4.80E-06	4893750.	0.00
34.0000	-4.02E-12	-9.44E-06	-2.17E-05	0.00	765.9332	5.80E+09	3.28E-06	4893750.	0.00
34.5000	-2.22E-12	-8.11E-05	-6.47E-06	0.00	765.9332	5.80E+09	1.81E-06	4893750.	0.00
35.0000	0.00	-8.75E-05	1.23E-06	0.00	765.9332	5.80E+09	7.54E-07	4893750.	0.00
35.5000	0.00	-6.66E-05	3.92E-06	0.00	765.9332	5.80E+09	1.39E-07	4893750.	0.00
36.0000	0.00	-4.07E-05	3.92E-06	0.00	765.9332	5.80E+09	-1.38E-07	4893750.	0.00
36.5000	0.00	-1.97E-05	2.87E-06	0.00	765.9332	5.80E+09	-2.10E-07	4893750.	0.00
37.0000	0.00	-6.21E-06	1.70E-06	0.00	765.9332	5.80E+09	-1.82E-07	4893750.	0.00
37.5000	0.00	7.09E-07	7.85E-07	0.00	765.9332	5.80E+09	-1.22E-07	4893750.	0.00

38.0000	0.00	3.23E-06	2.19E-07	0.00	765.9332	5.80E+09	-6.64E-08	4893750.	0.00
38.5000	0.00	3.35E-06	-6.12E-08	0.00	765.9332	5.80E+09	-2.68E-08	4893750.	0.00
39.0000	0.00	2.50E-06	-1.54E-07	0.00	765.9332	5.80E+09	-4.18E-09	4893750.	0.00
39.5000	0.00	1.50E-06	-1.49E-07	0.00	765.9332	5.80E+09	5.79E-09	4893750.	0.00
40.0000	0.00	7.12E-07	-1.08E-07	0.00	765.9332	5.80E+09	8.14E-09	4893750.	0.00
40.5000	0.00	2.12E-07	-6.26E-08	0.00	765.9332	5.80E+09	6.89E-09	4893750.	0.00
41.0000	0.00	-3.97E-08	-2.83E-08	0.00	765.9332	5.80E+09	4.56E-09	4893750.	0.00
41.5000	0.00	-1.28E-07	-7.30E-09	0.00	765.9332	5.80E+09	2.43E-09	4893750.	0.00
42.0000	0.00	-1.28E-07	2.85E-09	0.00	765.9332	5.80E+09	9.50E-10	4893750.	0.00
42.5000	0.00	-9.39E-08	6.05E-09	0.00	765.9332	5.80E+09	1.18E-10	4893750.	0.00
43.0000	0.00	-5.55E-08	5.69E-09	0.00	765.9332	5.80E+09	-2.39E-10	4893750.	0.00
43.5000	0.00	-2.57E-08	4.03E-09	0.00	765.9332	5.80E+09	-3.15E-10	4893750.	0.00
44.0000	0.00	-7.18E-09	2.30E-09	0.00	765.9332	5.80E+09	-2.60E-10	4893750.	0.00
44.5000	0.00	1.98E-09	1.01E-09	0.00	765.9332	5.80E+09	-1.70E-10	4893750.	0.00
45.0000	0.00	5.03E-09	2.40E-10	0.00	765.9332	5.80E+09	-8.88E-11	4893750.	0.00
45.5000	0.00	4.88E-09	-1.27E-10	0.00	765.9332	5.80E+09	-3.35E-11	4893750.	0.00
46.0000	0.00	3.52E-09	-2.37E-10	0.00	765.9332	5.80E+09	-2.94E-12	4893750.	0.00
46.5000	0.00	2.04E-09	-2.16E-10	0.00	765.9332	5.80E+09	9.85E-12	4893750.	0.00
47.0000	0.00	9.26E-10	-1.50E-10	0.00	765.9332	5.80E+09	1.23E-11	4893750.	0.00
47.5000	0.00	2.48E-10	-8.29E-11	0.00	765.9332	5.80E+09	1.00E-11	4893750.	0.00
48.0000	0.00	-6.99E-11	-3.33E-11	0.00	765.9332	5.80E+09	6.51E-12	4893750.	0.00
48.5000	0.00	-1.53E-10	-3.72E-12	0.00	765.9332	5.80E+09	3.35E-12	4893750.	0.00
49.0000	0.00	-1.16E-10	9.25E-12	0.00	765.9332	5.80E+09	0.00	4893750.	0.00
49.5000	0.00	-4.30E-11	9.69E-12	0.00	765.9332	5.80E+09	0.00	4893750.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	-2.40E-12	2446875.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =     0.25000000 inches
Computed slope at pile head      =    -0.00462397 radians
Maximum bending moment           =        375819. inch-lbs
Maximum shear force              =         12633. lbs
Depth of maximum bending moment  =     4.50000000 feet below pile head
Depth of maximum shear force     =      0.000000 feet below pile head
Number of iterations             =             17
Number of zero deflection points =             12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

```
Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head                              =     0.500000 inches
Moment at pile head                                    =          0.0 in-lbs
Axial load at pile head                                =     154000.0 lbs
```

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.00	17508.	-0.00829	765.9332	5.80E+09	-497.8259	2987.	0.00
0.5000	0.4502	103751.	15339.	-0.00824	1282.	5.80E+09	-225.1935	3001.	0.00
1.0000	0.4011	199296.	13971.	-0.00808	1757.	5.80E+09	-230.8130	3453.	0.00
1.5000	0.3532	286342.	12573.	-0.00783	2190.	5.80E+09	-235.2470	3996.	0.00
2.0000	0.3071	364644.	11152.	-0.00750	2580.	5.80E+09	-238.4172	4658.	0.00
2.5000	0.2633	434015.	9716.	-0.00708	2925.	5.80E+09	-240.2403	5475.	0.00
3.0000	0.2221	494323.	8051.	-0.00660	3224.	5.80E+09	-314.7531	8501.	0.00
3.5000	0.1841	542826.	5948.	-0.00607	3466.	5.80E+09	-386.3658	12595.	0.00
4.0000	0.1494	576902.	3645.	-0.00549	3635.	5.80E+09	-381.2647	15316.	0.00
4.5000	0.1182	596700.	1381.	-0.00488	3734.	5.80E+09	-373.3656	18948.	0.00
5.0000	0.09081	602487.	-826.5413	-0.00426	3762.	5.80E+09	-362.3926	23945.	0.00
5.5000	0.06713	594651.	-2958.	-0.00364	3723.	5.80E+09	-347.9557	31101.	0.00

6.0000	0.04714	573721.	-4990.	-0.00303	3619.	5.80E+09	-329.4492	41934.	0.00
6.5000	0.03071	540382.	-6896.	-0.00246	3454.	5.80E+09	-305.8075	59746.	0.00
7.0000	0.01764	495517.	-8637.	-0.00192	3230.	5.80E+09	-274.7888	93475.	0.00
7.5000	0.00764	440286.	-10152.	-0.00144	2956.	5.80E+09	-229.9479	180534.	0.00
8.0000	3.80E-04	376356.	-11117.	-0.00102	2638.	5.80E+09	-91.9949	1453834.	0.00
8.5000	-0.00455	308754.	-10991.	-6.61E-04	2302.	5.80E+09	134.0653	176931.	0.00
9.0000	-0.00756	245684.	-10119.	-3.74E-04	1988.	5.80E+09	156.7372	124468.	0.00
9.5000	-0.00904	188021.	-9143.	-1.50E-04	1701.	5.80E+09	168.6049	111913.	0.00
10.0000	-0.00936	136248.	-8113.	1.77E-05	1444.	5.80E+09	174.7737	112083.	0.00
10.5000	-0.00883	90637.	-7058.	1.35E-04	1217.	5.80E+09	176.8873	120241.	0.00
11.0000	-0.00773	51307.	-6000.	2.09E-04	1021.	5.80E+09	175.6300	136242.	0.00
11.5000	-0.00632	18250.	-4967.	2.45E-04	856.7029	5.80E+09	168.6059	159965.	0.00
12.0000	-0.00480	-8754.	-3989.	2.49E-04	809.4704	5.80E+09	157.3814	196717.	0.00
12.5000	-0.00333	-30084.	-3086.	2.29E-04	915.5567	5.80E+09	143.6453	258764.	0.00
13.0000	-0.00205	-46214.	-1892.	1.90E-04	995.7804	5.80E+09	254.4178	745368.	0.00
13.5000	-0.00105	-53140.	-159.4894	1.38E-04	1030.	5.80E+09	323.1336	1842679.	0.00
14.0000	-3.86E-04	-48383.	1565.	8.60E-05	1007.	5.80E+09	251.6057	3908410.	0.00
14.5000	-2.07E-05	-34522.	2366.	4.31E-05	937.6331	5.80E+09	15.5379	4498936.	0.00
15.0000	1.30E-04	-20069.	2119.	1.48E-05	865.7480	5.80E+09	-97.8379	4498936.	0.00
15.5000	1.57E-04	-9119.	1472.	-2.83E-07	811.2853	5.80E+09	-117.7891	4498936.	0.00
16.0000	1.27E-04	-2400.	833.1364	-6.24E-06	777.8693	5.80E+09	-95.2918	4498936.	0.00
16.5000	8.22E-05	890.5872	362.3937	-7.02E-06	770.3626	5.80E+09	-61.6225	4498936.	0.00
17.0000	4.28E-05	1962.	81.2292	-5.55E-06	775.6904	5.80E+09	-32.0990	4498936.	0.00
17.5000	1.56E-05	1876.	-50.1923	-3.56E-06	775.2616	5.80E+09	-11.7081	4498936.	0.00
18.0000	6.46E-08	1366.	-85.4298	-1.88E-06	772.7275	5.80E+09	-0.03769	3499172.	0.00
18.5000	-7.00E-06	853.9145	-76.7898	-7.36E-07	770.1802	5.80E+09	2.9177	2499409.	0.00
19.0000	-8.77E-06	445.9666	-57.0749	-6.38E-08	768.1512	5.80E+09	3.6539	2499409.	0.00
19.5000	-7.77E-06	169.1339	-36.4027	2.54E-07	766.7744	5.80E+09	3.2368	2499409.	0.00
20.0000	-5.72E-06	8.6643	-19.5455	3.46E-07	765.9763	5.80E+09	2.3822	2499409.	0.00
20.5000	-3.61E-06	-66.0526	-7.8829	3.17E-07	766.2617	5.80E+09	1.5053	2499409.	0.00
21.0000	-1.92E-06	-86.5160	-0.9696	2.38E-07	766.3635	5.80E+09	0.7992	2499409.	0.00
21.5000	-7.60E-07	-78.1268	2.3782	1.53E-07	766.3217	5.80E+09	0.3168	2499409.	0.00
22.0000	-8.75E-08	-58.2591	3.4379	8.20E-08	766.2229	5.80E+09	0.03644	2499409.	0.00
22.5000	2.24E-07	-37.0236	3.2676	3.27E-08	766.1173	5.80E+09	-0.09322	2499409.	0.00
23.0000	3.05E-07	-19.1086	2.5303	3.68E-09	766.0282	5.80E+09	-0.1526	2999290.	0.00
23.5000	2.68E-07	-6.6672	1.6038	-9.65E-09	765.9663	5.80E+09	-0.1563	3499172.	0.00
24.0000	1.89E-07	0.1549	0.8038	-1.30E-08	765.9339	5.80E+09	-0.1104	3499172.	0.00
24.5000	1.12E-07	3.0019	0.2771	-1.14E-08	765.9481	5.80E+09	-0.06513	3499172.	0.00
25.0000	5.26E-08	3.5015	-0.01037	-8.03E-09	765.9506	5.80E+09	-0.03070	3499172.	0.00
25.5000	1.54E-08	2.8923	-0.1294	-4.72E-09	765.9475	5.80E+09	-0.00896	3499172.	0.00
26.0000	-3.96E-09	1.9578	-0.1493	-2.21E-09	765.9429	5.80E+09	0.00231	3499172.	0.00
26.5000	-1.11E-08	1.1045	-0.1229	-6.24E-10	765.9387	5.80E+09	0.00649	3499172.	0.00
27.0000	-1.14E-08	0.4840	-0.08340	1.98E-10	765.9356	5.80E+09	0.00668	3499172.	0.00
27.5000	-8.76E-09	0.1034	-0.04804	5.02E-10	765.9337	5.80E+09	0.00511	3499172.	0.00
28.0000	-5.43E-09	-0.09345	-0.02144	5.07E-10	765.9336	5.80E+09	0.00376	4156176.	0.00
28.5000	-2.68E-09	-0.1548	-0.00361	3.78E-10	765.9339	5.80E+09	0.00218	4893750.	0.00
29.0000	-8.86E-10	-0.1375	0.00510	2.27E-10	765.9338	5.80E+09	7.23E-04	4893750.	0.00
29.5000	5.03E-11	-0.09402	0.00715	1.07E-10	765.9336	5.80E+09	-4.10E-05	4893750.	0.00
30.0000	4.03E-10	-0.05192	0.00604	3.19E-11	765.9334	5.80E+09	-3.29E-04	4893750.	0.00
30.5000	4.33E-10	-0.02160	0.00399	-6.12E-12	765.9333	5.80E+09	-3.53E-04	4893750.	0.00
31.0000	3.29E-10	-0.00398	0.00213	-1.94E-11	765.9332	5.80E+09	-2.69E-04	4893750.	0.00
31.5000	2.01E-10	0.00397	8.30E-04	-1.94E-11	765.9332	5.80E+09	-1.64E-04	4893750.	0.00
32.0000	9.70E-11	0.00602	1.01E-04	-1.42E-11	765.9332	5.80E+09	-7.91E-05	4893750.	0.00
32.5000	3.05E-11	0.00521	-2.11E-04	-8.39E-12	765.9332	5.80E+09	-2.49E-05	4893750.	0.00
33.0000	-3.64E-12	0.00351	-2.76E-04	-3.88E-12	765.9332	5.80E+09	2.97E-06	4893750.	0.00
33.5000	-1.60E-11	0.00190	-2.28E-04	-1.08E-12	765.9332	5.80E+09	1.31E-05	4893750.	0.00
34.0000	-1.66E-11	7.68E-04	-1.49E-04	0.00	765.9332	5.80E+09	1.35E-05	4893750.	0.00
34.5000	-1.24E-11	1.20E-04	-7.77E-05	0.00	765.9332	5.80E+09	1.01E-05	4893750.	0.00
35.0000	-7.43E-12	-1.66E-04	-2.93E-05	0.00	765.9332	5.80E+09	6.06E-06	4893750.	0.00
35.5000	-3.51E-12	-2.33E-04	-2.53E-06	0.00	765.9332	5.80E+09	2.86E-06	4893750.	0.00
36.0000	-1.04E-12	-1.97E-04	8.61E-06	0.00	765.9332	5.80E+09	8.50E-07	4893750.	0.00
36.5000	0.00	-1.31E-04	1.07E-05	0.00	765.9332	5.80E+09	-1.64E-07	4893750.	0.00
37.0000	0.00	-6.96E-05	8.62E-06	0.00	765.9332	5.80E+09	-5.17E-07	4893750.	0.00
37.5000	0.00	-2.72E-05	5.52E-06	0.00	765.9332	5.80E+09	-5.17E-07	4893750.	0.00
38.0000	0.00	-3.37E-06	2.83E-06	0.00	765.9332	5.80E+09	-3.79E-07	4893750.	0.00
38.5000	0.00	6.86E-06	1.03E-06	0.00	765.9332	5.80E+09	-2.24E-07	4893750.	0.00
39.0000	0.00	9.02E-06	4.73E-08	0.00	765.9332	5.80E+09	-1.03E-07	4893750.	0.00
39.5000	0.00	7.46E-06	-3.49E-07	0.00	765.9332	5.80E+09	-2.87E-08	4893750.	0.00

40.0000	0.00	4.86E-06	-4.10E-07	0.00	765.9332	5.80E+09	8.13E-09	4893750.	0.00
40.5000	0.00	2.54E-06	-3.25E-07	0.00	765.9332	5.80E+09	2.04E-08	4893750.	0.00
41.0000	0.00	9.60E-07	-2.05E-07	0.00	765.9332	5.80E+09	1.97E-08	4893750.	0.00
41.5000	0.00	8.46E-08	-1.03E-07	0.00	765.9332	5.80E+09	1.42E-08	4893750.	0.00
42.0000	0.00	-2.80E-07	-3.59E-08	0.00	765.9332	5.80E+09	8.24E-09	4893750.	0.00
42.5000	0.00	-3.48E-07	-4.40E-12	0.00	765.9332	5.80E+09	3.72E-09	4893750.	0.00
43.0000	0.00	-2.82E-07	1.40E-08	0.00	765.9332	5.80E+09	9.58E-10	4893750.	0.00
43.5000	0.00	-1.81E-07	1.58E-08	0.00	765.9332	5.80E+09	-3.78E-10	4893750.	0.00
44.0000	0.00	-9.28E-08	1.22E-08	0.00	765.9332	5.80E+09	-7.99E-10	4893750.	0.00
44.5000	0.00	-3.37E-08	7.59E-09	0.00	765.9332	5.80E+09	-7.50E-10	4893750.	0.00
45.0000	0.00	-1.63E-09	3.75E-09	0.00	765.9332	5.80E+09	-5.31E-10	4893750.	0.00
45.5000	0.00	1.13E-08	1.24E-09	0.00	765.9332	5.80E+09	-3.04E-10	4893750.	0.00
46.0000	0.00	1.34E-08	-6.61E-11	0.00	765.9332	5.80E+09	-1.33E-10	4893750.	0.00
46.5000	0.00	1.06E-08	-5.60E-10	0.00	765.9332	5.80E+09	-3.12E-11	4893750.	0.00
47.0000	0.00	6.69E-09	-6.02E-10	0.00	765.9332	5.80E+09	1.74E-11	4893750.	0.00
47.5000	0.00	3.40E-09	-4.53E-10	0.00	765.9332	5.80E+09	3.21E-11	4893750.	0.00
48.0000	0.00	1.26E-09	-2.69E-10	0.00	765.9332	5.80E+09	2.95E-11	4893750.	0.00
48.5000	0.00	1.75E-10	-1.18E-10	0.00	765.9332	5.80E+09	2.06E-11	4893750.	0.00
49.0000	0.00	-1.65E-10	-2.40E-11	0.00	765.9332	5.80E+09	1.08E-11	4893750.	0.00
49.5000	0.00	-1.16E-10	1.40E-11	0.00	765.9332	5.80E+09	1.85E-12	4893750.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	-6.52E-12	2446875.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 2:

```
Pile-head deflection             =     0.50000000 inches
Computed slope at pile head      =    -0.00829402 radians
Maximum bending moment           =        602487. inch-lbs
Maximum shear force              =         17508. lbs
Depth of maximum bending moment  =     5.00000000 feet below pile head
Depth of maximum shear force     =      0.000000 feet below pile head
Number of iterations             =             14
Number of zero deflection points =             12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.0 in-lbs
Axial load at pile head = 154000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.00	24146.	-0.01476	765.9332	5.80E+09	-592.0180	1776.	0.00
0.5000	0.9115	147854.	21564.	-0.01468	1501.	5.80E+09	-268.6143	1768.	0.00
1.0000	0.8238	285896.	19929.	-0.01446	2188.	5.80E+09	-276.3127	2012.	0.00
1.5000	0.7380	413718.	18252.	-0.01409	2824.	5.80E+09	-282.8247	2299.	0.00
2.0000	0.6547	530962.	16539.	-0.01361	3407.	5.80E+09	-288.0807	2640.	0.00
2.5000	0.5747	637328.	14799.	-0.01300	3936.	5.80E+09	-292.0086	3049.	0.00
3.0000	0.4987	732572.	12767.	-0.01229	4409.	5.80E+09	-385.2670	4636.	0.00
3.5000	0.4272	813246.	10180.	-0.01149	4811.	5.80E+09	-476.8757	6698.	0.00
4.0000	0.3607	875975.	7324.	-0.01062	5123.	5.80E+09	-475.2969	7905.	0.00
4.5000	0.2997	920756.	4485.	-0.00969	5345.	5.80E+09	-471.1217	9430.	0.00
5.0000	0.2445	947696.	1679.	-0.00872	5479.	5.80E+09	-464.1848	11393.	0.00
5.5000	0.1951	957020.	-1077.	-0.00774	5526.	5.80E+09	-454.2857	13973.	0.00
6.0000	0.1516	949074.	-3763.	-0.00675	5486.	5.80E+09	-441.1675	17459.	0.00
6.5000	0.1141	924339.	-6360.	-0.00578	5363.	5.80E+09	-424.4784	22331.	0.00
7.0000	0.08223	883438.	-8845.	-0.00485	5160.	5.80E+09	-403.6948	29457.	0.00
7.5000	0.05589	827160.	-11190.	-0.00396	4880.	5.80E+09	-377.9503	40576.	0.00

8.0000	0.03468	756486.	-13167.	-0.00314	4528.	5.80E+09	-281.0620	48623.	0.00
8.5000	0.01817	674969.	-14579.	-0.00240	4123.	5.80E+09	-189.8170	62664.	0.00
9.0000	0.00586	585974.	-15591.	-0.00175	3680.	5.80E+09	-147.3191	150908.	0.00
9.5000	-0.00282	491115.	-15655.	-0.00119	3209.	5.80E+09	125.7796	267408.	0.00
10.0000	-0.00845	400315.	-14767.	-7.31E-04	2757.	5.80E+09	170.3147	120895.	0.00
10.5000	-0.01160	315263.	-13688.	-3.61E-04	2334.	5.80E+09	189.3332	97949.	0.00
11.0000	-0.01279	236726.	-12523.	-7.55E-05	1943.	5.80E+09	199.1032	93433.	0.00
11.5000	-0.01250	165130.	-11326.	1.32E-04	1587.	5.80E+09	199.8920	95917.	0.00
12.0000	-0.01120	100572.	-10143.	2.70E-04	1266.	5.80E+09	194.4522	104197.	0.00
12.5000	-0.00927	42919.	-9003.	3.44E-04	979.3932	5.80E+09	185.4609	120093.	0.00
13.0000	-0.00707	-8099.	-7407.	3.62E-04	806.2155	5.80E+09	346.6352	294255.	0.00
13.5000	-0.00492	-46631.	-4942.	3.34E-04	997.8545	5.80E+09	474.9179	579101.	0.00
14.0000	-0.00306	-68020.	-2252.	2.74E-04	1104.	5.80E+09	421.7902	826343.	0.00
14.5000	-0.00163	-74160.	93.5842	2.01E-04	1135.	5.80E+09	360.0341	1327821.	0.00
15.0000	-6.52E-04	-67269.	2033.	1.28E-04	1100.	5.80E+09	286.3153	2636434.	0.00
15.5000	-9.39E-05	-50005.	3103.	6.71E-05	1015.	5.80E+09	70.4395	4498936.	0.00
16.0000	1.53E-04	-30158.	2969.	2.56E-05	915.9253	5.80E+09	-114.9213	4498936.	0.00
16.5000	2.13E-04	-14419.	2145.	2.54E-06	837.6465	5.80E+09	-159.8927	4498936.	0.00
17.0000	1.84E-04	-4422.	1252.	-7.21E-06	787.9278	5.80E+09	-137.7421	4498936.	0.00
17.5000	1.27E-04	619.7771	553.8643	-9.18E-06	769.0157	5.80E+09	-95.0050	4498936.	0.00
18.0000	7.36E-05	2241.	140.1591	-7.70E-06	777.0793	5.80E+09	-42.8968	3499172.	0.00
18.5000	3.43E-05	2316.	-31.4206	-5.34E-06	777.4516	5.80E+09	-14.2964	2499409.	0.00
19.0000	9.46E-06	1874.	-86.1352	-3.17E-06	775.2531	5.80E+09	-3.9417	2499409.	0.00
19.5000	-3.76E-06	1288.	-93.2603	-1.54E-06	772.3399	5.80E+09	1.5667	2499409.	0.00
20.0000	-8.99E-06	757.5988	-77.3292	-4.79E-07	769.7012	5.80E+09	3.7437	2499409.	0.00
20.5000	-9.51E-06	361.0909	-54.2139	9.97E-08	767.7291	5.80E+09	3.9614	2499409.	0.00
21.0000	-7.79E-06	106.8479	-32.5940	3.42E-07	766.4646	5.80E+09	3.2452	2499409.	0.00
21.5000	-5.41E-06	-30.6686	-16.1000	3.81E-07	766.0857	5.80E+09	2.2527	2499409.	0.00
22.0000	-3.22E-06	-87.0570	-5.3231	3.20E-07	766.3661	5.80E+09	1.3396	2499409.	0.00
22.5000	-1.56E-06	-95.1375	0.6503	2.26E-07	766.4063	5.80E+09	0.6515	2499409.	0.00
23.0000	-5.03E-07	-79.6714	3.3593	1.36E-07	766.3294	5.80E+09	0.2515	2999290.	0.00
23.5000	6.33E-08	-55.0759	4.0030	6.59E-08	766.2071	5.80E+09	-0.03692	3499172.	0.00
24.0000	2.88E-07	-31.7569	3.3888	2.10E-08	766.0911	5.80E+09	-0.1678	3499172.	0.00
24.5000	3.15E-07	-14.4487	2.3342	-2.93E-09	766.0050	5.80E+09	-0.1837	3499172.	0.00
25.0000	2.53E-07	-3.7410	1.3410	-1.23E-08	765.9518	5.80E+09	-0.1473	3499172.	0.00
25.5000	1.67E-07	1.6666	0.6069	-1.34E-08	765.9415	5.80E+09	-0.09738	3499172.	0.00
26.0000	9.17E-08	3.5668	0.1544	-1.07E-08	765.9509	5.80E+09	-0.05347	3499172.	0.00
26.5000	3.85E-08	3.5387	-0.07346	-7.03E-09	765.9508	5.80E+09	-0.02247	3499172.	0.00
27.0000	7.35E-09	2.6983	-0.1537	-3.80E-09	765.9466	5.80E+09	-0.00429	3499172.	0.00
27.5000	-7.08E-09	1.7008	-0.1542	-1.52E-09	765.9416	5.80E+09	0.00413	3499172.	0.00
28.0000	-1.09E-08	0.8502	-0.1191	-2.05E-10	765.9374	5.80E+09	0.00758	4156176.	0.00
28.5000	-9.54E-09	0.2718	-0.07304	3.75E-10	765.9345	5.80E+09	0.00778	4893750.	0.00
29.0000	-6.44E-09	-0.02688	-0.03395	5.02E-10	765.9333	5.80E+09	0.00525	4893750.	0.00
29.5000	-3.51E-09	-0.1365	-0.00960	4.18E-10	765.9338	5.80E+09	0.00286	4893750.	0.00
30.0000	-1.43E-09	-0.1429	0.00248	2.73E-10	765.9339	5.80E+09	0.00116	4893750.	0.00
30.5000	-2.32E-10	-0.1073	0.00654	1.44E-10	765.9337	5.80E+09	1.90E-04	4893750.	0.00
31.0000	2.97E-10	-0.06469	0.00638	5.47E-11	765.9335	5.80E+09	-2.42E-04	4893750.	0.00
31.5000	4.25E-10	-0.03078	0.00462	5.35E-12	765.9333	5.80E+09	-3.46E-04	4893750.	0.00
32.0000	3.61E-10	-0.00931	0.00269	-1.54E-11	765.9332	5.80E+09	-2.95E-04	4893750.	0.00
32.5000	2.40E-10	0.00157	0.00122	-1.94E-11	765.9332	5.80E+09	-1.96E-04	4893750.	0.00
33.0000	1.28E-10	0.00541	3.22E-04	-1.58E-11	765.9332	5.80E+09	-1.05E-04	4893750.	0.00
33.5000	5.06E-11	0.00546	-1.17E-04	-1.02E-11	765.9332	5.80E+09	-4.13E-05	4893750.	0.00
34.0000	6.67E-12	0.00403	-2.57E-04	-5.24E-12	765.9332	5.80E+09	-5.44E-06	4893750.	0.00
34.5000	-1.23E-11	0.00239	-2.43E-04	-1.92E-12	765.9332	5.80E+09	1.00E-05	4893750.	0.00
35.0000	-1.64E-11	0.00111	-1.73E-04	0.00	765.9332	5.80E+09	1.34E-05	4893750.	0.00
35.5000	-1.37E-11	3.15E-04	-9.92E-05	0.00	765.9332	5.80E+09	1.11E-05	4893750.	0.00
36.0000	-8.93E-12	-8.00E-05	-4.39E-05	0.00	765.9332	5.80E+09	7.28E-06	4893750.	0.00
36.5000	-4.70E-12	-2.13E-04	-1.06E-05	0.00	765.9332	5.80E+09	3.83E-06	4893750.	0.00
37.0000	-1.79E-12	-2.08E-04	5.25E-06	0.00	765.9332	5.80E+09	1.46E-06	4893750.	0.00
37.5000	0.00	-1.51E-04	1.01E-05	0.00	765.9332	5.80E+09	1.42E-07	4893750.	0.00
38.0000	0.00	-8.81E-05	9.25E-06	0.00	765.9332	5.80E+09	-4.11E-07	4893750.	0.00
38.5000	0.00	-4.01E-05	6.46E-06	0.00	765.9332	5.80E+09	-5.17E-07	4893750.	0.00
39.0000	0.00	-1.06E-05	3.65E-06	0.00	765.9332	5.80E+09	-4.21E-07	4893750.	0.00
39.5000	0.00	3.78E-06	1.57E-06	0.00	765.9332	5.80E+09	-2.71E-07	4893750.	0.00
40.0000	0.00	8.38E-06	3.43E-07	0.00	765.9332	5.80E+09	-1.40E-07	4893750.	0.00
40.5000	0.00	7.94E-06	-2.30E-07	0.00	765.9332	5.80E+09	-5.13E-08	4893750.	0.00
41.0000	0.00	5.65E-06	-3.92E-07	0.00	765.9332	5.80E+09	-2.98E-09	4893750.	0.00
41.5000	0.00	3.25E-06	-3.51E-07	0.00	765.9332	5.80E+09	1.67E-08	4893750.	0.00

42.0000	0.00	1.44E-06	-2.41E-07	0.00	765.9332	5.80E+09	1.99E-08	4893750.	0.00
42.5000	0.00	3.49E-07	-1.34E-07	0.00	765.9332	5.80E+09	1.59E-08	4893750.	0.00
43.0000	0.00	-1.70E-07	-5.62E-08	0.00	765.9332	5.80E+09	1.00E-08	4893750.	0.00
43.5000	0.00	-3.28E-07	-1.08E-08	0.00	765.9332	5.80E+09	5.09E-09	4893750.	0.00
44.0000	0.00	-3.02E-07	9.81E-09	0.00	765.9332	5.80E+09	1.79E-09	4893750.	0.00
44.5000	0.00	-2.11E-07	1.53E-08	0.00	765.9332	5.80E+09	2.52E-11	4893750.	0.00
45.0000	0.00	-1.19E-07	1.33E-08	0.00	765.9332	5.80E+09	-6.73E-10	4893750.	0.00
45.5000	0.00	-5.16E-08	9.00E-09	0.00	765.9332	5.80E+09	-7.66E-10	4893750.	0.00
46.0000	0.00	-1.13E-08	4.91E-09	0.00	765.9332	5.80E+09	-5.98E-10	4893750.	0.00
46.5000	0.00	7.44E-09	2.00E-09	0.00	765.9332	5.80E+09	-3.73E-10	4893750.	0.00
47.0000	0.00	1.28E-08	3.26E-10	0.00	765.9332	5.80E+09	-1.85E-10	4893750.	0.00
47.5000	0.00	1.14E-08	-4.18E-10	0.00	765.9332	5.80E+09	-6.25E-11	4893750.	0.00
48.0000	0.00	7.79E-09	-5.97E-10	0.00	765.9332	5.80E+09	2.59E-12	4893750.	0.00
48.5000	0.00	4.26E-09	-5.05E-10	0.00	765.9332	5.80E+09	2.82E-11	4893750.	0.00
49.0000	0.00	1.74E-09	-3.24E-10	0.00	765.9332	5.80E+09	3.22E-11	4893750.	0.00
49.5000	0.00	3.75E-10	-1.45E-10	0.00	765.9332	5.80E+09	2.74E-11	4893750.	0.00
50.0000	0.00	0.00	0.00	0.00	765.9332	5.80E+09	2.08E-11	2446875.	0.00

* The above values of total stress are combined axial and bending stresses.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =     1.00000000 inches
Computed slope at pile head      =    -0.01475780 radians
Maximum bending moment           =        957020. inch-lbs
Maximum shear force              =         24146. lbs
Depth of maximum bending moment  =     5.50000000 feet below pile head
Depth of maximum shear force     =      0.000000 feet below pile head
Number of iterations             =             21
Number of zero deflection points =             11
```

Summary of Pile-head Responses for Conventional Analyses

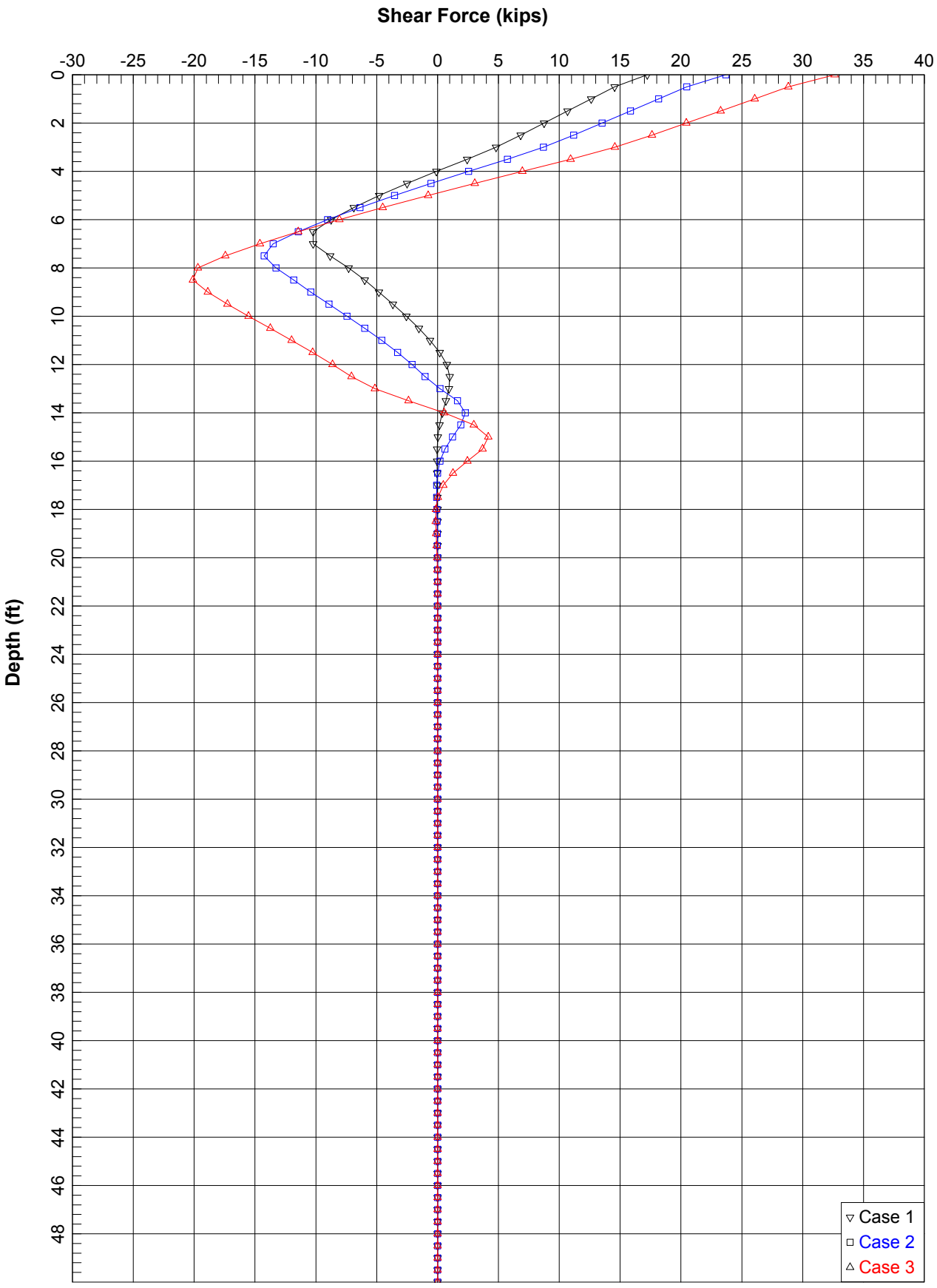
Definitions of Pile-head Loading Conditions:

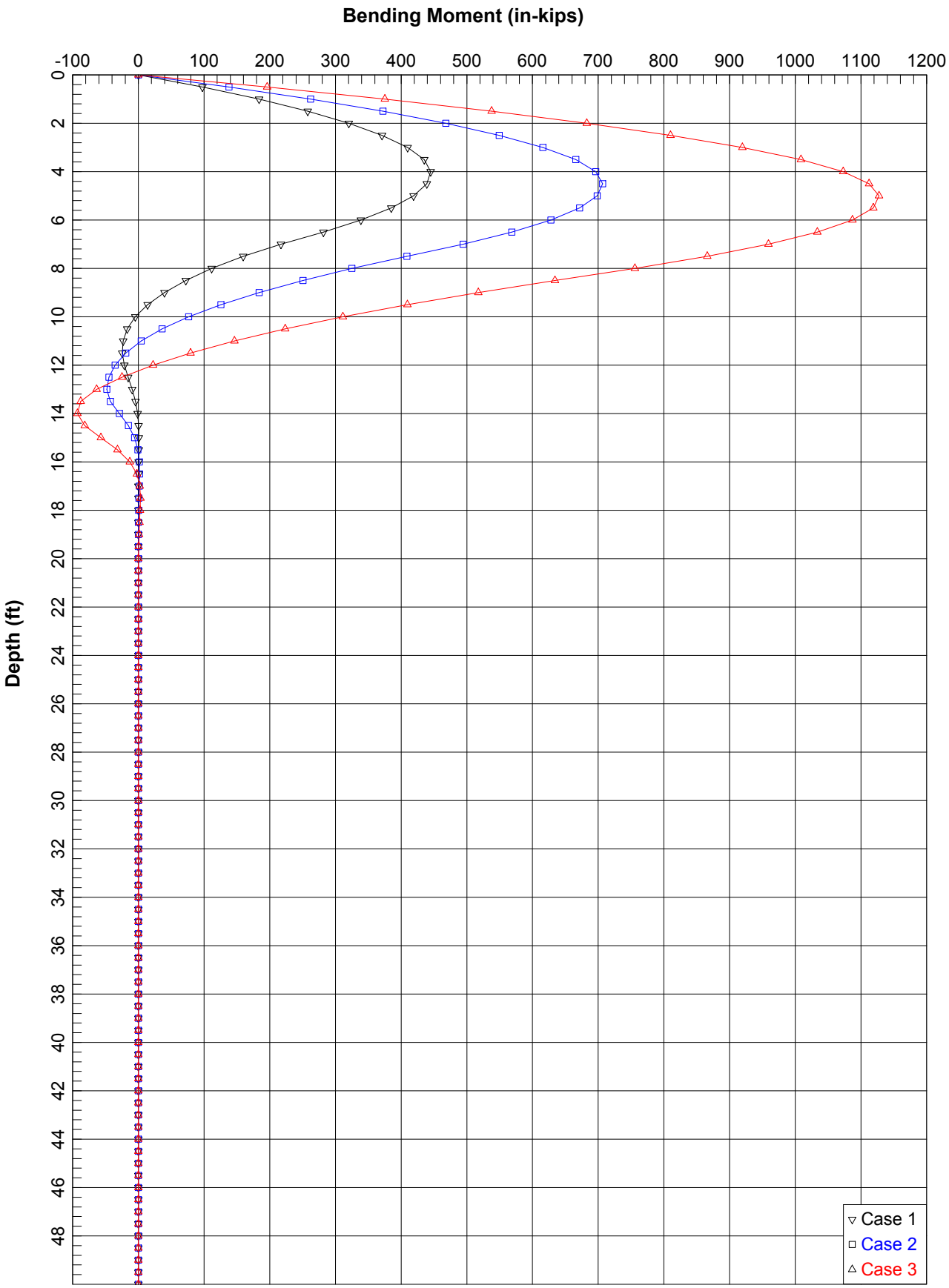
Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load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

Load Case No.	Load Type	Pile-head Load 1	Load Type	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	y, in	0.2500	M, in-lb	0.00	154000.	0.2500	-0.00462	12633.	375819.
2	y, in	0.5000	M, in-lb	0.00	154000.	0.5000	-0.00829	17508.	602487.
3	y, in	1.0000	M, in-lb	0.00	154000.	1.0000	-0.01476	24146.	957020.

Maximum pile-head deflection = 1.0000000000 inches
Maximum pile-head rotation   = -0.0147578046 radians = -0.845560 deg.

The analysis ended normally.


Shear Force (kips)
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 1\
Name of input data file: Abut 1L_transv_Max P.lp6d
Name of output report file: Abut 1L_transv_Max P.lp6o
Name of plot output file: Abut 1L_transv_Max P.lp6p
Name of runtime messeage file: Abut 1L_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:55:33

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 8 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	3.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	3.00000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	2500.00000 psi
Undrained cohesion at bottom of layer	=	2500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 8.00000 ft
Distance from top of pile to bottom of layer = 13.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 1500.00000 psi
Undrained cohesion at bottom of layer = 1500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 13.00000 ft
Distance from top of pile to bottom of layer = 18.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 18.00000 ft
Distance from top of pile to bottom of layer = 23.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 2500.00000 psi
Undrained cohesion at bottom of layer = 2500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 23.00000 ft
Distance from top of pile to bottom of layer = 28.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3500.00000 psi
Undrained cohesion at bottom of layer = 3500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 8 is stiff clay without free water

Distance from top of pile to top of layer = 28.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	Uniaxial qu psi	RQD % or GSI
	Strain Factor Epsilon 50	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Soil Type	Modulus Property	Subgrade Mod. pci
1	Stiff Clay w/o Free Water	-2.000	120.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
				0.10000	120.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
2	Stiff Clay w/o Free Water	0.10000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
				3.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
3	Stiff Clay w/o Free Water	3.000	120.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--
				8.000	120.000	2500.000	--	--	--	--

	0.00700	--	--	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water			8.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--
					13.000	120.000	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water			13.000	--	125.000	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
					18.000	125.000	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water			18.000	--	125.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
					23.000	125.000	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
7	Stiff Clay w/o Free Water			23.000	--	125.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
					28.000	125.000	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--
8	Stiff Clay w/o Free Water			28.000	--	125.000	4500.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--	--	--	--
					80.000	125.000	4500.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--	--	--	--

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.8000	1.0000
2	50.000	0.8000	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	154000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	154000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	154000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	17233.	-0.005051	765.9332	5.799E+09	-577.4069	6928.8823	0.000
6.000	0.2197	97673.	14541.	-0.005000	1251.7188	5.799E+09	-320.0950	8741.9259	0.000
12.000	0.1900	183729.	12613.	-0.004854	1679.7272	5.799E+09	-322.4488	10183.	0.000
18.000	0.1614	258002.	10677.	-0.004626	2049.1277	5.799E+09	-322.8014	11997.	0.000
24.000	0.1345	320406.	8745.9120	-0.004327	2359.5040	5.799E+09	-321.0198	14322.	0.000
30.000	0.1095	370948.	6831.9912	-0.003969	2610.8783	5.799E+09	-316.9538	17364.	0.000
36.000	0.0869	409725.	4807.2699	-0.003565	2803.7384	5.799E+09	-357.9534	24726.	0.000
42.000	0.0667	435224.	2442.7547	-0.003128	2930.5588	5.799E+09	-430.2184	38676.	0.000
48.000	0.0493	444819.	-90.2968	-0.002673	2978.2793	5.799E+09	-414.1321	50377.	0.000
54.000	0.0347	439079.	-2512.1579	-0.002215	2949.7346	5.799E+09	-393.1550	68041.	0.000
60.000	0.0227	418767.	-4790.8103	-0.001772	2848.7078	5.799E+09	-366.3959	96675.	0.000
66.000	0.0134	384863.	-6886.4175	-0.001356	2680.0868	5.799E+09	-332.1398	148602.	0.000
72.000	0.006471	338635.	-8741.2020	-0.000981	2450.1663	5.799E+09	-286.1217	265313.	0.000
78.000	0.001633	281783.	-10229.	-0.000660	2167.4057	5.799E+09	-209.8570	771081.	0.000
84.000	-0.001455	217106.	-10233.	-0.000402	1845.7303	5.799E+09	208.6657	860323.	0.000
90.000	-0.003196	159734.	-8819.9905	-0.000207	1560.3840	5.799E+09	262.2414	492379.	0.000
96.000	-0.003944	111650.	-7302.0481	-6.701E-05	1321.2323	5.799E+09	243.7394	370776.	0.000
102.000	-0.004000	72233.	-5988.9273	2.812E-05	1125.1910	5.799E+09	193.9676	290969.	0.000
108.000	-0.003607	39730.	-4824.6410	8.605E-05	963.5361	5.799E+09	194.1278	322937.	0.000
114.000	-0.002967	14178.	-3673.0462	0.000114	836.4506	5.799E+09	189.7371	383671.	0.000
120.000	-0.002240	-4556.6926	-2566.1734	0.000119	788.5963	5.799E+09	179.2205	480153.	0.000
126.000	-0.001540	-16835.	-1538.9556	0.000108	849.6659	5.799E+09	163.1854	635708.	0.000
132.000	-0.000945	-23223.	-616.1745	8.712E-05	881.4372	5.799E+09	144.4082	916526.	0.000
138.000	-0.000495	-24391.	185.3859	6.249E-05	887.2419	5.799E+09	122.7786	1489090.	0.000
144.000	-0.000195	-21114.	755.9027	3.895E-05	870.9471	5.799E+09	67.3937	2068476.	0.000
150.000	-2.735E-05	-15392.	986.3691	2.006E-05	842.4852	5.799E+09	9.4284	2068476.	0.000
156.000	4.523E-05	-9314.9560	932.6016	7.278E-06	812.2620	5.799E+09	-27.3509	3628020.	0.000
162.000	5.998E-05	-4213.9350	686.4204	2.784E-07	786.8916	5.799E+09	-54.7095	5472419.	0.000
168.000	4.857E-05	-1078.4261	386.0148	-2.460E-06	771.2968	5.799E+09	-45.4257	5611200.	0.000
174.000	3.047E-05	422.7879	162.1441	-2.799E-06	768.0359	5.799E+09	-29.1978	5749987.	0.000
180.000	1.499E-05	872.4753	30.4249	-2.129E-06	770.2725	5.799E+09	-14.7085	5888777.	0.000
186.000	4.922E-06	791.8212	-28.5343	-1.268E-06	769.8714	5.799E+09	-4.9446	6027571.	0.000
192.000	-2.265E-07	532.4060	-42.6695	-5.826E-07	768.5811	5.799E+09	0.2328	6166368.	0.000
198.000	-2.070E-06	280.8635	-35.5495	-1.619E-07	767.3301	5.799E+09	2.1405	6205428.	0.000
204.000	-2.169E-06	106.1112	-22.3979	3.833E-08	766.4609	5.799E+09	2.2433	6205428.	0.000
210.000	-1.610E-06	12.0174	-10.6735	9.945E-08	765.9929	5.799E+09	1.6648	6205428.	0.000
216.000	-9.757E-07	-22.1548	-3.3244	9.420E-08	766.0434	5.799E+09	0.7849	4826444.	0.000
222.000	-4.793E-07	-28.0501	-0.1436	6.823E-08	766.0727	5.799E+09	0.2754	3447460.	0.000
228.000	-1.570E-07	-24.0046	0.9532	4.130E-08	766.0526	5.799E+09	0.0902	3447460.	0.000
234.000	1.625E-08	-16.6885	1.1958	2.024E-08	766.0162	5.799E+09	-0.000339	3447460.	0.000
240.000	8.590E-08	-9.6927	1.0197	6.594E-09	765.9814	5.799E+09	-0.0494	3447460.	0.000
246.000	9.538E-08	-4.4645	0.7072	-7.309E-10	765.9554	5.799E+09	-0.0548	3447460.	0.000
252.000	7.713E-08	-1.2048	0.4099	-3.664E-09	765.9392	5.799E+09	-0.0443	3447460.	0.000
258.000	5.141E-08	0.4605	0.1883	-4.049E-09	765.9355	5.799E+09	-0.0295	3447460.	0.000
264.000	2.854E-08	1.0621	0.0505	-3.261E-09	765.9384	5.799E+09	-0.0164	3447460.	0.000
270.000	1.227E-08	1.0722	-0.0199	-2.157E-09	765.9385	5.799E+09	-0.007051	3447460.	0.000
276.000	2.657E-09	0.8275	-0.0465	-1.174E-09	765.9373	5.799E+09	-0.001832	4136952.	0.000
282.000	-1.820E-09	0.5161	-0.0476	-4.791E-10	765.9357	5.799E+09	0.001464	4826444.	0.000
288.000	-3.093E-09	0.2569	-0.0358	-7.920E-11	765.9344	5.799E+09	0.002488	4826444.	0.000
294.000	-2.770E-09	0.0870	-0.0216	9.870E-11	765.9336	5.799E+09	0.002228	4826444.	0.000
300.000	-1.908E-09	-0.002794	-0.0103	1.423E-10	765.9332	5.799E+09	0.001535	4826444.	0.000
306.000	-1.063E-09	-0.0373	-0.003164	1.215E-10	765.9333	5.799E+09	0.000855	4826444.	0.000
312.000	-4.500E-10	-0.0410	0.000488	8.101E-11	765.9334	5.799E+09	0.000362	4826444.	0.000
318.000	-9.117E-11	-0.0316	0.001794	4.346E-11	765.9333	5.799E+09	7.334E-05	4826444.	0.000
324.000	7.150E-11	-0.0195	0.001842	1.701E-11	765.9333	5.799E+09	-5.752E-05	4826444.	0.000
330.000	1.129E-10	-0.009529	0.001397	1.968E-12	765.9332	5.799E+09	-9.081E-05	4826444.	0.000
336.000	9.513E-11	-0.002781	0.000851	-4.400E-12	765.9332	5.799E+09	-9.089E-05	5732657.	0.000
342.000	6.009E-11	0.000696	0.000376	-5.479E-12	765.9332	5.799E+09	-6.760E-05	6750000.	0.000
348.000	2.938E-11	0.001740	7.401E-05	-4.219E-12	765.9332	5.799E+09	-3.305E-05	6750000.	0.000
354.000	9.465E-12	0.001592	-5.707E-05	-2.494E-12	765.9332	5.799E+09	-1.065E-05	6750000.	0.000
360.000	0.000	0.001060	-8.713E-05	-1.122E-12	765.9332	5.799E+09	6.287E-07	6750000.	0.000
366.000	-4.003E-12	0.000549	-7.173E-05	0.000	765.9332	5.799E+09	4.503E-06	6750000.	0.000
372.000	-4.039E-12	0.000200	-4.459E-05	0.000	765.9332	5.799E+09	4.544E-06	6750000.	0.000
378.000	-2.836E-12	1.360E-05	-2.139E-05	0.000	765.9332	5.799E+09	3.191E-06	6750000.	0.000
384.000	-1.549E-12	-5.751E-05	-6.590E-06	0.000	765.9332	5.799E+09	1.743E-06	6750000.	0.000
390.000	0.000	-6.582E-05	7.273E-07	0.000	765.9332	5.799E+09	6.963E-07	6750000.	0.000
396.000	0.000	-4.900E-05	3.145E-06	0.000	765.9332	5.799E+09	1.096E-07	6750000.	0.000
402.000	0.000	-2.819E-05	3.070E-06	0.000	765.9332	5.799E+09	-1.348E-07	6750000.	0.000
408.000	0.000	-1.221E-05	2.119E-06	0.000	765.9332	5.799E+09	-1.823E-07	6750000.	0.000
414.000	0.000	-2.777E-06	1.138E-06	0.000	765.9332	5.799E+09	-1.445E-07	6750000.	0.000
420.000	0.000	1.462E-06	4.421E-07	0.000	765.9332	5.799E+09	-8.743E-08	6750000.	0.000
426.000	0.000	2.548E-06	5.829E-08	0.000	765.9332	5.799E+09	-4.053E-08	6750000.	0.000
432.000	0.000	2.172E-06	-9.758E-08	0.000	765.9332	5.799E+09	-1.143E-08	6750000.	0.000
438.000	0.000	1.383E-06	-1.244E-07	0.000	765.9332	5.799E+09	2.497E-09	6750000.	0.000
444.000	0.000	6.823E-07	-9.660E-08	0.000	765.9332	5.799E+09	6.764E-09	6750000.	0.000
450.000	0.000	2.244E-07	-5.751E-08	0.000	765.9332	5.799E+09	6.266E-09	6750000.	0.000
456.000	0.000	-8.166E-09	-2.611E-08	0.000	765.9332	5.799E+09	4.200E-09	6750000.	0.000
462.000	0.000	-8.951E-08	-6.937E-09	0.000	765.9332	5.799E+09	2.191E-09	6750000.	0.000
468.000	0.000	-9.188E-08	2.060E-09	0.000	765.9332	5.799E+09	8.079E-10	6750000.	0.000
474.000	0.000	-6.508E-08	4.683E-09	0.000	765.9332	5.799E+09	6.617E-11	6750000.	0.000
480.000	0.000	-3.583E-08	4.218E-09	0.000	765.9332	5.799E+09	-2.210E-10	6750000.	0.000
486.000	0.000	-1.450E-08	2.781E-09	0.000	765.9332	5.799E+09	-2.580E-10	6750000.	0.000
492.000	0.000	-2.454E-09	1.426E-09	0.000	765.9332	5.799E+09	-1.937E-10	6750000.	0.000

498.000	0.000	2.627E-09	5.085E-10	0.000	765.9332	5.799E+09	-1.122E-10	6750000.	0.000
504.000	0.000	3.667E-09	2.478E-11	0.000	765.9332	5.799E+09	-4.905E-11	6750000.	0.000
510.000	0.000	2.938E-09	-1.570E-10	0.000	765.9332	5.799E+09	-1.154E-11	6750000.	0.000
516.000	0.000	1.791E-09	-1.752E-10	0.000	765.9332	5.799E+09	5.455E-12	6750000.	0.000
522.000	0.000	8.386E-10	-1.291E-10	0.000	765.9332	5.799E+09	9.936E-12	6750000.	0.000
528.000	0.000	2.429E-10	-7.357E-11	0.000	765.9332	5.799E+09	8.560E-12	6750000.	0.000
534.000	0.000	-4.488E-11	-3.143E-11	0.000	765.9332	5.799E+09	5.487E-12	6750000.	0.000
540.000	0.000	-1.351E-10	-6.782E-12	0.000	765.9332	5.799E+09	2.728E-12	6750000.	0.000
546.000	0.000	-1.269E-10	4.142E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
552.000	0.000	-8.573E-11	6.832E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
558.000	0.000	-4.508E-11	5.742E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
564.000	0.000	-1.688E-11	3.612E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
570.000	0.000	-1.717E-12	1.743E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
576.000	0.000	4.065E-12	0.000	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
582.000	0.000	4.572E-12	0.000	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
588.000	0.000	2.892E-12	0.000	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
594.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	3375000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0050506 radians
Maximum bending moment = 444819. inch-lbs
Maximum shear force = 17233. lbs
Depth of maximum bending moment = 48.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 19
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	23685.	-0.009015	765.9332	5.799E+09	-686.6563	4119.9381	0.000
6.000	0.4459	138078.	20479.	-0.008944	1452.6780	5.799E+09	-382.0619	5140.8860	0.000
12.000	0.3927	262270.	18173.	-0.008736	2070.3584	5.799E+09	-386.6151	5907.3787	0.000
18.000	0.3411	372293.	15845.	-0.008408	2617.5684	5.799E+09	-389.1683	6846.0885	0.000
24.000	0.2918	467950.	13509.	-0.007973	3093.3278	5.799E+09	-389.5980	8011.5094	0.000
30.000	0.2454	549135.	11177.	-0.007447	3497.1048	5.799E+09	-387.7689	9481.2667	0.000
36.000	0.2024	615834.	8686.7162	-0.006845	3828.8407	5.799E+09	-442.2454	13109.	0.000
42.000	0.1633	666024.	5745.9794	-0.006181	4078.4645	5.799E+09	-538.0002	19773.	0.000
48.000	0.1282	696209.	2554.5183	-0.005477	4228.5927	5.799E+09	-525.8202	24603.	0.000
54.000	0.0975	706799.	-550.2702	-0.004751	4281.2625	5.799E+09	-509.1093	31318.	0.000
60.000	0.0712	698385.	-3539.5697	-0.004024	4239.4157	5.799E+09	-487.3238	41051.	0.000
66.000	0.0493	671760.	-6380.3869	-0.003315	4106.9929	5.799E+09	-459.6153	55991.	0.000
72.000	0.0314	627946.	-9032.6436	-0.002642	3889.0820	5.799E+09	-424.4703	80984.	0.000
78.000	0.0175	568251.	-11442.	-0.002024	3592.1839	5.799E+09	-378.6190	129495.	0.000
84.000	0.007165	494383.	-13514.	-0.001474	3224.7923	5.799E+09	-312.1521	261382.	0.000
90.000	-0.000143	408804.	-14253.	-0.001007	2799.1591	5.799E+09	65.9266	2770629.	0.000
96.000	-0.004913	325208.	-13282.	-0.000627	2383.3861	5.799E+09	257.6324	314637.	0.000
102.000	-0.007664	250576.	-11824.	-0.000329	2012.1956	5.799E+09	228.3372	178758.	0.000
108.000	-0.008860	183924.	-10410.	-0.000104	1680.6972	5.799E+09	243.1562	164673.	0.000
114.000	-0.008913	125850.	-8930.9309	5.617E-05	1391.2611	5.799E+09	249.9119	168230.	0.000
120.000	-0.008186	76653.	-7437.1263	0.000161	1147.1731	5.799E+09	247.9230	181727.	0.000
126.000	-0.006982	36307.	-5978.6701	0.000219	946.5111	5.799E+09	238.2291	204724.	0.000
132.000	-0.005553	4503.3789	-4589.1720	0.000240	788.3311	5.799E+09	224.9369	243045.	0.000
138.000	-0.004096	-19207.	-3289.1189	0.000233	861.4617	5.799E+09	208.4141	305293.	0.000
144.000	-0.002758	-35396.	-2097.6447	0.000205	941.9805	5.799E+09	188.7440	410564.	0.000
150.000	-0.001640	-44757.	-1034.3727	0.000163	980.5366	5.799E+09	165.6800	606014.	0.000
156.000	-0.000800	-48110.	190.7768	0.000115	1005.2148	5.799E+09	242.7032	1819652.	0.000
162.000	-0.000259	-42680.	1627.2255	6.815E-05	978.2085	5.799E+09	236.1131	5472419.	0.000
168.000	1.754E-05	-28710.	2286.3407	3.122E-05	908.7234	5.799E+09	-16.4080	5611200.	0.000
174.000	0.000116	-15302.	1904.4056	8.447E-06	842.0395	5.799E+09	-110.9037	5749987.	0.000
180.000	0.000119	-5872.4160	1221.5901	-2.508E-06	795.1402	5.799E+09	-116.7015	5888777.	0.000
186.000	8.563E-05	-638.3773	613.4230	-5.877E-06	769.1082	5.799E+09	-86.0209	6027571.	0.000
192.000	4.839E-05	1499.5198	206.1778	-5.431E-06	773.3912	5.799E+09	-49.7275	6166368.	0.000
198.000	2.045E-05	1845.7925	-6.4674	-3.700E-06	775.1134	5.799E+09	-21.1542	6205428.	0.000
204.000	3.981E-06	1428.7490	-82.2829	-2.006E-06	773.0392	5.799E+09	-4.1176	6205428.	0.000
210.000	-3.621E-06	862.1058	-83.4003	-8.210E-07	770.2209	5.799E+09	3.7451	6205428.	0.000
216.000	-5.871E-06	429.4622	-57.9963	-1.528E-07	768.0691	5.799E+09	4.7229	4826444.	0.000
222.000	-5.455E-06	166.4322	-34.4244	1.555E-07	766.7609	5.799E+09	3.1344	3447460.	0.000
228.000	-4.006E-06	16.0818	-18.1163	2.499E-07	766.0131	5.799E+09	2.3016	3447460.	0.000

234.000	-2.457E-06	-51.4256	-6.9770	2.316E-07	766.1889	5.799E+09	1.4115	3447460.	0.000
240.000	-1.227E-06	-68.0708	-0.6283	1.698E-07	766.2717	5.799E+09	0.7048	3447460.	0.000
246.000	-4.192E-07	-59.2792	2.2086	1.039E-07	766.2280	5.799E+09	0.2409	3447460.	0.000
252.000	2.008E-08	-41.7590	2.8967	5.162E-08	766.1409	5.799E+09	-0.0115	3447460.	0.000
258.000	2.002E-07	-24.6144	2.5171	1.728E-08	766.0556	5.799E+09	-0.1150	3447460.	0.000
264.000	2.274E-07	-11.5863	1.7801	-1.452E-09	765.9908	5.799E+09	-0.1307	3447460.	0.000
270.000	1.827E-07	-3.2509	1.0731	-9.129E-09	765.9493	5.799E+09	-0.1050	3447460.	0.000
276.000	1.179E-07	1.3080	0.5144	-1.013E-08	765.9397	5.799E+09	-0.0813	4136952.	0.000
282.000	6.112E-08	2.9402	0.1231	-7.936E-09	765.9478	5.799E+09	-0.0492	4826444.	0.000
288.000	2.263E-08	2.7997	-0.0790	-4.966E-09	765.9471	5.799E+09	-0.0182	4826444.	0.000
294.000	1.525E-09	2.0610	-0.1373	-2.482E-09	765.9431	5.799E+09	-0.001227	4826444.	0.000
300.000	-7.158E-09	1.1563	-0.1237	-8.490E-10	765.9389	5.799E+09	0.005758	4826444.	0.000
306.000	-8.663E-09	0.5178	-0.0856	1.717E-11	765.9357	5.799E+09	0.006968	4826444.	0.000
312.000	-6.952E-09	0.1297	-0.0479	3.521E-10	765.9338	5.799E+09	0.005592	4826444.	0.000
318.000	-4.437E-09	-0.0573	-0.0204	3.896E-10	765.9334	5.799E+09	0.003569	4826444.	0.000
324.000	-2.277E-09	-0.1157	-0.004186	3.001E-10	765.9337	5.799E+09	0.001832	4826444.	0.000
330.000	-8.368E-10	-0.1081	0.003327	1.843E-10	765.9337	5.799E+09	0.000672	4826444.	0.000
336.000	-6.593E-11	-0.0761	0.005533	8.895E-11	765.9335	5.799E+09	6.300E-05	5732657.	0.000
342.000	2.314E-10	-0.0419	0.004941	2.790E-11	765.9334	5.799E+09	-0.000260	6750000.	0.000
348.000	2.689E-10	-0.0169	0.003253	-2.495E-12	765.9332	5.799E+09	-0.000303	6750000.	0.000
354.000	2.015E-10	-0.002821	0.001665	-1.270E-11	765.9332	5.799E+09	-0.000227	6750000.	0.000
360.000	1.165E-10	0.003102	0.000592	-1.255E-11	765.9332	5.799E+09	-0.000131	6750000.	0.000
366.000	5.084E-11	0.004303	2.683E-05	-8.722E-12	765.9332	5.799E+09	-5.720E-05	6750000.	0.000
372.000	1.187E-11	0.003440	-0.000185	-4.716E-12	765.9332	5.799E+09	-1.335E-05	6750000.	0.000
378.000	-5.751E-12	0.002094	-0.000205	-1.853E-12	765.9332	5.799E+09	6.470E-06	6750000.	0.000
384.000	-1.037E-11	0.000978	-0.000151	0.000	765.9332	5.799E+09	1.166E-05	6750000.	0.000
390.000	-8.911E-12	0.000282	-8.597E-05	0.000	765.9332	5.799E+09	1.003E-05	6750000.	0.000
396.000	-5.704E-12	-5.392E-05	-3.664E-05	0.000	765.9332	5.799E+09	6.417E-06	6750000.	0.000
402.000	-2.831E-12	-0.000159	-7.838E-06	0.000	765.9332	5.799E+09	3.185E-06	6750000.	0.000
408.000	0.000	-0.000149	4.901E-06	0.000	765.9332	5.799E+09	1.062E-06	6750000.	0.000
414.000	0.000	-0.000100	8.017E-06	0.000	765.9332	5.799E+09	-2.313E-08	6750000.	0.000
420.000	0.000	-5.270E-05	6.726E-06	0.000	765.9332	5.799E+09	-4.070E-07	6750000.	0.000
426.000	0.000	-1.967E-05	4.237E-06	0.000	765.9332	5.799E+09	-4.229E-07	6750000.	0.000
432.000	0.000	-1.850E-06	2.064E-06	0.000	765.9332	5.799E+09	-3.013E-07	6750000.	0.000
438.000	0.000	5.130E-06	6.599E-07	0.000	765.9332	5.799E+09	-1.668E-07	6750000.	0.000
444.000	0.000	6.101E-06	-4.474E-08	0.000	765.9332	5.799E+09	-6.811E-08	6750000.	0.000
450.000	0.000	4.615E-06	-2.852E-07	0.000	765.9332	5.799E+09	-1.205E-08	6750000.	0.000
456.000	0.000	2.690E-06	-2.860E-07	0.000	765.9332	5.799E+09	1.178E-08	6750000.	0.000
462.000	0.000	1.187E-06	-2.002E-07	0.000	765.9332	5.799E+09	1.682E-08	6750000.	0.000
468.000	0.000	2.877E-07	-1.090E-07	0.000	765.9332	5.799E+09	1.357E-08	6750000.	0.000
474.000	0.000	-1.229E-07	-4.334E-08	0.000	765.9332	5.799E+09	8.318E-09	6750000.	0.000
480.000	0.000	-2.338E-07	-6.631E-09	0.000	765.9332	5.799E+09	3.920E-09	6750000.	0.000
486.000	0.000	-2.034E-07	8.595E-09	0.000	765.9332	5.799E+09	1.155E-09	6750000.	0.000
492.000	0.000	-1.312E-07	1.149E-08	0.000	765.9332	5.799E+09	-1.888E-10	6750000.	0.000
498.000	0.000	-6.571E-08	9.080E-09	0.000	765.9332	5.799E+09	-6.163E-10	6750000.	0.000
504.000	0.000	-2.233E-08	5.476E-09	0.000	765.9332	5.799E+09	-5.848E-10	6750000.	0.000
510.000	0.000	3.029E-11	2.529E-09	0.000	765.9332	5.799E+09	-3.975E-10	6750000.	0.000
516.000	0.000	8.077E-09	7.060E-10	0.000	765.9332	5.799E+09	-2.105E-10	6750000.	0.000
522.000	0.000	8.546E-09	-1.636E-10	0.000	765.9332	5.799E+09	-7.955E-11	6750000.	0.000
528.000	0.000	6.142E-09	-4.277E-10	0.000	765.9332	5.799E+09	-8.488E-12	6750000.	0.000
534.000	0.000	3.427E-09	-3.941E-10	0.000	765.9332	5.799E+09	1.968E-11	6750000.	0.000
540.000	0.000	1.417E-09	-2.634E-10	0.000	765.9332	5.799E+09	2.390E-11	6750000.	0.000
546.000	0.000	2.664E-10	-1.370E-10	0.000	765.9332	5.799E+09	1.823E-11	6750000.	0.000
552.000	0.000	-2.283E-10	-5.019E-11	0.000	765.9332	5.799E+09	1.070E-11	6750000.	0.000
558.000	0.000	-3.377E-10	-3.817E-12	0.000	765.9332	5.799E+09	4.760E-12	6750000.	0.000
564.000	0.000	-2.754E-10	1.401E-11	0.000	765.9332	5.799E+09	1.181E-12	6750000.	0.000
570.000	0.000	-1.703E-10	1.613E-11	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
576.000	0.000	-8.221E-11	1.188E-11	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
582.000	0.000	-2.785E-11	6.561E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
588.000	0.000	-3.422E-12	2.475E-12	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
594.000	0.000	1.942E-12	0.000	0.000	765.9332	5.799E+09	0.000	6750000.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	0.000	3375000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0090150 radians
Maximum bending moment	=	706799. inch-lbs
Maximum shear force	=	23685. lbs
Depth of maximum bending moment	=	54.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	14
Number of zero deflection points	=	13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	154000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	32629.	-0.0161	765.9332	5.799E+09	-816.5766	2449.7298	0.000
6.000	0.9034	195954.	28812.	-0.0160	1740.5286	5.799E+09	-455.8153	3027.4180	0.000
12.000	0.8080	375311.	26055.	-0.0157	2632.5789	5.799E+09	-463.0396	3438.5606	0.000
18.000	0.7149	537640.	23261.	-0.0152	3439.9376	5.799E+09	-468.2579	3930.0616	0.000
24.000	0.6251	682598.	20442.	-0.0146	4160.8984	5.799E+09	-471.3553	4523.9605	0.000
30.000	0.5396	809935.	17612.	-0.0138	4794.2175	5.799E+09	-472.2095	5250.2547	0.000
36.000	0.4592	919497.	14567.	-0.0129	5339.1364	5.799E+09	-542.7461	7092.1420	0.000
42.000	0.3844	1008642.	10939.	-0.0119	5782.5047	5.799E+09	-666.4394	10402.	0.000
48.000	0.3159	1072830.	6963.5210	-0.0109	6101.7511	5.799E+09	-658.7501	12512.	0.000
54.000	0.2541	1112277.	3046.9671	-0.009732	6297.9472	5.799E+09	-646.7679	15275.	0.000
60.000	0.1991	1127378.	-783.7279	-0.008573	6373.0509	5.799E+09	-630.1304	18988.	0.000
66.000	0.1512	1118716.	-4499.1710	-0.007411	6329.9693	5.799E+09	-608.3506	24145.	0.000
72.000	0.1102	1087084.	-8066.3781	-0.006270	6172.6432	5.799E+09	-580.7184	31624.	0.000
78.000	0.0759	1033506.	-11447.	-0.005173	5906.1706	5.799E+09	-546.0896	43149.	0.000
84.000	0.0481	959281.	-14592.	-0.004142	5537.0065	5.799E+09	-502.3520	62654.	0.000
90.000	0.0262	866055.	-17433.	-0.003197	5073.3350	5.799E+09	-444.7410	101714.	0.000
96.000	0.009739	755989.	-19686.	-0.002358	4525.9147	5.799E+09	-306.1006	188588.	0.000
102.000	-0.002064	634181.	-20112.	-0.001639	3920.0925	5.799E+09	164.1263	477132.	0.000
108.000	-0.009929	517676.	-18869.	-0.001043	3340.6413	5.799E+09	250.1871	151181.	0.000
114.000	-0.0146	409682.	-17270.	-0.000563	2803.5242	5.799E+09	282.7071	116334.	0.000
120.000	-0.0167	311474.	-15533.	-0.000190	2315.0776	5.799E+09	296.3764	106554.	0.000
126.000	-0.0169	223638.	-13752.	8.666E-05	1878.2158	5.799E+09	297.1555	105730.	0.000
132.000	-0.0156	146285.	-11986.	0.000278	1493.4960	5.799E+09	291.6588	111826.	0.000
138.000	-0.0135	79203.	-10267.	0.000395	1160.3020	5.799E+09	281.2225	124743.	0.000
144.000	-0.0109	22348.	-8624.0829	0.000447	877.0836	5.799E+09	266.5160	146546.	0.000
150.000	-0.008159	-25023.	-7081.0673	0.000446	890.3879	5.799E+09	247.8225	182256.	0.000
156.000	-0.005560	-63449.	-5152.8167	0.000400	1081.5016	5.799E+09	394.9277	426144.	0.000
162.000	-0.003356	-87596.	-2392.9346	0.000322	1201.6021	5.799E+09	525.0330	938572.	0.000
168.000	-0.001696	-92759.	543.6842	0.000229	1227.2793	5.799E+09	453.8399	1605477.	0.000
174.000	-0.000612	-81495.	2986.0665	0.000139	1171.2556	5.799E+09	360.2875	3533979.	0.000
180.000	-3.325E-05	-57182.	4164.8323	6.682E-05	1050.3352	5.799E+09	32.6344	5888777.	0.000
186.000	0.000190	-31640.	3689.5552	2.087E-05	923.2997	5.799E+09	-191.0601	6027571.	0.000
192.000	0.000217	-12946.	2446.7444	-2.198E-06	830.3229	5.799E+09	-223.2101	6166368.	0.000
198.000	0.000164	-2275.4167	1268.8456	-1.007E-05	777.2502	5.799E+09	-169.4228	6205428.	0.000
204.000	9.631E-05	2298.4415	461.7432	-1.006E-05	777.3647	5.799E+09	-99.6113	6205428.	0.000
210.000	4.308E-05	3284.8948	29.2354	-7.173E-06	782.2669	5.799E+09	-44.5579	6205428.	0.000
216.000	1.024E-05	2662.5220	-129.1520	-4.096E-06	779.1755	5.799E+09	-8.2379	4826444.	0.000
222.000	-6.071E-06	1741.8409	-143.4005	-1.818E-06	774.5964	5.799E+09	3.4883	3447460.	0.000
228.000	-1.157E-05	945.0750	-112.9932	-4.274E-07	770.6336	5.799E+09	6.6474	3447460.	0.000
234.000	-1.120E-05	386.7125	-73.7453	2.616E-07	767.8565	5.799E+09	6.4352	3447460.	0.000
240.000	-8.430E-06	59.6484	-39.9089	4.926E-07	766.2298	5.799E+09	4.8436	3447460.	0.000
246.000	-5.289E-06	-93.1046	-16.2609	4.752E-07	766.3962	5.799E+09	3.0391	3447460.	0.000
252.000	-2.727E-06	-138.3601	2.4431	3.565E-07	766.6114	5.799E+09	1.5668	3447460.	0.000
258.000	-1.011E-06	-123.0804	4.0000	2.223E-07	766.5453	5.799E+09	0.5809	3447460.	0.000
264.000	-5.927E-08	-88.7706	5.8449	1.127E-07	766.3747	5.799E+09	0.0341	3447460.	0.000
270.000	3.413E-07	-53.1498	5.3587	3.927E-08	766.1975	5.799E+09	-0.1961	3447460.	0.000
276.000	4.120E-07	-24.5389	3.9181	-9.212E-10	766.0552	5.799E+09	-0.2841	4136952.	0.000
282.000	3.303E-07	-6.1310	2.2688	-1.679E-08	765.9637	5.799E+09	-0.2657	4826444.	0.000
288.000	2.105E-07	2.7179	0.9637	-1.855E-08	765.9467	5.799E+09	-0.1694	4826444.	0.000
294.000	1.076E-07	5.4676	0.1959	-1.432E-08	765.9604	5.799E+09	-0.0866	4826444.	0.000
300.000	3.870E-08	5.0948	-0.1573	-8.855E-09	765.9585	5.799E+09	-0.0311	4826444.	0.000
306.000	1.382E-09	3.5966	-0.2540	-4.358E-09	765.9511	5.799E+09	-0.001112	4826444.	0.000
312.000	-1.360E-08	2.0548	-0.2245	-1.434E-09	765.9434	5.799E+09	0.0109	4826444.	0.000
318.000	-1.583E-08	0.9051	-0.1535	9.687E-11	765.9377	5.799E+09	0.0127	4826444.	0.000
324.000	-1.244E-08	0.2129	-0.0852	6.753E-10	765.9342	5.799E+09	0.0100	4826444.	0.000
330.000	-7.728E-09	-0.1191	-0.0366	7.238E-10	765.9338	5.799E+09	0.006216	4826444.	0.000
336.000	-3.755E-09	-0.2273	-0.007166	5.446E-10	765.9343	5.799E+09	0.003587	5732657.	0.000
342.000	-1.193E-09	-0.2061	0.007621	3.204E-10	765.9342	5.799E+09	0.001342	6750000.	0.000
348.000	8.958E-11	-0.1365	0.0113	1.431E-10	765.9338	5.799E+09	-0.000101	6750000.	0.000
354.000	5.247E-10	-0.0703	0.009271	3.616E-11	765.9335	5.799E+09	-0.000590	6750000.	0.000
360.000	5.235E-10	-0.0253	0.005733	-1.326E-11	765.9333	5.799E+09	-0.000589	6750000.	0.000
366.000	3.655E-10	-0.001444	0.002733	-2.708E-11	765.9332	5.799E+09	-0.000411	6750000.	0.000
372.000	1.986E-10	0.007575	0.000829	-2.391E-11	765.9332	5.799E+09	-0.000223	6750000.	0.000
378.000	7.863E-11	0.008545	-0.000107	-1.557E-11	765.9332	5.799E+09	-8.846E-05	6750000.	0.000
384.000	1.174E-11	0.006322	-0.000412	-7.877E-12	765.9332	5.799E+09	-1.321E-05	6750000.	0.000
390.000	-1.590E-11	0.003618	-0.000398	-2.734E-12	765.9332	5.799E+09	1.789E-05	6750000.	0.000
396.000	-2.107E-11	0.001555	-0.000273	0.000	765.9332	5.799E+09	2.371E-05	6750000.	0.000
402.000	-1.659E-11	0.000343	-0.000146	0.000	765.9332	5.799E+09	1.867E-05	6750000.	0.000
408.000	-9.985E-12	-0.000197	-5.611E-05	0.000	765.9332	5.799E+09	1.123E-05	6750000.	0.000
414.000	-4.598E-12	-0.000332	-6.898E-06	0.000	765.9332	5.799E+09	5.173E-06	6750000.	0.000
420.000	-1.272E-12	-0.000281	1.291E-05	0.000	765.9332	5.799E+09	1.432E-06	6750000.	0.000
426.000	0.000	-0.000178	1.617E-05	0.000	765.9332	5.799E+09	-3.475E-07	6750000.	0.000
432.000	0.000	-8.723E-05	1.247E-05	0.000	765.9332	5.799E+09	-8.840E-07	6750000.	0.000
438.000	0.000	-2.830E-05	7.387E-06	0.000	765.9332	5.799E+09	-8.112E-07	6750000.	0.000
444.000	0.000	1.456E-06	3.330E-06	0.000	765.9332	5.799E+09	-5.408E-07	6750000.	0.000
450.000	0.000	1.174E-05	8.663E-07	0.000	765.9332	5.799E+09	-2.806E-07	6750000.	0.000
456.000	0.000	1.191E-05	-2.824E-07	0.000	765.9332	5.799E+09	-1.023E-07	6750000.	0.000
462.000	0.000	8.388E-06	-6.114E-07	0.000	765.9332	5.799E+09	-7.307E-09	6750000.	0.000
468.000	0.000	4.594E-06	-5.459E-07	0.000	765.9332	5.799E+09	2.914E-08	6750000.	0.000
474.000	0.000	1.843E-06	-3.580E-07	0.000	765.9332	5.799E+09	3.350E-08	6750000.	0.000
480.000	0.000	2.974E-07	-1.825E-07	0.000	765.9332	5.799E+09	2.499E-08	6750000.	0.000
486.000	0.000	-3.492E-07	-6.433E-08	0.000	765.9332	5.799E+09	1.440E-08	6750000.	0.000
492.000	0.000	-4.771E-07	-2.383E-09	0.000	765.9332	5.799E+09	6.249E-09	6750000.	0.000
498.000	0.000	-3.796E-07	2.066E-08	0.000	765.9332	5.799E+09	1.431E-09	6750000.	0.000
504.000	0.000	-2.302E-07	2.274E-08	0.000	765.9332	5.799E+09	-7.361E-10	6750000.	0.000
510.000	0.000	-1.071E-07	1.665E-08	0.000	765.9332	5.799E+09	-1.295E-09	6750000.	0.000

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516.000	0.000	-3.046E-08	9.440E-09	0.000	765.9332	5.799E+09	-1.107E-09	6750000.	0.000
522.000	0.000	6.310E-09	4.001E-09	0.000	765.9332	5.799E+09	-7.059E-10	6750000.	0.000
528.000	0.000	1.766E-08	8.370E-10	0.000	765.9332	5.799E+09	-3.489E-10	6750000.	0.000
534.000	0.000	1.644E-08	-5.553E-10	0.000	765.9332	5.799E+09	-1.152E-10	6750000.	0.000
540.000	0.000	1.105E-08	-8.899E-10	0.000	765.9332	5.799E+09	3.681E-12	6750000.	0.000
546.000	0.000	5.779E-09	-7.426E-10	0.000	765.9332	5.799E+09	4.542E-11	6750000.	0.000
552.000	0.000	2.141E-09	-4.659E-10	0.000	765.9332	5.799E+09	4.679E-11	6750000.	0.000
558.000	0.000	1.862E-10	-2.259E-10	0.000	765.9332	5.799E+09	3.321E-11	6750000.	0.000
564.000	0.000	-5.736E-10	-7.129E-11	0.000	765.9332	5.799E+09	1.833E-11	6750000.	0.000
570.000	0.000	-6.729E-10	6.059E-12	0.000	765.9332	5.799E+09	7.455E-12	6750000.	0.000
576.000	0.000	-5.032E-10	3.226E-11	0.000	765.9332	5.799E+09	1.279E-12	6750000.	0.000
582.000	0.000	-2.870E-10	3.195E-11	0.000	765.9332	5.799E+09	-1.382E-12	6750000.	0.000
588.000	0.000	-1.203E-10	2.169E-11	0.000	765.9332	5.799E+09	-2.038E-12	6750000.	0.000
594.000	0.000	-2.676E-11	1.001E-11	0.000	765.9332	5.799E+09	-1.854E-12	6750000.	0.000
600.000	0.000	0.000	0.000	0.000	765.9332	5.799E+09	-1.484E-12	3375000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0161043 radians
Maximum bending moment           =       1127378. inch-lbs
Maximum shear force              =         32629. lbs
Depth of maximum bending moment  =     60.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             24
Number of zero deflection points =             12
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

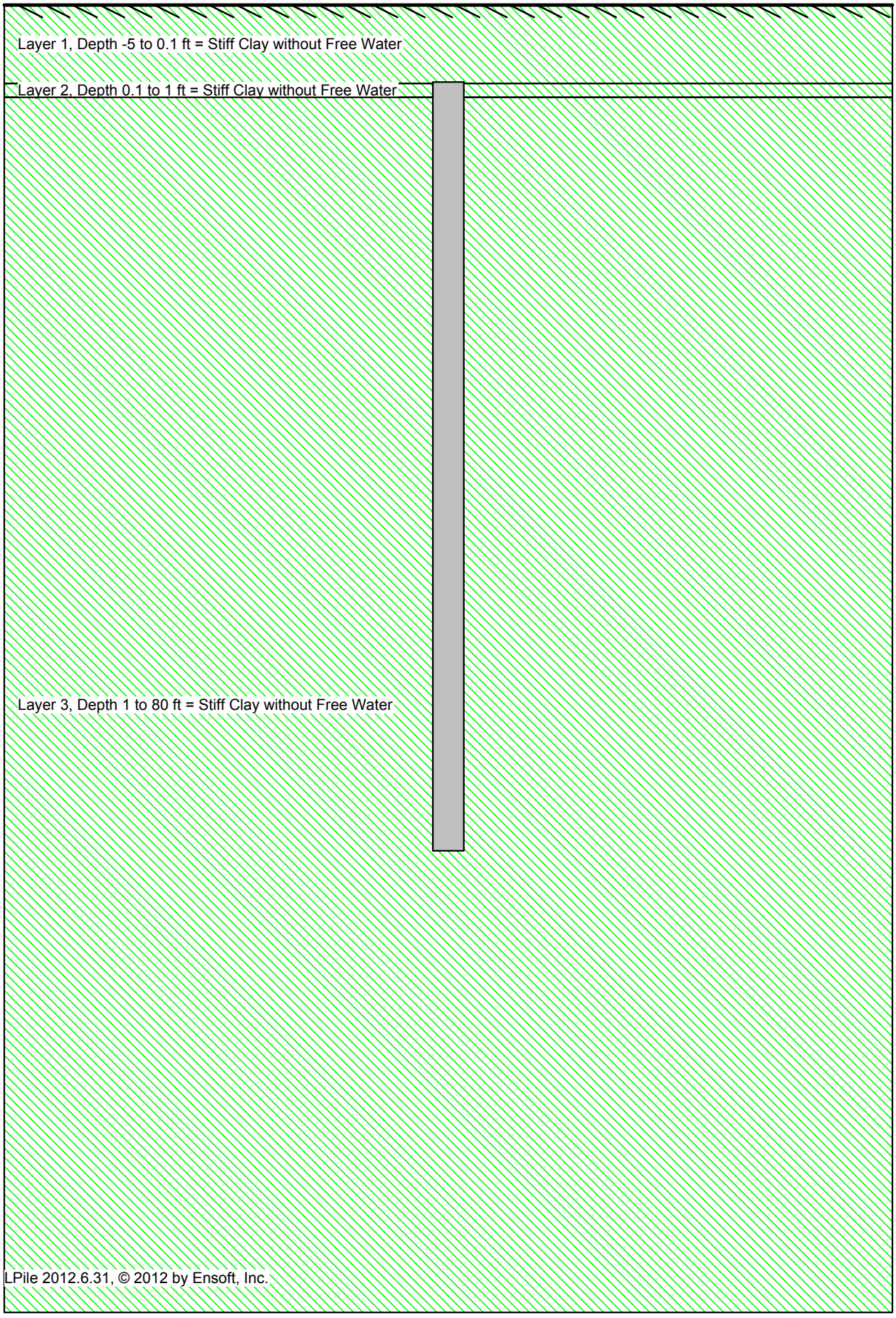
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)		Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M =	0.000	154000.	0.25000000	444819.	17233.	-0.00505059
2	4	y = 0.5000	M =	0.000	154000.	0.50000000	706799.	23685.	-0.00901504
3	4	y = 1.0000	M =	0.000	154000.	1.00000000	1127378.	32629.	-0.01610427

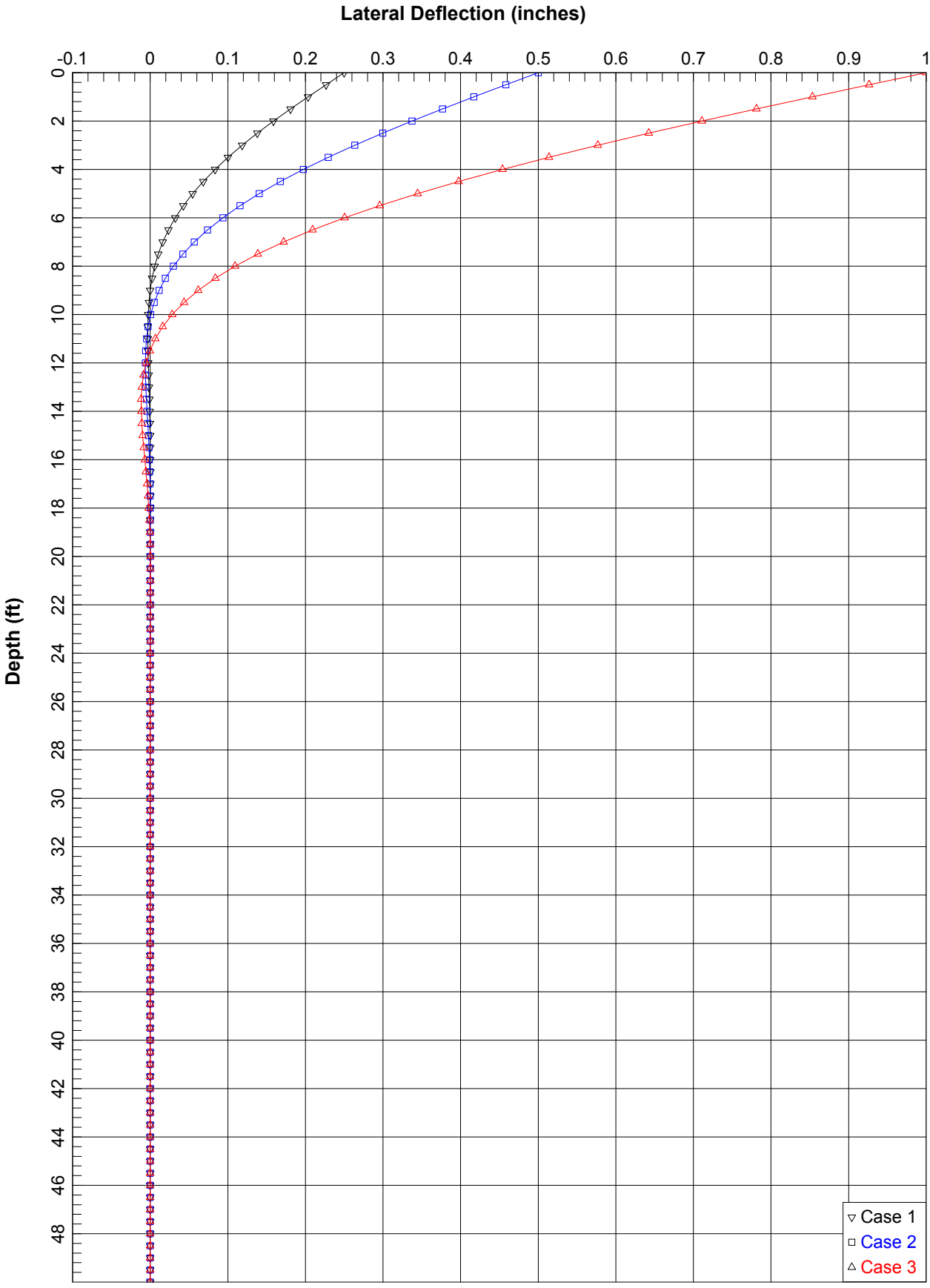
The analysis ended normally.

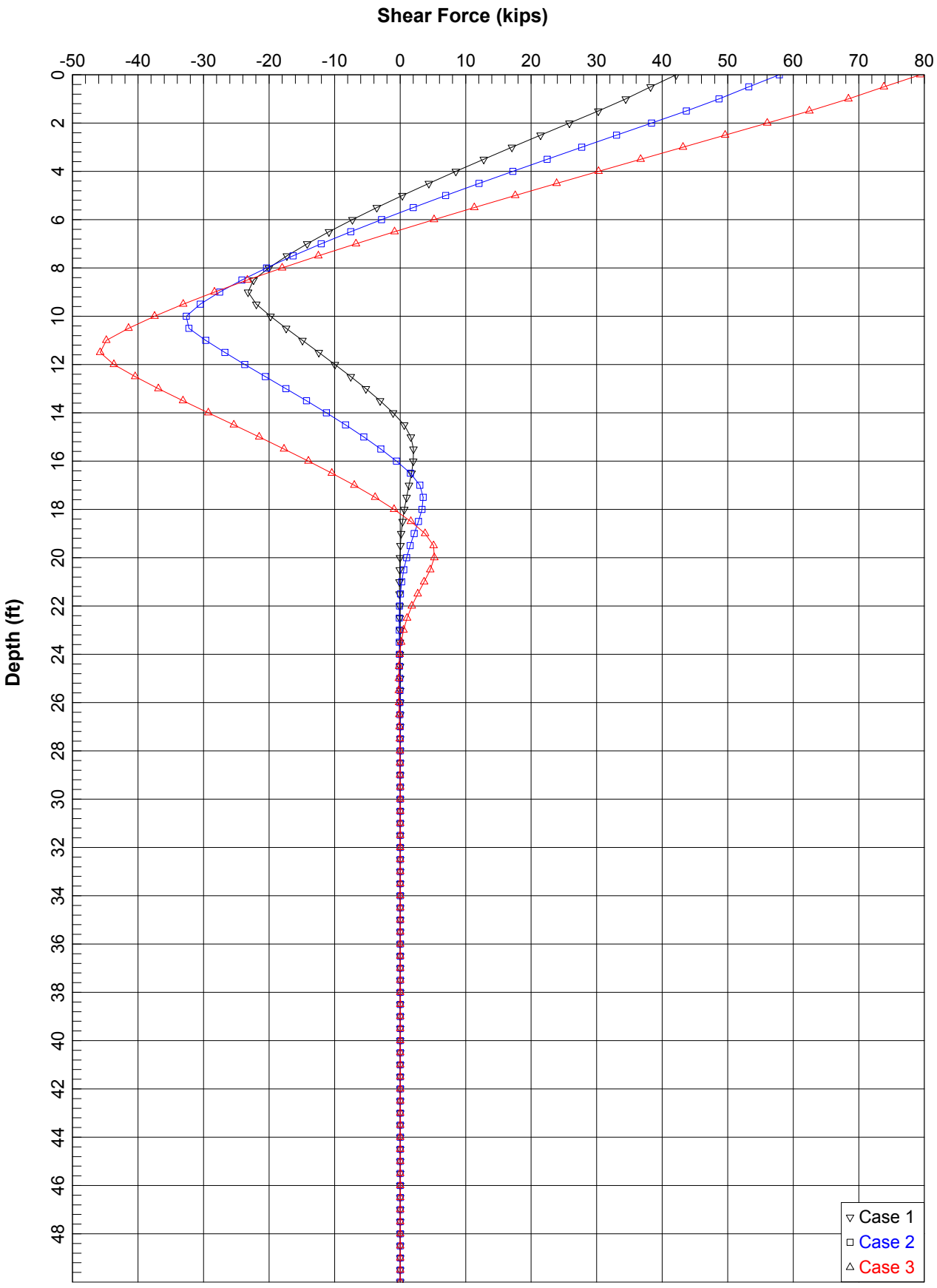
SUPPORT: **BENT 2R**

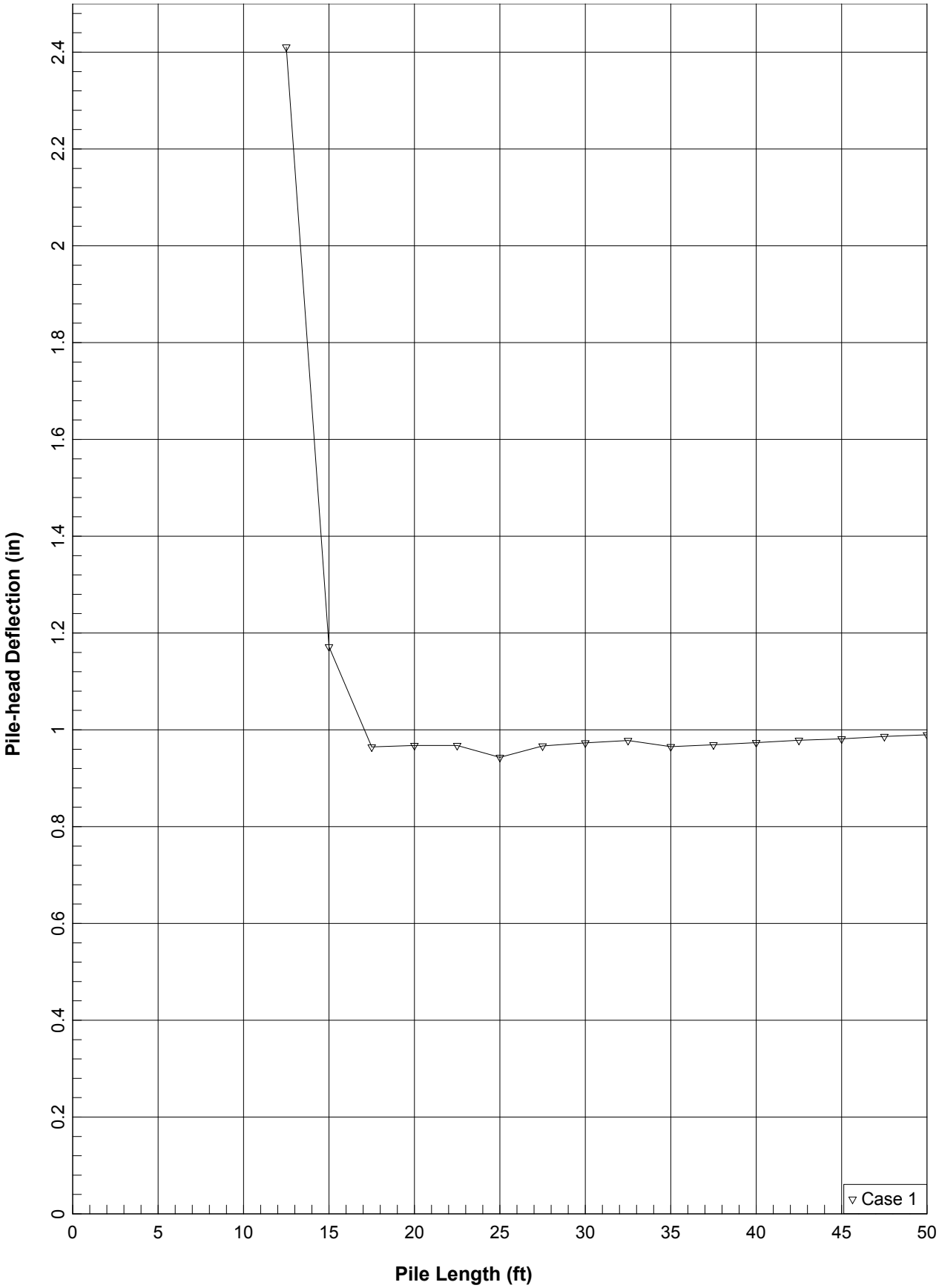
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 1 ft = Stiff Clay without Free Water
Layer 3, Depth 1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2R_long_crit length.lp6d
Name of output report file: Bent 2R_long_crit length.lp6o
Name of plot output file: Bent 2R_long_crit length.lp6p
Name of runtime messeage file: Bent 2R_long_crit length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:14:23

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Test qu psi	RQD % or Subgrade Mod. pci	GSI	Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	125.000	4500.000	--	--	--	--	0.00700
		--	--	--	--	0.10000	125.000	4500.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	3750.000	--	--	--	--	0.00700
		--	--	--	--	1.000	125.000	3750.000	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	--	1.000	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--	--	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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
1	1	V = 79000. lbs	M = 0.0000 in-lbs	185000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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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 = 79000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9895	7.242E-07	79000.	-0.0122	408.9398	2.936E+10	-978.7525	2967.3697	0.000
6.000	0.9165	469893.	73447.	-0.0121	1101.4008	2.936E+10	-872.1213	5709.5602	0.000
12.000	0.8440	908283.	68056.	-0.0120	1747.4373	2.936E+10	-924.9561	6575.2710	0.000
18.000	0.7727	1313169.	62097.	-0.0118	2344.0997	2.936E+10	-1061.5671	8243.1354	0.000
24.000	0.7030	1679540.	55709.	-0.0114	2884.0051	2.936E+10	-1067.6930	9113.0886	0.000
30.000	0.6353	2007093.	49292.	-0.0111	3366.7061	2.936E+10	-1071.1731	10117.	0.000
36.000	0.5701	2295629.	42863.	-0.0106	3791.9086	2.936E+10	-1071.9128	11282.	0.000
42.000	0.5077	2545055.	36438.	-0.0101	4159.4769	2.936E+10	-1069.8115	12643.	0.000
48.000	0.4484	2755390.	30034.	-0.009597	4469.4390	2.936E+10	-1064.7619	14247.	0.000
54.000	0.3925	2926769.	23670.	-0.009016	4721.9925	2.936E+10	-1056.6470	16151.	0.000
60.000	0.3402	3059444.	17364.	-0.008405	4917.5106	2.936E+10	-1045.3378	18435.	0.000
66.000	0.2917	3153793.	11136.	-0.007770	5056.5490	2.936E+10	-1030.6890	21202.	0.000
72.000	0.2470	3210322.	5006.1186	-0.007119	5139.8532	2.936E+10	-1012.5334	24597.	0.000
78.000	0.2062	3229672.	-1003.4998	-0.006461	5168.3675	2.936E+10	-990.6728	28821.	0.000
84.000	0.1695	3212624.	-6870.1130	-0.005803	5143.2451	2.936E+10	-964.8650	34164.	0.000
90.000	0.1366	3160112.	-12569.	-0.005152	5065.8611	2.936E+10	-934.8022	41058.	0.000
96.000	0.1076	3073231.	-18074.	-0.004514	4937.8276	2.936E+10	-900.0749	50174.	0.000
102.000	0.0824	2953258.	-23354.	-0.003899	4761.0163	2.936E+10	-860.1071	62605.	0.000
108.000	0.0609	2801634.	-28377.	-0.003310	4537.5875	2.936E+10	-814.0320	80265.	0.000
114.000	0.0427	2620978.	-33100.	-0.002756	4270.0362	2.936E+10	-760.4285	106837.	0.000
120.000	0.0278	2410552.	-37471.	-0.002242	3961.2670	2.936E+10	-696.6771	150502.	0.000
126.000	0.0158	2175399.	-41412.	-0.001774	3614.7320	2.936E+10	-617.0098	234331.	0.000
132.000	0.006490	1917540.	-44774.	-0.001355	3234.7363	2.936E+10	-503.5830	465532.	0.000
138.000	-0.000466	1641117.	-45506.	-0.000992	2827.3836	2.936E+10	259.7840	3344901.	0.000
144.000	-0.005410	1373674.	-43228.	-0.000684	2433.2642	2.936E+10	499.4318	553916.	0.000
150.000	-0.008669	1123899.	-40013.	-0.000428	2065.1812	2.936E+10	572.2407	396057.	0.000
156.000	-0.0106	894469.	-36461.	-0.000222	1727.0808	2.936E+10	611.8649	347979.	0.000
162.000	-0.0113	686864.	-32723.	-6.048E-05	1421.1417	2.936E+10	633.9528	335801.	0.000
168.000	-0.0113	501925.	-28889.	6.101E-05	1148.6053	2.936E+10	644.1444	342759.	0.000
174.000	-0.0106	340062.	-25021.	0.000147	910.0739	2.936E+10	645.1367	365106.	0.000
180.000	-0.009511	201346.	-21170.	0.000202	705.6544	2.936E+10	638.4082	402737.	0.000
186.000	-0.008173	85567.	-17381.	0.000232	535.0363	2.936E+10	624.8228	458683.	0.000
192.000	-0.006731	-7737.5061	-13692.	0.000240	420.3422	2.936E+10	604.8838	539230.	0.000
198.000	-0.005297	-79264.	-10140.	0.000231	525.7485	2.936E+10	578.8459	655631.	0.000
204.000	-0.003961	-129935.	-6763.6464	0.000209	600.4195	2.936E+10	546.7505	928144.	0.000
210.000	-0.002785	-160893.	-3614.9504	0.000180	646.0410	2.936E+10	502.8148	1083424.	0.000
216.000	-0.001805	-173713.	-752.9850	0.000145	664.9336	2.936E+10	451.1737	1499569.	0.000
222.000	-0.001039	-170252.	1779.3974	0.000110	659.8326	2.936E+10	392.9538	2269504.	0.000
228.000	-0.000481	-152605.	3930.7970	7.733E-05	633.8279	2.936E+10	324.1794	4041152.	0.000
234.000	-0.000111	-123254.	5127.9284	4.914E-05	590.5739	2.936E+10	74.8644	4050000.	0.000
240.000	0.000108	-91179.	5133.1223	2.722E-05	543.3070	2.936E+10	-73.1330	4050000.	0.000
246.000	0.000216	-61717.	4476.7619	1.160E-05	499.8894	2.936E+10	-145.6537	4050000.	0.000
252.000	0.000248	-37484.	3538.5421	1.461E-06	464.1784	2.936E+10	-167.0862	4050000.	0.000
258.000	0.000233	-19258.	2564.8132	-4.337E-06	437.3190	2.936E+10	-157.4901	4050000.	0.000
264.000	0.000195	-6696.6418	1696.4847	-6.990E-06	418.8083	2.936E+10	-131.9528	4050000.	0.000
270.000	0.000149	1115.6349	998.0101	-7.560E-06	410.5838	2.936E+10	-100.8721	4050000.	0.000
276.000	0.000105	5296.2635	483.2492	-6.905E-06	416.7447	2.936E+10	-70.7149	4050000.	0.000
282.000	6.658E-05	6929.9538	136.2788	-5.656E-06	419.1522	2.936E+10	-44.9419	4050000.	0.000
288.000	3.690E-05	6944.1641	-73.2629	-4.238E-06	419.1731	2.936E+10	-24.9054	4050000.	0.000
294.000	1.573E-05	6060.2061	-179.8302	-2.909E-06	417.8704	2.936E+10	-10.6171	4050000.	0.000
300.000	1.993E-06	4792.6584	-215.7175	-1.800E-06	416.0025	2.936E+10	-1.3453	4050000.	0.000
306.000	-5.865E-06	3475.5912	-207.8761	-9.546E-07	414.0616	2.936E+10	3.9591	4050000.	0.000

312.000	-9.462E-06	2300.2641	-176.8391	-3.643E-07	412.3296	2.936E+10	6.3866	4050000.	0.000
318.000	-1.024E-05	1354.3312	-136.9498	9.193E-09	410.9356	2.936E+10	6.9099	4050000.	0.000
324.000	-9.351E-06	656.8465	-97.2839	2.147E-07	409.9078	2.936E+10	6.3121	4050000.	0.000
330.000	-7.660E-06	186.4483	-62.8358	3.009E-07	409.2145	2.936E+10	5.1706	4050000.	0.000
336.000	-5.740E-06	-97.8510	-35.6998	3.180E-07	409.0840	2.936E+10	3.8748	4050000.	0.000
342.000	-3.941E-06	-242.6370	-16.0958	2.752E-07	409.2973	2.936E+10	2.6599	4050000.	0.000
348.000	-2.438E-06	-291.6112	-3.1783	2.206E-07	409.3695	2.936E+10	1.6459	4050000.	0.000
354.000	-1.294E-06	-281.2663	4.3794	1.629E-07	409.3543	2.936E+10	0.8733	4050000.	0.000
360.000	-4.941E-07	-239.4183	8.0000	1.088E-07	409.2926	2.936E+10	0.3335	4050000.	0.000
366.000	1.192E-08	-185.5085	8.9764	6.538E-08	409.2132	2.936E+10	-0.008047	4050000.	0.000
372.000	2.905E-07	-131.8463	8.3641	3.295E-08	409.1341	2.936E+10	-0.1961	4050000.	0.000
378.000	4.074E-07	-85.2128	6.9510	1.077E-08	409.0654	2.936E+10	-0.2750	4050000.	0.000
384.000	4.197E-07	-48.4586	5.2761	-2.891E-09	409.0112	2.936E+10	-0.2833	4050000.	0.000
390.000	3.727E-07	-21.8927	3.6716	-1.008E-08	408.9720	2.936E+10	-0.2515	4050000.	0.000
396.000	2.988E-07	-4.3774	2.3119	-1.276E-08	408.9462	2.936E+10	-0.2017	4050000.	0.000
402.000	2.195E-07	5.8791	1.2625	-1.261E-08	408.9484	2.936E+10	-0.1482	4050000.	0.000
408.000	1.474E-07	10.8007	0.5195	-1.091E-08	408.9557	2.936E+10	-0.0995	4050000.	0.000
414.000	8.860E-08	12.1376	0.0416	-8.563E-09	408.9577	2.936E+10	-0.0598	4050000.	0.000
420.000	4.467E-08	11.3188	-0.2283	-6.166E-09	408.9565	2.936E+10	-0.0302	4050000.	0.000
426.000	1.462E-08	9.4119	-0.3483	-4.047E-09	408.9537	2.936E+10	-0.009865	4050000.	0.000
432.000	-3.895E-09	7.1478	-0.3700	-2.355E-09	408.9503	2.936E+10	0.002629	4050000.	0.000
438.000	-1.364E-08	4.9766	-0.3345	-1.116E-09	408.9471	2.936E+10	0.009207	4050000.	0.000
444.000	-1.728E-08	3.1358	-0.2719	-2.865E-10	408.9444	2.936E+10	0.0117	4050000.	0.000
450.000	-1.708E-08	1.7143	-0.2023	2.092E-10	408.9423	2.936E+10	0.0115	4050000.	0.000
456.000	-1.477E-08	0.7073	-0.1378	4.566E-10	408.9408	2.936E+10	0.009971	4050000.	0.000
462.000	-1.160E-08	0.0591	-0.0844	5.350E-10	408.9399	2.936E+10	0.007829	4050000.	0.000
468.000	-8.352E-09	-0.3072	-0.0440	5.096E-10	408.9402	2.936E+10	0.005638	4050000.	0.000
474.000	-5.483E-09	-0.4705	-0.0160	4.301E-10	408.9405	2.936E+10	0.003701	4050000.	0.000
480.000	-3.191E-09	-0.5005	0.001539	3.309E-10	408.9405	2.936E+10	0.002154	4050000.	0.000
486.000	-1.512E-09	-0.4528	0.0111	2.335E-10	408.9405	2.936E+10	0.001021	4050000.	0.000
492.000	-3.891E-10	-0.3682	0.0149	1.496E-10	408.9403	2.936E+10	0.000263	4050000.	0.000
498.000	2.826E-10	-0.2741	0.0151	8.393E-11	408.9402	2.936E+10	-0.000191	4050000.	0.000
504.000	6.180E-10	-0.1869	0.0133	3.682E-11	408.9401	2.936E+10	-0.000417	4050000.	0.000
510.000	7.244E-10	-0.1146	0.0106	6.014E-12	408.9400	2.936E+10	-0.000489	4050000.	0.000
516.000	6.902E-10	-0.0598	0.007723	-1.181E-11	408.9399	2.936E+10	-0.000466	4050000.	0.000
522.000	5.827E-10	-0.0219	0.005145	-2.016E-11	408.9398	2.936E+10	-0.000393	4050000.	0.000
528.000	4.483E-10	0.001961	0.003057	-2.219E-11	408.9398	2.936E+10	-0.000303	4050000.	0.000
534.000	3.164E-10	0.0149	0.001509	-2.047E-11	408.9398	2.936E+10	-0.000214	4050000.	0.000
540.000	2.027E-10	0.0201	0.000458	-1.689E-11	408.9398	2.936E+10	-0.000137	4050000.	0.000
546.000	1.137E-10	0.0204	-0.000183	-1.275E-11	408.9398	2.936E+10	-7.676E-05	4050000.	0.000
552.000	4.975E-11	0.0179	-0.000514	-8.829E-12	408.9398	2.936E+10	-3.358E-05	4050000.	0.000
558.000	7.774E-12	0.0143	-0.000631	-5.538E-12	408.9398	2.936E+10	-5.247E-06	4050000.	0.000
564.000	-1.671E-11	0.0104	-0.000613	-3.019E-12	408.9398	2.936E+10	1.128E-05	4050000.	0.000
570.000	-2.846E-11	0.006916	-0.000521	-1.251E-12	408.9398	2.936E+10	1.921E-05	4050000.	0.000
576.000	-3.173E-11	0.004135	-0.000390	0.000	408.9398	2.936E+10	2.142E-05	4050000.	0.000
582.000	-2.992E-11	0.002124	-0.000274	0.000	408.9398	2.936E+10	2.020E-05	4050000.	0.000
588.000	-2.552E-11	0.000840	-0.000162	0.000	408.9398	2.936E+10	1.722E-05	4050000.	0.000
594.000	-2.008E-11	0.000176	-6.986E-05	0.000	408.9398	2.936E+10	1.355E-05	4050000.	0.000
600.000	-1.442E-11	0.000	0.000	0.000	408.9398	2.936E+10	9.735E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9895153 inches
Computed slope at pile head = -0.0121717 radians
Maximum bending moment = 3229672. inch-lbs
Maximum shear force = 79000. lbs
Depth of maximum bending moment = 78.00000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 32
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 79000. lbs
Moment = 0. in-lbs
Axial Load = 185000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9895153	3229672.	79000.
47.500	0.9864290	3230432.	79000.
45.000	0.9815414	3222995.	79000.
42.500	0.9785756	3216445.	79000.
40.000	0.9734594	3210885.	79000.
37.500	0.9690324	3203641.	79000.
35.000	0.9649885	3194636.	79000.
32.500	0.9781520	3223480.	79000.
30.000	0.9728097	3212190.	79000.
27.500	0.9665418	3202832.	79000.
25.000	0.9430606	3179853.	79000.
22.500	0.9674293	3207934.	79000.
20.000	0.9676591	3205556.	79000.
17.500	0.9647889	3200180.	79000.
15.000	1.1714281	3051680.	79000.
12.500	2.4109444	2670199.	79000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 79000.	M = 0.000	185000.	0.98951526	3229672.	79000.	-0.01217166

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2R_long_ave P.lp6d
Name of output report file: Bent 2R_long_ave P.lp6o
Name of plot output file: Bent 2R_long_ave P.lp6p
Name of runtime messeage file: Bent 2R_long_ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:12:07

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Test qu psi	RQD % or Subgrade Mod. pci	GSI	Strain Epsilon 50 Factor
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	125.000	4500.000	--	--	--	--	0.00700
		--	--	--	--	0.10000	125.000	4500.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	3750.000	--	--	--	--	0.00700
		--	--	--	--	1.000	125.000	3750.000	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	--	1.000	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--	--	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	185000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	185000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	185000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	42130.	-0.003917	408.9398	2.936E+10	-693.9046	8326.8553	0.000
6.000	0.2265	244639.	38204.	-0.003892	769.4538	2.936E+10	-614.9060	16289.	0.000
12.000	0.2033	467086.	34415.	-0.003820	1097.2643	2.936E+10	-647.9781	19125.	0.000
18.000	0.1807	666100.	30257.	-0.003704	1390.5423	2.936E+10	-738.1788	24516.	0.000
24.000	0.1588	838388.	25834.	-0.003550	1644.4360	2.936E+10	-736.1369	27806.	0.000
30.000	0.1381	983985.	21431.	-0.003364	1858.9961	2.936E+10	-731.3675	31785.	0.000
36.000	0.1185	1103030.	17066.	-0.003151	2034.4270	2.936E+10	-723.7535	36652.	0.000
42.000	0.1003	1195769.	12755.	-0.002916	2171.0928	2.936E+10	-713.1635	42682.	0.000
48.000	0.0835	1262563.	8517.2183	-0.002664	2269.5243	2.936E+10	-699.4457	50265.	0.000
54.000	0.0683	1303890.	4371.6211	-0.002402	2330.4270	2.936E+10	-682.4200	59967.	0.000
60.000	0.0547	1320355.	338.7698	-0.002134	2354.6902	2.936E+10	-661.8638	72645.	0.000
66.000	0.0427	1312693.	-3559.2886	-0.001865	2343.3990	2.936E+10	-637.4890	89636.	0.000
72.000	0.0323	1281784.	-7298.4577	-0.001600	2297.8491	2.936E+10	-608.9007	113153.	0.000
78.000	0.0235	1228663.	-10852.	-0.001343	2219.5674	2.936E+10	-575.5158	147097.	0.000
84.000	0.0162	1154545.	-14187.	-0.001100	2110.3429	2.936E+10	-536.3907	199039.	0.000
90.000	0.0103	1060855.	-17266.	-0.000873	1972.2760	2.936E+10	-489.7951	285881.	0.000
96.000	0.005691	949292.	-20031.	-0.000668	1807.8700	2.936E+10	-431.9117	455369.	0.000
102.000	0.002266	821964.	-22379.	-0.000487	1620.2330	2.936E+10	-350.8719	928916.	0.000
108.000	-0.000150	681819.	-23204.	-0.000333	1413.7068	2.936E+10	75.9383	3032401.	0.000
114.000	-0.001731	544253.	-21955.	-0.000208	1210.9814	2.936E+10	340.3370	1179886.	0.000
120.000	-0.002644	418815.	-19775.	-0.000109	1026.1294	2.936E+10	386.3197	876772.	0.000
126.000	-0.003043	307190.	-17392.	-3.517E-05	861.6322	2.936E+10	408.1553	804753.	0.000
132.000	-0.003066	210189.	-14917.	1.770E-05	718.6857	2.936E+10	416.8627	815844.	0.000
138.000	-0.002831	128147.	-12417.	5.228E-05	597.7842	2.936E+10	416.3856	882592.	0.000
144.000	-0.002438	61066.	-9942.3147	7.162E-05	498.9297	2.936E+10	408.5883	1005381.	0.000
150.000	-0.001971	8680.0250	-7533.1537	7.874E-05	421.7312	2.936E+10	394.4654	1200641.	0.000
156.000	-0.001493	-29507.	-5226.0916	7.661E-05	452.4228	2.936E+10	374.5553	1504747.	0.000
162.000	-0.001052	-54203.	-3055.1753	6.806E-05	488.8166	2.936E+10	349.0834	1991158.	0.000
168.000	-0.000677	-66328.	-1054.1327	5.574E-05	506.6729	2.936E+10	317.9308	2818626.	0.000
174.000	-0.000383	-66976.	611.9971	4.212E-05	507.6402	2.936E+10	237.4458	3719901.	0.000
180.000	-0.000171	-59070.	1648.3586	2.924E-05	495.9882	2.936E+10	108.0080	3782401.	0.000
186.000	-3.212E-05	-47261.	2034.1268	1.837E-05	478.5864	2.936E+10	-20.5814	3844901.	0.000
192.000	4.914E-05	-34701.	1999.8674	9.997E-06	460.9770	2.936E+10	-32.0012	3907401.	0.000
198.000	8.784E-05	-23285.	1729.5044	4.071E-06	443.2537	2.936E+10	-58.1198	3969901.	0.000
204.000	9.799E-05	-13956.	1357.5836	2.648E-07	429.5060	2.936E+10	-65.8537	4032401.	0.000
210.000	9.102E-05	-6994.4766	975.7102	-1.876E-06	419.2472	2.936E+10	-61.4374	4050000.	0.000
216.000	7.547E-05	-2243.2121	638.5670	-2.820E-06	412.2455	2.936E+10	-50.9437	4050000.	0.000
222.000	5.717E-05	674.5889	369.9567	-2.981E-06	409.9339	2.936E+10	-38.5931	4050000.	0.000
228.000	3.971E-05	2202.8856	173.7747	-2.687E-06	412.1861	2.936E+10	-26.8009	4050000.	0.000
234.000	2.494E-05	2765.8495	42.8752	-2.179E-06	413.0157	2.936E+10	-16.8323	4050000.	0.000
240.000	1.356E-05	2722.2248	-35.0809	-1.618E-06	412.9514	2.936E+10	-9.1531	4050000.	0.000
246.000	5.522E-06	2348.4795	-73.7224	-1.100E-06	412.4006	2.936E+10	-3.7274	4050000.	0.000
252.000	3.639E-07	1839.9979	-85.6415	-6.716E-07	411.6513	2.936E+10	-0.2457	4050000.	0.000
258.000	-2.538E-06	1322.2638	-81.2397	-3.485E-07	410.8883	2.936E+10	1.7129	4050000.	0.000
264.000	-3.818E-06	865.8952	-68.3700	-1.249E-07	410.2158	2.936E+10	2.5770	4050000.	0.000
270.000	-4.636E-06	502.1013	-52.4663	1.495E-08	409.6797	2.936E+10	2.7242	4050000.	0.000
276.000	-3.638E-06	236.2664	-36.9259	9.041E-08	409.2880	2.936E+10	2.4559	4050000.	0.000
282.000	-2.951E-06	58.7900	-23.5823	1.206E-07	409.0264	2.936E+10	1.9920	4050000.	0.000
288.000	-2.192E-06	-46.9892	-13.1684	1.218E-07	409.0090	2.936E+10	1.4794	4050000.	0.000

294.000	-1.490E-06	-99.5007	-5.7133	1.068E-07	409.0864	2.936E+10	1.0057	4050000.	0.000
300.000	-9.101E-07	-115.7859	-0.8534	8.479E-08	409.1104	2.936E+10	0.6143	4050000.	0.000
306.000	-4.723E-07	-109.9292	1.9461	6.173E-08	409.1018	2.936E+10	0.3188	4050000.	0.000
312.000	-1.694E-07	-92.5698	3.2456	4.103E-08	409.0762	2.936E+10	0.1143	4050000.	0.000
318.000	2.004E-08	-71.0732	3.5480	2.431E-08	409.0445	2.936E+10	-0.0135	4050000.	0.000
324.000	1.223E-07	-50.0476	3.2597	1.193E-08	409.0135	2.936E+10	-0.0826	4050000.	0.000
330.000	1.632E-07	-31.9829	2.6815	3.547E-09	408.9869	2.936E+10	-0.1102	4050000.	0.000
336.000	1.649E-07	-17.8771	2.0171	-1.548E-09	408.9661	2.936E+10	-0.1113	4050000.	0.000
342.000	1.446E-07	-7.7739	1.3903	-4.169E-09	408.9512	2.936E+10	-0.0976	4050000.	0.000
348.000	1.149E-07	-1.1837	0.8649	-5.085E-09	408.9415	2.936E+10	-0.0775	4050000.	0.000
354.000	8.362E-08	2.6159	0.4630	-4.938E-09	408.9436	2.936E+10	-0.0564	4050000.	0.000
360.000	5.559E-08	4.3829	0.1811	-4.223E-09	408.9462	2.936E+10	-0.0375	4050000.	0.000
366.000	3.294E-08	4.7980	0.001782	-3.285E-09	408.9469	2.936E+10	-0.0222	4050000.	0.000
372.000	1.617E-08	4.4116	-0.0977	-2.344E-09	408.9463	2.936E+10	-0.0109	4050000.	0.000
378.000	4.816E-09	3.6311	-0.1402	-1.522E-09	408.9451	2.936E+10	-0.003251	4050000.	0.000
384.000	-2.089E-09	2.7328	-0.1457	-8.715E-10	408.9438	2.936E+10	0.001410	4050000.	0.000
390.000	-5.642E-09	1.8847	-0.1300	-3.996E-10	408.9426	2.936E+10	0.003809	4050000.	0.000
396.000	-6.884E-09	1.1732	-0.1047	-8.711E-11	408.9415	2.936E+10	0.004647	4050000.	0.000
402.000	-6.688E-09	0.6287	-0.0772	9.704E-11	408.9407	2.936E+10	0.004514	4050000.	0.000
408.000	-5.729E-09	0.2466	-0.0521	1.865E-10	408.9401	2.936E+10	0.003861	4050000.	0.000
414.000	-4.450E-09	0.003489	-0.0315	2.121E-10	408.9398	2.936E+10	0.003004	4050000.	0.000
420.000	-3.175E-09	-0.1315	-0.0160	1.990E-10	408.9400	2.936E+10	0.002143	4050000.	0.000
426.000	-2.062E-09	-0.1894	-0.005430	1.662E-10	408.9401	2.936E+10	0.001392	4050000.	0.000
432.000	-1.181E-09	-0.1971	0.001137	1.267E-10	408.9401	2.936E+10	0.000797	4050000.	0.000
438.000	-5.418E-10	-0.1760	0.004626	8.855E-11	408.9400	2.936E+10	0.000366	4050000.	0.000
444.000	-1.184E-10	-0.1418	0.005962	5.608E-11	408.9400	2.936E+10	7.992E-05	4050000.	0.000
450.000	1.311E-10	-0.1046	0.005937	3.090E-11	408.9399	2.936E+10	-8.852E-05	4050000.	0.000
456.000	2.524E-10	-0.0706	0.005160	1.308E-11	408.9399	2.936E+10	-0.000170	4050000.	0.000
462.000	2.871E-10	-0.0427	0.004067	1.420E-12	408.9398	2.936E+10	-0.000194	4050000.	0.000
468.000	2.695E-10	-0.0218	0.002940	-5.171E-12	408.9398	2.936E+10	-0.000182	4050000.	0.000
474.000	2.251E-10	-0.007410	0.001939	-8.154E-12	408.9398	2.936E+10	-0.000152	4050000.	0.000
480.000	1.716E-10	0.001498	0.001136	-8.759E-12	408.9398	2.936E+10	-0.000116	4050000.	0.000
486.000	1.200E-10	0.006236	0.000545	-7.968E-12	408.9398	2.936E+10	-8.098E-05	4050000.	0.000
492.000	7.599E-11	0.008058	0.000148	-6.507E-12	408.9398	2.936E+10	-5.129E-05	4050000.	0.000
498.000	4.188E-11	0.008031	-9.036E-05	-4.863E-12	408.9398	2.936E+10	-2.827E-05	4050000.	0.000
504.000	1.763E-11	0.006984	-0.000211	-3.329E-12	408.9398	2.936E+10	-1.190E-05	4050000.	0.000
510.000	1.938E-12	0.005508	-0.000250	-2.052E-12	408.9398	2.936E+10	-1.308E-06	4050000.	0.000
516.000	-6.998E-12	0.003983	-0.000240	-1.082E-12	408.9398	2.936E+10	4.723E-06	4050000.	0.000
522.000	-1.105E-11	0.002627	-0.000204	0.000	408.9398	2.936E+10	7.458E-06	4050000.	0.000
528.000	-1.188E-11	0.001539	-0.000157	0.000	408.9398	2.936E+10	8.018E-06	4050000.	0.000
534.000	-1.082E-11	0.000740	-0.000111	0.000	408.9398	2.936E+10	7.304E-06	4050000.	0.000
540.000	-8.855E-12	0.000203	-7.147E-05	0.000	408.9398	2.936E+10	5.977E-06	4050000.	0.000
546.000	-6.640E-12	-0.000119	-4.009E-05	0.000	408.9398	2.936E+10	4.482E-06	4050000.	0.000
552.000	-4.571E-12	-0.000279	-1.739E-05	0.000	408.9398	2.936E+10	3.085E-06	4050000.	0.000
558.000	-2.844E-12	-0.000328	-2.372E-06	0.000	408.9398	2.936E+10	1.919E-06	4050000.	0.000
564.000	-1.518E-12	-0.000308	6.461E-06	0.000	408.9398	2.936E+10	1.025E-06	4050000.	0.000
570.000	0.000	-0.000251	1.069E-05	0.000	408.9398	2.936E+10	3.850E-07	4050000.	0.000
576.000	0.000	-0.000180	1.170E-05	0.000	408.9398	2.936E+10	-4.723E-08	4050000.	0.000
582.000	0.000	-0.000111	1.057E-05	0.000	408.9398	2.936E+10	-3.306E-07	4050000.	0.000
588.000	0.000	-5.309E-05	8.010E-06	0.000	408.9398	2.936E+10	-5.225E-07	4050000.	0.000
594.000	0.000	-1.448E-05	4.431E-06	0.000	408.9398	2.936E+10	-6.705E-07	4050000.	0.000
600.000	1.195E-12	0.000	0.000	0.000	408.9398	2.936E+10	-8.065E-07	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.003917 radians
Maximum bending moment = 1320355. inch-lbs
Maximum shear force = 42130. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	57870.	-0.006942	408.9398	2.936E+10	-825.1963	4951.1778	0.000
6.000	0.4583	340072.	53194.	-0.006907	910.0898	2.936E+10	-733.4021	9600.5900	0.000
12.000	0.4171	653664.	48667.	-0.006806	1372.2164	2.936E+10	-775.5199	11156.	0.000
18.000	0.3767	939189.	43680.	-0.006643	1792.9826	2.936E+10	-887.0282	14129.	0.000
24.000	0.3374	1192568.	38353.	-0.006425	2166.3765	2.936E+10	-888.6853	15804.	0.000
30.000	0.2996	1413804.	33024.	-0.006159	2492.2254	2.936E+10	-887.6538	17778.	0.000
36.000	0.2635	1602524.	27709.	-0.005851	2770.5102	2.936E+10	-883.8275	20126.	0.000
42.000	0.2294	1759182.	22426.	-0.005507	3001.3708	2.936E+10	-877.0906	22943.	0.000
48.000	0.1974	1883866.	17193.	-0.005135	3185.1121	2.936E+10	-867.3145	26361.	0.000
54.000	0.1678	1976899.	12028.	-0.004740	3322.2110	2.936E+10	-854.3537	30557.	0.000
60.000	0.1405	2038727.	6950.9934	-0.004330	3413.3242	2.936E+10	-838.0391	35781.	0.000
66.000	0.1158	2069923.	1982.3731	-0.003910	3459.2964	2.936E+10	-818.1677	42393.	0.000
72.000	0.0936	2071196.	-2855.5923	-0.003487	3461.1714	2.936E+10	-794.4874	50924.	0.000
78.000	0.0740	2043396.	-7539.0658	-0.003066	3420.2050	2.936E+10	-766.6704	62197.	0.000
84.000	0.0568	1987534.	-12042.	-0.002654	3337.8824	2.936E+10	-734.2664	77543.	0.000
90.000	0.0421	1904786.	-16335.	-0.002256	3215.9412	2.936E+10	-696.6154	99260.	0.000
96.000	0.0297	1796529.	-20382.	-0.001878	3056.4066	2.936E+10	-652.6655	131684.	0.000
102.000	0.0196	1664367.	-24142.	-0.001524	2861.6464	2.936E+10	-600.5424	184118.	0.000
108.000	0.0114	1510209.	-27553.	-0.001200	2634.4699	2.936E+10	-536.3186	281189.	0.000
114.000	0.005170	1336401.	-30509.	-0.000909	2378.3359	2.936E+10	-449.0186	521144.	0.000
120.000	0.000534	1146124.	-32642.	-0.000655	2097.9340	2.936E+10	-262.1955	2945169.	0.000
126.000	-0.002696	946149.	-32242.	-0.000442	1803.2390	2.936E+10	395.7306	880785.	0.000
132.000	-0.004765	760205.	-29658.	-0.000267	1529.2218	2.936E+10	465.5872	586214.	0.000
138.000	-0.005903	590850.	-26759.	-0.000129	1279.6506	2.936E+10	500.6559	508909.	0.000
144.000	-0.006315	439385.	-23701.	-2.389E-05	1056.4425	2.936E+10	518.7506	492840.	0.000
150.000	-0.006189	306495.	-20568.	5.234E-05	860.6081	2.936E+10	525.6244	509543.	0.000

156.000	-0.005687	192458.	-17419.	0.000103	692.5564	2.936E+10	523.8916	552687.	0.000
162.000	-0.004949	97237.	-14303.	0.000133	552.2337	2.936E+10	514.9340	624235.	0.000
168.000	-0.004092	20532.	-11259.	0.000145	439.1966	2.936E+10	499.5261	732487.	0.000
174.000	-0.003210	-38195.	-8326.3586	0.000143	465.2262	2.936E+10	478.0830	893669.	0.000
180.000	-0.002374	-79702.	-5539.8515	0.000131	526.3937	2.936E+10	450.7527	1139110.	0.000
186.000	-0.001636	-104964.	-2935.3775	0.000112	563.6213	2.936E+10	417.4053	1530436.	0.000
192.000	-0.001027	-115176.	-550.7686	8.975E-05	578.6697	2.936E+10	377.4643	2204556.	0.000
198.000	-0.000559	-111773.	1569.4181	6.655E-05	573.6546	2.936E+10	329.2646	3531182.	0.000
204.000	-0.000229	-96491.	3018.2963	4.527E-05	551.1341	2.936E+10	153.6948	4032401.	0.000
210.000	-1.024E-05	-75654.	3512.2692	2.768E-05	520.4275	2.936E+10	10.9628	4050000.	0.000
216.000	0.000103	-54405.	3335.7125	1.439E-05	489.1140	2.936E+10	-69.8151	4050000.	0.000
222.000	0.000156	-35657.	2809.5947	5.181E-06	461.4862	2.936E+10	-105.5575	4050000.	0.000
228.000	0.000166	-20701.	2157.5714	-5.783E-07	439.4464	2.936E+10	-111.7836	4050000.	0.000
234.000	0.000149	-9765.0195	1519.6003	-3.692E-06	423.3301	2.936E+10	-100.8735	4050000.	0.000
240.000	0.000121	-2457.9339	971.3399	-4.941E-06	412.5619	2.936E+10	-81.8800	4050000.	0.000
246.000	9.015E-05	1902.0287	543.1441	-4.998E-06	411.7427	2.936E+10	-60.8519	4050000.	0.000
252.000	6.133E-05	4070.8899	236.3932	-4.387E-06	414.9389	2.936E+10	-41.3983	4050000.	0.000
258.000	3.750E-05	4748.4873	36.2546	-3.486E-06	415.9374	2.936E+10	-25.3145	4050000.	0.000
264.000	1.950E-05	4513.6839	-79.1734	-2.539E-06	415.5914	2.936E+10	-13.1615	4050000.	0.000
270.000	7.029E-06	3804.0438	-132.0920	-1.689E-06	414.5466	2.936E+10	-4.7447	4050000.	0.000
276.000	-7.749E-07	2922.7306	-145.5569	-1.002E-06	413.2469	2.936E+10	0.5231	4050000.	0.000
282.000	-4.995E-06	2059.5854	-133.8731	-4.928E-07	411.9749	2.936E+10	3.3715	4050000.	0.000
288.000	-6.689E-06	1317.3475	-110.2134	-1.477E-07	410.8811	2.936E+10	4.5151	4050000.	0.000
294.000	-6.768E-06	737.3528	-82.9638	6.225E-08	410.0264	2.936E+10	4.5681	4050000.	0.000
300.000	-5.942E-06	321.6432	-57.2270	1.705E-07	409.4138	2.936E+10	4.0108	4050000.	0.000
306.000	-4.722E-06	50.2501	-35.6328	2.085E-07	409.0138	2.936E+10	3.1873	4050000.	0.000
312.000	-3.440E-06	-106.4130	-19.1047	2.027E-07	409.0966	2.936E+10	2.3221	4050000.	0.000
318.000	-2.289E-06	-179.4559	-7.5032	1.735E-07	409.2494	2.936E+10	1.5450	4050000.	0.000
324.000	-1.358E-06	-196.8362	-0.1184	1.351E-07	409.2299	2.936E+10	0.9165	4050000.	0.000
330.000	-6.681E-07	-181.1766	3.9841	9.644E-08	409.2068	2.936E+10	0.4510	4050000.	0.000
336.000	-2.905E-07	-149.2413	5.7430	6.267E-08	409.1597	2.936E+10	0.1354	4050000.	0.000
342.000	8.400E-08	-112.3992	5.9790	3.594E-08	409.1054	2.936E+10	-0.0567	4050000.	0.000
348.000	2.307E-07	-77.5728	5.3418	1.652E-08	409.0541	2.936E+10	-0.1557	4050000.	0.000
354.000	2.823E-07	-48.3347	4.3030	3.654E-09	409.0110	2.936E+10	-0.1905	4050000.	0.000
360.000	2.746E-07	-25.9446	3.1755	-3.937E-09	408.9787	2.936E+10	-0.1852	4050000.	0.000
366.000	2.350E-07	-10.2202	2.1436	-7.632E-09	408.9548	2.936E+10	-0.1586	4050000.	0.000
372.000	1.830E-07	-0.2046	1.2972	-8.698E-09	408.9401	2.936E+10	-0.1235	4050000.	0.000
378.000	1.307E-07	5.3651	0.6621	-8.176E-09	408.9347	2.936E+10	-0.0882	4050000.	0.000
384.000	8.492E-08	7.7587	0.2256	-6.829E-09	408.9512	2.936E+10	-0.0573	4050000.	0.000
390.000	4.870E-08	8.0871	-0.0450	-5.210E-09	408.9517	2.936E+10	-0.0329	4050000.	0.000
396.000	2.240E-08	7.2303	-0.1890	-3.644E-09	408.9504	2.936E+10	-0.0151	4050000.	0.000
402.000	4.967E-09	5.8275	-0.2444	-2.310E-09	408.9462	2.936E+10	-0.003353	4050000.	0.000
408.000	-5.320E-09	4.3026	-0.2437	-1.275E-09	408.9461	2.936E+10	0.003591	4050000.	0.000
414.000	-1.033E-08	2.9061	-0.2120	-5.381E-10	408.9441	2.936E+10	0.006973	4050000.	0.000
420.000	-1.178E-08	1.7590	-0.1672	-6.121E-11	408.9412	2.936E+10	0.007949	4050000.	0.000
426.000	-1.106E-08	0.8995	-0.1210	2.106E-10	408.9411	2.936E+10	0.007499	4050000.	0.000
432.000	-9.250E-09	0.3078	-0.0798	3.340E-10	408.9402	2.936E+10	0.006243	4050000.	0.000
438.000	-7.057E-09	-0.0593	-0.0468	3.594E-10	408.9399	2.936E+10	0.004764	4050000.	0.000
444.000	-4.937E-09	-0.2548	-0.0225	3.273E-10	408.9402	2.936E+10	0.003333	4050000.	0.000
450.000	-3.130E-09	-0.3303	-0.006190	2.675E-10	408.9403	2.936E+10	0.002113	4050000.	0.000
456.000	-1.728E-09	-0.3297	0.003647	2.000E-10	408.9403	2.936E+10	0.001166	4050000.	0.000
462.000	-7.296E-10	-0.2870	0.008623	1.370E-10	408.9402	2.936E+10	0.000493	4050000.	0.000
468.000	-8.355E-11	-0.2265	0.0103	8.453E-11	408.9401	2.936E+10	5.640E-05	4050000.	0.000
474.000	2.848E-10	-0.1639	0.009862	4.463E-11	408.9400	2.936E+10	-0.000192	4050000.	0.000
480.000	4.521E-10	-0.1083	0.008370	1.682E-11	408.9399	2.936E+10	-0.000305	4050000.	0.000
486.000	4.866E-10	-0.0635	0.006469	0.000	408.9399	2.936E+10	-0.000328	4050000.	0.000
492.000	4.432E-10	-0.0306	0.004586	-1.036E-11	408.9398	2.936E+10	-0.000299	4050000.	0.000
498.000	3.623E-10	-0.008476	0.002955	-1.435E-11	408.9398	2.936E+10	-0.000245	4050000.	0.000
504.000	2.710E-10	0.004868	0.001672	-1.472E-11	408.9398	2.936E+10	-0.000183	4050000.	0.000
510.000	1.856E-10	0.0116	0.000748	-1.304E-11	408.9398	2.936E+10	-0.000123	4050000.	0.000
516.000	1.145E-10	0.0139	0.000140	-1.043E-11	408.9398	2.936E+10	-7.731E-05	4050000.	0.000
522.000	6.045E-11	0.0133	-0.000214	-7.652E-12	408.9398	2.936E+10	-4.088E-05	4050000.	0.000
528.000	2.271E-11	0.0113	-0.000383	-5.133E-12	408.9398	2.936E+10	-1.533E-05	4050000.	0.000
534.000	-1.152E-12	0.008748	-0.000426	-3.083E-12	408.9398	2.936E+10	7.777E-07	4050000.	0.000
540.000	-1.428E-11	0.006206	-0.000395	-1.554E-12	408.9398	2.936E+10	9.642E-06	4050000.	0.000
546.000	-1.981E-11	0.004010	-0.000326	0.000	408.9398	2.936E+10	1.337E-05	4050000.	0.000
552.000	-2.041E-11	0.002295	-0.000245	0.000	408.9398	2.936E+10	1.378E-05	4050000.	0.000
558.000	-1.820E-11	0.001074	-0.000166	0.000	408.9398	2.936E+10	1.228E-05	4050000.	0.000
564.000	-1.467E-11	0.000296	-9.990E-05	0.000	408.9398	2.936E+10	9.962E-06	4050000.	0.000
570.000	-1.078E-11	-0.000126	-4.838E-05	0.000	408.9398	2.936E+10	7.274E-06	4050000.	0.000
576.000	-7.039E-12	-0.000286	-1.238E-05	0.000	408.9398	2.936E+10	4.751E-06	4050000.	0.000
582.000	-3.651E-12	-0.000275	9.348E-06	0.000	408.9398	2.936E+10	2.465E-06	4050000.	0.000
588.000	0.000	-0.000175	1.796E-05	0.000	408.9398	2.936E+10	4.055E-07	4050000.	0.000
594.000	2.236E-12	-6.022E-05	1.465E-05	0.000	408.9398	2.936E+10	-1.509E-06	4050000.	0.000
600.000	4.998E-12	0.000	0.000	0.000	408.9398	2.936E+10	-3.374E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0069421 radians
Maximum bending moment	=	2071196. inch-lbs
Maximum shear force	=	57870. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	16
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	79386.	-0.0123	408.9398	2.936E+10	981.3293	2943.9879	0.000
6.000	0.9263	472284.	73819.	-0.0122	1104.9249	2.936E+10	-874.4469	5663.9950	0.000
12.000	0.8532	912981.	68413.	-0.0121	1754.3612	2.936E+10	-927.4585	6522.0382	0.000

18.000	0.7812	1320083.	62437.	-0.0119	2354.2891	2.936E+10	-1064.4858	8175.3219	0.000
24.000	0.7109	1688563.	56032.	-0.0116	2897.3029	2.936E+10	-1070.6813	9036.7771	0.000
30.000	0.6426	2018116.	49597.	-0.0112	3382.9507	2.936E+10	-1074.2307	10030.	0.000
36.000	0.5768	2308539.	43149.	-0.0107	3810.9341	2.936E+10	-1075.0389	11183.	0.000
42.000	0.5138	2559737.	36705.	-0.0102	4181.1131	2.936E+10	-1073.0056	12530.	0.000
48.000	0.4539	2771725.	30282.	-0.009691	4493.5116	2.936E+10	-1068.0231	14116.	0.000
54.000	0.3975	2944636.	23898.	-0.009107	4748.3230	2.936E+10	-1059.9745	15999.	0.000
60.000	0.3447	3078720.	17572.	-0.008491	4945.9166	2.936E+10	-1048.7306	18256.	0.000
66.000	0.2956	3174351.	11323.	-0.007852	5086.8439	2.936E+10	-1034.1459	20990.	0.000
72.000	0.2504	3232033.	5172.8200	-0.007197	5171.8468	2.936E+10	-1016.0531	24342.	0.000
78.000	0.2092	3252403.	-858.1007	-0.006535	5201.8658	2.936E+10	-994.2538	28510.	0.000
84.000	0.1720	3236242.	-6746.3794	-0.005872	5178.0506	2.936E+10	-968.5058	33780.	0.000
90.000	0.1388	3184481.	-12467.	-0.005215	5101.7726	2.936E+10	-938.5011	40574.	0.000
96.000	0.1094	3098212.	-17994.	-0.004573	4974.6410	2.936E+10	-903.8305	49551.	0.000
102.000	0.0839	2978701.	-23298.	-0.003952	4798.5237	2.936E+10	-863.9189	61780.	0.000
108.000	0.0620	2827414.	-28343.	-0.003359	4575.5783	2.936E+10	-817.9025	79133.	0.000
114.000	0.0436	2646041.	-33090.	-0.002800	4308.2965	2.936E+10	-764.3675	105201.	0.000
120.000	0.0284	2436550.	-37485.	-0.002280	3999.5791	2.936E+10	-700.7168	147938.	0.000
126.000	0.0162	2201281.	-41451.	-0.001806	3652.8729	2.936E+10	-621.2600	229639.	0.000
132.000	0.000745	1943147.	-44841.	-0.001383	3272.4718	2.936E+10	-508.5626	452434.	0.000
138.000	-0.000360	1666263.	-45764.	-0.001014	2864.4399	2.936E+10	200.7102	3344901.	0.000
144.000	-0.005421	1396227.	-43664.	-0.000701	2466.4990	2.936E+10	499.4469	552765.	0.000
150.000	-0.008770	1143854.	-40444.	-0.000441	2094.5877	2.936E+10	573.6974	392485.	0.000
156.000	-0.0107	911874.	-36881.	-0.000231	1752.7296	2.936E+10	614.0596	343804.	0.000
162.000	-0.0115	701794.	-33129.	-6.627E-05	1443.1435	2.936E+10	636.6569	330891.	0.000
168.000	-0.0115	514474.	-29277.	5.803E-05	1167.0985	2.936E+10	647.2501	337352.	0.000
174.000	-0.0108	350339.	-25390.	0.000146	925.2191	2.936E+10	648.5840	358727.	0.000
180.000	-0.009755	209473.	-21517.	0.000204	717.6311	2.936E+10	642.1614	394980.	0.000
186.000	-0.008405	91677.	-17704.	0.000234	544.0408	2.936E+10	628.8608	448935.	0.000
192.000	-0.006942	-3500.0927	-13990.	0.000243	414.0977	2.936E+10	609.1963	526520.	0.000
198.000	-0.005484	-76746.	-10412.	0.000235	522.3386	2.936E+10	583.4333	638345.	0.000
204.000	-0.004120	-128970.	-7007.1558	0.000214	598.9977	2.936E+10	551.6263	803396.	0.000
210.000	-0.002914	-161307.	-3828.4059	0.000185	646.6510	2.936E+10	507.9569	1045998.	0.000
216.000	-0.001906	-175321.	-934.6433	0.000150	667.3024	2.936E+10	456.6306	1437800.	0.000
222.000	-0.001112	-172856.	1631.9568	0.000115	663.6702	2.936E+10	398.9028	2151647.	0.000
228.000	-0.000531	-155992.	3822.2410	8.092E-05	638.8178	2.936E+10	331.1920	3741068.	0.000
234.000	-0.000141	-127169.	5101.9067	5.199E-05	596.3429	2.936E+10	95.3633	4050000.	0.000
240.000	9.267E-05	-94884.	5200.8563	2.929E-05	548.7663	2.936E+10	-62.5467	4050000.	0.000
246.000	0.000210	-64830.	4586.9760	1.297E-05	504.4762	2.936E+10	-141.9134	4050000.	0.000
252.000	0.000248	-39869.	3658.3901	2.272E-06	467.6932	2.936E+10	-167.6153	4050000.	0.000
258.000	0.000238	-20934.	2674.6015	-3.942E-06	439.7891	2.936E+10	-160.3142	4050000.	0.000
264.000	0.000201	-7765.1727	1786.8533	-5.873E-06	420.3838	2.936E+10	-135.6845	4050000.	0.000
270.000	0.000155	520.6506	1065.6712	-7.615E-06	409.7070	2.936E+10	-104.6269	4050000.	0.000
276.000	0.000110	5039.7882	529.7899	-7.047E-06	416.3667	2.936E+10	-74.0002	4050000.	0.000
282.000	7.044E-05	6893.7737	165.1528	-5.528E-06	419.9088	2.936E+10	-47.5455	4050000.	0.000
288.000	3.970E-05	7034.5585	-57.8753	-4.404E-06	419.9363	2.936E+10	-26.7972	4050000.	0.000
294.000	1.759E-05	6209.0474	-173.8831	-3.051E-06	418.0898	2.936E+10	-11.8721	4050000.	0.000
300.000	3.091E-06	4954.7333	-215.7593	-1.910E-06	416.2414	2.936E+10	-2.0866	4050000.	0.000
306.000	-5.329E-06	3624.1757	-211.2273	-1.030E-06	414.2806	2.936E+10	3.5973	4050000.	0.000
312.000	-9.306E-06	2422.2995	-181.5915	-4.152E-07	412.5094	2.936E+10	6.2813	4050000.	0.000
318.000	-1.031E-05	1445.9997	-141.8674	-1.983E-08	411.0707	2.936E+10	6.9601	4050000.	0.000
324.000	-9.544E-06	719.9349	-101.6614	2.015E-07	410.0007	2.936E+10	6.4419	4050000.	0.000
330.000	-7.893E-06	225.6159	-66.3522	3.009E-07	409.2723	2.936E+10	5.3278	4050000.	0.000
336.000	-5.966E-06	-76.9531	-38.2879	3.133E-07	409.0532	2.936E+10	4.0269	4050000.	0.000
342.000	-4.133E-06	-234.5348	-17.8378	2.815E-07	409.2854	2.936E+10	2.7898	4050000.	0.000
348.000	-2.588E-06	-291.6318	-4.2283	2.277E-07	409.3695	2.936E+10	1.7467	4050000.	0.000
354.000	-1.400E-06	-285.7799	3.8473	1.687E-07	409.3609	2.936E+10	0.9451	4050000.	0.000
360.000	-5.631E-07	-245.8390	7.8228	1.144E-07	409.3021	2.936E+10	0.3801	4050000.	0.000
366.000	-2.742E-08	-192.1802	9.0185	6.964E-08	409.2230	2.936E+10	0.0185	4050000.	0.000
372.000	2.726E-07	-137.7715	8.5221	3.592E-08	409.1428	2.936E+10	-0.1840	4050000.	0.000
378.000	4.036E-07	-89.9750	7.1528	1.264E-08	409.0724	2.936E+10	-0.2724	4050000.	0.000
384.000	4.243E-07	-51.9655	5.4764	-1.863E-09	409.0164	2.936E+10	-0.2864	4050000.	0.000
390.000	3.817E-07	-24.2444	3.8452	-9.650E-09	408.9755	2.936E+10	-0.2573	4050000.	0.000
396.000	3.085E-07	-5.8020	2.4485	-1.272E-08	408.9483	2.936E+10	-0.2082	4050000.	0.000
402.000	2.286E-07	5.1561	1.3610	-1.279E-08	408.9474	2.936E+10	-0.1543	4050000.	0.000
408.000	1.550E-07	10.5589	0.5844	-1.118E-08	408.9553	2.936E+10	-0.1046	4050000.	0.000
414.000	9.169E-08	12.1932	0.0794	-8.436E-09	408.9578	2.936E+10	-0.0637	4050000.	0.000
420.000	4.869E-08	11.5318	-0.2102	-6.434E-09	408.9568	2.936E+10	-0.0329	4050000.	0.000
426.000	1.715E-08	9.6847	-0.3436	-4.266E-09	408.9541	2.936E+10	-0.0116	4050000.	0.000
432.000	2.303E-09	7.4186	-0.4132	-2.513E-09	408.9508	2.936E+10	0.001689	4050000.	0.000
438.000	-1.300E-08	5.2116	-0.3417	-1.227E-09	408.9475	2.936E+10	0.008815	4050000.	0.000
444.000	-1.723E-08	3.3208	-0.2804	-3.559E-10	408.9447	2.936E+10	0.0116	4050000.	0.000
450.000	-1.732E-08	1.8478	-0.2104	1.732E-10	408.9425	2.936E+10	0.0117	4050000.	0.000
456.000	-1.515E-08	0.7952	-0.1447	4.301E-10	408.9410	2.936E+10	0.0102	4050000.	0.000
462.000	-1.200E-08	0.1105	-0.0897	5.359E-10	408.9399	2.936E+10	0.008099	4050000.	0.000
468.000	-8.716E-09	-0.2827	-0.0478	5.183E-10	408.9402	2.936E+10	0.005883	4050000.	0.000
474.000	-5.779E-09	-0.4640	-0.0184	4.420E-10	408.9405	2.936E+10	0.003901	4050000.	0.000
480.000	-3.412E-09	-0.5047	0.000189	3.430E-10	408.9405	2.936E+10	0.002303	4050000.	0.000
486.000	-1.663E-09	-0.4625	0.0105	2.442E-10	408.9405	2.936E+10	0.001123	4050000.	0.000
492.000	-4.819E-10	-0.3797	0.0148	1.581E-10	408.9403	2.936E+10	0.000325	4050000.	0.000
498.000	2.339E-10	-0.2851	0.0153	9.016E-11	408.9402	2.936E+10	-0.000158	4050000.	0.000
504.000	6.000E-10	-0.1961	0.0136	4.098E-11	408.9401	2.936E+10	-0.000405	4050000.	0.000
510.000	7.256E-10	-0.1217	0.0109	8.497E-12	408.9400	2.936E+10	-0.000490	4050000.	0.000
516.000	7.020E-10	-0.0649	0.000848	-1.057E-11	408.9399	2.936E+10	-0.000474	4050000.	0.000
522.000	5.988E-10	-0.0251	0.005414	-1.977E-11	408.9398	2.936E+10	-0.000404	4050000.	0.000
528.000	4.648E-10	0.000130	0.003261	-2.232E-11	408.9398	2.936E+10	-0.000314	4050000.	0.000
534.000	3.309E-10	0.0141	0.001649	-2.087E-11	408.9398	2.936E+10	-0.000223	4050000.	0.000
540.000	2.141E-10	0.0200	0.000545	-1.739E-11	408.9398	2.936E+10	-0.000145	4050000.	0.000
546.000	1.222E-10	0.0207	-0.000136	-1.324E-11	408.9398	2.936E+10	-8.250E-05	4050000.	0.000
552.000	5.546E-11	0.0184	-0.000496	-9.251E-12	408.9398	2.936E+10	-3.743E-05	4050000.	0.000
558.000	1.121E-11	0.0147	-0.000631	-5.870E-12	408.9398	2.936E+10	-7.569E-06	4050000.	0.000
564.000	-1.498E-11	0.0108	-0.000623	-3.261E-12	408.9398	2.936E+10	1.011E-05	4050000.	0.000
570.000	-2.792E-11	0.007249	-0.000537	-1.416E-12	408.9398	2.936E+10	1.884E-05	4050000.	0.000
576.000	-3.197E-11	0.004370	-0.000415	0.000	408.9398	2.936E+10	2.158E-05	4050000.	0.000
582.000	-3.066E-11	0.002267	-0.000288	0.000	408.9398	2.936E+10	2.069E-05	4050000.	0.000
588.000	-2.657E-11	0.000908	-0.000173	0.000	408.9398	2.936E+10	1.793E-05	4050000.	0.000
594.000	-2.136E-11	0.000194	-7.550E-05	0.000	408.9398	2.936E+10	1.442E-05	4050000.	0.000
600.000	-1.592E-11	0.000	0.000	0.000	408.9398	2.936E+10	1.075E-05	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0122797 radians
Maximum bending moment	=	3252403. inch-lbs
Maximum shear force	=	79386. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 19
Number of zero deflection points = 7

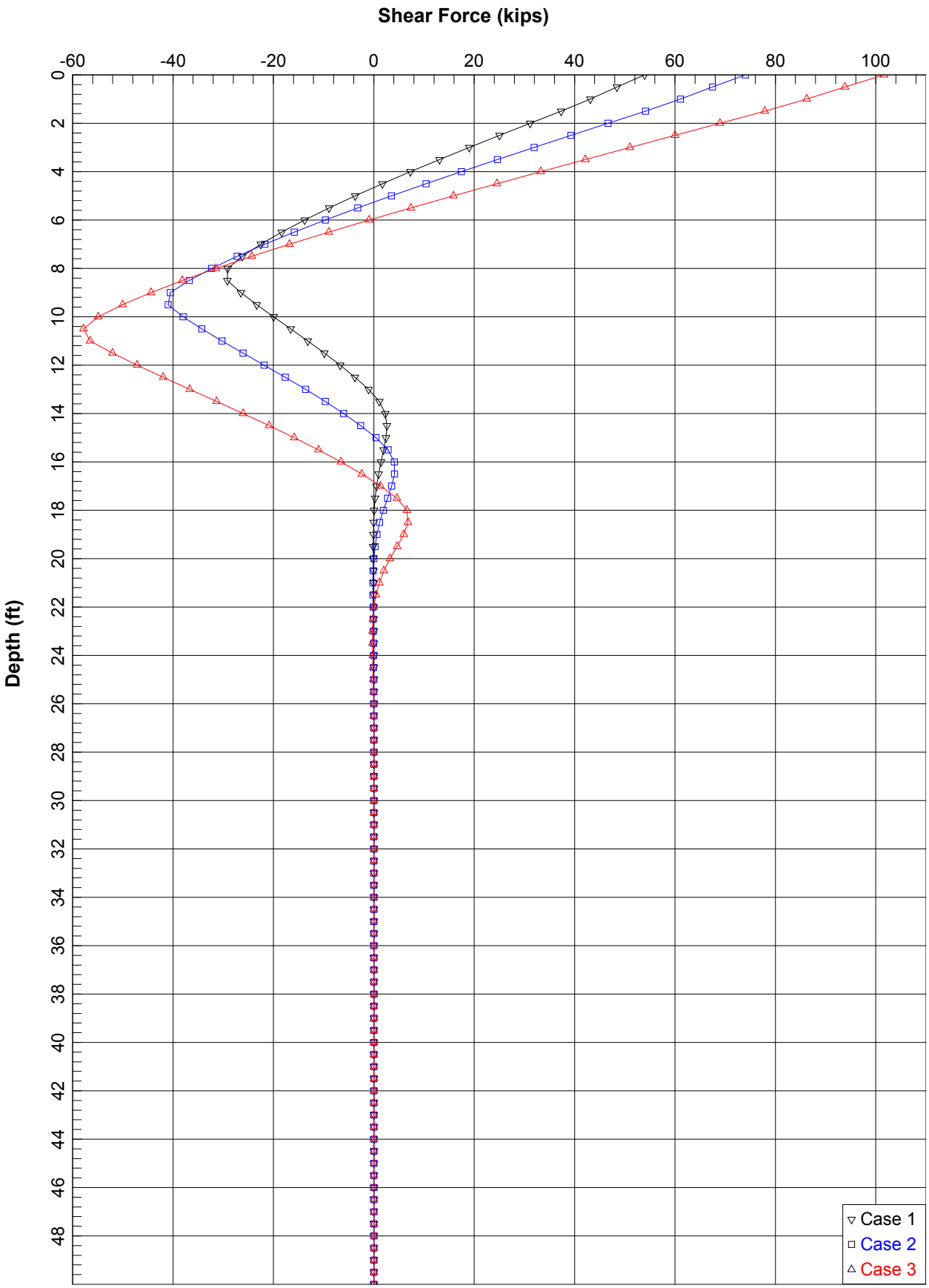
Summary of Pile Response(s)

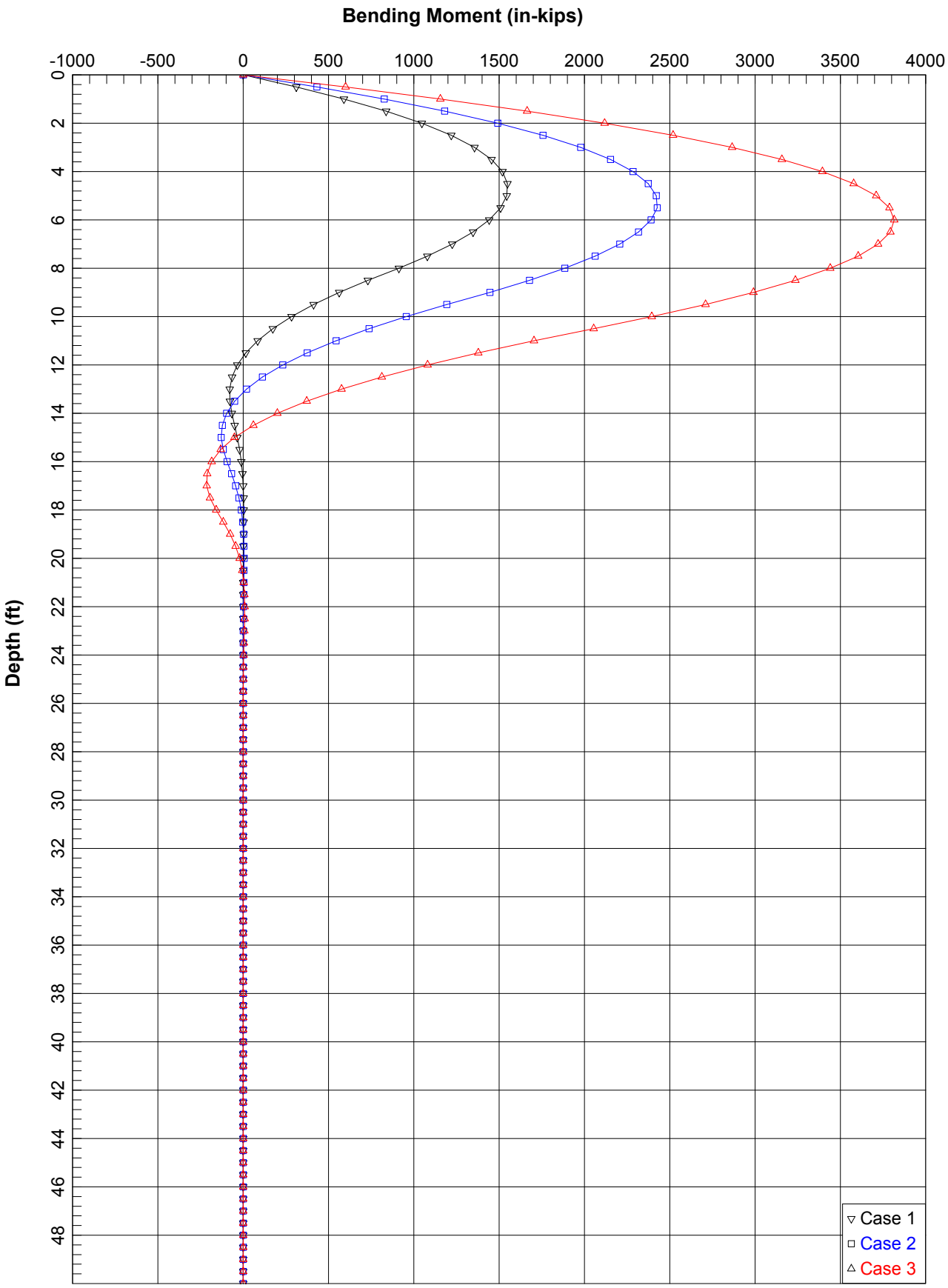
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	185000.	0.25000000	1320355.	42130.	-0.00391738
2	4	y = 0.5000	M = 0.000	185000.	0.50000000	2071196.	57870.	-0.00694205
3	4	y = 1.0000	M = 0.000	185000.	1.00000000	3252403.	79386.	-0.01227971

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2R_long_Max P.lp6d
Name of output report file: Bent 2R_long_Max P.lp6o
Name of plot output file: Bent 2R_long_Max P.lp6p
Name of runtime messeage file: Bent 2R_long_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:16:14

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion In-situ Test psi	Undrained Cohesion Elastic Test psi	Angle of Friction Subgrade deg.	Uniaxial qu Property Type	RQD % or Mod. pci	Strain 50 psi	Epsilon
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	125.000	4500.000	--	--	--	--	0.00700	--
						0.10000	125.000	4500.000	--	--	--	--	0.00700	--
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	3750.000	--	--	--	--	0.00700	--
						1.000	125.000	3750.000	--	--	--	--	0.00700	--
3	Stiff Clay w/o Free Water	--	--	--	--	1.000	125.000	4500.000	--	--	--	--	0.00500	--
						80.000	125.000	4500.000	--	--	--	--	0.00500	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6750	1.0000
2	50.000	0.6750	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	185000.		False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	185000.		False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	185000.		False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	53947.	-0.004247	408.9398	2.936E+10	-975.8034	11710.	0.000
6.000	0.2245	310831.	48431.	-0.004215	866.9974	2.936E+10	-862.8216	23058.	0.000
12.000	0.1994	590529.	43122.	-0.004123	1279.1769	2.936E+10	-906.8555	27284.	0.000
18.000	0.1750	837447.	37312.	-0.003977	1643.0489	2.936E+10	-1029.9135	35301.	0.000
24.000	0.1517	1047098.	31152.	-0.003784	1952.0023	2.936E+10	-1023.3611	40475.	0.000
30.000	0.1296	1219670.	25044.	-0.003552	2206.3146	2.936E+10	-1012.4450	46858.	0.000
36.000	0.1091	1355517.	19016.	-0.003289	2406.5072	2.936E+10	-996.9624	54842.	0.000
42.000	0.0902	1455167.	13095.	-0.003002	2553.3561	2.936E+10	-976.6782	64990.	0.000
48.000	0.0730	1519325.	7311.3343	-0.002698	2647.9042	2.936E+10	-951.3105	78138.	0.000
54.000	0.0578	1548892.	1695.8778	-0.002385	2691.4757	2.936E+10	-920.5083	95568.	0.000
60.000	0.0444	1544978.	-3717.0807	-0.002068	2685.6948	2.936E+10	-883.8112	119341.	0.000
66.000	0.0330	1508879.	-8890.2386	-0.001756	2632.5098	2.936E+10	-840.5748	152961.	0.000
72.000	0.0234	1442186.	-13781.	-0.001455	2534.2265	2.936E+10	-789.8217	202867.	0.000
78.000	0.0155	1346731.	-18341.	-0.001170	2393.5596	2.936E+10	-729.9017	282248.	0.000
84.000	0.009324	1224695.	-22503.	-0.000907	2213.7200	2.936E+10	-657.5872	423151.	0.000
90.000	0.004634	1078708.	-26171.	-0.000671	1998.5848	2.936E+10	-564.9045	731427.	0.000
96.000	0.001267	912139.	-29122.	-0.000468	1753.1199	2.936E+10	-418.8702	1984064.	0.000
102.000	-0.000982	730284.	-29187.	-0.000300	1485.1283	2.936E+10	397.2608	2427281.	0.000
108.000	-0.002335	562565.	-26478.	-0.000168	1237.9678	2.936E+10	505.4743	1298806.	0.000
114.000	-0.002998	412915.	-23314.	-6.834E-05	1017.4355	2.936E+10	549.5214	1099660.	0.000
120.000	-0.003155	282955.	-19961.	2.777E-06	825.9182	2.936E+10	567.9444	1080031.	0.000
126.000	-0.002965	173376.	-16546.	4.941E-05	664.4366	2.936E+10	570.3062	1154079.	0.000
132.000	-0.002562	84289.	-13154.	7.574E-05	533.1528	2.936E+10	560.5451	1312643.	0.000
138.000	-0.002056	15362.	-9850.3096	8.593E-05	431.5786	2.936E+10	540.6175	1577627.	0.000
144.000	-0.001531	-34106.	-6693.8267	8.401E-05	459.1996	2.936E+10	511.5435	2004640.	0.000
150.000	-0.001048	-65150.	-3737.9447	7.387E-05	504.9486	2.936E+10	473.7505	2712529.	0.000
156.000	-0.000645	-79125.	-1035.5862	5.912E-05	525.5426	2.936E+10	427.0357	3974580.	0.000
162.000	-0.000338	-77708.	1100.9299	4.310E-05	523.4553	2.936E+10	285.1363	5055329.	0.000
168.000	-0.000127	-66009.	2284.1791	2.841E-05	506.2149	2.936E+10	109.2801	5143220.	0.000
174.000	2.500E-06	-50361.	2605.4811	1.652E-05	483.1550	2.936E+10	-2.1794	5231110.	0.000
180.000	7.072E-05	-34780.	2410.8535	7.816E-06	460.1939	2.936E+10	-62.6965	5319001.	0.000
186.000	9.629E-05	-21448.	1962.4361	2.070E-06	440.5474	2.936E+10	-86.7760	5406892.	0.000
192.000	9.550E-05	-11236.	1439.5589	-1.270E-06	425.4972	2.936E+10	-87.5164	5494782.	0.000
198.000	8.105E-05	-4170.8711	950.7648	-2.845E-06	415.0862	2.936E+10	-75.4150	5582673.	0.000
204.000	6.143E-05	179.8785	550.3567	-3.253E-06	409.2049	2.936E+10	-58.0544	5670564.	0.000
210.000	4.202E-05	2440.6304	256.5289	-2.985E-06	412.5364	2.936E+10	-39.8883	5695312.	0.000
216.000	2.561E-05	3264.8508	63.9344	-2.402E-06	413.7511	2.936E+10	-24.3099	5695312.	0.000
222.000	1.320E-05	3213.1754	-46.5911	-1.740E-06	413.6749	2.936E+10	-12.5320	5695312.	0.000
228.000	4.735E-06	2709.6201	-97.6703	-1.134E-06	412.9328	2.936E+10	-4.4944	5695312.	0.000
234.000	-4.097E-07	2043.6504	-109.9868	-6.486E-07	411.9514	2.936E+10	0.3889	5695312.	0.000
240.000	-3.048E-06	1391.2181	-100.1401	-2.976E-07	410.9900	2.936E+10	2.8933	5695312.	0.000
246.000	-3.980E-06	842.6296	-80.1254	-6.927E-08	410.1815	2.936E+10	3.7782	5695312.	0.000
252.000	-3.879E-06	429.8669	-57.7438	6.078E-08	409.5733	2.936E+10	3.6823	5695312.	0.000
258.000	-3.251E-06	149.5695	-37.4390	1.200E-07	409.1602	2.936E+10	3.0860	5695312.	0.000
264.000	-2.439E-06	-19.6676	-21.2347	1.333E-07	408.9688	2.936E+10	2.3155	5695312.	0.000
270.000	-1.652E-06	-105.5422	-9.5843	1.205E-07	409.0953	2.936E+10	1.5679	5695312.	0.000
276.000	-9.937E-07	-134.9471	-2.0508	9.590E-08	409.1387	2.936E+10	0.9432	5695312.	0.000
282.000	-5.011E-07	-130.3648	2.2058	6.878E-08	409.1319	2.936E+10	0.4756	5695312.	0.000
288.000	-1.683E-07	-108.6304	4.1119	4.436E-08	409.0999	2.936E+10	0.1598	5695312.	0.000

294.000	3.123E-08	-81.1199	4.5023	2.497E-08	409.0593	2.936E+10	-0.0296	5695312.	0.000
300.000	1.313E-07	-54.6580	4.0395	1.109E-08	409.0203	2.936E+10	-0.1246	5695312.	0.000
306.000	1.643E-07	-32.6702	3.1978	2.166E-09	408.9879	2.936E+10	-0.1560	5695312.	0.000
312.000	1.573E-07	-16.2898	2.2820	-2.837E-09	408.9638	2.936E+10	-0.1493	5695312.	0.000
318.000	1.303E-07	-5.2804	1.4631	-5.042E-09	408.9476	2.936E+10	-0.1237	5695312.	0.000
324.000	9.678E-08	1.2787	0.8166	-5.451E-09	408.9417	2.936E+10	-0.0919	5695312.	0.000
330.000	6.486E-08	4.5303	0.3563	-4.857E-09	408.9465	2.936E+10	-0.0616	5695312.	0.000
336.000	3.850E-08	5.5646	0.0619	-3.825E-09	408.9480	2.936E+10	-0.0365	5695312.	0.000
342.000	1.896E-08	5.2821	-0.1017	-2.717E-09	408.9476	2.936E+10	-0.0180	5695312.	0.000
348.000	5.893E-09	4.3507	-0.1724	-1.732E-09	408.9462	2.936E+10	-0.005594	5695312.	0.000
354.000	-1.834E-09	3.2169	-0.1840	-9.591E-10	408.9445	2.936E+10	0.001741	5695312.	0.000
360.000	-5.616E-09	2.1450	-0.1628	-4.111E-10	408.9429	2.936E+10	0.005331	5695312.	0.000
366.000	-6.768E-09	1.2646	-0.1275	-6.268E-11	408.9416	2.936E+10	0.006424	5695312.	0.000
372.000	-6.368E-09	0.6152	-0.0901	1.294E-10	408.9407	2.936E+10	0.006045	5695312.	0.000
378.000	-5.215E-09	0.1833	-0.0571	2.110E-10	408.9401	2.936E+10	0.004950	5695312.	0.000
384.000	-3.836E-09	-0.0705	-0.0313	2.226E-10	408.9399	2.936E+10	0.003641	5695312.	0.000
390.000	-2.544E-09	-0.1932	-0.0132	1.956E-10	408.9401	2.936E+10	0.002415	5695312.	0.000
396.000	-1.489E-09	-0.2290	-0.001681	1.525E-10	408.9401	2.936E+10	0.001413	5695312.	0.000
402.000	-7.145E-10	-0.2137	0.004593	1.072E-10	408.9401	2.936E+10	0.000678	5695312.	0.000
408.000	-2.923E-10	-0.1741	0.007204	6.758E-11	408.9400	2.936E+10	0.000102	5695312.	0.000
414.000	9.641E-11	-0.1274	0.007506	3.676E-11	408.9400	2.936E+10	-9.151E-05	5695312.	0.000
420.000	2.388E-10	-0.0841	0.006551	1.515E-11	408.9399	2.936E+10	-0.000227	5695312.	0.000
426.000	2.782E-10	-0.0489	0.005079	1.558E-12	408.9399	2.936E+10	-0.000264	5695312.	0.000
432.000	2.575E-10	-0.0231	0.003553	-5.802E-12	408.9398	2.936E+10	-0.000244	5695312.	0.000
438.000	2.085E-10	-0.006219	0.002226	-8.803E-12	408.9398	2.936E+10	-0.000198	5695312.	0.000
444.000	1.519E-10	0.003584	0.001200	-9.072E-12	408.9398	2.936E+10	-0.000144	5695312.	0.000
450.000	9.967E-11	0.008196	0.000483	-7.868E-12	408.9398	2.936E+10	-9.460E-05	5695312.	0.000
456.000	5.748E-11	0.009401	3.573E-05	-6.078E-12	408.9398	2.936E+10	-5.456E-05	5695312.	0.000
462.000	2.683E-11	0.008639	-0.000204	-4.226E-12	408.9398	2.936E+10	-2.546E-05	5695312.	0.000
468.000	6.766E-12	0.006958	-0.000300	-2.632E-12	408.9398	2.936E+10	-6.422E-06	5695312.	0.000
474.000	-4.763E-12	0.005044	-0.000306	-1.406E-12	408.9398	2.936E+10	4.521E-06	5695312.	0.000
480.000	-1.011E-11	0.003292	-0.000263	0.000	408.9398	2.936E+10	9.592E-06	5695312.	0.000
486.000	-1.141E-11	0.001885	-0.000202	0.000	408.9398	2.936E+10	1.083E-05	5695312.	0.000
492.000	-1.040E-11	0.000867	-0.000140	0.000	408.9398	2.936E+10	9.874E-06	5695312.	0.000
498.000	-8.331E-12	0.000205	-8.665E-05	0.000	408.9398	2.936E+10	7.908E-06	5695312.	0.000
504.000	-6.010E-12	-0.000173	-4.581E-05	0.000	408.9398	2.936E+10	5.704E-06	5695312.	0.000
510.000	-3.900E-12	-0.000346	-1.759E-05	0.000	408.9398	2.936E+10	3.702E-06	5695312.	0.000
516.000	-2.215E-12	-0.000385	-1.740E-07	0.000	408.9398	2.936E+10	2.103E-06	5695312.	0.000
522.000	-1.002E-12	-0.000349	8.989E-06	0.000	408.9398	2.936E+10	9.516E-07	5695312.	0.000
528.000	0.000	-0.000278	1.246E-05	0.000	408.9398	2.936E+10	2.061E-07	5695312.	0.000
534.000	0.000	-0.000199	1.243E-05	0.000	408.9398	2.936E+10	-2.163E-07	5695312.	0.000
540.000	0.000	-0.000129	1.056E-05	0.000	408.9398	2.936E+10	-4.068E-07	5695312.	0.000
546.000	0.000	-7.251E-05	7.999E-06	0.000	408.9398	2.936E+10	-4.476E-07	5695312.	0.000
552.000	0.000	-3.257E-05	5.444E-06	0.000	408.9398	2.936E+10	-4.040E-07	5695312.	0.000
558.000	0.000	-7.150E-06	3.264E-06	0.000	408.9398	2.936E+10	-3.225E-07	5695312.	0.000
564.000	0.000	6.638E-06	1.598E-06	0.000	408.9398	2.936E+10	-2.327E-07	5695312.	0.000
570.000	0.000	1.206E-05	4.485E-07	0.000	408.9398	2.936E+10	-1.506E-07	5695312.	0.000
576.000	0.000	1.205E-05	-2.511E-07	0.000	408.9398	2.936E+10	-8.256E-08	5695312.	0.000
582.000	0.000	9.067E-06	-5.843E-07	0.000	408.9398	2.936E+10	-2.853E-08	5695312.	0.000
588.000	0.000	5.056E-06	-6.250E-07	0.000	408.9398	2.936E+10	1.495E-08	5695312.	0.000
594.000	0.000	1.582E-06	-4.225E-07	0.000	408.9398	2.936E+10	5.255E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	408.9398	2.936E+10	8.830E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042465 radians
Maximum bending moment = 1548892. inch-lbs
Maximum shear force = 53947. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 18
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	74017.	-0.007510	408.9398	2.936E+10	-1160.4323	6962.5937	0.000
6.000	0.4549	431551.	67448.	-0.007466	1044.8976	2.936E+10	-1029.4255	13577.	0.000
12.000	0.4104	825944.	61101.	-0.007337	1626.0984	2.936E+10	-1086.1694	15879.	0.000
18.000	0.3669	1181048.	54125.	-0.007132	2149.4000	2.936E+10	-1239.2055	20265.	0.000
24.000	0.3248	1491273.	46693.	-0.006859	2606.5648	2.936E+10	-1237.9106	22866.	0.000
30.000	0.2846	1756595.	39283.	-0.006527	2997.5578	2.936E+10	-1232.3507	25902.	0.000
36.000	0.2465	1977153.	31918.	-0.006145	3322.5853	2.936E+10	-1222.3501	29752.	0.000
42.000	0.2108	2153259.	24628.	-0.005723	3582.1042	2.936E+10	-1207.7143	34368.	0.000
48.000	0.1778	2285398.	17440.	-0.005270	3776.8318	2.936E+10	-1188.2231	40092.	0.000
54.000	0.1476	2374242.	10385.	-0.004794	3907.7582	2.936E+10	-1163.6205	47300.	0.000
60.000	0.1203	2420658.	3493.2129	-0.004304	3976.1588	2.936E+10	-1133.5995	56538.	0.000
66.000	0.0960	2425715.	-3200.9146	-0.003808	3983.6108	2.936E+10	-1097.7763	68636.	0.000
72.000	0.0746	2390701.	-9661.1858	-0.003316	3932.0129	2.936E+10	-1055.6475	84902.	0.000
78.000	0.0562	2317142.	-15848.	-0.002835	3823.6119	2.936E+10	-1006.5119	107510.	0.000
84.000	0.0406	2206823.	-21715.	-0.002373	3661.0391	2.936E+10	-949.3164	140350.	0.000
90.000	0.0277	2061827.	-27210.	-0.001936	3447.3657	2.936E+10	-882.3194	191107.	0.000
96.000	0.0173	1884601.	-32264.	-0.001533	3186.1945	2.936E+10	-802.2377	277469.	0.000
102.000	0.009305	1678066.	-36775.	-0.001169	2881.8331	2.936E+10	-701.5093	452343.	0.000
108.000	0.003320	1445896.	-40542.	-0.000850	2539.6945	2.936E+10	-554.1982	1061478.	0.000
114.000	-0.000891	1193447.	-40993.	-0.000580	2167.6713	2.936E+10	403.9518	2719383.	0.000
120.000	-0.003639	955270.	-38015.	-0.000360	1816.6794	2.936E+10	588.5742	970378.	0.000
126.000	-0.005216	738064.	-34278.	-0.000187	1496.5930	2.936E+10	657.0596	755859.	0.000
132.000	-0.005887	544345.	-30236.	-5.626E-05	1211.1179	2.936E+10	690.5171	703760.	0.000
138.000	-0.005891	375362.	-26053.	3.773E-05	962.0939	2.936E+10	703.8296	716863.	0.000
144.000	-0.005434	231631.	-21833.	9.976E-05	750.2837	2.936E+10	702.6851	775819.	0.000
150.000	-0.004694	113144.	-17655.	0.000135	575.6747	2.936E+10	689.8377	881802.	0.000

156.000	-0.003815	19465.	-13586.	0.000149	437.6249	2.936E+10	666.7547	1048767.	0.000
162.000	-0.002911	-50214.	-9682.8342	0.000145	482.9386	2.936E+10	634.1975	1307034.	0.000
168.000	-0.002070	-97052.	-6002.9704	0.000130	551.9605	2.936E+10	592.4237	1717420.	0.000
174.000	-0.001347	-122539.	-2602.2524	0.000108	589.5209	2.936E+10	541.1489	2410278.	0.000
180.000	-0.000775	-128518.	458.4827	8.225E-05	598.3315	2.936E+10	479.0961	3710167.	0.000
186.000	-0.000360	-117220.	2869.2042	5.714E-05	581.6822	2.936E+10	324.4777	5406892.	0.000
192.000	-8.911E-05	-94215.	4087.4611	3.553E-05	547.7797	2.936E+10	81.6079	5494782.	0.000
198.000	6.631E-05	-68250.	4147.1937	1.893E-05	509.5163	2.936E+10	-61.6970	5582673.	0.000
204.000	0.000138	-44490.	3570.7427	7.407E-06	474.5032	2.936E+10	-130.4533	5670564.	0.000
210.000	0.000155	-25417.	2737.4417	2.629E-07	446.3959	2.936E+10	-147.3137	5695312.	0.000
216.000	0.000141	-11642.	1893.4481	-3.524E-06	426.0954	2.936E+10	-134.0175	5695312.	0.000
222.000	0.000113	-2687.9314	1169.8865	-4.989E-06	412.9009	2.936E+10	-107.1697	5695312.	0.000
228.000	8.132E-05	2408.1756	616.7985	-5.017E-06	412.4886	2.936E+10	-77.1930	5695312.	0.000
234.000	5.270E-05	4724.7888	235.1609	-4.288E-06	415.9025	2.936E+10	-50.0195	5695312.	0.000
240.000	2.986E-05	5239.6264	0.0640	-3.270E-06	416.6612	2.936E+10	-28.3461	5695312.	0.000
246.000	1.346E-05	4732.8160	-123.2900	-2.251E-06	415.9143	2.936E+10	-12.7719	5695312.	0.000
252.000	2.852E-06	3765.1428	-169.7270	-1.382E-06	414.4883	2.936E+10	-2.7071	5695312.	0.000
258.000	-3.134E-06	2699.1609	-168.9235	-7.218E-07	412.9174	2.936E+10	2.9749	5695312.	0.000
264.000	-5.810E-06	1739.6627	-143.4543	-2.682E-07	411.5035	2.936E+10	5.5148	5695312.	0.000
270.000	-6.352E-06	978.3042	-108.8207	9.576E-09	410.3815	2.936E+10	6.0297	5695312.	0.000
276.000	-5.695E-06	433.7933	-74.5143	1.539E-07	409.5790	2.936E+10	5.4058	5695312.	0.000
282.000	-4.506E-06	83.7914	-45.4664	2.068E-07	409.0633	2.936E+10	4.2768	5695312.	0.000
288.000	-3.214E-06	-112.2629	-23.4847	2.039E-07	409.1052	2.936E+10	3.0504	5695312.	0.000
294.000	-2.059E-06	-198.4775	-8.4696	1.721E-07	409.2323	2.936E+10	1.9546	5695312.	0.000
300.000	-1.148E-06	-214.2804	0.6640	1.299E-07	409.2556	2.936E+10	1.0899	5695312.	0.000
306.000	-5.000E-07	-190.7984	5.3575	8.854E-08	409.2210	2.936E+10	0.4746	5695312.	0.000
312.000	-8.577E-08	-150.1872	7.0256	5.369E-08	409.1611	2.936E+10	0.0814	5695312.	0.000
318.000	1.443E-07	-106.6109	6.8590	2.745E-08	409.0894	2.936E+10	-0.1369	5695312.	0.000
324.000	2.436E-07	-67.9404	5.7546	9.607E-09	409.0399	2.936E+10	-0.2312	5695312.	0.000
330.000	2.596E-07	-37.5777	4.3218	-1.177E-09	408.9952	2.936E+10	-0.2464	5695312.	0.000
336.000	2.295E-07	-16.0758	2.9293	-6.660E-09	408.9635	2.936E+10	-0.2178	5695312.	0.000
342.000	1.796E-07	-2.4111	1.7644	-8.549E-09	408.9433	2.936E+10	-0.1705	5695312.	0.000
348.000	1.269E-07	5.1157	0.8916	-8.273E-09	408.9473	2.936E+10	-0.1204	5695312.	0.000
354.000	8.037E-08	8.3061	0.3014	-6.901E-09	408.9520	2.936E+10	-0.0763	5695312.	0.000
360.000	4.405E-08	8.7483	-0.0529	-5.158E-09	408.9527	2.936E+10	-0.0418	5695312.	0.000
366.000	1.847E-08	7.6832	-0.2309	-3.479E-09	408.9511	2.936E+10	-0.0175	5695312.	0.000
372.000	2.309E-09	5.9851	-0.2901	-2.082E-09	408.9486	2.936E+10	-0.002192	5695312.	0.000
378.000	-6.512E-09	4.2067	-0.2781	-1.040E-09	408.9480	2.936E+10	0.006130	5695312.	0.000
384.000	-1.017E-08	2.6499	-0.2306	-3.396E-10	408.9437	2.936E+10	0.009658	5695312.	0.000
390.000	-1.059E-08	1.4402	-0.1715	7.836E-11	408.9419	2.936E+10	0.0101	5695312.	0.000
396.000	-9.234E-09	0.5920	-0.1150	2.860E-10	408.9407	2.936E+10	0.008765	5695312.	0.000
402.000	-7.155E-09	0.0592	-0.0684	3.526E-10	408.9399	2.936E+10	0.006792	5695312.	0.000
408.000	-5.003E-09	-0.2291	-0.0337	3.352E-10	408.9401	2.936E+10	0.004749	5695312.	0.000
414.000	-3.132E-09	-0.3464	-0.0106	2.764E-10	408.9403	2.936E+10	0.002973	5695312.	0.000
420.000	-1.686E-09	-0.3566	0.000152	2.046E-10	408.9403	2.936E+10	0.001601	5695312.	0.000
426.000	-6.777E-10	-0.3091	0.009884	1.365E-10	408.9402	2.936E+10	0.000643	5695312.	0.000
432.000	-4.798E-11	-0.2383	0.0120	8.060E-11	408.9401	2.936E+10	4.555E-05	5695312.	0.000
438.000	2.895E-10	-0.1658	0.0113	3.930E-11	408.9400	2.936E+10	-0.000275	5695312.	0.000
444.000	4.237E-10	-0.1032	0.009232	1.181E-11	408.9399	2.936E+10	-0.000407	5695312.	0.000
450.000	4.312E-10	-0.0551	0.006797	-4.368E-12	408.9399	2.936E+10	-0.000409	5695312.	0.000
456.000	3.712E-10	-0.0216	0.004512	-1.221E-11	408.9398	2.936E+10	-0.000352	5695312.	0.000
462.000	2.847E-10	-0.000893	0.002644	-1.451E-11	408.9398	2.936E+10	-0.000270	5695312.	0.000
468.000	1.971E-10	0.0101	0.001272	-1.357E-11	408.9398	2.936E+10	-0.000187	5695312.	0.000
474.000	1.219E-10	0.0144	0.000364	-1.106E-11	408.9398	2.936E+10	-0.000116	5695312.	0.000
480.000	6.440E-11	0.0145	-0.000167	-8.105E-12	408.9398	2.936E+10	-6.113E-05	5695312.	0.000
486.000	2.467E-11	0.0124	-0.000421	-5.353E-12	408.9398	2.936E+10	-2.341E-05	5695312.	0.000
492.000	0.000	0.009478	-0.000491	-3.115E-12	408.9398	2.936E+10	-1.546E-07	5695312.	0.000
498.000	-1.272E-11	0.006530	-0.000456	-1.479E-12	408.9398	2.936E+10	1.207E-05	5695312.	0.000
504.000	-1.759E-11	0.004015	-0.000369	0.000	408.9398	2.936E+10	1.670E-05	5695312.	0.000
510.000	-1.754E-11	0.002100	-0.000269	0.000	408.9398	2.936E+10	1.665E-05	5695312.	0.000
516.000	-1.491E-11	0.000785	-0.000177	0.000	408.9398	2.936E+10	1.415E-05	5695312.	0.000
522.000	-1.132E-11	-2.196E-05	-0.000102	0.000	408.9398	2.936E+10	1.075E-05	5695312.	0.000
528.000	-7.757E-12	-0.000442	-4.775E-05	0.000	408.9398	2.936E+10	7.363E-06	5695312.	0.000
534.000	-4.736E-12	-0.000596	-1.218E-05	0.000	408.9398	2.936E+10	4.495E-06	5695312.	0.000
540.000	-2.446E-12	-0.000589	8.272E-06	0.000	408.9398	2.936E+10	2.321E-06	5695312.	0.000
546.000	0.000	-0.000498	1.774E-05	0.000	408.9398	2.936E+10	8.330E-07	5695312.	0.000
552.000	0.000	-0.000376	2.001E-05	0.000	408.9398	2.936E+10	-7.613E-08	5695312.	0.000
558.000	0.000	-0.000258	1.814E-05	0.000	408.9398	2.936E+10	-5.471E-07	5695312.	0.000
564.000	0.000	-0.000159	1.434E-05	0.000	408.9398	2.936E+10	-7.179E-07	5695312.	0.000
570.000	0.000	-8.578E-05	1.008E-05	0.000	408.9398	2.936E+10	-7.036E-07	5695312.	0.000
576.000	0.000	-3.796E-05	6.198E-06	0.000	408.9398	2.936E+10	-5.896E-07	5695312.	0.000
582.000	0.000	-1.136E-05	3.135E-06	0.000	408.9398	2.936E+10	-4.313E-07	5695312.	0.000
588.000	0.000	-2.804E-07	1.061E-06	0.000	408.9398	2.936E+10	-2.598E-07	5695312.	0.000
594.000	0.000	1.445E-06	1.781E-08	0.000	408.9398	2.936E+10	-8.803E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	408.9398	2.936E+10	8.210E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =      0.5000000 inches
Computed slope at pile head     =     -0.0075097 radians
Maximum bending moment          =      2425715. inch-lbs
Maximum shear force             =        74017. lbs
Depth of maximum bending moment =     66.0000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =             21
Number of zero deflection points =             9
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

```
Displacement of pile head                      =       1.000000 inches
Moment at pile head                            =          0.000 in-lbs
Axial load at pile head                        =     185000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	101662.	-0.0133	408.9398	2.936E+10	-1379.9943	4139.9830	0.000
6.000	0.9201	599909.	93839.	-0.0132	1292.9999	2.936E+10	-1227.6330	8005.1121	0.000
12.000	0.8410	1155487.	86258.	-0.0131	2111.7315	2.936E+10	-1299.5452	9271.3271	0.000

18.000	0.7633	1664020.	77895.	-0.0128	2861.1338	2.936E+10	-1488.2611	11699.	0.000
24.000	0.6876	2118597.	68950.	-0.0124	3531.0251	2.936E+10	-1493.1771	13029.	0.000
30.000	0.6146	2518940.	59989.	-0.0119	4120.9925	2.936E+10	-1493.8810	14585.	0.000
36.000	0.5446	2864931.	51037.	-0.0114	4630.8649	2.936E+10	-1490.2119	16419.	0.000
42.000	0.4781	3156625.	42120.	-0.0108	5060.7213	2.936E+10	-1481.9960	18598.	0.000
48.000	0.4155	3394250.	33267.	-0.0101	5410.8999	2.936E+10	-1469.0432	21213.	0.000
54.000	0.3571	3578220.	24506.	-0.009374	5682.0086	2.936E+10	-1451.1414	24384.	0.000
60.000	0.3030	3709137.	15869.	-0.008629	5874.9355	2.936E+10	-1428.0485	28276.	0.000
66.000	0.2535	3787803.	7386.3212	-0.007863	5990.8621	2.936E+10	-1399.4815	33121.	0.000
72.000	0.2087	3815228.	-907.4172	-0.007086	6031.2774	2.936E+10	-1365.0980	39251.	0.000
78.000	0.1685	3792644.	-8976.1175	-0.006308	5997.9964	2.936E+10	-1324.4688	47163.	0.000
84.000	0.1330	3721519.	-16781.	-0.005540	5893.1822	2.936E+10	-1277.0305	57622.	0.000
90.000	0.1020	3603577.	-24278.	-0.004792	5719.3752	2.936E+10	-1222.0019	71874.	0.000
96.000	0.0755	3440824.	-31418.	-0.004072	5479.5342	2.936E+10	-1158.2256	92079.	0.000
102.000	0.0532	3235595.	-38145.	-0.003390	5177.0971	2.936E+10	-1083.8345	122350.	0.000
108.000	0.0348	2990614.	-44382.	-0.002753	4816.0789	2.936E+10	-995.4548	171642.	0.000
114.000	0.0201	2709118.	-50026.	-0.002171	4401.2504	2.936E+10	-885.8668	264279.	0.000
120.000	0.008749	2395116.	-54886.	-0.001649	3938.5194	2.936E+10	-734.0251	503404.	0.000
126.000	0.000323	2054146.	-57819.	-0.001194	3436.0464	2.936E+10	-243.5115	4527985.	0.000
132.000	-0.005584	1703944.	-56504.	-0.000810	2919.9680	2.936E+10	681.7520	732592.	0.000
138.000	-0.009402	1377898.	-52084.	-0.000495	2439.4880	2.936E+10	791.4350	505082.	0.000
144.000	-0.0115	1080030.	-47165.	-0.000244	2000.5341	2.936E+10	848.4123	441528.	0.000
150.000	-0.0123	812461.	-41984.	-5.082E-05	1606.2289	2.936E+10	878.6256	427475.	0.000
156.000	-0.0121	576338.	-36675.	9.111E-05	1258.2646	2.936E+10	890.8963	440346.	0.000
162.000	-0.0112	372157.	-31335.	0.000188	957.3711	2.936E+10	889.3222	474770.	0.000
168.000	-0.009883	199906.	-26038.	0.000247	703.5332	2.936E+10	876.0980	531906.	0.000
174.000	-0.008281	59150.	-20853.	0.000273	496.1069	2.936E+10	852.4685	617661.	0.000
180.000	-0.006607	-50931.	-15838.	0.000274	483.9939	2.936E+10	819.1154	743884.	0.000
186.000	-0.004995	-131512.	-11052.	0.000255	602.7427	2.936E+10	776.3144	932488.	0.000
192.000	-0.003545	-184115.	-6550.7290	0.000223	680.2628	2.936E+10	723.9538	1225410.	0.000
198.000	-0.002320	-210615.	-2394.7155	0.000183	719.3143	2.936E+10	661.3841	1710408.	0.000
204.000	-0.001354	-213257.	1350.0222	0.000139	723.2079	2.936E+10	586.8618	2601025.	0.000
210.000	-0.000649	-194724.	4580.5221	9.757E-05	695.8963	2.936E+10	489.9715	4530063.	0.000
216.000	-0.000183	-158508.	6571.4312	6.147E-05	642.5257	2.936E+10	173.6648	5695312.	0.000
222.000	8.866E-05	-116063.	6839.9418	3.344E-05	579.8889	2.936E+10	-84.1613	5695312.	0.000
228.000	0.000218	-76503.	5966.6032	1.374E-05	521.6783	2.936E+10	-206.9515	5695312.	0.000
234.000	0.000254	-44435.	4623.6859	1.382E-06	474.4212	2.936E+10	-240.6876	5695312.	0.000
240.000	0.000235	-21021.	3233.5776	-5.380E-06	439.9181	2.936E+10	-222.6986	5695312.	0.000
246.000	0.000190	-5620.5244	2024.7139	-8.030E-06	417.2225	2.936E+10	-180.2393	5695312.	0.000
252.000	0.000138	3293.0022	1090.2842	-8.267E-06	413.7925	2.936E+10	-131.2373	5695312.	0.000
258.000	9.067E-05	7481.2396	438.3666	-7.166E-06	419.9646	2.936E+10	-86.0686	5695312.	0.000
264.000	5.222E-05	8569.3109	31.5057	-5.228E-06	421.5680	2.936E+10	-49.6085	5695312.	0.000
270.000	2.436E-05	7869.5306	-186.8617	-3.846E-06	420.5368	2.936E+10	-23.1238	5695312.	0.000
276.000	6.110E-06	6335.5088	-273.6321	-2.394E-06	418.2762	2.936E+10	-5.7997	5695312.	0.000
282.000	-4.371E-06	4591.2607	-278.5829	-1.278E-06	415.7957	2.936E+10	4.1494	5695312.	0.000
288.000	-9.222E-06	2995.3504	-239.8726	-5.024E-07	413.3539	2.936E+10	8.7540	5695312.	0.000
294.000	-1.040E-05	1713.9048	-183.9952	-2.111E-08	411.4655	2.936E+10	9.8718	5695312.	0.000
300.000	-9.476E-06	787.4546	-127.3965	2.345E-07	410.1002	2.936E+10	8.9945	5695312.	0.000
306.000	-7.340E-06	184.4765	-78.8116	3.339E-07	409.2119	2.936E+10	7.2005	5695312.	0.000
312.000	-5.469E-06	-159.0258	-41.6353	3.365E-07	409.1741	2.936E+10	5.1916	5695312.	0.000
318.000	-3.548E-06	-315.7443	-15.9570	2.880E-07	409.4051	2.936E+10	3.3678	5695312.	0.000
324.000	-2.014E-06	-351.1493	-0.1187	2.198E-07	409.4573	2.936E+10	1.9116	5695312.	0.000
330.000	-9.104E-07	-317.6569	8.2085	1.529E-07	409.4079	2.936E+10	0.8641	5695312.	0.000
336.000	-1.964E-07	-252.9834	11.3603	9.314E-08	409.3126	2.936E+10	0.1865	5695312.	0.000
342.000	2.073E-07	-181.5403	11.3294	4.873E-08	409.2073	2.936E+10	-0.1967	5695312.	0.000
348.000	3.885E-07	-117.1389	9.6333	1.827E-08	409.1124	2.936E+10	-0.3886	5695312.	0.000
354.000	4.258E-07	-65.9814	7.3150	-5.071E-10	409.0370	2.936E+10	-0.4041	5695312.	0.000
360.000	3.823E-07	-29.3577	5.0141	-1.025E-08	408.9830	2.936E+10	-0.3628	5695312.	0.000
366.000	3.028E-07	-5.7899	3.0634	-1.384E-08	408.9483	2.936E+10	-0.2874	5695312.	0.000
372.000	2.162E-07	7.4336	1.5857	-1.367E-08	408.9307	2.936E+10	-0.2052	5695312.	0.000
378.000	1.387E-07	13.2691	0.5753	-1.156E-08	408.9593	2.936E+10	-0.1316	5695312.	0.000
384.000	7.745E-08	14.3632	-0.0401	-8.735E-09	408.9610	2.936E+10	-0.0735	5695312.	0.000
390.000	3.385E-08	12.8075	-0.3570	-5.958E-09	408.9708	2.936E+10	-0.0321	5695312.	0.000
396.000	5.954E-09	10.0922	-0.4704	-3.618E-09	408.9547	2.936E+10	-0.005652	5695312.	0.000
402.000	-9.564E-09	7.1712	-0.4601	-1.853E-09	408.9504	2.936E+10	0.009078	5695312.	0.000
408.000	-1.629E-08	4.5753	-0.3865	-6.530E-10	408.9465	2.936E+10	0.0155	5695312.	0.000
414.000	-1.940E-08	2.5350	-0.2905	7.963E-11	408.9435	2.936E+10	0.0165	5695312.	0.000
420.000	-1.540E-08	1.0886	-0.1971	4.440E-10	408.9414	2.936E+10	0.0146	5695312.	0.000
426.000	-1.207E-08	0.1684	-0.1189	5.724E-10	408.9400	2.936E+10	0.0115	5695312.	0.000
432.000	-8.534E-09	-0.3394	-0.0591	5.429E-10	408.9403	2.936E+10	0.008101	5695312.	0.000
438.000	-5.412E-09	-0.5555	-0.0205	4.635E-10	408.9406	2.936E+10	0.005138	5695312.	0.000
444.000	-2.972E-09	-0.5865	0.003373	3.468E-10	408.9406	2.936E+10	0.002821	5695312.	0.000
450.000	-1.251E-09	-0.5158	0.0154	2.341E-10	408.9405	2.936E+10	0.001188	5695312.	0.000
456.000	-3.625E-10	-0.4022	0.0194	1.402E-10	408.9404	2.936E+10	0.000154	5695312.	0.000
462.000	4.324E-10	-0.2830	0.0187	7.028E-11	408.9402	2.936E+10	-0.000410	5695312.	0.000
468.000	6.806E-10	-0.1785	0.0155	2.312E-11	408.9400	2.936E+10	-0.000646	5695312.	0.000
474.000	7.099E-10	-0.0972	0.0115	-5.052E-12	408.9399	2.936E+10	-0.000674	5695312.	0.000
480.000	6.208E-10	-0.0401	0.007742	-1.908E-11	408.9398	2.936E+10	-0.000588	5695312.	0.000
486.000	4.809E-10	-0.004229	0.004607	-2.361E-11	408.9398	2.936E+10	-0.000456	5695312.	0.000
492.000	3.366E-10	0.0152	0.002280	-2.249E-11	408.9398	2.936E+10	-0.000320	5695312.	0.000
498.000	2.111E-10	0.0232	0.000720	-1.857E-11	408.9398	2.936E+10	-0.000200	5695312.	0.000
504.000	1.138E-10	0.0239	-0.000205	-1.375E-11	408.9398	2.936E+10	-0.000108	5695312.	0.000
510.000	4.594E-11	0.0207	-0.000660	-9.191E-12	408.9398	2.936E+10	-4.361E-05	5695312.	0.000
516.000	3.523E-12	0.0160	-0.000801	-5.434E-12	408.9398	2.936E+10	-3.344E-06	5695312.	0.000
522.000	-1.926E-11	0.0112	-0.000756	-2.658E-12	408.9398	2.936E+10	1.828E-05	5695312.	0.000
528.000	-2.837E-11	0.006949	-0.000620	0.000	408.9398	2.936E+10	2.693E-05	5695312.	0.000
534.000	-2.896E-11	0.003713	-0.000457	0.000	408.9398	2.936E+10	2.749E-05	5695312.	0.000
540.000	-2.490E-11	0.001465	-0.000303	0.000	408.9398	2.936E+10	2.372E-05	5695312.	0.000
546.000	-1.923E-11	7.138E-05	-0.000177	0.000	408.9398	2.936E+10	1.825E-05	5695312.	0.000
552.000	-1.338E-11	-0.000665	-8.452E-05	0.000	408.9398	2.936E+10	1.270E-05	5695312.	0.000
558.000	-8.342E-12	-0.000945	-2.267E-05	0.000	408.9398	2.936E+10	7.919E-06	5695312.	0.000
564.000	-4.466E-12	-0.000939	1.380E-05	0.000	408.9398	2.936E+10	4.240E-06	5695312.	0.000
570.000	-1.742E-12	-0.000781	3.148E-05	0.000	408.9398	2.936E+10	1.654E-06	5695312.	0.000
576.000	0.000	-0.000562	3.637E-05	0.000	408.9398	2.936E+10	-2.338E-08	5695312.	0.000
582.000	1.102E-12	-0.000345	3.316E-05	0.000	408.9398	2.936E+10	-1.046E-06	5695312.	0.000
588.000	1.757E-12	-0.000165	2.502E-05	0.000	408.9398	2.936E+10	-1.668E-06	5695312.	0.000
594.000	2.210E-12	-4.450E-05	1.372E-05	0.000	408.9398	2.936E+10	-2.098E-06	5695312.	0.000
600.000	2.609E-12	0.000	0.000	0.000	408.9398	2.936E+10	-2.476E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection            =      1.0000000 inches
Computed slope at pile head     =     -0.0133105 radians
Maximum bending moment          =      3815228. inch-lbs
Maximum shear force             =       101662. lbs
Depth of maximum bending moment =     72.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 16
Number of zero deflection points = 8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

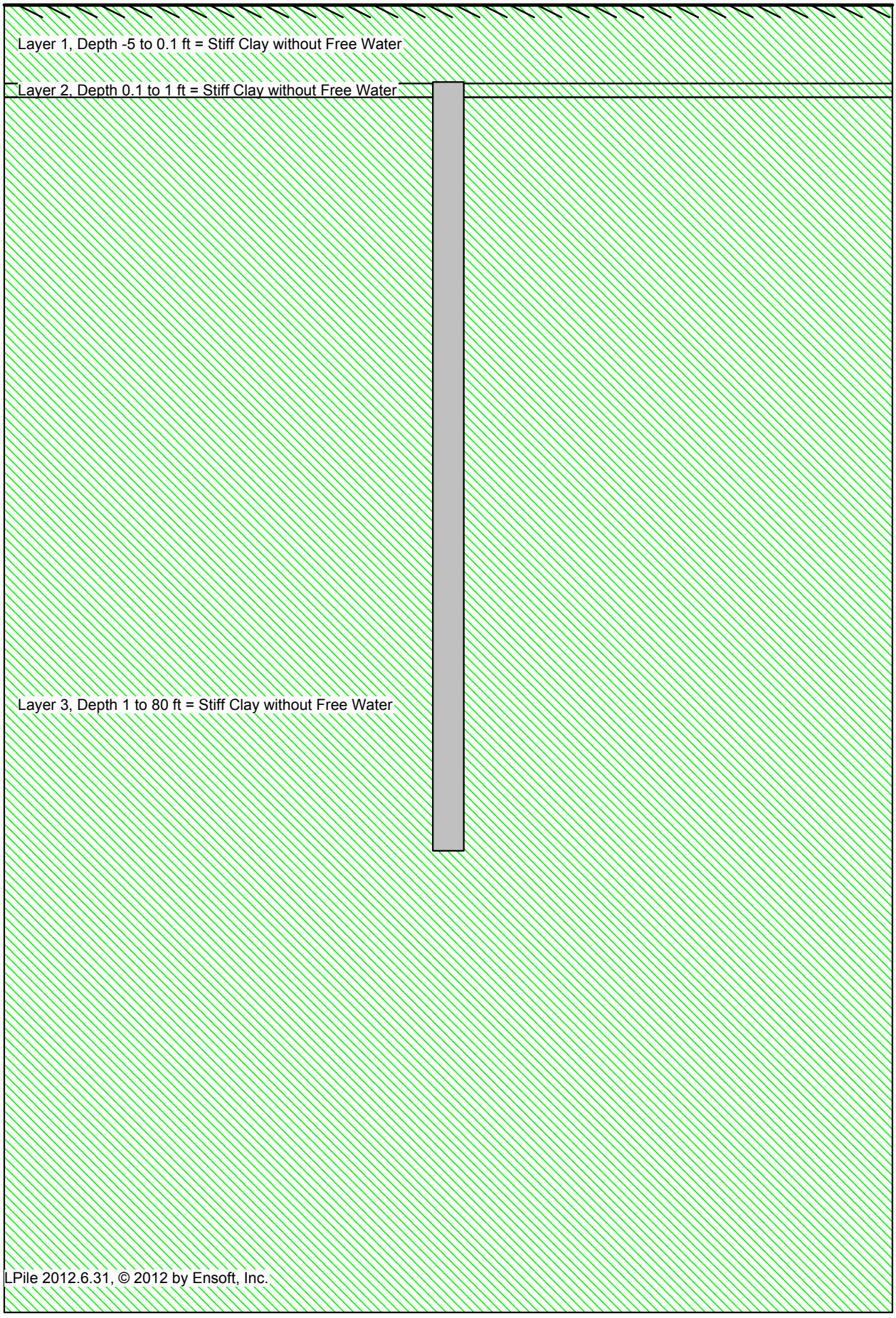
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	185000.	0.25000000	1548892.	53947.	-0.00424651
2	4	y = 0.5000	M = 0.000	185000.	0.50000000	2425715.	74017.	-0.00750975
3	4	y = 1.0000	M = 0.000	185000.	1.00000000	3815228.	101662.	-0.01331054

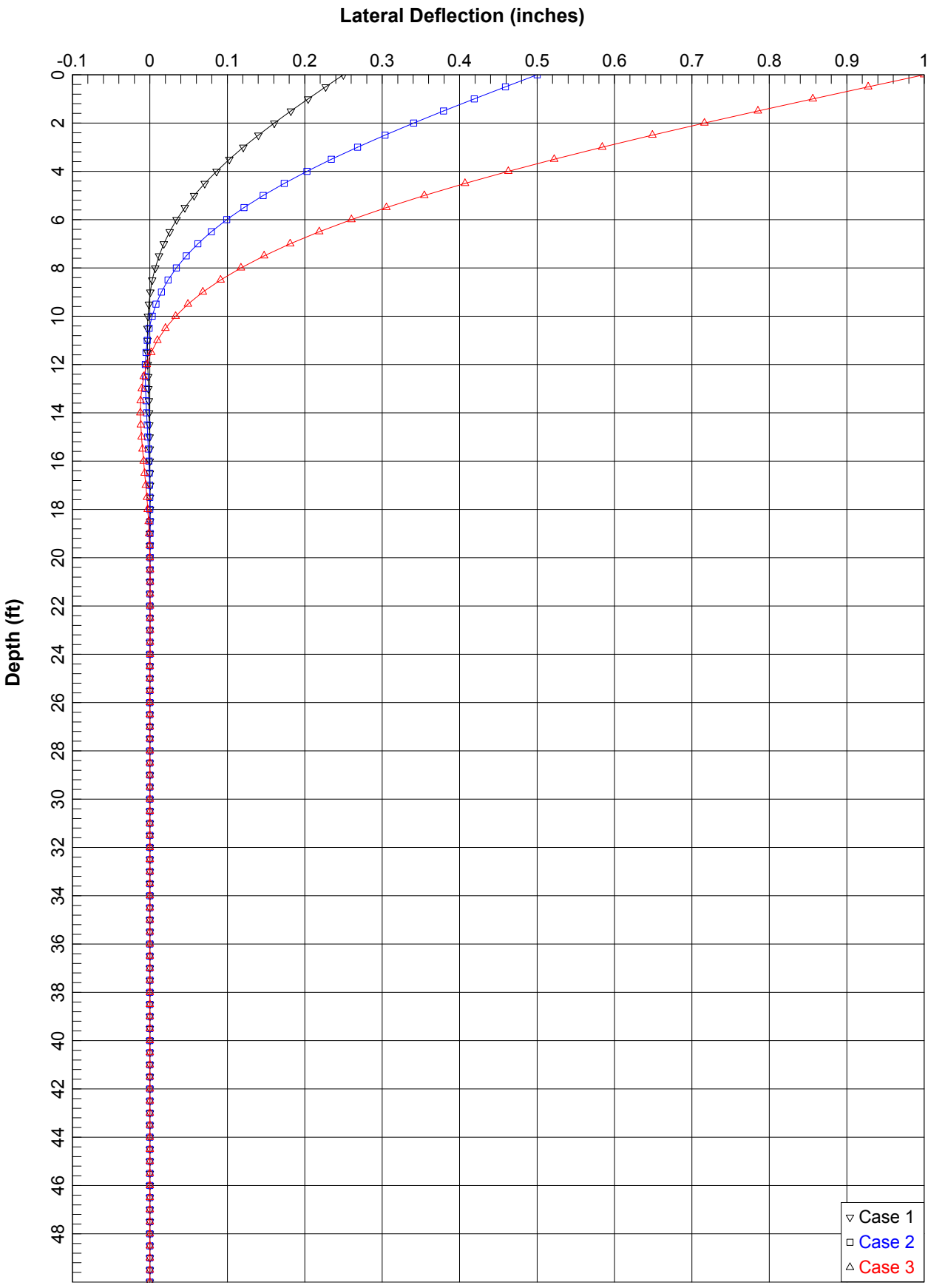
The analysis ended normally.

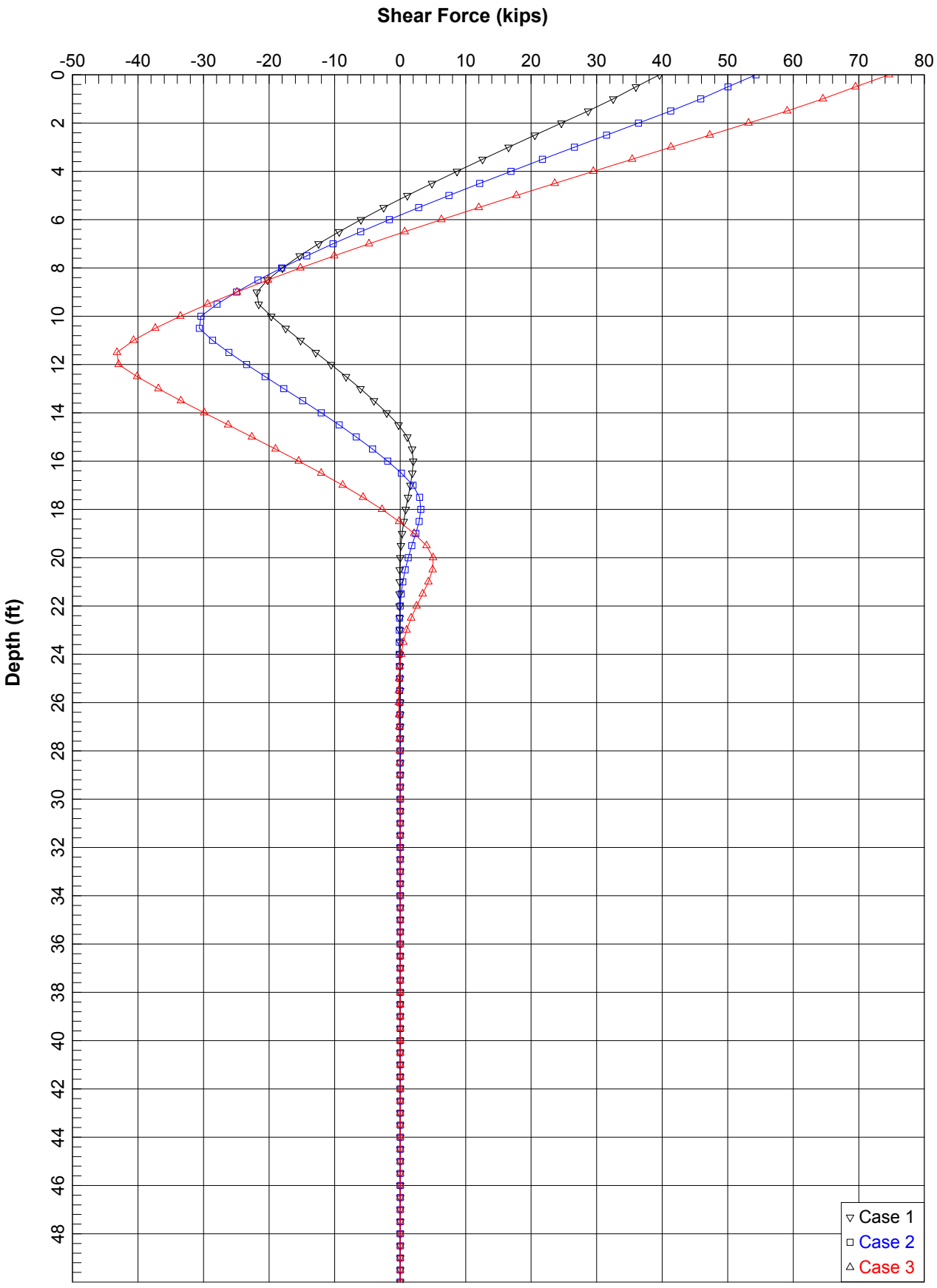
SUPPORT: **BENT 2R**

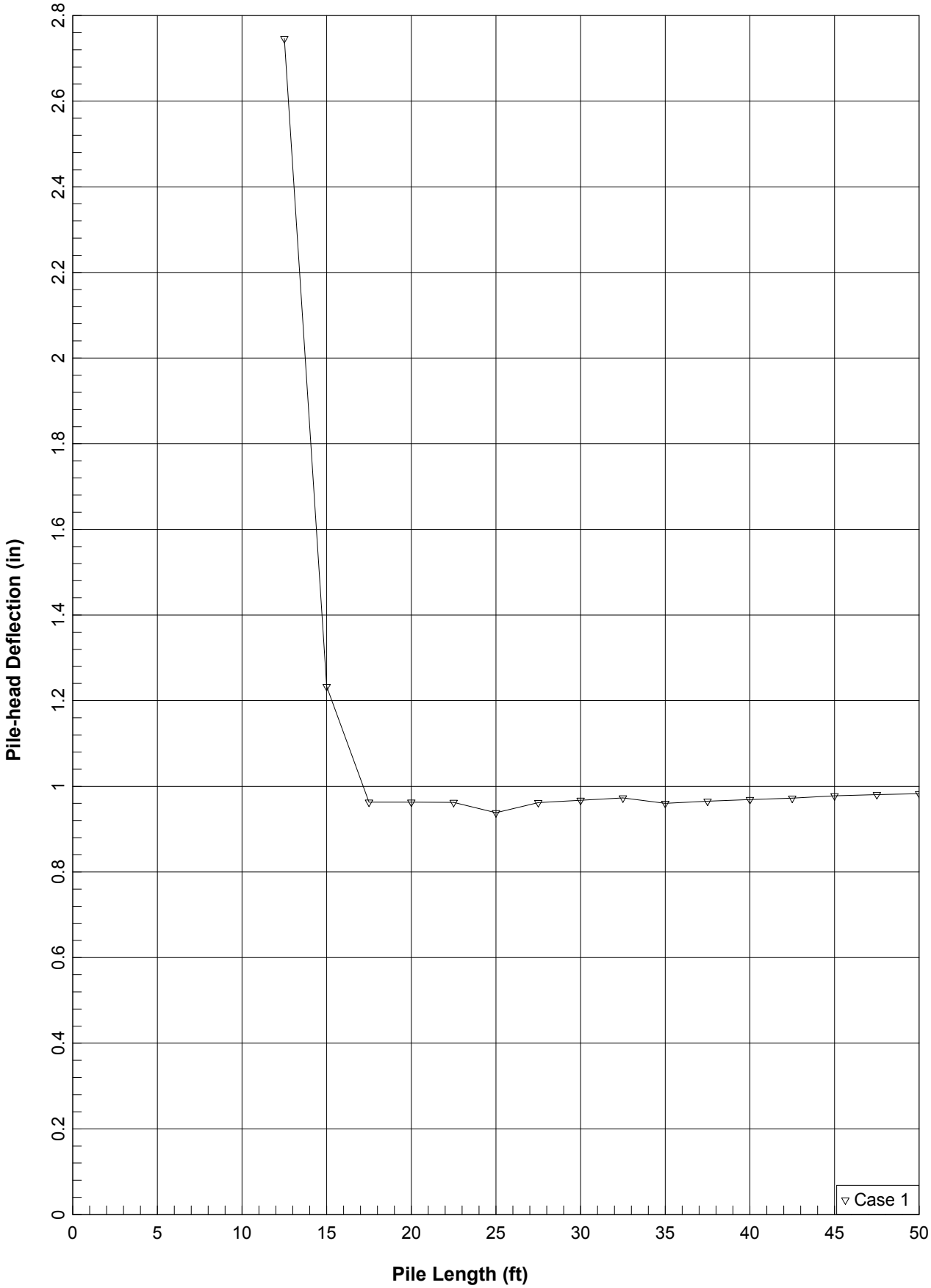
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 1 ft = Stiff Clay without Free Water
Layer 3, Depth 1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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                             All Rights Reserved

================================================================================

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gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file:       Bent 2R_transv_crit length.lp6d
Name of output report file:    Bent 2R_transv_crit length.lp6o
Name of plot output file:      Bent 2R_transv_crit length.lp6p
Name of runtime messeage file: Bent 2R_transv_crit length.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

              Date:  September 13, 2014     Time:  20:21:12

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                              Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =         Circular
   Section Length                              =      50.00000000 ft
   Top Width                                   =      24.00000000 in
   Bottom Width                                =      24.00000000 in
   Top Area                                    =     452.38934212 in
   Bottom Area                                 =     452.38934212 in
   Moment of Inertia at Top                    =    8143.00815810 in
   Moment of Inertia at Bottom                 =    8143.00815810 in
   Elastic Modulus                             =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =        0.000 degrees
                                               =        0.000 radians

Pile Batter Angle                              =        0.000 degrees
                                               =        0.000 radians


--------------------------------------------------------------------------------
                        Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =      -5.00000 ft
   Distance from top of pile to bottom of layer=       0.10000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00700
   Epsilon-50 at bottom of layer               =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =       0.10000 ft
   Distance from top of pile to bottom of layer=       1.00000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    3750.00000 psi
   Undrained cohesion at bottom of layer       =    3750.00000 psi
   Epsilon-50 at top of layer                  =       0.00700
   Epsilon-50 at bottom of layer               =       0.00700


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer   =       1.00000 ft
   Distance from top of pile to bottom of layer=      80.00000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00500
   Epsilon-50 at bottom of layer               =       0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                      Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                Rock Mass                    In-situ      In-situ      Elastic
Layer                 Soil Type                    Depth      Unit Wt.    Cohesion     Friction      qu            or
Factor          J       kpy       Rock Emass      krm          Test         Test       Subgrade
 Num.       (p-y Curve Criteria)                     ft          pcf          psf          deg.       psi           GSI      Epsilon
50     Factor        pci          psi                          Type        Property     Mod. pci
-----  ------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1    Stiff Clay w/o Free Water                      -5.000      125.000     4500.000       --          --          --
0.00700       --          --          --              --          --          --          --          --
                                                    0.10000      125.000     4500.000       --          --          --
0.00700       --          --          --              --          --          --          --          --
  2    Stiff Clay w/o Free Water                     0.10000      125.000     3750.000       --          --          --
0.00700       --          --          --              --          --          --          --          --
                                                      1.000      125.000     3750.000       --          --          --
0.00700       --          --          --              --          --          --          --          --
  3    Stiff Clay w/o Free Water                      1.000      125.000     4500.000       --          --          --
0.00500       --          --          --              --          --          --          --          --
                                                     80.000      125.000     4500.000       --          --          --
0.00500       --          --          --              --          --          --          --          --


--------------------------------------------------------------------------------
                    p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.          ft
-----      ----------      ----------      ----------
  1           0.000          0.4400          1.0000
  2          50.000          0.4400          1.0000
```

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
1	1	V =	74000. lbs	M =	0.0000 in-lbs	185000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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 = 74000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9828	-2.535E-06	74000.	-0.0119	408.9398	2.936E+10	-895.6675	2733.9850	0.000
6.000	0.9116	441061.	68918.	-0.0118	1058.9117	2.936E+10	-798.3682	5254.9672	0.000
12.000	0.8408	853288.	63982.	-0.0117	1666.3813	2.936E+10	-847.0747	6044.4725	0.000
18.000	0.7712	1234811.	58522.	-0.0115	2228.6270	2.936E+10	-972.6252	7567.3727	0.000
24.000	0.7030	1581047.	52668.	-0.0112	2738.8605	2.936E+10	-978.7384	8353.1807	0.000
30.000	0.6368	1891690.	46785.	-0.0108	3196.6416	2.936E+10	-982.4919	9257.1349	0.000
36.000	0.5729	2166534.	40886.	-0.0104	3601.6676	2.936E+10	-983.8008	10303.	0.000
42.000	0.5117	2405470.	34987.	-0.009961	3953.7769	2.936E+10	-982.5753	11522.	0.000
48.000	0.4534	2608487.	29103.	-0.009448	4252.9547	2.936E+10	-978.7192	12952.	0.000
54.000	0.3983	2775679.	23250.	-0.008898	4490.3370	2.936E+10	-972.1280	14645.	0.000
60.000	0.3466	2907244.	17446.	-0.008317	4693.2199	2.936E+10	-962.6865	16665.	0.000
66.000	0.2985	3003493.	11707.	-0.007713	4835.0578	2.936E+10	-950.2649	19102.	0.000
72.000	0.2540	3064851.	6052.0159	-0.007093	4925.4785	2.936E+10	-934.7142	22077.	0.000
78.000	0.2134	3091864.	509.2984	-0.006464	4965.2564	2.936E+10	-915.8583	25756.	0.000
84.000	0.1765	3085205.	-4927.7261	-0.005833	4955.4728	2.936E+10	-893.4832	30379.	0.000
90.000	0.1434	3045680.	-10210.	-0.005206	4897.2269	2.936E+10	-867.3183	36298.	0.000
96.000	0.1140	2974241.	-15323.	-0.004591	4791.9501	2.936E+10	-837.0073	44055.	0.000
102.000	0.0883	2871995.	-20240.	-0.003993	4641.2743	2.936E+10	-802.0553	54516.	0.000
108.000	0.0661	2740223.	-24932.	-0.003420	4447.0879	2.936E+10	-761.7312	69171.	0.000
114.000	0.0472	2580407.	-29361.	-0.002876	4211.5743	2.936E+10	-714.8648	90807.	0.000
120.000	0.0316	2394271.	-33484.	-0.002368	3937.2732	2.936E+10	-659.3753	125361.	0.000
126.000	0.0188	2183854.	-37235.	-0.001900	3627.1907	2.936E+10	-590.9321	188394.	0.000
132.000	0.008759	1951668.	-40501.	-0.001477	3285.0281	2.936E+10	-497.6196	340857.	0.000
138.000	0.001092	1701124.	-42899.	-0.001104	2915.8134	2.936E+10	-301.7520	1657741.	0.000
144.000	-0.004489	1439332.	-42494.	-0.000783	2530.0216	2.936E+10	436.8121	583849.	0.000
150.000	-0.008305	1192939.	-39627.	-0.000514	2166.9222	2.936E+10	518.8790	374870.	0.000
156.000	-0.0107	964954.	-36383.	-0.000294	1830.9513	2.936E+10	562.2462	316521.	0.000
162.000	-0.0118	756992.	-32935.	-0.000118	1524.4859	2.936E+10	587.2999	297929.	0.000
168.000	-0.0121	570000.	-29371.	1.803E-05	1248.9246	2.936E+10	600.5436	298555.	0.000
174.000	-0.0116	404499.	-25755.	0.000118	1005.0326	2.936E+10	604.9360	312593.	0.000
180.000	-0.0107	260684.	-22134.	0.000186	793.0982	2.936E+10	602.0631	338949.	0.000
186.000	-0.009384	138484.	-18549.	0.000226	613.0171	2.936E+10	592.8502	379053.	0.000
192.000	-0.007941	37595.	-15037.	0.000244	464.3414	2.936E+10	577.8526	436613.	0.000
198.000	-0.006452	-42500.	-11631.	0.000244	471.5705	2.936E+10	557.3876	518372.	0.000
204.000	-0.005014	-102519.	-8364.1152	0.000229	560.0182	2.936E+10	531.5911	636083.	0.000
210.000	-0.003703	-143378.	-5284.5378	0.000204	620.2299	2.936E+10	494.9347	801978.	0.000
216.000	-0.002567	-166387.	-2444.8663	0.000172	654.1365	2.936E+10	451.6225	1055530.	0.000
222.000	-0.001636	-173099.	120.4470	0.000138	664.0282	2.936E+10	403.4819	1480169.	0.000
228.000	-0.000916	-165247.	2378.0726	0.000103	652.4566	2.936E+10	349.0599	2285915.	0.000
234.000	-0.000400	-144791.	4166.8279	7.132E-05	622.3116	2.936E+10	247.1918	3712500.	0.000
240.000	-6.037E-05	-115403.	5020.4563	4.473E-05	579.0043	2.936E+10	37.3510	3712500.	0.000
246.000	0.000137	-84645.	4877.7438	2.429E-05	533.6768	2.936E+10	-84.9219	3712500.	0.000
252.000	0.000231	-56924.	4194.0788	9.818E-06	492.8263	2.936E+10	-142.9665	3712500.	0.000
258.000	0.000255	-34337.	3291.7282	4.910E-07	459.5413	2.936E+10	-157.8171	3712500.	0.000
264.000	0.000237	-17424.	2378.4396	-4.799E-06	434.6173	2.936E+10	-146.6125	3712500.	0.000
270.000	0.000197	-5785.4608	1572.0436	-7.171E-06	417.4656	2.936E+10	-122.1862	3712500.	0.000
276.000	0.000151	1456.0645	925.3750	-7.613E-06	411.0855	2.936E+10	-93.3700	3712500.	0.000
282.000	0.000106	5335.9408	448.2894	-6.919E-06	416.8031	2.936E+10	-65.6586	3712500.	0.000
288.000	6.787E-05	6850.8977	125.3254	-5.674E-06	419.0357	2.936E+10	-41.9961	3712500.	0.000
294.000	3.803E-05	6852.4408	-71.2592	-4.273E-06	419.0379	2.936E+10	-23.5321	3712500.	0.000
300.000	1.659E-05	6005.2739	-172.6586	-2.959E-06	417.7895	2.936E+10	-10.2677	3712500.	0.000
306.000	2.521E-06	4787.1068	-208.1422	-1.856E-06	415.9943	2.936E+10	-1.5601	3712500.	0.000

312.000	-5.681E-06	3511.6885	-202.2777	-1.008E-06	414.1148	2.936E+10	3.5150	3712500.	0.000
318.000	-9.576E-06	2362.0123	-173.9566	-4.079E-07	412.4206	2.936E+10	5.9254	3712500.	0.000
324.000	-1.058E-05	1425.1148	-136.5497	-2.086E-08	411.0399	2.936E+10	6.5436	3712500.	0.000
330.000	-9.827E-06	723.4620	-98.6781	1.987E-07	410.0059	2.936E+10	6.0803	3712500.	0.000
336.000	-8.191E-06	240.5366	-65.2328	2.972E-07	409.2943	2.936E+10	5.0681	3712500.	0.000
342.000	-6.260E-06	-59.9909	-38.4082	3.157E-07	409.0282	2.936E+10	3.8734	3712500.	0.000
348.000	-4.403E-06	-221.0621	-18.6153	2.870E-07	409.2656	2.936E+10	2.7242	3712500.	0.000
354.000	-2.817E-06	-284.0113	-5.2143	2.353E-07	409.3583	2.936E+10	1.7428	3712500.	0.000
360.000	-1.579E-06	-284.1566	2.9444	1.773E-07	409.3585	2.936E+10	0.9768	3712500.	0.000
366.000	-6.893E-07	-249.0719	7.1544	1.228E-07	409.3068	2.936E+10	0.4265	3712500.	0.000
372.000	-1.053E-07	-198.5770	8.6293	7.703E-08	409.2324	2.936E+10	0.0652	3712500.	0.000
378.000	2.351E-07	-145.6911	8.3884	4.185E-08	409.1545	2.936E+10	-0.1455	3712500.	0.000
384.000	3.969E-07	-98.0096	7.2151	1.695E-08	409.0842	2.936E+10	-0.2456	3712500.	0.000
390.000	4.385E-07	-59.1469	5.6644	8.860E-10	409.0269	2.936E+10	-0.2713	3712500.	0.000
396.000	4.075E-07	-30.0382	4.0940	-8.228E-09	408.9841	2.936E+10	-0.2522	3712500.	0.000
402.000	3.397E-07	-10.0005	2.7069	-1.232E-08	408.9545	2.936E+10	-0.2102	3712500.	0.000
408.000	2.597E-07	2.4716	1.5941	-1.309E-08	408.9434	2.936E+10	-0.1607	3712500.	0.000
414.000	1.827E-07	9.1583	0.7730	-1.190E-08	408.9533	2.936E+10	-0.1130	3712500.	0.000
420.000	1.169E-07	11.7740	0.2169	-9.762E-09	408.9571	2.936E+10	-0.0723	3712500.	0.000
426.000	6.553E-08	11.7834	-0.1217	-7.354E-09	408.9571	2.936E+10	-0.0405	3712500.	0.000
432.000	2.863E-08	10.3304	-0.2965	-5.094E-09	408.9550	2.936E+10	-0.0177	3712500.	0.000
438.000	4.399E-09	8.2373	-0.3578	-3.197E-09	408.9519	2.936E+10	-0.002722	3712500.	0.000
444.000	-9.732E-09	6.0443	-0.3479	-1.737E-09	408.9487	2.936E+10	0.006022	3712500.	0.000
450.000	-1.645E-08	4.0668	-0.2993	-7.041E-10	408.9458	2.936E+10	0.0102	3712500.	0.000
456.000	-1.818E-08	2.4548	-0.2350	-3.760E-11	408.9434	2.936E+10	0.0112	3712500.	0.000
462.000	-1.690E-08	1.2472	-0.1699	3.407E-10	408.9416	2.936E+10	0.0105	3712500.	0.000
468.000	-1.409E-08	0.4158	-0.1123	5.107E-10	408.9404	2.936E+10	0.008720	3712500.	0.000
474.000	-1.077E-08	-0.1018	-0.0662	5.428E-10	408.9399	2.936E+10	0.006666	3712500.	0.000
480.000	-7.579E-09	-0.3794	-0.0321	4.936E-10	408.9403	2.936E+10	0.004690	3712500.	0.000
486.000	-4.851E-09	-0.4881	-0.009025	4.049E-10	408.9405	2.936E+10	0.003001	3712500.	0.000
492.000	-2.720E-09	-0.4886	0.005029	3.051E-10	408.9405	2.936E+10	0.001683	3712500.	0.000
498.000	-1.189E-09	-0.4284	0.0123	2.114E-10	408.9404	2.936E+10	0.000736	3712500.	0.000
504.000	-1.837E-10	-0.3417	0.0148	1.327E-10	408.9403	2.936E+10	0.000114	3712500.	0.000
510.000	4.029E-10	-0.2507	0.0144	7.215E-11	408.9402	2.936E+10	-0.000249	3712500.	0.000
516.000	6.821E-10	-0.1687	0.0124	2.925E-11	408.9400	2.936E+10	-0.000422	3712500.	0.000
522.000	7.544E-10	-0.1018	0.009747	1.650E-12	408.9399	2.936E+10	-0.000467	3712500.	0.000
528.000	7.019E-10	-0.0517	0.007043	-1.404E-11	408.9399	2.936E+10	-0.000434	3712500.	0.000
534.000	5.868E-10	-0.0173	0.004653	-2.109E-11	408.9398	2.936E+10	-0.000363	3712500.	0.000
540.000	4.488E-10	0.004160	0.002732	-2.243E-11	408.9398	2.936E+10	-0.000278	3712500.	0.000
546.000	3.168E-10	0.0156	0.001311	-2.041E-11	408.9398	2.936E+10	-0.000196	3712500.	0.000
552.000	2.039E-10	0.0199	0.000344	-1.678E-11	408.9398	2.936E+10	-0.000126	3712500.	0.000
558.000	1.154E-10	0.0197	-0.000249	-1.273E-11	408.9398	2.936E+10	-7.143E-05	3712500.	0.000
564.000	5.120E-11	0.0170	-0.000558	-8.974E-12	408.9398	2.936E+10	-3.168E-05	3712500.	0.000
570.000	7.762E-12	0.0131	-0.000668	-5.904E-12	408.9398	2.936E+10	-4.803E-06	3712500.	0.000
576.000	-1.965E-11	0.008080	-0.000645	-3.650E-12	408.9398	2.936E+10	1.216E-05	3712500.	0.000
582.000	-3.604E-11	0.005330	-0.000542	-2.188E-12	408.9398	2.936E+10	2.230E-05	3712500.	0.000
588.000	-4.590E-11	0.002480	-0.000390	-1.390E-12	408.9398	2.936E+10	2.840E-05	3712500.	0.000
594.000	-5.272E-11	0.000653	-0.000207	-1.070E-12	408.9398	2.936E+10	3.262E-05	3712500.	0.000
600.000	-5.874E-11	0.000	0.000	-1.003E-12	408.9398	2.936E+10	3.634E-05	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9828153 inches
Computed slope at pile head = -0.0118762 radians
Maximum bending moment = 3091864. inch-lbs
Maximum shear force = 74000. lbs
Depth of maximum bending moment = 78.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 32
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 74000. lbs
Moment = 0. in-lbs
Axial Load = 185000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9828153	3091864.	74000.
47.500	0.9808205	3093811.	74000.
45.000	0.9776461	3085173.	74000.
42.500	0.9723048	3078967.	74000.
40.000	0.9689681	3070982.	74000.
37.500	0.9650298	3064727.	74000.
35.000	0.9604110	3059514.	74000.
32.500	0.9730958	3084202.	74000.
30.000	0.9673912	3075947.	74000.
27.500	0.9618557	3066484.	74000.
25.000	0.9381929	3043677.	74000.
22.500	0.9623702	3070290.	74000.
20.000	0.9628058	3068135.	74000.
17.500	0.9628965	3059848.	74000.
15.000	1.2328414	2887109.	74000.
12.500	2.7464375	2525420.	74000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Bent 2R_transv_crit length

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 74000.	M = 0.000	185000.	0.98281534	3091864.	74000.	-0.01187616

The analysis ended normally.

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file:       Bent 2R_transv_ave P.lp6d
Name of output report file:    Bent 2R_transv_ave P.lp6o
Name of plot output file:      Bent 2R_transv_ave P.lp6p
Name of runtime messeage file: Bent 2R_transv_ave P.lp6r

--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------

              Date:  September 13, 2014     Time:  20:19:13

--------------------------------------------------------------------------------
                              Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                              Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1          0.00000          24.0000000
  2         50.000000         24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =       Circular
   Section Length                              =     50.00000000 ft
   Top Width                                   =     24.00000000 in
   Bottom Width                                =     24.00000000 in
   Top Area                                    =    452.38934212 in
   Bottom Area                                 =    452.38934212 in
   Moment of Inertia at Top                    =   8143.00815810 in
   Moment of Inertia at Bottom                 =   8143.00815810 in
   Elastic Modulus                             =        3605000. lbs/in^2


--------------------------------------------------------------------------------
                      Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =        0.000 degrees
                                               =        0.000 radians

Pile Batter Angle                              =        0.000 degrees
                                               =        0.000 radians


--------------------------------------------------------------------------------
                      Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =     -5.00000 ft
   Distance from top of pile to bottom of layer=      0.10000 ft
   Effective unit weight at top of layer       =   125.00000 pcf
   Effective unit weight at bottom of layer    =   125.00000 pcf
   Undrained cohesion at top of layer          =  4500.00000 psi
   Undrained cohesion at bottom of layer       =  4500.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =      0.10000 ft
   Distance from top of pile to bottom of layer=      1.00000 ft
   Effective unit weight at top of layer       =   125.00000 pcf
   Effective unit weight at bottom of layer    =   125.00000 pcf
   Undrained cohesion at top of layer          =  3750.00000 psi
   Undrained cohesion at bottom of layer       =  3750.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer   =      1.00000 ft
   Distance from top of pile to bottom of layer=     80.00000 ft
   Effective unit weight at top of layer       =   125.00000 pcf
   Effective unit weight at bottom of layer    =   125.00000 pcf
   Undrained cohesion at top of layer          =  4500.00000 psi
   Undrained cohesion at bottom of layer       =  4500.00000 psi
   Epsilon-50 at top of layer                  =      0.00500
   Epsilon-50 at bottom of layer               =      0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                      Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                Rock Mass                    In-situ      In-situ      Elastic
Layer          Soil Type                          Depth        Unit Wt.     Cohesion     Friction      qu            or
Factor          J       kpy       Rock Emass      krm          Test         Test         Subgrade
 Num.       (p-y Curve Criteria)                    ft           pcf          psf          deg.          psi           GSI      Epsilon
50     Factor        pci          psi                          Type         Property     Mod. pci
-----  ------  ------------  ----------  ----------  ---------  -----------  -----------  ----------  ----------  ----------  ---------
  1     Stiff Clay w/o Free Water                      -5.000      125.000      4500.000       --          --          --
0.00700       --            --          --            --           --           --          --          --
                                                     0.10000      125.000      4500.000       --          --          --
0.00700       --            --          --            --           --           --          --          --
  2     Stiff Clay w/o Free Water                     0.10000      125.000      3750.000       --          --          --
0.00700       --            --          --            --           --           --          --          --
                                                       1.000      125.000      3750.000       --          --          --
0.00700       --            --          --            --           --           --          --          --
  3     Stiff Clay w/o Free Water                      1.000      125.000      4500.000       --          --          --
0.00500       --            --          --            --           --           --          --          --
                                                      80.000      125.000      4500.000       --          --          --
0.00500       --            --          --            --           --           --          --          --


--------------------------------------------------------------------------------
                    p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.          ft
-----      ----------      ----------      ----------
  1          0.000          0.4400          1.0000
  2         50.000          0.4400          1.0000
```

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	185000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	185000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	185000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	39578.	-0.003842	408.9398	2.936E+10	-636.0792	7632.9507	0.000
6.000	0.2270	230283.	35978.	-0.003818	748.2975	2.936E+10	-563.9468	14909.	0.000
12.000	0.2042	440211.	32502.	-0.003749	1057.6599	2.936E+10	-594.6309	17473.	0.000
18.000	0.1820	628633.	28685.	-0.003640	1335.3290	2.936E+10	-677.8754	22353.	0.000
24.000	0.1605	792509.	24621.	-0.003495	1576.8254	2.936E+10	-676.5439	25291.	0.000
30.000	0.1400	931849.	20573.	-0.003319	1782.1652	2.936E+10	-672.7850	28830.	0.000
36.000	0.1207	1046757.	16556.	-0.003117	1951.5011	2.936E+10	-666.4947	33138.	0.000
42.000	0.1026	1137435.	12583.	-0.002893	2085.1283	2.936E+10	-657.5568	38447.	0.000
48.000	0.0860	1204182.	8673.2527	-0.002654	2183.4908	2.936E+10	-645.8376	45082.	0.000
54.000	0.0708	1247406.	4842.2024	-0.002404	2247.1880	2.936E+10	-631.1792	53513.	0.000
60.000	0.0571	1267624.	1108.5011	-0.002147	2276.9830	2.936E+10	-613.3879	64440.	0.000
66.000	0.0450	1265473.	-2508.3100	-0.001888	2273.8129	2.936E+10	-592.2158	78944.	0.000
72.000	0.0345	1241715.	-5986.9392	-0.001631	2238.8017	2.936E+10	-567.3273	98778.	0.000
78.000	0.0254	1197252.	-9303.6316	-0.001382	2173.2778	2.936E+10	-538.2369	126975.	0.000
84.000	0.0179	1133140.	-12431.	-0.001144	2078.7992	2.936E+10	-504.1796	169238.	0.000
90.000	0.0117	1050621.	-15335.	-0.000921	1957.1942	2.936E+10	-463.8066	237739.	0.000
96.000	0.006825	951166.	-17969.	-0.000716	1810.6323	2.936E+10	-414.3220	364261.	0.000
102.000	0.003110	836580.	-20256.	-0.000534	1641.7718	2.936E+10	-348.0682	671470.	0.000
108.000	0.000422	709274.	-21887.	-0.000376	1454.1661	2.936E+10	-195.3944	2779701.	0.000
114.000	-0.001397	574773.	-21587.	-0.000244	1255.9573	2.936E+10	295.2229	1268076.	0.000
120.000	-0.002511	450769.	-19654.	-0.000140	1073.2183	2.936E+10	349.3274	834836.	0.000
126.000	-0.003072	339239.	-17481.	-5.883E-05	908.8611	2.936E+10	374.8032	732134.	0.000
132.000	-0.003217	241124.	-15197.	4.851E-07	764.2743	2.936E+10	386.5344	721026.	0.000
138.000	-0.003066	156871.	-12870.	4.116E-05	640.1132	2.936E+10	389.1674	761636.	0.000
144.000	-0.002723	86591.	-10548.	6.604E-05	536.5457	2.936E+10	384.7826	847964.	0.000
150.000	-0.002273	30145.	-8270.5357	7.797E-05	453.3625	2.936E+10	374.4676	988343.	0.000
156.000	-0.001787	-12828.	-6070.6672	7.974E-05	427.8442	2.936E+10	358.8219	1204768.	0.000
162.000	-0.001316	-42880.	-3979.7636	7.405E-05	472.1309	2.936E+10	338.1460	1541179.	0.000
168.000	-0.000898	-60750.	-2027.8794	6.345E-05	498.4641	2.936E+10	312.4821	2086773.	0.000
174.000	-0.000555	-67356.	-245.9750	5.036E-05	508.1993	2.936E+10	281.4861	3043167.	0.000
180.000	-0.000294	-63813.	1108.3509	3.696E-05	502.9786	2.936E+10	169.9559	3467201.	0.000
186.000	-0.000111	-54138.	1814.6893	2.496E-05	488.7202	2.936E+10	65.4903	3524492.	0.000
192.000	4.740E-06	-42092.	2002.6715	1.507E-05	470.9694	2.936E+10	-2.8295	3581784.	0.000
198.000	6.935E-05	-30139.	1867.9997	7.688E-06	453.3545	2.936E+10	-42.0611	3639076.	0.000
204.000	9.700E-05	-19693.	1562.5479	2.595E-06	437.9610	2.936E+10	-59.7562	3696367.	0.000
210.000	0.000100	-11394.	1196.7360	-5.815E-07	425.7311	2.936E+10	-62.1810	3712500.	0.000
216.000	9.002E-05	-5331.2196	843.0958	-2.291E-06	416.7962	2.936E+10	-55.6990	3712500.	0.000
222.000	7.300E-05	-1272.0797	540.4836	-2.966E-06	410.8144	2.936E+10	-45.1717	3712500.	0.000
228.000	5.443E-05	1161.1676	303.9312	-2.977E-06	410.6509	2.936E+10	-33.6791	3712500.	0.000
234.000	3.728E-05	2381.7037	133.6911	-2.615E-06	412.4496	2.936E+10	-23.0676	3712500.	0.000
240.000	2.305E-05	2771.2656	21.6982	-2.088E-06	413.0237	2.936E+10	-14.2633	3712500.	0.000
246.000	1.222E-05	2646.7182	-43.7776	-1.535E-06	412.8401	2.936E+10	-7.5619	3712500.	0.000
252.000	4.637E-06	2249.3410	-75.0699	-1.034E-06	412.2545	2.936E+10	-2.8688	3712500.	0.000
258.000	-1.898E-07	1748.1754	-83.3240	-6.257E-07	411.5160	2.936E+10	0.1175	3712500.	0.000
264.000	-2.872E-06	1250.8417	-77.6400	-3.192E-07	410.7831	2.936E+10	1.7772	3712500.	0.000
270.000	-4.021E-06	817.2044	-64.8447	-1.079E-07	410.1441	2.936E+10	2.4879	3712500.	0.000
276.000	-4.167E-06	472.9448	-49.6459	2.394E-08	409.6367	2.936E+10	2.5784	3712500.	0.000
282.000	-3.733E-06	221.4005	-34.9805	9.490E-08	409.2661	2.936E+10	2.3101	3712500.	0.000
288.000	-3.028E-06	52.9686	-22.4290	1.229E-07	409.0178	2.936E+10	1.8737	3712500.	0.000

294.000	-2.258E-06	-48.0205	-12.6161	1.234E-07	409.0106	2.936E+10	1.3972	3712500.	0.000
300.000	-1.547E-06	-98.6988	-5.5530	1.085E-07	409.0852	2.936E+10	0.9571	3712500.	0.000
306.000	-9.567E-07	-114.8978	-0.9058	8.663E-08	409.1091	2.936E+10	0.5919	3712500.	0.000
312.000	-5.074E-07	-109.7607	1.8119	6.367E-08	409.1015	2.936E+10	0.3139	3712500.	0.000
318.000	-1.927E-07	-93.2969	3.1113	4.292E-08	409.0773	2.936E+10	0.1192	3712500.	0.000
324.000	7.612E-09	-72.5202	3.4548	2.597E-08	409.0467	2.936E+10	-0.004710	3712500.	0.000
330.000	1.190E-07	-51.8966	3.2199	1.325E-08	409.0163	2.936E+10	-0.0736	3712500.	0.000
336.000	1.667E-07	-33.9111	2.6897	4.486E-09	408.9898	2.936E+10	-0.1031	3712500.	0.000
342.000	1.728E-07	-19.6306	2.0595	-9.859E-10	408.9687	2.936E+10	-0.1069	3712500.	0.000
348.000	1.548E-07	-9.1945	1.4514	-3.932E-09	408.9533	2.936E+10	-0.0958	3712500.	0.000
354.000	1.256E-07	-2.2056	0.9308	-5.097E-09	408.9430	2.936E+10	-0.0777	3712500.	0.000
360.000	9.368E-08	1.9859	0.5237	-5.119E-09	408.9427	2.936E+10	-0.0580	3712500.	0.000
366.000	6.418E-08	4.0901	0.2307	-4.498E-09	408.9458	2.936E+10	-0.0397	3712500.	0.000
372.000	3.970E-08	4.7637	0.0378	-3.593E-09	408.9468	2.936E+10	-0.0246	3712500.	0.000
378.000	2.106E-08	4.5518	-0.0750	-2.641E-09	408.9465	2.936E+10	-0.0130	3712500.	0.000
384.000	8.007E-09	3.8697	-0.1290	-1.781E-09	408.9455	2.936E+10	-0.004954	3712500.	0.000
390.000	-3.049E-10	3.0084	-0.1432	-1.078E-09	408.9442	2.936E+10	0.000189	3712500.	0.000
396.000	-4.927E-09	2.1532	-0.1335	-5.503E-10	408.9430	2.936E+10	0.003049	3712500.	0.000
402.000	-6.909E-09	1.4072	-0.1116	-1.865E-10	408.9419	2.936E+10	0.004275	3712500.	0.000
408.000	-7.165E-09	0.8148	-0.0854	4.059E-11	408.9410	2.936E+10	0.004433	3712500.	0.000
414.000	-6.422E-09	0.3818	-0.0602	1.629E-10	408.9403	2.936E+10	0.003974	3712500.	0.000
420.000	-5.211E-09	0.0918	-0.0386	2.113E-10	408.9399	2.936E+10	0.003224	3712500.	0.000
426.000	-3.887E-09	-0.0821	-0.0217	2.123E-10	408.9399	2.936E+10	0.002405	3712500.	0.000
432.000	-2.663E-09	-0.1695	-0.009580	1.866E-10	408.9400	2.936E+10	0.001648	3712500.	0.000
438.000	-1.648E-09	-0.1975	-0.001578	1.491E-10	408.9401	2.936E+10	0.001020	3712500.	0.000
444.000	-8.745E-10	-0.1888	0.003104	1.096E-10	408.9401	2.936E+10	0.000541	3712500.	0.000
450.000	-3.327E-10	-0.1605	0.005344	7.389E-11	408.9400	2.936E+10	0.000206	3712500.	0.000
456.000	1.220E-11	-0.1248	0.005939	4.473E-11	408.9400	2.936E+10	-7.548E-06	3712500.	0.000
462.000	2.041E-10	-0.0893	0.005538	2.285E-11	408.9399	2.936E+10	-0.000126	3712500.	0.000
468.000	2.864E-10	-0.0584	0.004627	7.753E-12	408.9399	2.936E+10	-0.000177	3712500.	0.000
474.000	2.971E-10	-0.0338	0.003544	-1.671E-12	408.9398	2.936E+10	-0.000184	3712500.	0.000
480.000	2.664E-10	-0.0159	0.002498	-6.747E-12	408.9398	2.936E+10	-0.000165	3712500.	0.000
486.000	2.161E-10	-0.003824	0.001603	-8.759E-12	408.9398	2.936E+10	-0.000134	3712500.	0.000
492.000	1.612E-10	0.003395	0.000902	-8.803E-12	408.9398	2.936E+10	-9.977E-05	3712500.	0.000
498.000	1.105E-10	0.007022	0.000398	-7.738E-12	408.9398	2.936E+10	-6.838E-05	3712500.	0.000
504.000	6.839E-11	0.008186	6.573E-05	-6.184E-12	408.9398	2.936E+10	-4.231E-05	3712500.	0.000
510.000	3.630E-11	0.007825	-0.000129	-4.548E-12	408.9398	2.936E+10	-2.246E-05	3712500.	0.000
516.000	1.381E-11	0.006653	-0.000222	-3.068E-12	408.9398	2.936E+10	-8.548E-06	3712500.	0.000
522.000	0.000	0.005172	-0.000246	-1.860E-12	408.9398	2.936E+10	3.190E-07	3712500.	0.000
528.000	-8.503E-12	0.003701	-0.000230	0.000	408.9398	2.936E+10	5.261E-06	3712500.	0.000
534.000	-1.195E-11	0.002419	-0.000192	0.000	408.9398	2.936E+10	7.395E-06	3712500.	0.000
540.000	-1.243E-11	0.001402	-0.000146	0.000	408.9398	2.936E+10	7.693E-06	3712500.	0.000
546.000	-1.120E-11	0.000663	-0.000102	0.000	408.9398	2.936E+10	6.928E-06	3712500.	0.000
552.000	-9.146E-12	0.000172	-6.472E-05	0.000	408.9398	2.936E+10	5.659E-06	3712500.	0.000
558.000	-6.884E-12	-0.000115	-3.497E-05	0.000	408.9398	2.936E+10	4.260E-06	3712500.	0.000
564.000	-4.764E-12	-0.000248	-1.334E-05	0.000	408.9398	2.936E+10	2.948E-06	3712500.	0.000
570.000	-2.947E-12	-0.000276	9.694E-07	0.000	408.9398	2.936E+10	1.824E-06	3712500.	0.000
576.000	-1.469E-12	-0.000237	9.168E-06	0.000	408.9398	2.936E+10	9.091E-07	3712500.	0.000
582.000	0.000	-0.000166	1.242E-05	0.000	408.9398	2.936E+10	1.746E-07	3712500.	0.000
588.000	0.000	-8.865E-05	1.164E-05	0.000	408.9398	2.936E+10	-4.339E-07	3712500.	0.000
594.000	1.576E-12	-2.677E-05	7.414E-06	0.000	408.9398	2.936E+10	-9.752E-07	3712500.	0.000
600.000	2.418E-12	0.000	0.000	0.000	408.9398	2.936E+10	-1.496E-06	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0038415 radians
Maximum bending moment = 1267624. inch-lbs
Maximum shear force = 39578. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	54302.	-0.006794	408.9398	2.936E+10	-756.4299	4538.5796	0.000
6.000	0.4592	319734.	50014.	-0.006761	880.1185	2.936E+10	-672.6119	8787.7414	0.000
12.000	0.4189	615182.	45862.	-0.006665	1315.5072	2.936E+10	-711.6411	10194.	0.000
18.000	0.3793	884871.	41283.	-0.006512	1712.9364	2.936E+10	-814.4964	12886.	0.000
24.000	0.3407	1125038.	36390.	-0.006307	2066.8595	2.936E+10	-816.6307	14380.	0.000
30.000	0.3036	1335550.	31491.	-0.006055	2377.0828	2.936E+10	-816.3850	16135.	0.000
36.000	0.2681	1516370.	26601.	-0.005764	2643.5490	2.936E+10	-813.6681	18212.	0.000
42.000	0.2344	1667554.	21735.	-0.005438	2866.3418	2.936E+10	-808.3818	20691.	0.000
48.000	0.2028	1789257.	16908.	-0.005085	3045.6911	2.936E+10	-800.4178	23681.	0.000
54.000	0.1734	1881740.	12138.	-0.004710	3181.9787	2.936E+10	-789.6554	27325.	0.000
60.000	0.1463	1945368.	7441.0568	-0.004319	3275.7447	2.936E+10	-775.9561	31827.	0.000
66.000	0.1216	1980620.	2835.7167	-0.003918	3327.6945	2.936E+10	-759.1573	37469.	0.000
72.000	0.0993	1988094.	-1658.9372	-0.003512	3338.7975	2.936E+10	-739.0607	44668.	0.000
78.000	0.0794	1968510.	-6022.3659	-0.003108	3309.8475	2.936E+10	-715.4155	54047.	0.000
84.000	0.0620	1922724.	-10232.	-0.002710	3242.3754	2.936E+10	-687.8882	66589.	0.000
90.000	0.0469	1851738.	-14264.	-0.002324	3137.7669	2.936E+10	-656.0082	83922.	0.000
96.000	0.0341	1756716.	-18089.	-0.001955	2997.7369	2.936E+10	-619.0613	108954.	0.000
102.000	0.0234	1639099.	-21674.	-0.001608	2824.2774	2.936E+10	-575.8572	147432.	0.000
108.000	0.0148	1500200.	-24974.	-0.001288	2619.7197	2.936E+10	-524.1403	212635.	0.000
114.000	0.007984	1342181.	-27922.	-0.000997	2386.8540	2.936E+10	-458.6908	344711.	0.000
120.000	0.002824	1167345.	-30383.	-0.000741	2129.2052	2.936E+10	-361.3643	767777.	0.000
126.000	-0.000904	979234.	-30642.	-0.000521	1851.9952	2.936E+10	274.9094	1823821.	0.000
132.000	-0.003432	800799.	-28638.	-0.000339	1589.0422	2.936E+10	392.9838	687056.	0.000
138.000	-0.004977	636329.	-26148.	-0.000193	1346.6698	2.936E+10	439.7166	530063.	0.000
144.000	-0.005742	487544.	-23428.	-7.769E-05	1127.4124	2.936E+10	464.3268	485155.	0.000
150.000	-0.005910	355365.	-20606.	8.452E-06	932.6254	2.936E+10	476.2913	483577.	0.000

156.000	-0.005641	240251.	-17739.	6.932E-05	762.9875	2.936E+10	479.2831	509786.	0.000
162.000	-0.005078	142337.	-14876.	0.000108	618.6961	2.936E+10	475.1081	561401.	0.000
168.000	-0.004340	61495.	-12057.	0.000129	499.5623	2.936E+10	464.7579	642531.	0.000
174.000	-0.003527	-2629.9141	-9316.0377	0.000135	412.8154	2.936E+10	448.7918	763526.	0.000
180.000	-0.002717	-50598.	-6687.1821	0.000130	483.5035	2.936E+10	427.4934	944130.	0.000
186.000	-0.001969	-83164.	-4201.9483	0.000116	531.4954	2.936E+10	400.9179	1221809.	0.000
192.000	-0.001323	-101279.	-1892.6630	9.731E-05	558.1903	2.936E+10	368.8439	1672940.	0.000
198.000	-0.000801	-106092.	205.4670	7.612E-05	565.2834	2.936E+10	330.5327	2475552.	0.000
204.000	-0.000409	-98982.	1953.8452	5.516E-05	554.8058	2.936E+10	252.2600	3696367.	0.000
210.000	-0.000139	-82769.	2969.0492	3.658E-05	530.9123	2.936E+10	86.1413	3712500.	0.000
216.000	2.953E-05	-63435.	3172.6526	2.164E-05	502.4212	2.936E+10	-18.2735	3712500.	0.000
222.000	0.000120	-44745.	2894.1706	1.059E-05	474.8783	2.936E+10	-74.5538	3712500.	0.000
228.000	0.000157	-28728.	2370.8638	3.078E-06	451.2756	2.936E+10	-96.8818	3712500.	0.000
234.000	0.000157	-16193.	1796.9869	-1.512E-06	432.8031	2.936E+10	-97.4106	3712500.	0.000
240.000	0.000138	-7161.2389	1247.7996	-3.899E-06	419.4930	2.936E+10	-85.6519	3712500.	0.000
246.000	0.000111	-1211.0343	785.4664	-4.755E-06	410.7244	2.936E+10	-68.4592	3712500.	0.000
252.000	8.137E-05	2274.9131	429.0457	-4.646E-06	412.2922	2.936E+10	-50.3477	3712500.	0.000
258.000	5.489E-05	3947.8288	176.1159	-4.010E-06	414.7575	2.936E+10	-33.9623	3712500.	0.000
264.000	3.325E-05	4397.2067	12.5115	-3.157E-06	415.4198	2.936E+10	-20.5725	3712500.	0.000
270.000	1.700E-05	4104.9758	-80.7643	-2.288E-06	414.9891	2.936E+10	-10.5194	3712500.	0.000
276.000	5.788E-06	3433.1158	-123.0657	-1.518E-06	413.9990	2.936E+10	-3.5811	3712500.	0.000
282.000	-1.216E-06	2631.5578	-131.5525	-8.983E-07	412.8178	2.936E+10	0.7522	3712500.	0.000
288.000	-4.992E-06	1856.4803	-120.0303	-4.396E-07	411.6756	2.936E+10	3.0886	3712500.	0.000
294.000	-6.491E-06	1192.1701	-98.7157	-1.281E-07	410.6966	2.936E+10	4.0163	3712500.	0.000
300.000	-6.528E-06	672.1759	-74.5487	6.247E-08	409.9303	2.936E+10	4.0394	3712500.	0.000
306.000	-5.741E-06	297.4472	-51.7732	1.616E-07	409.3781	2.936E+10	3.5524	3712500.	0.000
312.000	-4.590E-06	50.5388	-32.5965	1.971E-07	409.0143	2.936E+10	2.8398	3712500.	0.000
318.000	-3.376E-06	-94.1487	-17.8108	1.927E-07	409.0789	2.936E+10	2.0888	3712500.	0.000
324.000	-2.278E-06	-163.6185	-7.3168	1.663E-07	409.1809	2.936E+10	1.4092	3712500.	0.000
330.000	-1.380E-06	-182.3190	-0.5276	1.310E-07	409.2085	2.936E+10	0.8538	3712500.	0.000
336.000	-7.059E-07	-170.2406	3.3441	9.494E-08	409.1967	2.936E+10	0.4368	3712500.	0.000
342.000	-2.406E-07	-142.4004	5.1010	6.299E-08	409.1496	2.936E+10	0.1489	3712500.	0.000
348.000	5.003E-08	-109.1684	5.4548	3.728E-08	409.1007	2.936E+10	-0.0310	3712500.	0.000
354.000	2.068E-07	-77.0261	4.9780	1.825E-08	409.0533	2.936E+10	-0.1280	3712500.	0.000
360.000	2.691E-07	-49.4725	4.0947	5.327E-09	409.0227	2.936E+10	-0.1665	3712500.	0.000
366.000	2.707E-07	-27.9017	3.0927	-2.580E-09	408.9809	2.936E+10	-0.1675	3712500.	0.000
372.000	2.381E-07	-12.3547	2.1482	-6.694E-09	408.9580	2.936E+10	-0.1473	3712500.	0.000
378.000	1.904E-07	-2.1090	1.3527	-8.172E-09	408.9399	2.936E+10	-0.1179	3712500.	0.000
384.000	1.401E-07	3.8964	0.7394	-7.990E-09	408.9455	2.936E+10	-0.0867	3712500.	0.000
390.000	9.450E-08	6.7812	0.3040	-6.899E-09	408.9498	2.936E+10	-0.0585	3712500.	0.000
396.000	5.727E-08	7.5594	0.0222	-5.433E-09	408.9509	2.936E+10	-0.0354	3712500.	0.000
402.000	2.931E-08	7.0602	-0.1385	-3.939E-09	408.9509	2.936E+10	-0.0181	3712500.	0.000
408.000	1.000E-08	5.9065	-0.2114	-2.614E-09	408.9485	2.936E+10	-0.006189	3712500.	0.000
414.000	-2.059E-09	4.5288	-0.2262	-1.547E-09	408.9465	2.936E+10	0.001274	3712500.	0.000
420.000	-8.567E-09	3.1058	-0.2065	-7.580E-10	408.9443	2.936E+10	0.005301	3712500.	0.000
426.000	-1.116E-08	2.0530	-0.1698	-2.216E-10	408.9428	2.936E+10	0.006902	3712500.	0.000
432.000	-1.123E-08	1.1582	-0.1283	1.066E-10	408.9415	2.936E+10	0.006946	3712500.	0.000
438.000	-9.876E-09	0.5132	-0.0891	2.774E-10	408.9405	2.936E+10	0.006111	3712500.	0.000
444.000	-7.897E-09	0.0080	-0.0561	3.388E-10	408.9399	2.936E+10	0.004888	3712500.	0.000
450.000	-5.810E-09	-0.1613	-0.0307	3.313E-10	408.9400	2.936E+10	0.003595	3712500.	0.000
456.000	-3.921E-09	-0.2810	-0.0126	2.861E-10	408.9402	2.936E+10	0.002426	3712500.	0.000
462.000	-2.377E-09	-0.3134	-0.000938	2.254E-10	408.9402	2.936E+10	0.001471	3712500.	0.000
468.000	-1.217E-09	-0.2928	0.005733	1.634E-10	408.9402	2.936E+10	0.000753	3712500.	0.000
474.000	-4.158E-10	-0.2450	0.008764	1.085E-10	408.9401	2.936E+10	0.000257	3712500.	0.000
480.000	8.476E-11	-0.1879	0.009378	6.423E-11	408.9401	2.936E+10	-5.244E-05	3712500.	0.000
486.000	3.549E-10	-0.1326	0.008562	3.148E-11	408.9400	2.936E+10	-0.000220	3712500.	0.000
492.000	4.625E-10	-0.0852	0.007045	9.218E-12	408.9399	2.936E+10	-0.000286	3712500.	0.000
498.000	4.655E-10	-0.0481	0.005322	-4.402E-12	408.9399	2.936E+10	-0.000288	3712500.	0.000
504.000	4.096E-10	-0.0213	0.003698	-1.149E-11	408.9398	2.936E+10	-0.000253	3712500.	0.000
510.000	3.276E-10	-0.003083	0.002329	-1.485E-11	408.9398	2.936E+10	-0.000203	3712500.	0.000
516.000	2.411E-10	0.006659	0.001274	-1.375E-11	408.9398	2.936E+10	-0.000149	3712500.	0.000
522.000	1.627E-10	0.0116	0.000524	-1.188E-11	408.9398	2.936E+10	-0.000101	3712500.	0.000
528.000	9.853E-11	0.0130	3.930E-05	-9.362E-12	408.9398	2.936E+10	-6.096E-05	3712500.	0.000
534.000	5.031E-11	0.0121	-0.000237	-6.798E-12	408.9398	2.936E+10	-3.113E-05	3712500.	0.000
540.000	1.696E-11	0.0101	-0.000362	-4.522E-12	408.9398	2.936E+10	-1.049E-05	3712500.	0.000
546.000	-3.953E-12	0.007790	-0.000386	-2.689E-12	408.9398	2.936E+10	2.446E-06	3712500.	0.000
552.000	-1.531E-11	0.005520	-0.000350	-1.329E-12	408.9398	2.936E+10	9.473E-06	3712500.	0.000
558.000	-1.990E-11	0.003590	-0.000285	0.000	408.9398	2.936E+10	1.231E-05	3712500.	0.000
564.000	-2.008E-11	0.002103	-0.000211	0.000	408.9398	2.936E+10	1.243E-05	3712500.	0.000
570.000	-1.769E-11	0.001062	-0.000141	0.000	408.9398	2.936E+10	1.095E-05	3712500.	0.000
576.000	-1.399E-11	0.000415	-8.172E-05	0.000	408.9398	2.936E+10	8.659E-06	3712500.	0.000
582.000	-9.790E-12	7.971E-05	-3.757E-05	0.000	408.9398	2.936E+10	6.057E-06	3712500.	0.000
588.000	-5.488E-12	-3.750E-05	-9.216E-06	0.000	408.9398	2.936E+10	3.395E-06	3712500.	0.000
594.000	-2.231E-12	-3.247E-05	3.256E-06	0.000	408.9398	2.936E+10	7.619E-07	3712500.	0.000
600.000	2.985E-12	0.000	0.000	0.000	408.9398	2.936E+10	-1.847E-06	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =     0.5000000 inches
Computed slope at pile head     =    -0.0067935 radians
Maximum bending moment          =       1988094. inch-lbs
Maximum shear force             =         54302. lbs
Depth of maximum bending moment =    72.0000000 inches below pile head
Depth of maximum shear force    =     0.000000 inches below pile head
Number of iterations            =            21
Number of zero deflection points =            8
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	74584.	-0.0120	408.9398	2.936E+10	-899.5519	2698.6556	0.000
6.000	0.9277	444685.	69480.	-0.0120	1064.2526	2.936E+10	-801.8801	5186.1076	0.000
12.000	0.8560	860401.	64522.	-0.0119	1676.8757	2.936E+10	-850.8608	5964.0134	0.000

18.000	0.7853	1245291.	59038.	-0.0117	2244.0716	2.936E+10	-977.0507	7464.8594	0.000
24.000	0.7162	1594725.	53157.	-0.0114	2759.0170	2.936E+10	-983.2809	8237.7989	0.000
30.000	0.6490	1908399.	47246.	-0.0110	3221.2646	2.936E+10	-987.1526	9126.4908	0.000
36.000	0.5841	2186102.	41319.	-0.0106	3630.5040	2.936E+10	-988.5814	10154.	0.000
42.000	0.5220	2427720.	35390.	-0.0101	3986.5667	2.936E+10	-987.4780	11351.	0.000
48.000	0.4628	2633239.	29477.	-0.009596	4289.4303	2.936E+10	-983.7467	12755.	0.000
54.000	0.4068	2802745.	23594.	-0.009041	4539.2243	2.936E+10	-977.2837	14414.	0.000
60.000	0.3543	2936433.	17758.	-0.008454	4736.2346	2.936E+10	-967.9748	16394.	0.000
66.000	0.3053	3034608.	11987.	-0.007844	4880.9105	2.936E+10	-955.6915	18779.	0.000
72.000	0.2601	3097689.	6298.9032	-0.007218	4973.8709	2.936E+10	-940.2867	21687.	0.000
78.000	0.2187	3126218.	713.2820	-0.006581	5015.9118	2.936E+10	-921.5870	25279.	0.000
84.000	0.1812	3120859.	-4749.6244	-0.005943	5008.0158	2.936E+10	-899.3818	29786.	0.000
90.000	0.1474	3082416.	-10068.	-0.005309	4951.3628	2.936E+10	-873.4065	35547.	0.000
96.000	0.1175	3011830.	-15218.	-0.004686	4847.3435	2.936E+10	-843.3134	43079.	0.000
102.000	0.0912	2910201.	-20174.	-0.004081	4697.5781	2.936E+10	-808.6225	53207.	0.000
108.000	0.0685	2778802.	-24906.	-0.003500	4503.9409	2.936E+10	-768.6285	67341.	0.000
114.000	0.0492	2619102.	-29378.	-0.002948	4268.5978	2.936E+10	-722.2119	88093.	0.000
120.000	0.0331	2432808.	-33547.	-0.002432	3994.0644	2.936E+10	-667.4037	120953.	0.000
126.000	0.0200	2221936.	-37350.	-0.001956	3683.3108	2.936E+10	-600.1771	179979.	0.000
132.000	0.009634	1988953.	-40680.	-0.001526	3339.9730	2.936E+10	-509.8363	317515.	0.000
138.000	0.001699	1737165.	-43223.	-0.001145	2968.9244	2.936E+10	-337.7343	1192449.	0.000
144.000	-0.004105	1472824.	-42956.	-0.000817	2579.3767	2.936E+10	426.6740	623616.	0.000
150.000	-0.008104	1223509.	-40129.	-0.000541	2211.9724	2.936E+10	515.4185	381626.	0.000
156.000	-0.0106	992472.	-36899.	-0.000315	1871.5029	2.936E+10	561.2704	317658.	0.000
162.000	-0.0119	781415.	-33452.	-0.000134	1560.4778	2.936E+10	587.7728	296800.	0.000
168.000	-0.0122	591341.	-29883.	6.682E-06	1280.3738	2.936E+10	602.0340	295969.	0.000
174.000	-0.0118	422806.	-26255.	0.000110	1032.0110	2.936E+10	607.2198	308704.	0.000
180.000	-0.0109	276035.	-22618.	0.000182	815.7208	2.936E+10	605.0085	333020.	0.000
186.000	-0.009621	150982.	-19014.	0.000225	631.4351	2.936E+10	596.3739	371917.	0.000
192.000	-0.008176	47364.	-15479.	0.000246	478.7375	2.936E+10	581.9005	427019.	0.000
198.000	-0.006673	-35317.	-12048.	0.000247	460.9848	2.936E+10	561.9251	505232.	0.000
204.000	-0.005214	-97760.	-8752.3894	0.000233	553.0046	2.936E+10	536.5998	617534.	0.000
210.000	-0.003874	-140863.	-5641.5320	0.000209	616.5242	2.936E+10	500.3526	774962.	0.000
216.000	-0.002707	-165922.	-2768.1579	0.000178	653.4522	2.936E+10	457.4387	1013945.	0.000
222.000	-0.001743	-174475.	-166.5672	0.000143	666.0508	2.936E+10	409.7582	1410235.	0.000
228.000	-0.000994	-168238.	2130.7064	0.000108	656.8647	2.936E+10	355.9997	2149318.	0.000
234.000	-0.000451	-149146.	4035.0612	7.530E-05	628.7301	2.936E+10	278.7852	3712500.	0.000
240.000	-0.000105	-119084.	5038.8887	4.777E-05	585.7555	2.936E+10	55.8273	3712500.	0.000
246.000	0.000123	-88785.	4978.1208	2.646E-05	539.7791	2.936E+10	-76.0866	3712500.	0.000
252.000	0.000227	-60306.	4327.9714	1.122E-05	497.8096	2.936E+10	-140.6299	3712500.	0.000
258.000	0.000258	-36875.	3427.8418	1.291E-06	463.2805	2.936E+10	-159.4133	3712500.	0.000
264.000	0.000243	-19174.	2498.9536	-4.432E-06	437.0963	2.936E+10	-150.2161	3712500.	0.000
270.000	0.000204	-6877.4605	1668.8970	-7.099E-06	419.0748	2.936E+10	-126.4694	3712500.	0.000
276.000	0.000158	868.1328	996.9766	-7.713E-06	410.2191	2.936E+10	-97.5041	3712500.	0.000
282.000	0.000112	5103.3828	496.8720	-7.103E-06	416.4604	2.936E+10	-69.1975	3712500.	0.000
288.000	7.234E-05	6846.3661	154.9896	-5.882E-06	419.0290	2.936E+10	-44.7633	3712500.	0.000
294.000	4.125E-05	6976.3164	-55.8729	-4.469E-06	419.2205	2.936E+10	-25.5242	3712500.	0.000
300.000	1.871E-05	6185.8127	-167.1817	-3.124E-06	418.0555	2.936E+10	-11.5787	3712500.	0.000
306.000	3.776E-06	4977.6719	-208.0889	-1.970E-06	415.2743	2.936E+10	-2.3270	3712500.	0.000
312.000	-5.088E-06	3683.4292	-206.4358	-1.098E-06	414.3679	2.936E+10	3.1481	3712500.	0.000
318.000	-9.419E-06	2502.2812	-179.5071	-4.662E-07	412.6273	2.936E+10	5.8282	3712500.	0.000
324.000	-1.068E-05	1530.3795	-142.1940	-5.407E-08	411.1950	2.936E+10	6.6095	3712500.	0.000
330.000	-1.007E-05	796.0738	-103.6764	1.837E-07	410.1129	2.936E+10	6.2296	3712500.	0.000
336.000	-8.478E-06	285.8549	-69.2503	2.942E-07	409.3610	2.936E+10	5.2457	3712500.	0.000
342.000	-6.537E-06	-35.5835	-41.3787	3.198E-07	408.9922	2.936E+10	4.0449	3712500.	0.000
348.000	-4.646E-06	-211.3993	-20.6311	2.940E-07	408.9513	2.936E+10	2.8710	3712500.	0.000
354.000	-3.002E-06	-283.8111	-6.4455	2.440E-07	409.3580	2.936E+10	1.8576	3712500.	0.000
360.000	-1.712E-06	-289.2866	2.3056	1.854E-07	409.3661	2.936E+10	1.0595	3712500.	0.000
366.000	-7.772E-07	-256.5555	6.9267	1.296E-07	409.3179	2.936E+10	0.4809	3712500.	0.000
372.000	-1.568E-07	-206.4539	8.6604	8.232E-08	409.2440	2.936E+10	0.0970	3712500.	0.000
378.000	2.105E-07	-152.8138	8.5606	4.559E-08	409.1650	2.936E+10	-0.1302	3712500.	0.000
384.000	3.904E-07	-103.8279	7.4452	1.937E-08	409.0928	2.936E+10	-0.2415	3712500.	0.000
390.000	4.439E-07	-63.5139	5.8985	2.260E-09	409.0334	2.936E+10	-0.2740	3712500.	0.000
396.000	4.175E-07	-33.0510	4.3013	-7.604E-09	408.9885	2.936E+10	-0.2584	3712500.	0.000
402.000	3.516E-07	-11.8812	2.8735	-1.220E-08	408.9573	2.936E+10	-0.2176	3712500.	0.000
408.000	2.712E-07	1.4583	1.7174	-1.326E-08	408.9419	2.936E+10	-0.1678	3712500.	0.000
414.000	1.925E-07	8.7568	0.8506	-1.192E-08	408.9527	2.936E+10	-0.1191	3712500.	0.000
420.000	1.246E-07	11.7652	0.2680	-1.012E-08	408.9571	2.936E+10	-0.0771	3712500.	0.000
426.000	7.107E-08	11.9958	-0.0951	-7.692E-09	408.9575	2.936E+10	-0.0440	3712500.	0.000
432.000	3.228E-08	10.6406	-0.2720	-5.710E-09	408.9555	2.936E+10	-0.0200	3712500.	0.000
438.000	6.534E-09	8.5639	-0.3590	-3.416E-09	408.9524	2.936E+10	-0.004043	3712500.	0.000
444.000	-8.709E-09	6.3398	-0.3550	-1.893E-09	408.9491	2.936E+10	0.005389	3712500.	0.000
450.000	-1.618E-08	4.3082	-0.3088	-8.045E-10	408.9461	2.936E+10	0.0100	3712500.	0.000
456.000	-1.836E-08	2.6300	-0.2447	-9.947E-11	408.9437	2.936E+10	0.0114	3712500.	0.000
462.000	-1.732E-08	1.3722	-0.1785	3.148E-10	408.9418	2.936E+10	0.0107	3712500.	0.000
468.000	-1.459E-08	0.4938	-0.1192	5.055E-10	408.9405	2.936E+10	0.009025	3712500.	0.000
474.000	-1.125E-08	-0.0598	-0.0713	5.499E-10	408.9399	2.936E+10	0.006961	3712500.	0.000
480.000	-7.987E-09	-0.3627	-0.0356	5.067E-10	408.9403	2.936E+10	0.004942	3712500.	0.000
486.000	-5.170E-09	-0.4877	-0.0111	4.198E-10	408.9405	2.936E+10	0.003199	3712500.	0.000
492.000	-2.950E-09	-0.4974	0.003928	3.191E-10	408.9405	2.936E+10	0.001825	3712500.	0.000
498.000	-1.341E-09	-0.4413	0.0119	2.232E-10	408.9404	2.936E+10	0.000830	3712500.	0.000
504.000	-2.723E-10	-0.3552	0.0149	1.418E-10	408.9403	2.936E+10	0.000169	3712500.	0.000
510.000	3.605E-10	-0.2630	0.0147	7.860E-11	408.9402	2.936E+10	-0.000223	3712500.	0.000
516.000	6.708E-10	-0.1787	0.0128	3.346E-11	408.9400	2.936E+10	-0.000415	3712500.	0.000
522.000	7.628E-10	-0.1093	0.0101	4.030E-12	408.9399	2.936E+10	-0.000471	3712500.	0.000
528.000	7.192E-10	-0.0569	0.007400	-1.296E-11	408.9399	2.936E+10	-0.000445	3712500.	0.000
534.000	6.065E-10	-0.0205	0.004939	-2.087E-11	408.9398	2.936E+10	-0.000375	3712500.	0.000
540.000	4.688E-10	0.002415	0.002643	-2.271E-11	408.9398	2.936E+10	-0.000290	3712500.	0.000
546.000	3.340E-10	0.0149	0.001453	-2.095E-11	408.9398	2.936E+10	-0.000207	3712500.	0.000
552.000	2.174E-10	0.0199	0.000430	-1.739E-11	408.9398	2.936E+10	-0.000135	3712500.	0.000
558.000	1.253E-10	0.0201	-0.000207	-1.331E-11	408.9398	2.936E+10	-7.750E-05	3712500.	0.000
564.000	5.772E-11	0.0174	-0.000546	-9.473E-12	408.9398	2.936E+10	-3.572E-05	3712500.	0.000
570.000	1.158E-11	0.0135	-0.000675	-6.307E-12	408.9398	2.936E+10	-7.166E-06	3712500.	0.000
576.000	-1.796E-11	0.009364	-0.000663	-3.966E-12	408.9398	2.936E+10	1.111E-05	3712500.	0.000
582.000	-3.601E-11	0.005590	-0.000563	-2.438E-12	408.9398	2.936E+10	2.228E-05	3712500.	0.000
588.000	-4.722E-11	0.002616	-0.000408	-1.599E-12	408.9398	2.936E+10	2.921E-05	3712500.	0.000
594.000	-5.521E-11	0.000693	-0.000218	-1.261E-12	408.9398	2.936E+10	3.416E-05	3712500.	0.000
600.000	-6.235E-11	0.000	0.000	-1.190E-12	408.9398	2.936E+10	3.858E-05	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection            =     1.0000000 inches
Computed slope at pile head     =    -0.0120459 radians
Maximum bending moment          =       3126218. inch-lbs
Maximum shear force             =         74584. lbs
Depth of maximum bending moment =    78.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 21
Number of zero deflection points = 7

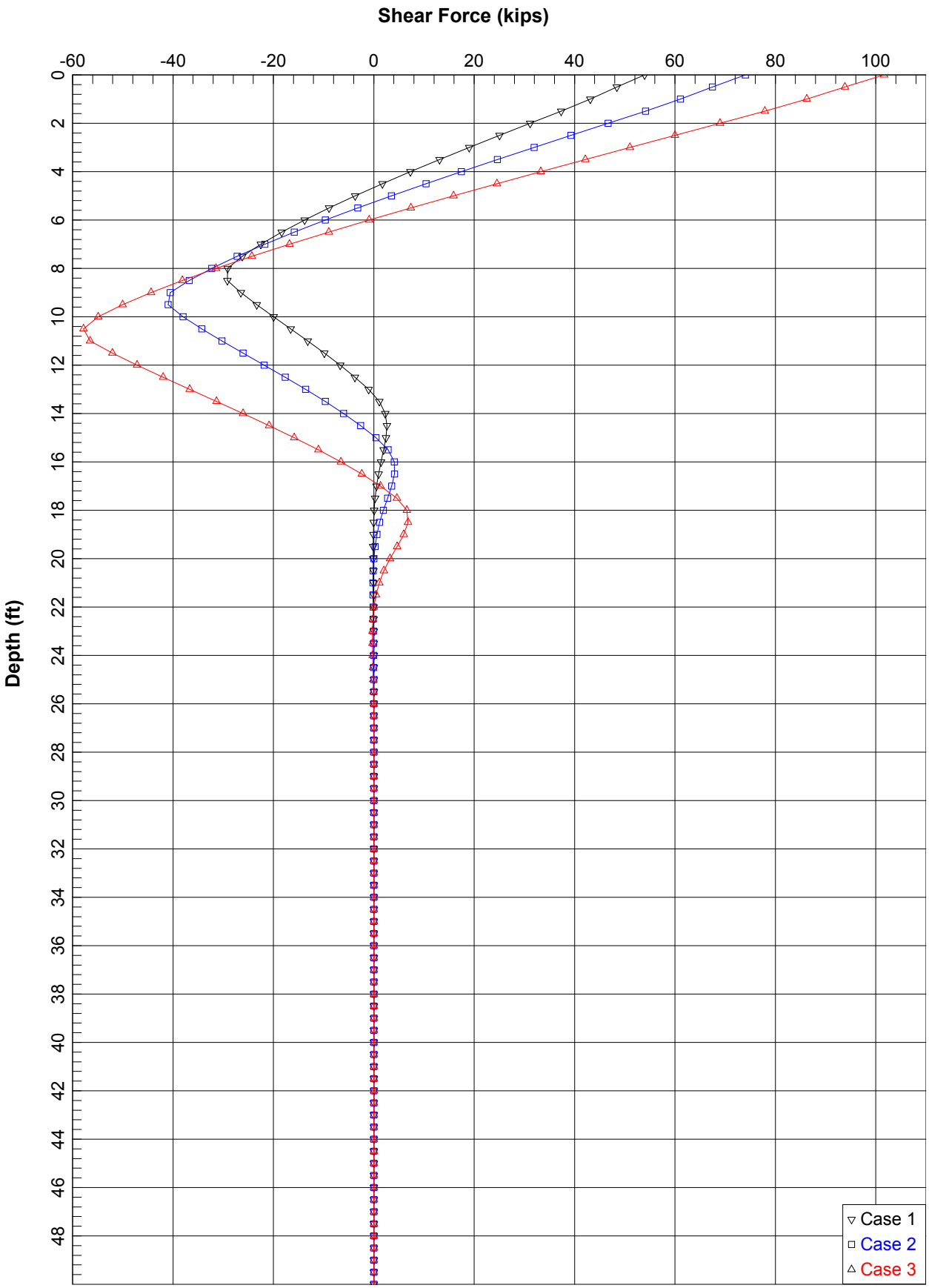
Summary of Pile Response(s)

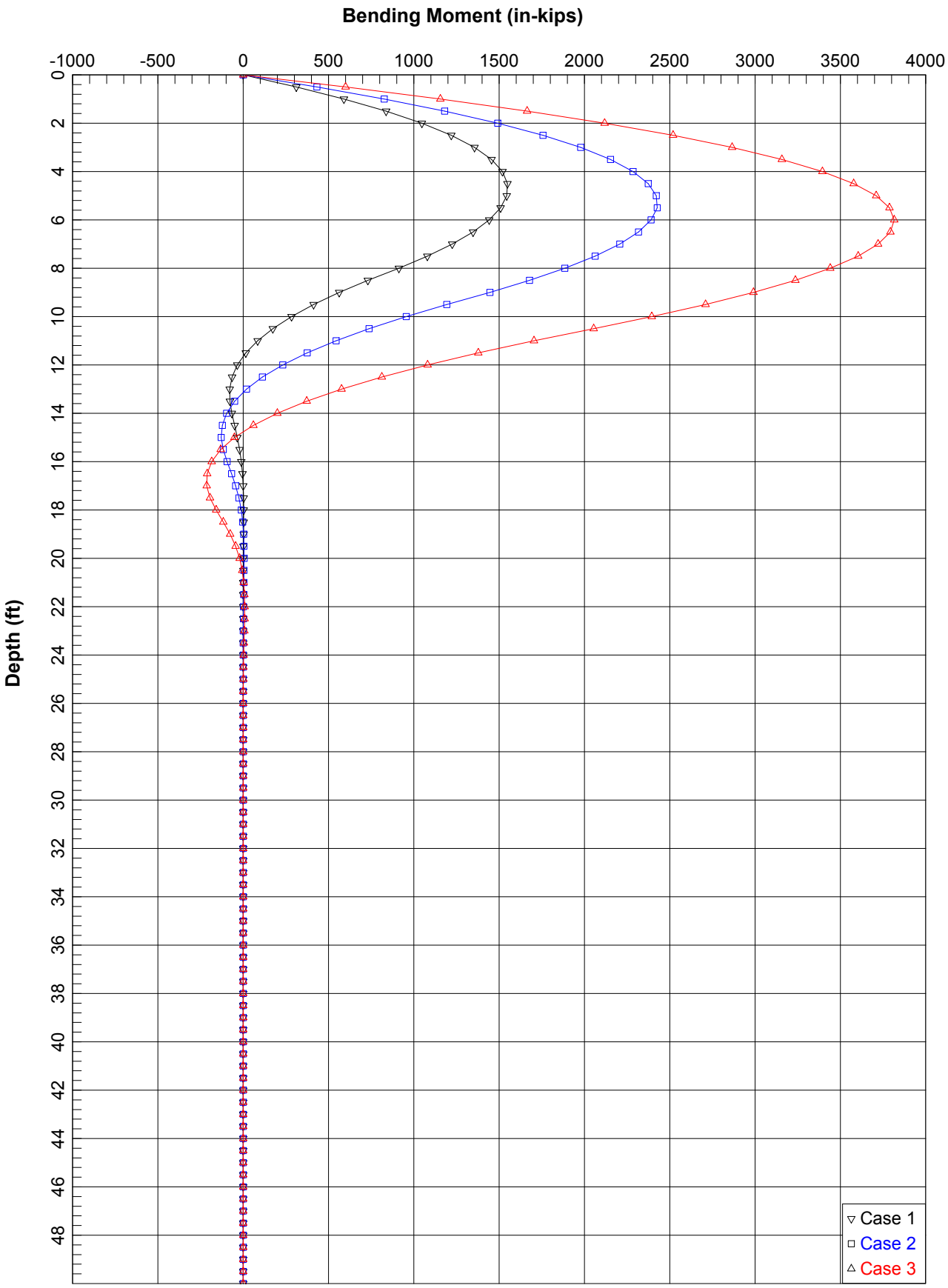
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	185000.	0.25000000	1267624.	39578.	-0.00384154
2	4	y = 0.5000	M = 0.000	185000.	0.50000000	1988094.	54302.	-0.00679355
3	4	y = 1.0000	M = 0.000	185000.	1.00000000	3126218.	74584.	-0.01204587

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2R_transv_Max P.lp6d
Name of output report file: Bent 2R_transv_Max P.lp6o
Name of plot output file: Bent 2R_transv_Max P.lp6p
Name of runtime messeage file: Bent 2R_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:22:16

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction Test deg.	Uniaxial Test qu psi	RQD % or Subgrade Mod. pci	GSI	Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	125.000	4500.000	--	--	--	--	0.00700
		--	--	--	--	0.10000	125.000	4500.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	3750.000	--	--	--	--	0.00700
		--	--	--	--	1.000	125.000	3750.000	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	--	1.000	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--	--	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6750	1.0000
2	50.000	0.6750	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		185000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		185000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		185000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	53947.	-0.004247	408.9398	2.936E+10	-975.8034	11710.	0.000
6.000	0.2245	310831.	48431.	-0.004215	866.9974	2.936E+10	-862.8216	23058.	0.000
12.000	0.1994	590529.	43122.	-0.004123	1279.1769	2.936E+10	-906.8555	27284.	0.000
18.000	0.1750	837447.	37312.	-0.003977	1643.0489	2.936E+10	-1029.9135	35301.	0.000
24.000	0.1517	1047098.	31152.	-0.003784	1952.0023	2.936E+10	-1023.3611	40475.	0.000
30.000	0.1296	1219670.	25044.	-0.003552	2206.3146	2.936E+10	-1012.4450	46858.	0.000
36.000	0.1091	1355517.	19016.	-0.003289	2406.5072	2.936E+10	-996.9624	54842.	0.000
42.000	0.0902	1455167.	13095.	-0.003002	2553.3561	2.936E+10	-976.6782	64990.	0.000
48.000	0.0730	1519325.	7311.3343	-0.002698	2647.9042	2.936E+10	-951.3105	78138.	0.000
54.000	0.0578	1548892.	1695.8778	-0.002385	2691.4757	2.936E+10	-920.5083	95568.	0.000
60.000	0.0444	1544978.	-3717.0807	-0.002068	2685.6948	2.936E+10	-883.8112	119341.	0.000
66.000	0.0330	1508879.	-8890.2386	-0.001756	2632.5098	2.936E+10	-840.5748	152961.	0.000
72.000	0.0234	1442186.	-13781.	-0.001455	2534.2265	2.936E+10	-789.8217	202867.	0.000
78.000	0.0155	1346731.	-18341.	-0.001170	2393.5596	2.936E+10	-729.9017	282248.	0.000
84.000	0.009324	1224695.	-22503.	-0.000907	2213.7200	2.936E+10	-657.5872	423151.	0.000
90.000	0.004634	1078708.	-26171.	-0.000671	1998.5848	2.936E+10	-564.9045	731427.	0.000
96.000	0.001267	912139.	-29122.	-0.000468	1753.1199	2.936E+10	-418.8702	1984064.	0.000
102.000	-0.000982	730284.	-29187.	-0.000300	1485.1283	2.936E+10	397.2608	2427281.	0.000
108.000	-0.002335	562565.	-26478.	-0.000168	1237.9678	2.936E+10	505.4743	1298806.	0.000
114.000	-0.002998	412915.	-23314.	-6.834E-05	1017.4355	2.936E+10	549.5214	1099660.	0.000
120.000	-0.003155	282955.	-19961.	2.777E-06	825.9182	2.936E+10	567.9444	1080031.	0.000
126.000	-0.002965	173376.	-16546.	4.941E-05	664.4366	2.936E+10	570.3062	1154079.	0.000
132.000	-0.002562	84289.	-13154.	7.574E-05	533.1528	2.936E+10	560.5451	1312643.	0.000
138.000	-0.002056	15362.	-9850.3096	8.593E-05	431.5786	2.936E+10	540.6175	1577627.	0.000
144.000	-0.001531	-34106.	-6693.8267	8.401E-05	459.1996	2.936E+10	511.5435	2004640.	0.000
150.000	-0.001048	-65150.	-3737.9447	7.387E-05	504.9486	2.936E+10	473.7505	2712529.	0.000
156.000	-0.000645	-79125.	-1035.5862	5.912E-05	525.5426	2.936E+10	427.0357	3974580.	0.000
162.000	-0.000338	-77708.	1100.9299	4.310E-05	523.4553	2.936E+10	285.1363	5055329.	0.000
168.000	-0.000127	-66009.	2284.1791	2.841E-05	506.2149	2.936E+10	109.2801	5143220.	0.000
174.000	2.500E-06	-50361.	2605.4811	1.652E-05	483.1550	2.936E+10	-2.1794	5231110.	0.000
180.000	7.072E-05	-34780.	2410.8535	7.816E-06	460.1939	2.936E+10	-62.6965	5319001.	0.000
186.000	9.629E-05	-21448.	1962.4361	2.070E-06	440.5474	2.936E+10	-86.7760	5406892.	0.000
192.000	9.550E-05	-11236.	1439.5589	-1.270E-06	425.4972	2.936E+10	-87.5164	5494782.	0.000
198.000	8.105E-05	-4170.8711	950.7648	-2.845E-06	415.0862	2.936E+10	-75.4150	5582673.	0.000
204.000	6.143E-05	179.8785	550.3567	-3.253E-06	409.2049	2.936E+10	-58.0544	5670564.	0.000
210.000	4.202E-05	2440.6304	256.5289	-2.985E-06	412.5364	2.936E+10	-39.8883	5695312.	0.000
216.000	2.561E-05	3264.8508	63.9344	-2.402E-06	413.7511	2.936E+10	-24.3099	5695312.	0.000
222.000	1.320E-05	3213.1754	-46.5911	-1.740E-06	413.6749	2.936E+10	-12.5320	5695312.	0.000
228.000	4.735E-06	2709.6201	-97.6703	-1.134E-06	412.9328	2.936E+10	-4.4944	5695312.	0.000
234.000	-4.097E-07	2043.6504	-109.9868	-6.486E-07	411.9514	2.936E+10	0.3889	5695312.	0.000
240.000	-3.048E-06	1391.2181	-100.1401	-2.976E-07	410.9900	2.936E+10	2.8933	5695312.	0.000
246.000	-3.980E-06	842.6296	-80.1254	-6.927E-08	410.1815	2.936E+10	3.7782	5695312.	0.000
252.000	-3.879E-06	429.8669	-57.7438	6.078E-08	409.5733	2.936E+10	3.6823	5695312.	0.000
258.000	-3.251E-06	149.5695	-37.4390	1.200E-07	409.1602	2.936E+10	3.0860	5695312.	0.000
264.000	-2.439E-06	-19.6676	-21.2347	1.333E-07	408.9688	2.936E+10	2.3155	5695312.	0.000
270.000	-1.652E-06	-105.5422	-9.5843	1.205E-07	409.0953	2.936E+10	1.5679	5695312.	0.000
276.000	-9.937E-07	-134.9471	-2.0508	9.590E-08	409.1387	2.936E+10	0.9432	5695312.	0.000
282.000	-5.011E-07	-130.3648	2.2058	6.878E-08	409.1319	2.936E+10	0.4756	5695312.	0.000
288.000	-1.683E-07	-108.6304	4.1119	4.436E-08	409.0999	2.936E+10	0.1598	5695312.	0.000

294.000	3.123E-08	-81.1199	4.5023	2.497E-08	409.0593	2.936E+10	-0.0296	5695312.	0.000
300.000	1.313E-07	-54.6580	4.0395	1.109E-08	409.0203	2.936E+10	-0.1246	5695312.	0.000
306.000	1.643E-07	-32.6702	3.1978	2.166E-09	408.9879	2.936E+10	-0.1560	5695312.	0.000
312.000	1.573E-07	-16.2898	2.2820	-2.837E-09	408.9638	2.936E+10	-0.1493	5695312.	0.000
318.000	1.303E-07	-5.2804	1.4631	-5.042E-09	408.9476	2.936E+10	-0.1237	5695312.	0.000
324.000	9.678E-08	1.2787	0.8166	-5.451E-09	408.9417	2.936E+10	-0.0919	5695312.	0.000
330.000	6.486E-08	4.5303	0.3563	-4.857E-09	408.9465	2.936E+10	-0.0616	5695312.	0.000
336.000	3.850E-08	5.5646	0.0619	-3.825E-09	408.9480	2.936E+10	-0.0365	5695312.	0.000
342.000	1.896E-08	5.2821	-0.1017	-2.717E-09	408.9476	2.936E+10	-0.0180	5695312.	0.000
348.000	5.893E-09	4.3507	-0.1724	-1.732E-09	408.9462	2.936E+10	-0.005594	5695312.	0.000
354.000	-1.834E-09	3.2169	-0.1840	-9.591E-10	408.9445	2.936E+10	0.001741	5695312.	0.000
360.000	-5.616E-09	2.1450	-0.1628	-4.111E-10	408.9429	2.936E+10	0.005331	5695312.	0.000
366.000	-6.768E-09	1.2646	-0.1275	-6.268E-11	408.9416	2.936E+10	0.006424	5695312.	0.000
372.000	-6.368E-09	0.6152	-0.0901	1.294E-10	408.9407	2.936E+10	0.006045	5695312.	0.000
378.000	-5.215E-09	0.1833	-0.0571	2.110E-10	408.9401	2.936E+10	0.004950	5695312.	0.000
384.000	-3.836E-09	-0.0705	-0.0313	2.226E-10	408.9399	2.936E+10	0.003641	5695312.	0.000
390.000	-2.544E-09	-0.1932	-0.0132	1.956E-10	408.9401	2.936E+10	0.002415	5695312.	0.000
396.000	-1.489E-09	-0.2290	-0.001681	1.525E-10	408.9401	2.936E+10	0.001413	5695312.	0.000
402.000	-7.145E-10	-0.2137	0.004593	1.072E-10	408.9401	2.936E+10	0.000678	5695312.	0.000
408.000	-2.923E-10	-0.1741	0.007204	6.758E-11	408.9400	2.936E+10	0.000102	5695312.	0.000
414.000	9.641E-11	-0.1274	0.007506	3.676E-11	408.9400	2.936E+10	-9.151E-05	5695312.	0.000
420.000	2.388E-10	-0.0841	0.006551	1.515E-11	408.9399	2.936E+10	-0.000227	5695312.	0.000
426.000	2.782E-10	-0.0489	0.005079	1.558E-12	408.9399	2.936E+10	-0.000264	5695312.	0.000
432.000	2.575E-10	-0.0231	0.003553	-5.802E-12	408.9398	2.936E+10	-0.000244	5695312.	0.000
438.000	2.085E-10	-0.006219	0.002226	-8.803E-12	408.9398	2.936E+10	-0.000198	5695312.	0.000
444.000	1.519E-10	0.003584	0.001200	-9.072E-12	408.9398	2.936E+10	-0.000144	5695312.	0.000
450.000	9.967E-11	0.008196	0.000483	-7.868E-12	408.9398	2.936E+10	-9.460E-05	5695312.	0.000
456.000	5.748E-11	0.009401	3.573E-05	-6.078E-12	408.9398	2.936E+10	-5.456E-05	5695312.	0.000
462.000	2.683E-11	0.008639	-0.000204	-4.226E-12	408.9398	2.936E+10	-2.546E-05	5695312.	0.000
468.000	6.766E-12	0.006958	-0.000300	-2.632E-12	408.9398	2.936E+10	-6.422E-06	5695312.	0.000
474.000	-4.763E-12	0.005044	-0.000306	-1.498E-12	408.9398	2.936E+10	4.521E-06	5695312.	0.000
480.000	-1.011E-11	0.003292	-0.000263	0.000	408.9398	2.936E+10	9.592E-06	5695312.	0.000
486.000	-1.141E-11	0.001885	-0.000202	0.000	408.9398	2.936E+10	1.083E-05	5695312.	0.000
492.000	-1.040E-11	0.000867	-0.000140	0.000	408.9398	2.936E+10	9.874E-06	5695312.	0.000
498.000	-8.331E-12	0.000205	-8.665E-05	0.000	408.9398	2.936E+10	7.908E-06	5695312.	0.000
504.000	-6.010E-12	-0.000173	-4.581E-05	0.000	408.9398	2.936E+10	5.704E-06	5695312.	0.000
510.000	-3.900E-12	-0.000346	-1.759E-05	0.000	408.9398	2.936E+10	3.702E-06	5695312.	0.000
516.000	-2.215E-12	-0.000385	-1.740E-07	0.000	408.9398	2.936E+10	2.103E-06	5695312.	0.000
522.000	-1.002E-12	-0.000349	8.989E-06	0.000	408.9398	2.936E+10	9.516E-07	5695312.	0.000
528.000	0.000	-0.000278	1.246E-05	0.000	408.9398	2.936E+10	2.061E-07	5695312.	0.000
534.000	0.000	-0.000199	1.243E-05	0.000	408.9398	2.936E+10	-2.163E-07	5695312.	0.000
540.000	0.000	-0.000129	1.056E-05	0.000	408.9398	2.936E+10	-4.068E-07	5695312.	0.000
546.000	0.000	-7.251E-05	7.999E-06	0.000	408.9398	2.936E+10	-4.476E-07	5695312.	0.000
552.000	0.000	-3.257E-05	5.444E-06	0.000	408.9398	2.936E+10	-4.040E-07	5695312.	0.000
558.000	0.000	-7.150E-06	3.264E-06	0.000	408.9398	2.936E+10	-3.225E-07	5695312.	0.000
564.000	0.000	6.638E-06	1.598E-06	0.000	408.9398	2.936E+10	-2.327E-07	5695312.	0.000
570.000	0.000	1.206E-05	4.485E-07	0.000	408.9398	2.936E+10	-1.506E-07	5695312.	0.000
576.000	0.000	1.205E-05	-2.511E-07	0.000	408.9398	2.936E+10	-8.256E-08	5695312.	0.000
582.000	0.000	9.067E-06	-5.843E-07	0.000	408.9398	2.936E+10	-2.853E-08	5695312.	0.000
588.000	0.000	5.056E-06	-6.250E-07	0.000	408.9398	2.936E+10	1.495E-08	5695312.	0.000
594.000	0.000	1.582E-06	-4.225E-07	0.000	408.9398	2.936E+10	5.255E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	408.9398	2.936E+10	8.830E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042465 radians
Maximum bending moment = 1548892. inch-lbs
Maximum shear force = 53947. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 18
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 185000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	74017.	-0.007510	408.9398	2.936E+10	-1160.4323	6962.5937	0.000
6.000	0.4549	431551.	67448.	-0.007466	1044.8976	2.936E+10	-1029.4255	13577.	0.000
12.000	0.4104	825944.	61101.	-0.007337	1626.0984	2.936E+10	-1086.1694	15879.	0.000
18.000	0.3669	1181048.	54125.	-0.007132	2149.4000	2.936E+10	-1239.2055	20265.	0.000
24.000	0.3248	1491273.	46693.	-0.006859	2606.5648	2.936E+10	-1237.9106	22866.	0.000
30.000	0.2846	1756595.	39283.	-0.006527	2997.5578	2.936E+10	-1232.3507	25902.	0.000
36.000	0.2465	1977153.	31918.	-0.006145	3322.5853	2.936E+10	-1222.3501	29752.	0.000
42.000	0.2108	2153259.	24628.	-0.005723	3582.1042	2.936E+10	-1207.7143	34368.	0.000
48.000	0.1778	2285398.	17440.	-0.005270	3776.8318	2.936E+10	-1188.2231	40092.	0.000
54.000	0.1476	2374242.	10385.	-0.004794	3907.7582	2.936E+10	-1163.6205	47300.	0.000
60.000	0.1203	2420658.	3493.2129	-0.004304	3976.1588	2.936E+10	-1133.5995	56538.	0.000
66.000	0.0960	2425715.	-3200.9146	-0.003808	3983.6108	2.936E+10	-1097.7763	68636.	0.000
72.000	0.0746	2390701.	-9661.1858	-0.003316	3932.0129	2.936E+10	-1055.6475	84902.	0.000
78.000	0.0562	2317142.	-15848.	-0.002835	3823.6119	2.936E+10	-1006.5119	107510.	0.000
84.000	0.0406	2206823.	-21715.	-0.002373	3661.0391	2.936E+10	-949.3164	140350.	0.000
90.000	0.0277	2061827.	-27210.	-0.001936	3447.3657	2.936E+10	-882.3194	191107.	0.000
96.000	0.0173	1884601.	-32264.	-0.001533	3186.1945	2.936E+10	-802.2377	277469.	0.000
102.000	0.009305	1678066.	-36775.	-0.001169	2881.8331	2.936E+10	-701.5093	452343.	0.000
108.000	0.003320	1445896.	-40542.	-0.000850	2539.6945	2.936E+10	-554.1982	1001478.	0.000
114.000	-0.000891	1193447.	-40993.	-0.000580	2167.6713	2.936E+10	403.9518	2719383.	0.000
120.000	-0.003639	955270.	-38015.	-0.000360	1816.6794	2.936E+10	588.5742	970378.	0.000
126.000	-0.005216	738064.	-34278.	-0.000187	1496.5930	2.936E+10	657.0596	755859.	0.000
132.000	-0.005887	544345.	-30236.	-5.626E-05	1211.1179	2.936E+10	690.5171	703760.	0.000
138.000	-0.005891	375362.	-26053.	3.773E-05	962.0939	2.936E+10	703.8296	716863.	0.000
144.000	-0.005434	231631.	-21833.	9.976E-05	750.2837	2.936E+10	702.6851	775819.	0.000
150.000	-0.004694	113144.	-17655.	0.000135	575.6747	2.936E+10	689.8377	881802.	0.000

156.000	-0.003815	19465.	-13586.	0.000149	437.6249	2.936E+10	666.7547	1048767.	0.000
162.000	-0.002911	-50214.	-9682.8342	0.000145	482.9386	2.936E+10	634.1975	1307034.	0.000
168.000	-0.002070	-97052.	-6002.9704	0.000130	551.9605	2.936E+10	592.4237	1717420.	0.000
174.000	-0.001347	-122539.	-2602.2524	0.000108	589.5209	2.936E+10	541.1489	2410278.	0.000
180.000	-0.000775	-128518.	458.4827	8.225E-05	598.3315	2.936E+10	479.0961	3710167.	0.000
186.000	-0.000360	-117220.	2869.2042	5.714E-05	581.6822	2.936E+10	324.4777	5406892.	0.000
192.000	-8.911E-05	-94215.	4087.4611	3.553E-05	547.7797	2.936E+10	81.6079	5494782.	0.000
198.000	6.631E-05	-68250.	4147.1937	1.893E-05	509.5163	2.936E+10	-61.6970	5582673.	0.000
204.000	0.000138	-44490.	3570.7427	7.407E-06	474.5032	2.936E+10	-130.4533	5670564.	0.000
210.000	0.000155	-25417.	2737.4417	2.629E-07	446.3959	2.936E+10	-147.3137	5695312.	0.000
216.000	0.000141	-11642.	1893.4481	-3.524E-06	426.0954	2.936E+10	-134.0175	5695312.	0.000
222.000	0.000113	-2687.9314	1169.8865	-4.989E-06	412.9009	2.936E+10	-107.1697	5695312.	0.000
228.000	8.132E-05	2408.1756	616.7985	-5.017E-06	412.4886	2.936E+10	-77.1930	5695312.	0.000
234.000	5.270E-05	4724.7888	235.1609	-4.288E-06	415.9025	2.936E+10	-50.0195	5695312.	0.000
240.000	2.986E-05	5239.6264	0.0640	-3.270E-06	416.6612	2.936E+10	-28.3461	5695312.	0.000
246.000	1.346E-05	4732.8160	-123.2900	-2.251E-06	415.9143	2.936E+10	-12.7719	5695312.	0.000
252.000	2.852E-06	3765.1428	-169.7270	-1.382E-06	414.4883	2.936E+10	-2.7071	5695312.	0.000
258.000	-3.134E-06	2699.1609	-168.9235	-7.218E-07	412.9174	2.936E+10	2.9749	5695312.	0.000
264.000	-5.810E-06	1739.6627	-143.4543	-2.682E-07	411.5035	2.936E+10	5.5148	5695312.	0.000
270.000	-6.352E-06	978.3042	-108.8207	9.576E-09	410.3815	2.936E+10	6.0297	5695312.	0.000
276.000	-5.695E-06	433.7933	-74.5143	1.539E-07	409.5790	2.936E+10	5.4058	5695312.	0.000
282.000	-4.506E-06	83.7914	-45.4664	2.068E-07	409.0633	2.936E+10	4.2768	5695312.	0.000
288.000	-3.214E-06	-112.2629	-23.4847	2.039E-07	409.1052	2.936E+10	3.0504	5695312.	0.000
294.000	-2.059E-06	-198.4775	-8.4696	1.721E-07	409.2323	2.936E+10	1.9546	5695312.	0.000
300.000	-1.148E-06	-214.2804	0.6640	1.299E-07	409.2556	2.936E+10	1.0899	5695312.	0.000
306.000	-5.000E-07	-190.7984	5.3575	8.854E-08	409.2210	2.936E+10	0.4746	5695312.	0.000
312.000	-8.577E-08	-150.1872	7.0256	5.369E-08	409.1611	2.936E+10	0.0814	5695312.	0.000
318.000	1.443E-07	-106.6109	6.8590	2.745E-08	409.0894	2.936E+10	-0.1369	5695312.	0.000
324.000	2.436E-07	-67.9404	5.7546	9.607E-09	409.0399	2.936E+10	-0.2312	5695312.	0.000
330.000	2.596E-07	-37.5777	4.3218	-1.177E-09	408.9952	2.936E+10	-0.2464	5695312.	0.000
336.000	2.295E-07	-16.0758	2.9293	-6.660E-09	408.9635	2.936E+10	-0.2178	5695312.	0.000
342.000	1.796E-07	-2.4111	1.7644	-8.549E-09	408.9433	2.936E+10	-0.1705	5695312.	0.000
348.000	1.269E-07	5.1157	0.8916	-8.273E-09	408.9473	2.936E+10	-0.1204	5695312.	0.000
354.000	8.037E-08	8.3061	0.3014	-6.901E-09	408.9520	2.936E+10	-0.0763	5695312.	0.000
360.000	4.405E-08	8.7483	-0.0529	-5.158E-09	408.9527	2.936E+10	-0.0418	5695312.	0.000
366.000	1.847E-08	7.6832	-0.2309	-3.479E-09	408.9511	2.936E+10	-0.0175	5695312.	0.000
372.000	2.309E-09	5.9851	-0.2901	-2.082E-09	408.9486	2.936E+10	-0.002192	5695312.	0.000
378.000	-6.512E-09	4.2067	-0.2781	-1.040E-09	408.9469	2.936E+10	0.006132	5695312.	0.000
384.000	-1.017E-08	2.6499	-0.2306	-3.396E-10	408.9437	2.936E+10	0.009658	5695312.	0.000
390.000	-1.059E-08	1.4402	-0.1715	7.836E-11	408.9419	2.936E+10	0.0101	5695312.	0.000
396.000	-9.234E-09	0.5920	-0.1150	2.860E-10	408.9407	2.936E+10	0.008765	5695312.	0.000
402.000	-7.155E-09	0.0592	-0.0684	3.526E-10	408.9399	2.936E+10	0.006792	5695312.	0.000
408.000	-5.003E-09	-0.2291	-0.0337	3.352E-10	408.9401	2.936E+10	0.004749	5695312.	0.000
414.000	-3.132E-09	-0.3464	-0.0106	2.764E-10	408.9403	2.936E+10	0.002973	5695312.	0.000
420.000	-1.686E-09	-0.3566	0.003152	2.046E-10	408.9403	2.936E+10	0.001601	5695312.	0.000
426.000	-6.777E-10	-0.3091	0.009884	1.365E-10	408.9402	2.936E+10	0.000643	5695312.	0.000
432.000	-4.798E-11	-0.2383	0.0120	8.060E-11	408.9401	2.936E+10	4.555E-05	5695312.	0.000
438.000	2.895E-10	-0.1658	0.0113	3.930E-11	408.9400	2.936E+10	-0.000275	5695312.	0.000
444.000	4.237E-10	-0.1032	0.009232	1.181E-11	408.9399	2.936E+10	-0.000402	5695312.	0.000
450.000	4.312E-10	-0.0551	0.006797	-4.368E-12	408.9399	2.936E+10	-0.000409	5695312.	0.000
456.000	3.712E-10	-0.0216	0.004512	-1.221E-11	408.9398	2.936E+10	-0.000352	5695312.	0.000
462.000	2.847E-10	-0.000893	0.002644	-1.451E-11	408.9398	2.936E+10	-0.000270	5695312.	0.000
468.000	1.971E-10	0.0101	0.001272	-1.357E-11	408.9398	2.936E+10	-0.000187	5695312.	0.000
474.000	1.219E-10	0.0144	0.000364	-1.106E-11	408.9398	2.936E+10	-0.000116	5695312.	0.000
480.000	6.440E-11	0.0145	-0.000167	-8.105E-12	408.9398	2.936E+10	-6.113E-05	5695312.	0.000
486.000	2.467E-11	0.0124	-0.000421	-5.353E-12	408.9398	2.936E+10	-2.341E-05	5695312.	0.000
492.000	0.000	0.009478	-0.000491	-3.115E-12	408.9398	2.936E+10	-1.546E-07	5695312.	0.000
498.000	-1.272E-11	0.006530	-0.000456	-1.479E-12	408.9398	2.936E+10	1.207E-05	5695312.	0.000
504.000	-1.759E-11	0.004015	-0.000369	0.000	408.9398	2.936E+10	1.670E-05	5695312.	0.000
510.000	-1.754E-11	0.002100	-0.000269	0.000	408.9398	2.936E+10	1.665E-05	5695312.	0.000
516.000	-1.491E-11	0.000785	-0.000177	0.000	408.9398	2.936E+10	1.415E-05	5695312.	0.000
522.000	-1.132E-11	-2.196E-05	-0.000102	0.000	408.9398	2.936E+10	1.075E-05	5695312.	0.000
528.000	-7.757E-12	-0.000442	-4.775E-05	0.000	408.9398	2.936E+10	7.363E-06	5695312.	0.000
534.000	-4.736E-12	-0.000596	-1.218E-05	0.000	408.9398	2.936E+10	4.495E-06	5695312.	0.000
540.000	-2.446E-12	-0.000589	8.272E-06	0.000	408.9398	2.936E+10	2.321E-06	5695312.	0.000
546.000	0.000	-0.000498	1.774E-05	0.000	408.9398	2.936E+10	8.330E-07	5695312.	0.000
552.000	0.000	-0.000376	2.001E-05	0.000	408.9398	2.936E+10	-7.613E-08	5695312.	0.000
558.000	0.000	-0.000258	1.814E-05	0.000	408.9398	2.936E+10	-5.471E-07	5695312.	0.000
564.000	0.000	-0.000159	1.434E-05	0.000	408.9398	2.936E+10	-7.179E-07	5695312.	0.000
570.000	0.000	-8.578E-05	1.008E-05	0.000	408.9398	2.936E+10	-7.036E-07	5695312.	0.000
576.000	0.000	-3.796E-05	6.198E-06	0.000	408.9398	2.936E+10	-5.896E-07	5695312.	0.000
582.000	0.000	-1.136E-05	3.135E-06	0.000	408.9398	2.936E+10	-4.313E-07	5695312.	0.000
588.000	0.000	-2.804E-07	1.061E-06	0.000	408.9398	2.936E+10	-2.598E-07	5695312.	0.000
594.000	0.000	1.445E-06	1.781E-08	0.000	408.9398	2.936E+10	-8.803E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	408.9398	2.936E+10	8.210E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =      0.5000000 inches
Computed slope at pile head     =     -0.0075097 radians
Maximum bending moment          =         2425715. inch-lbs
Maximum shear force             =           74017. lbs
Depth of maximum bending moment =     66.0000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =             21
Number of zero deflection points =              9
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

```
Displacement of pile head                      =       1.000000 inches
Moment at pile head                            =          0.000 in-lbs
Axial load at pile head                        =     185000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	101662.	-0.0133	408.9398	2.936E+10	-1379.9943	4139.9830	0.000
6.000	0.9201	599909.	93839.	-0.0132	1292.9999	2.936E+10	-1227.6330	8005.1121	0.000
12.000	0.8410	1155487.	86258.	-0.0131	2111.7315	2.936E+10	-1299.5452	9271.3271	0.000

18.000	0.7633	1664020.	77895.	-0.0128	2861.1338	2.936E+10	-1488.2611	11699.	0.000
24.000	0.6876	2118597.	68950.	-0.0124	3531.0251	2.936E+10	-1493.1771	13029.	0.000
30.000	0.6146	2518940.	59989.	-0.0119	4120.9925	2.936E+10	-1493.8810	14585.	0.000
36.000	0.5446	2864931.	51037.	-0.0114	4630.8649	2.936E+10	-1490.2119	16419.	0.000
42.000	0.4781	3156625.	42120.	-0.0108	5060.7213	2.936E+10	-1481.9960	18598.	0.000
48.000	0.4155	3394250.	33267.	-0.0101	5410.8999	2.936E+10	-1469.0432	21213.	0.000
54.000	0.3571	3578220.	24506.	-0.009374	5682.0086	2.936E+10	-1451.1414	24384.	0.000
60.000	0.3030	3709137.	15869.	-0.008629	5874.9355	2.936E+10	-1428.0485	28276.	0.000
66.000	0.2535	3787803.	7386.3212	-0.007863	5990.8621	2.936E+10	-1399.4815	33121.	0.000
72.000	0.2087	3815228.	-907.4172	-0.007086	6031.2774	2.936E+10	-1365.0980	39251.	0.000
78.000	0.1685	3792644.	-8976.1175	-0.006308	5997.9964	2.936E+10	-1324.4688	47163.	0.000
84.000	0.1330	3721519.	-16781.	-0.005540	5893.1822	2.936E+10	-1277.0305	57622.	0.000
90.000	0.1020	3603577.	-24278.	-0.004792	5719.3752	2.936E+10	-1222.0019	71874.	0.000
96.000	0.0755	3440824.	-31418.	-0.004072	5479.5342	2.936E+10	-1158.2256	92079.	0.000
102.000	0.0532	3235595.	-38145.	-0.003390	5177.0971	2.936E+10	-1083.8345	122350.	0.000
108.000	0.0348	2990614.	-44382.	-0.002753	4816.0789	2.936E+10	-995.4548	171642.	0.000
114.000	0.0201	2709118.	-50026.	-0.002171	4401.2504	2.936E+10	-885.8668	264279.	0.000
120.000	0.008749	2395116.	-54886.	-0.001649	3938.5194	2.936E+10	-734.0251	503404.	0.000
126.000	0.000323	2054146.	-57819.	-0.001194	3436.0464	2.936E+10	-243.5115	4527985.	0.000
132.000	-0.005584	1703944.	-56504.	-0.000810	2919.9680	2.936E+10	681.7520	732502.	0.000
138.000	-0.009402	1377898.	-52084.	-0.000495	2439.4880	2.936E+10	791.4350	505082.	0.000
144.000	-0.0115	1080030.	-47165.	-0.000244	2000.5341	2.936E+10	848.4123	441528.	0.000
150.000	-0.0123	812461.	-41984.	-5.082E-05	1606.2289	2.936E+10	878.6256	427475.	0.000
156.000	-0.0121	576338.	-36675.	9.111E-05	1258.2646	2.936E+10	890.8963	440346.	0.000
162.000	-0.0112	372157.	-31335.	0.000188	957.3711	2.936E+10	889.3222	474770.	0.000
168.000	-0.009883	199906.	-26038.	0.000247	703.5332	2.936E+10	876.0980	531906.	0.000
174.000	-0.008281	59150.	-20853.	0.000273	496.1069	2.936E+10	852.4685	617661.	0.000
180.000	-0.006607	-44931.	-15838.	0.000274	483.9939	2.936E+10	819.1154	743884.	0.000
186.000	-0.004995	-131512.	-11052.	0.000255	602.7427	2.936E+10	776.3144	932488.	0.000
192.000	-0.003545	-184115.	-6550.7290	0.000223	680.2628	2.936E+10	723.9538	1225410.	0.000
198.000	-0.002320	-210615.	-2394.7155	0.000183	719.3143	2.936E+10	661.3841	1710408.	0.000
204.000	-0.001354	-213257.	1350.0222	0.000139	723.2079	2.936E+10	586.8618	2601025.	0.000
210.000	-0.000649	-194724.	4580.5221	9.757E-05	695.8963	2.936E+10	489.9715	4530063.	0.000
216.000	-0.000183	-158508.	6571.4312	6.147E-05	642.5257	2.936E+10	173.6648	5695312.	0.000
222.000	8.866E-05	-116063.	6839.9418	3.344E-05	579.8889	2.936E+10	-84.1613	5695312.	0.000
228.000	0.000218	-76503.	5966.6032	1.374E-05	521.6783	2.936E+10	-206.9515	5695312.	0.000
234.000	0.000254	-44435.	4623.6859	1.382E-06	474.4212	2.936E+10	-240.6876	5695312.	0.000
240.000	0.000235	-21021.	3233.5574	-5.380E-06	439.9181	2.936E+10	-222.6986	5695312.	0.000
246.000	0.000190	-5620.5244	2024.7139	-8.030E-06	417.2225	2.936E+10	-180.2393	5695312.	0.000
252.000	0.000138	3293.0022	1090.2842	-8.267E-06	413.7925	2.936E+10	-131.2373	5695312.	0.000
258.000	9.067E-05	7481.2396	438.3666	-7.166E-06	419.9646	2.936E+10	-86.0686	5695312.	0.000
264.000	5.221E-05	8569.3109	91.5200	-5.422E-06	431.5680	2.936E+10	-49.6085	5695312.	0.000
270.000	2.436E-05	7869.5306	-186.8617	-3.846E-06	420.5368	2.936E+10	-23.1238	5695312.	0.000
276.000	6.110E-06	6335.5088	-273.6321	-2.394E-06	418.2762	2.936E+10	-5.7997	5695312.	0.000
282.000	-4.371E-06	4591.2607	-278.5829	-1.278E-06	415.7957	2.936E+10	4.1494	5695312.	0.000
288.000	-9.222E-06	2995.3504	-239.8726	-5.024E-07	413.3539	2.936E+10	8.7540	5695312.	0.000
294.000	-1.040E-05	1713.9048	-183.9952	-2.111E-08	411.4655	2.936E+10	9.8718	5695312.	0.000
300.000	-9.476E-06	787.4546	-127.3965	2.345E-07	410.1002	2.936E+10	8.9945	5695312.	0.000
306.000	-7.340E-06	184.4765	-78.8116	3.339E-07	409.2119	2.936E+10	7.2005	5695312.	0.000
312.000	-5.469E-06	-159.0258	-41.6353	3.365E-07	409.1741	2.936E+10	5.1916	5695312.	0.000
318.000	-3.548E-06	-315.7443	-15.9570	2.880E-07	409.4051	2.936E+10	3.3678	5695312.	0.000
324.000	-2.014E-06	-351.1493	-0.1187	2.198E-07	409.4573	2.936E+10	1.9116	5695312.	0.000
330.000	-9.104E-07	-317.6569	8.2085	1.529E-07	409.4079	2.936E+10	0.8641	5695312.	0.000
336.000	-1.964E-07	-252.9834	11.3603	9.314E-08	409.3126	2.936E+10	0.1865	5695312.	0.000
342.000	2.073E-07	-181.5403	11.3294	4.873E-08	409.2073	2.936E+10	-0.1967	5695312.	0.000
348.000	3.888E-07	-117.1389	9.6333	1.827E-08	409.1124	2.936E+10	-0.3686	5695312.	0.000
354.000	4.258E-07	-65.9814	7.3150	-5.071E-10	409.0370	2.936E+10	-0.4041	5695312.	0.000
360.000	3.823E-07	-29.3577	5.0141	-1.025E-08	408.9830	2.936E+10	-0.3628	5695312.	0.000
366.000	3.028E-07	-5.7899	3.0634	-1.384E-08	408.9483	2.936E+10	-0.2874	5695312.	0.000
372.000	2.162E-07	7.4336	1.5857	-1.367E-08	408.9307	2.936E+10	-0.2052	5695312.	0.000
378.000	1.387E-07	13.2691	0.5753	-1.156E-08	408.9593	2.936E+10	-0.1316	5695312.	0.000
384.000	7.745E-08	14.3632	-0.0401	-8.735E-09	408.9610	2.936E+10	-0.0735	5695312.	0.000
390.000	3.385E-08	12.8075	-0.3570	-5.958E-09	408.9658	2.936E+10	-0.0321	5695312.	0.000
396.000	5.954E-09	10.0922	-0.4704	-3.618E-09	408.9547	2.936E+10	-0.005652	5695312.	0.000
402.000	-9.564E-09	7.1712	-0.4601	-1.853E-09	408.9504	2.936E+10	0.009078	5695312.	0.000
408.000	-1.629E-08	4.5753	-0.3865	-6.530E-10	408.9465	2.936E+10	0.0155	5695312.	0.000
414.000	-1.740E-08	2.5350	-0.2905	7.114E-11	408.9435	2.936E+10	0.0165	5695312.	0.000
420.000	-1.540E-08	1.0886	-0.1971	4.440E-10	408.9414	2.936E+10	0.0146	5695312.	0.000
426.000	-1.207E-08	0.1684	-0.1189	5.724E-10	408.9400	2.936E+10	0.0115	5695312.	0.000
432.000	-8.534E-09	-0.3394	-0.0592	5.534E-10	408.9403	2.936E+10	0.008101	5695312.	0.000
438.000	-5.412E-09	-0.5555	-0.0205	4.635E-10	408.9406	2.936E+10	0.005138	5695312.	0.000
444.000	-2.972E-09	-0.5865	0.003373	3.468E-10	408.9406	2.936E+10	0.002821	5695312.	0.000
450.000	-1.251E-09	-0.5158	0.0154	2.341E-10	408.9405	2.936E+10	0.001188	5695312.	0.000
456.000	-3.228E-10	-0.4022	0.0194	1.429E-10	408.9404	2.936E+10	0.000154	5695312.	0.000
462.000	4.324E-10	-0.2830	0.0187	7.028E-11	408.9402	2.936E+10	-0.000410	5695312.	0.000
468.000	6.806E-10	-0.1785	0.0155	2.312E-11	408.9400	2.936E+10	-0.000646	5695312.	0.000
474.000	7.099E-10	-0.0972	0.0115	-5.052E-12	408.9399	2.936E+10	-0.000674	5695312.	0.000
480.000	6.208E-10	-0.0401	0.007742	-1.908E-11	408.9398	2.936E+10	-0.000588	5695312.	0.000
486.000	4.809E-10	-0.004229	0.004607	-2.361E-11	408.9398	2.936E+10	-0.000456	5695312.	0.000
492.000	3.366E-10	0.0152	0.002280	-2.249E-11	408.9398	2.936E+10	-0.000320	5695312.	0.000
498.000	2.111E-10	0.0232	0.000720	-1.857E-11	408.9398	2.936E+10	-0.000200	5695312.	0.000
504.000	1.138E-10	0.0239	-0.000205	-1.375E-11	408.9398	2.936E+10	-0.000108	5695312.	0.000
510.000	4.594E-11	0.0207	-0.000660	-9.191E-12	408.9398	2.936E+10	-4.361E-05	5695312.	0.000
516.000	3.523E-12	0.0160	-0.000801	-5.434E-12	408.9398	2.936E+10	-3.344E-06	5695312.	0.000
522.000	-1.926E-11	0.0112	-0.000756	-2.658E-12	408.9398	2.936E+10	1.828E-05	5695312.	0.000
528.000	-2.837E-11	0.006949	-0.000620	0.000	408.9398	2.936E+10	2.693E-05	5695312.	0.000
534.000	-2.896E-11	0.003713	-0.000457	0.000	408.9398	2.936E+10	2.749E-05	5695312.	0.000
540.000	-2.490E-11	0.001465	-0.000303	0.000	408.9398	2.936E+10	2.372E-05	5695312.	0.000
546.000	-1.923E-11	7.138E-05	-0.000177	0.000	408.9398	2.936E+10	1.825E-05	5695312.	0.000
552.000	-1.338E-11	-0.000665	-8.452E-05	0.000	408.9398	2.936E+10	1.270E-05	5695312.	0.000
558.000	-8.342E-12	-0.000945	-2.267E-05	0.000	408.9398	2.936E+10	7.919E-06	5695312.	0.000
564.000	-4.466E-12	-0.000939	1.380E-05	0.000	408.9398	2.936E+10	4.240E-06	5695312.	0.000
570.000	-1.742E-12	-0.000781	3.148E-05	0.000	408.9398	2.936E+10	1.654E-06	5695312.	0.000
576.000	0.000	-0.000562	3.637E-05	0.000	408.9398	2.936E+10	-2.338E-08	5695312.	0.000
582.000	1.102E-12	-0.000345	3.316E-05	0.000	408.9398	2.936E+10	-1.046E-06	5695312.	0.000
588.000	1.757E-12	-0.000165	2.502E-05	0.000	408.9398	2.936E+10	-1.668E-06	5695312.	0.000
594.000	2.210E-12	-4.450E-05	1.372E-05	0.000	408.9398	2.936E+10	-2.098E-06	5695312.	0.000
600.000	2.609E-12	0.000	0.000	0.000	408.9398	2.936E+10	-2.476E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection            =      1.0000000 inches
Computed slope at pile head     =     -0.0133105 radians
Maximum bending moment          =         3815228. inch-lbs
Maximum shear force             =          101662. lbs
Depth of maximum bending moment =     72.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 16
Number of zero deflection points = 8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

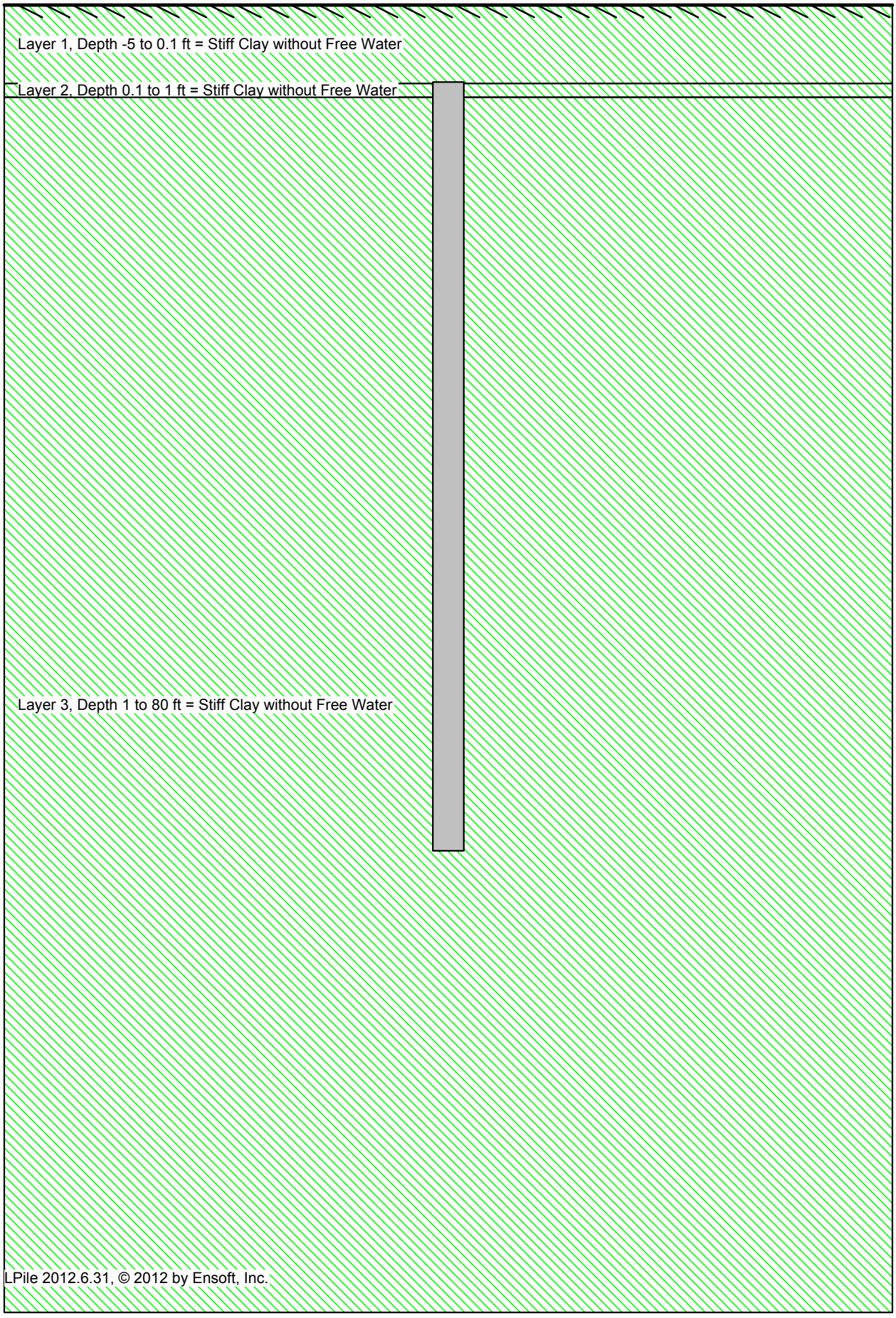
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	185000.	0.25000000	1548892.	53947.	-0.00424651
2	4	y = 0.5000	M = 0.000	185000.	0.50000000	2425715.	74017.	-0.00750975
3	4	y = 1.0000	M = 0.000	185000.	1.00000000	3815228.	101662.	-0.01331054

The analysis ended normally.

SUPPORT: **BENT 2L**

LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 1 ft = Stiff Clay without Free Water
Layer 3, Depth 1 to 80 ft = Stiff Clay without Free Water
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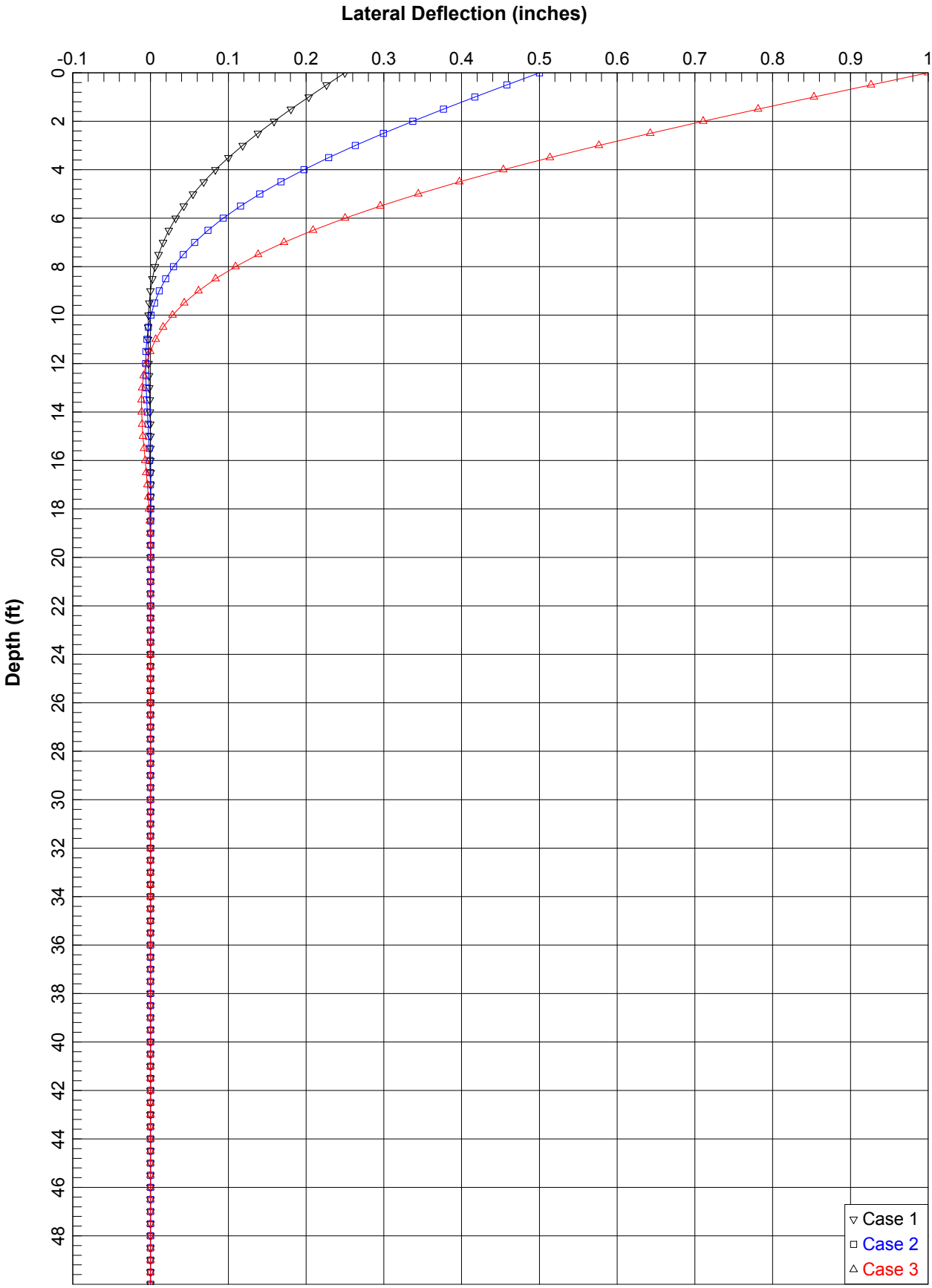
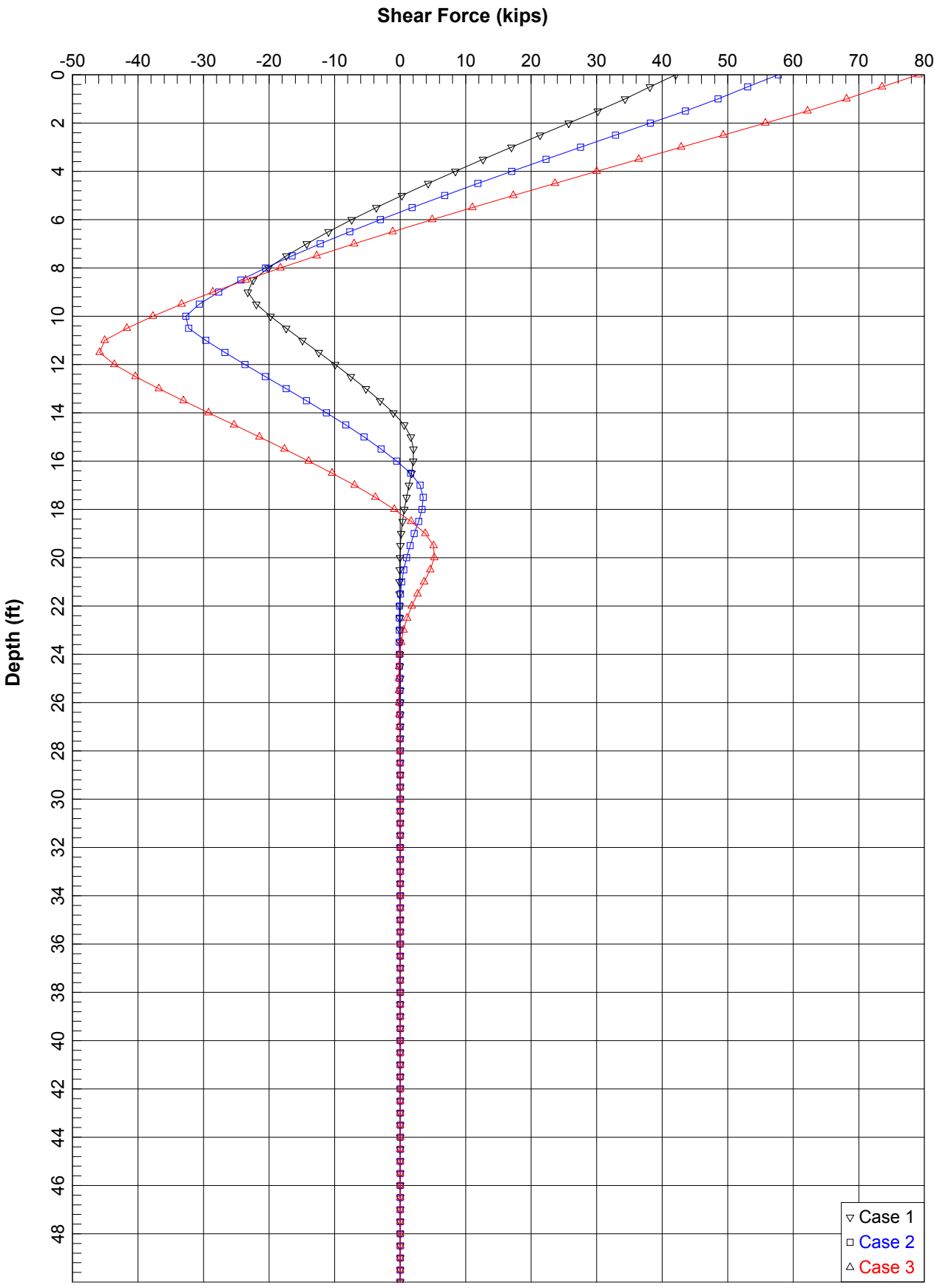
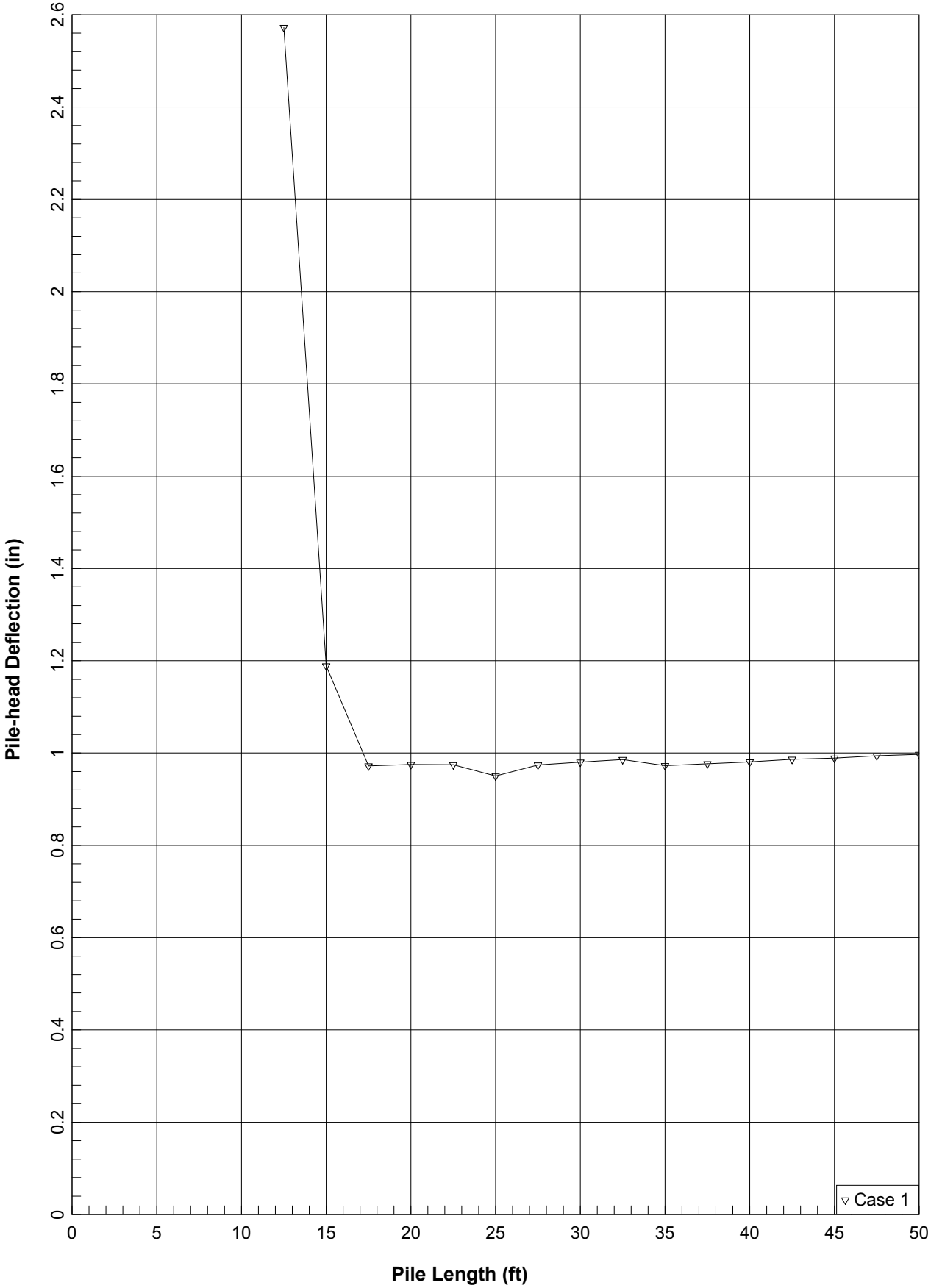

Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2L_long_crit length.lp6d
Name of output report file: Bent 2L_long_crit length.lp6o
Name of plot output file: Bent 2L_long_crit length.lp6p
Name of runtime messeage file: Bent 2L_long_crit length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:27:17

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Test qu psi	RQD % or Subgrade Mod. pci	GSI	Strain Epsilon 50 Factor
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	125.000	4500.000	--	--	--	--	0.00700
		--	--	--	--	0.10000	125.000	4500.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	3750.000	--	--	--	--	0.00700
		--	--	--	--	1.000	125.000	3750.000	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	--	1.000	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--	--	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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
1	1	V = 79000. lbs	M = 0.0000 in-lbs	219000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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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 = 79000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9973	2.173E-06	79000.	-0.0123	484.0963	2.936E+10	-980.6759	2949.9384	0.000
6.000	0.9238	472458.	73436.	-0.0122	1180.3367	2.936E+10	-873.8459	5675.8120	0.000
12.000	0.8508	913336.	68035.	-0.0121	1830.0312	2.936E+10	-926.7979	6536.1327	0.000
18.000	0.7789	1320592.	62063.	-0.0118	2430.1960	2.936E+10	-1063.6976	8193.6849	0.000
24.000	0.7087	1689207.	55662.	-0.0115	2973.4073	2.936E+10	-1069.8544	9057.9459	0.000
30.000	0.6405	2018853.	49233.	-0.0112	3459.1925	2.936E+10	-1073.3622	10055.	0.000
36.000	0.5748	2309316.	42790.	-0.0107	3887.2350	2.936E+10	-1074.1262	11212.	0.000
42.000	0.5119	2560490.	36352.	-0.0102	4257.3794	2.936E+10	-1072.0456	12564.	0.000
48.000	0.4522	2772382.	29935.	-0.009670	4569.6366	2.936E+10	-1067.0129	14157.	0.000
54.000	0.3959	2945118.	23557.	-0.009088	4824.1897	2.936E+10	-1058.9107	16048.	0.000
60.000	0.3432	3078942.	17237.	-0.008470	5021.4003	2.936E+10	-1047.6100	18315.	0.000
66.000	0.2943	3174225.	10995.	-0.007831	5161.8149	2.936E+10	-1032.9650	21063.	0.000
72.000	0.2492	3231469.	4852.1783	-0.007177	5246.1727	2.936E+10	-1014.8080	24432.	0.000
78.000	0.2081	3251312.	-1171.0672	-0.006514	5275.1443	2.936E+10	-992.9405	28624.	0.000
84.000	0.1710	3234536.	-7051.2478	-0.005851	5250.6919	2.936E+10	-967.1197	33926.	0.000
90.000	0.1379	3182074.	-12764.	-0.005196	5173.3821	2.936E+10	-937.0369	40765.	0.000
96.000	0.1087	3095025.	-18282.	-0.004554	5045.1016	2.936E+10	-902.2813	49806.	0.000
102.000	0.0833	2974663.	-23575.	-0.003934	4867.7286	2.936E+10	-862.2754	62133.	0.000
108.000	0.0615	2822460.	-28611.	-0.003341	4643.4332	2.936E+10	-816.1499	79641.	0.000
114.000	0.0432	2640117.	-33347.	-0.002783	4374.7226	2.936E+10	-762.4796	105975.	0.000
120.000	0.0281	2429616.	-37730.	-0.002265	4064.5163	2.936E+10	-698.6384	149235.	0.000
126.000	0.0160	2193311.	-41682.	-0.001793	3716.2845	2.936E+10	-618.8462	232246.	0.000
132.000	0.006576	1934139.	-45055.	-0.001371	3334.3538	2.936E+10	-505.2374	460949.	0.000
138.000	-0.000463	1656259.	-45790.	-0.001004	2924.8540	2.936E+10	258.0159	3344901.	0.000
144.000	-0.005471	1387223.	-43520.	-0.000693	2528.3608	2.936E+10	500.8445	549273.	0.000
150.000	-0.008778	1135844.	-40295.	-0.000435	2157.9412	2.936E+10	574.0339	392370.	0.000
156.000	-0.0107	904826.	-36731.	-0.000227	1817.4995	2.936E+10	613.9170	344511.	0.000
162.000	-0.0115	695666.	-32981.	-6.297E-05	1509.2689	2.936E+10	636.2145	332043.	0.000
168.000	-0.0114	509222.	-29132.	6.016E-05	1234.5153	2.936E+10	646.5894	338894.	0.000
174.000	-0.0108	345919.	-25249.	0.000148	993.8628	2.936E+10	647.7495	360715.	0.000
180.000	-0.009677	205843.	-21383.	0.000204	787.4376	2.936E+10	641.1796	397549.	0.000
186.000	-0.008327	88793.	-17576.	0.000234	614.9465	2.936E+10	627.7483	452316.	0.000
192.000	-0.006868	-5681.7201	-13869.	0.000243	492.4692	2.936E+10	607.9630	531099.	0.000
198.000	-0.005417	-78268.	-10298.	0.000234	599.4366	2.936E+10	582.0838	644781.	0.000
204.000	-0.004061	-129878.	-6901.7612	0.000213	675.4926	2.936E+10	550.1596	812890.	0.000
210.000	-0.002864	-161648.	-3732.1383	0.000183	722.3103	2.936E+10	506.3813	1060767.	0.000
216.000	-0.001866	-175145.	-848.1994	0.000148	742.1996	2.936E+10	454.9316	1462845.	0.000
222.000	-0.001082	-172217.	1707.6640	0.000113	737.8848	2.936E+10	397.0229	2200709.	0.000
228.000	-0.000510	-154950.	3885.5611	7.955E-05	712.4391	2.936E+10	328.9428	3868904.	0.000
234.000	-0.000128	-125799.	5131.2809	5.086E-05	669.4811	2.936E+10	86.2971	4050000.	0.000
240.000	0.000100	-93508.	5187.3376	2.845E-05	621.8951	2.936E+10	-67.6115	4050000.	0.000
246.000	0.000214	-63626.	4552.1554	1.239E-05	577.8590	2.936E+10	-144.1159	4050000.	0.000
252.000	0.000249	-38915.	3615.9521	1.909E-06	541.4433	2.936E+10	-167.9519	4050000.	0.000
258.000	0.000236	-20239.	2633.3718	-4.137E-06	513.9223	2.936E+10	-159.5749	4050000.	0.000
264.000	0.000199	-7303.4039	1751.3146	-6.952E-06	494.8590	2.936E+10	-134.4441	4050000.	0.000
270.000	0.000153	794.6042	1038.1790	-7.617E-06	485.2673	2.936E+10	-103.2677	4050000.	0.000
276.000	0.000108	5174.7612	510.1287	-7.007E-06	491.7221	2.936E+10	-72.7491	4050000.	0.000
282.000	6.891E-05	6934.5626	152.3397	-5.769E-06	494.3155	2.936E+10	-46.5140	4050000.	0.000
288.000	3.855E-05	7017.9988	-65.2598	-4.343E-06	494.4384	2.936E+10	-26.0192	4050000.	0.000
294.000	1.679E-05	6162.8593	-177.3187	-2.996E-06	493.1782	2.936E+10	-11.3338	4050000.	0.000
300.000	2.592E-06	4898.0482	-216.5698	-1.866E-06	491.3143	2.936E+10	-1.7499	4050000.	0.000
306.000	-5.599E-06	3568.9255	-210.4810	-1.001E-06	489.3557	2.936E+10	3.7795	4050000.	0.000

312.000	-9.414E-06	2374.9057	-180.0788	-3.931E-07	487.5961	2.936E+10	6.3546	4050000.	0.000
318.000	-1.032E-05	1409.0126	-140.1239	-6.420E-09	486.1727	2.936E+10	6.9637	4050000.	0.000
324.000	-9.491E-06	693.4362	-100.0129	2.084E-07	485.1182	2.936E+10	6.4066	4050000.	0.000
330.000	-7.815E-06	208.3101	-64.9670	3.006E-07	484.4033	2.936E+10	5.2754	4050000.	0.000
336.000	-5.884E-06	-86.9580	-37.2256	3.130E-07	484.2244	2.936E+10	3.9718	4050000.	0.000
342.000	-4.059E-06	-239.2195	-17.0900	2.797E-07	484.4488	2.936E+10	2.7401	4050000.	0.000
348.000	-2.528E-06	-292.7725	-3.7501	2.253E-07	484.5277	2.936E+10	1.7065	4050000.	0.000
354.000	-1.356E-06	-284.8131	4.1150	1.663E-07	484.5160	2.936E+10	0.9152	4050000.	0.000
360.000	-5.329E-07	-243.8291	7.9399	1.122E-07	484.4556	2.936E+10	0.3597	4050000.	0.000
366.000	-8.964E-09	-189.8297	9.0372	6.793E-08	484.3760	2.936E+10	0.000051	4050000.	0.000
372.000	2.822E-07	-135.5615	8.4839	3.467E-08	484.2961	2.936E+10	-0.1905	4050000.	0.000
378.000	4.071E-07	-88.1141	7.0881	1.181E-08	484.2261	2.936E+10	-0.2748	4050000.	0.000
384.000	4.240E-07	-50.5358	5.4052	-2.356E-09	484.1708	2.936E+10	-0.2862	4050000.	0.000
390.000	3.788E-07	-23.2460	3.7795	-9.896E-09	484.1305	2.936E+10	-0.2557	4050000.	0.000
396.000	3.052E-07	-5.1558	2.3943	-1.280E-08	484.1039	2.936E+10	-0.2060	4050000.	0.000
402.000	2.253E-07	5.5192	1.3201	-1.276E-08	484.1044	2.936E+10	-0.1520	4050000.	0.000
408.000	1.521E-07	10.7190	0.5560	-1.110E-08	484.1121	2.936E+10	-0.1027	4050000.	0.000
414.000	9.204E-08	12.2203	0.0617	-8.757E-09	484.1143	2.936E+10	-0.0621	4050000.	0.000
420.000	4.699E-08	11.4819	-0.2199	-6.335E-09	484.1132	2.936E+10	-0.0317	4050000.	0.000
426.000	1.602E-08	9.5986	-0.3475	-4.181E-09	484.1104	2.936E+10	-0.0108	4050000.	0.000
432.000	-3.181E-09	7.3234	-0.3735	-2.451E-09	484.1071	2.936E+10	0.002147	4050000.	0.000
438.000	-1.340E-08	5.1236	-0.3399	-1.179E-09	484.1038	2.936E+10	0.009044	4050000.	0.000
444.000	-1.733E-08	3.2479	-0.2776	-3.239E-10	484.1011	2.936E+10	0.0117	4050000.	0.000
450.000	-1.729E-08	1.7927	-0.2075	1.912E-10	484.0989	2.936E+10	0.0117	4050000.	0.000
456.000	-1.504E-08	0.7569	-0.1421	4.518E-10	484.0974	2.936E+10	0.0102	4050000.	0.000
462.000	-1.186E-08	0.0865	-0.0876	5.380E-10	484.0964	2.936E+10	0.008008	4050000.	0.000
468.000	-8.583E-09	-0.2957	-0.0462	5.166E-10	484.0967	2.936E+10	0.005793	4050000.	0.000
474.000	-5.665E-09	-0.4693	-0.0174	4.384E-10	484.0970	2.936E+10	0.003824	4050000.	0.000
480.000	-3.322E-09	-0.5051	0.000846	3.388E-10	484.0970	2.936E+10	0.002242	4050000.	0.000
486.000	-1.598E-09	-0.4601	0.0108	2.402E-10	484.0970	2.936E+10	0.001079	4050000.	0.000
492.000	-4.393E-10	-0.3760	0.0149	1.548E-10	484.0968	2.936E+10	0.000297	4050000.	0.000
498.000	2.587E-10	-0.2812	0.0153	8.760E-11	484.0967	2.936E+10	-0.000175	4050000.	0.000
504.000	6.119E-10	-0.1926	0.0135	3.917E-11	484.0966	2.936E+10	-0.000413	4050000.	0.000
510.000	7.287E-10	-0.1189	0.0108	7.335E-12	484.0965	2.936E+10	-0.000492	4050000.	0.000
516.000	6.996E-10	-0.0628	0.007931	-1.123E-11	484.0964	2.936E+10	-0.000472	4050000.	0.000
522.000	5.940E-10	-0.0237	0.005311	-2.006E-11	484.0963	2.936E+10	-0.000401	4050000.	0.000
528.000	4.592E-10	0.001019	0.003178	-2.237E-11	484.0963	2.936E+10	-0.000310	4050000.	0.000
534.000	3.256E-10	0.0145	0.001589	-2.078E-11	484.0963	2.936E+10	-0.000220	4050000.	0.000
540.000	2.098E-10	0.0201	0.000505	-1.724E-11	484.0963	2.936E+10	-0.000142	4050000.	0.000
546.000	1.187E-10	0.0206	-0.000160	-1.307E-11	484.0963	2.936E+10	-8.013E-05	4050000.	0.000
552.000	5.295E-11	0.0183	-0.000508	-9.094E-12	484.0963	2.936E+10	-3.574E-05	4050000.	0.000
558.000	9.580E-12	0.0146	-0.000634	-5.739E-12	484.0963	2.936E+10	-6.467E-06	4050000.	0.000
564.000	-1.592E-11	0.0107	-0.000622	-3.160E-12	484.0963	2.936E+10	1.074E-05	4050000.	0.000
570.000	-2.834E-11	0.007125	-0.000532	-1.343E-12	484.0963	2.936E+10	1.913E-05	4050000.	0.000
576.000	-3.203E-11	0.004279	-0.000410	0.000	484.0963	2.936E+10	2.162E-05	4050000.	0.000
582.000	-3.047E-11	0.002210	-0.000283	0.000	484.0963	2.936E+10	2.056E-05	4050000.	0.000
588.000	-2.620E-11	0.000880	-0.000168	0.000	484.0963	2.936E+10	1.768E-05	4050000.	0.000
594.000	-2.085E-11	0.000187	-7.313E-05	0.000	484.0963	2.936E+10	1.407E-05	4050000.	0.000
600.000	-1.527E-11	0.000	0.000	0.000	484.0963	2.936E+10	1.031E-05	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9973184 inches
Computed slope at pile head = -0.0122601 radians
Maximum bending moment = 3251312. inch-lbs
Maximum shear force = 79000. lbs
Depth of maximum bending moment = 78.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 32
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 79000. lbs
Moment = 0. in-lbs
Axial Load = 219000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9973184	3251312.	79000.
47.500	0.9941801	3252156.	79000.
45.000	0.9892404	3244338.	79000.
42.500	0.9862344	3237750.	79000.
40.000	0.9810549	3232116.	79000.
37.500	0.9765665	3224758.	79000.
35.000	0.9724756	3215582.	79000.
32.500	0.9857942	3244924.	79000.
30.000	0.9803881	3233562.	79000.
27.500	0.9740280	3224085.	79000.
25.000	0.9502591	3200540.	79000.
22.500	0.9749443	3229145.	79000.
20.000	0.9752072	3226663.	79000.
17.500	0.9723726	3221225.	79000.
15.000	1.1887928	3071623.	79000.
12.500	2.5726009	2701959.	79000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Bent 2L_long_crit length

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 79000.	M = 0.000	219000.	0.99731839	3251312.	79000.	-0.01226011

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2L_long_ave P.lp6d
Name of output report file: Bent 2L_long_ave P.lp6o
Name of plot output file: Bent 2L_long_ave P.lp6p
Name of runtime messeage file: Bent 2L_long_ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:24:50

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion Test psf	In-situ Test	Angle of Friction Test deg.	In-situ Test	Elastic Subgrade Property	Uniaxial qu Mod. pci	RQD % or GSI	Strain Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	125.000	4500.000	--	--	--	--	--	--	0.00700
		--	--	--	--	0.10000	125.000	4500.000	--	--	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	3750.000	--	--	--	--	--	--	0.00700
		--	--	--	--	1.000	125.000	3750.000	--	--	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	--	1.000	125.000	4500.000	--	--	--	--	--	--	0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--	--	--	--	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs	219000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs	219000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs	219000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	42039.	-0.003919	484.0963	2.936E+10	-693.9046	8326.8553	0.000
6.000	0.2265	244893.	38113.	-0.003894	844.9850	2.936E+10	-614.8991	16290.	0.000
12.000	0.2033	467585.	34324.	-0.003821	1173.1555	2.936E+10	-647.9620	19126.	0.000
18.000	0.1806	666824.	30166.	-0.003705	1466.7654	2.936E+10	-738.1487	24519.	0.000
24.000	0.1588	839310.	25743.	-0.003551	1720.9514	2.936E+10	-736.0929	27811.	0.000
30.000	0.1380	985072.	21341.	-0.003365	1935.7542	2.936E+10	-731.3075	31793.	0.000
36.000	0.1184	1104242.	16976.	-0.003151	2111.3702	2.936E+10	-723.6752	36664.	0.000
42.000	0.1002	1197063.	12666.	-0.002916	2248.1569	2.936E+10	-713.0642	42700.	0.000
48.000	0.0834	1263893.	8428.4054	-0.002665	2346.6406	2.936E+10	-699.3226	50292.	0.000
54.000	0.0682	1305207.	4283.6279	-0.002402	2407.5239	2.936E+10	-682.2698	60008.	0.000
60.000	0.0546	1321609.	251.7703	-0.002134	2431.6951	2.936E+10	-661.6827	72706.	0.000
66.000	0.0426	1313836.	-3645.0947	-0.001864	2420.2399	2.936E+10	-637.2723	89730.	0.000
72.000	0.0322	1282768.	-7382.8380	-0.001599	2374.4563	2.936E+10	-608.6421	113301.	0.000
78.000	0.0234	1229444.	-10934.	-0.001342	2295.8755	2.936E+10	-575.2065	147341.	0.000
84.000	0.0161	1155083.	-14268.	-0.001099	2185.2926	2.936E+10	-536.0163	199471.	0.000
90.000	0.0102	1061115.	-17344.	-0.000872	2047.8159	2.936E+10	-489.3285	286733.	0.000
96.000	0.005657	949246.	-20106.	-0.000667	1882.9595	2.936E+10	-431.2880	457444.	0.000
102.000	0.002239	821596.	-22449.	-0.000486	1694.8479	2.936E+10	-349.8424	937676.	0.000
108.000	-0.000172	681131.	-23238.	-0.000332	1487.8495	2.936E+10	87.0424	3032401.	0.000
114.000	-0.001748	543616.	-21953.	-0.000207	1285.2002	2.936E+10	341.1290	1171112.	0.000
120.000	-0.002657	418236.	-19770.	-0.000109	1100.4333	2.936E+10	386.7548	873512.	0.000
126.000	-0.003052	306667.	-17384.	-3.465E-05	936.0187	2.936E+10	408.4389	802833.	0.000
132.000	-0.003072	209720.	-14907.	1.812E-05	793.1512	2.936E+10	417.0554	814472.	0.000
138.000	-0.002835	127730.	-12407.	5.261E-05	672.3261	2.936E+10	416.5135	881510.	0.000
144.000	-0.002441	60700.	-9931.2581	7.187E-05	573.5472	2.936E+10	408.6643	1004492.	0.000
150.000	-0.001973	8365.7763	-7521.7760	7.892E-05	496.4246	2.936E+10	394.4964	1199925.	0.000
156.000	-0.001494	-29769.	-5214.6530	7.674E-05	527.9652	2.936E+10	374.5446	1504266.	0.000
162.000	-0.001052	-54412.	-3043.9267	6.813E-05	564.2805	2.936E+10	349.0309	1991123.	0.000
168.000	-0.000676	-66475.	-1043.3360	5.578E-05	582.0576	2.936E+10	317.8327	2819667.	0.000
174.000	-0.000382	-67078.	621.4059	4.213E-05	582.9468	2.936E+10	237.0813	3719901.	0.000
180.000	-0.000171	-59129.	1655.5538	2.923E-05	571.2319	2.936E+10	107.6347	3782401.	0.000
186.000	-3.159E-05	-47289.	2039.1948	1.836E-05	553.7834	2.936E+10	-20.2456	3844901.	0.000
192.000	4.956E-05	-34707.	2003.1038	9.979E-06	535.2421	2.936E+10	-32.2760	3907401.	0.000
198.000	8.815E-05	-23278.	1731.2952	4.053E-06	518.3993	2.936E+10	-58.3269	3969901.	0.000
204.000	9.820E-05	-13942.	1358.3238	2.496E-07	504.6417	2.936E+10	-65.9969	4032401.	0.000
210.000	9.115E-05	-6978.2771	975.7573	-1.888E-06	494.3799	2.936E+10	-61.5253	4050000.	0.000
216.000	7.554E-05	-2227.7703	638.2139	-2.829E-06	487.3793	2.936E+10	-50.9892	4050000.	0.000
222.000	5.720E-05	687.7245	369.4195	-2.987E-06	485.1098	2.936E+10	-38.6090	4050000.	0.000
228.000	3.970E-05	2213.1122	173.1986	-2.690E-06	487.3577	2.936E+10	-26.7980	4050000.	0.000
234.000	2.492E-05	2773.1779	42.3474	-2.181E-06	488.1830	2.936E+10	-16.8191	4050000.	0.000
240.000	1.353E-05	2727.0113	-35.5168	-1.618E-06	488.1150	2.936E+10	-9.1357	4050000.	0.000
246.000	5.496E-06	2351.2289	-74.0528	-1.099E-06	487.5612	2.936E+10	-3.7097	4050000.	0.000
252.000	3.407E-07	1841.2671	-85.8717	-6.710E-07	486.8097	2.936E+10	-0.2300	4050000.	0.000
258.000	-2.556E-06	1322.5319	-81.3849	-3.477E-07	486.0452	2.936E+10	1.7256	4050000.	0.000
264.000	-3.832E-06	865.5618	-68.4492	-1.241E-07	485.3718	2.936E+10	2.5863	4050000.	0.000
270.000	-4.045E-06	501.4671	-52.4985	1.563E-08	484.8353	2.936E+10	2.7306	4050000.	0.000
276.000	-3.644E-06	235.5390	-36.9274	9.094E-08	484.4434	2.936E+10	2.4598	4050000.	0.000
282.000	-2.954E-06	58.0989	-23.5663	1.210E-07	484.1819	2.936E+10	1.9939	4050000.	0.000
288.000	-2.193E-06	-47.5750	-13.1444	1.220E-07	484.1664	2.936E+10	1.4800	4050000.	0.000

294.000	-1.490E-06	-99.9549	-5.6878	1.070E-07	484.2436	2.936E+10	1.0055	4050000.	0.000
300.000	-9.092E-07	-116.1097	-0.8301	8.487E-08	484.2674	2.936E+10	0.6137	4050000.	0.000
306.000	-4.712E-07	-110.1394	1.9652	6.175E-08	484.2586	2.936E+10	0.3181	4050000.	0.000
312.000	-1.682E-07	-92.6897	3.2600	4.102E-08	484.2329	2.936E+10	0.1136	4050000.	0.000
318.000	2.107E-08	-71.1272	3.5580	2.428E-08	484.2011	2.936E+10	-0.0142	4050000.	0.000
324.000	1.231E-07	-50.0576	3.2660	1.190E-08	484.1701	2.936E+10	-0.0831	4050000.	0.000
330.000	1.638E-07	-31.9668	2.6849	3.513E-09	484.1434	2.936E+10	-0.1106	4050000.	0.000
336.000	1.653E-07	-17.8481	2.0184	-1.578E-09	484.1226	2.936E+10	-0.1116	4050000.	0.000
342.000	1.449E-07	-7.7413	1.3903	-4.193E-09	484.1077	2.936E+10	-0.0978	4050000.	0.000
348.000	1.150E-07	-1.1530	0.8641	-5.102E-09	484.0980	2.936E+10	-0.0776	4050000.	0.000
354.000	8.366E-08	2.6417	0.4619	-4.950E-09	484.1002	2.936E+10	-0.0565	4050000.	0.000
360.000	5.558E-08	4.4028	0.1799	-4.230E-09	484.1028	2.936E+10	-0.0375	4050000.	0.000
366.000	3.290E-08	4.8120	0.000765	-3.288E-09	484.1034	2.936E+10	-0.0222	4050000.	0.000
372.000	1.612E-08	4.4206	-0.0985	-2.345E-09	484.1028	2.936E+10	-0.0109	4050000.	0.000
378.000	4.764E-09	3.6362	-0.1408	-1.521E-09	484.1016	2.936E+10	-0.003216	4050000.	0.000
384.000	-2.134E-09	2.7350	-0.1461	-8.702E-10	484.1003	2.936E+10	0.001440	4050000.	0.000
390.000	-5.678E-09	1.8850	-0.1303	-3.980E-10	484.0991	2.936E+10	0.003832	4050000.	0.000
396.000	-6.910E-09	1.1724	-0.1048	-8.559E-11	484.0980	2.936E+10	0.004664	4050000.	0.000
402.000	-6.705E-09	0.6274	-0.0772	9.834E-11	484.0972	2.936E+10	0.004526	4050000.	0.000
408.000	-5.730E-09	0.2452	-0.0521	1.875E-10	484.0966	2.936E+10	0.003868	4050000.	0.000
414.000	-4.455E-09	0.002136	-0.0314	2.128E-10	484.0963	2.936E+10	0.003007	4050000.	0.000
420.000	-3.177E-09	-0.1327	-0.0160	1.995E-10	484.0965	2.936E+10	0.002144	4050000.	0.000
426.000	-2.061E-09	-0.1902	-0.005381	1.665E-10	484.0966	2.936E+10	0.001391	4050000.	0.000
432.000	-1.179E-09	-0.1977	0.001181	1.260E-10	484.0966	2.936E+10	0.000796	4050000.	0.000
438.000	-5.395E-10	-0.1764	0.004661	8.858E-11	484.0965	2.936E+10	0.000364	4050000.	0.000
444.000	-1.161E-10	-0.1420	0.005989	5.605E-11	484.0965	2.936E+10	7.840E-05	4050000.	0.000
450.000	1.331E-10	-0.1047	0.005954	3.084E-11	484.0964	2.936E+10	-8.983E-05	4050000.	0.000
456.000	2.539E-10	-0.0706	0.005171	1.293E-11	484.0963	2.936E+10	-0.000171	4050000.	0.000
462.000	2.882E-10	-0.0427	0.004073	1.353E-12	484.0963	2.936E+10	-0.000195	4050000.	0.000
468.000	2.762E-10	-0.0217	0.002942	-5.227E-12	484.0963	2.936E+10	-0.000182	4050000.	0.000
474.000	2.252E-10	-0.007345	0.001938	-8.198E-12	484.0963	2.936E+10	-0.000152	4050000.	0.000
480.000	1.718E-10	0.001557	0.001134	-8.789E-12	484.0963	2.936E+10	-0.000116	4050000.	0.000
486.000	1.200E-10	0.006285	0.000543	-7.988E-12	484.0963	2.936E+10	-8.101E-05	4050000.	0.000
492.000	7.594E-11	0.008094	0.000146	-6.519E-12	484.0963	2.936E+10	-5.126E-05	4050000.	0.000
498.000	4.179E-11	0.008056	-9.226E-05	-4.868E-12	484.0963	2.936E+10	-2.821E-05	4050000.	0.000
504.000	1.753E-11	0.007000	-0.000212	-3.330E-12	484.0963	2.936E+10	-1.183E-05	4050000.	0.000
510.000	1.840E-12	0.005516	-0.000252	-2.050E-12	484.0963	2.936E+10	-1.242E-06	4050000.	0.000
516.000	-7.081E-12	0.003986	-0.000241	-1.079E-12	484.0963	2.936E+10	4.780E-06	4050000.	0.000
522.000	-1.111E-11	0.002627	-0.000204	0.000	484.0963	2.936E+10	7.502E-06	4050000.	0.000
528.000	-1.192E-11	0.001537	-0.000157	0.000	484.0963	2.936E+10	8.049E-06	4050000.	0.000
534.000	-1.085E-11	0.000737	-0.000111	0.000	484.0963	2.936E+10	7.324E-06	4050000.	0.000
540.000	-8.871E-12	0.000200	-7.144E-05	0.000	484.0963	2.936E+10	5.988E-06	4050000.	0.000
546.000	-6.648E-12	-0.000121	-4.001E-05	0.000	484.0963	2.936E+10	4.487E-06	4050000.	0.000
552.000	-4.572E-12	-0.000281	-1.729E-05	0.000	484.0963	2.936E+10	3.086E-06	4050000.	0.000
558.000	-2.841E-12	-0.000329	-2.278E-06	0.000	484.0963	2.936E+10	1.918E-06	4050000.	0.000
564.000	-1.514E-12	-0.000309	6.541E-06	0.000	484.0963	2.936E+10	1.022E-06	4050000.	0.000
570.000	0.000	-0.000251	1.075E-05	0.000	484.0963	2.936E+10	3.818E-07	4050000.	0.000
576.000	0.000	-0.000180	1.175E-05	0.000	484.0963	2.936E+10	-5.021E-08	4050000.	0.000
582.000	0.000	-0.000111	1.060E-05	0.000	484.0963	2.936E+10	-3.331E-07	4050000.	0.000
588.000	0.000	-5.314E-05	8.025E-06	0.000	484.0963	2.936E+10	-5.244E-07	4050000.	0.000
594.000	0.000	-1.448E-05	4.436E-06	0.000	484.0963	2.936E+10	-6.717E-07	4050000.	0.000
600.000	1.196E-12	0.000	0.000	0.000	484.0963	2.936E+10	-8.070E-07	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.003919 radians
Maximum bending moment = 1321609. inch-lbs
Maximum shear force = 42039. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	57708.	-0.006946	484.0963	2.936E+10	-825.1963	4951.1778	0.000
6.000	0.4583	340519.	53832.	-0.006911	985.9041	2.936E+10	-733.3921	9600.9608	0.000
12.000	0.4171	654544.	48505.	-0.006809	1448.6695	2.936E+10	-775.4970	11156.	0.000
18.000	0.3766	940475.	43518.	-0.006646	1870.0344	2.936E+10	-886.9854	14131.	0.000
24.000	0.3373	1194223.	38191.	-0.006428	2243.9711	2.936E+10	-888.6232	15807.	0.000
30.000	0.2995	1415659.	32862.	-0.006162	2570.2922	2.936E+10	-887.5694	17783.	0.000
36.000	0.2634	1604763.	27548.	-0.005853	2848.9660	2.936E+10	-883.7176	20133.	0.000
42.000	0.2292	1761622.	22266.	-0.005509	3080.1220	2.936E+10	-876.9515	22953.	0.000
48.000	0.1973	1886437.	17034.	-0.005136	3264.0570	2.936E+10	-867.1424	26375.	0.000
54.000	0.1676	1979529.	11870.	-0.004741	3401.2421	2.936E+10	-854.1440	30578.	0.000
60.000	0.1404	2041339.	6794.4637	-0.004330	3492.3300	2.936E+10	-837.7865	35810.	0.000
66.000	0.1156	2072442.	1827.5062	-0.003910	3538.1640	2.936E+10	-817.8600	42435.	0.000
72.000	0.0935	2073544.	-3008.4780	-0.003486	3539.7887	2.936E+10	-794.1290	50985.	0.000
78.000	0.0738	2045501.	-7689.6016	-0.003065	3498.4629	2.936E+10	-766.2452	62288.	0.000
84.000	0.0567	1989324.	-12190.	-0.002653	3415.6769	2.936E+10	-733.7610	77683.	0.000
90.000	0.0420	1906197.	-16479.	-0.002255	3293.1783	2.936E+10	-696.0101	99484.	0.000
96.000	0.0296	1797502.	-20523.	-0.001876	3132.9968	2.936E+10	-651.9281	132065.	0.000
102.000	0.0195	1664854.	-24277.	-0.001522	2937.5201	2.936E+10	-599.6143	184835.	0.000
108.000	0.0114	1510174.	-27681.	-0.001198	2709.5739	2.936E+10	-535.0684	282815.	0.000
114.000	0.005091	1335825.	-30628.	-0.000907	2452.6438	2.936E+10	-447.0166	526837.	0.000
120.000	0.000468	1145025.	-32708.	-0.000653	2171.4700	2.936E+10	-246.5199	3157401.	0.000
126.000	-0.002750	945043.	-32254.	-0.000440	1876.7647	2.936E+10	398.0865	868607.	0.000
132.000	-0.004809	759138.	-29659.	-0.000266	1602.8046	2.936E+10	466.8587	582461.	0.000
138.000	-0.005938	589836.	-26754.	-0.000128	1353.3116	2.936E+10	501.5259	506801.	0.000
144.000	-0.006343	438430.	-23691.	-2.270E-05	1130.1919	2.936E+10	519.3922	491338.	0.000
150.000	-0.006210	305605.	-20554.	5.334E-05	934.4534	2.936E+10	526.1073	508321.	0.000

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156.000	-0.005703	191638.	-17403.	0.000104	766.5048	2.936E+10	524.2496	551596.	0.000
162.000	-0.004960	96492.	-14285.	0.000134	626.2926	2.936E+10	515.1845	623192.	0.000
168.000	-0.004099	19867.	-11240.	0.000145	513.3736	2.936E+10	499.6775	731349.	0.000
174.000	-0.003214	-38775.	-8306.9411	0.000144	541.2371	2.936E+10	478.1376	892535.	0.000
180.000	-0.002377	-80193.	-5520.4055	0.000131	602.2739	2.936E+10	450.7076	1137826.	0.000
186.000	-0.001637	-105365.	-2916.5286	0.000112	639.3682	2.936E+10	417.2514	1528903.	0.000
192.000	-0.001027	-115487.	-533.2302	8.987E-05	654.2849	2.936E+10	377.1815	2202637.	0.000
198.000	-0.000559	-112000.	1584.7276	6.662E-05	649.1458	2.936E+10	328.8045	3528805.	0.000
204.000	-0.000228	-96646.	3030.9005	4.530E-05	626.5188	2.936E+10	153.2532	4032401.	0.000
210.000	-1.552E-05	-75748.	3522.0926	2.768E-05	595.7231	2.936E+10	10.4776	4050000.	0.000
216.000	0.000104	-54453.	3342.7336	1.437E-05	564.3417	2.936E+10	-70.2639	4050000.	0.000
222.000	0.000157	-35673.	2814.1523	5.161E-06	536.6663	2.936E+10	-105.9299	4050000.	0.000
228.000	0.000166	-20607.	2160.1637	-6.000E-07	514.5065	2.936E+10	-112.0663	4050000.	0.000
234.000	0.000150	-9749.6242	1520.7546	-3.711E-06	498.4639	2.936E+10	-101.0701	4050000.	0.000
240.000	0.000121	-2438.1721	971.5344	-4.957E-06	487.6893	2.936E+10	-82.0033	4050000.	0.000
246.000	9.025E-05	1921.8152	542.7696	-5.010E-06	486.9284	2.936E+10	-60.9183	4050000.	0.000
252.000	6.137E-05	4088.2284	235.7425	-4.396E-06	490.1209	2.936E+10	-41.4241	4050000.	0.000
258.000	3.750E-05	4762.2766	35.5281	-3.491E-06	491.1142	2.936E+10	-25.3140	4050000.	0.000
264.000	1.948E-05	4523.7402	-79.8525	-2.542E-06	490.7627	2.936E+10	-13.1461	4050000.	0.000
270.000	6.997E-06	3810.7279	-133.4596	-1.690E-06	489.7139	2.936E+10	-4.7229	4050000.	0.000
276.000	-8.087E-07	2926.6676	-145.9907	-1.002E-06	488.4092	2.936E+10	0.5459	4050000.	0.000
282.000	-5.025E-06	2061.4728	-134.1770	-4.921E-07	487.1342	2.936E+10	3.3920	4050000.	0.000
288.000	-6.714E-06	1317.8369	-110.4058	-1.467E-07	486.0383	2.936E+10	4.5317	4050000.	0.000
294.000	-6.766E-06	736.9884	-83.0692	6.327E-08	485.1824	2.936E+10	4.5805	4050000.	0.000
300.000	-5.954E-06	320.8402	-57.2699	1.714E-07	484.5691	2.936E+10	4.0192	4050000.	0.000
306.000	-4.729E-06	49.2987	-35.6350	2.092E-07	484.1689	2.936E+10	3.1924	4050000.	0.000
312.000	-3.444E-06	-107.3296	-19.0836	2.033E-07	484.2545	2.936E+10	2.3247	4050000.	0.000
318.000	-2.290E-06	-180.2383	-7.4715	1.739E-07	484.2019	2.936E+10	1.5455	4050000.	0.000
324.000	-1.358E-06	-197.4449	-0.0848	1.353E-07	484.3873	2.936E+10	0.9163	4050000.	0.000
330.000	-6.669E-07	-181.6108	4.0147	9.654E-08	484.3639	2.936E+10	0.4502	4050000.	0.000
336.000	-1.990E-07	-149.5225	5.7681	6.276E-08	484.3166	2.936E+10	0.1343	4050000.	0.000
342.000	8.555E-08	-112.5586	5.9978	3.592E-08	484.2622	2.936E+10	-0.0577	4050000.	0.000
348.000	2.321E-07	-77.6434	5.3546	1.648E-08	484.2107	2.936E+10	-0.1566	4050000.	0.000
354.000	2.833E-07	-48.3462	4.3110	3.607E-09	484.1675	2.936E+10	-0.1913	4050000.	0.000
360.000	2.753E-07	-25.9213	3.1796	-3.983E-09	484.1324	2.936E+10	-0.1859	4050000.	0.000
366.000	2.355E-07	-10.1801	2.1451	-7.672E-09	484.1113	2.936E+10	-0.1590	4050000.	0.000
372.000	1.833E-07	-0.1601	1.2970	-8.729E-09	484.0965	2.936E+10	-0.1237	4050000.	0.000
378.000	1.308E-07	5.4060	0.6610	-8.193E-09	484.1028	2.936E+10	-0.0883	4050000.	0.000
384.000	8.496E-08	7.7933	0.2241	-6.844E-09	484.1078	2.936E+10	-0.0573	4050000.	0.000
390.000	4.867E-08	8.1135	-0.0465	-5.218E-09	484.1082	2.936E+10	-0.0329	4050000.	0.000
396.000	2.234E-08	7.2487	-0.1903	-3.648E-09	484.1070	2.936E+10	-0.0151	4050000.	0.000
402.000	4.895E-09	5.8390	-0.2455	-2.311E-09	484.1049	2.936E+10	-0.003304	4050000.	0.000
408.000	-5.390E-09	4.3089	-0.2445	-1.274E-09	484.1026	2.936E+10	0.003638	4050000.	0.000
414.000	-1.039E-08	2.9086	-0.2125	-5.361E-10	484.1006	2.936E+10	0.007013	4050000.	0.000
420.000	-1.182E-08	1.7680	-0.1675	-5.900E-11	484.0989	2.936E+10	0.007981	4050000.	0.000
426.000	-1.110E-08	0.8982	-0.1211	2.127E-10	484.0976	2.936E+10	0.007491	4050000.	0.000
432.000	-9.271E-09	0.3059	-0.0799	3.357E-10	484.0967	2.936E+10	0.006258	4050000.	0.000
438.000	-7.069E-09	-0.0613	-0.0468	3.607E-10	484.0964	2.936E+10	0.004772	4050000.	0.000
444.000	-4.943E-09	-0.2566	-0.0225	3.282E-10	484.0967	2.936E+10	0.003333	4050000.	0.000
450.000	-3.131E-09	-0.3318	-0.006120	2.681E-10	484.0968	2.936E+10	0.002113	4050000.	0.000
456.000	-1.726E-09	-0.3308	0.003715	2.004E-10	484.0968	2.936E+10	0.001165	4050000.	0.000
462.000	-7.267E-10	-0.2877	0.008682	1.371E-10	484.0967	2.936E+10	0.000491	4050000.	0.000
468.000	-8.825E-11	-0.2270	0.0103	8.455E-11	484.0966	2.936E+10	5.417E-05	4050000.	0.000
474.000	2.879E-10	-0.1642	0.009895	4.457E-11	484.0965	2.936E+10	-0.000194	4050000.	0.000
480.000	4.547E-10	-0.1083	0.008392	1.673E-11	484.0964	2.936E+10	-0.000307	4050000.	0.000
486.000	4.886E-10	-0.0635	0.006482	0.000	484.0964	2.936E+10	-0.000330	4050000.	0.000
492.000	4.446E-10	-0.0306	0.004592	-1.045E-11	484.0963	2.936E+10	-0.000300	4050000.	0.000
498.000	3.632E-10	-0.008385	0.002956	-1.443E-11	484.0963	2.936E+10	-0.000245	4050000.	0.000
504.000	2.715E-10	0.004960	0.001671	-1.478E-11	484.0963	2.936E+10	-0.000183	4050000.	0.000
510.000	1.858E-10	0.0117	0.000745	-1.308E-11	484.0963	2.936E+10	-0.000127	4050000.	0.000
516.000	1.145E-10	0.0139	0.000137	-1.046E-11	484.0963	2.936E+10	-7.732E-05	4050000.	0.000
522.000	6.035E-11	0.0134	-0.000217	-7.665E-12	484.0963	2.936E+10	-4.074E-05	4050000.	0.000
528.000	2.257E-11	0.0113	-0.000385	-5.138E-12	484.0963	2.936E+10	-1.523E-05	4050000.	0.000
534.000	-1.301E-12	0.008767	-0.000428	-3.082E-12	484.0963	2.936E+10	8.785E-07	4050000.	0.000
540.000	-1.442E-11	0.006215	-0.000396	-1.551E-12	484.0963	2.936E+10	9.734E-06	4050000.	0.000
546.000	-1.992E-11	0.004013	-0.000327	0.000	484.0963	2.936E+10	1.344E-05	4050000.	0.000
552.000	-2.049E-11	0.002293	-0.000245	0.000	484.0963	2.936E+10	1.383E-05	4050000.	0.000
558.000	-1.826E-11	0.001071	-0.000167	0.000	484.0963	2.936E+10	1.232E-05	4050000.	0.000
564.000	-1.471E-11	0.000292	-9.990E-05	0.000	484.0963	2.936E+10	9.926E-06	4050000.	0.000
570.000	-1.080E-11	-0.000129	-4.826E-05	0.000	484.0963	2.936E+10	7.287E-06	4050000.	0.000
576.000	-7.045E-12	-0.000288	-1.213E-05	0.000	484.0963	2.936E+10	4.755E-06	4050000.	0.000
582.000	-3.648E-12	-0.000276	9.521E-06	0.000	484.0963	2.936E+10	2.462E-06	4050000.	0.000
588.000	0.000	-0.000176	1.810E-05	0.000	484.0963	2.936E+10	3.980E-07	4050000.	0.000
594.000	2.253E-12	-6.041E-05	1.473E-05	0.000	484.0963	2.936E+10	-1.521E-06	4050000.	0.000
600.000	5.022E-12	0.000	0.000	0.000	484.0963	2.936E+10	-3.390E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection             =      0.5000000 inches
Computed slope at pile head      =     -0.0069460 radians
Maximum bending moment           =      2073544. inch-lbs
Maximum shear force              =        57708. lbs
Depth of maximum bending moment  =     72.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             15
Number of zero deflection points =              8
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	79098.	-0.0123	484.0963	2.936E+10	981.3293	2943.9879	0.000
6.000	0.9263	473069.	73530.	-0.0122	1181.2374	2.936E+10	-874.4358	5664.2183	0.000
12.000	0.8531	914531.	68125.	-0.0121	1831.8009	2.936E+10	-927.4331	6522.5911	0.000

Bent 2L_long_ave P

18.000	0.7811	1322360.	62149.	-0.0119	2432.8007	2.936E+10	-1064.4388	8176.4386	0.000
24.000	0.7107	1691514.	55744.	-0.0116	2976.8069	2.936E+10	-1070.6138	9038.5441	0.000
30.000	0.6424	2021671.	49310.	-0.0112	3463.3458	2.936E+10	-1074.1398	10033.	0.000
36.000	0.5765	2312617.	42863.	-0.0107	3892.0996	2.936E+10	-1074.9218	11187.	0.000
42.000	0.5135	2564244.	36419.	-0.0102	4262.9118	2.936E+10	-1072.8594	12536.	0.000
48.000	0.4536	2776559.	29997.	-0.009694	4575.7922	2.936E+10	-1067.8446	14124.	0.000
54.000	0.3972	2949687.	23614.	-0.009109	4830.9228	2.936E+10	-1059.7605	16010.	0.000
60.000	0.3443	3083871.	17290.	-0.008493	5028.6639	2.936E+10	-1048.4777	18270.	0.000
66.000	0.2953	3179481.	11043.	-0.007853	5169.5610	2.936E+10	-1033.8505	21009.	0.000
72.000	0.2501	3237019.	4893.9878	-0.007197	5254.3522	2.936E+10	-1015.7115	24368.	0.000
78.000	0.2089	3257122.	-1134.7324	-0.006533	5283.9771	2.936E+10	-993.8619	28545.	0.000
84.000	0.1717	3240572.	-7020.4956	-0.005869	5259.5869	2.936E+10	-968.0591	33828.	0.000
90.000	0.1385	3188300.	-12739.	-0.005212	5182.5571	2.936E+10	-937.9946	40643.	0.000
96.000	0.1092	3101405.	-18262.	-0.004569	5054.1032	2.936E+10	-903.2580	49650.	0.000
102.000	0.0836	2981160.	-23562.	-0.003948	4877.3025	2.936E+10	-863.2723	61927.	0.000
108.000	0.0618	2829035.	-28603.	-0.003354	4653.1239	2.936E+10	-817.1698	79359.	0.000
114.000	0.0434	2646734.	-33345.	-0.002794	4384.4735	2.936E+10	-763.5286	105571.	0.000
120.000	0.0283	2436234.	-37735.	-0.002275	4074.2690	2.936E+10	-699.7317	148609.	0.000
126.000	0.0161	2199889.	-41694.	-0.001801	3725.9785	2.936E+10	-620.0282	231125.	0.000
132.000	0.0066638	1940633.	-45075.	-0.001378	3343.9237	2.936E+10	-506.7075	457974.	0.000
138.000	-0.000439	1662614.	-45866.	-0.001010	2934.2192	2.936E+10	244.8060	3344901.	0.000
144.000	-0.005478	1392962.	-43624.	-0.000697	2536.8441	2.936E+10	500.6189	548345.	0.000
150.000	-0.008808	1148958.	-40400.	-0.000438	2165.4763	2.936E+10	574.2379	391162.	0.000
156.000	-0.01007	999319.	-36834.	-0.000229	1824.1212	2.936E+10	614.3280	347219.	0.000
162.000	-0.0116	699553.	-33081.	-6.452E-05	1514.9973	2.936E+10	636.7612	330629.	0.000
168.000	-0.0115	512522.	-29229.	5.935E-05	1239.3778	2.936E+10	647.2381	337290.	0.000
174.000	-0.0108	348654.	-25341.	0.000147	997.8925	2.936E+10	648.4816	358830.	0.000
180.000	-0.009204	208938.	-21476.	0.000204	790.6722	2.936E+10	641.9836	395256.	0.000
186.000	-0.008392	90477.	-17658.	0.000235	617.4279	2.936E+10	628.6170	449425.	0.000
192.000	-0.006928	-4478.2353	-13946.	0.000244	490.6957	2.936E+10	608.8924	527312.	0.000
198.000	-0.005470	-77512.	-10370.	0.000235	590.3221	2.936E+10	583.0724	639597.	0.000
204.000	-0.004106	-129534.	-6966.9674	0.000214	674.9849	2.936E+10	551.2091	805413.	0.000
210.000	-0.002902	-161678.	-3790.8827	0.000184	722.3540	2.936E+10	507.4858	1049365.	0.000
216.000	-0.001895	-175509.	-900.1244	0.000150	742.7360	2.936E+10	456.1003	1443860.	0.000
222.000	-0.001104	-172873.	1663.0522	0.000114	738.8517	2.936E+10	398.2919	2104171.	0.000
228.000	-0.000525	-155852.	3849.2157	8.059E-05	713.7690	2.936E+10	330.4293	3775374.	0.000
234.000	-0.000137	-126894.	5118.2548	5.169E-05	671.0948	2.936E+10	92.5838	4050000.	0.000
240.000	9.523E-05	-94561.	5203.2358	2.906E-05	623.4586	2.936E+10	-64.2568	4050000.	0.000
246.000	0.000212	-64532.	4582.0213	1.280E-05	579.1939	2.936E+10	-142.8148	4050000.	0.000
252.000	0.000249	-39618.	3649.7135	2.159E-06	542.4802	2.936E+10	-167.9545	4050000.	0.000
258.000	0.000237	-20741.	2664.9532	-4.010E-06	514.6612	2.936E+10	-160.2989	4050000.	0.000
264.000	0.000201	-7628.4366	1777.6335	-6.900E-06	495.3388	2.936E+10	-135.4744	4050000.	0.000
270.000	0.000155	608.9286	1058.2050	-7.626E-06	484.9936	2.936E+10	-104.3351	4050000.	0.000
276.000	0.000109	5090.0655	524.0996	-7.044E-06	491.5973	2.936E+10	-73.7000	4050000.	0.000
282.000	7.004E-05	6916.6362	161.1649	-5.817E-06	494.2890	2.936E+10	-47.2783	4050000.	0.000
288.000	3.938E-05	7039.3311	-60.4161	-4.391E-06	494.4698	2.936E+10	-26.5821	4050000.	0.000
294.000	1.735E-05	6203.1814	-175.3009	-3.037E-06	493.2376	2.936E+10	-11.7129	4050000.	0.000
300.000	2.931E-06	4943.7025	-216.3752	-1.898E-06	491.3816	2.936E+10	-1.9786	4050000.	0.000
306.000	-5.427E-06	3611.6678	-212.9206	-1.024E-06	489.4186	2.936E+10	3.6634	4050000.	0.000
312.000	-9.357E-06	2410.5468	-181.3830	-4.085E-07	487.6486	2.936E+10	6.3158	4050000.	0.000
318.000	-1.033E-05	1436.1459	-141.5176	-1.543E-08	486.2127	2.936E+10	6.9727	4050000.	0.000
324.000	-9.542E-06	712.3756	-101.2773	2.041E-07	485.1461	2.936E+10	6.4408	4050000.	0.000
330.000	-7.880E-06	220.2820	-65.9974	2.998E-07	484.4209	2.936E+10	5.3192	4050000.	0.000
336.000	-5.949E-06	-80.3803	-37.9941	3.137E-07	484.2147	2.936E+10	4.0152	4050000.	0.000
342.000	-4.115E-06	-236.4721	-17.6149	2.814E-07	484.4448	2.936E+10	2.7778	4050000.	0.000
348.000	-2.577E-06	-292.4981	-4.0728	2.272E-07	484.5273	2.936E+10	1.7362	4050000.	0.000
354.000	-1.388E-06	-285.9427	3.9458	1.682E-07	484.5177	2.936E+10	0.9367	4050000.	0.000
360.000	-5.538E-07	-245.5907	7.8773	1.139E-07	484.4582	2.936E+10	0.3738	4050000.	0.000
366.000	-2.118E-08	-191.7149	9.0416	6.918E-08	484.3788	2.936E+10	0.0143	4050000.	0.000
372.000	2.776E-07	-137.2730	8.5249	3.506E-08	484.2986	2.936E+10	-0.1865	4050000.	0.000
378.000	4.056E-07	-89.5097	7.1440	1.238E-08	484.2282	2.936E+10	-0.2737	4050000.	0.000
384.000	4.250E-07	-51.5772	5.4622	-2.034E-09	484.1723	2.936E+10	-0.2869	4050000.	0.000
390.000	3.811E-07	-24.9577	3.8298	-9.758E-09	484.1311	2.936E+10	-0.2573	4050000.	0.000
396.000	3.079E-07	-5.5936	2.4345	-1.277E-08	484.1045	2.936E+10	-0.2079	4050000.	0.000
402.000	2.279E-07	5.2893	1.3495	-1.280E-08	484.1041	2.936E+10	-0.1538	4050000.	0.000
408.000	1.543E-07	10.6336	0.5756	-1.118E-08	484.1120	2.936E+10	-0.1041	4050000.	0.000
414.000	9.374E-08	12.2260	0.0734	-8.423E-09	484.1143	2.936E+10	-0.0633	4050000.	0.000
420.000	4.819E-08	11.5371	-0.2141	-6.412E-09	484.1133	2.936E+10	-0.0325	4050000.	0.000
426.000	1.679E-08	9.6742	-0.3456	-4.245E-09	484.1105	2.936E+10	-0.0113	4050000.	0.000
432.000	-2.745E-09	7.4006	-0.3743	-2.530E-09	484.1072	2.936E+10	0.001853	4050000.	0.000
438.000	-1.321E-08	5.1917	-0.3418	-1.213E-09	484.1039	2.936E+10	0.008914	4050000.	0.000
444.000	-1.730E-08	3.3023	-0.2800	-3.448E-10	484.1012	2.936E+10	0.0117	4050000.	0.000
450.000	-1.734E-08	1.8324	-0.2099	1.799E-10	484.0990	2.936E+10	0.0117	4050000.	0.000
456.000	-1.514E-08	0.7835	-0.1441	4.423E-10	484.0974	2.936E+10	0.0102	4050000.	0.000
462.000	-1.198E-08	0.1023	-0.0892	5.378E-10	484.0964	2.936E+10	0.008084	4050000.	0.000
468.000	-8.688E-09	-0.2878	-0.0473	5.188E-10	484.0967	2.936E+10	0.005864	4050000.	0.000
474.000	-5.751E-09	-0.4668	-0.0181	4.417E-10	484.0970	2.936E+10	0.003882	4050000.	0.000
480.000	-3.387E-09	-0.5060	0.000426	3.422E-10	484.0970	2.936E+10	0.002286	4050000.	0.000
486.000	-1.644E-09	-0.4626	0.0106	2.433E-10	484.0970	2.936E+10	0.001110	4050000.	0.000
492.000	-4.677E-10	-0.3792	0.0149	1.573E-10	484.0968	2.936E+10	0.000316	4050000.	0.000
498.000	2.433E-10	-0.2844	0.0153	8.945E-11	484.0967	2.936E+10	-0.000164	4050000.	0.000
504.000	6.057E-10	-0.1953	0.0136	4.042E-11	484.0966	2.936E+10	-0.000409	4050000.	0.000
510.000	7.284E-10	-0.1210	0.0109	8.100E-12	484.0965	2.936E+10	-0.000492	4050000.	0.000
516.000	7.029E-10	-0.0643	0.000825	-1.083E-11	484.0964	2.936E+10	-0.000474	4050000.	0.000
522.000	5.985E-10	-0.0246	0.005390	-1.992E-11	484.0963	2.936E+10	-0.000404	4050000.	0.000
528.000	4.638E-10	0.000449	0.003238	-2.239E-11	484.0963	2.936E+10	-0.000313	4050000.	0.000
534.000	3.298E-10	0.0143	0.001631	-2.089E-11	484.0963	2.936E+10	-0.000223	4050000.	0.000
540.000	2.132E-10	0.0201	0.000532	-1.738E-11	484.0963	2.936E+10	-0.000144	4050000.	0.000
546.000	1.212E-10	0.0207	-0.000145	-1.321E-11	484.0963	2.936E+10	-8.184E-05	4050000.	0.000
552.000	5.468E-11	0.0184	-0.000502	-9.217E-12	484.0963	2.936E+10	-3.691E-05	4050000.	0.000
558.000	1.064E-11	0.0147	-0.000634	-5.836E-12	484.0963	2.936E+10	-7.182E-06	4050000.	0.000
564.000	-1.536E-11	0.0108	-0.000624	-3.232E-12	484.0963	2.936E+10	1.037E-05	4050000.	0.000
570.000	-2.815E-11	0.007222	-0.000536	-1.392E-12	484.0963	2.936E+10	1.900E-05	4050000.	0.000
576.000	-3.207E-11	0.004348	-0.000414	0.000	484.0963	2.936E+10	2.165E-05	4050000.	0.000
582.000	-3.067E-11	0.002252	-0.000287	0.000	484.0963	2.936E+10	2.070E-05	4050000.	0.000
588.000	-2.650E-11	0.000900	-0.000171	0.000	484.0963	2.936E+10	1.789E-05	4050000.	0.000
594.000	-2.123E-11	0.000192	-7.482E-05	0.000	484.0963	2.936E+10	1.433E-05	4050000.	0.000
600.000	-1.572E-11	0.000	0.000	0.000	484.0963	2.936E+10	1.061E-05	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0122878 radians
Maximum bending moment           =      3257122. inch-lbs
Maximum shear force              =        79098. lbs
Depth of maximum bending moment  =     78.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 21
Number of zero deflection points = 7

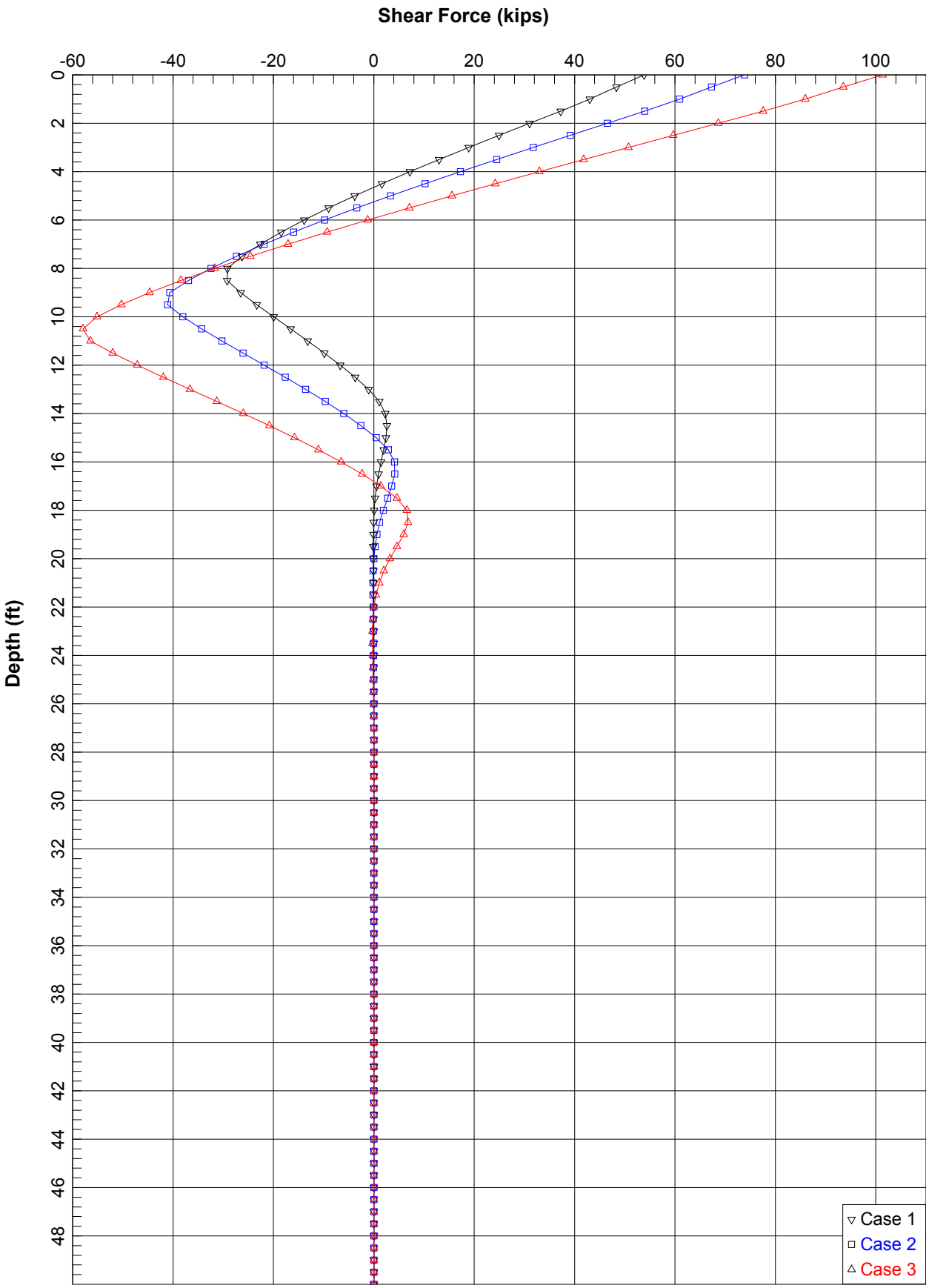
Summary of Pile Response(s)

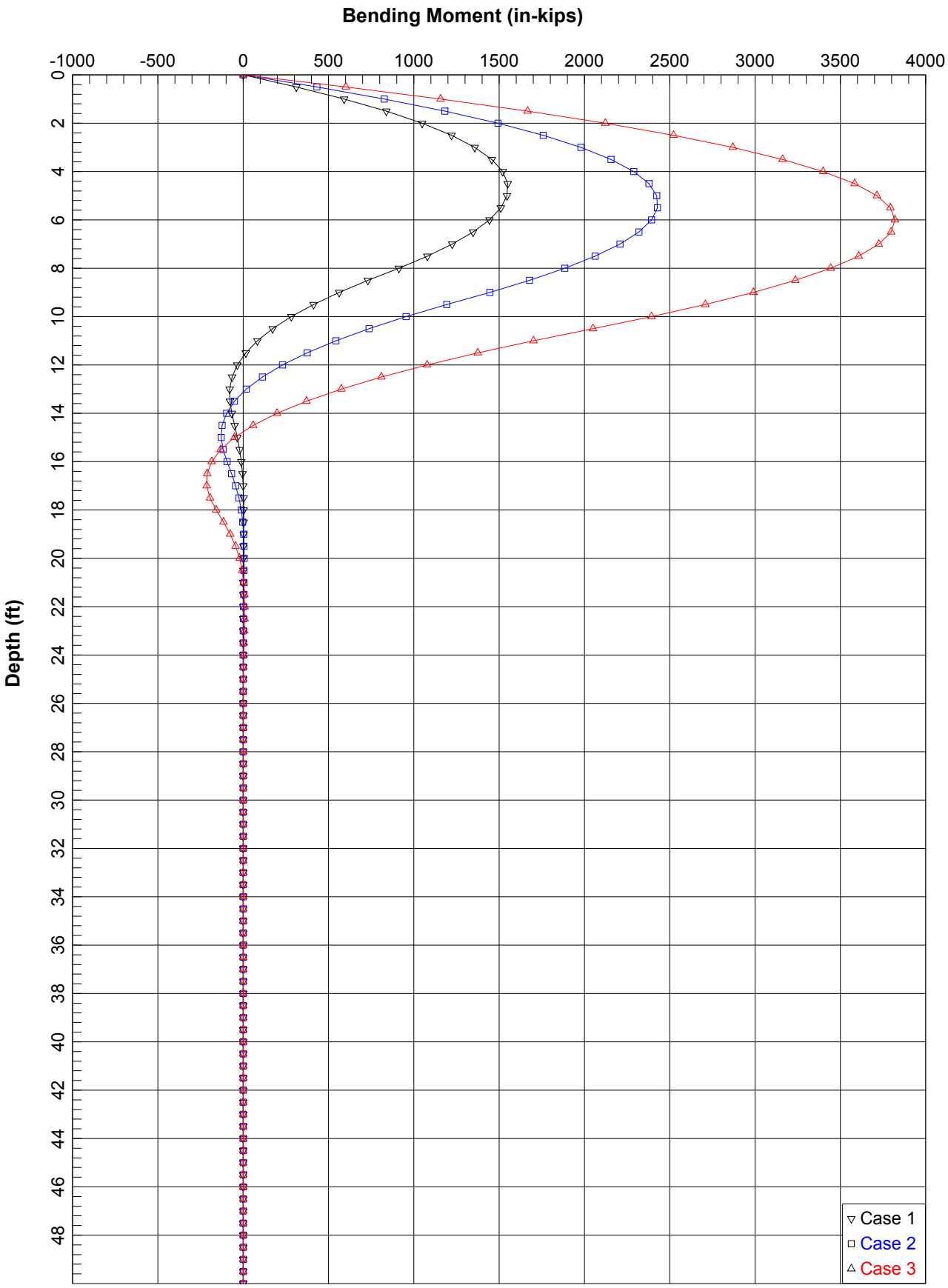
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	219000.	0.25000000	1321609.	42039.	-0.00391912
2	4	y = 0.5000	M = 0.000	219000.	0.50000000	2073544.	57708.	-0.00694597
3	4	y = 1.0000	M = 0.000	219000.	1.00000000	3257122.	79098.	-0.01228776

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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                             All Rights Reserved

================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file:       Bent 2L_long_Max P.lp6d
Name of output report file:    Bent 2L_long_Max P.lp6o
Name of plot output file:      Bent 2L_long_Max P.lp6p
Name of runtime messeage file: Bent 2L_long_Max P.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

              Date:  September 13, 2014     Time:  20:28:48

--------------------------------------------------------------------------------
                                 Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                              Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =       Circular
   Section Length                              =     50.00000000 ft
   Top Width                                   =     24.00000000 in
   Bottom Width                                =     24.00000000 in
   Top Area                                    =    452.38934212 in
   Bottom Area                                 =    452.38934212 in
   Moment of Inertia at Top                    =   8143.00815810 in
   Moment of Inertia at Bottom                 =   8143.00815810 in
   Elastic Modulus                             =        3605000. lbs/in^2


--------------------------------------------------------------------------------
                      Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =        0.000 degrees
                                               =        0.000 radians

Pile Batter Angle                              =        0.000 degrees
                                               =        0.000 radians


--------------------------------------------------------------------------------
                      Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =     -5.00000 ft
   Distance from top of pile to bottom of layer=      0.10000 ft
   Effective unit weight at top of layer       =   125.00000 pcf
   Effective unit weight at bottom of layer    =   125.00000 pcf
   Undrained cohesion at top of layer          =  4500.00000 psi
   Undrained cohesion at bottom of layer       =  4500.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =      0.10000 ft
   Distance from top of pile to bottom of layer=      1.00000 ft
   Effective unit weight at top of layer       =   125.00000 pcf
   Effective unit weight at bottom of layer    =   125.00000 pcf
   Undrained cohesion at top of layer          =  3750.00000 psi
   Undrained cohesion at bottom of layer       =  3750.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer   =      1.00000 ft
   Distance from top of pile to bottom of layer=     80.00000 ft
   Effective unit weight at top of layer       =   125.00000 pcf
   Effective unit weight at bottom of layer    =   125.00000 pcf
   Undrained cohesion at top of layer          =  4500.00000 psi
   Undrained cohesion at bottom of layer       =  4500.00000 psi
   Epsilon-50 at top of layer                  =      0.00500
   Epsilon-50 at bottom of layer               =      0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
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                      Layer                     Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                Rock Mass                    In-situ      In-situ      Elastic
Layer                 Soil Type                 Depth      Unit Wt.     Cohesion     Friction      qu            or
Factor          J        kpy       Rock Emass      krm          Test         Test       Subgrade
 Num.       (p-y Curve Criteria)                    ft          pcf          psf          deg.          psi           GSI      Epsilon
50     Factor        pci          psi                        Type        Property     Mod. pci
-----  ------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000      125.000     4500.000       --          --          --
0.00700       --            --          --            --          --          --          --
                                        0.10000      125.000     4500.000       --          --          --
0.00700       --            --          --            --          --          --          --
  2     Stiff Clay w/o Free Water         0.10000      125.000     3750.000       --          --          --
0.00700       --            --          --            --          --          --          --
                                        1.000        125.000     3750.000       --          --          --
0.00700       --            --          --            --          --          --          --
  3     Stiff Clay w/o Free Water          1.000      125.000     4500.000       --          --          --
0.00500       --            --          --            --          --          --          --
                                       80.000        125.000     4500.000       --          --          --
0.00500       --            --          --            --          --          --          --


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                    p-y Modification Factors for Group Action
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Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----      ----------      ----------      ----------
  1           0.000          0.6750          1.0000
  2          50.000          0.6750          1.0000
```

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	219000.		False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	219000.		False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	219000.		False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	53850.	-0.004248	484.0963	2.936E+10	-975.8034	11710.	0.000
6.000	0.2245	311118.	48334.	-0.004217	942.5781	2.936E+10	-862.8105	23059.	0.000
12.000	0.1994	591092.	43025.	-0.004124	1355.1633	2.936E+10	-906.8297	27287.	0.000
18.000	0.1750	838261.	37215.	-0.003978	1719.4057	2.936E+10	-1029.8647	35306.	0.000
24.000	0.1517	1048130.	31056.	-0.003786	2028.6804	2.936E+10	-1023.2891	40483.	0.000
30.000	0.1296	1220879.	24949.	-0.003554	2283.2530	2.936E+10	-1012.3456	46872.	0.000
36.000	0.1090	1356856.	18921.	-0.003290	2483.6358	2.936E+10	-996.8308	54863.	0.000
42.000	0.0901	1456582.	13001.	-0.003003	2630.5982	2.936E+10	-976.5084	65024.	0.000
48.000	0.0730	1520763.	7218.5098	-0.002698	2725.1786	2.936E+10	-951.0955	78190.	0.000
54.000	0.0577	1550296.	1604.5061	-0.002385	2768.7000	2.936E+10	-920.2391	95651.	0.000
60.000	0.0444	1546283.	-3806.6383	-0.002068	2762.7876	2.936E+10	-883.4757	119476.	0.000
66.000	0.0329	1510051.	-8977.5337	-0.001756	2709.3933	2.936E+10	-840.1561	153188.	0.000
72.000	0.0233	1443167.	-13866.	-0.001454	2610.8298	2.936E+10	-789.2936	203270.	0.000
78.000	0.0155	1347482.	-18421.	-0.001169	2469.8218	2.936E+10	-729.2190	283032.	0.000
84.000	0.009272	1225182.	-22579.	-0.000906	2289.5941	2.936E+10	-656.6584	424930.	0.000
90.000	0.004588	1078914.	-26239.	-0.000670	2074.0448	2.936E+10	-563.4819	736930.	0.000
96.000	0.001227	912070.	-29177.	-0.000467	1828.1748	2.936E+10	-415.5427	2032461.	0.000
102.000	-0.001016	730822.	-29221.	-0.000299	1559.8987	2.936E+10	400.7717	2367102.	0.000
108.000	-0.002363	562206.	-26497.	-0.000167	1312.5951	2.936E+10	507.0269	1287324.	0.000
114.000	-0.003021	412492.	-23325.	-6.749E-05	1091.9677	2.936E+10	550.5868	1093511.	0.000
120.000	-0.003173	282488.	-19967.	3.536E-06	900.3866	2.936E+10	568.7701	1075511.	0.000
126.000	-0.002979	172884.	-16547.	5.007E-05	738.8679	2.936E+10	579.9803	1150168.	0.000
132.000	-0.002572	83789.	-13151.	7.630E-05	607.5722	2.936E+10	561.1080	1308886.	0.000
138.000	-0.002063	14871.	-9844.4446	8.639E-05	506.0110	2.936E+10	541.0893	1573735.	0.000
144.000	-0.001536	-34572.	-6685.3761	8.437E-05	535.0430	2.936E+10	511.9335	2000372.	0.000
150.000	-0.001050	-65575.	-3727.3974	7.414E-05	580.7318	2.936E+10	474.0594	2707682.	0.000
156.000	-0.000646	-79495.	-1023.4539	5.931E-05	601.2450	2.936E+10	427.2551	3969198.	0.000
162.000	-0.000339	-78013.	1114.4923	4.322E-05	599.0601	2.936E+10	285.3937	5055329.	0.000
168.000	-0.000127	-66235.	2297.9428	2.847E-05	581.7038	2.936E+10	109.0898	5143220.	0.000
174.000	2.972E-06	-50512.	2617.4379	1.654E-05	558.5338	2.936E+10	-2.5915	5231110.	0.000
180.000	7.126E-05	-34869.	2420.1420	7.818E-06	535.4814	2.936E+10	-63.1738	5319001.	0.000
186.000	9.679E-05	-21491.	1968.9536	2.058E-06	515.7666	2.936E+10	-87.2223	5406892.	0.000
192.000	9.596E-05	-11247.	1443.6388	-1.287E-06	500.6706	2.936E+10	-87.8826	5494782.	0.000
198.000	8.134E-05	-4163.9175	952.9353	-2.862E-06	490.2325	2.936E+10	-75.6852	5582673.	0.000
204.000	6.162E-05	195.6798	551.1790	-3.268E-06	484.3847	2.936E+10	-58.2335	5670564.	0.000
210.000	4.213E-05	2458.8176	256.5059	-2.996E-06	487.7197	2.936E+10	-39.9908	5695312.	0.000
216.000	2.566E-05	3281.6250	63.4647	-2.410E-06	488.9323	2.936E+10	-24.3562	5695312.	0.000
222.000	1.321E-05	3226.7270	-47.2289	-1.745E-06	488.8514	2.936E+10	-12.5416	5695312.	0.000
228.000	4.723E-06	2719.4630	-98.3035	-1.137E-06	488.1038	2.936E+10	-4.4832	5695312.	0.000
234.000	-4.315E-07	2050.8732	-110.5243	-6.496E-07	487.1174	2.936E+10	0.4096	5695312.	0.000
240.000	-3.072E-06	1394.8781	-100.5476	-2.975E-07	486.1519	2.936E+10	2.9160	5695312.	0.000
246.000	-4.802E-06	844.2833	-80.4039	-6.869E-08	485.3405	2.936E+10	3.7986	5695312.	0.000
252.000	-3.896E-06	430.2117	-57.9128	6.155E-08	484.7303	2.936E+10	3.6984	5695312.	0.000
258.000	-3.263E-06	149.1684	-37.5250	1.208E-07	484.3161	2.936E+10	3.0975	5695312.	0.000
264.000	-2.447E-06	-20.4055	-21.2639	1.339E-07	484.1264	2.936E+10	2.3229	5695312.	0.000
270.000	-1.656E-06	-106.3502	-9.5792	1.210E-07	484.2530	2.936E+10	1.5720	5695312.	0.000
276.000	-9.955E-07	-135.6732	-2.0281	9.623E-08	484.2962	2.936E+10	0.9450	5695312.	0.000
282.000	-5.013E-07	-130.9405	2.2344	6.899E-08	484.2892	2.936E+10	0.4759	5695312.	0.000
288.000	-1.677E-07	-109.0414	4.1395	4.446E-08	484.2570	2.936E+10	0.1592	5695312.	0.000

294.000	3.223E-08	-81.3829	4.5253	2.500E-08	484.2162	2.936E+10	-0.0306	5695312.	0.000
300.000	1.323E-07	-54.8038	4.0567	1.108E-08	484.1770	2.936E+10	-0.1256	5695312.	0.000
306.000	1.652E-07	-32.7322	3.2093	2.139E-09	484.1445	2.936E+10	-0.1568	5695312.	0.000
312.000	1.580E-07	-16.2983	2.2888	-2.872E-09	484.1203	2.936E+10	-0.1500	5695312.	0.000
318.000	1.308E-07	-5.2592	1.4665	-5.075E-09	484.1040	2.936E+10	-0.1241	5695312.	0.000
324.000	9.710E-08	1.3125	0.8176	-5.479E-09	484.0982	2.936E+10	-0.0922	5695312.	0.000
330.000	6.503E-08	4.5659	0.3559	-4.878E-09	484.1030	2.936E+10	-0.0617	5695312.	0.000
336.000	3.856E-08	5.5958	0.0609	-3.839E-09	484.1045	2.936E+10	-0.0366	5695312.	0.000
342.000	1.896E-08	5.3064	-0.1029	-2.725E-09	484.1041	2.936E+10	-0.0180	5695312.	0.000
348.000	5.862E-09	4.3678	-0.1736	-1.737E-09	484.1027	2.936E+10	-0.005564	5695312.	0.000
354.000	-1.879E-09	3.2276	-0.1850	-9.603E-10	484.1010	2.936E+10	0.001784	5695312.	0.000
360.000	-5.662E-09	2.1508	-0.1635	-4.107E-10	484.0995	2.936E+10	0.005375	5695312.	0.000
366.000	-6.807E-09	1.2669	-0.1280	-6.138E-11	484.0982	2.936E+10	0.006462	5695312.	0.000
372.000	-6.399E-09	0.6153	-0.0904	1.310E-10	484.0972	2.936E+10	0.006074	5695312.	0.000
378.000	-5.236E-09	0.1822	-0.0572	2.125E-10	484.0966	2.936E+10	0.004970	5695312.	0.000
384.000	-3.849E-09	-0.0721	-0.0314	2.237E-10	484.0964	2.936E+10	0.003653	5695312.	0.000
390.000	-2.551E-09	-0.1948	-0.0131	1.965E-10	484.0966	2.936E+10	0.002421	5695312.	0.000
396.000	-1.491E-09	-0.2303	-0.001632	1.530E-10	484.0966	2.936E+10	0.001416	5695312.	0.000
402.000	-7.144E-10	-0.2148	0.004649	1.075E-10	484.0966	2.936E+10	0.000678	5695312.	0.000
408.000	-2.008E-10	-0.1748	0.007255	6.773E-11	484.0965	2.936E+10	0.000191	5695312.	0.000
414.000	9.842E-11	-0.1279	0.007547	3.680E-11	484.0965	2.936E+10	-9.342E-05	5695312.	0.000
420.000	2.408E-10	-0.0843	0.006581	1.512E-11	484.0964	2.936E+10	-0.000229	5695312.	0.000
426.000	2.798E-10	-0.0490	0.005098	1.498E-12	484.0964	2.936E+10	-0.000266	5695312.	0.000
432.000	2.588E-10	-0.0231	0.003564	-5.870E-12	484.0963	2.936E+10	-0.000246	5695312.	0.000
438.000	2.094E-10	-0.006168	0.002231	-8.865E-12	484.0963	2.936E+10	-0.000199	5695312.	0.000
444.000	1.524E-10	0.003653	0.001201	-9.122E-12	484.0963	2.936E+10	-0.000145	5695312.	0.000
450.000	9.993E-11	0.008263	0.000482	-7.904E-12	484.0963	2.936E+10	-9.485E-05	5695312.	0.000
456.000	5.757E-11	0.009457	3.349E-05	-6.093E-12	484.0963	2.936E+10	-5.465E-05	5695312.	0.000
462.000	2.681E-11	0.008681	-0.000207	-4.240E-12	484.0963	2.936E+10	-2.545E-05	5695312.	0.000
468.000	6.694E-12	0.006987	-0.000302	-2.638E-12	484.0963	2.936E+10	-6.354E-06	5695312.	0.000
474.000	-4.852E-12	0.005062	-0.000307	-1.497E-12	484.0963	2.936E+10	4.606E-06	5695312.	0.000
480.000	-1.019E-11	0.003301	-0.000265	0.000	484.0963	2.936E+10	9.673E-06	5695312.	0.000
486.000	-1.148E-11	0.001888	-0.000203	0.000	484.0963	2.936E+10	1.090E-05	5695312.	0.000
492.000	-1.046E-11	0.000867	-0.000140	0.000	484.0963	2.936E+10	9.924E-06	5695312.	0.000
498.000	-8.367E-12	0.000202	-8.683E-05	0.000	484.0963	2.936E+10	7.942E-06	5695312.	0.000
504.000	-6.031E-12	-0.000176	-4.584E-05	0.000	484.0963	2.936E+10	5.724E-06	5695312.	0.000
510.000	-3.911E-12	-0.000349	-1.753E-05	0.000	484.0963	2.936E+10	3.712E-06	5695312.	0.000
516.000	-2.212E-12	-0.000387	-7.346E-08	0.000	484.0963	2.936E+10	2.106E-06	5695312.	0.000
522.000	-1.001E-12	-0.000350	9.095E-06	0.000	484.0963	2.936E+10	9.504E-07	5695312.	0.000
528.000	0.000	-0.000279	1.255E-05	0.000	484.0963	2.936E+10	2.029E-07	5695312.	0.000
534.000	0.000	-0.000200	1.250E-05	0.000	484.0963	2.936E+10	-2.200E-07	5695312.	0.000
540.000	0.000	-0.000129	1.061E-05	0.000	484.0963	2.936E+10	-4.103E-07	5695312.	0.000
546.000	0.000	-7.261E-05	8.031E-06	0.000	484.0963	2.936E+10	-4.505E-07	5695312.	0.000
552.000	0.000	-3.253E-05	5.461E-06	0.000	484.0963	2.936E+10	-4.061E-07	5695312.	0.000
558.000	0.000	-7.051E-06	3.271E-06	0.000	484.0963	2.936E+10	-3.239E-07	5695312.	0.000
564.000	0.000	6.763E-06	1.598E-06	0.000	484.0963	2.936E+10	-2.335E-07	5695312.	0.000
570.000	0.000	1.217E-05	4.447E-07	0.000	484.0963	2.936E+10	-1.510E-07	5695312.	0.000
576.000	0.000	1.213E-05	-2.563E-07	0.000	484.0963	2.936E+10	-8.265E-08	5695312.	0.000
582.000	0.000	9.121E-06	-5.895E-07	0.000	484.0963	2.936E+10	-2.842E-08	5695312.	0.000
588.000	0.000	5.082E-06	-6.292E-07	0.000	484.0963	2.936E+10	1.520E-08	5695312.	0.000
594.000	0.000	1.589E-06	-4.249E-07	0.000	484.0963	2.936E+10	5.290E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	8.875E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042484 radians
Maximum bending moment = 1550296. inch-lbs
Maximum shear force = 53850. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 18
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	73845.	-0.007514	484.0963	2.936E+10	-1160.4323	6962.5937	0.000
6.000	0.4549	432058.	67276.	-0.007478	1120.8817	2.936E+10	-1029.4112	13577.	0.000
12.000	0.4104	826941.	60929.	-0.007341	1702.7241	2.936E+10	-1086.1364	15881.	0.000
18.000	0.3668	1182502.	53953.	-0.007136	2226.6979	2.936E+10	-1239.1436	20268.	0.000
24.000	0.3247	1493135.	46523.	-0.006862	2684.4651	2.936E+10	-1237.8202	22871.	0.000
30.000	0.2845	1758806.	39113.	-0.006530	3075.9738	2.936E+10	-1232.2270	25990.	0.000
36.000	0.2464	1979645.	31749.	-0.006148	3401.4131	2.936E+10	-1222.1878	29764.	0.000
42.000	0.2107	2155953.	24460.	-0.005725	3661.2306	2.936E+10	-1207.5073	34386.	0.000
48.000	0.1777	2288211.	17274.	-0.005271	3856.1346	2.936E+10	-1187.9645	40118.	0.000
54.000	0.1474	2377089.	10220.	-0.004794	3987.1094	2.936E+10	-1163.3020	47338.	0.000
60.000	0.1201	2423449.	3330.2956	-0.004304	4055.4284	2.936E+10	-1133.2109	56596.	0.000
66.000	0.0958	2428363.	-3361.2513	-0.003808	4062.6695	2.936E+10	-1097.3047	68725.	0.000
72.000	0.0744	2393121.	-9818.3938	-0.003315	4010.7357	2.936E+10	-1055.0760	85040.	0.000
78.000	0.0560	2319254.	-16001.	-0.002834	3901.8813	2.936E+10	-1005.8165	107733.	0.000
84.000	0.0404	2208555.	-21864.	-0.002371	3738.7487	2.936E+10	-948.4606	140729.	0.000
90.000	0.0276	2063118.	-27353.	-0.001934	3524.4246	2.936E+10	-881.2417	191808.	0.000
96.000	0.0172	1885403.	-32399.	-0.001531	3262.5327	2.936E+10	-800.8185	278945.	0.000
102.000	0.009196	1678351.	-36900.	-0.001167	2957.4098	2.936E+10	-699.4513	456349.	0.000
108.000	0.003226	1445668.	-40649.	-0.000847	2614.5156	2.936E+10	-550.2175	1023497.	0.000
114.000	-0.000972	1192790.	-41060.	-0.000578	2241.8593	2.936E+10	413.0784	2548929.	0.000
120.000	-0.003707	954462.	-38047.	-0.000358	1890.6454	2.936E+10	591.3383	956997.	0.000
126.000	-0.005272	737165.	-34297.	-0.000185	1570.4252	2.936E+10	658.8403	749809.	0.000
132.000	-0.005933	543389.	-30245.	-5.457E-05	1284.8658	2.936E+10	691.8594	699713.	0.000
138.000	-0.005927	374374.	-26054.	3.923E-05	1035.7956	2.936E+10	704.9096	713609.	0.000
144.000	-0.005462	230636.	-21829.	0.000101	823.9739	2.936E+10	703.5820	772891.	0.000
150.000	-0.004714	112164.	-17646.	0.000136	649.3871	2.936E+10	690.5927	878951.	0.000

156.000	-0.003829	18523.	-13572.	0.000149	511.3930	2.936E+10	667.3905	1045819.	0.000
162.000	-0.002921	-51096.	-9665.9322	0.000146	559.3948	2.936E+10	634.7260	1303833.	0.000
168.000	-0.002076	-97852.	-5983.2078	0.000131	628.2966	2.936E+10	592.8488	1713814.	0.000
174.000	-0.001350	-123239.	-2580.2630	0.000108	665.7081	2.936E+10	541.4661	2406177.	0.000
180.000	-0.000776	-129100.	481.9973	8.251E-05	674.3451	2.936E+10	479.2873	3705961.	0.000
186.000	-0.000360	-117672.	2893.3036	5.729E-05	657.5040	2.936E+10	324.4815	5406892.	0.000
192.000	-8.848E-05	-94531.	4109.8492	3.560E-05	623.4021	2.936E+10	81.0337	5494782.	0.000
198.000	6.718E-05	-68447.	4165.4299	1.895E-05	584.9638	2.936E+10	-62.5068	5582673.	0.000
204.000	0.000139	-44595.	3584.0787	7.397E-06	549.8146	2.936E+10	-131.2769	5670564.	0.000
210.000	0.000156	-25458.	2746.1889	2.375E-07	521.6121	2.936E+10	-148.0197	5695312.	0.000
216.000	0.000142	-11642.	1898.4647	-3.554E-06	501.2522	2.936E+10	-134.5551	5695312.	0.000
222.000	0.000113	-2666.6921	1172.1834	-5.016E-06	488.0261	2.936E+10	-107.5387	5695312.	0.000
228.000	8.156E-05	2437.6612	617.3130	-5.040E-06	487.6886	2.936E+10	-77.4181	5695312.	0.000
234.000	5.282E-05	4754.3880	234.6533	-4.305E-06	491.1025	2.936E+10	-50.1351	5695312.	0.000
240.000	2.991E-05	5264.8136	-0.9115	-3.281E-06	491.8548	2.936E+10	-28.3865	5695312.	0.000
246.000	1.345E-05	4751.9918	-124.3703	-2.257E-06	491.0991	2.936E+10	-12.7664	5695312.	0.000
252.000	2.821E-06	3778.3017	-170.7038	-1.385E-06	489.6642	2.936E+10	-2.6781	5695312.	0.000
258.000	-3.173E-06	2707.1866	-169.7016	-7.224E-07	488.0857	2.936E+10	3.0121	5695312.	0.000
264.000	-5.848E-06	1743.7811	-144.0123	-2.676E-07	486.6660	2.936E+10	5.5510	5695312.	0.000
270.000	-6.384E-06	979.7418	-109.1707	1.076E-08	485.5401	2.936E+10	6.0590	5695312.	0.000
276.000	-5.719E-06	433.5962	-74.7148	1.552E-07	484.7353	2.936E+10	5.4284	5695312.	0.000
282.000	-4.522E-06	82.7558	-45.5534	2.080E-07	484.2182	2.936E+10	4.2921	5695312.	0.000
288.000	-3.223E-06	-113.5910	-23.4985	2.048E-07	484.2637	2.936E+10	3.0595	5695312.	0.000
294.000	-2.064E-06	-199.7650	-8.4426	1.728E-07	484.3907	2.936E+10	1.9591	5695312.	0.000
300.000	-1.150E-06	-215.3568	0.7086	1.304E-07	484.4136	2.936E+10	1.0913	5695312.	0.000
306.000	-4.995E-07	-191.6041	5.4050	8.878E-08	484.3786	2.936E+10	0.4741	5695312.	0.000
312.000	-8.433E-08	-150.7306	7.0675	5.379E-08	484.3184	2.936E+10	0.0800	5695312.	0.000
318.000	1.460E-07	-106.9351	6.8919	2.746E-08	484.2523	2.936E+10	-0.1386	5695312.	0.000
324.000	2.452E-07	-68.1005	5.7778	9.574E-09	484.1966	2.936E+10	-0.2328	5695312.	0.000
330.000	2.609E-07	-37.6271	4.3365	-1.231E-09	484.1517	2.936E+10	-0.2477	5695312.	0.000
336.000	2.304E-07	-16.9503	2.9373	-6.717E-09	484.1200	2.936E+10	-0.2187	5695312.	0.000
342.000	1.803E-07	-2.3620	1.7676	-8.600E-09	484.0998	2.936E+10	-0.1711	5695312.	0.000
348.000	1.273E-07	5.1748	0.8918	-8.312E-09	484.1039	2.936E+10	-0.1208	5695312.	0.000
354.000	8.055E-08	8.3618	0.3001	-6.929E-09	484.1086	2.936E+10	-0.0765	5695312.	0.000
360.000	4.410E-08	8.7941	-0.0549	-5.176E-09	484.1077	2.936E+10	-0.0419	5695312.	0.000
366.000	1.844E-08	7.7169	-0.2330	-3.488E-09	484.1077	2.936E+10	-0.0175	5695312.	0.000
372.000	2.242E-09	6.0074	-0.2919	-2.086E-09	484.1051	2.936E+10	-0.002128	5695312.	0.000
378.000	-6.589E-09	4.2197	-0.2795	-1.041E-09	484.1028	2.936E+10	0.006230	5695312.	0.000
384.000	-1.025E-08	2.6561	-0.2316	-3.380E-10	484.1002	2.936E+10	0.009725	5695312.	0.000
390.000	-1.064E-08	1.4419	-0.1721	8.081E-11	484.0984	2.936E+10	0.0101	5695312.	0.000
396.000	-9.276E-09	0.5910	-0.1153	2.886E-10	484.0972	2.936E+10	0.0088005	5695312.	0.000
402.000	-7.182E-09	0.0569	-0.0685	3.548E-10	484.0963	2.936E+10	0.0068018	5695312.	0.000
408.000	-5.019E-09	-0.2317	-0.0337	3.369E-10	484.0966	2.936E+10	0.004764	5695312.	0.000
414.000	-3.139E-09	-0.3488	-0.0105	2.776E-10	484.0968	2.936E+10	0.002980	5695312.	0.000
420.000	-1.688E-09	-0.3585	0.003242	2.055E-10	484.0968	2.936E+10	0.001602	5695312.	0.000
426.000	-6.761E-10	-0.3105	0.009974	1.369E-10	484.0967	2.936E+10	0.000642	5695312.	0.000
432.000	-4.492E-11	-0.2392	0.0120	8.075E-11	484.0966	2.936E+10	4.264E-05	5695312.	0.000
438.000	2.929E-10	-0.1663	0.0113	3.930E-11	484.0965	2.936E+10	-0.000278	5695312.	0.000
444.000	4.267E-10	-0.1035	0.009271	1.173E-11	484.0964	2.936E+10	-0.000405	5695312.	0.000
450.000	4.336E-10	-0.0551	0.006822	-4.477E-12	484.0964	2.936E+10	-0.000412	5695312.	0.000
456.000	3.730E-10	-0.0216	0.004525	-1.232E-11	484.0963	2.936E+10	-0.000354	5695312.	0.000
462.000	2.858E-10	-0.000790	0.002649	-1.460E-11	484.0963	2.936E+10	-0.000271	5695312.	0.000
468.000	1.977E-10	0.0102	0.001272	-1.364E-11	484.0963	2.936E+10	-0.000188	5695312.	0.000
474.000	1.222E-10	0.0145	0.000361	-1.111E-11	484.0963	2.936E+10	-0.000116	5695312.	0.000
480.000	6.444E-11	0.0146	-0.000171	-8.134E-12	484.0963	2.936E+10	-6.117E-05	5695312.	0.000
486.000	2.458E-11	0.0125	-0.000424	-5.368E-12	484.0963	2.936E+10	-2.333E-05	5695312.	0.000
492.000	0.000	0.009515	-0.000494	-3.120E-12	484.0963	2.936E+10	-2.366E-08	5695312.	0.000
498.000	-1.286E-11	0.006551	-0.000458	-1.479E-12	484.0963	2.936E+10	1.221E-05	5695312.	0.000
504.000	-1.772E-11	0.004024	-0.000371	0.000	484.0963	2.936E+10	1.682E-05	5695312.	0.000
510.000	-1.764E-11	0.002102	-0.000270	0.000	484.0963	2.936E+10	1.674E-05	5695312.	0.000
516.000	-1.498E-11	0.000782	-0.000177	0.000	484.0963	2.936E+10	1.422E-05	5695312.	0.000
522.000	-1.136E-11	-2.662E-05	-0.000102	0.000	484.0963	2.936E+10	1.079E-05	5695312.	0.000
528.000	-7.781E-12	-0.000447	-4.771E-05	0.000	484.0963	2.936E+10	7.386E-06	5695312.	0.000
534.000	-4.746E-12	-0.000601	-1.203E-05	0.000	484.0963	2.936E+10	4.505E-06	5695312.	0.000
540.000	-2.446E-12	-0.000592	8.446E-06	0.000	484.0963	2.936E+10	2.322E-06	5695312.	0.000
546.000	0.000	-0.000500	1.790E-05	0.000	484.0963	2.936E+10	8.290E-07	5695312.	0.000
552.000	0.000	-0.000378	2.014E-05	0.000	484.0963	2.936E+10	-8.210E-08	5695312.	0.000
558.000	0.000	-0.000259	1.823E-05	0.000	484.0963	2.936E+10	-5.532E-07	5695312.	0.000
564.000	0.000	-0.000159	1.440E-05	0.000	484.0963	2.936E+10	-7.232E-07	5695312.	0.000
570.000	0.000	-8.587E-05	1.011E-05	0.000	484.0963	2.936E+10	-7.078E-07	5695312.	0.000
576.000	0.000	-3.791E-05	6.211E-06	0.000	484.0963	2.936E+10	-5.925E-07	5695312.	0.000
582.000	0.000	-1.127E-05	3.135E-06	0.000	484.0963	2.936E+10	-4.330E-07	5695312.	0.000
588.000	0.000	-2.159E-07	1.055E-06	0.000	484.0963	2.936E+10	-2.603E-07	5695312.	0.000
594.000	0.000	1.467E-06	1.137E-08	0.000	484.0963	2.936E+10	-8.748E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	8.368E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection            =      0.5000000 inches
Computed slope at pile head     =     -0.0075140 radians
Maximum bending moment          =      2428363. inch-lbs
Maximum shear force             =        73845. lbs
Depth of maximum bending moment =     66.0000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =            21
Number of zero deflection points =             9
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

```
Displacement of pile head                    =       1.000000 inches
Moment at pile head                          =          0.000 in-lbs
Axial load at pile head                      =      219000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	101348.	-0.0133	484.0963	2.936E+10	-1379.9943	4139.9830	0.000
6.000	0.9201	600747.	93525.	-0.0133	1369.3913	2.936E+10	-1227.6185	8005.3939	0.000
12.000	0.8409	1157139.	85944.	-0.0131	2189.3214	2.936E+10	-1299.5122	9272.0329	0.000

18.000	0.7632	1666437.	77581.	-0.0128	2939.8523	2.936E+10	-1488.1999	11700.	0.000
24.000	0.6875	2121712.	68637.	-0.0124	3610.7721	2.936E+10	-1493.0887	13031.	0.000
30.000	0.6144	2522667.	59676.	-0.0119	4201.6414	2.936E+10	-1493.7617	14588.	0.000
36.000	0.5443	2869168.	50725.	-0.0114	4712.2658	2.936E+10	-1490.0578	16424.	0.000
42.000	0.4779	3161257.	41809.	-0.0108	5142.7046	2.936E+10	-1481.8032	18606.	0.000
48.000	0.4152	3399152.	32957.	-0.0101	5493.2802	2.936E+10	-1468.8074	21223.	0.000
54.000	0.3568	3583257.	24198.	-0.009375	5764.5877	2.936E+10	-1450.8582	24398.	0.000
60.000	0.3027	3714169.	15563.	-0.008629	5957.5067	2.936E+10	-1427.7133	28296.	0.000
66.000	0.2532	3792685.	7082.1311	-0.007862	6073.2132	2.936E+10	-1399.0894	33148.	0.000
72.000	0.2084	3819816.	-1209.0687	-0.007084	6113.1945	2.936E+10	-1364.6439	39290.	0.000
78.000	0.1682	3796794.	-9274.8407	-0.006306	6079.2675	2.936E+10	-1323.9468	47219.	0.000
84.000	0.1327	3725090.	-17076.	-0.005537	5973.6002	2.936E+10	-1276.4338	57703.	0.000
90.000	0.1018	3606433.	-24569.	-0.004788	5798.7417	2.936E+10	-1221.3222	71993.	0.000
96.000	0.0753	3442841.	-31706.	-0.004067	5557.6627	2.936E+10	-1157.4510	92263.	0.000
102.000	0.0530	3236656.	-38427.	-0.003385	5253.8164	2.936E+10	-1082.9455	122651.	0.000
108.000	0.0347	2990615.	-44659.	-0.002748	4891.2371	2.936E+10	-994.4140	172181.	0.000
114.000	0.0200	2707973.	-50295.	-0.002166	4474.7188	2.936E+10	-884.5820	265432.	0.000
120.000	0.008660	2392758.	-55146.	-0.001645	4010.2002	2.936E+10	-732.1528	507280.	0.000
126.000	0.000258	2050543.	-57927.	-0.001191	3505.8927	2.936E+10	-194.8380	4527985.	0.000
132.000	-0.005629	1700763.	-56462.	-0.000807	2990.4372	2.936E+10	683.0903	728158.	0.000
138.000	-0.009430	1375118.	-52037.	-0.000493	2510.5481	2.936E+10	792.0228	503944.	0.000
144.000	-0.0115	1077616.	-47115.	-0.000242	2072.1329	2.936E+10	848.6898	441080.	0.000
150.000	-0.0123	810378.	-41932.	-4.940E-05	1678.3156	2.936E+10	878.7180	427323.	0.000
156.000	-0.0121	574556.	-36624.	9.214E-05	1330.7949	2.936E+10	890.8568	440384.	0.000
162.000	-0.0112	370651.	-31284.	0.000189	1030.3083	2.936E+10	889.1780	474974.	0.000
168.000	-0.009873	198656.	-25989.	0.000247	776.8474	2.936E+10	875.8640	532297.	0.000
174.000	-0.008269	58139.	-20804.	0.000273	569.7738	2.936E+10	852.1525	618296.	0.000
180.000	-0.006595	-51716.	-15792.	0.000274	408.3072	2.936E+10	818.7208	744882.	0.000
186.000	-0.004984	-132083.	-11008.	0.000255	678.7407	2.936E+10	775.8406	934073.	0.000
192.000	-0.003534	-184484.	-6510.4757	0.000223	755.9623	2.936E+10	723.3954	1228035.	0.000
198.000	-0.002311	-210793.	-2358.1046	0.000182	794.7336	2.936E+10	660.7282	1715090.	0.000
204.000	-0.001347	-213260.	1382.3139	0.000139	798.3687	2.936E+10	586.0779	2610582.	0.000
210.000	-0.000644	-194571.	4607.4871	9.727E-05	770.8270	2.936E+10	488.9798	4555083.	0.000
216.000	-0.000180	-158226.	6586.3888	6.121E-05	717.2671	2.936E+10	170.6541	5695312.	0.000
222.000	9.048E-05	115695.	6840.6891	3.322E-05	654.5911	2.936E+10	-85.8873	5695312.	0.000
228.000	0.000219	-76225.	5959.7723	1.361E-05	596.4258	2.936E+10	-207.7516	5695312.	0.000
234.000	0.000254	-44214.	4613.8633	1.299E-06	549.2519	2.936E+10	-240.8847	5695312.	0.000
240.000	0.000234	-20862.	3223.5516	-5.351E-06	514.9399	2.936E+10	-222.5502	5695312.	0.000
246.000	0.000190	-5516.8132	2016.1155	-8.047E-06	492.2262	2.936E+10	-179.9308	5695312.	0.000
252.000	0.000138	3352.4406	1083.6551	-8.268E-06	489.0366	2.936E+10	-130.8894	5695312.	0.000
258.000	9.034E-05	7508.7764	433.7355	-7.158E-06	495.1616	2.936E+10	-85.7505	5695312.	0.000
264.000	5.193E-05	8576.0788	38.2573	-5.512E-06	498.7345	2.936E+10	-49.3523	5695312.	0.000
270.000	2.416E-05	7864.3961	-188.4412	-3.834E-06	495.6857	2.936E+10	-22.9372	5695312.	0.000
276.000	5.981E-06	6324.8606	-274.2836	-2.384E-06	493.4170	2.936E+10	-5.6769	5695312.	0.000
282.000	-4.447E-06	4579.2582	-278.6517	-1.270E-06	490.8445	2.936E+10	4.2209	5695312.	0.000
288.000	-9.258E-06	2984.3772	-239.6249	-4.969E-07	488.4942	2.936E+10	8.7881	5695312.	0.000
294.000	-1.041E-05	1705.0651	-183.6170	-1.769E-08	486.6090	2.936E+10	9.8812	5695312.	0.000
300.000	-9.471E-06	781.0197	-127.0045	2.364E-07	485.2472	2.936E+10	8.9896	5695312.	0.000
306.000	-7.577E-06	180.5902	-78.4093	3.340E-07	484.5221	2.936E+10	7.1888	5695312.	0.000
312.000	-5.455E-06	-161.4908	-41.3688	3.366E-07	484.3343	2.936E+10	5.1780	5695312.	0.000
318.000	-3.535E-06	-316.9198	-15.7691	2.877E-07	484.5633	2.936E+10	3.3552	5695312.	0.000
324.000	-2.003E-06	-351.4758	0.000578	2.194E-07	484.6142	2.936E+10	1.9013	5695312.	0.000
330.000	-9.024E-07	-317.4893	8.2744	1.510E-07	484.5842	2.936E+10	0.8566	5695312.	0.000
336.000	-1.911E-07	-252.5802	11.3885	9.273E-08	484.4685	2.936E+10	0.1814	5695312.	0.000
342.000	2.104E-07	-181.9715	11.3336	4.842E-08	484.3631	2.936E+10	-0.1997	5695312.	0.000
348.000	3.898E-07	-116.7037	9.6243	1.790E-08	484.2683	2.936E+10	-0.3701	5695312.	0.000
354.000	4.262E-07	-65.6269	7.3004	-6.475E-10	484.1930	2.936E+10	-0.4046	5695312.	0.000
360.000	3.821E-07	-29.0972	4.9986	-1.033E-08	484.1392	2.936E+10	-0.3627	5695312.	0.000
366.000	3.023E-07	-5.6166	3.0497	-1.388E-08	484.1046	2.936E+10	-0.2869	5695312.	0.000
372.000	2.158E-07	7.5358	1.5750	-1.602E-08	484.0874	2.936E+10	-0.2046	5695312.	0.000
378.000	1.381E-07	13.3191	0.5677	-1.155E-08	484.1159	2.936E+10	-0.1311	5695312.	0.000
384.000	7.701E-08	14.3784	-0.0450	-8.717E-09	484.1175	2.936E+10	-0.0731	5695312.	0.000
390.000	3.559E-08	12.8022	-0.3598	-5.940E-09	484.1152	2.936E+10	-0.0318	5695312.	0.000
396.000	5.738E-09	10.0769	-0.4716	-3.602E-09	484.1111	2.936E+10	-0.005447	5695312.	0.000
402.000	-9.693E-09	7.1528	-0.4603	-1.841E-09	484.1068	2.936E+10	0.009200	5695312.	0.000
408.000	-1.635E-08	4.5580	-0.3861	-6.440E-10	484.1030	2.936E+10	0.0155	5695312.	0.000
414.000	-1.742E-08	2.5207	-0.2900	1.946E-11	484.1000	2.936E+10	0.0165	5695312.	0.000
420.000	-1.540E-08	1.0780	-0.1965	4.472E-10	484.0979	2.936E+10	0.0146	5695312.	0.000
426.000	-1.205E-08	0.1612	-0.1183	5.739E-10	484.0965	2.936E+10	0.0114	5695312.	0.000
432.000	-8.510E-09	-0.3437	-0.0598	5.512E-10	484.0960	2.936E+10	0.000080	5695312.	0.000
438.000	-5.391E-09	-0.5576	-0.0202	4.631E-10	484.0971	2.936E+10	0.005118	5695312.	0.000
444.000	-2.955E-09	-0.5872	0.003574	3.461E-10	484.0972	2.936E+10	0.002805	5695312.	0.000
450.000	-1.238E-09	-0.5156	0.0155	2.334E-10	484.0970	2.936E+10	0.001175	5695312.	0.000
456.000	-1.539E-10	-0.4016	0.0195	1.410E-10	484.0969	2.936E+10	0.000146	5695312.	0.000
462.000	4.378E-10	-0.2823	0.0187	6.977E-11	484.0967	2.936E+10	-0.000416	5695312.	0.000
468.000	6.833E-10	-0.1778	0.0155	2.275E-11	484.0965	2.936E+10	-0.000649	5695312.	0.000
474.000	7.108E-10	-0.0966	0.0115	-5.289E-12	484.0964	2.936E+10	-0.000675	5695312.	0.000
480.000	6.198E-10	-0.0397	0.007718	-1.922E-11	484.0963	2.936E+10	-0.000588	5695312.	0.000
486.000	4.802E-10	-0.003938	0.004585	-2.368E-11	484.0963	2.936E+10	-0.000456	5695312.	0.000
492.000	3.357E-10	0.0154	0.002262	-2.250E-11	484.0963	2.936E+10	-0.000319	5695312.	0.000
498.000	2.102E-10	0.0233	0.000707	-1.855E-11	484.0963	2.936E+10	-0.000199	5695312.	0.000
504.000	1.131E-10	0.0239	-0.000213	-1.373E-11	484.0963	2.936E+10	-0.000107	5695312.	0.000
510.000	4.541E-11	0.0207	-0.000664	-9.162E-12	484.0963	2.936E+10	-4.311E-05	5695312.	0.000
516.000	3.160E-12	0.0160	-0.000803	-5.408E-12	484.0963	2.936E+10	-3.000E-06	5695312.	0.000
522.000	-1.948E-11	0.0111	-0.000756	-2.637E-12	484.0963	2.936E+10	1.849E-05	5695312.	0.000
528.000	-2.848E-11	0.006921	-0.000620	0.000	484.0963	2.936E+10	2.704E-05	5695312.	0.000
534.000	-2.900E-11	0.003689	-0.000456	0.000	484.0963	2.936E+10	2.753E-05	5695312.	0.000
540.000	-2.490E-11	0.001148	-0.000302	0.000	484.0963	2.936E+10	2.372E-05	5695312.	0.000
546.000	-1.920E-11	5.944E-05	-0.000176	0.000	484.0963	2.936E+10	1.823E-05	5695312.	0.000
552.000	-1.334E-11	-0.000673	-8.382E-05	0.000	484.0963	2.936E+10	1.266E-05	5695312.	0.000
558.000	-8.308E-12	-0.000949	-2.217E-05	0.000	484.0963	2.936E+10	7.886E-06	5695312.	0.000
564.000	-4.437E-12	-0.000941	1.413E-05	0.000	484.0963	2.936E+10	4.212E-06	5695312.	0.000
570.000	-1.720E-12	-0.000781	3.166E-05	0.000	484.0963	2.936E+10	1.632E-06	5695312.	0.000
576.000	0.000	-0.000562	3.644E-05	0.000	484.0963	2.936E+10	-3.790E-08	5695312.	0.000
582.000	1.111E-12	-0.000344	3.316E-05	0.000	484.0963	2.936E+10	-1.054E-06	5695312.	0.000
588.000	1.760E-12	-0.000164	2.499E-05	0.000	484.0963	2.936E+10	-1.670E-06	5695312.	0.000
594.000	2.208E-12	-4.435E-05	1.369E-05	0.000	484.0963	2.936E+10	-2.095E-06	5695312.	0.000
600.000	2.601E-12	0.000	0.000	0.000	484.0963	2.936E+10	-2.469E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection            =      1.0000000 inches
Computed slope at pile head     =     -0.0133177 radians
Maximum bending moment          =        3819816. inch-lbs
Maximum shear force             =         101348. lbs
Depth of maximum bending moment =     72.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

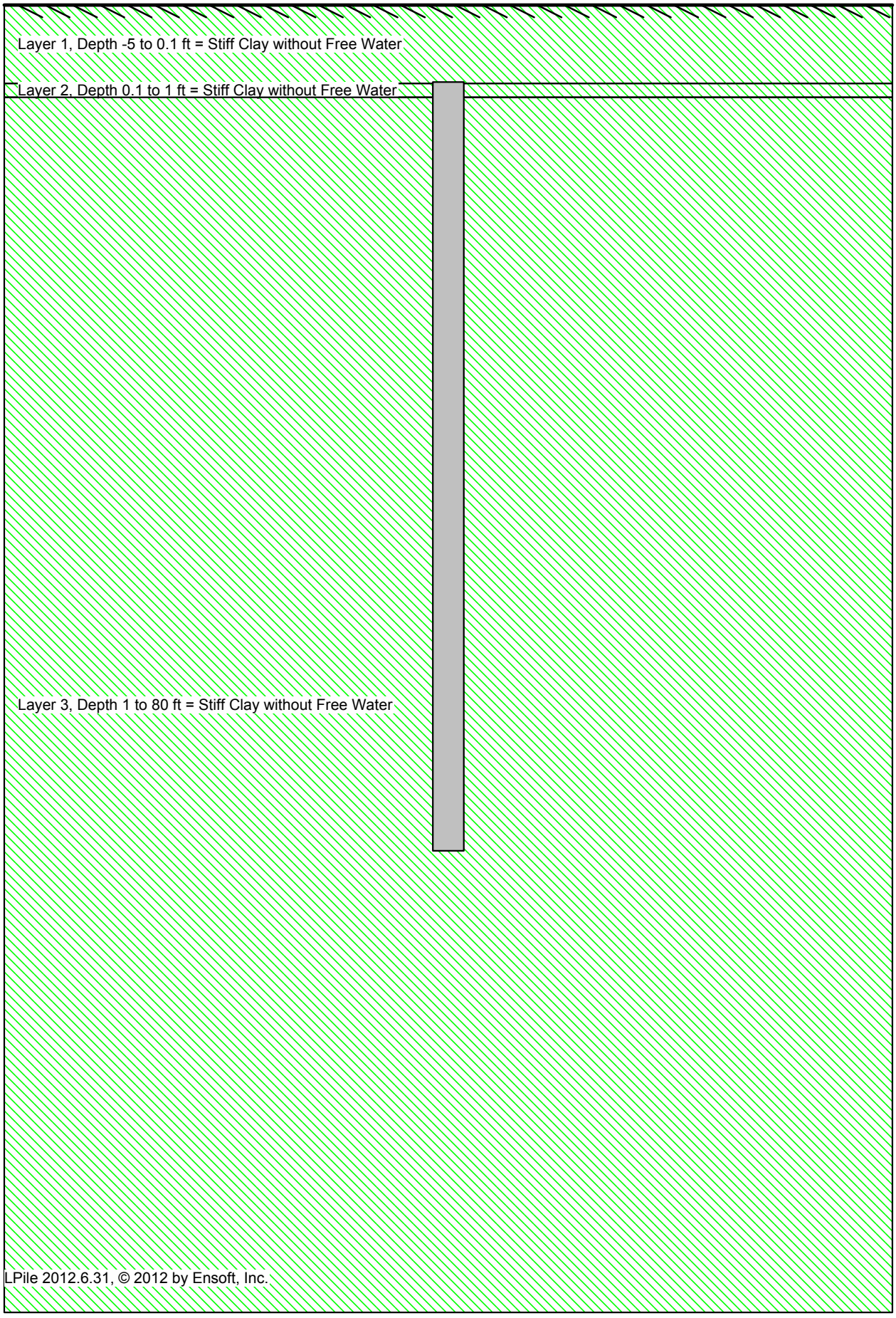
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	219000.	0.25000000	1550296.	53850.	-0.00424842
2	4	y = 0.5000	M = 0.000	219000.	0.50000000	2428363.	73845.	-0.00751395
3	4	y = 1.0000	M = 0.000	219000.	1.00000000	3819816.	101348.	-0.01331774

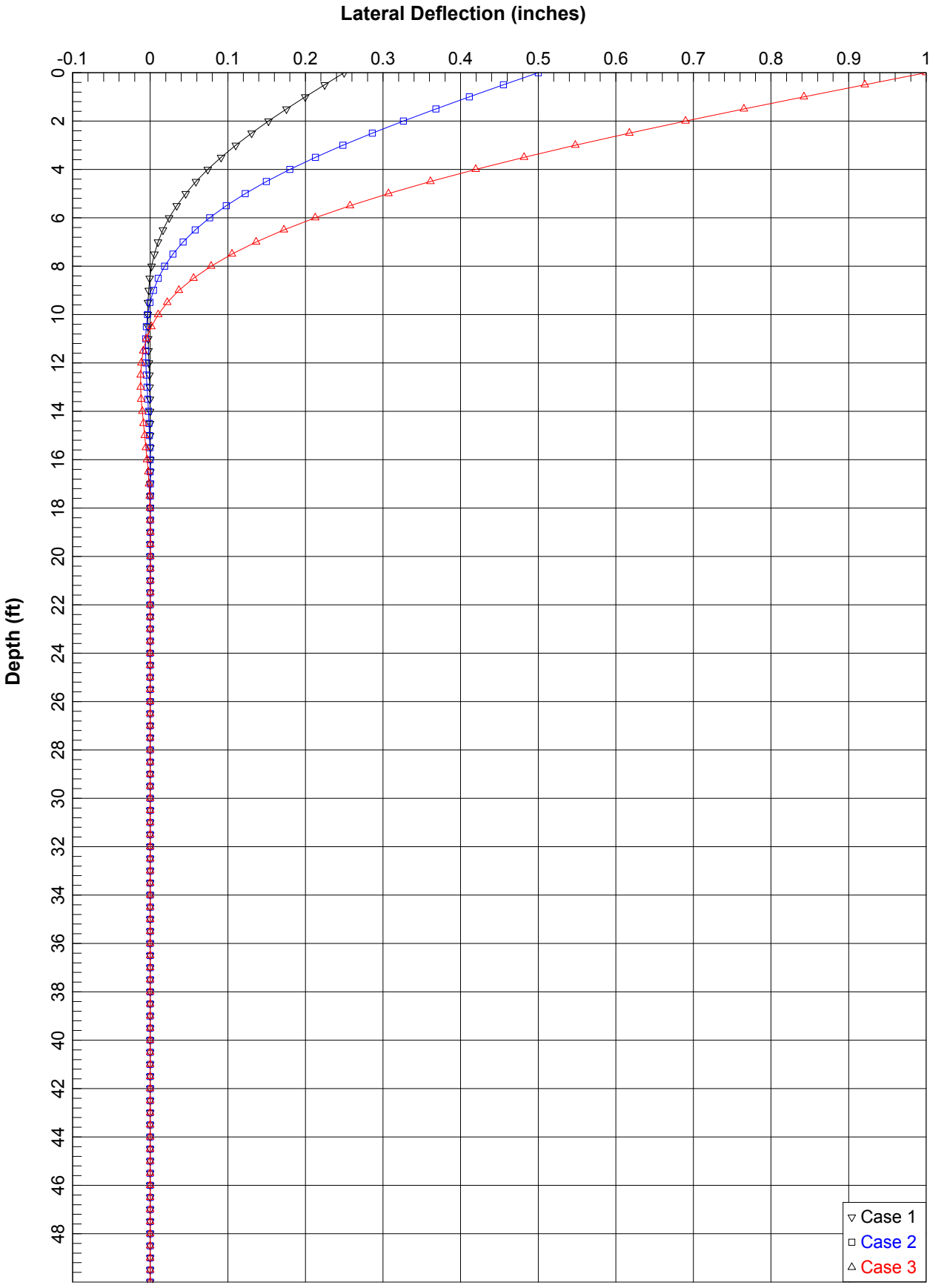
The analysis ended normally.

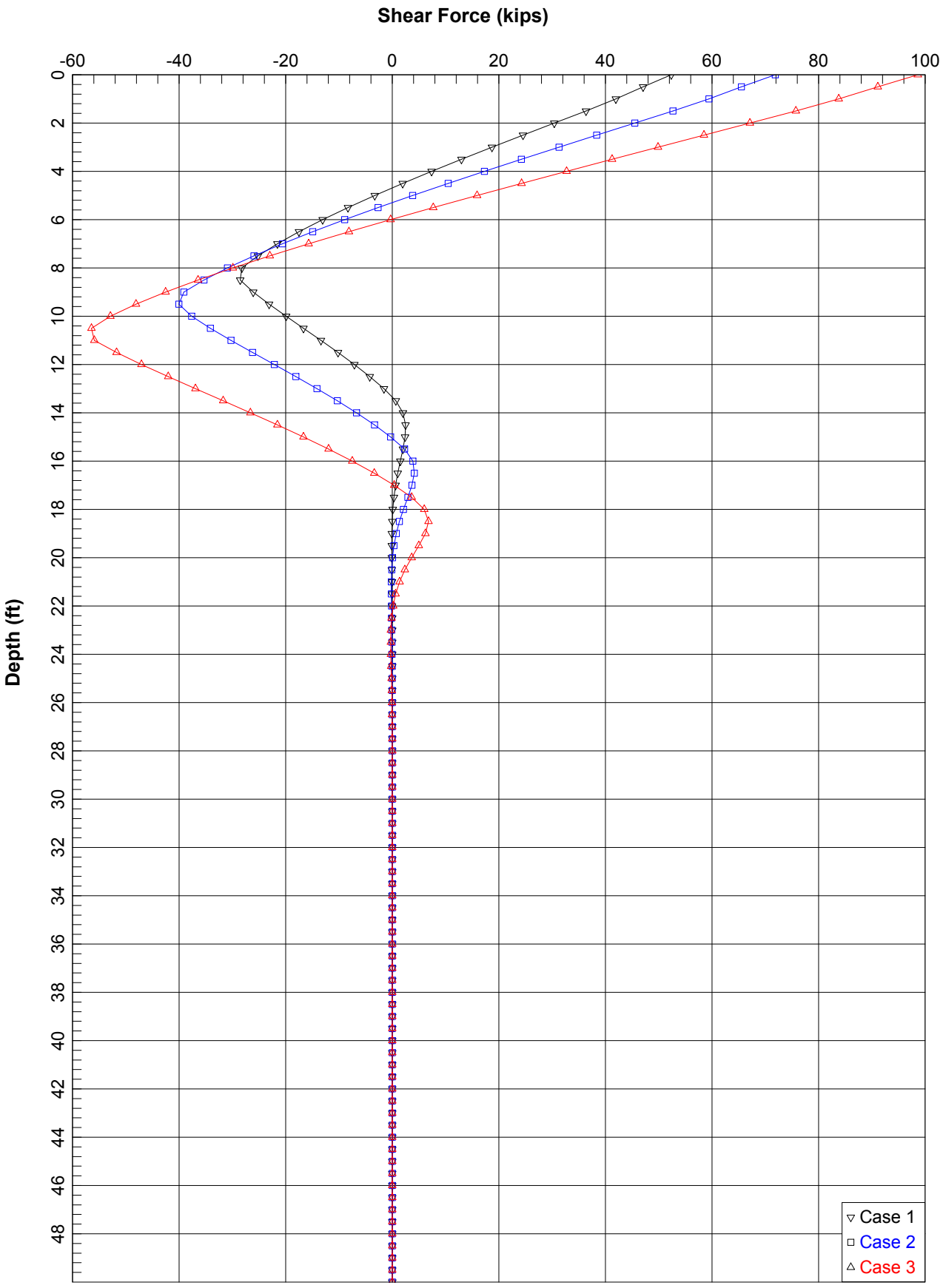
SUPPORT: **BENT 2L**

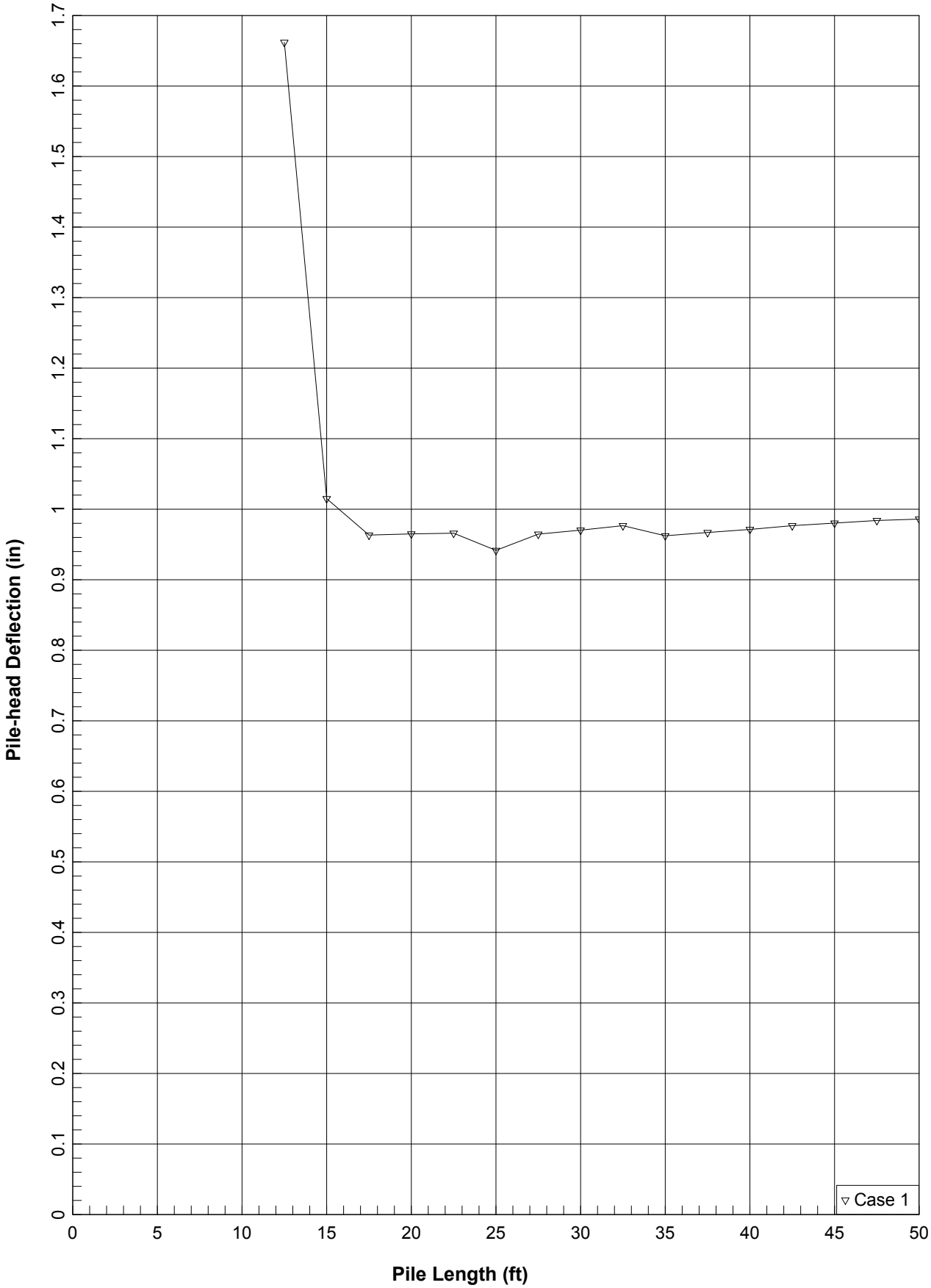
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 1 ft = Stiff Clay without Free Water
Layer 3, Depth 1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file:       Bent 2L_transv_crit length.lp6d
Name of output report file:    Bent 2L_transv_crit length.lp6o
Name of plot output file:      Bent 2L_transv_crit length.lp6p
Name of runtime messeage file: Bent 2L_transv_crit length.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

              Date:  September 13, 2014     Time:  20:33:42

--------------------------------------------------------------------------------
                                 Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                              Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                      =          1

Total Pile Length                             =      50.00 ft

Depth of ground surface below top of pile     =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------        ------------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                               =    Elastic Pile
```



```
   Cross-sectional Shape                      =         Circular
   Section Length                             =      50.00000000 ft
   Top Width                                  =      24.00000000 in
   Bottom Width                               =      24.00000000 in
   Top Area                                   =     452.38934212 in
   Bottom Area                                =     452.38934212 in
   Moment of Inertia at Top                   =    8143.00815810 in
   Moment of Inertia at Bottom                =    8143.00815810 in
   Elastic Modulus                            =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                      Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                            =        0.000 degrees
                                              =        0.000 radians

Pile Batter Angle                             =        0.000 degrees
                                              =        0.000 radians


--------------------------------------------------------------------------------
                      Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer          =      -5.00000 ft
   Distance from top of pile to bottom of layer       =       0.10000 ft
   Effective unit weight at top of layer              =     125.00000 pcf
   Effective unit weight at bottom of layer           =     125.00000 pcf
   Undrained cohesion at top of layer                 =    4500.00000 psi
   Undrained cohesion at bottom of layer              =    4500.00000 psi
   Epsilon-50 at top of layer                         =       0.00700
   Epsilon-50 at bottom of layer                      =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer          =       0.10000 ft
   Distance from top of pile to bottom of layer       =       1.00000 ft
   Effective unit weight at top of layer              =     125.00000 pcf
   Effective unit weight at bottom of layer           =     125.00000 pcf
   Undrained cohesion at top of layer                 =    3750.00000 psi
   Undrained cohesion at bottom of layer              =    3750.00000 psi
   Epsilon-50 at top of layer                         =       0.00700
   Epsilon-50 at bottom of layer                      =       0.00700


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer          =       1.00000 ft
   Distance from top of pile to bottom of layer       =      80.00000 ft
   Effective unit weight at top of layer              =     125.00000 pcf
   Effective unit weight at bottom of layer           =     125.00000 pcf
   Undrained cohesion at top of layer                 =    4500.00000 psi
   Undrained cohesion at bottom of layer              =    4500.00000 psi
   Epsilon-50 at top of layer                         =       0.00500
   Epsilon-50 at bottom of layer                      =       0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                      Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                Rock Mass                            In-situ      In-situ      Elastic
Layer          Soil Type                         Depth      Unit Wt.     Cohesion     Friction      qu            or
Factor          J       kpy       Rock Emass     krm                     Test         Test          Subgrade
 Num.       (p-y Curve Criteria)                  ft         pcf          psf          deg.          psi           GSI      Epsilon
50     Factor        pci          psi                       Type         Property     Mod. pci
-----  ------  ------------  ----------  ----------  ------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000      125.000     4500.000       --          --          --
0.00700       --            --          --          --          --          --          --          --
                                        0.10000     125.000     4500.000       --          --          --
0.00700       --            --          --          --          --          --          --          --
  2     Stiff Clay w/o Free Water          0.10000     125.000     3750.000       --          --          --
0.00700       --            --          --          --          --          --          --          --
                                        1.000       125.000     3750.000       --          --          --
0.00700       --            --          --          --          --          --          --          --
  3     Stiff Clay w/o Free Water          1.000       125.000     4500.000       --          --          --
0.00500       --            --          --          --          --          --          --          --
                                       80.000       125.000     4500.000       --          --          --
0.00500       --            --          --          --          --          --          --          --


--------------------------------------------------------------------------------
                    p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.          ft
-----      ----------      ----------      ----------
  1           0.000          0.6500          1.0000
  2          50.000          0.6500          1.0000
```

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
1	1	V = 98000. lbs	M = 0.0000 in-lbs	219000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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 = 98000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9860	0.000	98000.	-0.0131	484.0963	2.936E+10	-1324.2024	4029.1979	0.000
6.000	0.9076	581316.	90493.	-0.0130	1340.7559	2.936E+10	-1178.1396	7788.1590	0.000
12.000	0.8300	1120062.	83217.	-0.0128	2134.6832	2.936E+10	-1247.3224	9016.3946	0.000
18.000	0.7538	1613604.	75189.	-0.0125	2861.9946	2.936E+10	-1428.6770	11372.	0.000
24.000	0.6796	2055280.	66602.	-0.0122	3512.8738	2.936E+10	-1433.6497	12658.	0.000
30.000	0.6078	2444793.	57997.	-0.0117	4086.8821	2.936E+10	-1434.6124	14161.	0.000
36.000	0.5391	2782003.	49399.	-0.0112	4583.8142	2.936E+10	-1431.4118	15931.	0.000
42.000	0.4738	3066935.	40833.	-0.0106	5003.7065	2.936E+10	-1423.8828	18032.	0.000
48.000	0.4122	3299784.	32326.	-0.009923	5346.8456	2.936E+10	-1411.8443	20550.	0.000
54.000	0.3547	3480920.	23905.	-0.009230	5613.7781	2.936E+10	-1395.0947	23509.	0.000
60.000	0.3015	3610898.	15599.	-0.008505	5805.3209	2.936E+10	-1373.4041	27335.	0.000
66.000	0.2526	3690463.	7439.6491	-0.007759	5922.5731	2.936E+10	-1346.5039	31978.	0.000
72.000	0.2084	3720564.	-542.0726	-0.007001	5966.9305	2.936E+10	-1314.0700	37841.	0.000
78.000	0.1686	3702358.	-8311.3725	-0.006243	5940.1019	2.936E+10	-1275.6967	45391.	0.000
84.000	0.1334	3637233.	-15831.	-0.005493	5844.1301	2.936E+10	-1230.8531	55343.	0.000
90.000	0.1027	3526821.	-23060.	-0.004761	5681.4199	2.936E+10	-1178.8064	68859.	0.000
96.000	0.0763	3373024.	-29952.	-0.004055	5454.7763	2.936E+10	-1118.4764	87937.	0.000
102.000	0.0541	3178056.	-36452.	-0.003386	5167.4607	2.936E+10	-1048.1341	116351.	0.000
108.000	0.0357	2944502.	-42490.	-0.002760	4823.2821	2.936E+10	-964.6893	162209.	0.000
114.000	0.0209	2675428.	-47969.	-0.002186	4426.7597	2.936E+10	-861.6438	247041.	0.000
120.000	0.009452	2374617.	-52716.	-0.001670	3983.4660	2.936E+10	-720.7221	457498.	0.000
126.000	0.000889	2047222.	-56102.	-0.001218	3500.9987	2.936E+10	-407.8883	2752302.	0.000
132.000	-0.005163	1704593.	-55394.	-0.000835	2996.0811	2.936E+10	643.7518	748091.	0.000
138.000	-0.009125	1384681.	-51194.	-0.000519	2524.6410	2.936E+10	756.5141	497429.	0.000
144.000	-0.0114	1091632.	-46480.	-0.000266	2092.7871	2.936E+10	814.5940	429151.	0.000
150.000	-0.0123	827615.	-41499.	-6.961E-05	1703.7168	2.936E+10	845.9120	412169.	0.000
156.000	-0.0122	593829.	-36382.	7.566E-05	1359.1960	2.936E+10	859.5856	421909.	0.000
162.000	-0.0114	390828.	-31224.	0.000176	1060.0425	2.936E+10	859.7836	452273.	0.000
168.000	-0.0101	218674.	-26099.	0.000239	806.3473	2.936E+10	848.7250	503754.	0.000
174.000	-0.008543	77016.	-21070.	0.000269	597.5918	2.936E+10	827.6719	581278.	0.000
180.000	-0.006883	-34866.	-16195.	0.000273	535.4774	2.936E+10	797.3298	695010.	0.000
186.000	-0.005266	-118936.	-11528.	0.000257	658.0405	2.936E+10	758.0158	863653.	0.000
192.000	-0.003794	-173885.	-7125.3569	0.000228	740.3430	2.936E+10	709.6953	1122445.	0.000
198.000	-0.002534	-204138.	-3040.6303	0.000189	784.9261	2.936E+10	651.8802	1543251.	0.000
204.000	-0.001526	-210880.	664.6850	0.000147	794.8451	2.936E+10	583.2249	2293795.	0.000
210.000	-0.000775	-196547.	3898.0779	0.000105	773.7396	2.936E+10	494.5728	3827470.	0.000
216.000	-0.000266	-164368.	6111.3880	6.808E-05	726.3184	2.936E+10	243.1973	5484375.	0.000
222.000	4.160E-05	-123390.	6726.8940	3.867E-05	665.9302	2.936E+10	-38.0286	5484375.	0.000
228.000	0.000198	-83747.	6069.9873	1.750E-05	607.5106	2.936E+10	-180.9403	5484375.	0.000
234.000	0.000252	-50596.	4837.2402	3.770E-06	558.6570	2.936E+10	-229.9754	5484375.	0.000
240.000	0.000243	-25710.	3480.4289	-4.028E-06	521.9840	2.936E+10	-222.2950	5484375.	0.000
246.000	0.000203	-8819.9758	2256.1593	-7.557E-06	497.0939	2.936E+10	-185.7949	5484375.	0.000
252.000	0.000153	1383.7861	1280.5509	-8.317E-06	486.1355	2.936E+10	-139.4079	5484375.	0.000
258.000	0.000103	6568.4913	578.6107	-7.504E-06	493.7760	2.936E+10	-94.5721	5484375.	0.000
264.000	6.247E-05	8346.8354	123.5963	-5.980E-06	496.3967	2.936E+10	-57.0993	5484375.	0.000
270.000	3.171E-05	8067.3615	-134.6506	-4.302E-06	495.9848	2.936E+10	-28.9830	5484375.	0.000
276.000	1.084E-05	6742.3341	-251.3288	-2.789E-06	494.0322	2.936E+10	-9.9098	5484375.	0.000
282.000	-1.757E-06	5058.7447	-276.2412	-1.583E-06	491.5511	2.936E+10	1.6056	5484375.	0.000
288.000	-8.151E-06	3431.5986	-249.0734	-7.150E-07	489.1533	2.936E+10	7.4503	5484375.	0.000
294.000	-1.034E-05	2071.7433	-198.3771	-1.526E-07	487.1493	2.936E+10	9.4484	5484375.	0.000
300.000	-9.982E-06	1051.4747	-142.6594	1.666E-07	485.6458	2.936E+10	9.1242	5484375.	0.000
306.000	-8.338E-06	359.3932	-92.4232	3.108E-07	484.6259	2.936E+10	7.6212	5484375.	0.000

312.000	-6.253E-06	-58.4203	-52.4131	3.415E-07	484.1824	2.936E+10	5.7155	5484375.	0.000
318.000	-4.239E-06	-270.4618	-23.6413	3.079E-07	484.4949	2.936E+10	3.8752	5484375.	0.000
324.000	-2.558E-06	-342.9250	-5.8017	2.452E-07	484.6016	2.936E+10	2.3380	5484375.	0.000
330.000	-1.297E-06	-331.1267	5.5684	1.763E-07	484.5843	2.936E+10	1.1853	5484375.	0.000
336.000	-4.417E-07	-276.5679	10.3357	1.142E-07	484.5039	2.936E+10	0.4038	5484375.	0.000
342.000	7.410E-08	-207.3986	11.3438	6.478E-08	484.4019	2.936E+10	-0.0677	5484375.	0.000
348.000	3.356E-07	-140.6121	10.2203	2.921E-08	484.3035	2.936E+10	-0.3068	5484375.	0.000
354.000	4.247E-07	-84.8313	8.1355	6.175E-09	484.2213	2.936E+10	-0.3882	5484375.	0.000
360.000	4.097E-07	-43.0023	5.8475	-6.889E-09	484.1597	2.936E+10	-0.3745	5484375.	0.000
366.000	3.420E-07	-14.6438	3.7861	-1.278E-08	484.1179	2.936E+10	-0.3126	5484375.	0.000
372.000	2.564E-07	2.4643	2.1453	-1.402E-08	484.0999	2.936E+10	-0.2343	5484375.	0.000
378.000	1.737E-07	11.1362	0.9659	-1.263E-08	484.1127	2.936E+10	-0.1588	5484375.	0.000
384.000	1.047E-07	14.0888	0.2024	-1.006E-08	484.1170	2.936E+10	-0.0957	5484375.	0.000
390.000	5.303E-08	13.5911	-0.2303	-7.228E-09	484.1163	2.936E+10	-0.0485	5484375.	0.000
396.000	1.800E-08	11.3447	-0.4250	-4.680E-09	484.1130	2.936E+10	-0.0165	5484375.	0.000
402.000	-3.124E-09	8.5029	-0.4658	-2.651E-09	484.1088	2.936E+10	0.002855	5484375.	0.000
408.000	-1.382E-08	5.7617	-0.4194	-1.194E-09	484.1048	2.936E+10	0.0126	5484375.	0.000
414.000	-1.745E-08	3.4736	-0.3336	-2.499E-10	484.1014	2.936E+10	0.0159	5484375.	0.000
420.000	-1.682E-08	1.7587	-0.2397	2.849E-10	484.0989	2.936E+10	0.0154	5484375.	0.000
426.000	-1.403E-08	0.5967	-0.1551	5.256E-10	484.0972	2.936E+10	0.0128	5484375.	0.000
432.000	-1.051E-08	-0.1039	-0.0878	5.759E-10	484.0964	2.936E+10	0.009687	5484375.	0.000
438.000	-7.118E-09	-0.4585	-0.0395	5.184E-10	484.0970	2.936E+10	0.006506	5484375.	0.000
444.000	-4.289E-09	-0.5788	-0.008187	4.124E-10	484.0971	2.936E+10	0.003920	5484375.	0.000
450.000	-2.169E-09	-0.5578	0.009521	2.963E-10	484.0971	2.936E+10	0.001982	5484375.	0.000
456.000	-7.333E-10	-0.4654	0.0175	1.917E-10	484.0970	2.936E+10	0.000670	5484375.	0.000
462.000	1.316E-10	-0.3486	0.0191	1.085E-10	484.0968	2.936E+10	-0.000120	5484375.	0.000
468.000	5.689E-10	-0.2361	0.0172	4.877E-11	484.0966	2.936E+10	-0.000520	5484375.	0.000
474.000	7.168E-10	-0.1422	0.0137	1.011E-11	484.0965	2.936E+10	-0.000655	5484375.	0.000
480.000	6.902E-10	-0.0719	0.009824	-1.178E-11	484.0964	2.936E+10	-0.000631	5484375.	0.000
486.000	5.755E-10	-0.0243	0.006353	-2.161E-11	484.0963	2.936E+10	-0.000526	5484375.	0.000
492.000	4.309E-10	0.004374	0.003594	-2.365E-11	484.0963	2.936E+10	-0.000394	5484375.	0.000
498.000	2.917E-10	0.0189	0.001612	-2.127E-11	484.0963	2.936E+10	-0.000267	5484375.	0.000
504.000	1.756E-10	0.0238	0.000331	-1.691E-11	484.0963	2.936E+10	-0.000161	5484375.	0.000
510.000	8.870E-11	0.0229	-0.000394	-1.214E-11	484.0963	2.936E+10	-8.108E-05	5484375.	0.000
516.000	2.987E-11	0.0191	-0.000719	-7.855E-12	484.0963	2.936E+10	-2.731E-05	5484375.	0.000
522.000	-5.552E-12	0.0143	-0.000786	-4.445E-12	484.0963	2.936E+10	5.075E-06	5484375.	0.000
528.000	-2.346E-11	0.009666	-0.000706	-1.997E-12	484.0963	2.936E+10	2.144E-05	5484375.	0.000
534.000	-2.951E-11	0.005816	-0.000561	0.000	484.0963	2.936E+10	2.698E-05	5484375.	0.000
540.000	-2.844E-11	0.002936	-0.000402	0.000	484.0963	2.936E+10	2.599E-05	5484375.	0.000
546.000	-2.376E-11	0.000991	-0.000259	0.000	484.0963	2.936E+10	2.171E-05	5484375.	0.000
552.000	-1.786E-11	-0.000173	-0.000145	0.000	484.0963	2.936E+10	1.632E-05	5484375.	0.000
558.000	-1.218E-11	-0.000749	-6.241E-05	0.000	484.0963	2.936E+10	1.113E-05	5484375.	0.000
564.000	-7.410E-12	-0.000924	-8.700E-06	0.000	484.0963	2.936E+10	6.773E-06	5484375.	0.000
570.000	-3.777E-12	-0.000855	2.198E-05	0.000	484.0963	2.936E+10	3.452E-06	5484375.	0.000
576.000	-1.192E-12	-0.000661	3.560E-05	0.000	484.0963	2.936E+10	1.090E-06	5484375.	0.000
582.000	0.000	-0.000429	3.728E-05	0.000	484.0963	2.936E+10	-5.316E-07	5484375.	0.000
588.000	1.830E-12	-0.000215	3.066E-05	0.000	484.0963	2.936E+10	-1.672E-06	5484375.	0.000
594.000	2.814E-12	-6.108E-05	1.793E-05	0.000	484.0963	2.936E+10	-2.572E-06	5484375.	0.000
600.000	3.724E-12	0.000	0.000	0.000	484.0963	2.936E+10	-3.404E-06	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9859549 inches
Computed slope at pile head = -0.0130526 radians
Maximum bending moment = 3720564. inch-lbs
Maximum shear force = 98000. lbs
Depth of maximum bending moment = 72.00000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 30
Number of zero deflection points = 8

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

Boundary Condition Type 1, Shear and Moment

Shear = 98000. lbs
Moment = 0. in-lbs
Axial Load = 219000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9859549	3720564.	98000.
47.500	0.9841056	3721679.	98000.
45.000	0.9804648	3710379.	98000.
42.500	0.9765931	3704138.	98000.
40.000	0.9713823	3697255.	98000.
37.500	0.9668343	3688707.	98000.
35.000	0.9624868	3679263.	98000.
32.500	0.9766147	3710982.	98000.
30.000	0.9703686	3701667.	98000.
27.500	0.9645302	3689199.	98000.
25.000	0.9416476	3663333.	98000.
22.500	0.9661091	3693761.	98000.
20.000	0.9649585	3692914.	98000.
17.500	0.9632981	3684736.	98000.
15.000	1.0149996	3635009.	98000.
12.500	1.6618599	3245434.	98000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Bent 2L_transv_crit length

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 98000.	M = 0.000	219000.	0.98595487	3720564.	98000.	-0.01305263

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2L_transv_ave P.lp6d
Name of output report file: Bent 2L_transv_ave P.lp6o
Name of plot output file: Bent 2L_transv_ave P.lp6p
Name of runtime messeage file: Bent 2L_transv_ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:32:14

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion In-situ Test psf	Undrained Cohesion In-situ Test psf	Angle of Friction Elastic Subgrade deg.	Uniaxial qu or psi	RQD % or GSI	Strain Epsilon 50
1	Stiff Clay w/o Free Water					-5.000	125.000	4500.000	--	--	--		0.00700
		--	--	--	--	0.10000	125.000	4500.000	--	--	--		0.00700
2	Stiff Clay w/o Free Water					0.10000	125.000	3750.000	--	--	--		0.00700
		--	--	--	--	1.000	125.000	3750.000	--	--	--		0.00700
3	Stiff Clay w/o Free Water					1.000	125.000	4500.000	--	--	--		0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--		0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6500	1.0000
2	50.000	0.6500	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs	219000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs	219000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs	219000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	52377.	-0.004208	484.0963	2.936E+10	-939.6625	11276.	0.000
6.000	0.2248	302877.	47065.	-0.004177	930.4333	2.936E+10	-831.0789	22187.	0.000
12.000	0.1999	575754.	41950.	-0.004087	1332.5604	2.936E+10	-873.7629	26229.	0.000
18.000	0.1757	817021.	36351.	-0.003945	1688.1051	2.936E+10	-992.6955	33899.	0.000
24.000	0.1525	1022332.	30412.	-0.003757	1990.6622	2.936E+10	-986.8093	38816.	0.000
30.000	0.1306	1191842.	24522.	-0.003531	2240.4629	2.936E+10	-976.7861	44868.	0.000
36.000	0.1102	1325869.	18704.	-0.003273	2437.9718	2.936E+10	-962.4372	52417.	0.000
42.000	0.0913	1424891.	12986.	-0.002992	2583.8970	2.936E+10	-943.5451	61981.	0.000
48.000	0.0743	1489563.	7395.7253	-0.002694	2679.2017	2.936E+10	-919.8516	74322.	0.000
54.000	0.0590	1520721.	1963.0577	-0.002387	2725.1172	2.936E+10	-891.0376	90605.	0.000
60.000	0.0456	1519393.	-3280.1239	-0.002076	2723.1598	2.936E+10	-856.6896	112680.	0.000
66.000	0.0341	1486816.	-8298.9023	-0.001769	2675.1522	2.936E+10	-816.2366	143653.	0.000
72.000	0.0244	1424455.	-13054.	-0.001471	2583.2535	2.936E+10	-768.8277	189132.	0.000
78.000	0.0164	1334033.	-17500.	-0.001189	2450.0035	2.936E+10	-713.0586	260315.	0.000
84.000	0.0101	1217583.	-21578.	-0.000929	2278.3966	2.936E+10	-646.2717	383304.	0.000
90.000	0.005291	1077541.	-25203.	-0.000694	2072.0220	2.936E+10	-562.2642	637661.	0.000
96.000	0.001786	916968.	-28207.	-0.000490	1835.3918	2.936E+10	-439.0586	1474828.	0.000
102.000	-0.000594	740342.	-28517.	-0.000321	1575.1060	2.936E+10	335.7680	3393762.	0.000
108.000	-0.002066	575605.	-26094.	-0.000186	1332.3402	2.936E+10	471.8045	1370504.	0.000
114.000	-0.002832	427698.	-23114.	-8.396E-05	1114.3766	2.936E+10	521.5212	1105087.	0.000
120.000	-0.003073	298451.	-19920.	-9.753E-06	923.9113	2.936E+10	543.2259	1060613.	0.000
126.000	-0.002949	188681.	-16646.	4.003E-05	762.1469	2.936E+10	548.3518	1115819.	0.000
132.000	-0.002593	98600.	-13376.	6.939E-05	629.3988	2.936E+10	541.3267	1252716.	0.000
138.000	-0.002116	27981.	-10180.	8.232E-05	525.3300	2.936E+10	524.2981	1486704.	0.000
144.000	-0.001605	-23772.	-7111.5437	8.275E-05	519.1276	2.936E+10	498.3918	1863324.	0.000
150.000	-0.001123	-57575.	-4223.9673	7.444E-05	568.9428	2.936E+10	464.1337	2480011.	0.000
156.000	-0.000712	-74655.	-1567.0800	6.093E-05	594.1121	2.936E+10	421.4955	3554135.	0.000
162.000	-0.000392	-76541.	650.9913	4.548E-05	596.8908	2.936E+10	317.8616	4868095.	0.000
168.000	-0.000166	-66963.	2015.2708	3.081E-05	582.7761	2.936E+10	136.8982	4952730.	0.000
174.000	-2.204E-05	-52438.	2481.4808	1.861E-05	561.3723	2.936E+10	18.5051	5037366.	0.000
180.000	5.746E-05	-37234.	2389.8525	9.444E-06	538.9660	2.936E+10	-49.0479	5122001.	0.000
186.000	9.129E-05	-23785.	2005.0490	3.209E-06	519.1470	2.936E+10	-79.2200	5206636.	0.000
192.000	9.596E-05	-13182.	1513.5182	-5.692E-07	503.5214	2.936E+10	-84.6236	5291272.	0.000
198.000	8.446E-05	-5621.1470	1032.6215	-2.491E-06	492.3799	2.936E+10	-75.6752	5375907.	0.000
204.000	6.607E-05	-783.5444	625.2093	-3.145E-06	485.2510	2.936E+10	-60.1288	5460543.	0.000
210.000	4.672E-05	1889.0389	316.7167	-3.032E-06	486.8810	2.936E+10	-42.7021	5484375.	0.000
216.000	2.968E-05	3025.0243	107.2173	-2.530E-06	488.5541	2.936E+10	-27.1311	5484375.	0.000
222.000	1.636E-05	3182.8868	-19.0289	-1.896E-06	488.7868	2.936E+10	-14.9510	5484375.	0.000
228.000	6.935E-06	2801.6586	-82.8983	-1.284E-06	488.2250	2.936E+10	-6.3388	5484375.	0.000
234.000	9.488E-07	2191.4816	-104.5160	-7.737E-07	487.3258	2.936E+10	-0.8671	5484375.	0.000
240.000	-2.350E-06	1549.4997	-100.6734	-3.914E-07	486.3797	2.936E+10	2.1480	5484375.	0.000
246.000	-3.748E-06	984.4296	-83.9508	-1.325E-07	485.5470	2.936E+10	3.4262	5484375.	0.000
252.000	-3.939E-06	542.4381	-62.8695	2.358E-08	484.8957	2.936E+10	3.6009	5484375.	0.000
258.000	-3.465E-06	229.9332	-42.5642	1.025E-07	484.4351	2.936E+10	3.1675	5484375.	0.000
264.000	-2.709E-06	31.3979	-25.6323	1.292E-07	484.1426	2.936E+10	2.4764	5484375.	0.000
270.000	-1.915E-06	-77.9938	-12.9525	1.245E-07	484.2112	2.936E+10	1.7502	5484375.	0.000
276.000	-1.216E-06	-124.3591	-4.3682	1.038E-07	484.2795	2.936E+10	1.1113	5484375.	0.000
282.000	-6.693E-07	-130.6848	0.8011	7.772E-08	484.2889	2.936E+10	0.6118	5484375.	0.000
288.000	-2.832E-07	-114.9498	3.4131	5.261E-08	484.2657	2.936E+10	0.2588	5484375.	0.000

294.000	-3.800E-08	-89.8653	4.2939	3.168E-08	484.2287	2.936E+10	0.0347	5484375.	0.000
300.000	9.699E-08	-63.5065	4.1321	1.601E-08	484.1899	2.936E+10	-0.0887	5484375.	0.000
306.000	1.541E-07	-40.3221	3.4436	5.396E-09	484.1557	2.936E+10	-0.1409	5484375.	0.000
312.000	1.617E-07	-22.1975	2.5775	-9.927E-10	484.1290	2.936E+10	-0.1478	5484375.	0.000
318.000	1.422E-07	-9.3895	1.7441	-4.221E-09	484.1101	2.936E+10	-0.1300	5484375.	0.000
324.000	1.111E-07	-1.2575	1.0495	-5.309E-09	484.0981	2.936E+10	-0.1016	5484375.	0.000
330.000	7.847E-08	3.2190	0.5297	-5.108E-09	484.1010	2.936E+10	-0.0717	5484375.	0.000
336.000	4.980E-08	5.1124	0.1780	-4.257E-09	484.1038	2.936E+10	-0.0455	5484375.	0.000
342.000	2.739E-08	5.3657	-0.0337	-3.186E-09	484.1042	2.936E+10	-0.0250	5484375.	0.000
348.000	1.156E-08	4.7163	-0.1405	-2.156E-09	484.1032	2.936E+10	-0.0106	5484375.	0.000
354.000	1.521E-09	3.6851	-0.1764	-1.297E-09	484.1017	2.936E+10	-0.001390	5484375.	0.000
360.000	-4.903E-09	2.6028	-0.1696	-6.546E-10	484.1001	2.936E+10	0.003659	5484375.	0.000
366.000	-6.335E-09	1.6516	-0.1413	-2.109E-10	484.0987	2.936E+10	0.005790	5484375.	0.000
372.000	-6.641E-09	0.9084	-0.1057	4.176E-11	484.0976	2.936E+10	0.006070	5484375.	0.000
378.000	-5.833E-09	0.3834	-0.0715	1.738E-10	484.0969	2.936E+10	0.005332	5484375.	0.000
384.000	-4.556E-09	0.0503	-0.0430	2.181E-10	484.0964	2.936E+10	0.004164	5484375.	0.000
390.000	-3.216E-09	-0.1329	-0.0217	2.097E-10	484.0965	2.936E+10	0.002940	5484375.	0.000
396.000	-2.040E-09	-0.2102	-0.007250	1.746E-10	484.0966	2.936E+10	0.001864	5484375.	0.000
402.000	-1.121E-09	-0.2203	0.001417	1.306E-10	484.0966	2.936E+10	0.001025	5484375.	0.000
408.000	-4.722E-10	-0.1935	0.005786	8.833E-11	484.0966	2.936E+10	0.000432	5484375.	0.000
414.000	-6.085E-11	-0.1511	0.007247	5.312E-11	484.0965	2.936E+10	5.562E-05	5484375.	0.000
420.000	1.652E-10	-0.1067	0.006961	2.677E-11	484.0964	2.936E+10	-0.000151	5484375.	0.000
426.000	2.604E-10	-0.0676	0.005794	8.956E-12	484.0964	2.936E+10	-0.000238	5484375.	0.000
432.000	2.727E-10	-0.0372	0.004332	-1.756E-12	484.0963	2.936E+10	-0.000249	5484375.	0.000
438.000	2.393E-10	-0.0157	0.002928	-7.155E-12	484.0963	2.936E+10	-0.000219	5484375.	0.000
444.000	1.868E-10	-0.002014	0.001760	-8.960E-12	484.0963	2.936E+10	-0.000171	5484375.	0.000
450.000	1.318E-10	0.005483	0.000886	-8.606E-12	484.0963	2.936E+10	-0.000120	5484375.	0.000
456.000	8.354E-11	0.008640	0.000295	-7.163E-12	484.0963	2.936E+10	-7.636E-05	5484375.	0.000
462.000	4.587E-11	0.009045	-5.955E-05	-5.355E-12	484.0963	2.936E+10	-4.192E-05	5484375.	0.000
468.000	1.928E-11	0.007939	-0.000238	-3.619E-12	484.0963	2.936E+10	-1.762E-05	5484375.	0.000
474.000	2.433E-12	0.006197	-0.000298	-2.176E-12	484.0963	2.936E+10	-2.224E-06	5484375.	0.000
480.000	-6.817E-12	0.004372	-0.000286	-1.095E-12	484.0963	2.936E+10	6.231E-06	5484375.	0.000
486.000	-1.071E-11	0.002771	-0.000238	0.000	484.0963	2.936E+10	9.785E-06	5484375.	0.000
492.000	-1.120E-11	0.001521	-0.000178	0.000	484.0963	2.936E+10	1.023E-05	5484375.	0.000
498.000	-9.820E-12	0.000639	-0.000120	0.000	484.0963	2.936E+10	8.976E-06	5484375.	0.000
504.000	-7.661E-12	8.057E-05	-7.204E-05	0.000	484.0963	2.936E+10	7.003E-06	5484375.	0.000
510.000	-5.403E-12	-0.000226	-3.622E-05	0.000	484.0963	2.936E+10	4.939E-06	5484375.	0.000
516.000	-3.422E-12	-0.000355	-1.202E-05	0.000	484.0963	2.936E+10	3.128E-06	5484375.	0.000
522.000	-1.877E-12	-0.000371	2.512E-06	0.000	484.0963	2.936E+10	1.715E-06	5484375.	0.000
528.000	0.000	-0.000325	9.813E-06	0.000	484.0963	2.936E+10	7.186E-07	5484375.	0.000
534.000	0.000	-0.000254	1.223E-05	0.000	484.0963	2.936E+10	8.671E-08	5484375.	0.000
540.000	0.000	-0.000179	1.171E-05	0.000	484.0963	2.936E+10	-2.608E-07	5484375.	0.000
546.000	0.000	-0.000113	9.702E-06	0.000	484.0963	2.936E+10	-4.077E-07	5484375.	0.000
552.000	0.000	-6.251E-05	7.196E-06	0.000	484.0963	2.936E+10	-4.276E-07	5484375.	0.000
558.000	0.000	-2.702E-05	4.781E-06	0.000	484.0963	2.936E+10	-3.774E-07	5484375.	0.000
564.000	0.000	-5.104E-06	2.758E-06	0.000	484.0963	2.936E+10	-2.969E-07	5484375.	0.000
570.000	0.000	6.119E-06	1.235E-06	0.000	484.0963	2.936E+10	-2.107E-07	5484375.	0.000
576.000	0.000	9.756E-06	2.087E-07	0.000	484.0963	2.936E+10	-1.314E-07	5484375.	0.000
582.000	0.000	8.660E-06	-3.743E-07	0.000	484.0963	2.936E+10	-6.297E-08	5484375.	0.000
588.000	0.000	5.295E-06	-5.760E-07	0.000	484.0963	2.936E+10	-4.268E-09	5484375.	0.000
594.000	0.000	1.775E-06	-4.433E-07	0.000	484.0963	2.936E+10	4.850E-08	5484375.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	9.927E-08	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042080 radians
Maximum bending moment = 1520721. inch-lbs
Maximum shear force = 52377. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 18
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	71845.	-0.007447	484.0963	2.936E+10	-1117.4533	6704.7199	0.000
6.000	0.4553	420743.	65518.	-0.007404	1184.1265	2.936E+10	-991.5035	13066.	0.000
12.000	0.4112	805678.	59405.	-0.007279	1671.3893	2.936E+10	-1046.4115	15270.	0.000
18.000	0.3680	1152726.	52683.	-0.007078	2182.8194	2.936E+10	-1194.1840	19472.	0.000
24.000	0.3262	1456474.	45520.	-0.006812	2630.4398	2.936E+10	-1193.3267	21949.	0.000
30.000	0.2862	1716872.	38375.	-0.006488	3014.1758	2.936E+10	-1188.4153	24912.	0.000
36.000	0.2484	1934025.	31272.	-0.006114	3334.1850	2.936E+10	-1179.2839	28490.	0.000
42.000	0.2129	2108204.	24237.	-0.005701	3590.8657	2.936E+10	-1165.7490	32860.	0.000
48.000	0.1799	2239850.	17297.	-0.005257	3784.8672	2.936E+10	-1147.6036	38265.	0.000
54.000	0.1498	2329581.	10480.	-0.004790	3917.0999	2.936E+10	-1124.6079	45052.	0.000
60.000	0.1225	2378201.	3816.9442	-0.004309	3988.7483	2.936E+10	-1096.4753	53721.	0.000
66.000	0.0981	2386708.	-2661.0308	-0.003822	4001.2856	2.936E+10	-1062.8497	65026.	0.000
72.000	0.0766	2356313.	-8919.3818	-0.003337	3956.4924	2.936E+10	-1023.2672	80150.	0.000
78.000	0.0580	2288446.	-14920.	-0.002863	3856.4806	2.936E+10	-977.0873	101039.	0.000
84.000	0.0423	2184790.	-20622.	-0.002405	3703.7270	2.936E+10	-923.3590	131126.	0.000
90.000	0.0292	2047306.	-25973.	-0.001973	3501.1230	2.936E+10	-860.5340	177078.	0.000
96.000	0.0186	1878293.	-30912.	-0.001572	3252.0500	2.936E+10	-785.7592	253803.	0.000
102.000	0.0103	1680488.	-35348.	-0.001208	2960.5597	2.936E+10	-692.7061	403635.	0.000
108.000	0.004079	1457295.	-39110.	-0.000887	2631.6491	2.936E+10	-561.4888	825876.	0.000
114.000	-0.000351	1213497.	-40958.	-0.000614	2272.3739	2.936E+10	245.4730	4191011.	0.000
120.000	-0.003294	978209.	-37663.	-0.000390	1925.6412	2.936E+10	552.8258	1006994.	0.000
126.000	-0.005037	762561.	-34123.	-0.000213	1607.8496	2.936E+10	627.1943	747137.	0.000
132.000	-0.005844	569287.	-30251.	-7.644E-05	1323.0298	2.936E+10	663.6541	681313.	0.000
138.000	-0.005954	399751.	-26222.	2.259E-05	1073.1928	2.936E+10	679.4341	684677.	0.000
144.000	-0.005573	254568.	-22141.	8.946E-05	859.2426	2.936E+10	680.7493	732858.	0.000
150.000	-0.004881	133824.	-18087.	0.000129	681.3065	2.936E+10	670.5370	824342.	0.000

156.000	-0.004024	37183.	-14125.	0.000147	538.8905	2.936E+10	650.3508	969816.	0.000
162.000	-0.003121	-36056.	-10310.	0.000147	537.2305	2.936E+10	621.0117	1193878.	0.000
168.000	-0.002263	-86928.	-6098.8769	0.000134	612.1990	2.936E+10	582.8444	1545577.	0.000
174.000	-0.001511	-116795.	-3343.2821	0.000113	656.2123	2.936E+10	535.6872	2127320.	0.000
180.000	-0.000902	-127346.	-300.4640	8.841E-05	671.7602	2.936E+10	478.5855	3182221.	0.000
186.000	-0.000450	-120633.	2306.8201	6.306E-05	661.8680	2.936E+10	390.5092	5206636.	0.000
192.000	-0.000146	-99830.	3863.5592	4.053E-05	631.2109	2.936E+10	128.4038	5291272.	0.000
198.000	3.638E-05	-74377.	4150.9764	2.273E-05	593.7023	2.936E+10	-32.5981	5375907.	0.000
204.000	0.000127	-50078.	3706.0120	1.001E-05	557.8936	2.936E+10	-115.7233	5460543.	0.000
210.000	0.000157	-29931.	2929.6435	1.835E-06	528.2044	2.936E+10	-143.0662	5484375.	0.000
216.000	0.000149	-14927.	2091.3873	-2.750E-06	506.0932	2.936E+10	-136.3526	5484375.	0.000
222.000	0.000124	-4827.1706	1343.6093	-4.768E-06	491.2099	2.936E+10	-112.9067	5484375.	0.000
228.000	9.195E-05	1209.0779	752.7395	-5.138E-06	485.8781	2.936E+10	-84.0499	5484375.	0.000
234.000	6.188E-05	4219.2065	330.9450	-4.583E-06	490.3139	2.936E+10	-56.5483	5484375.	0.000
240.000	3.695E-05	5192.4628	59.9712	-3.622E-06	491.7482	2.936E+10	-33.7763	5484375.	0.000
246.000	1.841E-05	4948.3779	-91.8321	-2.585E-06	491.3885	2.936E+10	-16.8248	5484375.	0.000
252.000	5.930E-06	4097.2709	-158.5672	-1.661E-06	490.1343	2.936E+10	-5.4202	5484375.	0.000
258.000	-1.522E-06	3049.9357	-170.6534	-9.303E-07	488.5908	2.936E+10	1.3915	5484375.	0.000
264.000	-5.234E-06	2051.8755	-152.1257	-4.090E-07	487.1200	2.936E+10	4.7844	5484375.	0.000
270.000	-6.439E-06	1225.5023	-120.1400	-7.402E-08	485.9023	2.936E+10	5.8772	5484375.	0.000
276.000	-6.122E-06	610.3797	-85.7203	1.136E-07	484.9958	2.936E+10	5.5963	5484375.	0.000
282.000	-5.067E-06	196.5604	-55.0378	1.961E-07	484.3859	2.936E+10	4.6312	5484375.	0.000
288.000	-3.770E-06	-50.5888	-30.8070	2.110E-07	484.1708	2.936E+10	3.4457	5484375.	0.000
294.000	-2.535E-06	-173.6779	-13.5188	1.881E-07	484.3522	2.936E+10	2.3178	5484375.	0.000
300.000	-1.513E-06	-213.3084	-2.4190	1.485E-07	484.4106	2.936E+10	1.3829	5484375.	0.000
306.000	-7.527E-07	-203.0958	3.7938	1.060E-07	484.3956	2.936E+10	0.6880	5484375.	0.000
312.000	-2.414E-07	-168.0612	6.5199	6.803E-08	484.3439	2.936E+10	0.2207	5484375.	0.000
318.000	6.367E-08	-125.0363	7.0074	3.808E-08	484.2802	2.936E+10	-0.0582	5484375.	0.000
324.000	2.155E-07	-84.0730	6.2419	1.671E-08	484.2202	2.936E+10	-0.1969	5484375.	0.000
330.000	2.641E-07	-50.1770	4.9268	2.986E-09	484.1702	2.936E+10	-0.2414	5484375.	0.000
336.000	2.513E-07	-24.9592	3.5134	-4.693E-09	484.1331	2.936E+10	-0.2297	5484375.	0.000
342.000	2.078E-07	-8.0035	2.2545	-8.062E-09	484.1081	2.936E+10	-0.1900	5484375.	0.000
348.000	1.545E-07	2.1158	1.2608	-8.663E-09	484.0994	2.936E+10	-0.1413	5484375.	0.000
354.000	1.039E-07	7.1491	0.5522	-7.716E-09	484.1068	2.936E+10	-0.0949	5484375.	0.000
360.000	6.195E-08	8.7627	0.0975	-6.090E-09	484.1292	2.936E+10	-0.0566	5484375.	0.000
366.000	3.078E-08	8.3356	-0.1567	-4.343E-09	484.1086	2.936E+10	-0.0281	5484375.	0.000
372.000	9.831E-09	6.8935	-0.2681	-2.787E-09	484.1064	2.936E+10	-0.008986	5484375.	0.000
378.000	-2.662E-09	5.1260	-0.2877	-1.558E-09	484.1287	2.936E+10	0.002447	5484375.	0.000
384.000	-8.869E-09	3.4448	-0.2561	-6.824E-10	484.1014	2.936E+10	0.008106	5484375.	0.000
390.000	-1.085E-08	2.0544	-0.2020	-1.204E-10	484.0993	2.936E+10	0.009918	5484375.	0.000
396.000	-1.031E-08	1.0206	-0.1440	1.939E-10	484.0978	2.936E+10	0.009427	5484375.	0.000
402.000	-8.524E-09	0.3259	-0.0923	3.315E-10	484.0963	2.936E+10	0.007792	5484375.	0.000
408.000	-6.336E-09	-0.0885	-0.0516	3.557E-10	484.0964	2.936E+10	0.005791	5484375.	0.000
414.000	-4.256E-09	-0.2943	-0.0226	3.166E-10	484.0967	2.936E+10	0.003890	5484375.	0.000
420.000	-2.536E-09	-0.3600	-0.003932	2.490E-10	484.0968	2.936E+10	0.002318	5484375.	0.000
426.000	-1.258E-09	-0.3421	0.000474	1.780E-10	484.0968	2.936E+10	0.001150	5484375.	0.000
432.000	-4.002E-10	-0.2828	0.0110	1.141E-10	484.0967	2.936E+10	0.000366	5484375.	0.000
438.000	1.113E-10	-0.2101	0.0118	6.377E-11	484.0966	2.936E+10	-0.000102	5484375.	0.000
444.000	3.650E-10	-0.1411	0.0105	2.787E-11	484.0965	2.936E+10	-0.000334	5484375.	0.000
450.000	4.457E-10	-0.0841	0.008285	4.853E-12	484.0964	2.936E+10	-0.000407	5484375.	0.000
456.000	4.233E-10	-0.0417	0.005902	-8.008E-12	484.0963	2.936E+10	-0.000387	5484375.	0.000
462.000	3.496E-10	-0.0133	0.003783	-1.363E-11	484.0963	2.936E+10	-0.000320	5484375.	0.000
468.000	2.597E-10	0.003697	0.002112	-1.461E-11	484.0963	2.936E+10	-0.000237	5484375.	0.000
474.000	1.744E-10	0.0121	0.000921	-1.299E-11	484.0963	2.936E+10	-0.000159	5484375.	0.000
480.000	1.038E-10	0.0148	0.000158	-1.024E-11	484.0963	2.936E+10	-9.492E-05	5484375.	0.000
486.000	5.146E-11	0.0140	-0.000267	-7.296E-12	484.0963	2.936E+10	-4.704E-05	5484375.	0.000
492.000	1.629E-11	0.0116	-0.000453	-4.676E-12	484.0963	2.936E+10	-1.489E-05	5484375.	0.000
498.000	-4.649E-12	0.008615	-0.000485	-2.610E-12	484.0963	2.936E+10	4.249E-06	5484375.	0.000
504.000	-1.503E-11	0.005783	-0.000431	-1.139E-12	484.0963	2.936E+10	1.374E-05	5484375.	0.000
510.000	-1.831E-11	0.003444	-0.000340	0.000	484.0963	2.936E+10	1.674E-05	5484375.	0.000
516.000	-1.737E-11	0.001707	-0.000242	0.000	484.0963	2.936E+10	1.588E-05	5484375.	0.000
522.000	-1.434E-11	0.000541	-0.000155	0.000	484.0963	2.936E+10	1.311E-05	5484375.	0.000
528.000	-1.065E-11	-0.000154	-8.639E-05	0.000	484.0963	2.936E+10	9.733E-06	5484375.	0.000
534.000	-7.142E-12	-0.000498	-3.761E-05	0.000	484.0963	2.936E+10	6.529E-06	5484375.	0.000
540.000	-4.247E-12	-0.000606	-6.374E-06	0.000	484.0963	2.936E+10	3.882E-06	5484375.	0.000
546.000	-2.095E-12	-0.000575	1.102E-05	0.000	484.0963	2.936E+10	1.915E-06	5484375.	0.000
552.000	0.000	-0.000475	1.854E-05	0.000	484.0963	2.936E+10	5.933E-07	5484375.	0.000
558.000	0.000	-0.000353	1.973E-05	0.000	484.0963	2.936E+10	-1.962E-07	5484375.	0.000
564.000	0.000	-0.000238	1.738E-05	0.000	484.0963	2.936E+10	-5.896E-07	5484375.	0.000
570.000	0.000	-0.000145	1.346E-05	0.000	484.0963	2.936E+10	-7.158E-07	5484375.	0.000
576.000	0.000	-7.697E-05	9.275E-06	0.000	484.0963	2.936E+10	-6.795E-07	5484375.	0.000
582.000	0.000	-3.352E-05	5.565E-06	0.000	484.0963	2.936E+10	-5.570E-07	5484375.	0.000
588.000	0.000	-1.011E-05	2.703E-06	0.000	484.0963	2.936E+10	-3.970E-07	5484375.	0.000
594.000	0.000	-9.960E-07	8.358E-07	0.000	484.0963	2.936E+10	-2.256E-07	5484375.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	-5.304E-08	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection              =      0.5000000 inches
Computed slope at pile head       =     -0.0074470 radians
Maximum bending moment            =        2386708. inch-lbs
Maximum shear force               =          71845. lbs
Depth of maximum bending moment   =     66.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             17
Number of zero deflection points  =              9
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

```
Displacement of pile head                      =       1.000000 inches
Moment at pile head                            =          0.000 in-lbs
Axial load at pile head                        =      219000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	98631.	-0.0132	484.0963	2.936E+10	-1328.8834	3986.6503	0.000
6.000	0.9208	585217.	91097.	-0.0131	1346.5056	2.936E+10	-1182.3693	7704.6527	0.000
12.000	0.8423	1127712.	83794.	-0.0130	2145.9567	2.936E+10	-1251.8802	8918.0243	0.000

18.000	0.7651	1624836.	75737.	-0.0127	2878.5472	2.936E+10	-1434.0024	11245.	0.000
24.000	0.6900	2069900.	67117.	-0.0123	3534.4184	2.936E+10	-1439.1137	12514.	0.000
30.000	0.6174	2462600.	58479.	-0.0118	4113.1230	2.936E+10	-1440.2171	13996.	0.000
36.000	0.5478	2802790.	49847.	-0.0113	4614.4471	2.936E+10	-1437.1596	15741.	0.000
42.000	0.4817	3090490.	41247.	-0.0107	5038.4183	2.936E+10	-1429.7768	17810.	0.000
48.000	0.4193	3325888.	32704.	-0.0101	5385.3142	2.936E+10	-1417.8885	20288.	0.000
54.000	0.3611	3509349.	24246.	-0.009353	5655.6725	2.936E+10	-1401.2944	23287.	0.000
60.000	0.3071	3641421.	15903.	-0.008623	5850.3809	2.936E+10	-1379.7663	26959.	0.000
66.000	0.2576	3722843.	7704.3958	-0.007870	5970.2893	2.936E+10	-1353.0381	31517.	0.000
72.000	0.2126	3754556.	-317.8860	-0.007106	6017.0233	2.936E+10	-1320.7892	37267.	0.000
78.000	0.1723	3737712.	-8127.3123	-0.006340	5992.2013	2.936E+10	-1282.6196	44662.	0.000
84.000	0.1366	3673690.	-15689.	-0.005583	5897.8549	2.936E+10	-1238.0070	54393.	0.000
90.000	0.1053	3564113.	-22962.	-0.004843	5736.3762	2.936E+10	-1186.2334	67580.	0.000
96.000	0.0784	3410875.	-29899.	-0.004130	5510.5553	2.936E+10	-1126.2449	86142.	0.000
102.000	0.0558	3216175.	-36447.	-0.003453	5223.6353	2.936E+10	-1056.3646	113678.	0.000
108.000	0.0370	2982583.	-42537.	-0.002820	4879.4005	2.936E+10	-973.6194	157844.	0.000
114.000	0.0219	2713140.	-48074.	-0.002237	4482.3332	2.936E+10	-871.8379	238632.	0.000
120.000	0.0102	2411581.	-52891.	-0.001714	4037.9396	2.936E+10	-734.1125	433546.	0.000
126.000	0.001356	2082947.	-56456.	-0.001254	3553.6457	2.936E+10	-454.2208	2010004.	0.000
132.000	-0.004893	1737402.	-55915.	-0.000864	3044.4302	2.936E+10	634.6535	778161.	0.000
138.000	-0.009012	1414237.	-51750.	-0.000542	2568.1966	2.936E+10	753.8369	501877.	0.000
144.000	-0.0114	1117831.	-47045.	-0.000283	2131.3954	2.936E+10	814.4613	428793.	0.000
150.000	-0.0124	850445.	-42059.	-8.261E-05	1737.3604	2.936E+10	847.3113	409656.	0.000
156.000	-0.0124	613334.	-36931.	6.759E-05	1387.9401	2.936E+10	862.0878	417790.	0.000
162.000	-0.0116	407093.	-31755.	0.000172	1084.0122	2.936E+10	863.1645	446498.	0.000
168.000	-0.0103	231817.	-26607.	0.000237	825.7154	2.936E+10	852.8544	495926.	0.000
174.000	-0.008753	87182.	-21551.	0.000270	612.5723	2.936E+10	832.4705	570626.	0.000
180.000	-0.007276	-17508.	-16646.	0.000276	524.6348	2.936E+10	802.7516	680181.	0.000
186.000	-0.005443	-113292.	-11945.	0.000261	651.0496	2.936E+10	764.0412	842236.	0.000
192.000	-0.003944	-171539.	-7504.2177	0.000232	736.8866	2.936E+10	716.3330	1089864.	0.000
198.000	-0.002655	-203953.	-3377.6694	0.000194	784.6531	2.936E+10	659.1831	1489883.	0.000
204.000	-0.001616	-212581.	-373.9139	0.000151	797.3682	2.936E+10	591.3447	2195883.	0.000
210.000	-0.000838	-199864.	3659.5623	0.000109	778.6273	2.936E+10	503.8715	3609289.	0.000
216.000	-0.000305	-168954.	6006.3623	7.158E-05	733.0761	2.936E+10	278.3952	5484375.	0.000
222.000	0.000247	-127976.	6783.1649	4.122E-05	672.6887	2.936E+10	-19.4610	5484375.	0.000
228.000	0.000190	-87664.	6203.1953	1.919E-05	613.2831	2.936E+10	-173.8622	5484375.	0.000
234.000	0.000252	-53588.	4991.6214	4.759E-06	563.0664	2.936E+10	-229.9958	5484375.	0.000
240.000	0.000247	-27777.	3623.4547	-3.259E-06	525.0303	2.936E+10	-226.0598	5484375.	0.000
246.000	0.000209	-10097.	2372.3147	-7.427E-06	498.9759	2.936E+10	-190.9869	5484375.	0.000
252.000	0.000158	710.1545	1365.5675	-8.386E-06	485.1428	2.936E+10	-144.5955	5484375.	0.000
258.000	0.000108	6311.7637	634.7800	-7.669E-06	493.3977	2.936E+10	-99.0003	5484375.	0.000
264.000	6.617E-05	8347.6674	154.3384	-6.117E-06	509.3979	2.936E+10	-60.4802	5484375.	0.000
270.000	3.426E-05	8204.0406	-119.0549	-4.479E-06	496.1862	2.936E+10	-31.3175	5484375.	0.000
276.000	1.242E-05	6930.7790	-247.0612	-2.932E-06	494.3099	2.936E+10	-11.3512	5484375.	0.000
282.000	9.256E-07	5247.0125	-278.5767	-1.688E-06	491.8286	2.936E+10	0.8460	5484375.	0.000
288.000	-7.835E-06	3592.2938	-254.5538	-7.844E-07	489.3901	2.936E+10	7.1616	5484375.	0.000
294.000	-1.034E-05	2194.4281	-204.7179	-1.931E-07	487.3301	2.936E+10	9.4504	5484375.	0.000
300.000	-1.015E-05	1136.1866	-148.5289	1.473E-07	485.7706	2.936E+10	9.2793	5484375.	0.000
306.000	-8.571E-06	411.4644	-97.1672	3.691E-07	484.8030	2.936E+10	7.8346	5484375.	0.000
312.000	-6.486E-06	-30.8628	-55.8982	3.444E-07	484.1418	2.936E+10	5.9284	5484375.	0.000
318.000	-4.438E-06	-259.9890	-25.9425	3.147E-07	484.4794	2.936E+10	4.0568	5484375.	0.000
324.000	-2.710E-06	-342.9999	-6.3421	2.531E-07	484.6017	2.936E+10	2.4767	5484375.	0.000
330.000	-1.401E-06	-336.7590	4.9309	1.763E-07	484.6926	2.936E+10	1.2810	5484375.	0.000
336.000	-5.063E-07	-284.3119	10.1623	1.201E-07	484.5153	2.936E+10	0.4628	5484375.	0.000
342.000	4.011E-08	-215.1271	11.4408	6.909E-08	484.4133	2.936E+10	-0.0367	5484375.	0.000
348.000	3.227E-07	-147.2044	10.4458	3.208E-08	484.3132	2.936E+10	-0.2950	5484375.	0.000
354.000	4.248E-07	-89.8616	8.3959	7.832E-09	484.2287	2.936E+10	-0.3883	5484375.	0.000
360.000	4.167E-07	-46.4738	6.0883	-6.101E-09	484.1648	2.936E+10	-0.3809	5484375.	0.000
366.000	3.516E-07	-16.7857	3.9815	-1.257E-08	484.1210	2.936E+10	-0.3214	5484375.	0.000
372.000	2.658E-07	1.3370	2.2881	-1.414E-08	484.0983	2.936E+10	-0.2431	5484375.	0.000
378.000	1.819E-07	10.7090	1.0602	-1.291E-08	484.1121	2.936E+10	-0.1662	5484375.	0.000
384.000	1.110E-07	14.0935	0.2572	-1.038E-08	484.1171	2.936E+10	-0.1014	5484375.	0.000
390.000	6.145E-08	13.8232	-0.2042	-7.528E-09	484.1167	2.936E+10	-0.0524	5484375.	0.000
396.000	2.064E-08	11.6629	-0.4180	-4.921E-09	484.1135	2.936E+10	-0.0189	5484375.	0.000
402.000	-1.733E-09	8.8202	-0.4699	-2.828E-09	484.1093	2.936E+10	0.001584	5484375.	0.000
408.000	-1.329E-08	6.0321	-0.4287	-1.310E-09	484.1052	2.936E+10	0.0122	5484375.	0.000
414.000	-1.717E-08	3.6798	-0.3443	-1.177E-10	484.1017	2.936E+10	0.0160	5484375.	0.000
420.000	-1.710E-08	1.9009	-0.2496	2.527E-10	484.0991	2.936E+10	0.0156	5484375.	0.000
426.000	-1.442E-08	0.6844	-0.1631	5.169E-10	484.0973	2.936E+10	0.0132	5484375.	0.000
432.000	-1.090E-08	-0.0578	-0.0937	5.809E-10	484.0964	2.936E+10	0.009066	5484375.	0.000
438.000	-7.453E-09	-0.4411	-0.0433	5.299E-10	484.0969	2.936E+10	0.006812	5484375.	0.000
444.000	-4.544E-09	-0.5791	-0.0104	4.257E-10	484.0971	2.936E+10	0.004153	5484375.	0.000
450.000	-2.345E-09	-0.5674	0.008456	3.085E-10	484.0971	2.936E+10	0.002143	5484375.	0.000
456.000	-1.010E-09	-0.4784	0.0172	2.070E-10	484.0970	2.936E+10	0.000769	5484375.	0.000
462.000	7.468E-11	-0.3616	0.0193	1.158E-10	484.0968	2.936E+10	-6.826E-05	5484375.	0.000
468.000	5.475E-10	-0.2472	0.0176	5.354E-11	484.0966	2.936E+10	-0.000500	5484375.	0.000
474.000	7.172E-10	-0.1507	0.0141	1.288E-11	484.0965	2.936E+10	-0.000656	5484375.	0.000
480.000	7.021E-10	-0.0778	0.0102	-1.040E-11	484.0964	2.936E+10	-0.000642	5484375.	0.000
486.000	5.917E-10	-0.0279	0.006682	-2.126E-11	484.0963	2.936E+10	-0.000541	5484375.	0.000
492.000	4.470E-10	0.002488	0.003834	-2.386E-11	484.0963	2.936E+10	-0.000409	5484375.	0.000
498.000	3.054E-10	0.0182	0.001771	-2.175E-11	484.0963	2.936E+10	-0.000279	5484375.	0.000
504.000	1.861E-10	0.0238	0.000423	-1.746E-11	484.0963	2.936E+10	-0.000170	5484375.	0.000
510.000	9.591E-11	0.0233	-0.000350	-1.265E-11	484.0963	2.936E+10	-8.767E-05	5484375.	0.000
516.000	3.431E-11	0.0196	-0.000707	-8.261E-12	484.0963	2.936E+10	-3.136E-05	5484375.	0.000
522.000	-3.225E-12	0.0148	-0.000793	-4.741E-12	484.0963	2.936E+10	2.948E-06	5484375.	0.000
528.000	-2.259E-11	0.0101	-0.000722	-2.193E-12	484.0963	2.936E+10	2.065E-05	5484375.	0.000
534.000	-2.954E-11	0.006163	-0.000579	0.000	484.0963	2.936E+10	2.700E-05	5484375.	0.000
540.000	-2.891E-11	0.003175	-0.000419	0.000	484.0963	2.936E+10	2.664E-05	5484375.	0.000
546.000	-2.443E-11	0.001138	-0.000272	0.000	484.0963	2.936E+10	2.233E-05	5484375.	0.000
552.000	-1.853E-11	-9.501E-05	-0.000154	0.000	484.0963	2.936E+10	1.694E-05	5484375.	0.000
558.000	-1.275E-11	-0.000718	-6.870E-05	0.000	484.0963	2.936E+10	1.166E-05	5484375.	0.000
564.000	-7.853E-12	-0.000922	-1.228E-05	0.000	484.0963	2.936E+10	7.178E-06	5484375.	0.000
570.000	-4.084E-12	-0.000867	2.053E-05	0.000	484.0963	2.936E+10	3.733E-06	5484375.	0.000
576.000	-1.378E-12	-0.000677	3.551E-05	0.000	484.0963	2.936E+10	1.260E-06	5484375.	0.000
582.000	0.000	-0.000441	3.793E-05	0.000	484.0963	2.936E+10	-4.552E-07	5484375.	0.000
588.000	1.833E-12	-0.000222	3.153E-05	0.000	484.0963	2.936E+10	-1.675E-06	5484375.	0.000
594.000	2.894E-12	-6.360E-05	1.857E-05	0.000	484.0963	2.936E+10	-2.646E-06	5484375.	0.000
600.000	3.878E-12	0.000	0.000	0.000	484.0963	2.936E+10	-3.545E-06	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection              =      1.0000000 inches
Computed slope at pile head       =     -0.0132049 radians
Maximum bending moment            =        3754556. inch-lbs
Maximum shear force               =          98631. lbs
Depth of maximum bending moment   =     72.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 21
Number of zero deflection points = 8

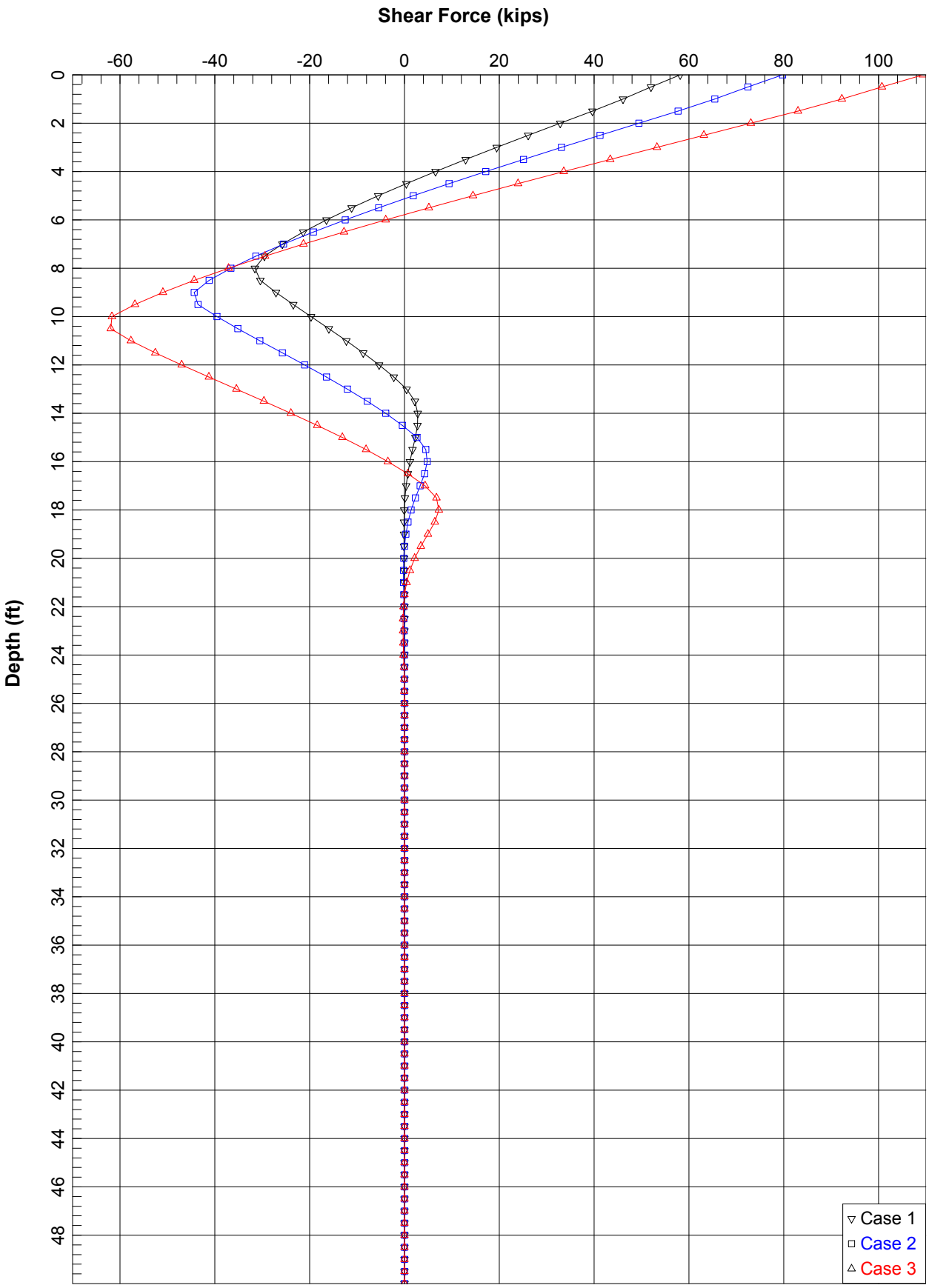
Summary of Pile Response(s)

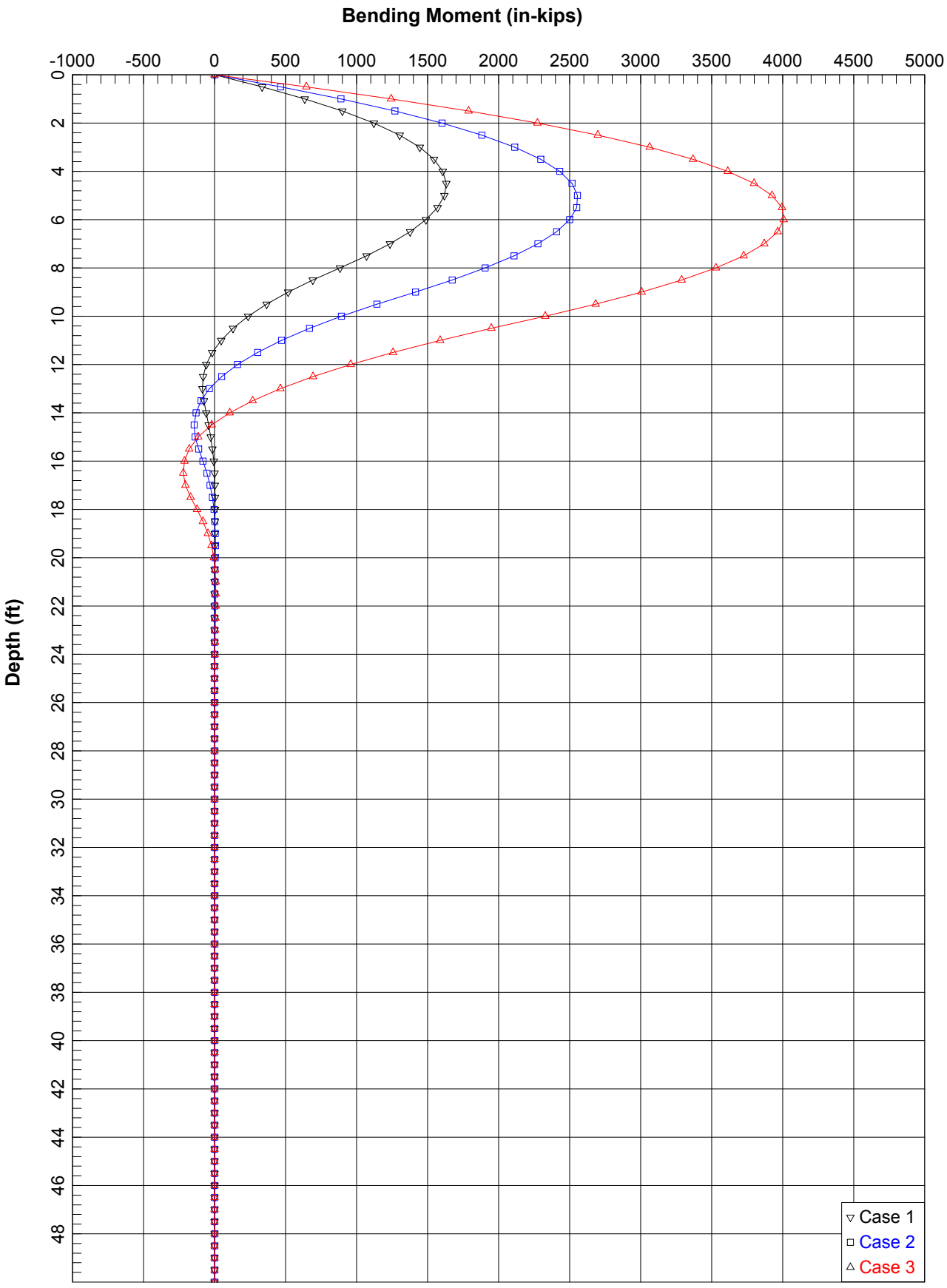
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	219000.	0.25000000	1520721.	52377.	-0.00420805
2	4	y = 0.5000	M = 0.000	219000.	0.50000000	2386708.	71845.	-0.00744695
3	4	y = 1.0000	M = 0.000	219000.	1.00000000	3754556.	98631.	-0.01320494

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 2\
Name of input data file: Bent 2L_transv_Max P.lp6d
Name of output report file: Bent 2L_transv_Max P.lp6o
Name of plot output file: Bent 2L_transv_Max P.lp6p
Name of runtime messeage file: Bent 2L_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:35:17

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 1.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 1.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction Test deg.	Uniaxial Test qu psi	RQD % or Subgrade Mod. pci	GSI	Strain Epsilon50
1	Stiff Clay w/o Free Water					-5.000	125.000	4500.000	--	--	--		
0.00700		--	--	--	--		--	--	--				
						0.10000	125.000	4500.000	--	--	--		
0.00700		--	--	--	--		--	--	--				
2	Stiff Clay w/o Free Water					0.10000	125.000	3750.000	--	--	--		
0.00700		--	--	--	--		--	--	--				
						1.000	125.000	3750.000	--	--	--		
0.00700		--	--	--	--		--	--	--				
3	Stiff Clay w/o Free Water					1.000	125.000	4500.000	--	--	--		
0.00500		--	--	--	--		--	--	--				
						80.000	125.000	4500.000	--	--	--		
0.00500		--	--	--	--		--	--	--				

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.7500	1.0000
2	50.000	0.7500	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs	219000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs	219000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs	219000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	58125.	-0.004356	484.0963	2.936E+10	-1084.2259	13011.	0.000
6.000	0.2239	334959.	51999.	-0.004321	977.7115	2.936E+10	-957.9902	25676.	0.000
12.000	0.1981	635341.	46107.	-0.004222	1420.3711	2.936E+10	-1005.9949	30463.	0.000
18.000	0.1732	899336.	39665.	-0.004065	1809.4096	2.936E+10	-1141.3094	39538.	0.000
24.000	0.1494	1122003.	32843.	-0.003859	2137.5438	2.936E+10	-1132.6443	45501.	0.000
30.000	0.1269	1303593.	26088.	-0.003611	2405.1453	2.936E+10	-1118.9252	52908.	0.000
36.000	0.1060	1444552.	19432.	-0.003330	2612.8701	2.936E+10	-1090.9907	62244.	0.000
42.000	0.0869	1545526.	12906.	-0.003025	2761.6711	2.936E+10	-1075.3129	74219.	0.000
48.000	0.0697	1607373.	6545.7798	-0.002702	2852.8132	2.936E+10	-1044.7889	89900.	0.000
54.000	0.0545	1631177.	387.7189	-0.002371	2887.8915	2.936E+10	-1007.8980	110958.	0.000
60.000	0.0413	1618258.	-5528.1222	-0.002039	2868.8535	2.936E+10	-964.0490	140145.	0.000
66.000	0.0300	1570199.	-11157.	-0.001713	2798.0307	2.936E+10	-912.3888	182296.	0.000
72.000	0.0207	1488872.	-16449.	-0.001401	2678.1826	2.936E+10	-851.5671	246690.	0.000
78.000	0.0132	1376489.	-21342.	-0.001108	2512.5683	2.936E+10	-779.1699	353641.	0.000
84.000	0.007416	1235086.	-25749.	-0.000841	2305.9729	2.936E+10	-690.0419	558322.	0.000
90.000	0.003127	1069709.	-29527.	-0.000605	2060.4806	2.936E+10	-569.1485	1092150.	0.000
96.000	0.000150	882956.	-31574.	-0.000406	1785.2707	2.936E+10	-113.4403	4542814.	0.000
102.000	-0.001744	691882.	-30383.	-0.000245	1503.6932	2.936E+10	510.7520	1756877.	0.000
108.000	-0.002790	519009.	-27089.	-0.000121	1248.9380	2.936E+10	587.1887	1262802.	0.000
114.000	-0.003199	367136.	-23466.	-3.067E-05	1025.1287	2.936E+10	620.2997	1163394.	0.000
120.000	-0.003158	237495.	-19713.	3.112E-05	834.0821	2.936E+10	630.7721	1198425.	0.000
126.000	-0.002826	130498.	-15944.	6.872E-05	676.4050	2.936E+10	625.5241	1328231.	0.000
132.000	-0.002333	45984.	-12244.	8.676E-05	551.8613	2.936E+10	607.7026	1562683.	0.000
138.000	-0.001785	-16664.	-8684.6425	8.976E-05	508.6535	2.936E+10	578.9102	1946413.	0.000
144.000	-0.001256	-58467.	-5328.1813	8.288E-05	570.2571	2.936E+10	539.9102	2578734.	0.000
150.000	-0.000800	-80818.	-2236.1399	6.784E-05	603.1944	2.936E+10	490.7703	3682622.	0.000
156.000	-0.000442	-85479.	456.1946	5.085E-05	610.0635	2.936E+10	406.6746	5519376.	0.000
162.000	-0.000189	-75477.	2208.1592	3.440E-05	595.3240	2.936E+10	177.3137	5617032.	0.000
168.000	-2.928E-05	-59072.	2823.7614	2.065E-05	571.1479	2.936E+10	27.8871	5714689.	0.000
174.000	5.840E-05	-41646.	2737.6971	1.036E-05	545.4689	2.936E+10	-56.5752	5812345.	0.000
180.000	9.501E-05	-26247.	2287.2170	3.419E-06	522.7749	2.936E+10	-93.5848	5910001.	0.000
186.000	9.943E-05	-14209.	1707.7897	-7.153E-07	505.0353	2.936E+10	-93.5576	6007657.	0.000
192.000	8.643E-05	-5751.3859	1145.2862	-2.755E-06	492.5717	2.936E+10	-87.9435	6105314.	0.000
198.000	6.637E-05	-458.1796	675.6123	-3.390E-06	484.7715	2.936E+10	-68.6144	6202970.	0.000
204.000	4.575E-05	2364.9497	325.6417	-3.195E-06	487.5814	2.936E+10	-48.0424	6300626.	0.000
210.000	2.803E-05	3457.9165	92.8218	-2.606E-06	489.1921	2.936E+10	-29.5642	6328125.	0.000
216.000	1.455E-05	3485.6435	-41.9172	-1.890E-06	489.2329	2.936E+10	-15.3488	6328125.	0.000
222.000	5.349E-06	2959.8777	-104.8888	-1.231E-06	488.4581	2.936E+10	-5.6418	6328125.	0.000
228.000	-2.247E-07	2230.2138	-121.1033	-7.011E-07	487.3829	2.936E+10	0.2369	6328125.	0.000
234.000	-3.864E-06	1508.4809	-110.6992	-3.190E-07	486.3193	2.936E+10	3.2311	6328125.	0.000
240.000	-4.052E-06	902.6611	-88.1837	-7.258E-08	485.4265	2.936E+10	4.2741	6328125.	0.000
246.000	-3.934E-06	450.4667	-62.9125	6.571E-08	484.7601	2.936E+10	4.1496	6328125.	0.000
252.000	-3.264E-06	147.5379	-40.1361	1.268E-07	484.3137	2.936E+10	3.4425	6328125.	0.000
258.000	-2.413E-06	-31.4999	-22.1748	1.387E-07	484.1427	2.936E+10	2.5446	6328125.	0.000
264.000	-1.600E-06	-118.9243	-9.4789	1.233E-07	484.2715	2.936E+10	1.6874	6328125.	0.000
270.000	-9.330E-07	-145.5711	-1.4648	9.627E-08	484.3108	2.936E+10	0.9840	6328125.	0.000
276.000	-4.446E-07	-136.7545	2.8940	6.742E-08	484.2978	2.936E+10	0.4689	6328125.	0.000
282.000	-1.239E-07	-111.0205	4.6928	4.210E-08	484.2599	2.936E+10	0.1307	6328125.	0.000
288.000	6.061E-08	-80.5517	4.8931	2.252E-08	484.2150	2.936E+10	-0.0639	6328125.	0.000

294.000	1.464E-07	-52.3625	4.2382	8.940E-09	484.1734	2.936E+10	-0.1544	6328125.	0.000
300.000	1.679E-07	-29.7163	3.2439	5.516E-10	484.1401	2.936E+10	-0.1771	6328125.	0.000
306.000	1.530E-07	-13.4366	2.2287	-3.858E-09	484.1161	2.936E+10	-0.1613	6328125.	0.000
312.000	1.216E-07	-2.9616	1.3600	-5.534E-09	484.1006	2.936E+10	-0.1282	6328125.	0.000
318.000	8.656E-08	2.8978	0.7014	-5.541E-09	484.1006	2.936E+10	-0.0913	6328125.	0.000
324.000	5.510E-08	5.4697	0.2532	-4.686E-09	484.1043	2.936E+10	-0.0581	6328125.	0.000
330.000	3.034E-08	5.9482	-0.0171	-3.519E-09	484.1051	2.936E+10	-0.0320	6328125.	0.000
336.000	1.287E-08	5.2733	-0.1538	-2.372E-09	484.1041	2.936E+10	-0.0136	6328125.	0.000
342.000	1.872E-09	4.1083	-0.2005	-1.413E-09	484.1023	2.936E+10	-0.001974	6328125.	0.000
348.000	-4.089E-09	2.8711	-0.1935	-7.000E-10	484.1005	2.936E+10	0.004313	6328125.	0.000
354.000	-6.528E-09	1.7885	-0.1599	-2.238E-10	484.0989	2.936E+10	0.006885	6328125.	0.000
360.000	-6.775E-09	0.9532	-0.1178	5.638E-11	484.0977	2.936E+10	0.007145	6328125.	0.000
366.000	-5.852E-09	0.3748	-0.0778	1.921E-10	484.0968	2.936E+10	0.006172	6328125.	0.000
372.000	-4.469E-09	0.0186	-0.0452	2.323E-10	484.0963	2.936E+10	0.004714	6328125.	0.000
378.000	-3.064E-09	-0.1679	-0.0213	2.170E-10	484.0965	2.936E+10	0.003232	6328125.	0.000
384.000	-1.865E-09	-0.2381	-0.005748	1.755E-10	484.0966	2.936E+10	0.001967	6328125.	0.000
390.000	-9.578E-10	-0.2374	0.003184	1.269E-10	484.0966	2.936E+10	0.001010	6328125.	0.000
396.000	-3.416E-10	-0.2002	0.007295	8.223E-11	484.0966	2.936E+10	0.000360	6328125.	0.000
402.000	2.895E-11	-0.1501	0.008285	4.643E-11	484.0965	2.936E+10	-3.053E-05	6328125.	0.000
408.000	2.155E-10	-0.1009	0.007511	2.078E-11	484.0964	2.936E+10	-0.000227	6328125.	0.000
414.000	2.783E-10	-0.0600	0.005949	4.338E-12	484.0964	2.936E+10	-0.000294	6328125.	0.000
420.000	2.676E-10	-0.0296	0.004221	-4.812E-12	484.0963	2.936E+10	-0.000282	6328125.	0.000
426.000	2.206E-10	-0.009303	0.002677	-8.784E-12	484.0963	2.936E+10	-0.000233	6328125.	0.000
432.000	1.622E-10	0.002583	0.001466	-9.471E-12	484.0963	2.936E+10	-0.000171	6328125.	0.000
438.000	1.069E-10	0.008311	0.000614	-8.357E-12	484.0963	2.936E+10	-0.000113	6328125.	0.000
444.000	6.189E-11	0.009976	8.009E-05	-6.488E-12	484.0963	2.936E+10	-6.527E-05	6328125.	0.000
450.000	2.907E-11	0.009289	-0.000208	-4.520E-12	484.0963	2.936E+10	-3.066E-05	6328125.	0.000
456.000	7.652E-12	0.007495	-0.000324	-2.804E-12	484.0963	2.936E+10	-8.069E-06	6328125.	0.000
462.000	-4.579E-12	0.005409	-0.000334	-1.485E-12	484.0963	2.936E+10	4.829E-06	6328125.	0.000
468.000	-1.017E-11	0.003496	-0.000287	0.000	484.0963	2.936E+10	1.073E-05	6328125.	0.000
474.000	-1.148E-11	0.001968	-0.000218	0.000	484.0963	2.936E+10	1.211E-05	6328125.	0.000
480.000	-1.038E-11	0.000875	-0.000149	0.000	484.0963	2.936E+10	1.095E-05	6328125.	0.000
486.000	-8.201E-12	0.000176	-9.046E-05	0.000	484.0963	2.936E+10	8.649E-06	6328125.	0.000
492.000	-5.808E-12	-0.000212	-4.614E-05	0.000	484.0963	2.936E+10	6.125E-06	6328125.	0.000
498.000	-3.674E-12	-0.000379	-1.614E-05	0.000	484.0963	2.936E+10	3.875E-06	6328125.	0.000
504.000	-2.005E-12	-0.000406	1.831E-06	0.000	484.0963	2.936E+10	2.114E-06	6328125.	0.000
510.000	0.000	-0.000357	1.081E-05	0.000	484.0963	2.936E+10	8.791E-07	6328125.	0.000
516.000	0.000	-0.000277	1.377E-05	0.000	484.0963	2.936E+10	1.060E-07	6328125.	0.000
522.000	0.000	-0.000192	1.316E-05	0.000	484.0963	2.936E+10	-3.091E-07	6328125.	0.000
528.000	0.000	-0.000119	1.080E-05	0.000	484.0963	2.936E+10	-4.753E-07	6328125.	0.000
534.000	0.000	-6.279E-05	7.915E-06	0.000	484.0963	2.936E+10	-4.876E-07	6328125.	0.000
540.000	0.000	-2.407E-05	5.196E-06	0.000	484.0963	2.936E+10	-4.186E-07	6328125.	0.000
546.000	0.000	-4.042E-07	2.985E-06	0.000	484.0963	2.936E+10	-3.185E-07	6328125.	0.000
552.000	0.000	1.179E-05	1.376E-06	0.000	484.0963	2.936E+10	-2.179E-07	6328125.	0.000
558.000	0.000	1.614E-05	3.244E-07	0.000	484.0963	2.936E+10	-1.325E-07	6328125.	0.000
564.000	0.000	1.572E-05	-2.772E-07	0.000	484.0963	2.936E+10	-6.802E-08	6328125.	0.000
570.000	0.000	1.284E-05	-5.529E-07	0.000	484.0963	2.936E+10	-2.385E-08	6328125.	0.000
576.000	0.000	9.096E-06	-6.133E-07	0.000	484.0963	2.936E+10	3.713E-09	6328125.	0.000
582.000	0.000	5.486E-06	-5.436E-07	0.000	484.0963	2.936E+10	1.951E-08	6328125.	0.000
588.000	0.000	2.578E-06	-4.004E-07	0.000	484.0963	2.936E+10	2.822E-08	6328125.	0.000
594.000	0.000	6.844E-07	-2.150E-07	0.000	484.0963	2.936E+10	3.359E-08	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	3.807E-08	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0043557 radians
Maximum bending moment = 1631177. inch-lbs
Maximum shear force = 58125. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	79767.	-0.007713	484.0963	2.936E+10	-1289.3692	7736.2153	0.000
6.000	0.4537	465527.	72470.	-0.007665	1170.1232	2.936E+10	-1143.0376	15115.	0.000
12.000	0.4080	889779.	65425.	-0.007527	1795.3258	2.936E+10	-1205.0858	17721.	0.000
18.000	0.3634	1270410.	57689.	-0.007306	2356.2444	2.936E+10	-1373.5971	22679.	0.000
24.000	0.3203	1601250.	49456.	-0.007013	2843.7887	2.936E+10	-1370.6737	25673.	0.000
30.000	0.2792	1882315.	41256.	-0.006657	3257.9827	2.936E+10	-1362.7962	29281.	0.000
36.000	0.2405	2113814.	33118.	-0.006248	3599.1332	2.936E+10	-1349.7508	33679.	0.000
42.000	0.2043	2296155.	25075.	-0.005798	3867.8405	2.936E+10	-1331.2975	39104.	0.000
48.000	0.1709	2429952.	17160.	-0.005315	4065.0116	2.936E+10	-1307.1600	45895.	0.000
54.000	0.1405	2516039.	9407.2491	-0.004809	4191.8740	2.936E+10	-1277.0106	54537.	0.000
60.000	0.1132	2555477.	1854.8790	-0.004291	4249.9930	2.936E+10	-1240.4461	65759.	0.000
66.000	0.0890	2549574.	-5457.3017	-0.003769	4241.2929	2.936E+10	-1196.9475	80690.	0.000
72.000	0.0680	2499895.	-12486.	-0.003253	4160.0838	2.936E+10	-1145.8087	101173.	0.000
78.000	0.0500	2408296.	-19181.	-0.002752	4033.0982	2.936E+10	-1086.0007	130410.	0.000
84.000	0.0349	2276954.	-25487.	-0.002273	3839.5453	2.936E+10	-1015.8876	174485.	0.000
90.000	0.0227	2108429.	-31332.	-0.001825	3591.1967	2.936E+10	-932.5488	246564.	0.000
96.000	0.0130	1905765.	-36619.	-0.001414	3292.5404	2.936E+10	-829.8104	381855.	0.000
102.000	0.005721	1672717.	-41179.	-0.001049	2949.1070	2.936E+10	-690.0775	723690.	0.000
108.000	0.000455	1414376.	-44328.	-0.000733	2568.4018	2.936E+10	-359.5799	4738126.	0.000
114.000	-0.003076	1142711.	-43562.	-0.000472	2168.0606	2.936E+10	614.8336	1199236.	0.000
120.000	-0.005206	892873.	-39570.	-0.000264	1799.8850	2.936E+10	715.6821	824798.	0.000
126.000	-0.006241	668560.	-35132.	-0.000104	1469.3242	2.936E+10	763.7289	734192.	0.000
132.000	-0.006457	471561.	-30486.	1.232E-05	1179.0159	2.936E+10	785.1437	729615.	0.000
138.000	-0.006094	302701.	-25765.	9.144E-05	930.1740	2.936E+10	788.5224	776410.	0.000
144.000	-0.005359	162147.	-21066.	0.000139	723.0448	2.936E+10	777.7647	870738.	0.000
150.000	-0.004426	49548.	-16468.	0.000161	557.1131	2.936E+10	754.8874	1023288.	0.000

156.000	-0.003432	-35888.	-12040.	0.000162	536.9827	2.936E+10	720.9411	1260247.	0.000
162.000	-0.002483	-95360.	-7848.3830	0.000149	624.6247	2.936E+10	676.3397	1634640.	0.000
168.000	-0.001650	-130459.	-3956.7026	0.000125	676.3479	2.936E+10	620.8871	2258296.	0.000
174.000	-0.000977	-143171.	-433.8120	9.752E-05	695.0805	2.936E+10	553.4097	3399687.	0.000
180.000	-0.000479	-135921.	2636.7258	6.990E-05	684.3971	2.936E+10	470.1029	5884256.	0.000
186.000	-0.000149	-111711.	4493.6743	4.369E-05	648.7202	2.936E+10	148.8800	6007657.	0.000
192.000	4.497E-05	-82112.	4803.0268	2.389E-05	605.1007	2.936E+10	-45.7625	6105314.	0.000
198.000	0.000138	-54138.	4237.9229	9.962E-06	563.8765	2.936E+10	-142.6055	6202970.	0.000
204.000	0.000165	-31283.	3291.8356	1.232E-06	530.1964	2.936E+10	-172.7569	6300626.	0.000
210.000	0.000153	-14639.	2290.3320	-3.461E-06	505.6689	2.936E+10	-161.0776	6328125.	0.000
216.000	0.000123	-3789.6928	1417.9681	-5.344E-06	489.6810	2.936E+10	-129.7103	6328125.	0.000
222.000	8.860E-05	2390.8607	748.5128	-5.487E-06	487.6196	2.936E+10	-93.4414	6328125.	0.000
228.000	5.714E-05	5206.8803	287.3938	-4.711E-06	491.7694	2.936E+10	-60.2649	6328125.	0.000
234.000	3.207E-05	5851.9652	5.1301	-3.580E-06	492.7201	2.936E+10	-33.8230	6328125.	0.000
240.000	1.417E-05	5277.8510	-141.1891	-2.443E-06	491.8740	2.936E+10	-14.9501	6328125.	0.000
246.000	2.753E-06	4164.1169	-194.7500	-1.478E-06	490.2328	2.936E+10	-2.9036	6328125.	0.000
252.000	-3.562E-06	2944.7358	-192.1896	-7.516E-07	488.4358	2.936E+10	3.7570	6328125.	0.000
258.000	-6.266E-06	1859.8165	-161.0920	-2.606E-07	486.8370	2.936E+10	6.6089	6328125.	0.000
264.000	-6.689E-06	1012.3164	-120.0999	3.292E-08	485.5881	2.936E+10	7.0552	6328125.	0.000
270.000	-5.871E-06	418.5310	-80.3570	1.791E-07	484.7131	2.936E+10	6.1922	6328125.	0.000
276.000	-4.540E-06	47.5514	-47.4178	2.268E-07	484.1664	2.936E+10	4.7878	6328125.	0.000
282.000	-3.150E-06	-151.0790	-23.0884	2.162E-07	484.3189	2.936E+10	3.3220	6328125.	0.000
288.000	-1.945E-06	-230.0773	-6.9678	1.772E-07	484.4353	2.936E+10	2.0516	6328125.	0.000
294.000	-1.023E-06	-235.1579	2.4230	1.297E-07	484.4428	2.936E+10	1.0787	6328125.	0.000
300.000	-3.887E-07	-201.3422	6.8891	8.509E-08	484.3930	2.936E+10	0.4100	6328125.	0.000
306.000	-1.631E-09	-152.7125	8.1242	4.891E-08	484.3213	2.936E+10	0.001720	6328125.	0.000
312.000	1.982E-07	-103.9798	7.5023	2.268E-08	484.2495	2.936E+10	-0.2090	6328125.	0.000
318.000	2.705E-07	-62.7446	6.0192	5.641E-09	484.1931	2.936E+10	-0.2853	6328125.	0.000
324.000	2.659E-07	-31.7638	4.3220	-4.018E-09	484.1431	2.936E+10	-0.2804	6328125.	0.000
330.000	2.223E-07	-10.8698	2.7774	-8.375E-09	484.1123	2.936E+10	-0.2345	6328125.	0.000
336.000	1.654E-07	1.5865	1.5507	-9.323E-09	484.0986	2.936E+10	-0.1744	6328125.	0.000
342.000	1.104E-07	7.7627	0.6780	-8.368E-09	484.1077	2.936E+10	-0.1165	6328125.	0.000
348.000	6.497E-08	9.7441	0.1230	-6.579E-09	484.1106	2.936E+10	-0.0685	6328125.	0.000
354.000	3.148E-08	9.2559	-0.1822	-4.637E-09	484.1099	2.936E+10	-0.0332	6328125.	0.000
360.000	9.329E-09	7.5702	-0.3113	-2.918E-09	484.1074	2.936E+10	-0.009838	6328125.	0.000
366.000	-3.535E-09	5.5281	-0.3296	-1.579E-09	484.1044	2.936E+10	0.003728	6328125.	0.000
372.000	-9.619E-09	3.6188	-0.2880	-6.442E-10	484.1016	2.936E+10	0.0101	6328125.	0.000
378.000	-1.127E-08	2.0737	-0.2219	-6.256E-11	484.0997	2.936E+10	0.0113	6328125.	0.000
384.000	-1.037E-08	0.9559	-0.1535	2.471E-10	484.0977	2.936E+10	0.0109	6328125.	0.000
390.000	-8.300E-09	0.2314	-0.0944	3.685E-10	484.0966	2.936E+10	0.008754	6328125.	0.000
396.000	-5.948E-09	-0.1779	-0.0493	3.739E-10	484.0965	2.936E+10	0.006273	6328125.	0.000
402.000	-3.813E-09	-0.3614	-0.0184	3.188E-10	484.0963	2.936E+10	0.004027	6328125.	0.000
408.000	-2.122E-09	-0.4000	0.000342	2.410E-10	484.0969	2.936E+10	0.002238	6328125.	0.000
414.000	-9.212E-10	-0.3579	0.009971	1.635E-10	484.0968	2.936E+10	0.000972	6328125.	0.000
420.000	-1.594E-10	-0.2888	0.0134	9.827E-11	484.0967	2.936E+10	0.000168	6328125.	0.000
426.000	2.580E-10	-0.1975	0.0131	4.939E-11	484.0966	2.936E+10	-0.000272	6328125.	0.000
432.000	4.332E-10	-0.1240	0.0109	1.654E-11	484.0965	2.936E+10	-0.000457	6328125.	0.000
438.000	4.565E-10	-0.0668	0.008076	-2.961E-12	484.0964	2.936E+10	-0.000481	6328125.	0.000
444.000	3.977E-10	-0.0270	0.005374	-1.256E-11	484.0963	2.936E+10	-0.000411	6328125.	0.000
450.000	3.058E-10	-0.002329	0.003148	-1.556E-11	484.0963	2.936E+10	-0.000323	6328125.	0.000
456.000	2.110E-10	0.0108	0.001512	-1.469E-11	484.0963	2.936E+10	-0.000223	6328125.	0.000
462.000	1.295E-10	0.0159	0.000435	-1.197E-11	484.0963	2.936E+10	-0.000137	6328125.	0.000
468.000	6.737E-11	0.0160	-0.000188	-8.714E-12	484.0963	2.936E+10	-7.106E-05	6328125.	0.000
474.000	2.491E-11	0.0136	-0.000480	-5.684E-12	484.0963	2.936E+10	-2.628E-05	6328125.	0.000
480.000	0.000	0.0103	-0.000556	-3.241E-12	484.0963	2.936E+10	8.834E-07	6328125.	0.000
486.000	-1.398E-11	0.000960	-0.000509	-1.480E-12	484.0963	2.936E+10	1.475E-05	6328125.	0.000
492.000	-1.860E-11	0.004171	-0.000406	0.000	484.0963	2.936E+10	1.961E-05	6328125.	0.000
498.000	-1.809E-11	0.002087	-0.000290	0.000	484.0963	2.936E+10	1.908E-05	6328125.	0.000
504.000	-1.503E-11	0.000689	-0.000185	0.000	484.0963	2.936E+10	1.585E-05	6328125.	0.000
510.000	-1.112E-11	-0.000138	-0.000103	0.000	484.0963	2.936E+10	1.173E-05	6328125.	0.000
516.000	-7.384E-12	-0.000543	-4.400E-05	0.000	484.0963	2.936E+10	7.787E-06	6328125.	0.000
522.000	-4.312E-12	-0.000668	-6.993E-06	0.000	484.0963	2.936E+10	4.548E-06	6328125.	0.000
528.000	-2.060E-12	-0.000628	1.317E-05	0.000	484.0963	2.936E+10	2.172E-06	6328125.	0.000
534.000	0.000	-0.000511	2.151E-05	0.000	484.0963	2.936E+10	6.095E-07	6328125.	0.000
540.000	0.000	-0.000371	2.246E-05	0.000	484.0963	2.936E+10	-2.929E-07	6328125.	0.000
546.000	0.000	-0.000241	1.944E-05	0.000	484.0963	2.936E+10	-7.157E-07	6328125.	0.000
552.000	0.000	-0.000138	1.485E-05	0.000	484.0963	2.936E+10	-8.264E-07	6328125.	0.000
558.000	0.000	-6.361E-05	1.006E-05	0.000	484.0963	2.936E+10	-7.591E-07	6328125.	0.000
564.000	0.000	-1.692E-05	5.950E-06	0.000	484.0963	2.936E+10	-6.095E-07	6328125.	0.000
570.000	0.000	7.848E-06	2.807E-06	0.000	484.0963	2.936E+10	-4.380E-07	6328125.	0.000
576.000	0.000	1.684E-05	6.634E-07	0.000	484.0963	2.936E+10	-2.767E-07	6328125.	0.000
582.000	0.000	1.587E-05	-5.779E-07	0.000	484.0963	2.936E+10	-1.371E-07	6328125.	0.000
588.000	0.000	9.960E-06	-1.043E-06	0.000	484.0963	2.936E+10	-1.808E-08	6328125.	0.000
594.000	0.000	3.395E-06	-8.336E-07	0.000	484.0963	2.936E+10	8.806E-08	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	1.898E-07	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection              =      0.5000000 inches
Computed slope at pile head       =     -0.0077130 radians
Maximum bending moment            =       2555477. inch-lbs
Maximum shear force               =          79767. lbs
Depth of maximum bending moment   =     60.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             14
Number of zero deflection points  =              9
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 219000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	109368.	-0.0136	484.0963	2.936E+10	-1533.3270	4599.9811	0.000
6.000	0.9181	646536.	100679.	-0.0136	1436.8683	2.936E+10	-1363.3003	8909.0166	0.000
12.000	0.8371	1243819.	92262.	-0.0134	2317.0592	2.936E+10	-1442.2565	10338.	0.000

18.000	0.7576	1788847.	82984.	-0.0131	3120.2436	2.936E+10	-1650.5096	13072.	0.000
24.000	0.6802	2273977.	73068.	-0.0127	3835.1579	2.936E+10	-1654.6040	14595.	0.000
30.000	0.6057	2698930.	63143.	-0.0121	4461.3926	2.936E+10	-1653.8416	16384.	0.000
36.000	0.5344	3063619.	53237.	-0.0116	4998.8202	2.936E+10	-1648.0350	18502.	0.000
42.000	0.4669	3368157.	43382.	-0.0109	5447.6043	2.936E+10	-1636.9816	21034.	0.000
48.000	0.4036	3612859.	33610.	-0.0102	5808.2107	2.936E+10	-1620.4584	24091.	0.000
54.000	0.3447	3798254.	23954.	-0.009432	6081.4193	2.936E+10	-1598.2154	27822.	0.000
60.000	0.2904	3925093.	14449.	-0.008643	6268.3367	2.936E+10	-1569.9655	32437.	0.000
66.000	0.2410	3994359.	5133.2899	-0.007834	6370.4113	2.936E+10	-1535.3697	38233.	0.000
72.000	0.1964	4007279.	-3954.8605	-0.007016	6389.4511	2.936E+10	-1494.0138	45643.	0.000
78.000	0.1568	3965339.	-12773.	-0.006201	6327.6451	2.936E+10	-1445.3702	55322.	0.000
84.000	0.1220	3870300.	-21275.	-0.005400	6187.5904	2.936E+10	-1388.7333	68308.	0.000
90.000	0.0920	3724227.	-29411.	-0.004624	5972.3293	2.936E+10	-1323.1003	86332.	0.000
96.000	0.0665	3529523.	-37121.	-0.003883	5685.4016	2.936E+10	-1246.9347	112518.	0.000
102.000	0.0454	3288981.	-44335.	-0.003186	5330.9250	2.936E+10	-1157.6443	153132.	0.000
108.000	0.0283	3005880.	-50958.	-0.002543	4913.7318	2.936E+10	-1050.2271	222991.	0.000
114.000	0.0148	2684164.	-56847.	-0.001961	4439.6327	2.936E+10	-912.7351	368921.	0.000
120.000	0.004722	2328868.	-61685.	-0.001449	3916.0491	2.936E+10	-700.0105	889447.	0.000
126.000	-0.002544	1947747.	-61958.	-0.001012	3354.4071	2.936E+10	609.0835	1436408.	0.000
132.000	-0.007422	1588030.	-57692.	-0.000651	2824.3071	2.936E+10	812.9051	657169.	0.000
138.000	-0.0104	1257150.	-52552.	-0.000360	2336.7045	2.936E+10	900.4953	521920.	0.000
144.000	-0.0117	958351.	-47010.	-0.000133	1896.3771	2.936E+10	946.7428	483829.	0.000
150.000	-0.0120	693377.	-41265.	3.532E-05	1505.8968	2.936E+10	968.5007	486119.	0.000
156.000	-0.0113	463084.	-35441.	0.000154	1166.5225	2.936E+10	972.5548	515634.	0.000
162.000	-0.0101	267677.	-29637.	0.000228	878.5606	2.936E+10	962.2930	570990.	0.000
168.000	-0.008579	106841.	-23931.	0.000266	641.5440	2.936E+10	939.5788	657155.	0.000
174.000	-0.006914	-20198.	-18396.	0.000275	513.8613	2.936E+10	905.4477	785712.	0.000
180.000	-0.005275	-114636.	-13135.	0.000262	653.6305	2.936E+10	860.3903	978069.	0.000
186.000	-0.003776	-178069.	-8104.1890	0.000232	746.5092	2.936E+10	804.4316	1278244.	0.000
192.000	-0.002495	-212495.	-3479.8310	0.000192	797.2410	2.936E+10	737.0210	1772093.	0.000
198.000	-0.001475	-220331.	709.8150	0.000147	800.7886	2.936E+10	656.5277	2669739.	0.000
204.000	-0.000726	-204473.	4345.3186	0.000104	785.4190	2.936E+10	558.3069	4615688.	0.000
210.000	-0.000227	-168461.	6737.7511	6.595E-05	732.3495	2.936E+10	239.1706	6328125.	0.000
216.000	6.562E-05	-123793.	7247.6305	3.608E-05	666.5248	2.936E+10	-69.2108	6328125.	0.000
222.000	0.000206	-81584.	6387.5671	1.509E-05	604.3230	2.936E+10	-217.4770	6328125.	0.000
228.000	0.000247	-47182.	4954.4707	1.933E-06	553.6263	2.936E+10	-260.2218	6328125.	0.000
234.000	0.000229	-22135.	3447.9824	-5.151E-06	516.7162	2.936E+10	-241.9410	6328125.	0.000
240.000	0.000185	-5792.4359	2137.1893	-8.809E-06	492.9326	2.936E+10	-195.0301	6328125.	0.000
246.000	0.000133	3530.5349	1130.0983	-8.236E-06	489.2991	2.936E+10	-140.6269	6328125.	0.000
252.000	8.608E-05	7790.1880	435.8468	-7.079E-06	495.5763	2.936E+10	-90.7902	6328125.	0.000
258.000	4.838E-05	8779.3008	10.3879	-5.386E-06	497.0340	2.936E+10	-51.0294	6328125.	0.000
264.000	1.943E-05	7928.9969	-210.5719	-3.676E-06	495.7809	2.936E+10	-22.6238	6328125.	0.000
270.000	4.242E-06	6262.1051	-291.8646	-2.228E-06	493.3245	2.936E+10	-4.4737	6328125.	0.000
276.000	-5.288E-06	4432.4779	-288.5549	-1.135E-06	490.6282	2.936E+10	5.5769	6328125.	0.000
282.000	-9.382E-06	2802.4304	-242.1402	-3.959E-07	488.2261	2.936E+10	9.9946	6328125.	0.000
288.000	-1.004E-05	1527.8358	-180.6937	4.663E-08	486.3478	2.936E+10	10.5876	6328125.	0.000
294.000	-8.822E-06	633.9830	-121.0179	2.676E-07	485.0306	2.936E+10	9.3044	6328125.	0.000
300.000	-6.828E-06	74.9183	-71.5009	3.400E-07	484.2067	2.936E+10	7.2012	6328125.	0.000
306.000	-4.741E-06	-224.2017	-34.0936	3.247E-07	483.7277	2.936E+10	5.0012	6328125.	0.000
312.000	-2.932E-06	-344.6587	-10.6140	2.665E-07	484.6042	2.936E+10	3.0920	6328125.	0.000
318.000	-1.544E-06	-352.9895	3.5482	1.952E-07	484.6165	2.936E+10	1.6287	6328125.	0.000
324.000	-5.896E-07	-302.5929	10.2999	1.282E-07	484.5422	2.936E+10	0.6219	6328125.	0.000
330.000	-6.136E-09	-229.7270	12.1859	7.377E-08	484.4348	2.936E+10	0.000468	6328125.	0.000
336.000	2.957E-07	-156.5666	11.2690	3.430E-08	484.3270	2.936E+10	-0.3118	6328125.	0.000
342.000	4.054E-07	-94.5896	9.8507	8.630E-09	484.2357	2.936E+10	-0.4276	6328125.	0.000
348.000	3.992E-07	-47.9811	6.5047	-5.940E-09	484.1670	2.936E+10	-0.4210	6328125.	0.000
354.000	3.342E-07	-16.5174	4.1843	-1.253E-08	484.1206	2.936E+10	-0.3524	6328125.	0.000
360.000	2.488E-07	2.2632	2.3397	-1.399E-08	484.0996	2.936E+10	-0.2624	6328125.	0.000
366.000	1.663E-07	11.5951	1.0261	-1.257E-08	484.1134	2.936E+10	-0.1754	6328125.	0.000
372.000	9.798E-08	14.6098	0.1899	-9.901E-09	484.1178	2.936E+10	-0.1033	6328125.	0.000
378.000	4.757E-08	13.9004	-0.2706	-6.980E-09	484.1168	2.936E+10	-0.0502	6328125.	0.000
384.000	1.422E-08	11.3810	-0.4661	-4.397E-09	484.1131	2.936E+10	-0.0150	6328125.	0.000
390.000	5.184E-09	8.3187	-0.4947	-2.380E-09	484.1085	2.936E+10	0.005468	6328125.	0.000
396.000	-1.438E-08	5.4510	-0.4328	-9.761E-10	484.1043	2.936E+10	0.0152	6328125.	0.000
402.000	-1.690E-08	3.1280	-0.3338	-9.936E-11	484.1009	2.936E+10	0.0178	6328125.	0.000
408.000	-1.558E-08	1.4457	-0.2311	3.680E-10	484.0984	2.936E+10	0.0164	6328125.	0.000
414.000	-1.248E-08	0.3543	-0.1423	5.520E-10	484.0968	2.936E+10	0.0132	6328125.	0.000
420.000	-8.951E-09	-0.2632	-0.0745	5.613E-10	484.0967	2.936E+10	0.009441	6328125.	0.000
426.000	-5.745E-09	-0.5408	-0.0280	4.791E-10	484.0971	2.936E+10	0.006059	6328125.	0.000
432.000	-3.202E-09	-0.6001	0.000495	3.525E-10	484.0972	2.936E+10	0.003377	6328125.	0.000
438.000	-1.394E-09	-0.5377	0.0149	2.463E-10	484.0971	2.936E+10	0.001471	6328125.	0.000
444.000	-2.466E-10	-0.4223	0.0201	1.481E-10	484.0969	2.936E+10	0.000260	6328125.	0.000
450.000	3.834E-10	-0.2973	0.0196	7.461E-11	484.0967	2.936E+10	-0.000404	6328125.	0.000
456.000	6.487E-10	-0.1868	0.0164	2.941E-11	484.0966	2.936E+10	-0.000684	6328125.	0.000
462.000	6.851E-10	-0.1009	0.0122	-4.259E-12	484.0964	2.936E+10	-0.000723	6328125.	0.000
468.000	5.976E-10	-0.0410	0.008093	-1.876E-11	484.0963	2.936E+10	-0.000630	6328125.	0.000
474.000	4.600E-10	-0.003731	0.004747	-2.333E-11	484.0963	2.936E+10	-0.000485	6328125.	0.000
480.000	3.177E-10	0.0160	0.002286	-2.207E-11	484.0963	2.936E+10	-0.000335	6328125.	0.000
486.000	1.952E-10	0.0238	0.000663	-1.800E-11	484.0963	2.936E+10	-0.000206	6328125.	0.000
492.000	1.017E-10	0.0241	-0.000276	-1.311E-11	484.0963	2.936E+10	-0.000107	6328125.	0.000
498.000	3.788E-11	0.0205	-0.000718	-8.562E-12	484.0963	2.936E+10	-3.987E-05	6328125.	0.000
504.000	-1.013E-12	0.0155	-0.000834	-4.890E-12	484.0963	2.936E+10	1.068E-06	6328125.	0.000
510.000	-2.087E-11	0.0105	-0.000765	-2.238E-12	484.0963	2.936E+10	2.201E-05	6328125.	0.000
516.000	-2.787E-11	0.006288	-0.000611	0.000	484.0963	2.936E+10	2.940E-05	6328125.	0.000
522.000	-2.717E-11	0.003153	-0.000437	0.000	484.0963	2.936E+10	2.865E-05	6328125.	0.000
528.000	-2.259E-11	0.001048	-0.000279	0.000	484.0963	2.936E+10	2.383E-05	6328125.	0.000
534.000	-1.673E-11	-0.000199	-0.000155	0.000	484.0963	2.936E+10	1.765E-05	6328125.	0.000
540.000	-1.112E-11	-0.000811	-6.657E-05	0.000	484.0963	2.936E+10	1.173E-05	6328125.	0.000
546.000	-6.500E-12	-0.001000	-1.082E-05	0.000	484.0963	2.936E+10	6.855E-06	6328125.	0.000
552.000	-3.106E-12	-0.000942	1.958E-05	0.000	484.0963	2.936E+10	3.276E-06	6328125.	0.000
558.000	0.000	-0.000767	3.215E-05	0.000	484.0963	2.936E+10	9.164E-07	6328125.	0.000
564.000	0.000	-0.000557	3.355E-05	0.000	484.0963	2.936E+10	-4.521E-07	6328125.	0.000
570.000	1.043E-12	-0.000364	2.889E-05	0.000	484.0963	2.936E+10	-1.100E-06	6328125.	0.000
576.000	1.210E-12	-0.000211	2.177E-05	0.000	484.0963	2.936E+10	-1.276E-06	6328125.	0.000
582.000	1.118E-12	-0.000103	1.449E-05	0.000	484.0963	2.936E+10	-1.179E-06	6328125.	0.000
588.000	0.000	-3.799E-05	8.015E-06	0.000	484.0963	2.936E+10	-9.493E-07	6328125.	0.000
594.000	0.000	-6.936E-06	3.156E-06	0.000	484.0963	2.936E+10	-6.701E-07	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	484.0963	2.936E+10	-3.820E-07	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection              =      1.0000000 inches
Computed slope at pile head       =     -0.0136419 radians
Maximum bending moment            =       4007279. inch-lbs
Maximum shear force               =          109368. lbs
Depth of maximum bending moment   =     72.0000000 inches below pile head
```

Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 23
Number of zero deflection points = 8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

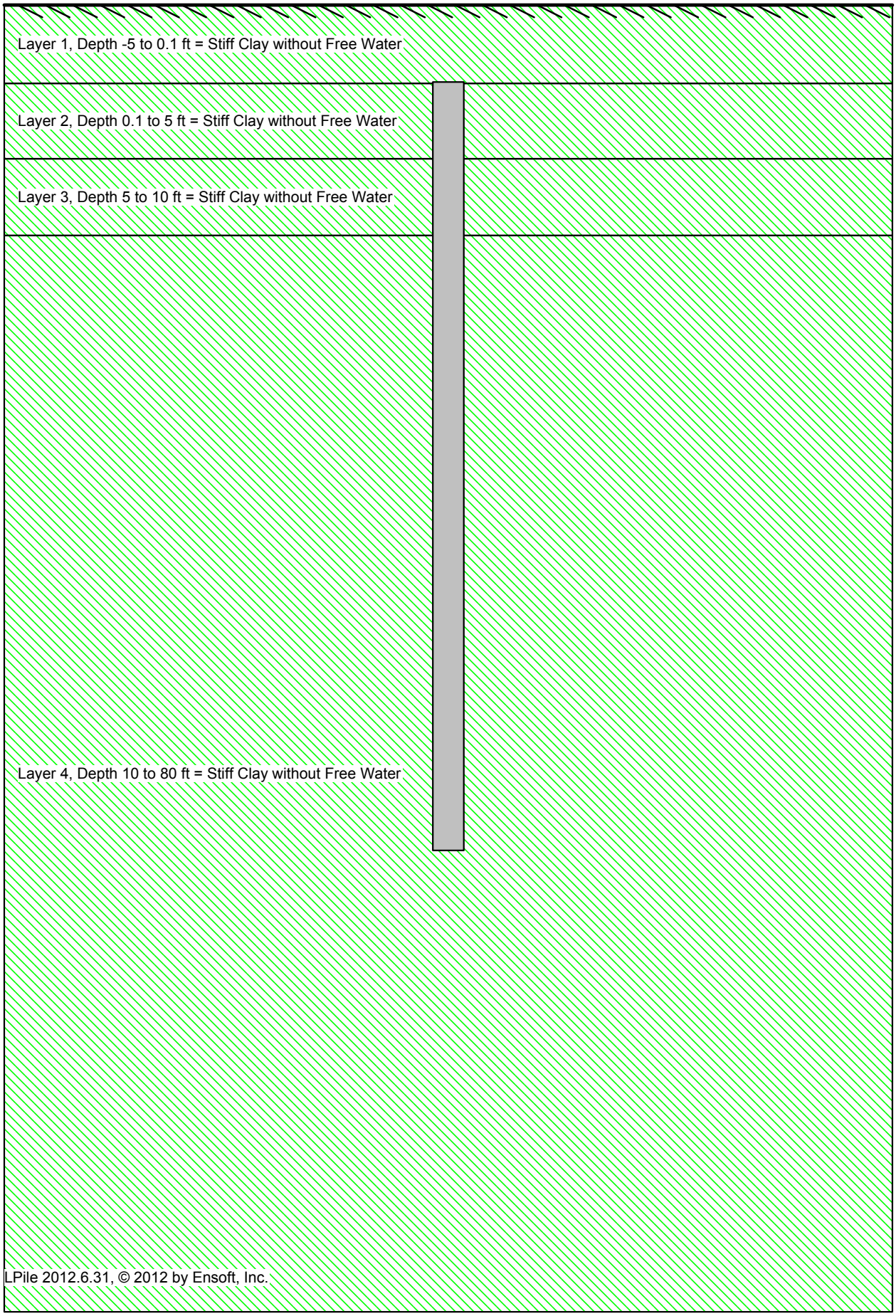
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	219000.	0.25000000	1631177.	58125.	-0.00435568
2	4	y = 0.5000	M = 0.000	219000.	0.50000000	2555477.	79767.	-0.00771297
3	4	y = 1.0000	M = 0.000	219000.	1.00000000	4007279.	109368.	-0.01364189

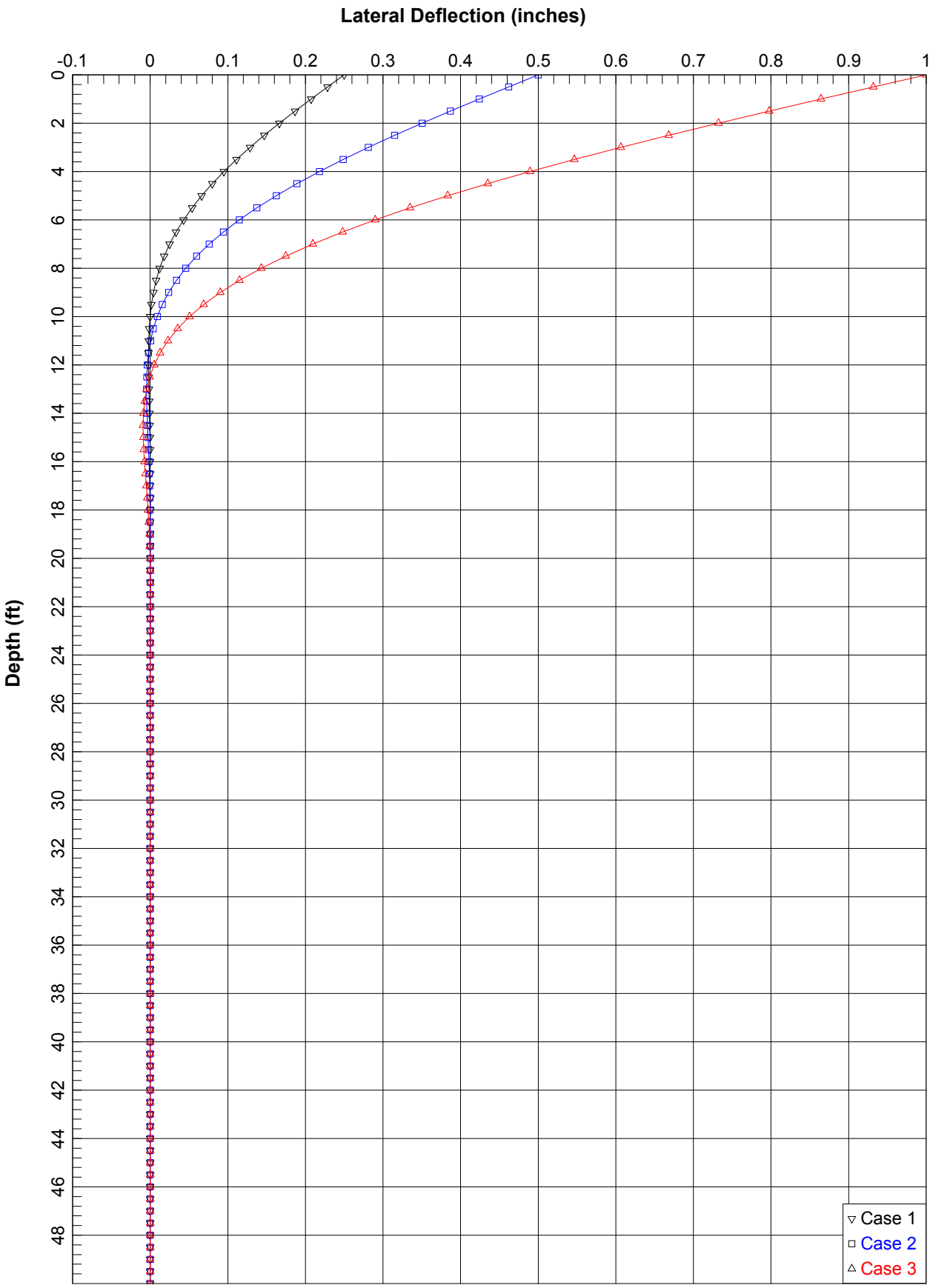
The analysis ended normally.

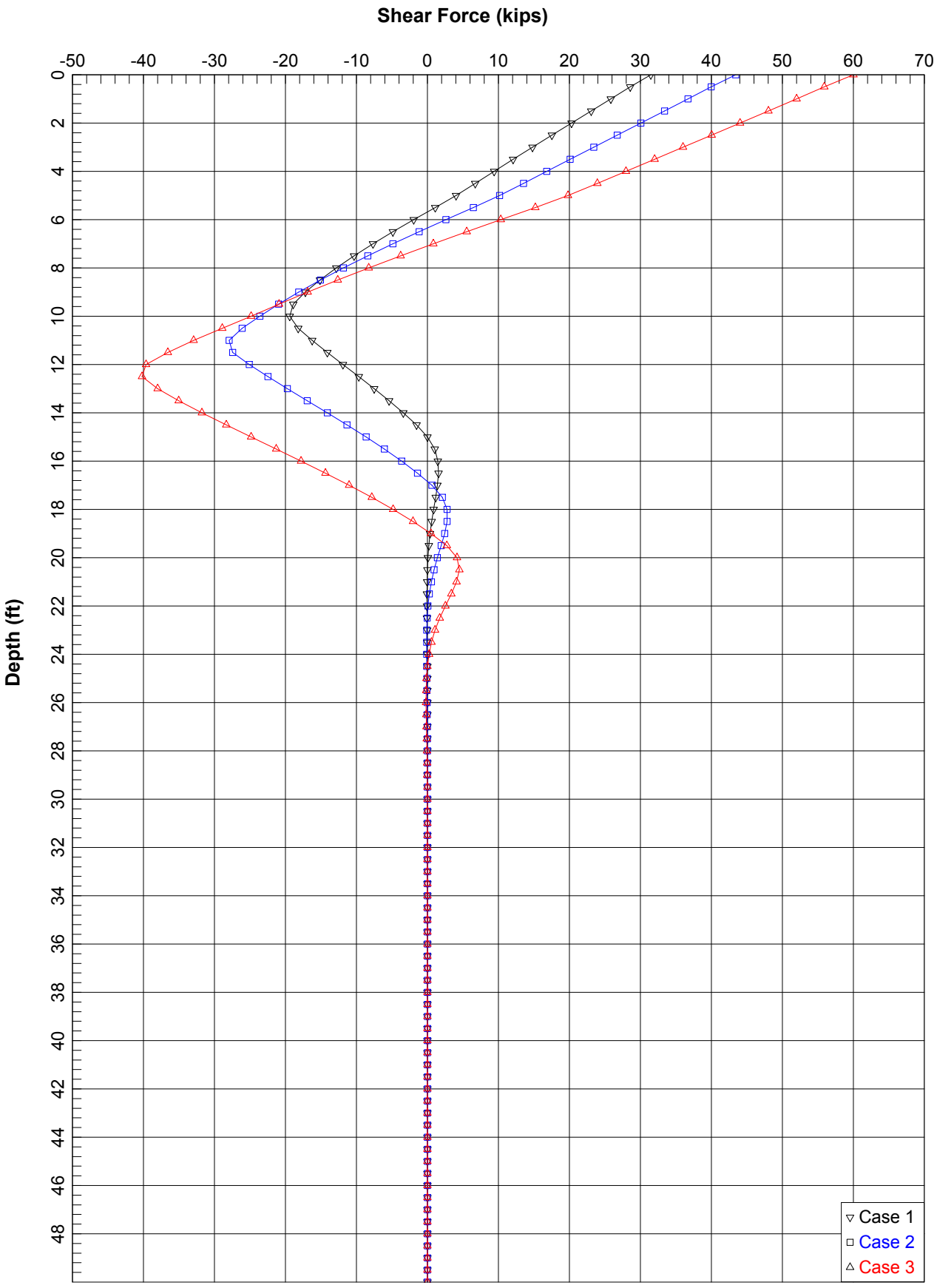
SUPPORT: **BENT 3R**

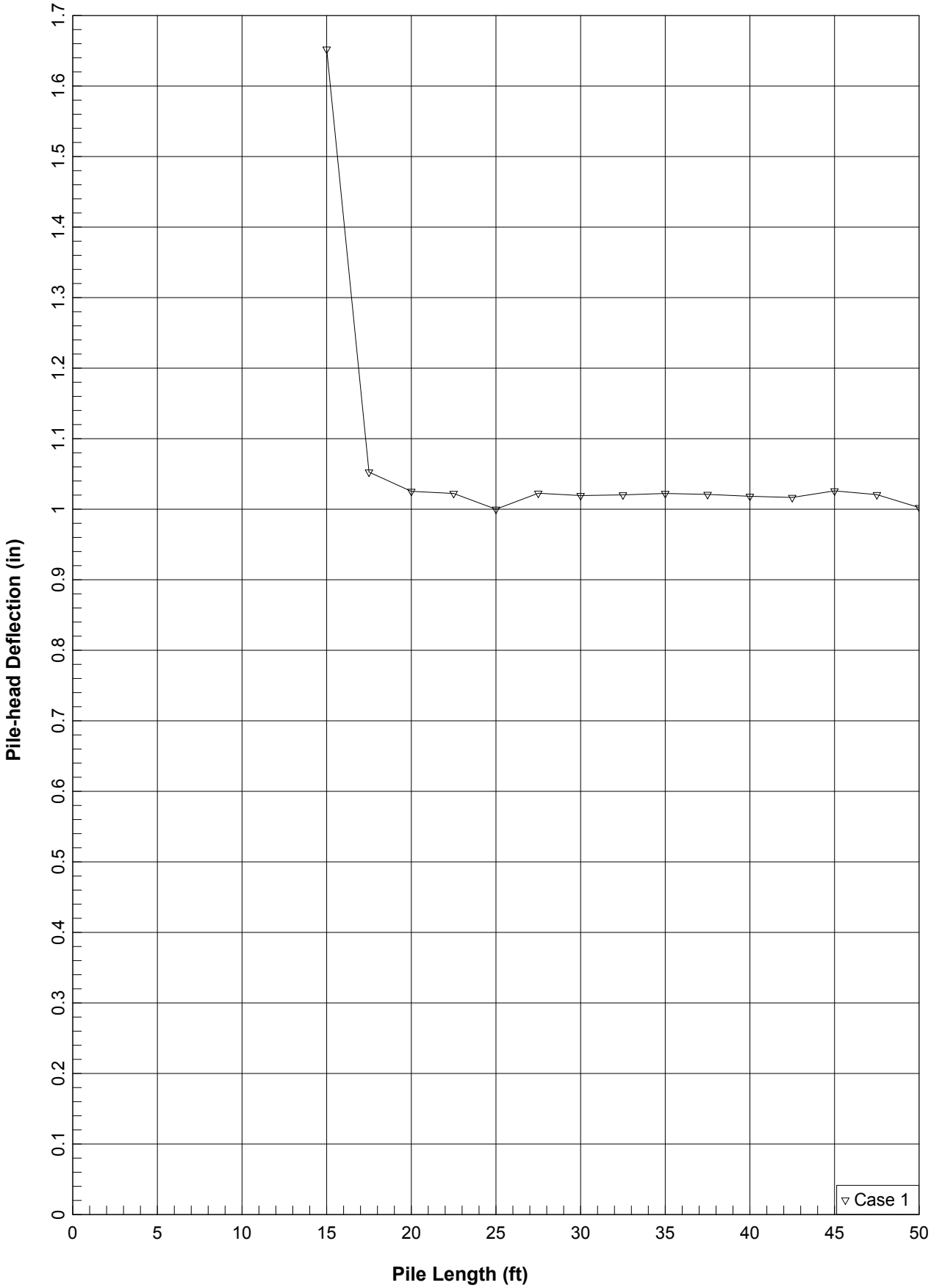
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 5 ft = Stiff Clay without Free Water
Layer 3, Depth 5 to 10 ft = Stiff Clay without Free Water
Layer 4, Depth 10 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

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gdc
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Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3R_long_Crit length.lp6d
Name of output report file: Bent 3R_long_Crit length.lp6o
Name of plot output file: Bent 3R_long_Crit length.lp6p
Name of runtime messeage file: Bent 3R_long_Crit length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:41:06

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	kpy pci	Rock Emass psi	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of In-situ Friction Test deg.	Elastic In-situ Test Subgrade	qu psi	Uniaxial Type	RQD % or Property	GSI	Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	-5.000	120.000	3250.000	--	--	--	--	--	--	0.00700
		--	--	--	0.10000	120.000	3250.000	--	--	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	0.10000	120.000	2750.000	--	--	--	--	--	--	0.00700
		--	--	--	5.000	120.000	2750.000	--	--	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	5.000	120.000	3750.000	--	--	--	--	--	--	0.00700
		--	--	--	10.000	120.000	3750.000	--	--	--	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	--	--	10.000	125.000	4500.000	--	--	--	--	--	--	0.00500
		--	--	--	80.000	125.000	4500.000	--	--	--	--	--	--	

0.00500 -- -- -- -- -- -- --

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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
1	1	V = 60000. lbs	M = 0.0000 in-lbs	226000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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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 = 60000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0024	-3.621E-07	60000.	-0.0114	499.5697	2.936E+10	-716.5499	2144.5798	0.000
6.000	0.9342	362502.	55906.	-0.0113	1033.7730	2.936E+10	-648.1341	4162.6051	0.000
12.000	0.8665	701570.	51995.	-0.0112	1533.4437	2.936E+10	-655.4154	4538.2179	0.000
18.000	0.7997	1016849.	48045.	-0.0110	1998.0569	2.936E+10	-661.3657	4962.1508	0.000
24.000	0.7341	1308038.	44063.	-0.0108	2427.1683	2.936E+10	-665.9365	5442.8515	0.000
30.000	0.6701	1574890.	40058.	-0.0105	2820.4165	2.936E+10	-669.0771	5990.6656	0.000
36.000	0.6081	1817218.	36039.	-0.0102	3177.5258	2.936E+10	-670.7348	6618.3677	0.000
42.000	0.5482	2034897.	32014.	-0.009763	3498.3092	2.936E+10	-670.8540	7341.8724	0.000
48.000	0.4909	2227861.	27993.	-0.009327	3782.6717	2.936E+10	-669.3763	8181.1976	0.000
54.000	0.4363	2396109.	23986.	-0.008855	4030.6127	2.936E+10	-666.2396	9161.7866	0.000
60.000	0.3847	2539709.	19834.	-0.008350	4242.2300	2.936E+10	-717.6928	11195.	0.000
66.000	0.3361	2656769.	15239.	-0.007819	4414.7352	2.936E+10	-814.2144	14535.	0.000
72.000	0.2908	2743780.	10382.	-0.007267	4542.9598	2.936E+10	-804.5774	16599.	0.000
78.000	0.2489	2801066.	5591.3578	-0.006701	4627.3797	2.936E+10	-792.4281	19102.	0.000
84.000	0.2104	2829048.	881.1640	-0.006125	4668.6159	2.936E+10	-777.6365	22174.	0.000
90.000	0.1754	2828251.	-3731.8888	-0.005547	4667.4418	2.936E+10	-760.0478	25999.	0.000
96.000	0.1439	2799309.	-8230.4502	-0.004972	4624.7907	2.936E+10	-739.4727	30842.	0.000
102.000	0.1157	2742970.	-12596.	-0.004406	4541.7661	2.936E+10	-715.6707	37100.	0.000
108.000	0.0910	2660106.	-16808.	-0.003853	4419.6536	2.936E+10	-688.3225	45389.	0.000
114.000	0.0695	2551726.	-20844.	-0.003321	4259.9381	2.936E+10	-656.9815	56716.	0.000
120.000	0.0511	2418987.	-24793.	-0.002813	4064.3263	2.936E+10	-659.5764	77382.	0.000
126.000	0.0357	2261833.	-28872.	-0.002334	3832.7350	2.936E+10	-700.0632	117498.	0.000
132.000	0.0231	2078849.	-32896.	-0.001891	3563.0804	2.936E+10	-641.0327	166293.	0.000
138.000	0.0131	1872213.	-36520.	-0.001487	3258.5688	2.936E+10	-567.0981	260555.	0.000
144.000	0.005285	1644642.	-39606.	-0.001128	2923.2072	2.936E+10	-461.4521	523897.	0.000
150.000	-0.000472	1400002.	-40227.	-0.000816	2562.6930	2.936E+10	254.1950	3228567.	0.000
156.000	-0.004513	1164126.	-38082.	-0.000554	2215.0924	2.936E+10	460.9652	612883.	0.000
162.000	-0.007125	944522.	-35119.	-0.000339	1891.4714	2.936E+10	526.5654	443393.	0.000
168.000	-0.008580	743613.	-31854.	-0.000166	1595.3997	2.936E+10	561.8797	392926.	0.000
174.000	-0.009122	562725.	-28425.	-3.291E-05	1328.8330	2.936E+10	580.9975	382134.	0.000
180.000	-0.008975	402597.	-24915.	6.574E-05	1092.8593	2.936E+10	589.0274	393786.	0.000
186.000	-0.008334	263562.	-21383.	0.000134	887.9701	2.936E+10	588.4126	423648.	0.000
192.000	-0.007369	145638.	-17876.	0.000176	714.1895	2.936E+10	580.4854	472645.	0.000
198.000	-0.006226	48570.	-14437.	0.000195	571.1451	2.936E+10	566.0134	545480.	0.000
204.000	-0.005023	-28135.	-11103.	0.000198	541.0306	2.936E+10	545.4263	651494.	0.000
210.000	-0.003855	-85196.	-7909.5115	0.000186	625.1196	2.936E+10	518.9109	807651.	0.000

216.000	-0.002791	-123553.	-4893.4983	0.000165	681.6448	2.936E+10	486.4269	1045610.	0.000
222.000	-0.001879	-144365.	-2091.3252	0.000137	712.3137	2.936E+10	447.6308	1429327.	0.000
228.000	-0.001144	-149021.	456.3512	0.000107	719.1762	2.936E+10	401.5946	2106447.	0.000
234.000	-0.000591	-139179.	2685.0564	7.784E-05	704.6725	2.936E+10	341.3071	3462126.	0.000
240.000	-0.000210	-117012.	4133.7776	5.166E-05	672.0951	2.936E+10	141.6000	4050000.	0.000
246.000	2.845E-05	-89714.	4500.9741	3.054E-05	631.7777	2.936E+10	-19.2012	4050000.	0.000
252.000	0.000157	-63083.	4126.1552	1.492E-05	592.5324	2.936E+10	-105.7385	4050000.	0.000
258.000	0.000207	-40241.	3388.7696	4.361E-06	558.8709	2.936E+10	-140.0567	4050000.	0.000
264.000	0.000209	-22430.	2545.4064	-2.043E-06	532.6232	2.936E+10	-141.0643	4050000.	0.000
270.000	0.000183	-9690.4554	1751.6981	-5.326E-06	513.8501	2.936E+10	-123.5051	4050000.	0.000
276.000	0.000145	-1394.7936	1087.4101	-6.459E-06	501.6251	2.936E+10	-97.9243	4050000.	0.000
282.000	0.000105	3375.9814	580.0707	-6.256E-06	504.5447	2.936E+10	-71.1888	4050000.	0.000
288.000	7.000E-05	5583.0224	224.7602	-5.341E-06	507.7971	2.936E+10	-47.2480	4050000.	0.000
294.000	4.138E-05	6087.5879	-0.7699	-4.148E-06	508.5407	2.936E+10	-27.9287	4050000.	0.000
300.000	2.022E-05	5585.0332	-125.5017	-2.955E-06	507.8001	2.936E+10	-13.6486	4050000.	0.000
306.000	5.914E-06	4589.5817	-178.4224	-1.915E-06	506.3332	2.936E+10	-3.9917	4050000.	0.000
312.000	-2.765E-06	3449.1585	-184.7991	-1.094E-06	504.6526	2.936E+10	1.8661	4050000.	0.000
318.000	-7.213E-06	2374.9585	-164.5948	-4.987E-07	503.0696	2.936E+10	4.8687	4050000.	0.000
324.000	-8.749E-06	1475.3730	-132.2728	-1.052E-07	501.7439	2.936E+10	5.9053	4050000.	0.000
330.000	-8.475E-06	787.9706	-97.3947	1.261E-07	500.7309	2.936E+10	5.7297	4050000.	0.000
336.000	-7.235E-06	306.2946	-65.5813	2.379E-07	500.0211	2.936E+10	4.8838	4050000.	0.000
342.000	-5.620E-06	0.3498	-39.5500	2.693E-07	499.5702	2.936E+10	3.7933	4050000.	0.000
348.000	-4.004E-06	-169.0352	-20.0622	2.520E-07	499.8188	2.936E+10	2.7026	4050000.	0.000
354.000	-2.595E-06	-241.0804	-6.6992	2.101E-07	499.9250	2.936E+10	1.7518	4050000.	0.000
360.000	-1.482E-06	-249.9954	1.5576	1.599E-07	499.9381	2.936E+10	1.0005	4050000.	0.000
366.000	-6.758E-07	-222.8228	5.9277	1.116E-07	499.8980	2.936E+10	0.4562	4050000.	0.000
372.000	-1.427E-07	-179.1655	7.5853	7.055E-08	499.8337	2.936E+10	0.0963	4050000.	0.000
378.000	1.707E-07	-131.9910	7.5285	3.875E-08	499.7642	2.936E+10	-0.1152	4050000.	0.000
384.000	3.223E-07	-88.9283	6.5302	1.617E-08	499.7007	2.936E+10	-0.2175	4050000.	0.000
390.000	3.648E-07	-53.6720	5.1390	1.597E-09	499.6488	2.936E+10	-0.2462	4050000.	0.000
396.000	3.414E-07	-27.2646	3.7090	-6.674E-09	499.6099	2.936E+10	-0.2305	4050000.	0.000
402.000	2.847E-07	-9.1465	2.4411	-1.039E-08	499.5832	2.936E+10	-0.1922	4050000.	0.000
408.000	2.167E-07	2.0565	1.4258	-1.112E-08	499.5727	2.936E+10	-0.1463	4050000.	0.000
414.000	1.512E-07	7.9933	0.6807	-1.009E-08	499.5815	2.936E+10	-0.1021	4050000.	0.000
420.000	9.555E-08	10.2527	0.1809	-8.220E-09	499.5848	2.936E+10	-0.0645	4050000.	0.000
426.000	5.251E-08	10.1865	-0.1190	-6.139E-09	499.5847	2.936E+10	-0.0354	4050000.	0.000
432.000	2.192E-08	8.8416	-0.2697	-4.194E-09	499.5827	2.936E+10	-0.0148	4050000.	0.000
438.000	2.172E-09	6.9617	-0.3185	-2.575E-09	499.5799	2.936E+10	-0.001466	4050000.	0.000
444.000	-9.036E-09	5.0271	-0.3046	-1.354E-09	499.5771	2.936E+10	0.006099	4050000.	0.000
450.000	-1.408E-08	3.3106	-0.2578	-5.022E-10	499.5746	2.936E+10	0.009504	4050000.	0.000
456.000	-1.506E-08	1.9354	-0.1987	3.393E-11	499.5725	2.936E+10	0.0102	4050000.	0.000
462.000	-1.367E-08	0.9256	-0.1406	3.263E-10	499.5710	2.936E+10	0.009229	4050000.	0.000
468.000	-1.115E-08	0.2479	-0.0903	4.462E-10	499.5700	2.936E+10	0.007524	4050000.	0.000
474.000	-8.317E-09	-0.1591	-0.0509	4.553E-10	499.5699	2.936E+10	0.005614	4050000.	0.000
480.000	-5.603E-09	-0.3639	-0.0225	4.018E-10	499.5702	2.936E+10	0.003836	4050000.	0.000
486.000	-3.495E-09	-0.4306	-0.003944	3.207E-10	499.5703	2.936E+10	0.002359	4050000.	0.000
492.000	-1.835E-09	-0.4122	0.006850	2.345E-10	499.5703	2.936E+10	0.001239	4050000.	0.000
498.000	-6.808E-10	-0.3490	0.0119	1.567E-10	499.5702	2.936E+10	0.000460	4050000.	0.000
504.000	4.568E-11	-0.2692	0.0132	9.356E-11	499.5701	2.936E+10	-3.983E-05	4050000.	0.000
510.000	4.419E-10	-0.1905	0.0122	4.658E-11	499.5700	2.936E+10	-0.000298	4050000.	0.000
516.000	6.046E-10	-0.1224	0.0101	1.459E-11	499.5699	2.936E+10	-0.000408	4050000.	0.000
522.000	6.171E-10	-0.0691	0.007650	-4.977E-12	499.5698	2.936E+10	-0.000417	4050000.	0.000
528.000	5.449E-10	-0.0306	0.005297	-1.516E-11	499.5697	2.936E+10	-0.000368	4050000.	0.000
534.000	4.351E-10	-0.005444	0.003313	-1.885E-11	499.5697	2.936E+10	-0.000294	4050000.	0.000
540.000	3.186E-10	0.009174	0.001787	-1.847E-11	499.5697	2.936E+10	-0.000215	4050000.	0.000
546.000	2.134E-10	0.0160	0.000709	-1.589E-11	499.5697	2.936E+10	-0.000144	4050000.	0.000
552.000	1.279E-10	0.0177	1.795E-05	-1.244E-11	499.5697	2.936E+10	-8.635E-05	4050000.	0.000
558.000	6.415E-11	0.0163	-0.000371	-8.964E-12	499.5697	2.936E+10	-4.330E-05	4050000.	0.000
564.000	2.035E-11	0.0133	-0.000542	-5.940E-12	499.5697	2.936E+10	-1.374E-05	4050000.	0.000
570.000	-7.129E-12	0.009806	-0.000569	-3.571E-12	499.5697	2.936E+10	4.812E-06	4050000.	0.000
576.000	-2.259E-11	0.006483	-0.000509	-1.914E-12	499.5697	2.936E+10	1.525E-05	4050000.	0.000
582.000	-3.009E-11	0.003707	-0.000402	0.000	499.5697	2.936E+10	2.031E-05	4050000.	0.000
588.000	-3.305E-11	0.001661	-0.000274	0.000	499.5697	2.936E+10	2.231E-05	4050000.	0.000
594.000	-3.398E-11	0.000418	-0.000138	0.000	499.5697	2.936E+10	2.293E-05	4050000.	0.000
600.000	-3.439E-11	0.000	0.000	0.000	499.5697	2.936E+10	2.321E-05	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 1.0023641 inches
Computed slope at pile head = -0.0113567 radians
Maximum bending moment = 2829048. inch-lbs
Maximum shear force = 60000. lbs
Depth of maximum bending moment = 84.00000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 32
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 60000. lbs
Moment = 0. in-lbs
Axial Load = 226000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	1.0023641	2829048.	60000.
47.500	1.0205471	2829398.	60000.
45.000	1.0260125	2834538.	60000.
42.500	1.0167099	2830330.	60000.
40.000	1.0183656	2834675.	60000.
37.500	1.0218734	2834963.	60000.
35.000	1.0224429	2836382.	60000.
32.500	1.0204938	2836240.	60000.
30.000	1.0192466	2834598.	60000.
27.500	1.0226928	2838389.	60000.
25.000	0.9999250	2839530.	60000.
22.500	1.0222562	2839785.	60000.

20.000	1.0254445	2840400.	60000.
17.500	1.0525871	2818443.	60000.
15.000	1.0523741	2593831.	60000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 60000.	M = 0.000	226000.	1.00236408	2829048.	60000.	-0.01135673

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3R_long_Ave P.lp6d
Name of output report file: Bent 3R_long_Ave P.lp6o
Name of plot output file: Bent 3R_long_Ave P.lp6p
Name of runtime messeage file: Bent 3R_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:39:25

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Test Subgrade qu psi	RQD % or GSI	Strain Epsilon 50
1	Stiff Clay w/o Free Water	--	-5.000	125.000	3250.000	--	--	--	0.00700
		--	0.10000	125.000	3250.000	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	0.10000	120.000	2750.000	--	--	--	0.00700
		--	5.000	120.000	2750.000	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	5.000	120.000	3750.000	--	--	--	0.00700
		--	10.000	120.000	3750.000	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	10.000	125.000	4500.000	--	--	--	0.00500
		--	80.000	125.000	4500.000	--	--	--	

0.00500 -- -- -- -- -- -- --

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	226000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	226000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	226000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	31460.	-0.003573	499.5697	2.936E+10	-507.2531	6087.0366	0.000
6.000	0.2286	184475.	28568.	-0.003554	771.4219	2.936E+10	-456.7866	11991.	0.000
12.000	0.2074	352454.	25820.	-0.003499	1018.9655	2.936E+10	-459.3281	13291.	0.000
18.000	0.1866	503799.	23060.	-0.003412	1241.9971	2.936E+10	-460.5397	14810.	0.000
24.000	0.1664	638426.	20297.	-0.003295	1440.3905	2.936E+10	-460.3683	16509.	0.000
30.000	0.1470	756302.	17540.	-0.003152	1614.0998	2.936E+10	-458.7572	18720.	0.000
36.000	0.1286	857454.	14797.	-0.002987	1763.1625	2.936E+10	-455.6450	21261.	0.000
42.000	0.1112	941965.	12077.	-0.002804	1887.7022	2.936E+10	-450.9647	24336.	0.000
48.000	0.0949	1009979.	9390.0394	-0.002604	1987.9327	2.936E+10	-444.6420	28100.	0.000
54.000	0.0799	1061707.	6746.3339	-0.002392	2064.1618	2.936E+10	-436.5932	32770.	0.000
60.000	0.0662	1097423.	4047.4728	-0.002172	2116.7952	2.936E+10	-463.0272	41945.	0.000
66.000	0.0539	1116166.	1110.7223	-0.001945	2144.4161	2.936E+10	-515.8897	57452.	0.000
72.000	0.0429	1116028.	-1934.7366	-0.001717	2144.2123	2.936E+10	-499.2633	69846.	0.000
78.000	0.0333	1097607.	-4871.8785	-0.001491	2117.0659	2.936E+10	-479.7840	86529.	0.000
84.000	0.0250	1061610.	-7682.6844	-0.001270	2064.0179	2.936E+10	-457.1513	109738.	0.000
90.000	0.0180	1008860.	-10347.	-0.001059	1986.2837	2.936E+10	-430.9199	143454.	0.000
96.000	0.0123	940318.	-12841.	-0.000860	1885.2764	2.936E+10	-400.3651	195480.	0.000
102.000	0.007707	857103.	-15134.	-0.000676	1762.6451	2.936E+10	-364.1454	283484.	0.000
108.000	0.004177	760548.	-17184.	-0.000511	1620.3451	2.936E+10	-319.2511	458599.	0.000
114.000	0.001579	652274.	-18910.	-0.000366	1460.7978	2.936E+10	-255.9531	972468.	0.000
120.000	-0.000219	534613.	-19397.	-0.000245	1287.4052	2.936E+10	93.5792	2568959.	0.000
126.000	-0.001361	420172.	-18190.	-0.000147	1118.7589	2.936E+10	308.7064	1361239.	0.000
132.000	-0.001988	316728.	-16224.	-7.211E-05	966.3184	2.936E+10	346.7901	1046879.	0.000
138.000	-0.002226	225881.	-14091.	-1.668E-05	832.1462	2.936E+10	364.1626	981565.	0.000
144.000	-0.002188	147681.	-11889.	2.148E-05	717.2014	2.936E+10	369.8966	1014483.	0.000
150.000	-0.001968	82957.	-9677.1227	4.505E-05	621.8198	2.936E+10	367.3380	1119779.	0.000
156.000	-0.001647	31434.	-7500.8291	5.674E-05	545.8922	2.936E+10	358.0932	1304440.	0.000
162.000	-0.001287	-7206.8565	-5397.4546	5.921E-05	510.1901	2.936E+10	343.0316	1598711.	0.000
168.000	-0.000937	-33496.	-3400.4781	5.505E-05	548.9318	2.936E+10	322.6272	2066937.	0.000
174.000	-0.000627	-48162.	-1541.4423	4.671E-05	570.5438	2.936E+10	297.0514	2843748.	0.000
180.000	-0.000376	-52120.	16.0301	3.646E-05	576.3771	2.936E+10	222.1060	3544071.	0.000
186.000	-0.000189	-48068.	1023.5432	2.622E-05	570.4060	2.936E+10	113.7317	3606556.	0.000
192.000	-6.135E-05	-39909.	1477.2796	1.723E-05	558.3817	2.936E+10	37.5138	3669042.	0.000

198.000	1.757E-05	-30388.	1557.0331	1.005E-05	544.3509	2.936E+10	-10.9293	3731529.	0.000
204.000	5.923E-05	-21252.	1411.8907	4.770E-06	530.8875	2.936E+10	-37.4515	3794016.	0.000
210.000	7.482E-05	-13458.	1155.2657	1.223E-06	519.4022	2.936E+10	-48.0901	3856504.	0.000
216.000	7.391E-05	-7391.8730	866.1750	-9.075E-07	510.4628	2.936E+10	-48.2735	3918993.	0.000
222.000	6.393E-05	-3061.4910	594.0870	-1.976E-06	504.0813	2.936E+10	-42.4225	3981482.	0.000
228.000	5.020E-05	-257.4707	365.3197	-2.315E-06	499.9491	2.936E+10	-33.8332	4043971.	0.000
234.000	3.615E-05	1328.6240	190.6150	-2.205E-06	501.5276	2.936E+10	-24.4017	4050000.	0.000
240.000	2.373E-05	2035.8903	69.3516	-1.862E-06	502.5699	2.936E+10	-16.0195	4050000.	0.000
246.000	1.381E-05	2165.8914	-6.6745	-1.432E-06	502.7615	2.936E+10	-9.3225	4050000.	0.000
252.000	6.546E-06	1959.6806	-47.8976	-1.011E-06	502.4576	2.936E+10	-4.4185	4050000.	0.000
258.000	1.684E-06	1593.8606	-64.5631	-6.474E-07	501.9185	2.936E+10	-1.1367	4050000.	0.000
264.000	-1.223E-06	1186.6794	-65.4955	-3.633E-07	501.3184	2.936E+10	0.8258	4050000.	0.000
270.000	-2.676E-06	808.8994	-57.6000	-1.594E-07	500.7617	2.936E+10	1.8060	4050000.	0.000
276.000	-3.136E-06	495.9112	-45.8323	-2.601E-08	500.3005	2.936E+10	2.1166	4050000.	0.000
282.000	-2.988E-06	258.9824	-33.4326	5.114E-08	499.9513	2.936E+10	2.0167	4050000.	0.000
288.000	-2.522E-06	94.5814	-22.2756	8.727E-08	499.7091	2.936E+10	1.7023	4050000.	0.000
294.000	-1.940E-06	-8.5616	-13.2394	9.606E-08	499.5823	2.936E+10	1.3097	4050000.	0.000
300.000	-1.369E-06	-64.5515	-6.5375	8.859E-08	499.6648	2.936E+10	0.9242	4050000.	0.000
306.000	-8.772E-07	-87.2515	-1.9884	7.388E-08	499.6983	2.936E+10	0.5921	4050000.	0.000
312.000	-4.923E-07	-88.6102	0.7849	5.511E-08	499.7003	2.936E+10	0.3323	4050000.	0.000
318.000	-2.160E-07	-77.9820	2.2191	3.808E-08	499.6846	2.936E+10	0.1458	4050000.	0.000
324.000	-3.530E-08	-62.0841	2.7280	2.377E-08	499.6612	2.936E+10	0.0238	4050000.	0.000
330.000	6.923E-08	-45.3111	2.6592	1.279E-08	499.6365	2.936E+10	-0.0467	4050000.	0.000
336.000	1.182E-07	-30.2079	2.2797	5.074E-09	499.6142	2.936E+10	-0.0798	4050000.	0.000
342.000	1.301E-07	-17.9687	1.7768	1.509E-10	499.5962	2.936E+10	-0.0878	4050000.	0.000
348.000	1.200E-07	-8.8866	1.2703	-2.594E-09	499.5828	2.936E+10	-0.0810	4050000.	0.000
354.000	9.900E-08	-2.7184	0.8268	-3.780E-09	499.5737	2.936E+10	-0.0668	4050000.	0.000
360.000	7.466E-08	1.0449	0.4751	-3.953E-09	499.5712	2.936E+10	-0.0504	4050000.	0.000
366.000	5.160E-08	2.9936	0.2194	-3.538E-09	499.5741	2.936E+10	-0.0348	4050000.	0.000
372.000	3.220E-08	3.6878	0.0498	-2.855E-09	499.5751	2.936E+10	-0.0217	4050000.	0.000
378.000	1.733E-08	3.5984	-0.0506	-2.110E-09	499.5750	2.936E+10	-0.0117	4050000.	0.000
384.000	6.878E-09	3.0868	-0.0996	-1.427E-09	499.5742	2.936E+10	-0.004643	4050000.	0.000
390.000	2.071E-10	2.4071	-0.1139	-8.658E-10	499.5732	2.936E+10	-0.000140	4050000.	0.000
396.000	-3.512E-09	1.7218	-0.1072	-4.439E-10	499.5722	2.936E+10	0.002371	4050000.	0.000
402.000	-5.119E-09	1.1214	-0.0898	-1.533E-10	499.5713	2.936E+10	0.003456	4050000.	0.000
408.000	-5.352E-09	0.6450	-0.0686	2.721E-11	499.5706	2.936E+10	0.003612	4050000.	0.000
414.000	-4.793E-09	0.2985	-0.0480	1.236E-10	499.5701	2.936E+10	0.003235	4050000.	0.000
420.000	-3.868E-09	0.0684	-0.0305	1.611E-10	499.5698	2.936E+10	0.002611	4050000.	0.000
426.000	-2.859E-09	-0.0678	-0.0169	1.612E-10	499.5698	2.936E+10	0.001930	4050000.	0.000
432.000	-1.934E-09	-0.1344	-0.007158	1.405E-10	499.5699	2.936E+10	0.001305	4050000.	0.000
438.000	-1.173E-09	-0.1541	-0.000867	1.110E-10	499.5699	2.936E+10	0.000792	4050000.	0.000
444.000	-6.015E-10	-0.1451	0.002727	8.045E-11	499.5699	2.936E+10	0.000406	4050000.	0.000
450.000	-2.078E-10	-0.1216	0.004366	5.319E-11	499.5699	2.936E+10	0.000140	4050000.	0.000
456.000	3.676E-11	-0.0929	0.004712	3.127E-11	499.5698	2.936E+10	-2.482E-05	4050000.	0.000
462.000	1.673E-10	-0.0651	0.004299	1.512E-11	499.5698	2.936E+10	-0.000113	4050000.	0.000
468.000	2.182E-10	-0.0414	0.003518	4.243E-12	499.5697	2.936E+10	-0.000147	4050000.	0.000
474.000	2.183E-10	-0.0229	0.002634	-2.324E-12	499.5697	2.936E+10	-0.000147	4050000.	0.000
480.000	1.904E-10	-0.009745	0.001806	-5.660E-12	499.5697	2.936E+10	-0.000128	4050000.	0.000
486.000	1.504E-10	-0.001212	0.001116	-6.780E-12	499.5697	2.936E+10	-0.000102	4050000.	0.000
492.000	1.090E-10	0.003667	0.000591	-6.529E-12	499.5697	2.936E+10	-7.357E-05	4050000.	0.000
498.000	7.207E-11	0.005896	0.000224	-5.552E-12	499.5697	2.936E+10	-4.865E-05	4050000.	0.000
504.000	4.237E-11	0.006372	-7.568E-06	-4.298E-12	499.5697	2.936E+10	-2.860E-05	4050000.	0.000
510.000	2.040E-11	0.005817	-0.000135	-3.052E-12	499.5697	2.936E+10	-1.383E-05	4050000.	0.000
516.000	5.748E-12	0.004762	-0.000188	-1.971E-12	499.5697	2.936E+10	-3.880E-06	4050000.	0.000
522.000	-3.159E-12	0.003566	-0.000193	-1.120E-12	499.5697	2.936E+10	2.132E-06	4050000.	0.000
528.000	-7.692E-12	0.002446	-0.000171	0.000	499.5697	2.936E+10	5.192E-06	4050000.	0.000
534.000	-9.226E-12	0.001512	-0.000137	0.000	499.5697	2.936E+10	6.228E-06	4050000.	0.000
540.000	-8.906E-12	0.000802	-0.000100	0.000	499.5697	2.936E+10	6.012E-06	4050000.	0.000
546.000	-7.603E-12	0.000308	-6.688E-05	0.000	499.5697	2.936E+10	5.132E-06	4050000.	0.000
552.000	-5.922E-12	-1.448E-06	-3.949E-05	0.000	499.5697	2.936E+10	3.998E-06	4050000.	0.000
558.000	-4.243E-12	-0.000167	-1.891E-05	0.000	499.5697	2.936E+10	2.864E-06	4050000.	0.000
564.000	-2.769E-12	-0.000229	-4.706E-06	0.000	499.5697	2.936E+10	1.869E-06	4050000.	0.000
570.000	-1.575E-12	-0.000224	4.091E-06	0.000	499.5697	2.936E+10	1.063E-06	4050000.	0.000
576.000	0.000	-0.000180	8.609E-06	0.000	499.5697	2.936E+10	4.429E-07	4050000.	0.000
582.000	0.000	-0.000121	9.854E-06	0.000	499.5697	2.936E+10	-2.808E-08	4050000.	0.000
588.000	0.000	-6.245E-05	8.573E-06	0.000	499.5697	2.936E+10	-3.990E-07	4050000.	0.000
594.000	1.064E-12	-1.839E-05	5.221E-06	0.000	499.5697	2.936E+10	-7.182E-07	4050000.	0.000
600.000	1.514E-12	0.000	0.000	0.000	499.5697	2.936E+10	-1.022E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0035728 radians
Maximum bending moment = 1116166. inch-lbs
Maximum shear force = 31460. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	43425.	-0.006365	499.5697	2.936E+10	-603.2289	3619.3736	0.000
6.000	0.4618	258320.	39981.	-0.006338	880.2448	2.936E+10	-544.5999	7075.6134	0.000
12.000	0.4239	496963.	36700.	-0.006261	1231.9224	2.936E+10	-549.2510	7773.5250	0.000
18.000	0.3867	715695.	33394.	-0.006137	1554.2585	2.936E+10	-552.5734	8574.1760	0.000
24.000	0.3503	914336.	30073.	-0.005971	1846.9872	2.936E+10	-554.5158	9498.0377	0.000
30.000	0.3150	1092761.	26744.	-0.005766	2109.9246	2.936E+10	-555.0241	10571.	0.000
36.000	0.2811	1250902.	23417.	-0.005526	2342.9707	2.936E+10	-554.0412	11826.	0.000
42.000	0.2487	1388752.	20100.	-0.005256	2546.1131	2.936E+10	-551.5058	13304.	0.000
48.000	0.2180	1506362.	16804.	-0.004960	2719.4300	2.936E+10	-547.3518	15063.	0.000
54.000	0.1892	1603850.	13537.	-0.004643	2863.0938	2.936E+10	-541.5073	17173.	0.000

60.000	0.1623	1681399.	10175.	-0.004307	2977.3746	2.936E+10	-579.3146	21414.	0.000
66.000	0.1375	1737627.	6480.6917	-0.003957	3060.2351	2.936E+10	-652.0346	28450.	0.000
72.000	0.1148	1769900.	2608.7662	-0.003599	3107.7944	2.936E+10	-638.6072	33368.	0.000
78.000	0.0943	1778692.	-1174.6283	-0.003236	3120.7517	2.936E+10	-622.5243	39600.	0.000
84.000	0.0760	1764581.	-4852.9876	-0.002874	3099.9565	2.936E+10	-603.5955	47655.	0.000
90.000	0.0598	1728251.	-8408.4942	-0.002517	3046.4189	2.936E+10	-581.5734	58320.	0.000
96.000	0.0458	1670506.	-11822.	-0.002170	2961.3220	2.936E+10	-556.1185	72872.	0.000
102.000	0.0338	1592277.	-15070.	-0.001836	2846.0398	2.936E+10	-526.7337	93521.	0.000
108.000	0.0238	1494645.	-18128.	-0.001521	2702.1632	2.936E+10	-492.6277	124448.	0.000
114.000	0.0155	1378864.	-20963.	-0.001227	2531.5415	2.936E+10	-452.3931	174652.	0.000
120.000	0.009023	1246414.	-23605.	-0.000959	2336.3563	2.936E+10	-428.1392	284699.	0.000
126.000	0.004033	1098206.	-26109.	-0.000719	2117.9486	2.936E+10	-406.5827	604895.	0.000
132.000	0.000390	935057.	-27922.	-0.000512	1877.5225	2.936E+10	-197.6993	3044220.	0.000
138.000	-0.002107	764531.	-27438.	-0.000338	1626.2262	2.936E+10	358.8581	1021944.	0.000
144.000	-0.003666	606712.	-25099.	-0.000198	1393.6557	2.936E+10	420.8385	688788.	0.000
150.000	-0.004481	463876.	-22483.	-8.842E-05	1183.1635	2.936E+10	451.3142	604323.	0.000
156.000	-0.004727	337158.	-19730.	-6.558E-06	996.4249	2.936E+10	466.2409	591809.	0.000
162.000	-0.004560	227131.	-16919.	5.111E-05	834.2833	2.936E+10	470.7908	619523.	0.000
168.000	-0.004114	133990.	-14105.	8.802E-05	697.0253	2.936E+10	467.3126	681608.	0.000
174.000	-0.003503	57635.	-11332.	0.000108	584.5042	2.936E+10	457.0412	782745.	0.000
180.000	-0.002822	-2282.2832	-8638.6253	0.000113	502.9330	2.936E+10	440.6584	936760.	0.000
186.000	-0.002144	-46335.	-6061.1224	0.000108	567.8522	2.936E+10	418.5092	1171032.	0.000
192.000	-0.001523	-75309.	-3633.5883	9.586E-05	610.5499	2.936E+10	390.6688	1539074.	0.000
198.000	-0.000994	-90198.	-1390.9488	7.894E-05	632.4913	2.936E+10	356.8777	2154083.	0.000
204.000	-0.000576	-92215.	628.2685	6.030E-05	635.4628	2.936E+10	316.1948	3295345.	0.000
210.000	-0.000270	-82823.	2098.3694	4.241E-05	621.6220	2.936E+10	173.8389	3856504.	0.000
216.000	-6.678E-05	-67149.	2750.7394	2.708E-05	598.5250	2.936E+10	43.6178	3918993.	0.000
222.000	5.455E-05	-49887.	2772.9893	1.512E-05	573.0609	2.936E+10	-36.2011	3981482.	0.000
228.000	0.000115	-33915.	2432.4468	6.560E-06	549.5482	2.936E+10	-77.3130	4043971.	0.000
234.000	0.000133	-20716.	1930.6323	9.768E-07	530.0976	2.936E+10	-89.9585	4050000.	0.000
240.000	0.000126	-10750.	1404.7352	-2.239E-06	515.4110	2.936E+10	-85.3405	4050000.	0.000
246.000	0.000106	-3852.8835	933.2410	-3.731E-06	505.2475	2.936E+10	-71.8242	4050000.	0.000
252.000	8.166E-05	459.3201	552.4129	-4.078E-06	500.2466	2.936E+10	-55.1185	4050000.	0.000
258.000	5.747E-05	2787.1302	270.6783	-3.746E-06	503.6770	2.936E+10	-38.7930	4050000.	0.000
264.000	3.670E-05	3717.6187	79.9751	-3.081E-06	505.4232	2.936E+10	-24.7747	4050000.	0.000
270.000	2.049E-05	3755.1881	-35.8502	-2.318E-06	505.1035	2.936E+10	-13.8337	4050000.	0.000
276.000	8.891E-06	3293.7025	-95.3551	-1.597E-06	504.4235	2.936E+10	-6.0012	4050000.	0.000
282.000	1.326E-06	2615.2501	-116.0445	-9.935E-07	503.4237	2.936E+10	-0.8952	4050000.	0.000
288.000	-3.031E-06	1903.8626	-112.5924	-5.316E-07	502.3753	2.936E+10	2.0459	4050000.	0.000
294.000	-5.053E-06	1265.5915	-96.2214	-2.077E-07	501.4347	2.936E+10	3.4111	4050000.	0.000
300.000	-5.524E-06	749.7687	-74.8024	-1.780E-09	500.6746	2.936E+10	3.7286	4050000.	0.000
306.000	-5.975E-06	367.9681	-53.3400	1.124E-07	500.1437	2.936E+10	3.4255	4050000.	0.000
312.000	-4.175E-06	109.3836	-34.6101	1.612E-07	499.7309	2.936E+10	2.8178	4050000.	0.000
318.000	-3.140E-06	-47.7909	-19.7982	1.675E-07	499.6401	2.936E+10	2.1195	4050000.	0.000
324.000	-2.164E-06	-128.6490	-9.0571	1.495E-07	499.7593	2.936E+10	1.4608	4050000.	0.000
330.000	-1.346E-06	-156.8815	-1.9487	1.203E-07	499.8009	2.936E+10	0.9086	4050000.	0.000
336.000	-7.204E-07	-152.3598	2.2361	8.871E-08	499.7942	2.936E+10	0.4863	4050000.	0.000
342.000	-2.816E-07	-130.2894	4.2651	5.983E-08	499.7617	2.936E+10	0.1901	4050000.	0.000
348.000	-2.523E-09	-101.3403	4.8405	3.615E-08	499.7190	2.936E+10	0.001703	4050000.	0.000
354.000	1.523E-07	-72.3019	4.5372	1.841E-08	499.6762	2.936E+10	-0.1028	4050000.	0.000
360.000	2.184E-07	-46.9434	3.7867	6.222E-09	499.6389	2.936E+10	-0.1474	4050000.	0.000
366.000	2.269E-07	-26.8785	2.8849	-1.322E-09	499.6093	2.936E+10	-0.1532	4050000.	0.000
372.000	2.025E-07	-12.3206	2.0153	-5.328E-09	499.5875	2.936E+10	-0.1367	4050000.	0.000
378.000	1.630E-07	-2.6805	1.2751	-6.861E-09	499.5736	2.936E+10	-0.1100	4050000.	0.000
384.000	1.202E-07	2.9996	0.7017	-6.828E-09	499.5741	2.936E+10	-0.0811	4050000.	0.000
390.000	8.106E-08	5.7582	0.2942	-5.933E-09	499.5793	2.936E+10	-0.0547	4050000.	0.000
396.000	4.899E-08	6.5456	0.0308	-4.676E-09	499.5793	2.936E+10	-0.0331	4050000.	0.000
402.000	2.495E-08	6.1408	-0.1189	-3.379E-09	499.5787	2.936E+10	-0.0168	4050000.	0.000
408.000	8.436E-09	5.1280	-0.1865	-2.228E-09	499.5772	2.936E+10	-0.005694	4050000.	0.000
414.000	-1.787E-09	3.9089	-0.2000	-1.304E-09	499.5774	2.936E+10	0.001200	4050000.	0.000
420.000	-7.215E-09	2.7321	-0.1817	-6.255E-10	499.5737	2.936E+10	0.004870	4050000.	0.000
426.000	-9.293E-09	1.7298	-0.1483	-1.696E-10	499.5722	2.936E+10	0.006273	4050000.	0.000
432.000	-9.250E-09	0.9529	-0.1108	1.046E-10	499.5711	2.936E+10	0.006244	4050000.	0.000
438.000	-8.838E-09	0.4005	-0.0757	2.429E-10	499.5703	2.936E+10	0.005426	4050000.	0.000
444.000	-6.335E-09	0.0433	-0.0466	2.883E-10	499.5697	2.936E+10	0.004276	4050000.	0.000
450.000	-4.579E-09	-0.1599	-0.0245	2.764E-10	499.5699	2.936E+10	0.003090	4050000.	0.000
456.000	-3.018E-09	-0.2519	-0.000157	2.343E-10	499.5701	2.936E+10	0.002037	4050000.	0.000
462.000	-1.767E-09	-0.2705	0.000534	1.809E-10	499.5701	2.936E+10	0.001193	4050000.	0.000
468.000	-8.477E-10	-0.2460	0.005829	1.281E-10	499.5700	2.936E+10	0.000572	4050000.	0.000
474.000	-2.299E-10	-0.2009	0.000012	8.244E-11	499.5700	2.936E+10	0.000165	4050000.	0.000
480.000	1.416E-10	-0.1501	0.008190	4.658E-11	499.5699	2.936E+10	-9.556E-05	4050000.	0.000
486.000	3.290E-10	-0.1027	0.007238	2.075E-11	499.5698	2.936E+10	-0.000222	4050000.	0.000
492.000	3.905E-10	-0.0633	0.005781	3.782E-12	499.5698	2.936E+10	-0.000264	4050000.	0.000
498.000	3.744E-10	-0.0333	0.004232	-6.093E-12	499.5697	2.936E+10	-0.000253	4050000.	0.000
504.000	3.174E-10	-0.0125	0.002831	-1.078E-11	499.5697	2.936E+10	-0.000214	4050000.	0.000
510.000	2.451E-10	0.000654	0.001692	-1.199E-11	499.5697	2.936E+10	-0.000165	4050000.	0.000
516.000	1.736E-10	0.007843	0.000844	-1.112E-11	499.5697	2.936E+10	-0.000117	4050000.	0.000
522.000	1.117E-10	0.0108	0.000266	-9.211E-12	499.5697	2.936E+10	-7.537E-05	4050000.	0.000
528.000	6.302E-11	0.0111	-8.738E-05	-6.976E-12	499.5697	2.936E+10	-4.254E-05	4050000.	0.000
534.000	2.795E-11	0.009782	-0.000272	-4.846E-12	499.5697	2.936E+10	-1.887E-05	4050000.	0.000
540.000	4.878E-12	0.007818	-0.000338	-3.047E-12	499.5697	2.936E+10	-3.293E-06	4050000.	0.000
546.000	-8.610E-12	0.005733	-0.000331	-1.662E-12	499.5697	2.936E+10	5.812E-06	4050000.	0.000
552.000	-1.507E-11	0.003856	-0.000283	0.000	499.5697	2.936E+10	1.017E-05	4050000.	0.000
558.000	-1.679E-11	0.002344	-0.000218	0.000	499.5697	2.936E+10	1.134E-05	4050000.	0.000
564.000	-1.565E-11	0.001239	-0.000152	0.000	499.5697	2.936E+10	1.056E-05	4050000.	0.000
570.000	-1.298E-11	0.000514	-9.440E-05	0.000	499.5697	2.936E+10	8.764E-06	4050000.	0.000
576.000	-9.687E-12	0.000105	-4.849E-05	0.000	499.5697	2.936E+10	6.539E-06	4050000.	0.000
582.000	-6.261E-12	-6.895E-05	-1.619E-05	0.000	499.5697	2.936E+10	4.226E-06	4050000.	0.000
588.000	-2.921E-12	-9.080E-05	2.399E-06	0.000	499.5697	2.936E+10	1.971E-06	4050000.	0.000
594.000	0.000	-4.165E-05	7.687E-06	0.000	499.5697	2.936E+10	-2.085E-07	4050000.	0.000
600.000	3.487E-12	0.000	0.000	0.000	499.5697	2.936E+10	-2.354E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0063648 radians
Maximum bending moment	=	1778692. inch-lbs
Maximum shear force	=	43425. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	14
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	60004.	-0.0113	499.5697	2.936E+10	-717.3641	2152.0924	0.000
6.000	0.9320	362486.	55905.	-0.0113	1033.7503	2.936E+10	-649.1005	4178.8875	0.000
12.000	0.8644	701505.	51988.	-0.0112	1533.3471	2.936E+10	-656.3292	4555.8012	0.000
18.000	0.7977	1016701.	48033.	-0.0110	1997.8380	2.936E+10	-662.2277	4981.2593	0.000
24.000	0.7322	1307775.	44046.	-0.0108	2426.7814	2.936E+10	-666.7468	5463.7510	0.000
30.000	0.6683	1574484.	40036.	-0.0105	2819.8186	2.936E+10	-669.8357	6013.6753	0.000
36.000	0.6064	1816642.	36012.	-0.0101	3176.6760	2.936E+10	-671.4411	6643.8761	0.000
42.000	0.5467	2034125.	31983.	-0.009745	3497.1722	2.936E+10	-671.5074	7370.3574	0.000
48.000	0.4894	2226870.	27959.	-0.009309	3781.2121	2.936E+10	-669.9758	8213.2543	0.000
54.000	0.4349	2394879.	23949.	-0.008837	4028.7991	2.936E+10	-666.7840	9198.1656	0.000
60.000	0.3834	2538219.	19794.	-0.008333	4240.0340	2.936E+10	-718.1739	11239.	0.000
66.000	0.3350	2655002.	15196.	-0.007802	4412.1319	2.936E+10	-814.5717	14591.	0.000
72.000	0.2898	2741725.	10337.	-0.007250	4539.9311	2.936E+10	-804.8726	16666.	0.000
78.000	0.2479	2798712.	5544.6196	-0.006684	4623.9107	2.936E+10	-792.6580	19181.	0.000
84.000	0.2096	2826388.	833.1338	-0.006109	4664.6953	2.936E+10	-777.7973	22269.	0.000
90.000	0.1746	2825279.	-3780.5446	-0.005532	4663.0622	2.936E+10	-760.1355	26116.	0.000
96.000	0.1432	2796023.	-8279.3995	-0.004957	4619.9486	2.936E+10	-739.4827	30989.	0.000
102.000	0.1151	2739371.	-12645.	-0.004392	4536.4524	2.936E+10	-715.5974	37287.	0.000
108.000	0.0905	2656198.	-16856.	-0.003840	4413.8936	2.936E+10	-688.1589	45634.	0.000
114.000	0.0691	2547515.	-20891.	-0.003308	4253.7321	2.936E+10	-656.7177	57051.	0.000
120.000	0.0508	2414484.	-24838.	-0.002801	4057.6901	2.936E+10	-659.1840	77889.	0.000
126.000	0.0355	2257503.	-28914.	-0.002324	3824.9311	2.936E+10	-699.4050	118373.	0.000
132.000	0.0229	2073818.	-32933.	-0.001881	3555.6657	2.936E+10	-640.1538	167788.	0.000
138.000	0.0129	1866963.	-36551.	-0.001479	3256.8321	2.936E+10	-565.8615	263697.	0.000
144.000	0.005149	1639319.	-39655.	-0.001124	2935.2161	2.936E+10	-459.3224	535288.	0.000
150.000	-0.000568	1394485.	-40203.	-0.000810	2554.5628	2.936E+10	267.1029	2821557.	0.000
156.000	-0.004574	1158981.	-38014.	-0.000549	2207.5101	2.936E+10	462.4993	606641.	0.000
162.000	-0.007159	939805.	-35045.	-0.000335	1884.5205	2.936E+10	527.3534	441951.	0.000
168.000	-0.008592	739354.	-31776.	-0.000169	1584.1240	2.936E+10	562.3154	392680.	0.000
174.000	-0.009118	558941.	-28345.	-3.052E-05	1323.2572	2.936E+10	581.1971	382459.	0.000
180.000	-0.008958	399296.	-24834.	6.741E-05	1087.9957	2.936E+10	589.0395	394526.	0.000
186.000	-0.008390	260746.	-21302.	0.000135	883.8205	2.936E+10	588.2608	424793.	0.000
192.000	-0.007340	143302.	-17797.	0.000176	710.7471	2.936E+10	580.1814	474273.	0.000
198.000	-0.006195	46704.	-14360.	0.000196	568.3947	2.936E+10	565.5618	547756.	0.000
204.000	-0.004993	-29547.	-11029.	0.000197	543.1121	2.936E+10	544.8267	654712.	0.000
210.000	-0.003827	-86176.	-7839.7485	0.000185	626.5635	2.936E+10	518.1584	812342.	0.000
216.000	-0.002767	-124127.	-4828.7405	0.000164	682.4906	2.936E+10	485.5103	1052791.	0.000
222.000	-0.001859	-144566.	-2032.6249	0.000137	712.6099	2.936E+10	446.5282	1441141.	0.000
228.000	-0.001128	-148889.	507.7365	0.000107	718.9810	2.936E+10	400.2589	2128247.	0.000
234.000	-0.000580	-138762.	2726.6208	7.711E-05	704.0570	2.936E+10	339.3692	3508506.	0.000
240.000	-0.000202	-116379.	4154.7540	5.109E-05	671.0722	2.936E+10	136.6752	4050000.	0.000
246.000	3.268E-05	-89043.	4498.6003	3.009E-05	630.7890	2.936E+10	-22.0598	4050000.	0.000
252.000	0.000159	-62477.	4111.1619	1.461E-05	591.6397	2.936E+10	-107.0863	4050000.	0.000
258.000	0.000208	-39749.	3368.7171	4.162E-06	558.1461	2.936E+10	-140.3953	4050000.	0.000
264.000	0.000209	-22064.	2525.1289	-2.155E-06	532.0844	2.936E+10	-140.8008	4050000.	0.000
270.000	0.000182	-9441.5960	1733.9004	-5.374E-06	513.4834	2.936E+10	-122.9421	4050000.	0.000
276.000	0.000144	-2142.5550	1073.2736	-6.496E-06	501.4408	2.936E+10	-97.2678	4050000.	0.000
282.000	0.000105	3455.1884	569.7721	-6.240E-06	504.6614	2.936E+10	-70.5650	4050000.	0.000
288.000	6.922E-05	5611.6339	217.9101	-5.314E-06	507.8393	2.936E+10	-46.7223	4050000.	0.000
294.000	4.073E-05	6884.5202	-4.8115	-4.113E-06	509.9362	2.936E+10	-27.5249	4050000.	0.000
300.000	1.980E-05	5564.8251	-127.4982	-2.928E-06	507.7703	2.936E+10	-13.3641	4050000.	0.000
306.000	5.644E-06	4562.4817	-179.0195	-1.893E-06	506.2932	2.936E+10	-3.8097	4050000.	0.000
312.000	-2.915E-06	3421.7243	-184.5450	-1.077E-06	504.6121	2.936E+10	1.9679	4050000.	0.000
318.000	-7.198E-06	2350.8628	-163.3021	-4.878E-07	503.0348	2.936E+10	4.9131	4050000.	0.000
324.000	-8.759E-06	1456.2197	-131.4263	-9.789E-08	501.7157	2.936E+10	5.9122	4050000.	0.000
330.000	-8.453E-06	774.0128	-96.5718	1.300E-07	500.7103	2.936E+10	5.7059	4050000.	0.000
336.000	-7.198E-06	297.0051	-64.8772	2.230E-07	500.0074	2.936E+10	4.8590	4050000.	0.000
342.000	-5.579E-06	-5.1627	-39.0020	2.693E-07	499.5773	2.936E+10	3.7661	4050000.	0.000
348.000	-3.967E-06	-171.7492	-19.6711	2.512E-07	499.8228	2.936E+10	2.6775	4050000.	0.000
354.000	-2.565E-06	-241.8969	-6.4451	2.090E-07	499.9262	2.936E+10	1.7311	4050000.	0.000
360.000	-1.452E-06	-249.6567	1.7033	1.587E-07	499.9376	2.936E+10	0.9850	4050000.	0.000
366.000	-6.600E-07	-221.8882	5.9946	1.105E-07	499.8967	2.936E+10	0.4455	4050000.	0.000
372.000	-1.328E-07	-178.0212	7.6000	6.967E-08	499.8320	2.936E+10	0.0896	4050000.	0.000
378.000	1.760E-07	-130.8775	7.5125	3.810E-08	499.7626	2.936E+10	-0.1188	4050000.	0.000
384.000	3.244E-07	-87.9749	6.4992	1.572E-08	499.6993	2.936E+10	-0.2189	4050000.	0.000
390.000	3.648E-07	-52.9297	5.1037	1.332E-09	499.6477	2.936E+10	-0.2462	4050000.	0.000
396.000	3.403E-07	-26.7344	3.6758	-6.810E-09	499.6091	2.936E+10	-0.2297	4050000.	0.000
402.000	2.831E-07	-8.8018	2.4134	-1.044E-08	499.5827	2.936E+10	-0.1911	4050000.	0.000
408.000	2.150E-07	2.2543	1.4047	-1.111E-08	499.5730	2.936E+10	-0.1452	4050000.	0.000
414.000	1.498E-07	8.0843	0.6659	-1.005E-08	499.5816	2.936E+10	-0.1011	4050000.	0.000
420.000	9.439E-08	10.2729	0.1715	-8.178E-09	499.5848	2.936E+10	-0.0637	4050000.	0.000
426.000	5.162E-08	10.1650	-0.1241	-6.089E-09	499.5847	2.936E+10	-0.0348	4050000.	0.000
432.000	2.132E-08	8.7997	-0.2719	-4.151E-09	499.5827	2.936E+10	-0.0144	4050000.	0.000
438.000	1.812E-09	6.9139	-0.3187	-2.545E-09	499.5799	2.936E+10	-0.001223	4050000.	0.000
444.000	-6.261E-09	4.9822	-0.2937	-1.329E-09	499.5778	2.936E+10	0.006224	4050000.	0.000
450.000	-1.414E-08	3.2731	-0.2564	-4.858E-10	499.5745	2.936E+10	0.009546	4050000.	0.000
456.000	-1.505E-08	1.9067	-0.1973	4.352E-11	499.5725	2.936E+10	0.0102	4050000.	0.000
462.000	-1.362E-08	0.9056	-0.1392	3.369E-10	499.5710	2.936E+10	0.009193	4050000.	0.000
468.000	-1.108E-08	0.2351	-0.0892	4.475E-10	499.5700	2.936E+10	0.007478	4050000.	0.000
474.000	-8.250E-09	-0.1661	-0.0501	4.546E-10	499.5699	2.936E+10	0.005569	4050000.	0.000
480.000	-5.624E-09	-0.3669	-0.0220	4.001E-10	499.5702	2.936E+10	0.003796	4050000.	0.000
486.000	-3.449E-09	-0.4309	-0.003602	3.185E-10	499.5703	2.936E+10	0.002328	4050000.	0.000
492.000	-1.802E-09	-0.4110	0.007030	2.325E-10	499.5703	2.936E+10	0.001216	4050000.	0.000
498.000	-6.586E-10	-0.3472	0.0120	1.550E-10	499.5702	2.936E+10	0.000445	4050000.	0.000
504.000	5.867E-11	-0.2673	0.0132	9.223E-11	499.5701	2.936E+10	-3.960E-05	4050000.	0.000
510.000	4.482E-10	-0.1887	0.0122	4.564E-11	499.5700	2.936E+10	-0.000303	4050000.	0.000
516.000	6.063E-10	-0.1210	0.0101	1.399E-11	499.5699	2.936E+10	-0.000409	4050000.	0.000
522.000	6.160E-10	-0.0680	0.007590	-5.320E-12	499.5698	2.936E+10	-0.000416	4050000.	0.000
528.000	5.425E-10	-0.0299	0.005244	-1.532E-11	499.5697	2.936E+10	-0.000366	4050000.	0.000
534.000	4.322E-10	-0.0049080	0.003271	-1.888E-11	499.5697	2.936E+10	-0.000292	4050000.	0.000
540.000	3.159E-10	0.009419	0.001756	-1.843E-11	499.5697	2.936E+10	-0.000213	4050000.	0.000
546.000	2.111E-10	0.0161	0.000689	-1.582E-11	499.5697	2.936E+10	-0.000142	4050000.	0.000
552.000	1.261E-10	0.0177	5.832E-06	-1.235E-11	499.5697	2.936E+10	-8.512E-05	4050000.	0.000
558.000	6.284E-11	0.0162	-0.000377	-8.883E-12	499.5697	2.936E+10	-4.242E-05	4050000.	0.000
564.000	1.950E-11	0.0132	-0.000544	-5.871E-12	499.5697	2.936E+10	-1.316E-05	4050000.	0.000
570.000	-7.612E-12	0.009737	-0.000568	-3.524E-12	499.5697	2.936E+10	5.138E-06	4050000.	0.000
576.000	-2.279E-11	0.006427	-0.000506	-1.872E-12	499.5697	2.936E+10	1.538E-05	4050000.	0.000
582.000	-3.008E-11	0.003670	-0.000399	0.000	499.5697	2.936E+10	2.030E-05	4050000.	0.000
588.000	-3.287E-11	0.001642	-0.000272	0.000	499.5697	2.936E+10	2.219E-05	4050000.	0.000

```
   594.000 -3.365E-11   0.000412  -0.000137      0.000   499.5697  2.936E+10  2.271E-05   4050000.      0.000
   600.000 -3.392E-11      0.000       0.000      0.000   499.5697  2.936E+10  2.290E-05   2025000.      0.000
```

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0113381 radians
Maximum bending moment           =       2826388. inch-lbs
Maximum shear force              =         60004. lbs
Depth of maximum bending moment  =     84.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             22
Number of zero deflection points =              7
```

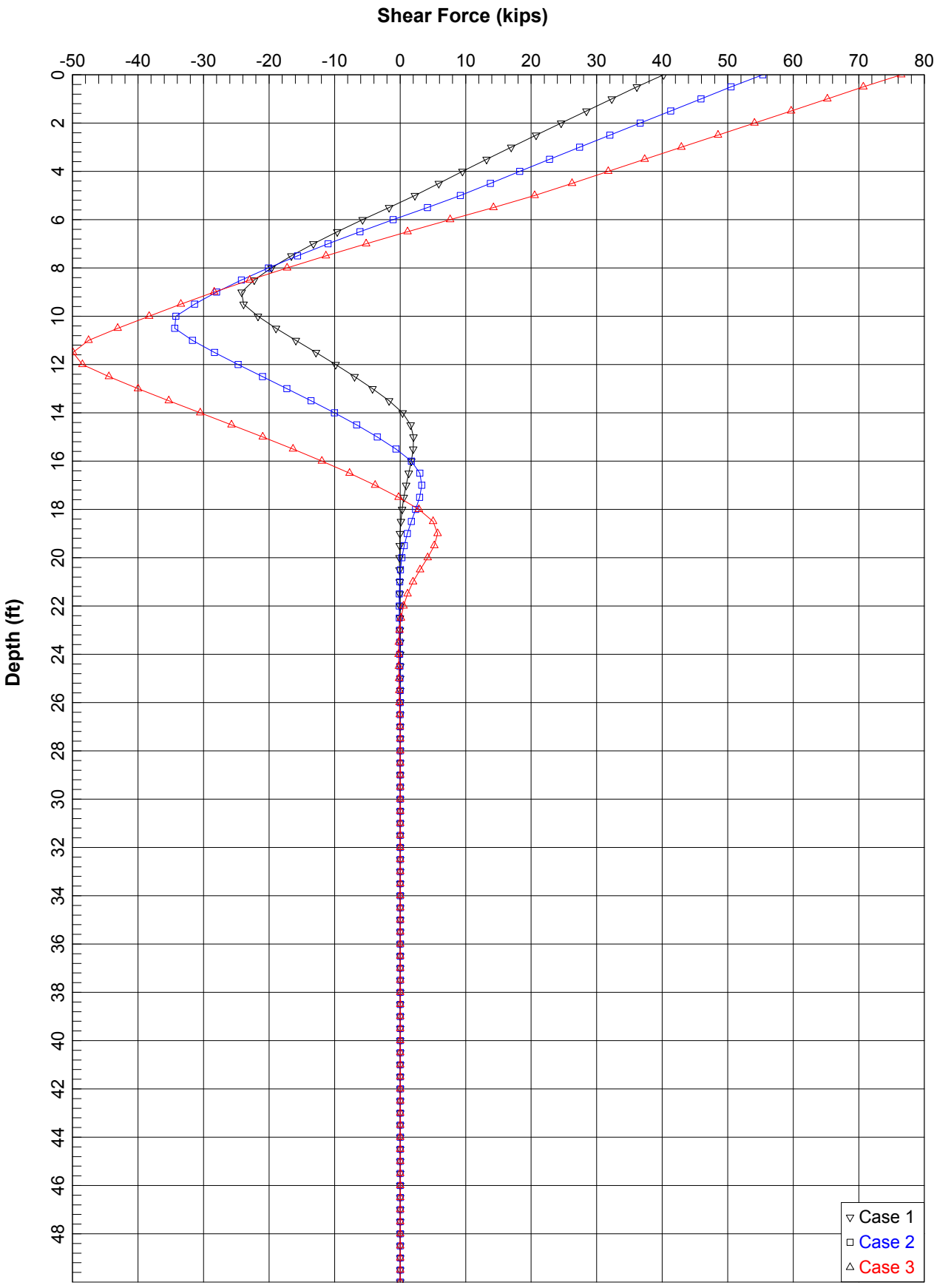
Summary of Pile Response(s)

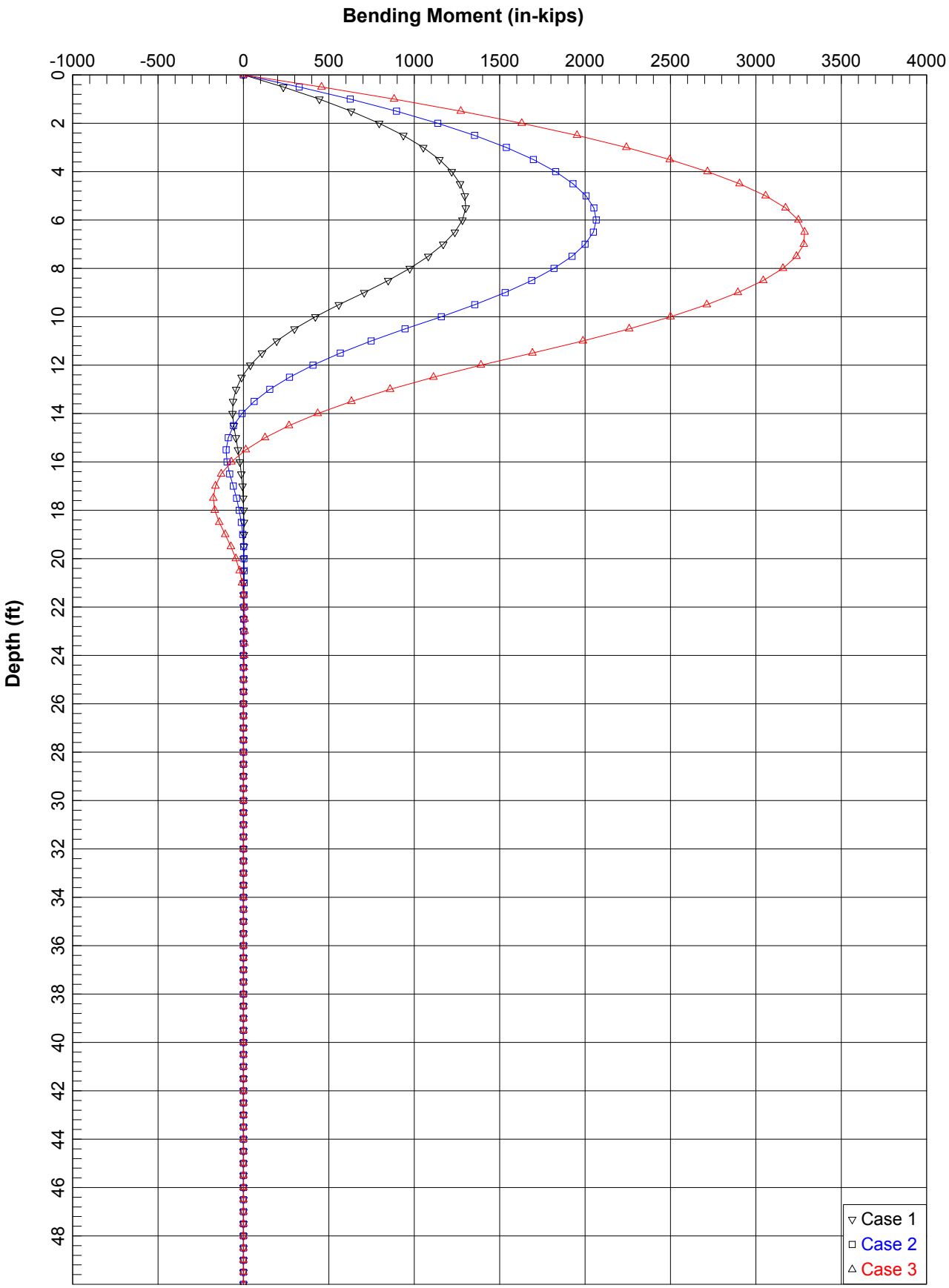
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	226000.	0.25000000	1116166.	31460.	-0.00357284
2	4	y = 0.5000	M = 0.000	226000.	0.50000000	1778692.	43425.	-0.00636475
3	4	y = 1.0000	M = 0.000	226000.	1.00000000	2826388.	60004.	-0.01133813

The analysis ended normally.


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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                             All Rights Reserved

================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file:       Bent 3R_long_Max P.lp6d
Name of output report file:    Bent 3R_long_Max P.lp6o
Name of plot output file:      Bent 3R_long_Max P.lp6p
Name of runtime messeage file: Bent 3R_long_Max P.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  20:42:11

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -


--------------------------------------------------------------------------------
                              Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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


--------------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth             Pile
               X                 Diameter
               ft                in
-----        ---------         ------------
  1          0.00000           24.0000000
  2         50.000000          24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =        Circular
   Section Length                              =      50.00000000 ft
   Top Width                                   =      24.00000000 in
   Bottom Width                                =      24.00000000 in
   Top Area                                    =     452.38934212 in
   Bottom Area                                 =     452.38934212 in
   Moment of Inertia at Top                    =    8143.00815810 in
   Moment of Inertia at Bottom                 =    8143.00815810 in
   Elastic Modulus                             =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                    Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =        0.000 degrees
                                               =        0.000 radians

Pile Batter Angle                              =        0.000 degrees
                                               =        0.000 radians


--------------------------------------------------------------------------------
                    Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =      -5.00000 ft
   Distance from top of pile to bottom of layer=       0.10000 ft
   Effective unit weight at top of layer       =    125.00000 pcf
   Effective unit weight at bottom of layer    =    125.00000 pcf
   Undrained cohesion at top of layer          =   3250.00000 psi
   Undrained cohesion at bottom of layer       =   3250.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =      0.10000 ft
   Distance from top of pile to bottom of layer=      5.00000 ft
   Effective unit weight at top of layer       =    120.00000 pcf
   Effective unit weight at bottom of layer    =    120.00000 pcf
   Undrained cohesion at top of layer          =   2750.00000 psi
   Undrained cohesion at bottom of layer       =   2750.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer   =      5.00000 ft
   Distance from top of pile to bottom of layer=     10.00000 ft
   Effective unit weight at top of layer       =    120.00000 pcf
   Effective unit weight at bottom of layer    =    120.00000 pcf
   Undrained cohesion at top of layer          =   3750.00000 psi
   Undrained cohesion at bottom of layer       =   3750.00000 psi
   Epsilon-50 at top of layer                  =      0.00700
   Epsilon-50 at bottom of layer               =      0.00700


Layer 4 is stiff clay without free water

   Distance from top of pile to top of layer   =     10.00000 ft
   Distance from top of pile to bottom of layer=     80.00000 ft
   Effective unit weight at top of layer       =    125.00000 pcf
   Effective unit weight at bottom of layer    =    125.00000 pcf
   Undrained cohesion at top of layer          =   4500.00000 psi
   Undrained cohesion at bottom of layer       =   4500.00000 psi
   Epsilon-50 at top of layer                  =      0.00500
   Epsilon-50 at bottom of layer               =      0.00500

   (Depth of lowest soil layer extends   30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
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                      Layer                    Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                Rock Mass                        In-situ      In-situ       Elastic
Layer                 Soil Type                Depth      Unit Wt.    Cohesion     Friction        qu            or
Factor          J          kpy       Rock Emass     krm                 Test         Test         Subgrade
 Num.       (p-y Curve Criteria)                 ft          pcf          psf          deg.          psi           GSI      Epsilon
50      Factor          pci          psi                    Type       Property     Mod. pci
-----   ------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water              -5.000      125.000     3250.000       --          --          --
0.00700       --          --          --          --          --          --          --          --
                                                0.10000     125.000     3250.000       --          --          --
0.00700       --          --          --          --          --          --          --          --
  2     Stiff Clay w/o Free Water              0.10000     120.000     2750.000       --          --          --
0.00700       --          --          --          --          --          --          --          --
                                                5.000       120.000     2750.000       --          --          --
0.00700       --          --          --          --          --          --          --          --
  3     Stiff Clay w/o Free Water              5.000       120.000     3750.000       --          --          --
0.00700       --          --          --          --          --          --          --          --
                                                10.000      120.000     3750.000       --          --          --
0.00700       --          --          --          --          --          --          --          --
  4     Stiff Clay w/o Free Water              10.000      125.000     4500.000       --          --          --
0.00500       --          --          --          --          --          --          --          --
                                                80.000      125.000     4500.000       --          --          --
```

0.00500 -- -- -- -- -- -- --

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6750	1.0000
2	50.000	0.6750	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	226000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	226000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	226000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	40200.	-0.003864	499.5697	2.936E+10	-713.3246	8559.8952	0.000
6.000	0.2268	233600.	36137.	-0.003840	843.8160	2.936E+10	-641.1260	16960.	0.000
12.000	0.2039	444055.	32284.	-0.003771	1153.9540	2.936E+10	-643.2412	18926.	0.000
18.000	0.1816	631230.	28424.	-0.003661	1429.7857	2.936E+10	-643.2468	21256.	0.000
24.000	0.1600	795073.	24571.	-0.003515	1671.2343	2.936E+10	-641.0554	24041.	0.000
30.000	0.1394	935618.	20738.	-0.003338	1878.3491	2.936E+10	-636.5719	27402.	0.000
36.000	0.1199	1052987.	16940.	-0.003135	2051.3106	2.936E+10	-629.6910	31503.	0.000
42.000	0.1018	1147395.	13190.	-0.002910	2190.4358	2.936E+10	-620.2946	36572.	0.000
48.000	0.0850	1219154.	9503.9936	-0.002668	2296.1848	2.936E+10	-608.2474	42931.	0.000
54.000	0.0697	1268679.	5899.0752	-0.002414	2369.1673	2.936E+10	-593.3920	51047.	0.000
60.000	0.0560	1296490.	2245.3850	-0.002152	2410.1513	2.936E+10	-624.5047	66863.	0.000
66.000	0.0439	1301460.	-1696.2812	-0.001886	2417.4747	2.936E+10	-689.3840	94170.	0.000
72.000	0.0334	1281251.	-5743.2326	-0.001622	2387.6935	2.936E+10	-659.5998	118479.	0.000
78.000	0.0245	1236941.	-9596.3739	-0.001365	2322.3963	2.936E+10	-624.7806	153294.	0.000
84.000	0.0170	1169796.	-13223.	-0.001119	2223.4481	2.936E+10	-584.0851	205881.	0.000
90.000	0.0110	1081300.	-16583.	-0.000889	2093.0356	2.936E+10	-536.0461	291743.	0.000
96.000	0.006353	973207.	-19624.	-0.000679	1933.7432	2.936E+10	-477.6493	451126.	0.000
102.000	0.002875	847649.	-22260.	-0.000493	1748.7133	2.936E+10	-400.7319	836417.	0.000
108.000	0.000436	707429.	-24173.	-0.000334	1542.0777	2.936E+10	-237.2266	3264425.	0.000
114.000	-0.001135	558473.	-23898.	-0.000205	1322.5679	2.936E+10	329.0147	1739225.	0.000
120.000	-0.002021	421207.	-21673.	-0.000105	1120.2848	2.936E+10	412.8468	1225538.	0.000
126.000	-0.002391	298687.	-18934.	-3.108E-05	939.7319	2.936E+10	499.9495	1254656.	0.000
132.000	-0.002394	194082.	-15902.	1.928E-05	785.5801	2.936E+10	510.6367	1279687.	0.000
138.000	-0.002160	107806.	-12847.	5.013E-05	658.4391	2.936E+10	507.7960	1410855.	0.000
144.000	-0.001793	39781.	-9840.6747	6.521E-05	558.1935	2.936E+10	494.3376	1654551.	0.000
150.000	-0.001377	-10459.	-6942.4003	6.821E-05	514.9822	2.936E+10	471.7539	2055597.	0.000
156.000	-0.000974	-43713.	-4204.6941	6.267E-05	563.9870	2.936E+10	440.8148	2715083.	0.000
162.000	-0.000625	-61085.	-1677.0333	5.196E-05	589.5880	2.936E+10	401.7388	3857209.	0.000
168.000	-0.000351	-63978.	371.0380	3.918E-05	593.8511	2.936E+10	280.9516	4808112.	0.000
174.000	-0.000155	-56739.	1592.6869	2.684E-05	583.1832	2.936E+10	126.2647	4895980.	0.000
180.000	-2.846E-05	-44938.	2042.3954	1.645E-05	565.7935	2.936E+10	23.6382	4983849.	0.000
186.000	4.271E-05	-32275.	2005.0002	8.563E-06	547.1315	2.936E+10	-36.1033	5071719.	0.000
192.000	7.430E-05	-20902.	1705.0105	3.129E-06	530.3716	2.936E+10	-63.8933	5159590.	0.000

198.000	8.026E-05	-11823.	1302.7581	-2.155E-07	516.9928	2.936E+10	-70.1909	5247463.	0.000
204.000	7.171E-05	-5267.9890	900.8756	-1.962E-06	507.3329	2.936E+10	-63.7700	5335335.	0.000
210.000	5.671E-05	-1007.2041	555.7870	-2.603E-06	501.0540	2.936E+10	-51.2596	5423209.	0.000
216.000	4.047E-05	1408.5157	290.4828	-2.562E-06	501.6454	2.936E+10	-37.1752	5511083.	0.000
222.000	2.596E-05	2485.5389	106.2763	-2.164E-06	503.2325	2.936E+10	-24.2270	5598959.	0.000
228.000	1.458E-05	2689.7008	-7.6333	-1.636E-06	503.5334	2.936E+10	-13.7428	5686834.	0.000
234.000	6.335E-06	2398.3747	-66.9030	-1.116E-06	503.1041	2.936E+10	-6.0137	5695312.	0.000
240.000	1.112E-06	1889.8902	-88.1121	-6.774E-07	502.3547	2.936E+10	-1.0560	5695312.	0.000
246.000	-1.793E-06	1342.8668	-86.1746	-3.470E-07	501.5488	2.936E+10	1.7018	5695312.	0.000
252.000	-3.051E-06	856.7363	-72.3800	-1.222E-07	500.8322	2.936E+10	2.8964	5695312.	0.000
258.000	-3.259E-06	474.6385	-54.4097	1.387E-08	500.2691	2.936E+10	3.0937	5695312.	0.000
264.000	-2.885E-06	203.7818	-36.9133	8.320E-08	499.8700	2.936E+10	2.7385	5695312.	0.000
270.000	-2.261E-06	31.4534	-22.2598	1.072E-07	499.6160	2.936E+10	2.1460	5695312.	0.000
276.000	-1.598E-06	-63.6268	-11.2708	1.039E-07	499.6634	2.936E+10	1.5170	5695312.	0.000
282.000	-1.013E-06	-104.0783	-3.8339	8.681E-08	499.7231	2.936E+10	0.9620	5695312.	0.000
288.000	-5.564E-07	-109.8693	0.6365	6.495E-08	499.7316	2.936E+10	0.5282	5695312.	0.000
294.000	-2.341E-07	-96.6162	2.8877	4.384E-08	499.7121	2.936E+10	0.2222	5695312.	0.000
300.000	-3.029E-08	-75.3363	3.6406	2.627E-08	499.6807	2.936E+10	0.0288	5695312.	0.000
306.000	8.114E-08	-53.0003	3.4958	1.316E-08	499.6478	2.936E+10	-0.0770	5695312.	0.000
312.000	1.276E-07	-33.4223	2.9015	4.323E-09	499.6180	2.936E+10	-0.1211	5695312.	0.000
318.000	1.330E-07	-18.1943	2.1594	-9.517E-10	499.5965	2.936E+10	-0.1263	5695312.	0.000
324.000	1.162E-07	-7.5067	1.4499	-3.578E-09	499.5807	2.936E+10	-0.1103	5695312.	0.000
330.000	9.008E-08	-0.7861	0.8626	-4.426E-09	499.5708	2.936E+10	-0.0855	5695312.	0.000
336.000	6.304E-08	2.8566	0.4266	-4.214E-09	499.5739	2.936E+10	-0.0598	5695312.	0.000
342.000	3.951E-08	4.3442	0.1345	-3.478E-09	499.5761	2.936E+10	-0.0375	5695312.	0.000
348.000	2.130E-08	4.4806	-0.0386	-2.576E-09	499.5763	2.936E+10	-0.0202	5695312.	0.000
354.000	8.592E-09	3.8878	-0.1238	-1.721E-09	499.5754	2.936E+10	-0.008156	5695312.	0.000
360.000	6.491E-10	3.0002	-0.1501	-1.017E-09	499.5741	2.936E+10	-0.000616	5695312.	0.000
366.000	-3.615E-09	2.0897	-0.1416	-4.971E-10	499.5728	2.936E+10	0.003431	5695312.	0.000
372.000	-5.316E-09	1.3021	-0.1162	-1.504E-10	499.5716	2.936E+10	0.005046	5695312.	0.000
378.000	-5.426E-09	0.6958	-0.0856	5.377E-11	499.5707	2.936E+10	0.005145	5695312.	0.000
384.000	-4.671E-09	0.2745	-0.0569	1.529E-10	499.5701	2.936E+10	0.004434	5695312.	0.000
390.000	-3.586E-09	0.0128	-0.0334	1.822E-10	499.5697	2.936E+10	0.003403	5695312.	0.000
396.000	-2.484E-09	-0.1265	-0.0161	1.706E-10	499.5699	2.936E+10	0.002358	5695312.	0.000
402.000	-1.538E-09	-0.1808	-0.004633	1.392E-10	499.5699	2.936E+10	0.001460	5695312.	0.000
408.000	-8.136E-10	-0.1824	0.002064	1.021E-10	499.5700	2.936E+10	0.000772	5695312.	0.000
414.000	-3.128E-10	-0.1563	0.005271	6.749E-11	499.5699	2.936E+10	0.000297	5695312.	0.000
420.000	-3.790E-12	-0.1194	0.006173	3.932E-11	499.5699	2.936E+10	3.513E-06	5695312.	0.000
426.000	1.590E-10	-0.0823	0.005730	1.871E-11	499.5698	2.936E+10	-0.000151	5695312.	0.000
432.000	2.208E-10	-0.0507	0.004648	5.124E-12	499.5698	2.936E+10	-0.000210	5695312.	0.000
438.000	2.205E-10	-0.0265	0.003392	-2.766E-12	499.5697	2.936E+10	-0.000209	5695312.	0.000
444.000	1.877E-10	-0.009951	0.002229	-6.498E-12	499.5697	2.936E+10	-0.000178	5695312.	0.000
450.000	1.426E-10	0.000229	0.001289	-7.488E-12	499.5697	2.936E+10	-0.000135	5695312.	0.000
456.000	9.779E-11	0.005536	0.000604	-6.899E-12	499.5697	2.936E+10	-9.283E-05	5695312.	0.000
462.000	5.979E-11	0.007499	0.000156	-5.567E-12	499.5697	2.936E+10	-5.676E-05	5695312.	0.000
468.000	3.099E-11	0.007417	-0.000103	-4.043E-12	499.5697	2.936E+10	-2.942E-05	5695312.	0.000
474.000	1.128E-11	0.006275	-0.000223	-2.643E-12	499.5697	2.936E+10	-1.071E-05	5695312.	0.000
480.000	0.000	0.004745	-0.000253	-1.517E-12	499.5697	2.936E+10	6.949E-07	5695312.	0.000
486.000	-6.927E-12	0.003238	-0.000232	0.000	499.5697	2.936E+10	6.575E-06	5695312.	0.000
492.000	-9.150E-12	0.001968	-0.000186	0.000	499.5697	2.936E+10	8.685E-06	5695312.	0.000
498.000	-8.959E-12	0.001010	-0.000134	0.000	499.5697	2.936E+10	8.504E-06	5695312.	0.000
504.000	-7.531E-12	0.000357	-8.725E-05	0.000	499.5697	2.936E+10	7.149E-06	5695312.	0.000
510.000	-5.661E-12	-3.823E-05	-4.967E-05	0.000	499.5697	2.936E+10	5.377E-06	5695312.	0.000
516.000	-3.846E-12	-0.000240	-2.259E-05	0.000	499.5697	2.936E+10	3.651E-06	5695312.	0.000
522.000	-2.321E-12	-0.000310	-5.028E-06	0.000	499.5697	2.936E+10	2.203E-06	5695312.	0.000
528.000	-1.176E-12	-0.000301	4.929E-06	0.000	499.5697	2.936E+10	1.116E-06	5695312.	0.000
534.000	0.000	-0.000251	9.418E-06	0.000	499.5697	2.936E+10	3.798E-07	5695312.	0.000
540.000	0.000	-0.000188	1.036E-05	0.000	499.5697	2.936E+10	-6.409E-08	5695312.	0.000
546.000	0.000	-0.000127	9.305E-06	0.000	499.5697	2.936E+10	-2.890E-07	5695312.	0.000
552.000	0.000	-7.650E-05	7.340E-06	0.000	499.5697	2.936E+10	-3.668E-07	5695312.	0.000
558.000	0.000	-3.905E-05	5.181E-06	0.000	499.5697	2.936E+10	-3.539E-07	5695312.	0.000
564.000	0.000	-1.432E-05	3.230E-06	0.000	499.5697	2.936E+10	-2.964E-07	5695312.	0.000
570.000	0.000	-2.582E-07	1.674E-06	0.000	499.5697	2.936E+10	-2.222E-07	5695312.	0.000
576.000	0.000	5.806E-06	5.648E-07	0.000	499.5697	2.936E+10	-1.477E-07	5695312.	0.000
582.000	0.000	6.553E-06	-1.179E-07	0.000	499.5697	2.936E+10	-7.990E-08	5695312.	0.000
588.000	0.000	4.422E-06	-4.169E-07	0.000	499.5697	2.936E+10	-1.978E-08	5695312.	0.000
594.000	0.000	1.577E-06	-3.706E-07	0.000	499.5697	2.936E+10	3.520E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	499.5697	2.936E+10	8.834E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0038639 radians
Maximum bending moment = 1301460. inch-lbs
Maximum shear force = 40200. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	55354.	-0.006861	499.5697	2.936E+10	-848.2907	5089.7442	0.000
6.000	0.4588	326157.	50515.	-0.006828	980.2133	2.936E+10	-764.6056	9998.5072	0.000
12.000	0.4181	624698.	45912.	-0.006731	1420.1601	2.936E+10	-769.6945	11047.	0.000
18.000	0.3781	895357.	41285.	-0.006576	1819.0182	2.936E+10	-772.6924	12263.	0.000
24.000	0.3392	1137950.	36646.	-0.006368	2176.5180	2.936E+10	-773.5172	13684.	0.000
30.000	0.3016	1352382.	32010.	-0.006113	2492.5167	2.936E+10	-772.0820	15357.	0.000
36.000	0.2658	1538644.	27388.	-0.005818	2767.0028	2.936E+10	-768.2935	17343.	0.000
42.000	0.2318	1696821.	22797.	-0.005487	3000.1012	2.936E+10	-762.0507	19722.	0.000
48.000	0.2000	1827093.	18252.	-0.005127	3192.0786	2.936E+10	-753.2431	22603.	0.000
54.000	0.1703	1929743.	13767.	-0.004743	3343.3489	2.936E+10	-741.7486	26131.	0.000

60.000	0.1430	2005155.	9173.3280	-0.004341	3454.4801	2.936E+10	-789.3172	33110.	0.000
66.000	0.1182	2051590.	4156.5611	-0.003926	3522.9177	2.936E+10	-882.9384	44811.	0.000
72.000	0.0959	2065682.	-1067.9268	-0.003506	3543.6761	2.936E+10	-858.5576	53704.	0.000
78.000	0.0762	2048288.	-6133.1583	-0.003085	3518.0429	2.936E+10	-829.8529	65382.	0.000
84.000	0.0589	2000451.	-11012.	-0.002671	3447.5480	2.936E+10	-796.4467	81133.	0.000
90.000	0.0441	1923388.	-15675.	-0.002270	3333.9833	2.936E+10	-757.8124	103110.	0.000
96.000	0.0317	1818510.	-20088.	-0.001888	3179.4299	2.936E+10	-713.1590	135177.	0.000
102.000	0.0214	1687455.	-24211.	-0.001530	2986.2994	2.936E+10	-661.1765	185018.	0.000
108.000	0.0133	1532130.	-27992.	-0.001201	2757.4032	2.936E+10	-599.3869	270440.	0.000
114.000	0.007033	1354802.	-31357.	-0.000906	2496.0828	2.936E+10	-522.0386	445331.	0.000
120.000	0.002430	1158305.	-34226.	-0.000649	2206.5141	2.936E+10	-434.4338	1072498.	0.000
126.000	-0.000752	945848.	-34411.	-0.000434	1893.4248	2.936E+10	372.9237	2974656.	0.000
132.000	-0.002775	746554.	-31701.	-0.000261	1590.7334	2.936E+10	530.1741	1146375.	0.000
138.000	-0.003882	566139.	-28345.	-0.000127	1333.8638	2.936E+10	588.7555	909975.	0.000
144.000	-0.004295	406762.	-24730.	-2.724E-05	1098.9973	2.936E+10	616.0833	860678.	0.000
150.000	-0.004209	269452.	-21006.	4.187E-05	896.6490	2.936E+10	625.1121	891129.	0.000
156.000	-0.003792	154571.	-17269.	8.526E-05	727.3538	2.936E+10	620.8337	982206.	0.000
162.000	-0.003187	61997.	-13589.	0.000107	590.9318	2.936E+10	605.6633	1140424.	0.000
168.000	-0.002505	-8790.2749	-10030.	0.000113	512.5235	2.936E+10	580.8706	1391574.	0.000
174.000	-0.001833	-50664.	-6645.7178	0.000106	586.9101	2.936E+10	547.0748	1790459.	0.000
180.000	-0.001234	-88826.	-3491.3590	9.080E-05	630.4688	2.936E+10	504.3782	2452359.	0.000
186.000	-0.000744	-100806.	-621.7057	7.142E-05	648.1234	2.936E+10	452.1730	3648136.	0.000
192.000	-0.000377	-96480.	1767.2808	5.126E-05	641.7484	2.936E+10	324.1559	5159590.	0.000
198.000	-0.000129	-80458.	3017.0310	3.318E-05	618.1369	2.936E+10	112.4275	5247463.	0.000
204.000	2.118E-05	-60366.	3297.7994	1.879E-05	588.5281	2.936E+10	-18.8381	5335335.	0.000
210.000	9.689E-05	-40935.	2978.5546	8.434E-06	559.8941	2.936E+10	-87.5769	5423209.	0.000
216.000	0.000122	-24646.	2378.5540	1.732E-06	535.8894	2.936E+10	-112.4233	5511083.	0.000
222.000	0.000118	-12397.	1711.8465	-1.052E-06	517.8429	2.936E+10	-109.8125	5598959.	0.000
228.000	9.776E-05	-4098.2855	1104.4474	-3.739E-06	505.6091	2.936E+10	-92.6538	5686834.	0.000
234.000	7.281E-05	866.2683	619.1532	-4.069E-06	500.8463	2.936E+10	-69.1109	5695312.	0.000
240.000	4.892E-05	3342.5899	272.5059	-3.639E-06	504.4955	2.936E+10	-46.4382	5695312.	0.000
246.000	2.914E-05	4146.2092	50.2216	-2.874E-06	505.6798	2.936E+10	-27.6566	5695312.	0.000
252.000	1.443E-05	3953.0436	-73.8521	-2.046E-06	505.3951	2.936E+10	-13.7014	5695312.	0.000
258.000	4.580E-06	3265.5335	-127.9995	-1.309E-06	504.3820	2.936E+10	-4.3478	5695312.	0.000
264.000	-1.269E-06	2420.5983	-137.4294	-7.275E-07	503.1263	2.936E+10	1.2045	5695312.	0.000
270.000	-4.150E-06	1618.3540	-121.9988	-3.147E-07	501.9546	2.936E+10	3.9390	5695312.	0.000
276.000	-5.046E-06	957.4662	-95.8127	-5.151E-08	500.9807	2.936E+10	4.7897	5695312.	0.000
282.000	-4.768E-06	468.7415	-67.8663	9.424E-08	500.2604	2.936E+10	4.5258	5695312.	0.000
288.000	-3.915E-06	142.8148	-43.1403	1.567E-07	499.7801	2.936E+10	3.7162	5695312.	0.000
294.000	-2.887E-06	-49.3672	-23.7703	1.663E-07	499.6424	2.936E+10	2.7404	5695312.	0.000
300.000	-1.920E-06	-142.8799	-10.0827	1.466E-07	499.7802	2.936E+10	1.8221	5695312.	0.000
306.000	-1.127E-06	-170.7572	-1.4061	1.146E-07	499.9702	2.936E+10	1.0701	5695312.	0.000
312.000	-5.445E-07	-160.0637	3.3548	8.078E-08	499.8056	2.936E+10	0.5169	5695312.	0.000
318.000	-1.580E-07	-130.7186	5.3553	5.106E-08	499.7623	2.936E+10	0.1500	5695312.	0.000
324.000	8.825E-08	-95.0390	5.6108	2.790E-08	499.7111	2.936E+10	-0.0648	5695312.	0.000
330.000	1.768E-07	-63.4651	4.9129	1.161E-08	499.6632	2.936E+10	-0.1679	5695312.	0.000
336.000	2.076E-07	-37.0162	3.8182	1.342E-09	499.6242	2.936E+10	-0.1970	5695312.	0.000
342.000	1.929E-07	-17.6504	2.6777	-4.245E-09	499.5957	2.936E+10	-0.1831	5695312.	0.000
348.000	1.566E-07	-4.8724	1.6822	-6.547E-09	499.5769	2.936E+10	-0.1487	5695312.	0.000
354.000	1.144E-07	2.5544	0.9105	-6.784E-09	499.5734	2.936E+10	-0.1086	5695312.	0.000
360.000	7.523E-08	6.0722	0.3706	-5.902E-09	499.5786	2.936E+10	-0.0714	5695312.	0.000
366.000	4.354E-08	7.0176	0.0324	-4.564E-09	499.5800	2.936E+10	-0.0413	5695312.	0.000
372.000	2.046E-08	6.4730	-0.1499	-3.186E-09	499.5792	2.936E+10	-0.0194	5695312.	0.000
378.000	5.315E-09	5.2274	-0.2233	-1.990E-09	499.5774	2.936E+10	-0.005046	5695312.	0.000
384.000	-3.419E-09	3.7988	-0.2287	-1.068E-09	499.5753	2.936E+10	0.003245	5695312.	0.000
390.000	-7.495E-09	2.4859	-0.1976	-4.252E-10	499.5739	2.936E+10	0.007114	5695312.	0.000
396.000	-8.522E-09	1.4285	-0.1520	-2.520E-11	499.5718	2.936E+10	0.008089	5695312.	0.000
402.000	-7.797E-09	0.6619	-0.1055	1.884E-10	499.5707	2.936E+10	0.007401	5695312.	0.000
408.000	-6.261E-09	0.1615	-0.0655	2.726E-10	499.5699	2.936E+10	0.005943	5695312.	0.000
414.000	-4.526E-09	0.1250	-0.0348	2.763E-10	499.5699	2.936E+10	0.004296	5695312.	0.000
420.000	-2.945E-09	-0.2568	-0.0135	2.373E-10	499.5701	2.936E+10	0.002796	5695312.	0.000
426.000	-1.679E-09	-0.2878	-0.000350	1.816E-10	499.5701	2.936E+10	0.001594	5695312.	0.000
432.000	-7.654E-10	-0.2614	0.000611	1.255E-10	499.5701	2.936E+10	0.000727	5695312.	0.000
438.000	-1.727E-10	-0.2088	0.000282	7.744E-11	499.5700	2.936E+10	0.000164	5695312.	0.000
444.000	1.638E-10	-0.1503	0.000308	4.074E-11	499.5699	2.936E+10	-0.000156	5695312.	0.000
450.000	3.161E-10	-0.0973	0.000941	1.544E-11	499.5698	2.936E+10	-0.000300	5695312.	0.000
456.000	3.492E-10	-0.0550	0.000640	0.000	499.5698	2.936E+10	-0.000331	5695312.	0.000
462.000	3.147E-10	-0.0247	0.004156	-8.266E-12	499.5697	2.936E+10	-0.000299	5695312.	0.000
468.000	2.500E-10	-0.0005134	0.002547	-1.131E-11	499.5697	2.936E+10	-0.000237	5695312.	0.000
474.000	1.790E-10	0.005896	0.001326	-1.124E-11	499.5697	2.936E+10	-0.000170	5695312.	0.000
480.000	1.151E-10	0.0108	0.000488	-9.530E-12	499.5697	2.936E+10	-0.000109	5695312.	0.000
486.000	6.459E-11	0.0118	-2.338E-05	-7.221E-12	499.5697	2.936E+10	-6.131E-05	5695312.	0.000
492.000	2.849E-11	0.0105	-0.000288	-4.939E-12	499.5697	2.936E+10	-2.705E-05	5695312.	0.000
498.000	5.327E-12	0.008335	-0.000385	-3.009E-12	499.5697	2.936E+10	-5.056E-06	5695312.	0.000
504.000	-7.618E-12	0.005938	-0.000378	-1.551E-12	499.5697	2.936E+10	7.232E-06	5695312.	0.000
510.000	-1.328E-11	0.003800	-0.000319	0.000	499.5697	2.936E+10	1.261E-05	5695312.	0.000
516.000	-1.428E-11	0.002115	-0.000240	0.000	499.5697	2.936E+10	1.356E-05	5695312.	0.000
522.000	-1.269E-11	0.000917	-0.000163	0.000	499.5697	2.936E+10	1.205E-05	5695312.	0.000
528.000	-9.973E-12	0.000153	-9.889E-05	0.000	499.5697	2.936E+10	9.467E-06	5695312.	0.000
534.000	-7.068E-12	-0.000270	-5.036E-05	0.000	499.5697	2.936E+10	6.709E-06	5695312.	0.000
540.000	-4.495E-12	-0.000452	-1.743E-05	0.000	499.5697	2.936E+10	4.267E-06	5695312.	0.000
546.000	-2.476E-12	-0.000481	2.422E-06	0.000	499.5697	2.936E+10	2.351E-06	5695312.	0.000
552.000	-1.047E-12	-0.000424	1.246E-05	0.000	499.5697	2.936E+10	9.941E-07	5695312.	0.000
558.000	0.000	-0.000332	1.583E-05	0.000	499.5697	2.936E+10	1.313E-07	5695312.	0.000
564.000	0.000	-0.000234	1.519E-05	0.000	499.5697	2.936E+10	-3.454E-07	5695312.	0.000
570.000	0.000	-0.000150	1.251E-05	0.000	499.5697	2.936E+10	-5.491E-07	5695312.	0.000
576.000	0.000	-8.445E-05	9.123E-06	0.000	499.5697	2.936E+10	-5.787E-07	5695312.	0.000
582.000	0.000	-4.012E-05	5.857E-06	0.000	499.5697	2.936E+10	-5.099E-07	5695312.	0.000
588.000	0.000	-1.413E-05	3.143E-06	0.000	499.5697	2.936E+10	-3.945E-07	5695312.	0.000
594.000	0.000	-2.337E-06	1.172E-06	0.000	499.5697	2.936E+10	-2.626E-07	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	499.5697	2.936E+10	-1.280E-07	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0068614 radians
Maximum bending moment	=	2065682. inch-lbs
Maximum shear force	=	55354. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	21
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	76458.	-0.0122	499.5697	2.936E+10	-1008.7933	3026.3800	0.000
6.000	0.9266	457173.	70697.	-0.0122	1173.2861	2.936E+10	-911.4821	5902.0288	0.000
12.000	0.8538	881406.	65202.	-0.0120	1798.4601	2.936E+10	-920.1189	6466.1608	0.000
18.000	0.7820	1272271.	59662.	-0.0118	2374.4603	2.936E+10	-926.6623	7109.5835	0.000
24.000	0.7119	1629423.	54089.	-0.0115	2900.7799	2.936E+10	-931.0325	7847.3948	0.000
30.000	0.6437	1952606.	48496.	-0.0112	3377.0412	2.936E+10	-933.1463	8698.4229	0.000
36.000	0.5779	2241655.	42898.	-0.0107	3803.0000	2.936E+10	-932.9158	9686.3777	0.000
42.000	0.5148	2496498.	37308.	-0.0103	4178.5506	2.936E+10	-930.2476	10841.	0.000
48.000	0.4548	2717159.	31743.	-0.009719	4503.7304	2.936E+10	-925.0419	12202.	0.000
54.000	0.3982	2903767.	26216.	-0.009145	4778.7254	2.936E+10	-917.1911	13820.	0.000
60.000	0.3451	3056550.	20513.	-0.008536	5003.8759	2.936E+10	-903.7060	17103.	0.000
66.000	0.2958	3173073.	14231.	-0.007899	5175.5908	2.936E+10	-1110.3954	22526.	0.000
72.000	0.2503	3248742.	7626.1097	-0.007243	5287.1014	2.936E+10	-1091.1702	26155.	0.000
78.000	0.2089	3284229.	1149.0548	-0.006575	5339.3968	2.936E+10	-1067.8481	30678.	0.000
84.000	0.1714	3280863.	-5177.9305	-0.005904	5333.6997	2.936E+10	-1040.1690	36409.	0.000
90.000	0.1380	3238142.	-11319.	-0.005238	5271.4801	2.936E+10	-1007.8058	43818.	0.000
96.000	0.1086	3158742.	-17253.	-0.004585	5154.4722	2.936E+10	-970.3295	53632.	0.000
102.000	0.0830	3043535.	-22946.	-0.003951	4984.6756	2.936E+10	-927.1461	67036.	0.000
108.000	0.0611	2894108.	-28359.	-0.003344	4764.4913	2.936E+10	-877.3771	86093.	0.000
114.000	0.0429	2712292.	-33450.	-0.002771	4496.5576	2.936E+10	-819.6093	114745.	0.000
120.000	0.0279	2500219.	-38303.	-0.002238	4184.0346	2.936E+10	-798.0027	171645.	0.000
126.000	0.0160	2258725.	-43115.	-0.001752	3826.1550	2.936E+10	-806.0862	302311.	0.000
132.000	0.006872	1987585.	-47533.	-0.001318	3428.5887	2.936E+10	-666.3859	581819.	0.000
138.000	0.000183	1691905.	-49932.	-0.000942	2992.8577	2.936E+10	-133.3849	4368793.	0.000
144.000	-0.004431	1390952.	-48469.	-0.000627	2523.0595	2.936E+10	621.0353	840908.	0.000
150.000	-0.007339	1111976.	-44450.	-0.000371	2138.2400	2.936E+10	718.5733	587460.	0.000
156.000	-0.008884	858557.	-39990.	-0.000170	1764.7880	2.936E+10	768.3129	518914.	0.000
162.000	-0.009375	632560.	-35304.	-1.731E-05	1431.7455	2.936E+10	793.4854	507808.	0.000
168.000	-0.009091	434952.	-30518.	0.000051	1138.5403	2.936E+10	802.6251	529309.	0.000
174.000	-0.008274	266098.	-25719.	0.000163	891.7063	2.936E+10	797.6134	578403.	0.000
180.000	-0.007130	125883.	-20979.	0.000203	685.0783	2.936E+10	782.2079	658222.	0.000
186.000	-0.005832	13793.	-16362.	0.000218	519.8963	2.936E+10	756.8960	778692.	0.000
192.000	-0.004517	-71052.	-11925.	0.000212	604.2761	2.936E+10	722.2347	959353.	0.000
198.000	-0.003289	-129877.	-7722.8533	0.000191	690.9644	2.936E+10	678.3701	1237489.	0.000
204.000	-0.002220	-164245.	-3812.7607	0.000161	741.6110	2.936E+10	624.9941	1688827.	0.000
210.000	-0.001353	-176068.	-254.2525	0.000127	750.0336	2.936E+10	561.0253	2487485.	0.000
216.000	-0.000702	-167645.	2878.5441	9.142E-05	746.6209	2.936E+10	483.3902	4131920.	0.000
222.000	-0.000256	-141773.	5046.0153	5.980E-05	708.4951	2.936E+10	239.1002	5598959.	0.000
228.000	1.562E-05	-107255.	5718.9032	3.435E-05	657.6267	2.936E+10	-14.8043	5686834.	0.000
234.000	0.000156	-73240.	5230.4438	1.590E-05	607.5000	2.936E+10	-148.0155	5695312.	0.000
240.000	0.000206	-44533.	4198.5519	3.865E-06	565.1957	2.936E+10	-195.9485	5695312.	0.000
246.000	0.000202	-22868.	3034.5797	-3.023E-06	533.2687	2.936E+10	-192.0423	5695312.	0.000
252.000	0.000170	-8109.6330	1973.9032	-6.189E-06	511.5205	2.936E+10	-161.5166	5695312.	0.000
258.000	0.000128	836.0034	1124.7015	-6.932E-06	500.8017	2.936E+10	-121.5507	5695312.	0.000
264.000	8.697E-05	5405.5837	512.3755	-6.294E-06	507.5357	2.936E+10	-82.5580	5695312.	0.000
270.000	5.253E-05	7001.5789	115.1284	-5.026E-06	509.8876	2.936E+10	-49.8577	5695312.	0.000
276.000	2.965E-05	7855.7554	-110.3682	-3.616E-06	507.5917	2.936E+10	-25.3078	5695312.	0.000
282.000	9.138E-06	5686.9659	-212.3149	-2.339E-06	507.9503	2.936E+10	-8.6744	5695312.	0.000
288.000	-1.411E-06	4259.3207	-234.3215	-1.323E-06	505.8465	2.936E+10	1.3389	5695312.	0.000
294.000	-6.275E-06	2974.6961	-211.1223	-5.934E-07	503.6119	2.936E+10	6.3941	5695312.	0.000
300.000	-8.532E-06	1727.4623	-167.6449	-1.227E-07	502.1154	2.936E+10	8.0983	5695312.	0.000
306.000	-8.209E-06	867.2900	-119.9749	1.425E-07	500.8478	2.936E+10	7.7917	5695312.	0.000
312.000	-6.822E-06	287.3773	-77.1737	2.605E-07	499.9932	2.936E+10	6.4754	5695312.	0.000
318.000	-5.023E-06	-59.5005	-43.2736	2.838E-07	499.6574	2.936E+10	4.8246	5695312.	0.000
324.000	-3.417E-06	-232.6755	-19.0705	2.539E-07	499.9126	2.936E+10	3.2431	5695312.	0.000
330.000	-2.036E-06	-289.0345	-3.5439	2.006E-07	499.9956	2.936E+10	1.9324	5695312.	0.000
336.000	-1.009E-06	-275.7464	5.1280	1.429E-07	499.9760	2.936E+10	0.9582	5695312.	0.000
342.000	-3.213E-07	-227.8865	8.9175	9.141E-08	499.9055	2.936E+10	0.3050	5695312.	0.000
348.000	8.742E-08	-168.9844	9.5835	5.085E-08	499.8187	2.936E+10	-0.0830	5695312.	0.000
354.000	2.889E-07	-113.0228	8.5118	2.263E-08	499.7362	2.936E+10	-0.2742	5695312.	0.000
360.000	3.510E-07	-66.9021	6.6874	3.641E-09	499.6683	2.936E+10	-0.3339	5695312.	0.000
366.000	3.326E-07	-32.7835	4.7386	-6.546E-09	499.6180	2.936E+10	-0.3157	5695312.	0.000
372.000	2.732E-07	-10.0211	3.0135	-1.092E-08	499.5845	2.936E+10	-0.2593	5695312.	0.000
378.000	2.016E-07	3.4076	1.6615	-1.160E-08	499.5747	2.936E+10	-0.1913	5695312.	0.000
384.000	1.341E-07	9.9481	0.7058	-1.022E-08	499.5843	2.936E+10	-0.1273	5695312.	0.000
390.000	7.877E-08	11.9045	0.0997	-7.998E-09	499.5872	2.936E+10	-0.0748	5695312.	0.000
396.000	3.809E-08	11.1658	-0.2331	-5.640E-09	499.5861	2.936E+10	-0.0362	5695312.	0.000
402.000	1.109E-08	9.1226	-0.2731	-3.567E-09	499.5831	2.936E+10	-0.0105	5695312.	0.000
408.000	4.719E-09	6.6978	-0.3913	-1.950E-09	499.5796	2.936E+10	0.004479	5695312.	0.000
414.000	-1.231E-08	4.4325	-0.3428	-8.128E-10	499.5762	2.936E+10	0.0117	5695312.	0.000
420.000	-1.447E-08	2.5866	-0.2665	-9.547E-11	499.5735	2.936E+10	0.0137	5695312.	0.000
426.000	-1.346E-08	1.2346	-0.1870	2.950E-10	499.5715	2.936E+10	0.0128	5695312.	0.000
432.000	-1.093E-08	0.3422	-0.1175	4.562E-10	499.5702	2.936E+10	0.0104	5695312.	0.000
438.000	-7.985E-09	-0.1768	-0.0636	4.731E-10	499.5699	2.936E+10	0.007579	5695312.	0.000
444.000	-5.254E-09	-0.4229	-0.0259	4.113E-10	499.5703	2.936E+10	0.004988	5695312.	0.000
450.000	-3.043E-09	-0.4893	-0.002320	3.186E-10	499.5704	2.936E+10	0.002888	5695312.	0.000
456.000	-1.431E-09	-0.4516	0.0104	2.224E-10	499.5703	2.936E+10	0.001359	5695312.	0.000
462.000	-3.735E-10	-0.3648	0.0156	1.390E-10	499.5702	2.936E+10	0.000355	5695312.	0.000
468.000	2.368E-10	-0.2652	0.0159	7.463E-11	499.5701	2.936E+10	-0.000225	5695312.	0.000
474.000	5.220E-10	-0.1736	0.0138	2.978E-11	499.5699	2.936E+10	-0.000495	5695312.	0.000
480.000	5.942E-10	-0.0998	0.0106	1.832E-12	499.5698	2.936E+10	-0.000564	5695312.	0.000
486.000	5.448E-10	-0.0463	0.007370	-1.310E-11	499.5698	2.936E+10	-0.000516	5695312.	0.000
492.000	4.370E-10	-0.0114	0.004576	-1.899E-11	499.5697	2.936E+10	-0.000415	5695312.	0.000
498.000	3.160E-10	0.008663	0.002432	-1.927E-11	499.5697	2.936E+10	-0.000300	5695312.	0.000
504.000	2.057E-10	0.0179	0.000946	-1.656E-11	499.5697	2.936E+10	-0.000195	5695312.	0.000
510.000	1.173E-10	0.0201	2.657E-05	-1.208E-11	499.5697	2.936E+10	-0.000111	5695312.	0.000
516.000	5.356E-11	0.0182	-0.000460	-8.765E-12	499.5697	2.936E+10	-5.084E-05	5695312.	0.000
522.000	1.215E-11	0.0146	-0.000647	-5.413E-12	499.5697	2.936E+10	-1.153E-05	5695312.	0.000
528.000	-1.140E-11	0.0105	-0.000649	-2.853E-12	499.5697	2.936E+10	1.082E-05	5695312.	0.000
534.000	-2.209E-11	0.006785	-0.000554	-1.088E-12	499.5697	2.936E+10	2.096E-05	5695312.	0.000
540.000	-2.445E-11	0.003839	-0.000421	0.000	499.5697	2.936E+10	2.321E-05	5695312.	0.000
546.000	-2.211E-11	0.001728	-0.000289	0.000	499.5697	2.936E+10	2.099E-05	5695312.	0.000
552.000	-1.765E-11	0.000372	-0.000176	0.000	499.5697	2.936E+10	1.676E-05	5695312.	0.000
558.000	-1.274E-11	-0.000381	-8.903E-05	0.000	499.5697	2.936E+10	1.209E-05	5695312.	0.000
564.000	-8.290E-12	-0.000699	-2.915E-05	0.000	499.5697	2.936E+10	7.869E-06	5695312.	0.000
570.000	-4.700E-12	-0.000733	7.842E-06	0.000	499.5697	2.936E+10	4.461E-06	5695312.	0.000
576.000	-2.008E-12	-0.000606	2.694E-05	0.000	499.5697	2.936E+10	1.906E-06	5695312.	0.000
582.000	0.000	-0.000411	3.283E-05	0.000	499.5697	2.936E+10	5.627E-08	5695312.	0.000
588.000	1.386E-12	-0.000213	2.905E-05	0.000	499.5697	2.936E+10	-1.315E-06	5695312.	0.000

594.000	2.570E-12	-6.257E-05	1.779E-05	0.000	499.5697	2.936E+10	-2.439E-06	5695312.	0.000
600.000	3.677E-12	0.000	0.000	0.000	499.5697	2.936E+10	-3.490E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0122313 radians
Maximum bending moment           =      3284229. inch-lbs
Maximum shear force              =        76458. lbs
Depth of maximum bending moment  =     78.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             15
Number of zero deflection points =              8
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

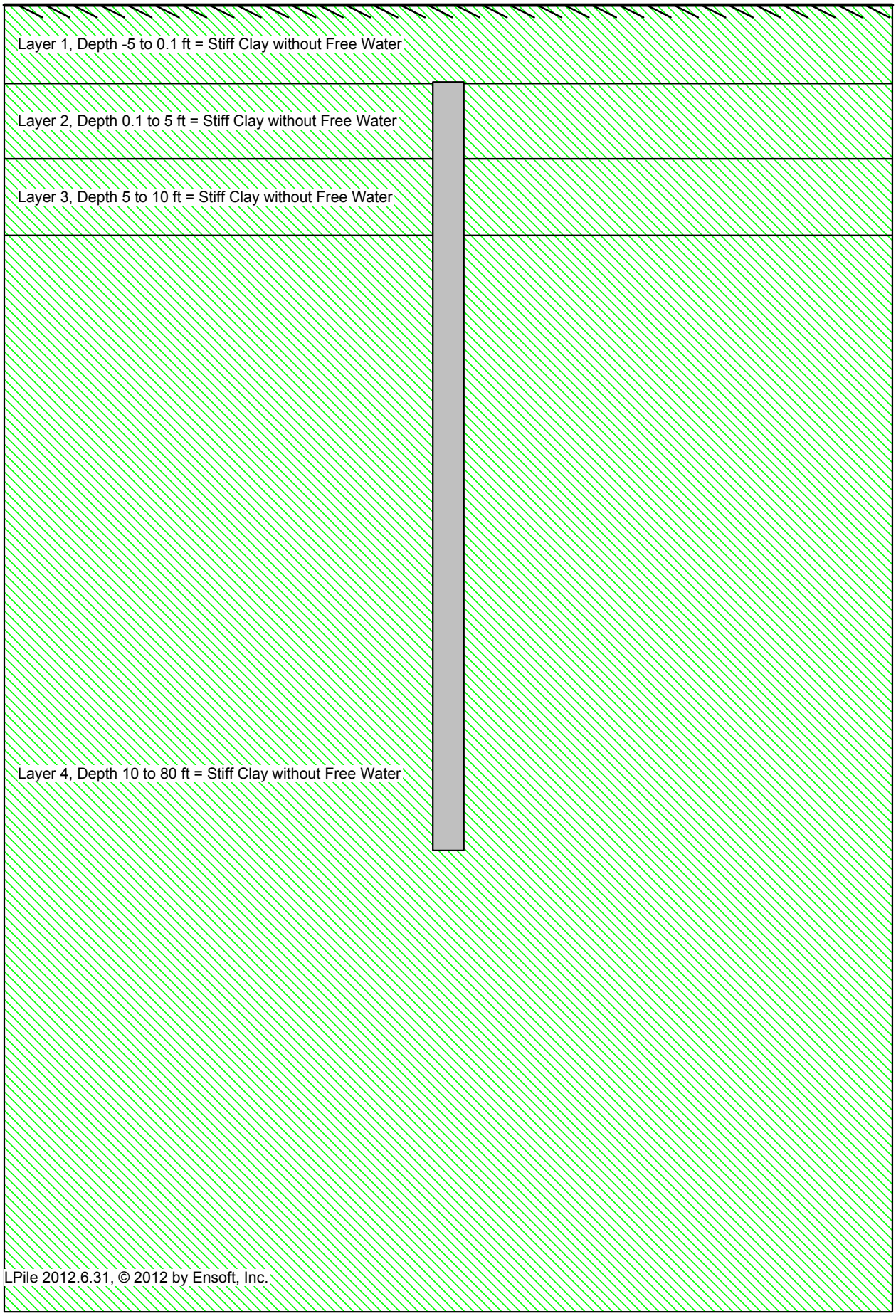
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	226000.	0.25000000	1301460.	40200.	-0.00386388
2	4	y = 0.5000	M = 0.000	226000.	0.50000000	2065682.	55354.	-0.00686136
3	4	y = 1.0000	M = 0.000	226000.	1.00000000	3284229.	76458.	-0.01223127

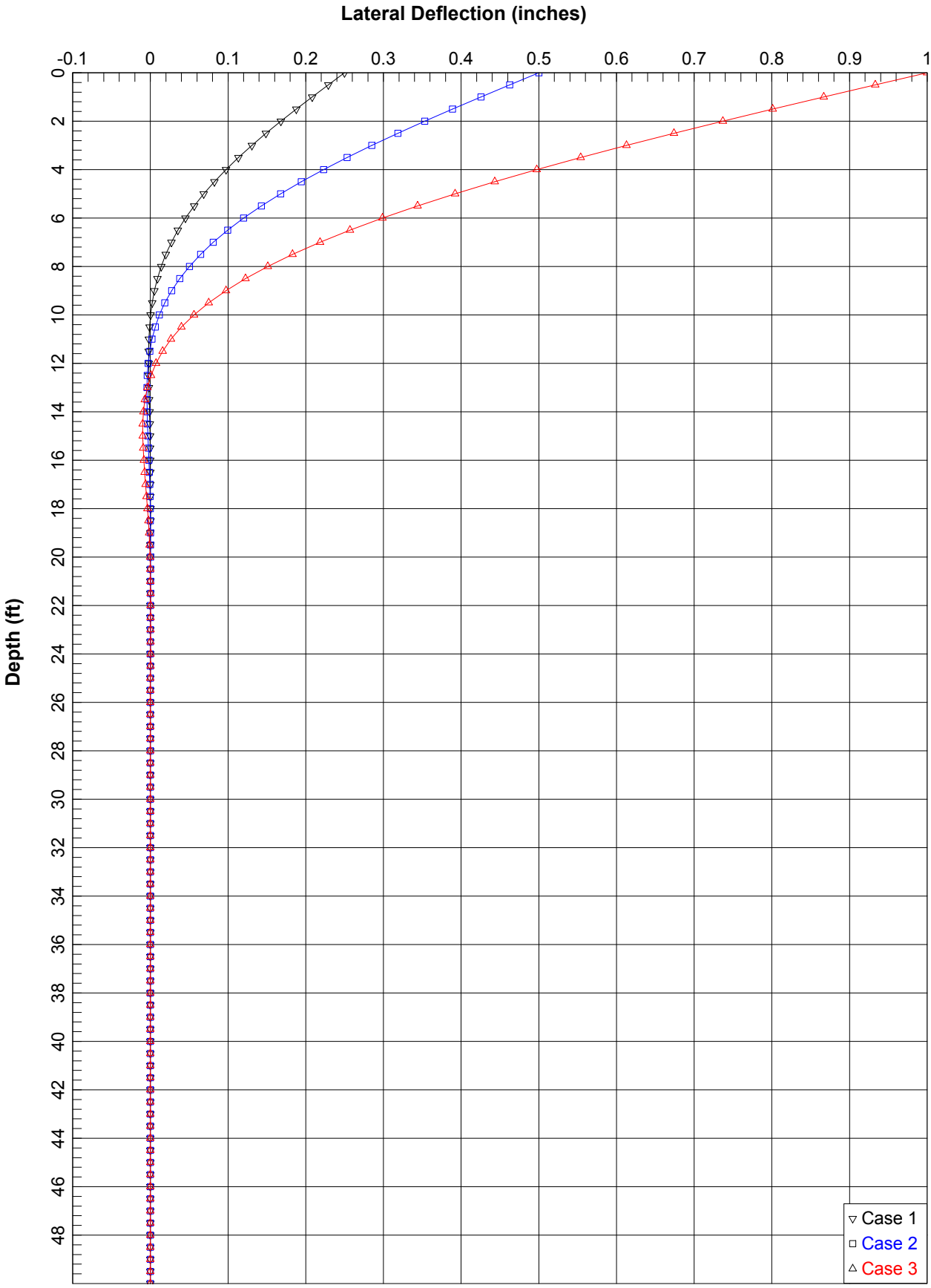
The analysis ended normally.

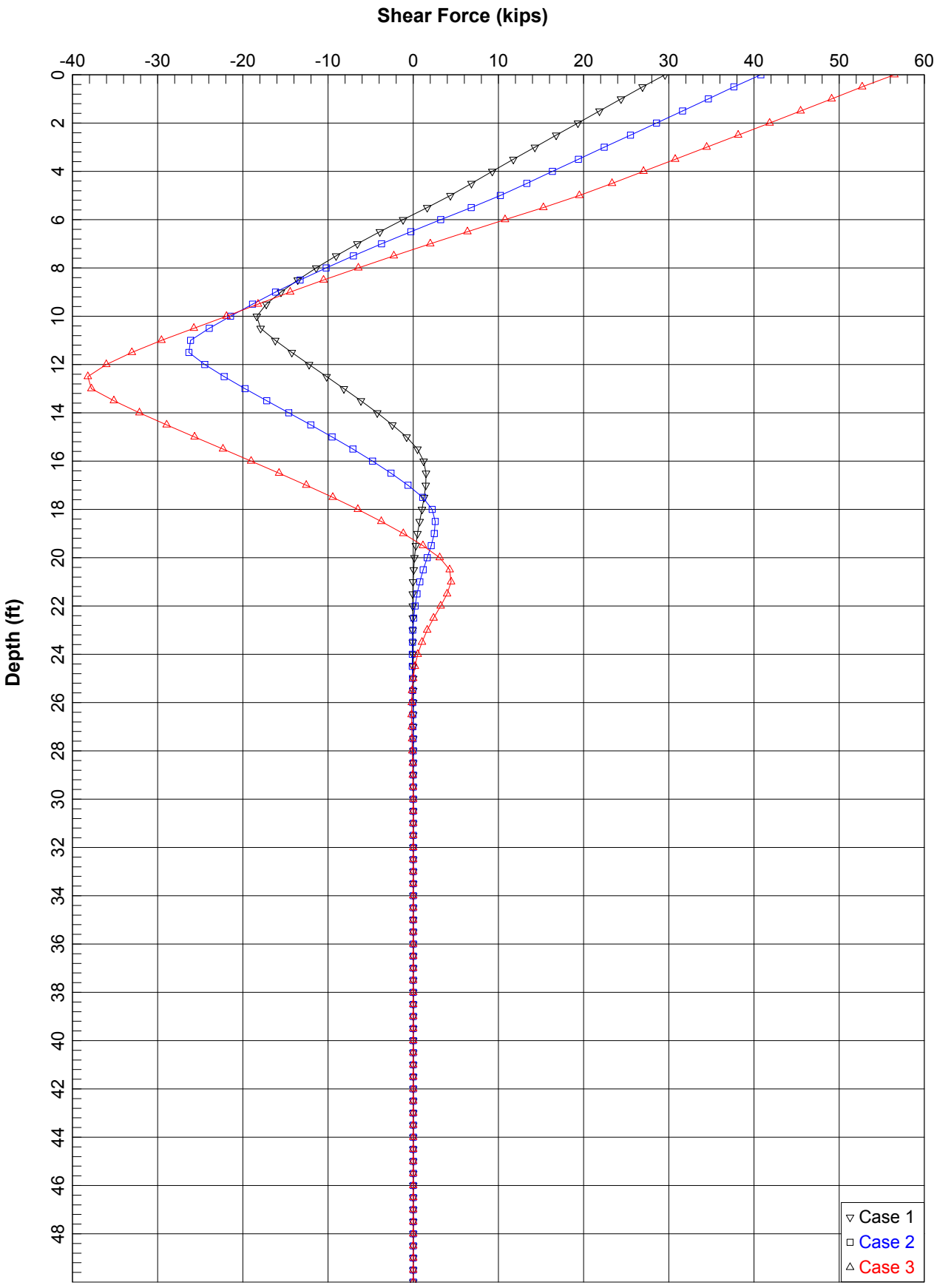
SUPPORT: **BENT 3R**

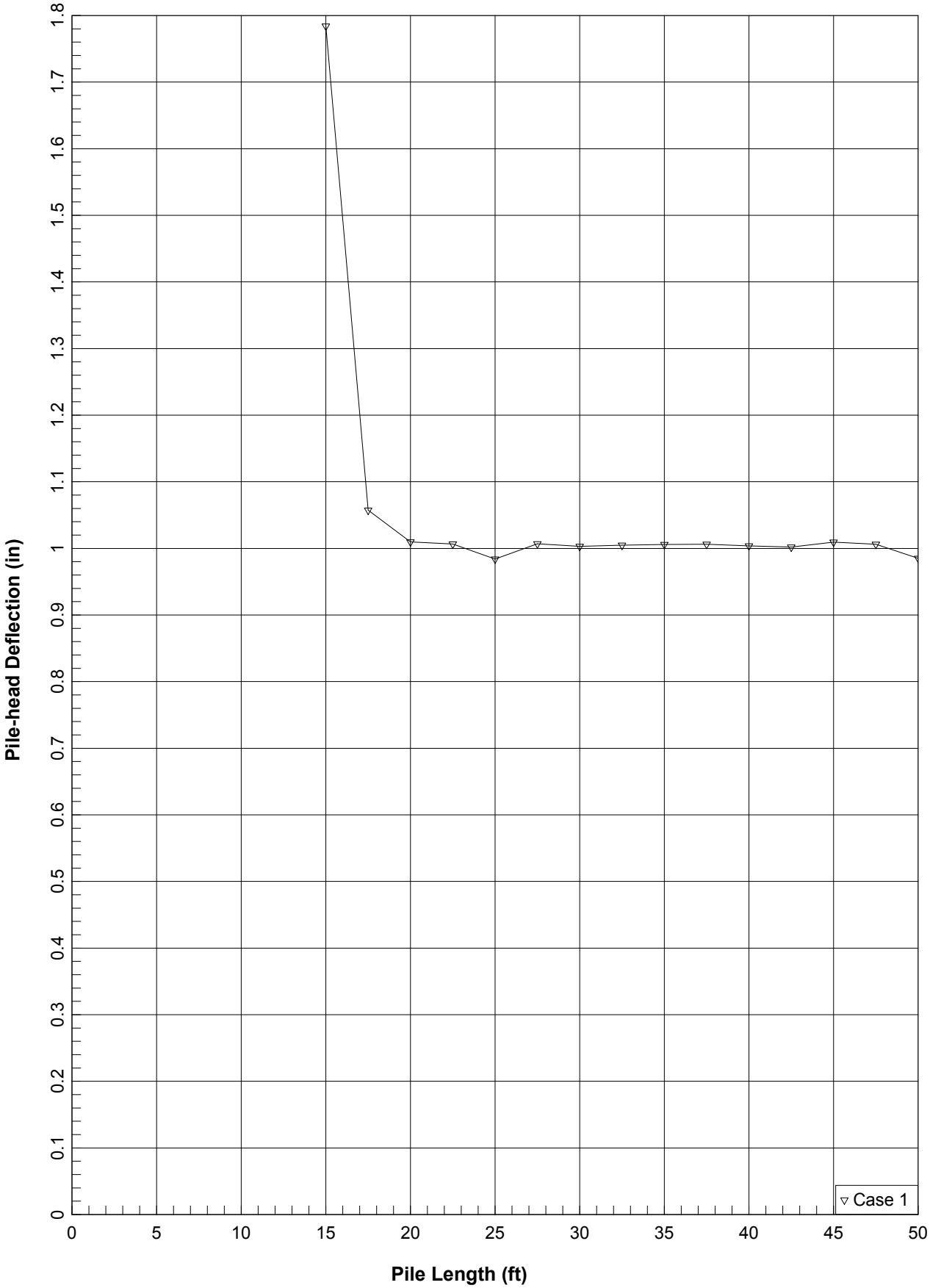
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 5 ft = Stiff Clay without Free Water
Layer 3, Depth 5 to 10 ft = Stiff Clay without Free Water
Layer 4, Depth 10 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-40
-30
-20
-10
0
10
20
30
40
50
60
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3R_transv_Crit length.lp6d
Name of output report file: Bent 3R_transv_Crit length.lp6o
Name of plot output file: Bent 3R_transv_Crit length.lp6p
Name of runtime messeage file: Bent 3R_transv_Crit length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:47:13

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Test Subgrade psi	RQD % or GSI	Strain Factor kpy	Rock Emass krm
					In-situ Type	In-situ Property	Elastic Mod. pci			
1	Stiff Clay w/o Free Water	--	-5.000	120.000	3250.000	--	--	--	0.00700	--
			0.10000	120.000	3250.000	--	--	--	0.00700	--
2	Stiff Clay w/o Free Water	--	0.10000	120.000	2750.000	--	--	--	0.00700	--
			5.000	120.000	2750.000	--	--	--	0.00700	--
3	Stiff Clay w/o Free Water	--	5.000	120.000	3750.000	--	--	--	0.00700	--
			10.000	120.000	3750.000	--	--	--	0.00700	--
4	Stiff Clay w/o Free Water	--	10.000	125.000	4500.000	--	--	--	0.00500	--
			80.000	125.000	4500.000	--	--	--		

0.00500 -- -- -- -- -- -- --

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4400	1.0000
2	50.000	0.4400	1.0000

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
1	1	V = 56000. lbs	M = 0.0000 in-lbs	226000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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 = 56000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9852	-9.053E-07	56000.	-0.0110	499.5697	2.936E+10	-654.0080	1991.4816	0.000
6.000	0.9192	339138.	52263.	-0.0110	999.3431	2.936E+10	-591.7244	3862.2926	0.000
12.000	0.8537	656880.	48692.	-0.0109	1467.5861	2.936E+10	-598.5561	4206.9209	0.000
18.000	0.7889	952893.	45084.	-0.0107	1903.8065	2.936E+10	-604.1990	4595.1379	0.000
24.000	0.7253	1226890.	41445.	-0.0105	2307.5838	2.936E+10	-608.6096	5034.4484	0.000
30.000	0.6633	1478636.	37784.	-0.0102	2678.5724	2.936E+10	-611.7427	5534.0168	0.000
36.000	0.6030	1707951.	34108.	-0.009870	3016.5030	2.936E+10	-613.5509	6105.1249	0.000
42.000	0.5448	1914704.	30426.	-0.009500	3321.1862	2.936E+10	-613.9847	6761.7815	0.000
48.000	0.4890	2098823.	26745.	-0.009090	3592.5145	2.936E+10	-612.9915	7521.5458	0.000
54.000	0.4357	2260293.	23074.	-0.008644	3830.4654	2.936E+10	-610.5157	8406.6529	0.000
60.000	0.3853	2399157.	19268.	-0.008168	4035.1042	2.936E+10	-658.1402	10250.	0.000
66.000	0.3377	2513664.	15052.	-0.007666	4203.8477	2.936E+10	-747.2521	13276.	0.000
72.000	0.2933	2600573.	10593.	-0.007143	4331.9216	2.936E+10	-739.0686	15121.	0.000
78.000	0.2520	2660154.	6190.0495	-0.006606	4419.7245	2.936E+10	-728.6377	17348.	0.000
84.000	0.2140	2692768.	1856.6107	-0.006059	4467.7855	2.936E+10	-715.8419	20070.	0.000
90.000	0.1793	2698865.	-2392.5423	-0.005508	4476.7701	2.936E+10	-700.5424	23443.	0.000
96.000	0.1479	2678994.	-6541.8774	-0.004958	4447.4875	2.936E+10	-682.5693	27689.	0.000
102.000	0.1198	2633808.	-10575.	-0.004415	4380.8993	2.936E+10	-661.7077	33140.	0.000
108.000	0.0949	2564071.	-14473.	-0.003884	4278.1307	2.936E+10	-637.6745	40305.	0.000
114.000	0.0732	2470667.	-18216.	-0.003369	4140.4851	2.936E+10	-610.0768	50009.	0.000
120.000	0.0545	2354615.	-21889.	-0.002876	3969.4649	2.936E+10	-614.2814	67633.	0.000
126.000	0.0387	2215797.	-25696.	-0.002409	3764.8944	2.936E+10	-654.4913	101518.	0.000
132.000	0.0256	2052803.	-29467.	-0.001973	3524.6970	2.936E+10	-602.6162	141316.	0.000
138.000	0.0150	1867546.	-32889.	-0.001572	3251.6914	2.936E+10	-538.2044	215179.	0.000
144.000	0.006719	1662396.	-35851.	-0.001212	2949.3704	2.936E+10	-449.1097	401071.	0.000
150.000	0.000469	1440617.	-37892.	-0.000894	2622.5444	2.936E+10	-231.2463	2959519.	0.000
156.000	-0.004014	1210114.	-37355.	-0.000624	2282.8620	2.936E+10	410.4172	613429.	0.000
162.000	-0.007013	994050.	-34681.	-0.000398	1964.4587	2.936E+10	480.8157	411337.	0.000
168.000	-0.008794	795021.	-31684.	-0.000215	1671.1575	2.936E+10	518.2692	353625.	0.000
174.000	-0.009599	614429.	-28511.	-7.139E-05	1405.0266	2.936E+10	539.4362	337195.	0.000
180.000	-0.009650	453086.	-25243.	3.770E-05	1167.2627	2.936E+10	549.8640	341876.	0.000
186.000	-0.009146	311413.	-21937.	0.000116	958.4850	2.936E+10	552.1143	362192.	0.000
192.000	-0.008260	189529.	-18638.	0.000167	778.8706	2.936E+10	547.5642	397733.	0.000
198.000	-0.007142	87306.	-15384.	0.000195	628.2280	2.936E+10	537.0097	451147.	0.000
204.000	-0.005917	4390.0053	-12210.	0.000205	506.0390	2.936E+10	520.9128	528264.	0.000
210.000	-0.004686	-59774.	-9149.0813	0.000199	587.6558	2.936E+10	499.5114	639621.	0.000

216.000	-0.003528	-105939.	-6231.9760	0.000182	655.6870	2.936E+10	472.8570	804135.	0.000
222.000	-0.002501	-135051.	-3491.0287	0.000157	698.5891	2.936E+10	440.7920	1057645.	0.000
228.000	-0.001639	-148258.	-960.1706	0.000129	718.0513	2.936E+10	402.8273	1474983.	0.000
234.000	-0.000958	-146922.	1307.6061	9.834E-05	716.0822	2.936E+10	353.0983	2210350.	0.000
240.000	-0.000459	-132834.	3218.0112	6.975E-05	695.3208	2.936E+10	283.7034	3712500.	0.000
246.000	-0.000121	-108495.	4294.5353	4.509E-05	659.4541	2.936E+10	75.1379	3712500.	0.000
252.000	8.259E-05	-81421.	4366.6443	2.568E-05	619.5569	2.936E+10	-51.1016	3712500.	0.000
258.000	0.000187	-56165.	3866.6642	1.162E-05	582.3375	2.936E+10	-115.5585	3712500.	0.000
264.000	0.000222	-35053.	3107.7967	2.300E-06	551.2257	2.936E+10	-137.3974	3712500.	0.000
270.000	0.000214	-18878.	2297.6904	-3.211E-06	527.3888	2.936E+10	-132.6381	3712500.	0.000
276.000	0.000184	-7471.9700	1559.1128	-5.904E-06	510.5808	2.936E+10	-113.5545	3712500.	0.000
282.000	0.000144	-152.2323	952.0461	-6.683E-06	499.7940	2.936E+10	-88.8011	3712500.	0.000
288.000	0.000103	3970.7077	493.8461	-6.293E-06	505.4211	2.936E+10	-63.9322	3712500.	0.000
294.000	6.800E-05	5790.9866	175.8203	-5.295E-06	508.1036	2.936E+10	-42.0763	3712500.	0.000
300.000	3.978E-05	6094.9121	-24.2527	-4.081E-06	508.5515	2.936E+10	-24.6147	3712500.	0.000
306.000	1.903E-05	5511.0206	-133.4301	-2.895E-06	507.6910	2.936E+10	-11.7778	3712500.	0.000
312.000	5.047E-06	4501.6013	-178.1315	-1.871E-06	506.2035	2.936E+10	-3.1227	3712500.	0.000
318.000	-3.421E-06	3378.5175	-181.1498	-1.066E-06	504.5485	2.936E+10	2.1166	3712500.	0.000
324.000	-7.745E-06	2330.6948	-160.4232	-4.825E-07	503.0043	2.936E+10	4.7923	3712500.	0.000
330.000	-9.211E-06	1454.7476	-128.9483	-9.568E-08	501.7135	2.936E+10	5.6994	3712500.	0.000
336.000	-8.893E-06	783.5753	-95.3421	1.331E-07	500.7244	2.936E+10	5.5027	3712500.	0.000
342.000	-7.614E-06	310.2816	-64.7000	2.449E-07	500.0269	2.936E+10	4.7114	3712500.	0.000
348.000	-5.955E-06	6.5108	-39.5122	2.772E-07	499.5793	2.936E+10	3.6846	3712500.	0.000
354.000	-4.288E-06	-164.6161	-20.4996	2.611E-07	499.8123	2.936E+10	2.6529	3712500.	0.000
360.000	-2.822E-06	-240.1924	-7.3025	2.197E-07	499.9236	2.936E+10	1.7461	3712500.	0.000
366.000	-1.651E-06	-252.8414	1.0008	1.693E-07	499.9423	2.936E+10	1.0216	3712500.	0.000
372.000	-7.902E-07	-228.6421	5.5325	1.201E-07	499.9066	2.936E+10	0.4889	3712500.	0.000
378.000	-2.097E-07	-186.7774	7.3887	7.766E-08	499.8449	2.936E+10	0.1298	3712500.	0.000
384.000	1.417E-07	-140.1889	7.5150	4.424E-08	499.7763	2.936E+10	-0.0877	3712500.	0.000
390.000	3.212E-07	-96.7176	6.6558	2.003E-08	499.7122	2.936E+10	-0.1987	3712500.	0.000
396.000	3.821E-07	-60.3741	5.3503	3.980E-09	499.6587	2.936E+10	-0.2364	3712500.	0.000
402.000	3.689E-07	-32.5248	3.9562	-5.514E-09	499.6176	2.936E+10	-0.2283	3712500.	0.000
408.000	3.159E-07	-12.8848	2.6849	-1.015E-08	499.5887	2.936E+10	-0.1955	3712500.	0.000
414.000	2.471E-07	-0.2782	1.6398	-1.150E-08	499.5701	2.936E+10	-0.1529	3712500.	0.000
420.000	1.779E-07	6.8246	0.8509	-1.083E-08	499.5797	2.936E+10	-0.1101	3712500.	0.000
426.000	1.171E-07	9.9624	0.3033	-9.116E-09	499.5844	2.936E+10	-0.0725	3712500.	0.000
432.000	6.853E-08	10.4889	-0.0413	-7.026E-09	499.5851	2.936E+10	-0.0424	3712500.	0.000
438.000	3.281E-08	9.4859	-0.2294	-4.984E-09	499.5837	2.936E+10	-0.0203	3712500.	0.000
444.000	8.717E-09	7.7496	-0.3065	-3.223E-09	499.5811	2.936E+10	-0.005393	3712500.	0.000
450.000	-5.869E-09	5.8170	-0.3118	-1.836E-09	499.5783	2.936E+10	0.003631	3712500.	0.000
456.000	-1.332E-08	4.0135	-0.2761	-8.317E-10	499.5756	2.936E+10	0.008242	3712500.	0.000
462.000	-1.585E-08	2.5056	-0.2220	-1.655E-10	499.5734	2.936E+10	0.009807	3712500.	0.000
468.000	-1.531E-08	1.3500	-0.1642	2.285E-10	499.5717	2.936E+10	0.009471	3712500.	0.000
474.000	-1.311E-08	0.5351	-0.1114	4.212E-10	499.5705	2.936E+10	0.008110	3712500.	0.000
480.000	-1.025E-08	0.0119	-0.0681	4.770E-10	499.5697	2.936E+10	0.006344	3712500.	0.000
486.000	-7.383E-09	-0.2829	-0.0353	4.493E-10	499.5701	2.936E+10	0.004568	3712500.	0.000
492.000	-4.860E-09	-0.4132	-0.0126	3.782E-10	499.5703	2.936E+10	0.003007	3712500.	0.000
498.000	-2.844E-09	-0.4351	0.001708	2.915E-10	499.5703	2.936E+10	0.001760	3712500.	0.000
504.000	-1.362E-09	-0.3935	0.009516	2.069E-10	499.5703	2.936E+10	0.000843	3712500.	0.000
510.000	-3.621E-10	-0.3214	0.0127	1.338E-10	499.5702	2.936E+10	0.000224	3712500.	0.000
516.000	2.435E-10	-0.2412	0.0129	7.629E-11	499.5700	2.936E+10	-0.000151	3712500.	0.000
522.000	5.533E-10	-0.1664	0.0115	3.463E-11	499.5699	2.936E+10	-0.000342	3712500.	0.000
528.000	6.591E-10	-0.1038	0.009207	7.011E-12	499.5698	2.936E+10	-0.000408	3712500.	0.000
534.000	6.375E-10	-0.0559	0.006800	-9.318E-12	499.5698	2.936E+10	-0.000394	3712500.	0.000
540.000	5.473E-10	-0.0222	0.004601	-1.731E-11	499.5697	2.936E+10	-0.000339	3712500.	0.000
546.000	4.298E-10	-0.000683	0.002787	-1.965E-11	499.5697	2.936E+10	-0.000266	3712500.	0.000
552.000	3.115E-10	0.0113	0.001411	-1.856E-11	499.5697	2.936E+10	-0.000193	3712500.	0.000
558.000	2.070E-10	0.0163	0.000449	-1.574E-11	499.5697	2.936E+10	-0.000128	3712500.	0.000
564.000	1.226E-10	0.0167	-0.000163	-1.237E-11	499.5697	2.936E+10	-7.583E-05	3712500.	0.000
570.000	5.858E-11	0.0144	-0.000499	-9.194E-12	499.5697	2.936E+10	-3.624E-05	3712500.	0.000
576.000	1.223E-11	0.0107	-0.000631	-6.626E-12	499.5697	2.936E+10	-7.567E-06	3712500.	0.000
582.000	-2.094E-11	0.006830	-0.000614	-4.831E-12	499.5697	2.936E+10	1.296E-05	3712500.	0.000
588.000	-4.574E-11	0.003382	-0.000491	-3.787E-12	499.5697	2.936E+10	2.830E-05	3712500.	0.000
594.000	-6.638E-11	0.000952	-0.000283	-3.344E-12	499.5697	2.936E+10	4.107E-05	3712500.	0.000
600.000	-8.586E-11	0.000	0.000	-3.247E-12	499.5697	2.936E+10	5.313E-05	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9852082 inches
Computed slope at pile head = -0.0109959 radians
Maximum bending moment = 2698865. inch-lbs
Maximum shear force = 56000. lbs
Depth of maximum bending moment = 90.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 28
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 56000. lbs
Moment = 0. in-lbs
Axial Load = 226000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9852082	2698865.	56000.
47.500	1.0063639	2694413.	56000.
45.000	1.0094868	2700397.	56000.
42.500	1.0020262	2694889.	56000.
40.000	1.0038327	2698908.	56000.
37.500	1.0062178	2702005.	56000.
35.000	1.0060558	2703589.	56000.
32.500	1.0049365	2703488.	56000.
30.000	1.0031646	2701336.	56000.
27.500	1.0068427	2705887.	56000.
25.000	0.9838392	2704653.	56000.
22.500	1.0067400	2706327.	56000.

20.000	1.0097474	2706971.	56000.
17.500	1.0573063	2673243.	56000.
15.000	1.7840662	2444493.	56000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 56000.	M = 0.000	226000.	0.98520824	2698865.	56000.	-0.01099589

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3R_transv_Ave P.lp6d
Name of output report file: Bent 3R_transv_Ave P.lp6o
Name of plot output file: Bent 3R_transv_Ave P.lp6p
Name of runtime messeage file: Bent 3R_transv_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:45:13

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	Rock Emass kpy psi	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Test Subgrade qu psi	RQD % or GSI	Strain Epsilon 50
1	Stiff Clay w/o Free Water	--	--	-5.000	125.000	3250.000	--	--	--	0.00700
		--	--	0.10000	125.000	3250.000	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	0.10000	120.000	2750.000	--	--	--	0.00700
		--	--	5.000	120.000	2750.000	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	5.000	120.000	3750.000	--	--	--	0.00700
		--	--	10.000	120.000	3750.000	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	--	10.000	125.000	4500.000	--	--	--	0.00500
		--	--	80.000	125.000	4500.000	--	--	--	

0.00500 -- -- -- -- -- -- --

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4400	1.0000
2	50.000	0.4400	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	226000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	226000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	226000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	29567.	-0.003505	499.5697	2.936E+10	-464.9820	5579.7836	0.000
6.000	0.2290	173784.	26915.	-0.003487	755.6684	2.936E+10	-418.9080	10977.	0.000
12.000	0.2082	332440.	24394.	-0.003435	989.4724	2.936E+10	-421.4582	12148.	0.000
18.000	0.1877	475831.	21861.	-0.003353	1200.7815	2.936E+10	-422.8242	13513.	0.000
24.000	0.1679	603869.	19324.	-0.003242	1389.4648	2.936E+10	-422.9590	15113.	0.000
30.000	0.1488	716512.	16790.	-0.003107	1555.4628	2.936E+10	-421.8122	17004.	0.000
36.000	0.1306	813772.	14266.	-0.002951	1698.7903	2.936E+10	-419.3298	19260.	0.000
42.000	0.1134	895710.	11762.	-0.002776	1819.5392	2.936E+10	-415.4528	21977.	0.000
48.000	0.0973	962444.	9285.1810	-0.002586	1917.8819	2.936E+10	-410.1160	25285.	0.000
54.000	0.0824	1014147.	6845.0924	-0.002384	1994.0742	2.936E+10	-403.2468	29367.	0.000
60.000	0.0687	1051852.	4350.3092	-0.002173	2048.4594	2.936E+10	-428.3476	37408.	0.000
66.000	0.0563	1072245.	1630.8151	-0.001956	2079.6907	2.936E+10	-478.1505	50950.	0.000
72.000	0.0452	1075927.	-1194.9734	-0.001737	2085.1174	2.936E+10	-463.7790	61527.	0.000
78.000	0.0355	1062616.	-3927.0009	-0.001518	2065.5005	2.936E+10	-446.8968	75606.	0.000
84.000	0.0270	1032921.	-6549.4578	-0.001304	2021.7409	2.936E+10	-427.2555	94922.	0.000
90.000	0.0198	987559.	-9044.7136	-0.001098	1954.8929	2.936E+10	-404.4964	122482.	0.000
96.000	0.0138	927361.	-11392.	-0.000902	1866.1823	2.936E+10	-378.0547	163963.	0.000
102.000	0.008991	853297.	-13567.	-0.000720	1757.0365	2.936E+10	-346.9340	231520.	0.000
108.000	0.005194	766506.	-15535.	-0.000554	1629.1368	2.936E+10	-309.0651	357017.	0.000
114.000	0.002337	668377.	-17239.	-0.000408	1484.5276	2.936E+10	-258.7531	664264.	0.000
120.000	0.000300	560747.	-18368.	-0.000282	1325.9181	2.936E+10	-117.7203	2354879.	0.000
126.000	-0.001050	448724.	-17928.	-0.000179	1160.8344	2.936E+10	264.5586	1512261.	0.000
132.000	-0.001849	346100.	-16198.	-9.785E-05	1009.6026	2.936E+10	311.8446	1011957.	0.000
138.000	-0.002224	254807.	-14263.	-3.646E-05	874.7734	2.936E+10	333.4438	899649.	0.000
144.000	-0.002286	175048.	-12235.	7.451E-06	757.5299	2.936E+10	342.5614	898932.	0.000
150.000	-0.002134	107772.	-10177.	3.635E-05	658.3884	2.936E+10	343.3407	965155.	0.000
156.000	-0.001850	52826.	-8133.9426	5.277E-05	577.4177	2.936E+10	337.6427	1094931.	0.000
162.000	-0.001501	10021.	-6141.6775	5.919E-05	514.3379	2.936E+10	326.4456	1304716.	0.000
168.000	-0.001140	-21034.	-4231.4629	5.806E-05	530.5669	2.936E+10	310.2926	1633191.	0.000
174.000	-0.000804	-40914.	-2432.2311	5.173E-05	559.8623	2.936E+10	289.4514	2158828.	0.000
180.000	-0.000519	-50361.	-772.1599	4.248E-05	573.7850	2.936E+10	263.9057	3049990.	0.000
186.000	-0.000296	-50294.	508.2073	3.212E-05	573.6865	2.936E+10	162.8834	3306010.	0.000
192.000	-0.000134	-44350.	1221.7678	2.245E-05	564.9263	2.936E+10	74.9701	3363289.	0.000

198.000	-2.626E-05	-35694.	1491.5968	1.427E-05	552.1706	2.936E+10	14.9728	3420568.	0.000
204.000	3.744E-05	-26489.	1471.4040	7.911E-06	538.6061	2.936E+10	-21.7038	3477848.	0.000
210.000	6.867E-05	-18059.	1284.9218	3.358E-06	526.1821	2.936E+10	-40.4569	3535129.	0.000
216.000	7.774E-05	-11080.	1023.9116	3.804E-07	515.8971	2.936E+10	-46.5465	3592410.	0.000
222.000	7.323E-05	-5772.8521	750.6390	-1.342E-06	508.0769	2.936E+10	-44.5444	3649691.	0.000
228.000	6.164E-05	-2068.1982	502.7588	-2.143E-06	502.6175	2.936E+10	-38.0823	3706973.	0.000
234.000	4.751E-05	266.0661	300.3185	-2.327E-06	499.9618	2.936E+10	-29.3978	3712500.	0.000
240.000	3.371E-05	1541.9355	149.5498	-2.143E-06	501.8420	2.936E+10	-20.8584	3712500.	0.000
246.000	2.180E-05	2066.4739	46.5072	-1.774E-06	502.6150	2.936E+10	-13.4891	3712500.	0.000
252.000	1.242E-05	2104.8327	-17.0233	-1.348E-06	502.6715	2.936E+10	-7.6878	3712500.	0.000
258.000	5.630E-06	1865.8484	-50.5375	-9.418E-07	502.3193	2.936E+10	-3.4836	3712500.	0.000
264.000	1.124E-06	1590.9371	-63.0740	-5.977E-07	501.7815	2.936E+10	-0.6952	3712500.	0.000
270.000	-1.542E-06	1110.5810	-62.2972	-3.308E-07	501.2063	2.936E+10	0.9542	3712500.	0.000
276.000	-2.846E-06	754.2682	-54.1518	-1.402E-07	500.6812	2.936E+10	1.7609	3712500.	0.000
282.000	-3.225E-06	461.1400	-42.8830	-1.601E-08	500.2492	2.936E+10	1.9953	3712500.	0.000
288.000	-3.038E-06	239.7159	-31.2575	5.561E-08	499.9229	2.936E+10	1.8798	3712500.	0.000
294.000	-2.557E-06	85.8988	-20.8709	8.889E-08	499.6963	2.936E+10	1.5824	3712500.	0.000
300.000	-1.971E-06	-10.9755	-12.4642	9.655E-08	499.5859	2.936E+10	1.2198	3712500.	0.000
306.000	-1.399E-06	-63.9337	-6.2081	8.889E-08	499.6639	2.936E+10	0.8655	3712500.	0.000
312.000	-9.047E-07	-85.7144	-1.9321	7.360E-08	499.6940	2.936E+10	0.5508	3712500.	0.000
318.000	-5.157E-07	-87.3187	0.7045	5.591E-08	499.6984	2.936E+10	0.3191	3712500.	0.000
324.000	-2.337E-07	-77.4117	2.0957	3.908E-08	499.6838	2.936E+10	0.1446	3712500.	0.000
330.000	-4.673E-08	-62.2766	2.6163	2.480E-08	499.6615	2.936E+10	0.0289	3712500.	0.000
336.000	6.390E-08	-46.0832	2.5844	1.373E-08	499.6376	2.936E+10	-0.0395	3712500.	0.000
342.000	1.180E-07	-31.3006	2.2467	5.822E-09	499.6158	2.936E+10	-0.0730	3712500.	0.000
348.000	1.338E-07	-19.1384	1.7793	6.675E-10	499.5979	2.936E+10	-0.0828	3712500.	0.000
354.000	1.260E-07	-9.9506	1.2970	-2.305E-09	499.5843	2.936E+10	-0.0780	3712500.	0.000
360.000	1.061E-07	-3.5676	0.8661	-3.687E-09	499.5749	2.936E+10	-0.0657	3712500.	0.000
366.000	8.180E-08	0.4527	0.5173	-4.005E-09	499.5703	2.936E+10	-0.0506	3712500.	0.000
372.000	5.805E-08	2.6509	0.2577	-3.688E-09	499.5736	2.936E+10	-0.0359	3712500.	0.000
378.000	3.755E-08	3.5553	0.0803	-3.054E-09	499.5749	2.936E+10	-0.0232	3712500.	0.000
384.000	2.140E-08	3.6224	-0.0292	-2.320E-09	499.5750	2.936E+10	-0.0132	3712500.	0.000
390.000	9.705E-09	3.2117	-0.0869	-1.622E-09	499.5744	2.936E+10	-0.006005	3712500.	0.000
396.000	1.944E-09	2.5840	-0.1085	-1.029E-09	499.5735	2.936E+10	-0.001203	3712500.	0.000
402.000	-2.648E-09	1.9122	-0.1072	-5.698E-10	499.5725	2.936E+10	0.001639	3712500.	0.000
408.000	-4.895E-09	1.2989	-0.0932	-2.417E-10	499.5716	2.936E+10	0.003029	3712500.	0.000
414.000	-5.549E-09	0.7943	-0.0738	-2.783E-11	499.5709	2.936E+10	0.003434	3712500.	0.000
420.000	-5.222E-09	0.4130	-0.0538	9.555E-11	499.5703	2.936E+10	0.003235	3712500.	0.000
426.000	-4.402E-09	0.1482	-0.0359	1.529E-10	499.5699	2.936E+10	0.002724	3712500.	0.000
432.000	-3.394E-09	-0.0187	-0.0215	1.661E-10	499.5697	2.936E+10	0.002100	3712500.	0.000
438.000	-2.409E-09	-0.1099	-0.0107	1.530E-10	499.5698	2.936E+10	0.001490	3712500.	0.000
444.000	-1.556E-09	-0.1475	-0.003335	1.267E-10	499.5699	2.936E+10	0.000964	3712500.	0.000
450.000	-8.884E-10	-0.1503	0.001207	9.627E-11	499.5699	2.936E+10	0.000550	3712500.	0.000
456.000	-4.029E-10	-0.1332	0.003604	6.730E-11	499.5699	2.936E+10	0.000249	3712500.	0.000
462.000	-8.004E-11	-0.1072	0.004502	4.272E-11	499.5698	2.936E+10	5.992E-05	3712500.	0.000
468.000	1.097E-10	-0.0793	0.004448	2.366E-11	499.5698	2.936E+10	-6.790E-05	3712500.	0.000
474.000	2.030E-10	-0.0539	0.003867	1.004E-11	499.5698	2.936E+10	-0.000126	3712500.	0.000
480.000	2.302E-10	-0.0330	0.003063	1.161E-12	499.5697	2.936E+10	-0.000142	3712500.	0.000
486.000	2.169E-10	-0.0171	0.002233	-3.961E-12	499.5697	2.936E+10	-0.000134	3712500.	0.000
492.000	1.827E-10	-0.006155	0.001491	-6.342E-12	499.5697	2.936E+10	-0.000113	3712500.	0.000
498.000	1.408E-10	0.000768	0.000891	-6.892E-12	499.5697	2.936E+10	-8.715E-05	3712500.	0.000
504.000	9.996E-11	0.004554	0.000444	-6.348E-12	499.5697	2.936E+10	-6.185E-05	3712500.	0.000
510.000	6.466E-11	0.006113	0.000138	-5.258E-12	499.5697	2.936E+10	-4.001E-05	3712500.	0.000
516.000	3.686E-11	0.006229	-5.012E-05	-3.997E-12	499.5697	2.936E+10	-2.281E-05	3712500.	0.000
522.000	1.670E-11	0.005522	-0.000150	-2.796E-12	499.5697	2.936E+10	-1.033E-05	3712500.	0.000
528.000	3.308E-12	0.004442	-0.000187	-1.778E-12	499.5697	2.936E+10	-2.047E-06	3712500.	0.000
534.000	-4.636E-12	0.003287	-0.000184	0.000	499.5697	2.936E+10	2.869E-06	3712500.	0.000
540.000	-8.549E-12	0.002234	-0.000160	0.000	499.5697	2.936E+10	5.290E-06	3712500.	0.000
546.000	-9.722E-12	0.001371	-0.000126	0.000	499.5697	2.936E+10	6.016E-06	3712500.	0.000
552.000	-9.214E-12	0.000724	-9.067E-05	0.000	499.5697	2.936E+10	5.701E-06	3712500.	0.000
558.000	-7.818E-12	0.000283	-5.905E-05	0.000	499.5697	2.936E+10	4.837E-06	3712500.	0.000
564.000	-6.074E-12	1.508E-05	-3.326E-05	0.000	499.5697	2.936E+10	3.759E-06	3712500.	0.000
570.000	-4.313E-12	-0.000117	-1.398E-05	0.000	499.5697	2.936E+10	2.668E-06	3712500.	0.000
576.000	-2.695E-12	-0.000153	-9.752E-07	0.000	499.5697	2.936E+10	1.667E-06	3712500.	0.000
582.000	-1.265E-12	-0.000130	6.375E-06	0.000	499.5697	2.936E+10	7.827E-07	3712500.	0.000
588.000	0.000	-7.759E-05	8.713E-06	0.000	499.5697	2.936E+10	-3.534E-09	3712500.	0.000
594.000	1.181E-12	-2.564E-05	6.509E-06	0.000	499.5697	2.936E+10	-7.309E-07	3712500.	0.000
600.000	2.325E-12	0.000	0.000	0.000	499.5697	2.936E+10	-1.439E-06	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0035048 radians
Maximum bending moment = 1075927. inch-lbs
Maximum shear force = 29567. lbs
Depth of maximum bending moment = 72.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	40799.	-0.006238	499.5697	2.936E+10	-552.9599	3317.7592	0.000
6.000	0.4626	243300.	37642.	-0.006213	858.1099	2.936E+10	-499.4221	6477.9830	0.000
12.000	0.4254	468553.	34632.	-0.006140	1190.0556	2.936E+10	-503.9259	7106.8556	0.000
18.000	0.3889	675535.	31598.	-0.006023	1495.0758	2.936E+10	-507.2482	7826.1550	0.000
24.000	0.3532	864068.	28549.	-0.005866	1772.9097	2.936E+10	-509.3439	8653.4775	0.000
30.000	0.3185	1034026.	25490.	-0.005672	2023.3692	2.936E+10	-510.1659	9610.8689	0.000
36.000	0.2851	1185331.	22431.	-0.005445	2246.3413	2.936E+10	-509.6642	10726.	0.000
42.000	0.2531	1317960.	19378.	-0.005190	2441.7907	2.936E+10	-507.7858	12035.	0.000
48.000	0.2228	1431943.	16341.	-0.004909	2609.7629	2.936E+10	-504.4739	13584.	0.000
54.000	0.1942	1527369.	13329.	-0.004606	2750.3871	2.936E+10	-499.6671	15434.	0.000

60.000	0.1675	1604383.	10224.	-0.004286	2863.8793	2.936E+10	-535.2660	19168.	0.000
66.000	0.1428	1661682.	6808.2157	-0.003952	2948.3195	2.936E+10	-603.3853	25350.	0.000
72.000	0.1201	1696800.	3221.9929	-0.003609	3000.0704	2.936E+10	-592.0223	29572.	0.000
78.000	0.0995	1710134.	-289.0849	-0.003261	3019.7206	2.936E+10	-578.3370	34873.	0.000
84.000	0.0810	1702174.	-3710.6289	-0.002912	3007.9905	2.936E+10	-562.1776	41648.	0.000
90.000	0.0646	1673504.	-7027.2155	-0.002567	2965.7408	2.936E+10	-543.3512	50497.	0.000
96.000	0.0502	1624810.	-10222.	-0.002230	2893.9819	2.936E+10	-521.6007	62364.	0.000
102.000	0.0378	1556887.	-13277.	-0.001905	2793.8876	2.936E+10	-496.5632	78822.	0.000
108.000	0.0273	1470657.	-16169.	-0.001596	2666.8139	2.936E+10	-467.6877	102699.	0.000
114.000	0.0187	1367183.	-18875.	-0.001306	2514.3280	2.936E+10	-434.0546	139625.	0.000
120.000	0.0117	1247703.	-21432.	-0.001038	2338.2563	2.936E+10	-418.4053	215349.	0.000
126.000	0.006193	1112816.	-23931.	-0.000797	2139.4780	2.936E+10	-414.7604	401849.	0.000
132.000	0.002093	962888.	-26146.	-0.000585	1918.2414	2.936E+10	-323.3653	927093.	0.000
138.000	-0.000827	800652.	-26337.	-0.000405	1679.4566	2.936E+10	259.4769	1883324.	0.000
144.000	-0.002764	647736.	-24481.	-0.000257	1454.1104	2.936E+10	359.4301	780181.	0.000
150.000	-0.003907	507580.	-22203.	-0.000139	1247.5681	2.936E+10	399.8672	614014.	0.000
156.000	-0.004428	381678.	-19741.	-4.778E-05	1062.0329	2.936E+10	429.6342	569946.	0.000
162.000	-0.004481	270813.	-17190.	1.890E-05	898.6554	2.936E+10	429.9216	575683.	0.000
168.000	-0.004201	175351.	-14607.	6.449E-05	757.9763	2.936E+10	430.9491	615441.	0.000
174.000	-0.003707	95354.	-12038.	9.216E-05	640.0880	2.936E+10	425.3050	688402.	0.000
180.000	-0.003095	30641.	-9520.8173	0.000105	544.7240	2.936E+10	413.8569	802186.	0.000
186.000	-0.002446	-19181.	-7087.9979	0.000106	527.8361	2.936E+10	397.0829	973850.	0.000
192.000	-0.001821	-54703.	-4771.1495	9.866E-05	580.1831	2.936E+10	375.1999	1236243.	0.000
198.000	-0.001263	-76702.	-2601.0032	8.523E-05	612.6028	2.936E+10	348.1822	1654579.	0.000
204.000	-0.000798	-86146.	-609.5239	6.858E-05	626.5196	2.936E+10	315.6442	2372407.	0.000
210.000	-0.000440	-84203.	1114.4459	5.117E-05	623.6557	2.936E+10	259.0124	3535129.	0.000
216.000	-0.000184	-72912.	2222.3279	3.512E-05	607.0164	2.936E+10	110.2816	3592410.	0.000
222.000	-1.819E-05	-57638.	2586.3625	2.178E-05	584.4880	2.936E+10	11.0633	3649691.	0.000
228.000	7.714E-05	-41934.	2476.5722	1.160E-05	561.3665	2.936E+10	-47.6601	3706973.	0.000
234.000	0.000121	-27943.	2108.9037	4.462E-06	540.7476	2.936E+10	-74.8961	3712500.	0.000
240.000	0.000131	-16640.	1641.6408	-9.454E-08	524.0907	2.936E+10	-80.8582	3712500.	0.000
246.000	0.000120	-8242.7418	1176.4839	-2.637E-06	511.7167	2.936E+10	-74.1941	3712500.	0.000
252.000	9.903E-05	-2514.6143	770.0750	-3.737E-06	503.2754	2.936E+10	-61.2755	3712500.	0.000
258.000	7.507E-05	1008.2924	446.9022	-3.891E-06	501.0556	2.936E+10	-46.4488	3712500.	0.000
264.000	5.234E-05	2858.7640	210.3945	-3.495E-06	503.7597	2.936E+10	-32.3871	3712500.	0.000
270.000	3.312E-05	3542.5066	51.7490	-2.841E-06	504.7901	2.936E+10	-20.4947	3712500.	0.000
276.000	1.825E-05	3487.4574	-43.6063	-2.123E-06	504.7090	2.936E+10	-11.2904	3712500.	0.000
282.000	7.648E-06	3024.9882	-91.6743	-1.457E-06	504.0275	2.936E+10	-4.7323	3712500.	0.000
288.000	7.590E-07	2391.3175	-107.2801	-9.038E-07	503.0937	2.936E+10	-0.4696	3712500.	0.000
294.000	-3.198E-06	1740.0784	-102.7532	-4.816E-07	502.1340	2.936E+10	1.9786	3712500.	0.000
300.000	-5.020E-06	1159.5853	-87.4984	-1.853E-07	501.2785	2.936E+10	3.1064	3712500.	0.000
306.000	-5.421E-06	680.6000	-68.1165	-3.800E-09	500.5872	2.936E+10	3.3543	3712500.	0.000
312.000	-4.975E-06	342.1771	-48.8192	1.093E-07	500.0739	2.936E+10	3.0781	3712500.	0.000
318.000	-4.109E-06	104.4725	-31.9577	1.550E-07	499.7236	2.936E+10	2.5424	3712500.	0.000
324.000	-3.115E-06	-41.7353	-18.5485	1.614E-07	499.6312	2.936E+10	1.9273	3712500.	0.000
330.000	-2.172E-06	-118.5474	-8.7346	1.450E-07	499.7444	2.936E+10	1.3440	3712500.	0.000
336.000	-1.375E-06	-146.9438	-2.1511	1.179E-07	499.7862	2.936E+10	0.8505	3712500.	0.000
342.000	-7.574E-07	-144.6798	1.8065	8.809E-08	499.7829	2.936E+10	0.4686	3712500.	0.000
348.000	-3.176E-07	-125.5050	3.8019	6.048E-08	499.7946	2.936E+10	0.1982	3712500.	0.000
354.000	-3.167E-08	-99.2215	4.4501	3.751E-08	499.7159	2.936E+10	0.0196	3712500.	0.000
360.000	1.326E-07	-72.2051	4.2629	1.999E-08	499.6761	2.936E+10	-0.0820	3712500.	0.000
366.000	2.082E-07	-48.1213	3.6303	7.694E-09	499.6406	2.936E+10	-0.1288	3712500.	0.000
372.000	2.249E-07	-28.6023	2.8264	1.526E-10	499.6319	2.936E+10	-0.1391	3712500.	0.000
378.000	2.064E-07	-14.2046	2.0258	-4.533E-09	499.5906	2.936E+10	-0.1277	3712500.	0.000
384.000	1.705E-07	-4.3404	1.3262	-6.429E-09	499.5761	2.936E+10	-0.1055	3712500.	0.000
390.000	1.292E-07	1.7275	0.7698	-6.696E-09	499.5722	2.936E+10	-0.0800	3712500.	0.000
396.000	9.013E-08	4.9159	0.3626	-6.017E-09	499.5769	2.936E+10	-0.0558	3712500.	0.000
402.000	5.705E-08	6.0953	0.0894	-4.891E-09	499.5787	2.936E+10	-0.0353	3712500.	0.000
408.000	3.144E-08	6.0022	-0.0748	-3.655E-09	499.5785	2.936E+10	-0.0195	3712500.	0.000
414.000	1.319E-08	5.2071	-0.1577	-2.510E-09	499.5737	2.936E+10	-0.0081	3712500.	0.000
420.000	1.321E-09	4.1169	-0.1846	-1.557E-09	499.5757	2.936E+10	-0.000818	3712500.	0.000
426.000	-5.495E-09	2.9962	-0.1769	-8.298E-10	499.5741	2.936E+10	0.003400	3712500.	0.000
432.000	-8.636E-09	1.9970	-0.1506	-3.195E-10	499.5726	2.936E+10	0.005344	3712500.	0.000
438.000	-9.329E-09	1.1896	-0.1173	6.122E-12	499.5714	2.936E+10	0.005772	3712500.	0.000
444.000	-8.563E-09	0.5897	-0.0841	1.880E-10	499.5706	2.936E+10	0.005298	3712500.	0.000
450.000	-7.073E-09	0.1803	-0.0550	2.666E-10	499.5699	2.936E+10	0.004377	3712500.	0.000
456.000	-5.363E-09	0.0715	-0.0320	2.778E-10	499.5699	2.936E+10	0.003318	3712500.	0.000
462.000	-3.740E-09	-0.2039	-0.0151	2.496E-10	499.5700	2.936E+10	0.002314	3712500.	0.000
468.000	-2.368E-09	-0.2528	-0.003717	2.030E-10	499.5701	2.936E+10	0.001465	3712500.	0.000
474.000	-1.395E-09	-0.2490	0.000306	1.517E-10	499.5700	2.936E+10	0.000807	3712500.	0.000
480.000	-5.475E-10	-0.2160	0.000539	1.041E-10	499.5700	2.936E+10	0.000339	3712500.	0.000
486.000	-5.512E-11	-0.1708	0.007657	6.461E-11	499.5699	2.936E+10	3.411E-05	3712500.	0.000
492.000	2.278E-10	-0.1243	0.007337	3.444E-11	499.5699	2.936E+10	-0.000141	3712500.	0.000
498.000	3.582E-10	-0.0829	0.006249	1.327E-11	499.5699	2.936E+10	-0.000222	3712500.	0.000
504.000	3.870E-10	-0.0494	0.004866	0.000	499.5698	2.936E+10	-0.000239	3712500.	0.000
510.000	3.553E-10	-0.0245	0.003488	-7.793E-12	499.5697	2.936E+10	-0.000220	3712500.	0.000
516.000	2.935E-10	-0.007501	0.002283	-1.106E-11	499.5697	2.936E+10	-0.000182	3712500.	0.000
522.000	2.225E-10	0.002948	0.001326	-1.153E-11	499.5697	2.936E+10	-0.000138	3712500.	0.000
528.000	1.552E-10	0.008438	0.000624	-1.036E-11	499.5697	2.936E+10	9.601E-05	3712500.	0.000
534.000	9.817E-11	0.0105	0.000154	-8.432E-12	499.5697	2.936E+10	6.074E-05	3712500.	0.000
540.000	5.400E-11	0.0103	-0.000128	-6.308E-12	499.5697	2.936E+10	3.341E-05	3712500.	0.000
546.000	2.247E-11	0.008948	-0.000270	-4.340E-12	499.5697	2.936E+10	1.390E-05	3712500.	0.000
552.000	1.922E-12	0.007081	-0.000315	-2.702E-12	499.5697	2.936E+10	1.189E-06	3712500.	0.000
558.000	-9.946E-12	0.005170	-0.000301	-1.450E-12	499.5697	2.936E+10	6.154E-06	3712500.	0.000
564.000	-1.547E-11	0.003478	-0.000253	0.000	499.5697	2.936E+10	9.574E-06	3712500.	0.000
570.000	-1.674E-11	0.002131	-0.000194	0.000	499.5697	2.936E+10	1.035E-05	3712500.	0.000
576.000	-1.538E-11	0.001155	-0.000134	0.000	499.5697	2.936E+10	9.519E-06	3712500.	0.000
582.000	-1.262E-11	0.000522	-8.280E-05	0.000	499.5697	2.936E+10	7.807E-06	3712500.	0.000
588.000	-9.209E-12	0.000170	-4.148E-05	0.000	499.5697	2.936E+10	5.698E-06	3712500.	0.000
594.000	-5.594E-12	2.255E-05	-1.400E-05	0.000	499.5697	2.936E+10	3.461E-06	3712500.	0.000
600.000	-1.951E-12	0.000	0.000	0.000	499.5697	2.936E+10	1.207E-06	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0062380 radians
Maximum bending moment	=	1710134. inch-lbs
Maximum shear force	=	40799. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	21
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	56459.	-0.0111	499.5697	2.936E+10	-657.5838	1972.7514	0.000
6.000	0.9332	342017.	52700.	-0.0111	1003.5857	2.936E+10	-595.2010	3826.9354	0.000
12.000	0.8668	662512.	49108.	-0.0110	1475.8855	2.936E+10	-602.0497	4167.5277	0.000
18.000	0.8012	961150.	45479.	-0.0108	1915.9751	2.936E+10	-607.7101	4551.1085	0.000
24.000	0.7368	1237644.	41820.	-0.0106	2323.4321	2.936E+10	-612.1384	4985.0578	0.000
30.000	0.6739	1491758.	38137.	-0.0103	2697.9086	2.936E+10	-615.2891	5478.3845	0.000
36.000	0.6128	1723308.	34440.	-0.0100	3039.1338	2.936E+10	-617.1145	6042.1737	0.000
42.000	0.5539	1932164.	30736.	-0.009628	3346.9162	2.936E+10	-617.5649	6690.1831	0.000
48.000	0.4973	2118252.	27034.	-0.009214	3621.1465	2.936E+10	-616.5879	7439.6472	0.000
54.000	0.4433	2281556.	23342.	-0.008764	3861.8008	2.936E+10	-614.1277	8312.3756	0.000
60.000	0.3921	2422119.	19513.	-0.008284	4068.9426	2.936E+10	-662.0313	10131.	0.000
66.000	0.3439	2538178.	15272.	-0.007777	4239.9734	2.936E+10	-751.6169	13114.	0.000
72.000	0.2988	2626475.	10787.	-0.007249	4370.0930	2.936E+10	-743.4671	14930.	0.000
78.000	0.2569	2687280.	6357.2458	-0.006706	4459.6977	2.936E+10	-733.0690	17121.	0.000
84.000	0.2183	2720949.	1997.1211	-0.006153	4509.3143	2.936E+10	-720.3059	19797.	0.000
90.000	0.1831	2727932.	-2278.9153	-0.005596	4519.6062	2.936E+10	-705.0396	23109.	0.000
96.000	0.1512	2708779.	-6455.3393	-0.005041	4491.3804	2.936E+10	-687.1017	27275.	0.000
102.000	0.1226	2664139.	-10515.	-0.004492	4425.5964	2.936E+10	-666.2795	32616.	0.000
108.000	0.0973	2594775.	-14441.	-0.003954	4323.3770	2.936E+10	-642.2931	39627.	0.000
114.000	0.0751	2501568.	-18212.	-0.003433	4186.0231	2.936E+10	-614.7556	49104.	0.000
120.000	0.0561	2385538.	-21915.	-0.002934	4015.0338	2.936E+10	-619.3497	66299.	0.000
126.000	0.0399	2245649.	-25754.	-0.002461	3810.5126	2.936E+10	-660.3750	99280.	0.000
132.000	0.0265	2083165.	-29561.	-0.002018	3569.4398	2.936E+10	-608.7862	137715.	0.000
138.000	0.0157	1897287.	-33023.	-0.001611	3295.5191	2.936E+10	-544.9555	208364.	0.000
144.000	0.007188	1691246.	-36038.	-0.001245	2989.0127	2.936E+10	-457.5144	381908.	0.000
150.000	0.000757	1468302.	-38205.	-0.000922	2663.3437	2.936E+10	-267.4111	2118677.	0.000
156.000	-0.003873	1235307.	-37787.	-0.000645	2319.9884	2.936E+10	406.6125	629987.	0.000
162.000	-0.006988	1016607.	-35126.	-0.000415	1997.6999	2.936E+10	480.4875	412581.	0.000
168.000	-0.008856	814923.	-32126.	-0.000228	1697.4870	2.936E+10	519.3884	351897.	0.000
174.000	-0.009725	631711.	-28944.	-8.025E-05	1430.4956	2.936E+10	541.4414	334063.	0.000
180.000	-0.009819	467816.	-25662.	3.211E-05	1188.9705	2.936E+10	552.5082	337621.	0.000
186.000	-0.009339	323682.	-22359.	0.000113	976.5659	2.936E+10	555.2640	356726.	0.000
192.000	-0.008463	199447.	-19019.	0.000166	793.4867	2.936E+10	551.1386	390747.	0.000
198.000	-0.007342	94998.	-15743.	0.000197	639.5648	2.936E+10	540.9569	442091.	0.000
204.000	-0.006104	9997.6900	-12545.	0.000207	514.3028	2.936E+10	525.1994	516231.	0.000
210.000	-0.004854	-56099.	-9456.6330	0.000203	582.2399	2.936E+10	504.1184	623085.	0.000
216.000	-0.003673	-104031.	-6510.9381	0.000186	652.8760	2.936E+10	477.7789	780390.	0.000
222.000	-0.002620	-134735.	-3739.4733	0.000162	698.1227	2.936E+10	446.0427	1021495.	0.000
228.000	-0.001732	-149344.	-1175.9748	0.000133	719.6511	2.936E+10	408.4568	1415203.	0.000
234.000	-0.001027	-149207.	1126.0703	0.000102	719.4492	2.936E+10	358.8915	2097443.	0.000
240.000	-0.000505	-136108.	3103.9480	7.311E-05	700.1465	2.936E+10	300.4010	3572206.	0.000
246.000	-0.000149	-112158.	4282.4546	4.773E-05	664.8515	2.936E+10	92.4345	3712500.	0.000
252.000	6.824E-05	-84848.	4433.0842	2.790E-05	624.6069	2.936E+10	-42.2247	3712500.	0.000
258.000	0.000182	-59035.	3968.9072	1.290E-05	586.5677	2.936E+10	-112.5010	3712500.	0.000
264.000	0.000223	-37256.	3217.4607	3.056E-06	554.4727	2.936E+10	-137.9812	3712500.	0.000
270.000	0.000218	-20434.	2397.9433	-2.840E-06	529.6827	2.936E+10	-135.1913	3712500.	0.000
276.000	0.000189	-8473.2977	1641.6818	-5.794E-06	512.6564	2.936E+10	-116.8959	3712500.	0.000
282.000	0.000149	-718.3016	1014.4813	-6.733E-06	500.6282	2.936E+10	-92.1710	3712500.	0.000
288.000	0.000108	3718.7393	537.2656	-6.427E-06	505.0498	2.936E+10	-66.9010	3712500.	0.000
294.000	7.184E-05	5746.1646	203.2044	-5.459E-06	509.0378	2.936E+10	-44.4528	3712500.	0.000
300.000	4.261E-05	6171.9975	-9.2486	-4.241E-06	508.6651	2.936E+10	-26.3649	3712500.	0.000
306.000	2.095E-05	5646.8342	-127.2241	-3.034E-06	507.8912	2.936E+10	-12.9603	3712500.	0.000
312.000	6.207E-06	4653.5349	-177.6267	-1.981E-06	506.4274	2.936E+10	-3.8405	3712500.	0.000
318.000	-2.825E-06	3520.6864	-182.9040	-1.146E-06	504.7580	2.936E+10	1.7481	3712500.	0.000
324.000	-7.540E-06	2449.7941	-164.6638	-5.354E-07	503.1798	2.936E+10	4.6653	3712500.	0.000
330.000	-9.250E-06	1546.1723	-133.4975	-1.270E-07	501.8482	2.936E+10	5.7235	3712500.	0.000
336.000	-9.064E-06	848.1686	-99.5014	1.177E-07	500.8196	2.936E+10	5.6085	3712500.	0.000
342.000	-7.838E-06	351.8369	-68.1259	2.403E-07	500.0882	2.936E+10	4.8500	3712500.	0.000
348.000	-6.181E-06	30.0060	-42.1028	2.793E-07	499.6139	2.936E+10	3.8244	3712500.	0.000
354.000	-4.487E-06	-154.1547	-22.3014	2.666E-07	499.7069	2.936E+10	2.7761	3712500.	0.000
360.000	-2.981E-06	-238.3337	-8.4389	2.265E-07	499.9209	2.936E+10	1.8447	3712500.	0.000
366.000	-1.768E-06	-256.0360	0.3780	1.760E-07	499.9470	2.936E+10	1.0942	3712500.	0.000
372.000	-8.695E-07	-234.2748	5.2748	1.259E-07	499.9149	2.936E+10	0.5380	3712500.	0.000
378.000	-2.579E-07	-193.0800	7.3676	8.221E-08	499.8542	2.936E+10	0.1596	3712500.	0.000
384.000	1.170E-07	-146.0871	7.6292	4.755E-08	499.7858	2.936E+10	-0.0724	3712500.	0.000
390.000	3.127E-07	-101.6591	6.8316	2.223E-08	499.7195	2.936E+10	-0.1935	3712500.	0.000
396.000	3.837E-07	-64.1676	5.5390	5.281E-09	499.6642	2.936E+10	-0.2374	3712500.	0.000
402.000	3.760E-07	-35.2052	4.1288	-4.874E-09	499.6216	2.936E+10	-0.2327	3712500.	0.000
408.000	3.252E-07	-14.6093	2.8271	-9.965E-09	499.5912	2.936E+10	-0.2012	3712500.	0.000
414.000	2.565E-07	-1.2534	1.7473	-1.159E-08	499.5715	2.936E+10	-0.1587	3712500.	0.000
420.000	1.862E-07	6.3902	0.9257	-1.106E-08	499.5791	2.936E+10	-0.1152	3712500.	0.000
426.000	1.237E-07	9.8851	0.3505	-9.398E-09	499.5842	2.936E+10	-0.0766	3712500.	0.000
432.000	7.340E-08	10.6213	-0.0154	-7.302E-09	499.5853	2.936E+10	-0.0454	3712500.	0.000
438.000	3.610E-08	9.7195	-0.2187	-5.224E-09	499.5840	2.936E+10	-0.0223	3712500.	0.000
444.000	1.077E-08	8.0111	-0.2856	-3.413E-09	499.5815	2.936E+10	-0.006630	3712500.	0.000
450.000	-4.842E-09	6.0617	-0.3165	-1.973E-09	499.5786	2.936E+10	0.002996	3712500.	0.000
456.000	-1.297E-08	4.2185	-0.2834	-9.228E-10	499.5759	2.936E+10	0.008023	3712500.	0.000
462.000	-1.592E-08	2.6630	-0.2298	-2.195E-10	499.5736	2.936E+10	0.009848	3712500.	0.000
468.000	-1.560E-08	1.4613	-0.1713	2.019E-10	499.5718	2.936E+10	0.009653	3712500.	0.000
474.000	-1.349E-08	0.6066	-0.1173	4.133E-10	499.5706	2.936E+10	0.008349	3712500.	0.000
480.000	-1.064E-08	0.0524	-0.0725	4.806E-10	499.5698	2.936E+10	0.006584	3712500.	0.000
486.000	-7.726E-09	-0.2649	-0.0384	4.589E-10	499.5701	2.936E+10	0.004780	3712500.	0.000
492.000	-5.135E-09	-0.4100	-0.0146	3.899E-10	499.5703	2.936E+10	0.003177	3712500.	0.000
498.000	-3.046E-09	-0.4405	0.000635	3.030E-10	499.5703	2.936E+10	0.001885	3712500.	0.000
504.000	-1.499E-09	-0.4032	0.009672	2.168E-10	499.5703	2.936E+10	0.000927	3712500.	0.000
510.000	-4.451E-10	-0.3323	0.0127	1.416E-10	499.5702	2.936E+10	0.000275	3712500.	0.000
516.000	2.009E-10	-0.2514	0.0131	8.198E-11	499.5701	2.936E+10	-0.000124	3712500.	0.000
522.000	5.387E-10	-0.1749	0.0118	3.841E-11	499.5699	2.936E+10	-0.000333	3712500.	0.000
528.000	6.610E-10	-0.1104	0.009531	9.260E-12	499.5698	2.936E+10	-0.000410	3712500.	0.000
534.000	6.498E-10	-0.0605	0.007097	-8.200E-12	499.5698	2.936E+10	-0.000402	3712500.	0.000
540.000	5.634E-10	-0.0252	0.004845	-1.697E-11	499.5697	2.936E+10	-0.000349	3712500.	0.000
546.000	4.462E-10	-0.002369	0.002970	-1.978E-11	499.5697	2.936E+10	-0.000276	3712500.	0.000
552.000	3.260E-10	0.0105	0.001537	-1.895E-11	499.5697	2.936E+10	-0.000202	3712500.	0.000
558.000	2.188E-10	0.0161	0.000526	-1.623E-11	499.5697	2.936E+10	-0.000135	3712500.	0.000
564.000	1.313E-10	0.0169	-0.000124	-1.286E-11	499.5697	2.936E+10	-8.122E-05	3712500.	0.000
570.000	6.447E-11	0.0147	-0.000487	-9.635E-12	499.5697	2.936E+10	-3.989E-05	3712500.	0.000
576.000	1.566E-11	0.0110	-0.000636	-7.007E-12	499.5697	2.936E+10	-9.687E-06	3712500.	0.000
582.000	-1.961E-11	0.007060	-0.000629	-5.156E-12	499.5697	2.936E+10	1.213E-05	3712500.	0.000
588.000	-4.622E-11	0.003513	-0.000507	-4.076E-12	499.5697	2.936E+10	2.860E-05	3712500.	0.000

```
   594.000 -6.852E-11   0.000993  -0.000294 -3.615E-12   499.5697  2.936E+10  4.240E-05   3712500.      0.000
   600.000 -8.961E-11      0.000      0.000 -3.514E-12   499.5697  2.936E+10  5.544E-05   1856250.      0.000

* The above values of total stress are combined axial and bending stress.


Output Verification: Computed forces and moments are within specified convergence limits.


Output Summary for Load Case No. 3:

Pile-head deflection              =      1.0000000 inches
Computed slope at pile head       =     -0.0111373 radians
Maximum bending moment            =       2727932. inch-lbs
Maximum shear force               =         56459. lbs
Depth of maximum bending moment   =     90.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             19
Number of zero deflection points  =              7



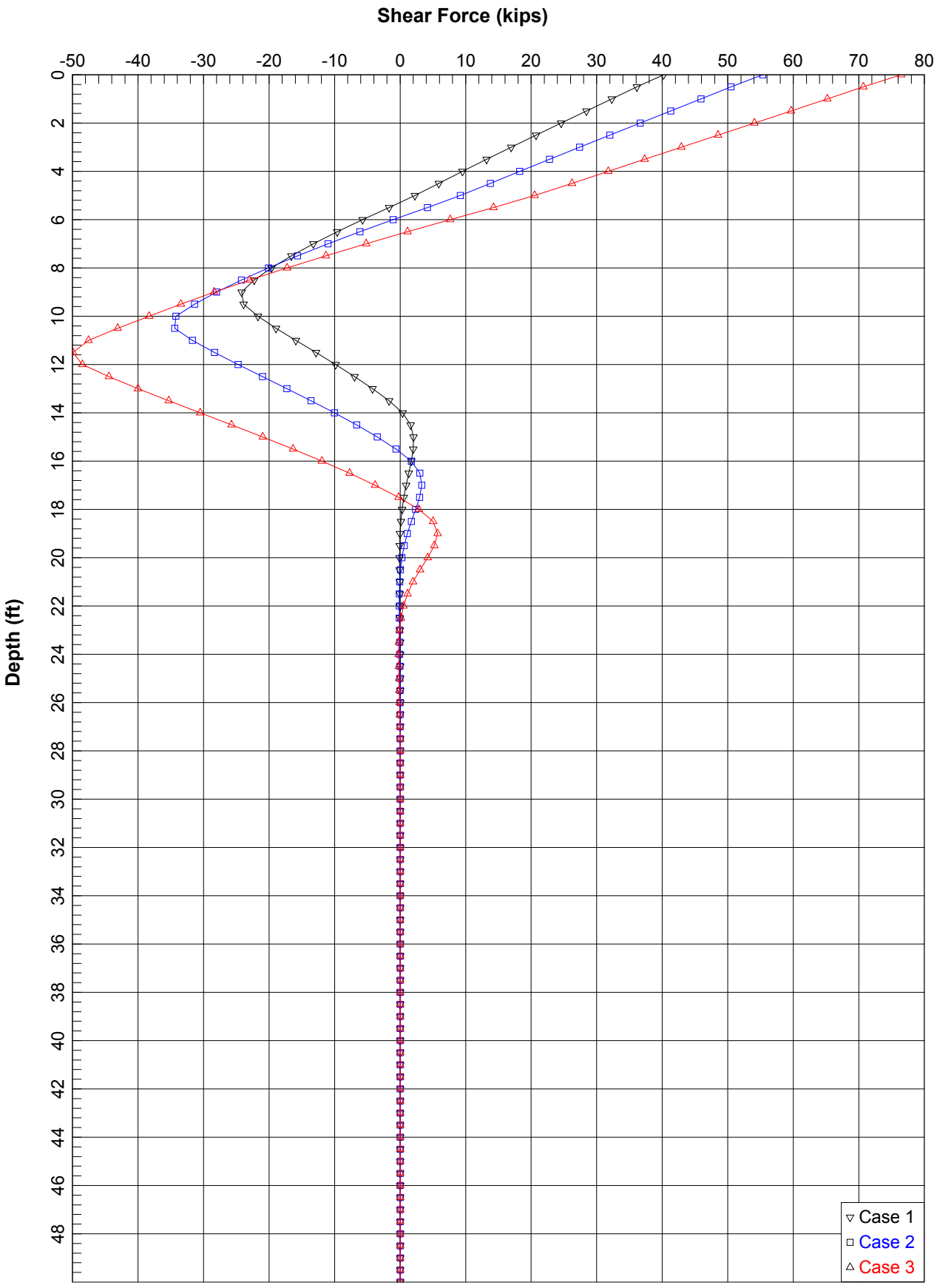
--------------------------------------------------------------------------------
                          Summary of Pile Response(s)
--------------------------------------------------------------------------------

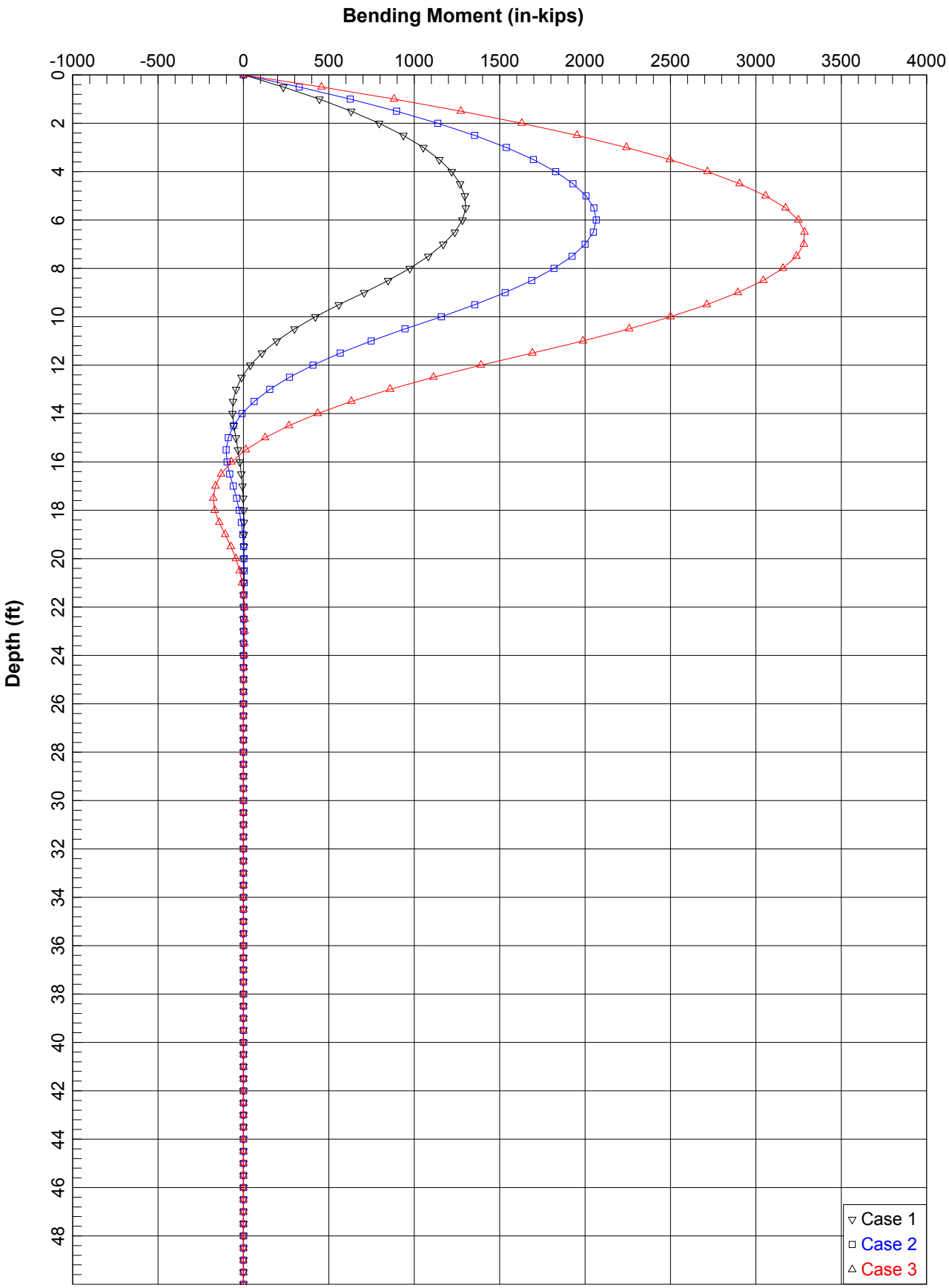

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians


                Pile-head      Pile-head
Load  Load    Condition 1    Condition 2        Axial       Pile-head       Maximum        Maximum       Pile-head
Case  Type    V(lbs) or      in-lb, rad.,      Loading     Deflection      Moment          Shear        Rotation
 No.   No.    y(inches)     or in-lb/rad.       lbs          inches         in-lbs          lbs          radians
----  ----  -------------  -------------  ------------  -------------  -------------  -------------  -------------
  1     4   y =     0.2500  M =       0.000        226000.     0.25000000       1075927.         29567.    -0.00350481
  2     4   y =     0.5000  M =       0.000        226000.     0.50000000       1710134.         40799.    -0.00623802
  3     4   y =     1.0000  M =       0.000        226000.     1.00000000       2727932.         56459.    -0.01113725

The analysis ended normally.
```


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3R_transv_Max P.lp6d
Name of output report file: Bent 3R_transv_Max P.lp6o
Name of plot output file: Bent 3R_transv_Max P.lp6p
Name of runtime messeage file: Bent 3R_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:48:52

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	kpy pci	Rock Emass psi	Layer Depth ft	krm	Effective Unit Wt. pcf	Undrained Cohesion Test psf	Angle of Friction Test deg.	Uniaxial Subgrade Mod. pci	qu Type	RQD % or Property	GSI	Strain Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	-5.000	--	125.000	3250.000	--	--	--	--	--	0.00700
					0.10000	--	125.000	3250.000	--	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	0.10000	--	120.000	2750.000	--	--	--	--	--	0.00700
					5.000	--	120.000	2750.000	--	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	5.000	--	120.000	3750.000	--	--	--	--	--	0.00700
					10.000	--	120.000	3750.000	--	--	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	--	--	10.000	--	125.000	4500.000	--	--	--	--	--	0.00500
					80.000	--	125.000	4500.000	--	--	--	--	--	

0.00500 -- -- -- -- -- -- --

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6750	1.0000
2	50.000	0.6750	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	226000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	226000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	226000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	40200.	-0.003864	499.5697	2.936E+10	-713.3246	8559.8952	0.000
6.000	0.2268	233600.	36137.	-0.003840	843.8160	2.936E+10	-641.1260	16960.	0.000
12.000	0.2039	444055.	32284.	-0.003771	1153.9540	2.936E+10	-643.2412	18926.	0.000
18.000	0.1816	631230.	28424.	-0.003661	1429.7857	2.936E+10	-643.2468	21256.	0.000
24.000	0.1600	795073.	24571.	-0.003515	1671.2343	2.936E+10	-641.0554	24041.	0.000
30.000	0.1394	935618.	20738.	-0.003338	1878.3491	2.936E+10	-636.5719	27402.	0.000
36.000	0.1199	1052987.	16940.	-0.003135	2051.3106	2.936E+10	-629.6910	31503.	0.000
42.000	0.1018	1147395.	13190.	-0.002910	2190.4358	2.936E+10	-620.2946	36572.	0.000
48.000	0.0850	1219154.	9503.9936	-0.002668	2296.1848	2.936E+10	-608.2474	42931.	0.000
54.000	0.0697	1268679.	5899.0752	-0.002414	2369.1673	2.936E+10	-593.3920	51047.	0.000
60.000	0.0560	1296490.	2245.3850	-0.002152	2410.1513	2.936E+10	-624.5047	66863.	0.000
66.000	0.0439	1301460.	-1696.2812	-0.001886	2417.4747	2.936E+10	-689.3840	94170.	0.000
72.000	0.0334	1281251.	-5743.2326	-0.001622	2387.6935	2.936E+10	-659.5998	118479.	0.000
78.000	0.0245	1236941.	-9596.3739	-0.001365	2322.3963	2.936E+10	-624.7806	153294.	0.000
84.000	0.0170	1169796.	-13223.	-0.001119	2223.4481	2.936E+10	-584.0851	205881.	0.000
90.000	0.0110	1081300.	-16583.	-0.000889	2093.0356	2.936E+10	-536.0461	291743.	0.000
96.000	0.006353	973207.	-19624.	-0.000679	1933.7432	2.936E+10	-477.6493	451126.	0.000
102.000	0.002875	847649.	-22260.	-0.000493	1748.7133	2.936E+10	-400.7319	836417.	0.000
108.000	0.000436	707429.	-24173.	-0.000334	1542.0777	2.936E+10	-237.2266	3264425.	0.000
114.000	-0.001135	558473.	-23898.	-0.000205	1322.5679	2.936E+10	329.0147	1739225.	0.000
120.000	-0.002021	421207.	-21673.	-0.000105	1120.2848	2.936E+10	412.8468	1225538.	0.000
126.000	-0.002391	298687.	-18934.	-3.108E-05	939.7319	2.936E+10	499.9495	1254656.	0.000
132.000	-0.002394	194082.	-15902.	1.928E-05	785.5801	2.936E+10	510.6367	1279687.	0.000
138.000	-0.002160	107806.	-12847.	5.013E-05	658.4391	2.936E+10	507.7960	14108855.	0.000
144.000	-0.001793	39781.	-9840.6747	6.521E-05	558.1935	2.936E+10	494.3376	1654551.	0.000
150.000	-0.001377	-10459.	-6942.4003	6.821E-05	514.9822	2.936E+10	471.7539	2055597.	0.000
156.000	-0.000974	-43713.	-4204.6941	6.267E-05	563.9870	2.936E+10	440.8148	2715083.	0.000
162.000	-0.000625	-61085.	-1677.0333	5.196E-05	589.5880	2.936E+10	401.7388	3857209.	0.000
168.000	-0.000351	-63978.	371.0380	3.918E-05	593.8511	2.936E+10	280.9516	4808112.	0.000
174.000	-0.000155	-56739.	1592.6869	2.684E-05	583.1832	2.936E+10	126.2647	4895980.	0.000
180.000	-2.846E-05	-44938.	2042.3954	1.645E-05	565.7935	2.936E+10	23.6382	4983849.	0.000
186.000	4.271E-05	-32275.	2005.0002	8.563E-06	547.1315	2.936E+10	-36.1033	5071719.	0.000
192.000	7.430E-05	-20902.	1705.0105	3.129E-06	530.3716	2.936E+10	-63.8933	5159590.	0.000

198.000	8.026E-05	-11823.	1302.7581	-2.155E-07	516.9928	2.936E+10	-70.1909	5247463.	0.000
204.000	7.171E-05	-5267.9890	900.8756	-1.962E-06	507.3329	2.936E+10	-63.7700	5335335.	0.000
210.000	5.671E-05	-1007.2041	555.7870	-2.603E-06	501.0540	2.936E+10	-51.2596	5423209.	0.000
216.000	4.047E-05	1408.5157	290.4828	-2.562E-06	501.6454	2.936E+10	-37.1752	5511083.	0.000
222.000	2.596E-05	2485.5389	106.2763	-2.164E-06	503.2325	2.936E+10	-24.2270	5598959.	0.000
228.000	1.450E-05	2689.7008	-7.6333	-1.636E-06	503.5334	2.936E+10	-13.7428	5686834.	0.000
234.000	6.335E-06	2398.3747	-66.9030	-1.116E-06	503.1041	2.936E+10	-6.0137	5695312.	0.000
240.000	1.112E-06	1889.8902	-88.1121	-6.774E-07	502.3547	2.936E+10	-1.0560	5695312.	0.000
246.000	-1.793E-06	1342.8668	-86.1746	-3.470E-07	501.5486	2.936E+10	1.7018	5695312.	0.000
252.000	-3.051E-06	856.7363	-72.3800	-1.222E-07	500.8322	2.936E+10	2.8964	5695312.	0.000
258.000	-3.259E-06	474.6385	-54.4097	1.387E-08	500.2691	2.936E+10	3.0937	5695312.	0.000
264.000	-2.885E-06	203.7818	-36.9133	8.320E-08	499.8700	2.936E+10	2.7385	5695312.	0.000
270.000	-2.261E-06	31.4534	-22.2598	1.072E-07	499.6160	2.936E+10	2.1460	5695312.	0.000
276.000	-1.598E-06	-63.6268	-11.2708	1.039E-07	499.6634	2.936E+10	1.5170	5695312.	0.000
282.000	-1.013E-06	-104.0783	-3.8339	8.681E-08	499.7231	2.936E+10	0.9620	5695312.	0.000
288.000	-5.564E-07	-109.8693	0.6365	6.495E-08	499.7316	2.936E+10	0.5282	5695312.	0.000
294.000	-2.341E-07	-96.6162	2.8877	4.384E-08	499.7121	2.936E+10	0.2222	5695312.	0.000
300.000	-3.029E-08	-75.3363	3.6406	2.627E-08	499.6807	2.936E+10	0.0288	5695312.	0.000
306.000	8.114E-08	-53.0003	3.4958	1.316E-08	499.6478	2.936E+10	-0.0770	5695312.	0.000
312.000	1.276E-07	-33.4223	2.9015	4.323E-09	499.6189	2.936E+10	-0.1211	5695312.	0.000
318.000	1.330E-07	-18.1943	2.1594	-9.517E-10	499.5965	2.936E+10	-0.1263	5695312.	0.000
324.000	1.162E-07	-7.5067	1.4499	-3.578E-09	499.5807	2.936E+10	-0.1103	5695312.	0.000
330.000	9.008E-08	-0.7861	0.8626	-4.426E-09	499.5708	2.936E+10	-0.0855	5695312.	0.000
336.000	6.304E-08	2.8566	0.4266	-4.214E-09	499.5739	2.936E+10	-0.0598	5695312.	0.000
342.000	3.951E-08	4.3442	0.1345	-3.478E-09	499.5761	2.936E+10	-0.0375	5695312.	0.000
348.000	2.130E-08	4.4806	-0.0386	-2.576E-09	499.5763	2.936E+10	-0.0202	5695312.	0.000
354.000	8.592E-09	3.8878	-0.1238	-1.721E-09	499.5754	2.936E+10	-0.008156	5695312.	0.000
360.000	6.491E-10	3.0002	-0.1501	-1.017E-09	499.5741	2.936E+10	-0.000616	5695312.	0.000
366.000	-3.615E-09	2.0897	-0.1416	-4.971E-10	499.5728	2.936E+10	0.003431	5695312.	0.000
372.000	-5.316E-09	1.3021	-0.1162	-1.504E-10	499.5716	2.936E+10	0.005046	5695312.	0.000
378.000	-5.420E-09	0.6958	-0.0856	5.377E-11	499.5707	2.936E+10	0.005145	5695312.	0.000
384.000	-4.671E-09	0.2745	-0.0569	1.529E-10	499.5701	2.936E+10	0.004434	5695312.	0.000
390.000	-3.586E-09	0.0128	-0.0334	1.822E-10	499.5697	2.936E+10	0.003403	5695312.	0.000
396.000	-2.484E-09	-0.1265	-0.0161	1.706E-10	499.5699	2.936E+10	0.002358	5695312.	0.000
402.000	-1.538E-09	-0.1808	-0.004633	1.392E-10	499.5699	2.936E+10	0.001460	5695312.	0.000
408.000	-8.136E-10	-0.1824	0.002064	1.021E-10	499.5700	2.936E+10	0.000772	5695312.	0.000
414.000	-3.128E-10	-0.1563	0.005271	6.749E-11	499.5699	2.936E+10	0.000297	5695312.	0.000
420.000	-3.700E-12	-0.1194	0.006173	3.932E-11	499.5699	2.936E+10	3.513E-06	5695312.	0.000
426.000	1.590E-10	-0.0823	0.005730	1.871E-11	499.5698	2.936E+10	-0.000151	5695312.	0.000
432.000	2.208E-10	-0.0507	0.004648	5.124E-12	499.5698	2.936E+10	-0.000210	5695312.	0.000
438.000	2.205E-10	-0.0265	0.003392	-2.766E-12	499.5697	2.936E+10	-0.000209	5695312.	0.000
444.000	1.877E-10	-0.009951	0.002229	-6.495E-12	499.5697	2.936E+10	-0.000178	5695312.	0.000
450.000	1.426E-10	0.000229	0.001289	-7.488E-12	499.5697	2.936E+10	-0.000135	5695312.	0.000
456.000	9.779E-11	0.005536	0.000604	-6.899E-12	499.5697	2.936E+10	-9.283E-05	5695312.	0.000
462.000	5.979E-11	0.007499	0.000156	-5.567E-12	499.5697	2.936E+10	-5.676E-05	5695312.	0.000
468.000	3.099E-11	0.007417	-0.000103	-4.043E-12	499.5697	2.936E+10	-2.942E-05	5695312.	0.000
474.000	1.128E-11	0.006275	-0.000223	-2.643E-12	499.5697	2.936E+10	-1.071E-05	5695312.	0.000
480.000	0.000	0.004745	-0.000253	-1.517E-12	499.5697	2.936E+10	6.949E-07	5695312.	0.000
486.000	-6.927E-12	0.003238	-0.000232	0.000	499.5697	2.936E+10	6.575E-06	5695312.	0.000
492.000	-9.150E-12	0.001968	-0.000186	0.000	499.5697	2.936E+10	8.685E-06	5695312.	0.000
498.000	-8.959E-12	0.001010	-0.000134	0.000	499.5697	2.936E+10	8.504E-06	5695312.	0.000
504.000	-7.531E-12	0.000357	-8.725E-05	0.000	499.5697	2.936E+10	7.149E-06	5695312.	0.000
510.000	-5.665E-12	-3.823E-05	-4.967E-05	0.000	499.5697	2.936E+10	5.377E-06	5695312.	0.000
516.000	-3.846E-12	-0.000240	-2.259E-05	0.000	499.5697	2.936E+10	3.651E-06	5695312.	0.000
522.000	-2.321E-12	-0.000310	-5.028E-06	0.000	499.5697	2.936E+10	2.203E-06	5695312.	0.000
528.000	-1.176E-12	-0.000301	4.929E-06	0.000	499.5697	2.936E+10	1.116E-06	5695312.	0.000
534.000	0.000	-0.000251	9.418E-06	0.000	499.5697	2.936E+10	3.798E-07	5695312.	0.000
540.000	0.000	-0.000188	1.036E-05	0.000	499.5697	2.936E+10	-6.409E-08	5695312.	0.000
546.000	0.000	-0.000127	9.305E-06	0.000	499.5697	2.936E+10	-2.890E-07	5695312.	0.000
552.000	0.000	-7.650E-05	7.340E-06	0.000	499.5697	2.936E+10	-3.660E-07	5695312.	0.000
558.000	0.000	-3.905E-05	5.181E-06	0.000	499.5697	2.936E+10	-3.539E-07	5695312.	0.000
564.000	0.000	-1.432E-05	3.230E-06	0.000	499.5697	2.936E+10	-2.964E-07	5695312.	0.000
570.000	0.000	-2.582E-07	1.674E-06	0.000	499.5697	2.936E+10	-2.222E-07	5695312.	0.000
576.000	0.000	5.806E-06	5.648E-07	0.000	499.5697	2.936E+10	-1.477E-07	5695312.	0.000
582.000	0.000	6.553E-06	-1.179E-07	0.000	499.5697	2.936E+10	-7.990E-08	5695312.	0.000
588.000	0.000	4.422E-06	-4.169E-07	0.000	499.5697	2.936E+10	-1.978E-08	5695312.	0.000
594.000	0.000	1.577E-06	-3.706E-07	0.000	499.5697	2.936E+10	3.520E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	499.5697	2.936E+10	8.834E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0038639 radians
Maximum bending moment = 1301460. inch-lbs
Maximum shear force = 40200. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	55354.	-0.006861	499.5697	2.936E+10	-848.2907	5089.7442	0.000
6.000	0.4588	326157.	50515.	-0.006828	980.2133	2.936E+10	-764.6056	9998.5072	0.000
12.000	0.4181	624698.	45912.	-0.006731	1420.1601	2.936E+10	-769.6945	11047.	0.000
18.000	0.3781	895357.	41285.	-0.006576	1819.0182	2.936E+10	-772.6924	12263.	0.000
24.000	0.3392	1137950.	36646.	-0.006368	2176.5180	2.936E+10	-773.5172	13684.	0.000
30.000	0.3016	1352382.	32010.	-0.006113	2492.5167	2.936E+10	-772.0820	15357.	0.000
36.000	0.2658	1538644.	27388.	-0.005818	2767.0028	2.936E+10	-768.2935	17343.	0.000
42.000	0.2318	1696821.	22797.	-0.005487	3000.1012	2.936E+10	-762.0507	19722.	0.000
48.000	0.2000	1827093.	18252.	-0.005127	3192.0786	2.936E+10	-753.2431	22603.	0.000
54.000	0.1703	1929743.	13767.	-0.004743	3343.3489	2.936E+10	-741.7486	26131.	0.000

60.000	0.1430	2005155.	9173.3280	-0.004341	3454.4801	2.936e+10	-789.3172	33110.	0.000
66.000	0.1182	2051596.	4156.5611	-0.003926	3522.9177	2.936e+10	-882.9384	44811.	0.000
72.000	0.0959	2065682.	-1067.9268	-0.003506	3543.6761	2.936e+10	-858.5576	53704.	0.000
78.000	0.0762	2048288.	-6133.1583	-0.003085	3518.0429	2.936e+10	-829.8529	65382.	0.000
84.000	0.0589	2000451.	-11012.	-0.002671	3447.5480	2.936e+10	-796.4467	81133.	0.000
90.000	0.0441	1923388.	-15675.	-0.002270	3333.9833	2.936e+10	-757.8124	103110.	0.000
96.000	0.0317	1818510.	-20088.	-0.001888	3179.4299	2.936e+10	-713.1590	135177.	0.000
102.000	0.0214	1687455.	-24211.	-0.001530	2986.2994	2.936e+10	-661.1765	185018.	0.000
108.000	0.0133	1532130.	-27992.	-0.001201	2757.4032	2.936e+10	-599.3869	270440.	0.000
114.000	0.007033	1354802.	-31357.	-0.000906	2496.0828	2.936e+10	-522.0386	445331.	0.000
120.000	0.002430	1158305.	-34226.	-0.000649	2206.5141	2.936e+10	-434.4338	1072498.	0.000
126.000	-0.000752	945848.	-34411.	-0.000434	1893.4248	2.936e+10	372.9237	2974656.	0.000
132.000	-0.002775	746554.	-31701.	-0.000261	1599.7334	2.936e+10	530.1741	1146375.	0.000
138.000	-0.003882	566139.	-28345.	-0.000127	1333.8638	2.936e+10	588.7555	909975.	0.000
144.000	-0.004295	406762.	-24730.	-2.724e-05	1098.9973	2.936e+10	616.0833	860678.	0.000
150.000	-0.004209	269452.	-21006.	4.187e-05	896.6490	2.936e+10	625.1121	891129.	0.000
156.000	-0.003792	154571.	-17269.	8.520e-05	727.3538	2.936e+10	620.8337	982206.	0.000
162.000	-0.003187	61997.	-13589.	0.000107	590.9318	2.936e+10	605.6633	1140424.	0.000
168.000	-0.002505	-8790.2749	-10030.	0.000113	512.5235	2.936e+10	580.8706	1391574.	0.000
174.000	-0.001833	-58664.	-6645.7178	0.000106	586.0197	2.936e+10	547.0748	1790459.	0.000
180.000	-0.001234	-88826.	-3491.3590	9.080e-05	630.4688	2.936e+10	504.3782	2452359.	0.000
186.000	-0.000744	-100806.	-621.7057	7.142e-05	648.1234	2.936e+10	452.1730	3648136.	0.000
192.000	-0.000377	-96480.	1707.2808	5.126e-05	641.7484	2.936e+10	324.1559	5159590.	0.000
198.000	-0.000129	-80458.	3017.0310	3.318e-05	618.1369	2.936e+10	112.4275	5247463.	0.000
204.000	2.118e-05	-60366.	3297.7994	1.879e-05	588.5281	2.936e+10	-18.8381	5335335.	0.000
210.000	9.689e-05	-40935.	2978.5546	8.434e-06	559.8941	2.936e+10	-87.5769	5423209.	0.000
216.000	0.000122	-24646.	2378.5540	1.732e-06	535.8894	2.936e+10	-112.4233	5511083.	0.000
222.000	0.000118	-12397.	1711.8465	-1.053e-06	517.8629	2.936e+10	-109.8123	5598959.	0.000
228.000	9.776e-05	-4098.2855	1104.4474	-3.739e-06	505.6091	2.936e+10	-92.6538	5686834.	0.000
234.000	7.281e-05	866.2683	619.1532	-4.069e-06	500.8463	2.936e+10	-69.1109	5695312.	0.000
240.000	4.892e-05	3341.5899	272.5059	-3.639e-06	504.4915	2.936e+10	-46.4382	5695312.	0.000
246.000	2.914e-05	4146.2092	50.2216	-2.874e-06	505.6798	2.936e+10	-27.6566	5695312.	0.000
252.000	1.443e-05	3953.0436	-73.8521	-2.046e-06	505.3951	2.936e+10	-13.7014	5695312.	0.000
258.000	4.580e-06	3265.5335	-127.9995	-1.309e-06	504.3820	2.936e+10	-4.3478	5695312.	0.000
264.000	-1.269e-06	2420.5983	-137.4294	-7.275e-07	503.1369	2.936e+10	1.2045	5695312.	0.000
270.000	-4.150e-06	1618.3540	-121.9988	-3.147e-07	501.9546	2.936e+10	3.9390	5695312.	0.000
276.000	-5.046e-06	957.4662	-95.8127	-5.151e-08	500.9807	2.936e+10	4.7897	5695312.	0.000
282.000	-4.768e-06	468.7415	-67.8663	9.424e-08	500.2604	2.936e+10	4.5258	5695312.	0.000
288.000	-3.915e-06	142.8148	-43.1403	1.567e-07	499.7801	2.936e+10	3.7162	5695312.	0.000
294.000	-2.887e-06	-49.3672	-23.7703	1.663e-07	499.6424	2.936e+10	2.7404	5695312.	0.000
300.000	-1.920e-06	-142.8799	-10.0827	1.466e-07	499.7802	2.936e+10	1.8221	5695312.	0.000
306.000	-1.127e-06	-170.7572	-1.4061	1.146e-07	499.8719	2.936e+10	1.0701	5695312.	0.000
312.000	-5.445e-07	-160.0637	3.3548	8.078e-08	499.8056	2.936e+10	0.5169	5695312.	0.000
318.000	-1.580e-07	-130.7186	5.3553	5.106e-08	499.7623	2.936e+10	0.1500	5695312.	0.000
324.000	6.825e-08	-93.9390	5.6108	2.790e-08	499.7311	2.936e+10	-0.0648	5695312.	0.000
330.000	1.768e-07	-63.4651	4.9129	1.161e-08	499.6632	2.936e+10	-0.1679	5695312.	0.000
336.000	2.076e-07	-37.0162	3.8182	1.342e-09	499.6242	2.936e+10	-0.1970	5695312.	0.000
342.000	1.929e-07	-17.6504	2.6777	-4.245e-09	499.5957	2.936e+10	-0.1831	5695312.	0.000
348.000	1.566e-07	-4.8724	1.6822	-6.547e-09	499.5769	2.936e+10	-0.1487	5695312.	0.000
354.000	1.144e-07	2.5544	0.9105	-6.784e-09	499.5734	2.936e+10	-0.1086	5695312.	0.000
360.000	7.523e-08	6.0722	0.3706	-5.902e-09	499.5786	2.936e+10	-0.0714	5695312.	0.000
366.000	4.354e-08	7.0176	0.0324	-4.564e-09	499.5800	2.936e+10	-0.0413	5695312.	0.000
372.000	2.046e-08	6.4730	-0.1499	-3.186e-09	499.5792	2.936e+10	-0.0194	5695312.	0.000
378.000	5.315e-09	5.2274	-0.2233	-1.990e-09	499.5774	2.936e+10	-0.005046	5695312.	0.000
384.000	-3.419e-09	3.7988	-0.2287	-1.068e-09	499.5753	2.936e+10	0.003245	5695312.	0.000
390.000	-7.495e-09	2.4859	-0.1976	-4.252e-10	499.5739	2.936e+10	0.007121	5695312.	0.000
396.000	-8.522e-09	1.4285	-0.1520	-2.520e-11	499.5718	2.936e+10	0.008089	5695312.	0.000
402.000	-7.797e-09	0.6619	-0.1055	1.884e-10	499.5707	2.936e+10	0.007401	5695312.	0.000
408.000	-6.261e-09	0.1615	-0.0655	2.726e-10	499.5699	2.936e+10	0.005943	5695312.	0.000
414.000	-4.526e-09	-0.1250	-0.0348	2.763e-10	499.5699	2.936e+10	0.004297	5695312.	0.000
420.000	-2.945e-09	-0.2568	-0.0135	2.373e-10	499.5701	2.936e+10	0.002796	5695312.	0.000
426.000	-1.679e-09	-0.2878	-0.000350	1.816e-10	499.5701	2.936e+10	0.001594	5695312.	0.000
432.000	-7.654e-10	-0.2614	0.006611	1.255e-10	499.5697	2.936e+10	0.000727	5695312.	0.000
438.000	-1.727e-10	-0.2088	0.009282	7.744e-11	499.5700	2.936e+10	0.000164	5695312.	0.000
444.000	1.638e-10	-0.1503	0.009308	4.074e-11	499.5699	2.936e+10	-0.000156	5695312.	0.000
450.000	3.161e-10	-0.0973	0.007941	1.544e-11	499.5698	2.936e+10	-0.000300	5695312.	0.000
456.000	3.492e-10	-0.0550	0.006040	0.000	499.5697	2.936e+10	-0.000331	5695312.	0.000
462.000	3.147e-10	-0.0247	0.004156	-8.266e-12	499.5697	2.936e+10	-0.000299	5695312.	0.000
468.000	2.500e-10	-0.0051340	0.002547	-1.131e-11	499.5697	2.936e+10	-0.000237	5695312.	0.000
474.000	1.790e-10	0.0058896	0.001326	-1.124e-11	499.5697	2.936e+10	-0.000170	5695312.	0.000
480.000	1.151e-10	0.0108	0.000488	-9.530e-12	499.5697	2.936e+10	-0.000109	5695312.	0.000
486.000	6.459e-11	0.0118	-2.338E-05	-7.221e-12	499.5697	2.936e+10	-6.131E-05	5695312.	0.000
492.000	2.849e-11	0.0105	-0.000288	-4.939e-12	499.5697	2.936e+10	-2.705E-05	5695312.	0.000
498.000	5.327E-12	0.008335	-0.000385	-3.009E-12	499.5697	2.936e+10	-5.059E-06	5695312.	0.000
504.000	-7.618E-12	0.005938	-0.000378	-1.551E-12	499.5697	2.936e+10	7.232E-06	5695312.	0.000
510.000	-1.328E-11	0.003800	-0.000319	0.000	499.5697	2.936e+10	1.261E-05	5695312.	0.000
516.000	-1.428E-11	0.002115	-0.000240	0.000	499.5697	2.936e+10	1.356E-05	5695312.	0.000
522.000	-1.269E-11	0.000917	-0.000163	0.000	499.5697	2.936e+10	1.205E-05	5695312.	0.000
528.000	-9.973E-12	0.000153	-9.889E-05	0.000	499.5697	2.936e+10	9.467E-06	5695312.	0.000
534.000	-7.068E-12	-0.000270	-5.036E-05	0.000	499.5697	2.936e+10	6.709E-06	5695312.	0.000
540.000	-4.495E-12	-0.000452	-1.743E-05	0.000	499.5697	2.936e+10	4.267E-06	5695312.	0.000
546.000	-2.476E-12	-0.000481	2.422E-06	0.000	499.5697	2.936e+10	2.351E-06	5695312.	0.000
552.000	-1.047E-12	-0.000424	1.246E-05	0.000	499.5697	2.936e+10	9.941E-07	5695312.	0.000
558.000	0.000	-0.000332	1.583E-05	0.000	499.5697	2.936e+10	1.313E-07	5695312.	0.000
564.000	0.000	-0.000234	1.519E-05	0.000	499.5697	2.936e+10	-3.454E-07	5695312.	0.000
570.000	0.000	-0.000150	1.251E-05	0.000	499.5697	2.936e+10	-5.491E-07	5695312.	0.000
576.000	0.000	-8.445E-05	9.123E-06	0.000	499.5697	2.936e+10	-5.787E-07	5695312.	0.000
582.000	0.000	-4.012E-05	5.857E-06	0.000	499.5697	2.936e+10	-5.099E-07	5695312.	0.000
588.000	0.000	-1.413E-05	3.143E-06	0.000	499.5697	2.936e+10	-3.945E-07	5695312.	0.000
594.000	0.000	-2.337E-06	1.172E-06	0.000	499.5697	2.936e+10	-2.626E-07	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	499.5697	2.936e+10	-1.280E-07	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0068614 radians
Maximum bending moment	=	2065682. inch-lbs
Maximum shear force	=	55354. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	21
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	226000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lbs^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	76458.	-0.0122	499.5697	2.936E+10	-1008.7933	3026.3800	0.000
6.000	0.9266	457173.	70697.	-0.0122	1173.2861	2.936E+10	-911.4821	5902.0288	0.000
12.000	0.8538	881406.	65202.	-0.0120	1798.4601	2.936E+10	-920.1189	6466.1608	0.000
18.000	0.7820	1272271.	59662.	-0.0118	2374.4603	2.936E+10	-926.6623	7109.5835	0.000
24.000	0.7119	1629423.	54089.	-0.0115	2900.7799	2.936E+10	-931.0325	7847.3948	0.000
30.000	0.6437	1952606.	48496.	-0.0112	3377.0412	2.936E+10	-933.1463	8698.4229	0.000
36.000	0.5779	2241655.	42898.	-0.0107	3803.0000	2.936E+10	-932.9158	9686.3777	0.000
42.000	0.5148	2496498.	37308.	-0.0103	4178.5506	2.936E+10	-930.2476	10841.	0.000
48.000	0.4548	2717159.	31743.	-0.009719	4503.7304	2.936E+10	-925.0419	12202.	0.000
54.000	0.3982	2903767.	26216.	-0.009145	4778.7254	2.936E+10	-917.1911	13820.	0.000
60.000	0.3451	3056550.	20513.	-0.008536	5003.8759	2.936E+10	-983.7060	17103.	0.000
66.000	0.2958	3173073.	14231.	-0.007899	5175.5908	2.936E+10	-1110.3954	22526.	0.000
72.000	0.2503	3248742.	7626.1097	-0.007243	5287.1014	2.936E+10	-1091.1702	26155.	0.000
78.000	0.2089	3284229.	1149.0548	-0.006575	5339.3968	2.936E+10	-1067.8481	30678.	0.000
84.000	0.1714	3280363.	-5177.5005	-0.005904	5333.6997	2.936E+10	-1040.1690	36409.	0.000
90.000	0.1380	3238142.	-11319.	-0.005238	5271.4801	2.936E+10	-1007.8058	43818.	0.000
96.000	0.1086	3158742.	-17253.	-0.004585	5154.4722	2.936E+10	-970.3295	53632.	0.000
102.000	0.0830	3043535.	-22946.	-0.003951	4984.6966	2.936E+10	-927.1461	67036.	0.000
108.000	0.0611	2894108.	-28359.	-0.003344	4764.4913	2.936E+10	-877.3771	86093.	0.000
114.000	0.0429	2712292.	-33450.	-0.002771	4496.5576	2.936E+10	-819.6093	114745.	0.000
120.000	0.0279	2500219.	-38303.	-0.002238	4184.0346	2.936E+10	-798.0027	171645.	0.000
126.000	0.0160	2258725.	-43115.	-0.001752	3826.1550	2.936E+10	-806.0862	302311.	0.000
132.000	0.006872	1987585.	-47533.	-0.001318	3428.5887	2.936E+10	-666.3859	581819.	0.000
138.000	0.000183	1691905.	-49932.	-0.000942	2992.8577	2.936E+10	-133.3849	4368793.	0.000
144.000	-0.005443	1390951.	-48489.	-0.000627	2549.4331	2.936E+10	621.0353	840968.	0.000
150.000	-0.007339	1111976.	-44450.	-0.000371	2138.2400	2.936E+10	718.5733	587460.	0.000
156.000	-0.008884	858557.	-39990.	-0.000170	1764.7880	2.936E+10	768.3129	518914.	0.000
162.000	-0.009375	632560.	-35304.	-1.731E-05	1431.7455	2.936E+10	793.4854	507808.	0.000
168.000	-0.009091	434952.	-30518.	9.579e-05	1138.5403	2.936E+10	802.0251	529309.	0.000
174.000	-0.008274	266098.	-25719.	0.000163	891.7063	2.936E+10	797.6134	578403.	0.000
180.000	-0.007130	125883.	-20979.	0.000203	685.0783	2.936E+10	782.2079	658222.	0.000
186.000	-0.005832	13793.	-16362.	0.000218	519.8963	2.936E+10	756.8960	778692.	0.000
192.000	-0.004517	-71052.	-11925.	0.000212	604.2761	2.936E+10	722.2347	959353.	0.000
198.000	-0.003289	-129877.	-7722.8533	0.000191	690.9644	2.936E+10	678.3701	1237489.	0.000
204.000	-0.002220	-164245.	-3812.7607	0.000161	741.6110	2.936E+10	624.9941	1688827.	0.000
210.000	-0.001353	-176068.	-254.7025	0.000127	759.0336	2.936E+10	561.0253	2487485.	0.000
216.000	-0.000702	-167645.	2878.5441	9.142e-05	746.6209	2.936E+10	483.3902	4131920.	0.000
222.000	-0.000256	-141773.	5046.0153	5.980e-05	708.4951	2.936E+10	239.1002	5598959.	0.000
228.000	1.562E-05	-107255.	5718.9032	3.435e-05	657.6267	2.936E+10	-14.8043	5686834.	0.000
234.000	0.000156	-73240.	5230.4438	1.590e-05	607.5000	2.936E+10	-148.0155	5695312.	0.000
240.000	0.000206	-44533.	4198.5519	3.865e-06	565.1957	2.936E+10	-195.9485	5695312.	0.000
246.000	0.000202	-22868.	3034.5797	-3.023e-06	533.2687	2.936E+10	-192.0423	5695312.	0.000
252.000	0.000170	-8109.6330	1973.9032	-6.189e-06	511.5205	2.936E+10	-161.5166	5695312.	0.000
258.000	0.000128	836.0034	1124.7015	-6.932e-06	500.8017	2.936E+10	-121.5507	5695312.	0.000
264.000	8.697e-05	5405.5837	512.3755	-6.294e-06	507.5357	2.936E+10	-82.5580	5695312.	0.000
270.000	5.253e-05	7001.5789	115.1284	-5.026e-06	509.8876	2.936E+10	-49.8577	5695312.	0.000
276.000	2.666e-05	6800.7514	-110.3682	-3.616e-06	509.5917	2.936E+10	-25.3078	5695312.	0.000
282.000	9.138e-06	5686.9659	-212.3149	-2.339e-06	507.9503	2.936E+10	-8.6744	5695312.	0.000
288.000	-1.411e-06	4259.3207	-234.3215	-1.323e-06	505.8465	2.936E+10	1.3389	5695312.	0.000
294.000	-6.173e-06	2878.6961	-211.1023	-5.934e-07	503.8119	2.936E+10	6.3941	5695312.	0.000
300.000	-8.532e-06	1727.4623	-167.6449	-1.227e-07	502.1154	2.936E+10	8.0983	5695312.	0.000
306.000	-8.209e-06	867.2900	-119.9749	1.425e-07	500.8478	2.936E+10	7.7917	5695312.	0.000
312.000	-6.822e-06	287.3773	-77.1737	2.605e-07	499.9932	2.936E+10	6.4754	5695312.	0.000
318.000	-5.083e-06	-59.5005	-43.2736	2.838e-07	499.6574	2.936E+10	4.8246	5695312.	0.000
324.000	-3.417e-06	-232.6755	-19.0705	2.539e-07	499.9126	2.936E+10	3.2431	5695312.	0.000
330.000	-2.036e-06	-289.0345	-3.5439	2.006e-07	499.9956	2.936E+10	1.9324	5695312.	0.000
336.000	-1.009e-06	-275.7464	5.1280	1.429e-07	499.9760	2.936E+10	0.9582	5695312.	0.000
342.000	-3.213e-07	-227.8865	8.9175	9.141e-08	499.9055	2.936E+10	0.3050	5695312.	0.000
348.000	8.742e-08	-168.9844	9.5835	5.085e-08	499.8187	2.936E+10	-0.0830	5695312.	0.000
354.000	2.889e-07	-113.0228	8.5118	2.203e-08	499.7362	2.936E+10	-0.2742	5695312.	0.000
360.000	3.518e-07	-66.9021	6.6874	3.641e-09	499.6683	2.936E+10	-0.3339	5695312.	0.000
366.000	3.326e-07	-32.7835	4.7386	-6.546e-09	499.6180	2.936E+10	-0.3157	5695312.	0.000
372.000	2.732e-07	-10.0211	3.0135	-1.092e-08	499.5845	2.936E+10	-0.2593	5695312.	0.000
378.000	2.016e-07	3.4076	1.6615	-1.160E-08	499.5747	2.936E+10	-0.1913	5695312.	0.000
384.000	1.341e-07	9.9481	0.7058	-1.023e-08	499.5843	2.936E+10	-0.1273	5695312.	0.000
390.000	7.877e-08	11.9045	0.0997	-7.998e-09	499.5872	2.936E+10	-0.0748	5695312.	0.000
396.000	3.809e-08	11.1658	-0.2331	-5.640e-09	499.5861	2.936E+10	-0.0362	5695312.	0.000
402.000	1.109e-08	9.1226	-0.3731	-3.567e-09	499.5831	2.936E+10	-0.0105	5695312.	0.000
408.000	-4.719e-09	6.6978	-0.3913	-1.950e-09	499.5796	2.936E+10	0.004479	5695312.	0.000
414.000	-1.231e-08	4.4325	-0.3428	-8.128e-10	499.5762	2.936E+10	0.0117	5695312.	0.000
420.000	-1.447e-08	2.5866	-0.2665	-9.547e-11	499.5735	2.936E+10	0.0137	5695312.	0.000
426.000	-1.346e-08	1.2346	-0.1870	2.950E-10	499.5715	2.936E+10	0.0128	5695312.	0.000
432.000	-1.093e-08	0.3422	-0.1175	4.562e-10	499.5702	2.936E+10	0.0104	5695312.	0.000
438.000	-7.985e-09	-0.1768	-0.0636	4.731E-10	499.5699	2.936E+10	0.007579	5695312.	0.000
444.000	-5.407e-09	-0.4229	-0.0259	4.118e-10	499.5703	2.936E+10	0.004988	5695312.	0.000
450.000	-3.043e-09	-0.4893	-0.002320	3.186e-10	499.5704	2.936E+10	0.002888	5695312.	0.000
456.000	-1.431e-09	-0.4516	0.0104	2.224e-10	499.5703	2.936E+10	0.001359	5695312.	0.000
462.000	-3.735e-10	-0.3648	0.0156	1.390e-10	499.5702	2.936E+10	0.000355	5695312.	0.000
468.000	2.368e-10	-0.2652	0.0159	7.463e-11	499.5701	2.936E+10	-0.000225	5695312.	0.000
474.000	5.220E-10	-0.1736	0.0138	2.978e-11	499.5699	2.936E+10	-0.000495	5695312.	0.000
480.000	5.942e-10	-0.0998	0.0106	1.832e-12	499.5698	2.936E+10	-0.000564	5695312.	0.000
486.000	5.440E-10	-0.0463	0.007370	-1.310E-11	499.5698	2.936E+10	-0.000516	5695312.	0.000
492.000	4.370E-10	-0.0114	0.004576	-1.899E-11	499.5697	2.936E+10	-0.000415	5695312.	0.000
498.000	3.160E-10	0.008663	0.002432	-1.927E-11	499.5697	2.936E+10	-0.000300	5695312.	0.000
504.000	2.057E-10	0.0179	0.000946	-1.656E-11	499.5697	2.936E+10	-0.000195	5695312.	0.000
510.000	1.173E-10	0.0201	2.657E-05	-1.268E-11	499.5697	2.936E+10	-0.000111	5695312.	0.000
516.000	5.356E-11	0.0182	-0.000460	-8.765E-12	499.5697	2.936E+10	-5.084E-05	5695312.	0.000
522.000	1.215E-11	0.0146	-0.000647	-5.413E-12	499.5697	2.936E+10	-1.153E-05	5695312.	0.000
528.000	1.140E-12	0.0105	-0.000649	-2.853E-12	499.5697	2.936E+10	1.082E-05	5695312.	0.000
534.000	-2.209E-11	0.006785	-0.000554	-1.088E-12	499.5697	2.936E+10	2.096E-05	5695312.	0.000
540.000	-2.445E-11	0.003839	-0.000421	0.000	499.5697	2.936E+10	2.321E-05	5695312.	0.000
546.000	-2.211E-11	0.001728	-0.000289	0.000	499.5697	2.936E+10	2.099E-05	5695312.	0.000
552.000	-1.765E-11	0.000372	-0.000176	0.000	499.5697	2.936E+10	1.676E-05	5695312.	0.000
558.000	-1.274E-11	-0.000381	-8.903E-05	0.000	499.5697	2.936E+10	1.209E-05	5695312.	0.000
564.000	-8.290E-12	-0.000699	-2.915E-05	0.000	499.5697	2.936E+10	7.869E-06	5695312.	0.000
570.000	-4.700E-12	-0.000733	7.842e-06	0.000	499.5697	2.936E+10	4.461e-06	5695312.	0.000
576.000	-2.008E-12	-0.000606	2.694E-05	0.000	499.5697	2.936E+10	1.906E-06	5695312.	0.000
582.000	0.000	-0.000411	3.283E-05	0.000	499.5697	2.936E+10	5.627E-08	5695312.	0.000
588.000	1.386E-12	-0.000213	2.905E-05	0.000	499.5697	2.936E+10	-1.315E-06	5695312.	0.000

594.000	2.570E-12	-6.257E-05	1.779E-05	0.000	499.5697	2.936E+10	-2.439E-06	5695312.	0.000
600.000	3.677E-12	0.000	0.000	0.000	499.5697	2.936E+10	-3.490E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0122313 radians
Maximum bending moment           =       3284229. inch-lbs
Maximum shear force              =         76458. lbs
Depth of maximum bending moment  =     78.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             15
Number of zero deflection points =              8
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

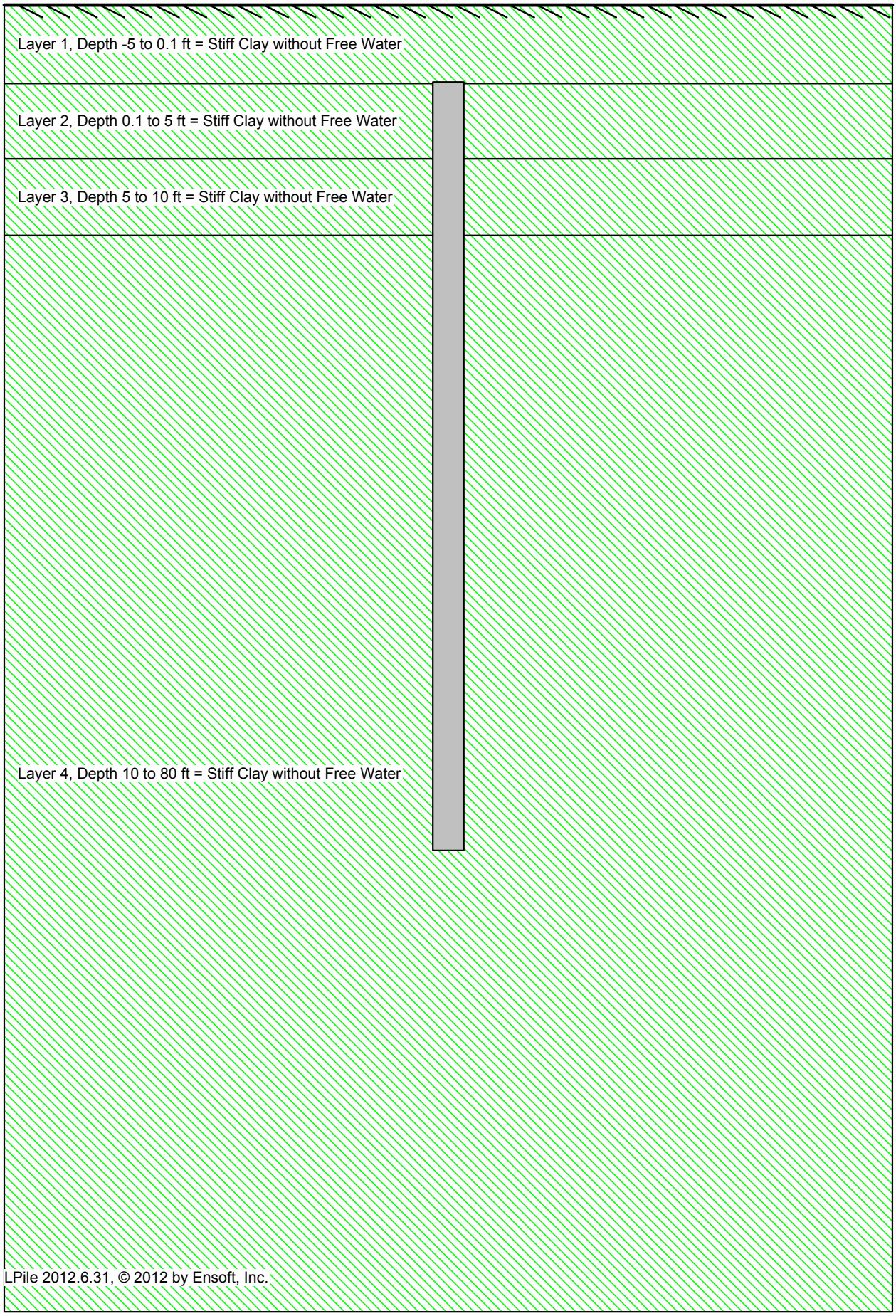
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	226000.	0.25000000	1301460.	40200.	-0.00386388
2	4	y = 0.5000	M = 0.000	226000.	0.50000000	2065682.	55354.	-0.00686136
3	4	y = 1.0000	M = 0.000	226000.	1.00000000	3284229.	76458.	-0.01223127

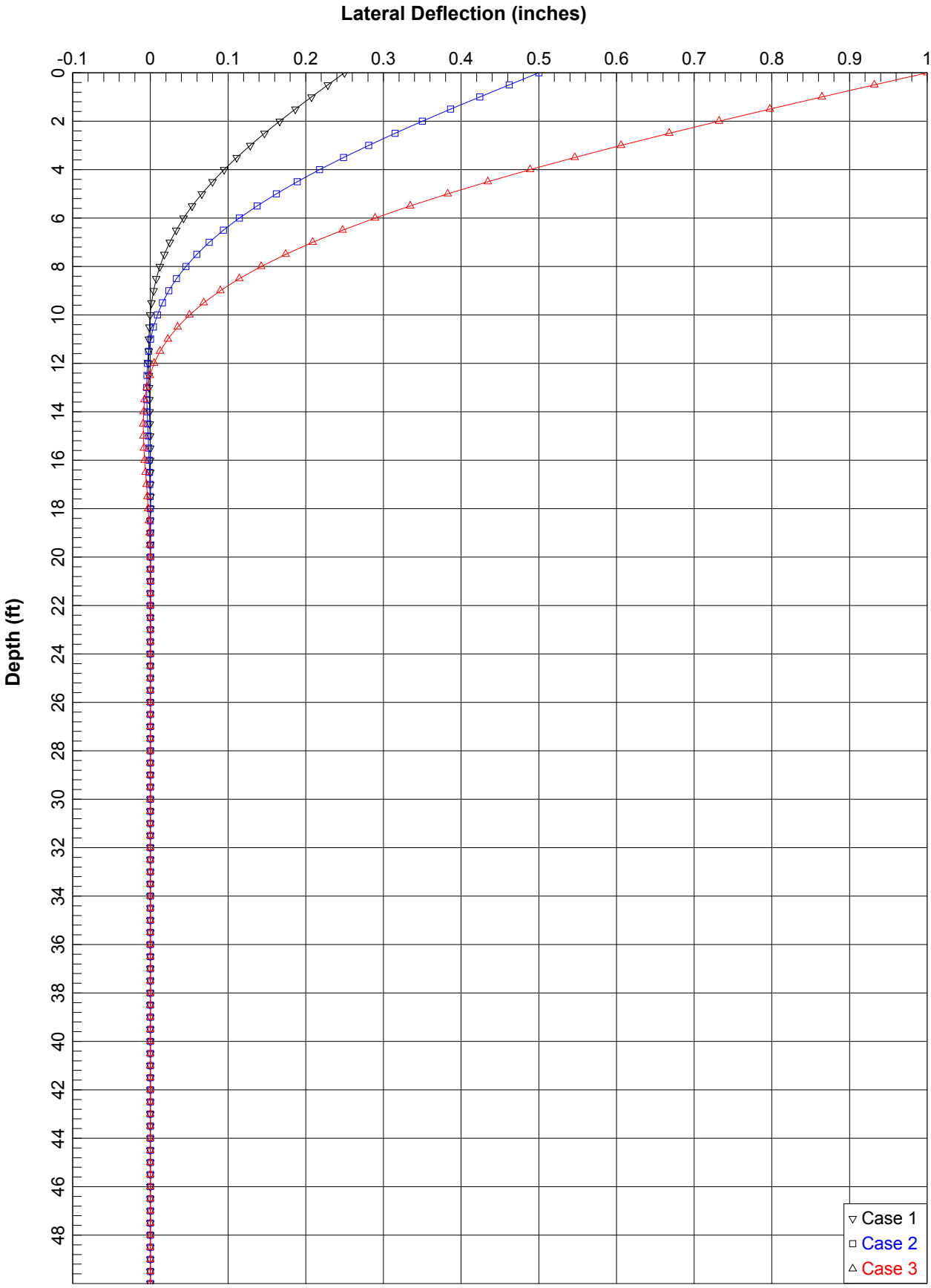
The analysis ended normally.

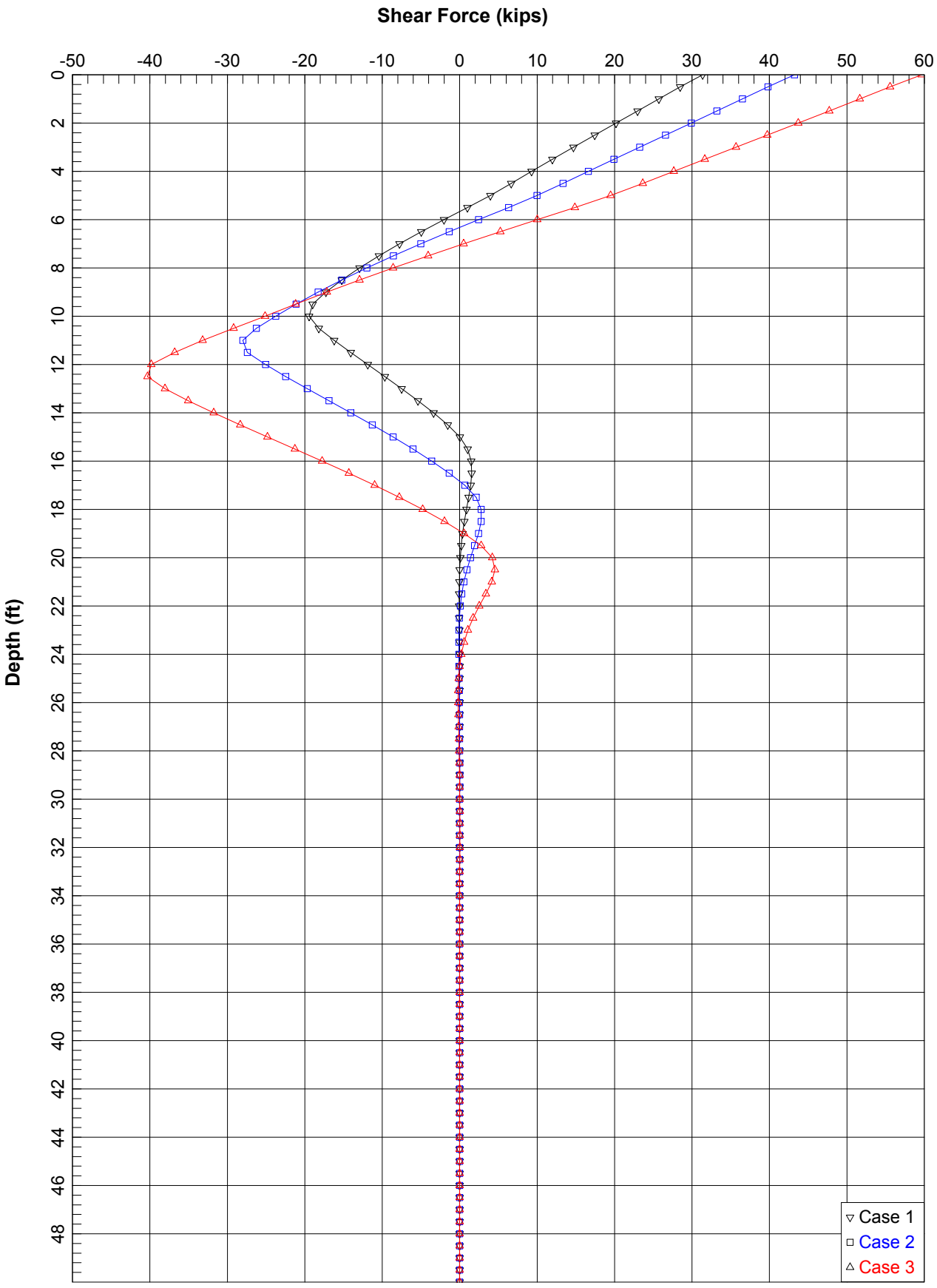
SUPPORT: **BENT 3L**

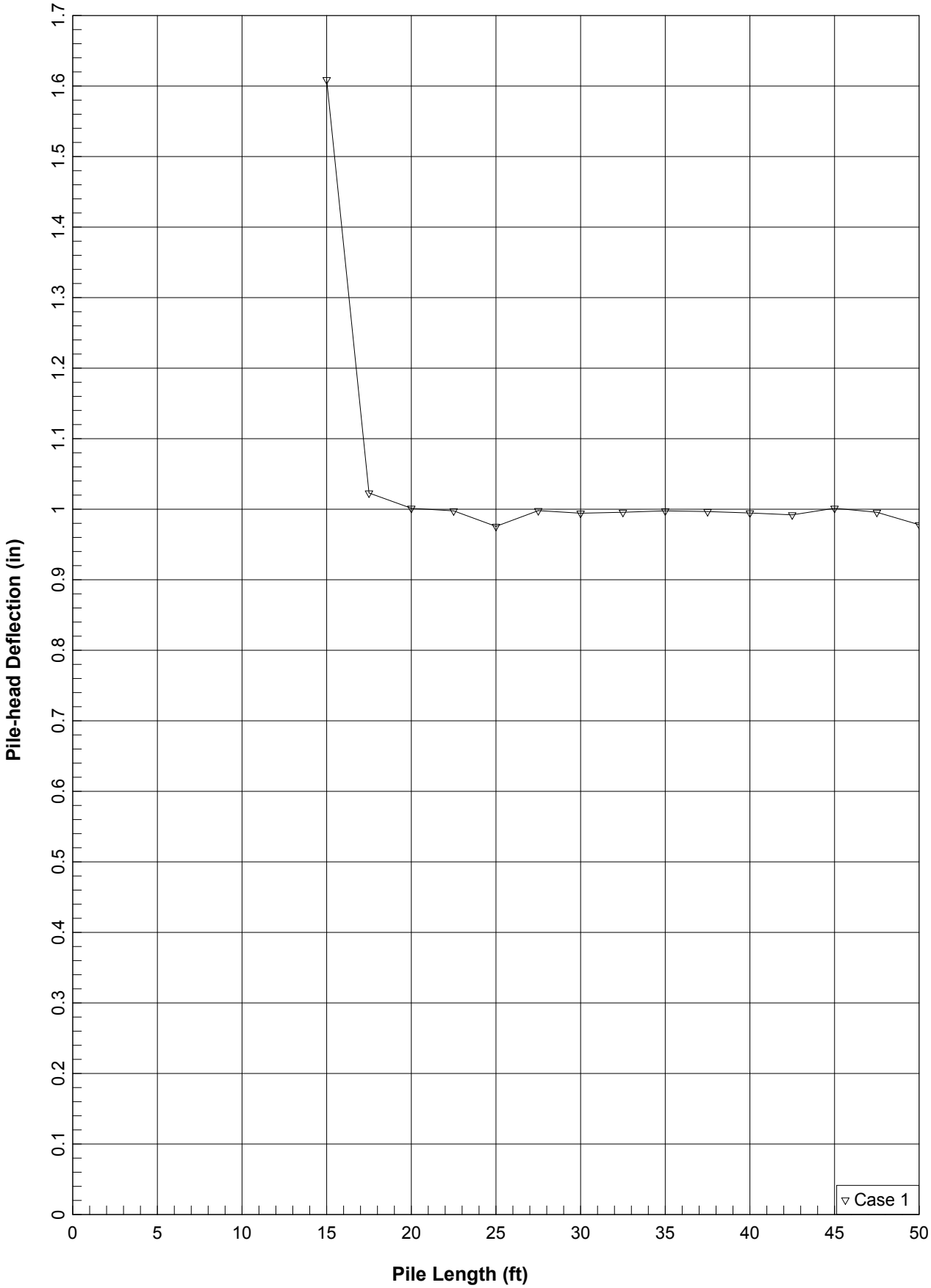
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 5 ft = Stiff Clay without Free Water
Layer 3, Depth 5 to 10 ft = Stiff Clay without Free Water
Layer 4, Depth 10 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3L_long_Crit length.lp6d
Name of output report file: Bent 3L_long_Crit length.lp6o
Name of plot output file: Bent 3L_long_Crit length.lp6p
Name of runtime messeage file: Bent 3L_long_Crit length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:53:05

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Emass psi	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion Test psi	Angle of Friction Test deg.	Uniaxial Subgrade Mod. pci	RQD % or Type	Strain Factor Property	GSI	Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	-5.000	120.000	3250.000	--	--	--	--	--	--
					0.10000	120.000	3250.000	--	--	--	--	--	--
2	Stiff Clay w/o Free Water	--	--	--	0.10000	120.000	2750.000	--	--	--	--	--	--
					5.000	120.000	2750.000	--	--	--	--	--	--
3	Stiff Clay w/o Free Water	--	--	--	5.000	120.000	3750.000	--	--	--	--	--	--
					10.000	120.000	3750.000	--	--	--	--	--	--
4	Stiff Clay w/o Free Water	--	--	--	10.000	125.000	4500.000	--	--	--	--	--	--
					80.000	125.000	4500.000	--	--	--	--	--	--

0.00500 -- -- -- -- -- -- --

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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
1	1	V = 59000. lbs	M = 0.0000 in-lbs	268000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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 = 59000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9781	-1.811E-07	59000.	-0.0111	592.4101	2.936E+10	-712.1658	2184.4315	0.000
6.000	0.9112	359094.	54931.	-0.0111	1121.5913	2.936E+10	-644.1065	4241.1831	0.000
12.000	0.8448	694882.	51045.	-0.0110	1616.4278	2.936E+10	-651.2713	4625.4064	0.000
18.000	0.7793	1006996.	47120.	-0.0108	2076.3766	2.936E+10	-657.1028	5059.3621	0.000
24.000	0.7150	1295123.	43164.	-0.0106	2500.9774	2.936E+10	-661.5521	5551.7990	0.000
30.000	0.6522	1559009.	39186.	-0.0103	2889.8544	2.936E+10	-664.5683	6113.4448	0.000
36.000	0.5914	1798458.	35194.	-0.009951	3242.7199	2.936E+10	-666.0982	6757.5647	0.000
42.000	0.5328	2013336.	31197.	-0.009562	3559.3768	2.936E+10	-666.0859	7500.7090	0.000
48.000	0.4767	2203574.	27205.	-0.009131	3839.7216	2.936E+10	-664.4722	8363.7306	0.000
54.000	0.4232	2369166.	23228.	-0.008664	4083.7478	2.936E+10	-661.1945	9373.1832	0.000
60.000	0.3727	2510177.	19109.	-0.008165	4291.5490	2.936E+10	-712.0587	11463.	0.000
66.000	0.3253	2624728.	14550.	-0.007640	4460.3586	2.936E+10	-807.5660	14897.	0.000
72.000	0.2810	2709345.	9733.8861	-0.007095	4585.0543	2.936E+10	-797.7189	17031.	0.000
78.000	0.2401	2764353.	4984.6896	-0.006536	4666.1174	2.936E+10	-785.3466	19624.	0.000
84.000	0.2026	2790180.	317.7020	-0.005968	4704.1778	2.936E+10	-770.3159	22812.	0.000
90.000	0.1685	2787359.	-4250.6486	-0.005398	4700.0202	2.936E+10	-752.4676	26793.	0.000
96.000	0.1378	2756532.	-8702.8684	-0.004832	4654.5930	2.936E+10	-731.6057	31849.	0.000
102.000	0.1105	2698462.	-13020.	-0.004274	4569.0178	2.936E+10	-707.4795	38405.	0.000
108.000	0.0865	2614036.	-17182.	-0.003731	4444.6027	2.936E+10	-679.7537	47130.	0.000
114.000	0.0658	2504280.	-21165.	-0.003208	4282.8595	2.936E+10	-647.9543	59125.	0.000
120.000	0.0480	2370374.	-25057.	-0.002710	4085.5284	2.936E+10	-649.3623	81101.	0.000
126.000	0.0332	2212312.	-29067.	-0.002242	3852.5995	2.936E+10	-687.4482	124107.	0.000
132.000	0.0211	2028775.	-33010.	-0.001808	3582.1288	2.936E+10	-626.8388	177895.	0.000
138.000	0.0115	1822005.	-36540.	-0.001415	3277.4206	2.936E+10	-549.8646	285973.	0.000
144.000	0.004166	1594841.	-39495.	-0.001065	2942.6588	2.936E+10	-434.9621	626448.	0.000
150.000	-0.001249	1351494.	-39817.	-0.000764	2584.0491	2.936E+10	327.5361	1573540.	0.000
156.000	-0.005006	1119495.	-37416.	-0.000512	2242.1612	2.936E+10	472.9814	566850.	0.000
162.000	-0.007391	904154.	-34403.	-0.000305	1924.8235	2.936E+10	531.3296	431330.	0.000
168.000	-0.008667	707645.	-31119.	-0.000140	1635.2358	2.936E+10	563.2368	389925.	0.000
174.000	-0.009075	531179.	-27689.	-1.372E-05	1375.1860	2.936E+10	580.1863	383601.	0.000
180.000	-0.008831	375426.	-24188.	7.894E-05	1145.6587	2.936E+10	586.6142	398541.	0.000
186.000	-0.008128	240667.	-20674.	0.000142	947.0705	2.936E+10	584.7024	431641.	0.000
192.000	-0.007129	126878.	-17193.	0.000179	779.3852	2.936E+10	575.6561	484514.	0.000
198.000	-0.005974	33772.	-13786.	0.000196	642.1779	2.936E+10	560.1690	562596.	0.000
204.000	-0.004778	-39180.	-10489.	0.000195	650.1480	2.936E+10	538.6195	676353.	0.000
210.000	-0.003630	-92729.	-7340.0301	0.000182	729.0601	2.936E+10	511.1494	844820.	0.000

216.000	-0.002596	-127845.	-4373.5879	0.000159	780.8100	2.936E+10	477.6647	1103986.	0.000
222.000	-0.001719	-145724.	-1627.3974	0.000131	807.1571	2.936E+10	437.7322	1528200.	0.000
228.000	-0.001020	-147796.	856.4609	0.000101	810.2112	2.936E+10	390.2206	2295622.	0.000
234.000	-0.000502	-135772.	3010.0678	7.237E-05	792.4919	2.936E+10	327.6483	3912628.	0.000
240.000	-0.000151	-111908.	4299.7805	4.706E-05	757.3245	2.936E+10	102.2559	4050000.	0.000
246.000	6.223E-05	-84326.	4480.5344	2.700E-05	716.6781	2.936E+10	-42.0046	4050000.	0.000
252.000	0.000173	-58229.	4005.1367	1.243E-05	678.2192	2.936E+10	-116.4613	4050000.	0.000
258.000	0.000211	-36305.	3227.6010	2.773E-06	645.9106	2.936E+10	-142.7173	4050000.	0.000
264.000	0.000206	-19506.	2382.6863	-2.931E-06	621.1558	2.936E+10	-138.9209	4050000.	0.000
270.000	0.000176	-7702.9649	1608.9909	-5.712E-06	603.7616	2.936E+10	-118.9775	4050000.	0.000
276.000	0.000137	-180.1651	974.0851	-6.517E-06	592.6756	2.936E+10	-92.6577	4050000.	0.000
282.000	9.806E-05	4007.0153	497.5455	-6.126E-06	598.3150	2.936E+10	-66.1888	4050000.	0.000
288.000	6.376E-05	5810.0817	169.8686	-5.123E-06	600.9721	2.936E+10	-43.0368	4050000.	0.000
294.000	3.658E-05	6061.9130	-33.3248	-3.910E-06	601.3432	2.936E+10	-24.6943	4050000.	0.000
300.000	1.684E-05	5422.7569	-141.5170	-2.736E-06	600.4013	2.936E+10	-11.3697	4050000.	0.000
306.000	3.754E-06	4372.5078	-183.2283	-1.735E-06	598.8536	2.936E+10	-2.5340	4050000.	0.000
312.000	-3.974E-06	3229.5961	-182.7839	-9.579E-07	597.1694	2.936E+10	2.6822	4050000.	0.000
318.000	-7.741E-06	2182.1812	-159.0624	-4.048E-07	595.6259	2.936E+10	5.2250	4050000.	0.000
324.000	-8.832E-06	1322.1488	-125.5032	-4.672E-08	594.3585	2.936E+10	5.9614	4050000.	0.000
330.000	-8.301E-06	676.2936	-90.8086	1.575E-07	593.4067	2.936E+10	5.6034	4050000.	0.000
336.000	-6.942E-06	231.9394	-59.9415	2.503E-07	592.7519	2.936E+10	4.6856	4050000.	0.000
342.000	-5.297E-06	-43.8094	-35.1574	2.696E-07	592.4746	2.936E+10	3.5758	4050000.	0.000
348.000	-3.707E-06	-190.8161	-16.9234	2.456E-07	592.6913	2.936E+10	2.5022	4050000.	0.000
354.000	-2.351E-06	-247.6806	-4.6570	2.008E-07	592.7751	2.936E+10	1.5866	4050000.	0.000
360.000	-1.298E-06	-247.3459	2.7309	1.502E-07	592.7746	2.936E+10	0.8760	4050000.	0.000
366.000	-5.484E-07	-215.3933	6.4695	1.029E-07	592.7275	2.936E+10	0.3702	4050000.	0.000
372.000	-6.319E-08	-170.0432	7.7080	6.350E-08	592.6607	2.936E+10	0.0427	4050000.	0.000
378.000	2.135E-07	-123.1016	7.4036	3.354E-08	592.5915	2.936E+10	-0.1441	4050000.	0.000
384.000	3.393E-07	-81.3081	6.2842	1.265E-08	592.5299	2.936E+10	-0.2290	4050000.	0.000
390.000	3.653E-07	-47.7318	4.8575	-5.399E-10	592.4804	2.936E+10	-0.2466	4050000.	0.000
396.000	3.328E-07	-23.0162	3.4439	-7.777E-09	592.4440	2.936E+10	-0.2246	4050000.	0.000
402.000	2.720E-07	-6.3795	2.2192	-1.077E-08	592.4195	2.936E+10	-0.1836	4050000.	0.000
408.000	2.035E-07	3.6486	1.2562	-1.105E-08	592.4154	2.936E+10	-0.1374	4050000.	0.000
414.000	1.394E-07	8.7308	0.5619	-9.788E-09	592.4229	2.936E+10	-0.0941	4050000.	0.000
420.000	8.603E-08	10.4226	0.1059	-7.831E-09	592.4254	2.936E+10	-0.0581	4050000.	0.000
426.000	4.544E-08	10.0204	-0.1609	-5.742E-09	592.4248	2.936E+10	-0.0307	4050000.	0.000
432.000	1.713E-08	8.5109	-0.2875	-3.848E-09	592.4226	2.936E+10	-0.0116	4050000.	0.000
438.000	-7.362E-10	6.5822	-0.3208	-2.305E-09	592.4198	2.936E+10	0.000497	4050000.	0.000
444.000	-1.053E-08	4.6693	-0.2979	-1.155E-09	592.4169	2.936E+10	0.007109	4050000.	0.000
450.000	-1.460E-08	3.0107	-0.2470	-3.706E-10	592.4145	2.936E+10	0.009856	4050000.	0.000
456.000	-1.498E-08	1.7060	-0.1871	1.115E-10	592.4126	2.936E+10	0.0101	4050000.	0.000
462.000	-1.326E-08	0.7647	-0.1299	3.640E-10	592.4112	2.936E+10	0.008953	4050000.	0.000
468.000	-1.061E-08	0.1455	-0.0816	4.570E-10	592.4103	2.936E+10	0.007162	4050000.	0.000
474.000	-7.780E-09	-0.2160	-0.0444	4.498E-10	592.4104	2.936E+10	0.005251	4050000.	0.000
480.000	-5.213E-09	-0.3883	-0.0180	3.880E-10	592.4106	2.936E+10	0.003519	4050000.	0.000
486.000	-3.123E-09	-0.4338	-0.001168	3.040E-10	592.4107	2.936E+10	0.002108	4050000.	0.000
492.000	-1.565E-09	-0.4033	0.008327	2.185E-10	592.4107	2.936E+10	0.001057	4050000.	0.000
498.000	-5.019E-10	-0.3346	0.0125	1.431E-10	592.4106	2.936E+10	0.000339	4050000.	0.000
504.000	1.512E-10	-0.2536	0.0132	8.259E-11	592.4104	2.936E+10	-0.000102	4050000.	0.000
510.000	4.934E-10	-0.1762	0.0119	3.902E-11	592.4103	2.936E+10	-0.000333	4050000.	0.000
516.000	6.195E-10	-0.1107	0.009665	9.699E-12	592.4102	2.936E+10	-0.000418	4050000.	0.000
522.000	6.098E-10	-0.0602	0.007175	-7.771E-12	592.4102	2.936E+10	-0.000412	4050000.	0.000
528.000	5.262E-10	-0.0246	0.004875	-1.644E-11	592.4101	2.936E+10	-0.000355	4050000.	0.000
534.000	4.125E-10	-0.001685	0.002974	-1.912E-11	592.4101	2.936E+10	-0.000278	4050000.	0.000
540.000	2.967E-10	0.0112	0.001538	-1.815E-11	592.4101	2.936E+10	-0.000200	4050000.	0.000
546.000	1.947E-10	0.0168	0.000543	-1.529E-11	592.4101	2.936E+10	-0.000131	4050000.	0.000
552.000	1.133E-10	0.0177	-8.081E-05	-1.176E-11	592.4101	2.936E+10	-7.646E-05	4050000.	0.000
558.000	5.362E-11	0.0159	-0.000419	-8.318E-12	592.4101	2.936E+10	-3.619E-05	4050000.	0.000
564.000	1.346E-11	0.0127	-0.000555	-5.391E-12	592.4101	2.936E+10	-9.084E-06	4050000.	0.000
570.000	-1.108E-11	0.009259	-0.000559	-3.143E-12	592.4101	2.936E+10	7.477E-06	4050000.	0.000
576.000	-2.426E-11	0.006041	-0.000488	-1.579E-12	592.4101	2.936E+10	1.637E-05	4050000.	0.000
582.000	-3.003E-11	0.003410	-0.000378	0.000	592.4101	2.936E+10	2.027E-05	4050000.	0.000
588.000	-3.162E-11	0.001507	-0.000253	0.000	592.4101	2.936E+10	2.134E-05	4050000.	0.000
594.000	-3.136E-11	0.000373	-0.000126	0.000	592.4101	2.936E+10	2.117E-05	4050000.	0.000
600.000	-3.065E-11	0.000	0.000	0.000	592.4101	2.936E+10	2.069E-05	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9780565 inches
Computed slope at pile head = -0.0111399 radians
Maximum bending moment = 2790180. inch-lbs
Maximum shear force = 59000. lbs
Depth of maximum bending moment = 84.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 33
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 59000. lbs
Moment = 0. in-lbs
Axial Load = 268000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9780565	2790180.	59000.
47.500	0.9958272	2790334.	59000.
45.000	1.0014662	2795010.	59000.
42.500	0.9920692	2790891.	59000.
40.000	0.9945045	2794558.	59000.
37.500	0.9966603	2795704.	59000.
35.000	0.9976251	2796560.	59000.
32.500	0.9958009	2797135.	59000.
30.000	0.9944819	2795346.	59000.
27.500	0.9979620	2799213.	59000.
25.000	0.9757888	2799520.	59000.
22.500	0.9975393	2800469.	59000.

20.000	1.0012271	2800609.	59000.
17.500	1.0231328	2782538.	59000.
15.000	1.6089180	2573285.	59000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 59000.	M = 0.000	268000.	0.97805652	2790180.	59000.	-0.01113988

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3L_long_Ave P.lp6d
Name of output report file: Bent 3L_long_Ave P.lp6o
Name of plot output file: Bent 3L_long_Ave P.lp6p
Name of runtime messeage file: Bent 3L_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:51:26

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	Strain Factor kpy	Rock Emass psi	Layer Depth krm ft	Effective Unit Wt. pcf	Undrained Cohesion In-situ Test psf	Angle of Friction In-situ Test deg.	Elastic Subgrade Mod. pci	Uniaxial qu Test psi	RQD % or GSI	Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	-5.000	125.000	3250.000	--	--	--	--	0.00700
		--	--	--	0.10000	125.000	3250.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	0.10000	120.000	2750.000	--	--	--	--	0.00700
		--	--	--	5.000	120.000	2750.000	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	5.000	120.000	3750.000	--	--	--	--	0.00700
		--	--	--	10.000	120.000	3750.000	--	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	--	--	10.000	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	80.000	125.000	4500.000	--	--	--	--	

0.00500	--	--	--	--	--	--	--

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.4800	1.0000
2	50.000	0.4800	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	268000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	268000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	268000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	31357.	-0.003575	592.4101	2.936E+10	-507.2531	6087.0366	0.000
6.000	0.2285	184761.	28465.	-0.003556	864.6851	2.936E+10	-456.7797	11992.	0.000
12.000	0.2073	353018.	25717.	-0.003501	1112.6377	2.936E+10	-459.3130	13293.	0.000
18.000	0.1865	504624.	22957.	-0.003414	1336.0520	2.936E+10	-460.5150	14813.	0.000
24.000	0.1664	639485.	20195.	-0.003297	1534.7908	2.936E+10	-460.3325	16602.	0.000
30.000	0.1470	757563.	17438.	-0.003154	1708.7986	2.936E+10	-458.7086	18726.	0.000
36.000	0.1285	858880.	14695.	-0.002989	1858.1041	2.936E+10	-455.5820	21270.	0.000
42.000	0.1111	943513.	11975.	-0.002805	1982.8243	2.936E+10	-450.8853	24349.	0.000
48.000	0.0949	1011604.	9289.1057	-0.002605	2083.1673	2.936E+10	-444.5440	28119.	0.000
54.000	0.0798	1063359.	6646.0502	-0.002393	2159.4366	2.936E+10	-436.4745	32797.	0.000
60.000	0.0661	1099052.	3948.0081	-0.002172	2212.0351	2.936E+10	-462.8729	41987.	0.000
66.000	0.0538	1117720.	1012.3495	-0.001945	2239.5452	2.936E+10	-515.6800	57523.	0.000
72.000	0.0428	1117456.	-2031.7380	-0.001717	2239.1563	2.936E+10	-499.0158	69952.	0.000
78.000	0.0332	1098860.	-4967.2642	-0.001490	2211.7525	2.936E+10	-479.4929	86690.	0.000
84.000	0.0249	1062641.	-7776.1692	-0.001269	2158.3786	2.936E+10	-456.8087	109991.	0.000
90.000	0.0180	1009628.	-10438.	-0.001058	2080.2556	2.936E+10	-430.5144	143871.	0.000
96.000	0.0122	940785.	-12929.	-0.000858	1978.8041	2.936E+10	-399.8777	196218.	0.000
102.000	0.007655	857237.	-15220.	-0.000675	1855.6828	2.936E+10	-363.5396	284954.	0.000
108.000	0.004133	760319.	-17265.	-0.000509	1712.8599	2.936E+10	-318.4380	462273.	0.000
114.000	0.001544	651688.	-18985.	-0.000365	1552.7751	2.936E+10	-254.5728	989320.	0.000
120.000	-0.000246	533679.	-19432.	-0.000244	1378.8692	2.936E+10	105.3565	2568959.	0.000
126.000	-0.001382	419286.	-18187.	-0.000146	1210.2941	2.936E+10	309.8388	1345577.	0.000
132.000	-0.002003	315910.	-16215.	-7.127E-05	1057.9535	2.936E+10	347.4200	1040741.	0.000
138.000	-0.002237	224938.	-14079.	-1.600E-05	923.8910	2.936E+10	364.5694	977907.	0.000
144.000	-0.002195	147016.	-11875.	2.201E-05	809.0605	2.936E+10	370.1666	1011891.	0.000
150.000	-0.001973	82371.	-9661.6171	4.546E-05	713.7969	2.936E+10	367.5085	1117798.	0.000
156.000	-0.001649	30930.	-7484.5414	5.703E-05	637.9902	2.936E+10	358.1834	1302934.	0.000
162.000	-0.001288	-7626.7866	-5380.8379	5.942E-05	603.6493	2.936E+10	343.0511	1597743.	0.000
168.000	-0.000936	-33831.	-3383.9459	5.518E-05	642.2656	2.936E+10	322.5796	2066849.	0.000
174.000	-0.000626	-48412.	-1525.4032	4.677E-05	663.7521	2.936E+10	296.9347	2845528.	0.000
180.000	-0.000375	-52286.	30.1732	3.648E-05	669.4623	2.936E+10	221.5908	3544071.	0.000
186.000	-0.000188	-48167.	1034.5133	2.622E-05	663.3915	2.936E+10	113.1892	3606556.	0.000
192.000	-6.053E-05	-39957.	1485.1324	1.721E-05	651.2924	2.936E+10	37.0172	3669042.	0.000

198.000	1.824E-05	-30401.	1562.1589	1.002E-05	637.2101	2.936E+10	-11.3417	3731529.	0.000
204.000	5.973E-05	-21243.	1414.8336	4.744E-06	623.7149	2.936E+10	-37.7667	3794016.	0.000
210.000	7.516E-05	-13438.	1156.5984	1.200E-06	612.2129	2.936E+10	-48.3116	3856504.	0.000
216.000	7.412E-05	-7367.6045	866.4208	-9.265E-07	603.2674	2.936E+10	-48.4143	3918993.	0.000
222.000	6.405E-05	-3037.8360	593.6791	-1.990E-06	596.8868	2.936E+10	-42.4996	3981482.	0.000
228.000	5.024E-05	-237.0558	364.5877	-2.325E-06	592.7594	2.936E+10	-33.8642	4043971.	0.000
234.000	3.615E-05	1344.6918	189.7889	-2.211E-06	594.3917	2.936E+10	-24.4021	4050000.	0.000
240.000	2.371E-05	2047.5222	68.5747	-1.865E-06	595.4274	2.936E+10	-16.0026	4050000.	0.000
246.000	1.377E-05	2173.5852	-7.3274	-1.433E-06	595.6132	2.936E+10	-9.2981	4050000.	0.000
252.000	6.508E-06	1964.2036	-48.3998	-1.010E-06	595.3046	2.936E+10	-4.3928	4050000.	0.000
258.000	1.649E-06	1596.0372	-64.9182	-6.466E-07	594.7621	2.936E+10	-1.1134	4050000.	0.000
264.000	-1.252E-06	1187.2647	-65.7239	-3.622E-07	594.1597	2.936E+10	0.8448	4050000.	0.000
270.000	-2.697E-06	808.5157	-57.7287	-1.582E-07	593.6015	2.936E+10	1.8202	4050000.	0.000
276.000	-3.150E-06	495.0292	-45.8889	-2.500E-08	593.1396	2.936E+10	2.1264	4050000.	0.000
282.000	-2.997E-06	257.9292	-33.4417	5.195E-08	592.7902	2.936E+10	2.0227	4050000.	0.000
288.000	-2.527E-06	93.5622	-22.2568	8.787E-08	592.5479	2.936E+10	1.7056	4050000.	0.000
294.000	-1.942E-06	-9.4351	-13.2072	9.647E-08	592.4240	2.936E+10	1.3110	4050000.	0.000
300.000	-1.369E-06	-65.2347	-6.5018	8.884E-08	592.5062	2.936E+10	0.9242	4050000.	0.000
306.000	-8.761E-07	-87.7427	-1.9552	7.320E-08	592.5394	2.936E+10	0.5914	4050000.	0.000
312.000	-4.907E-07	-88.9324	0.8126	5.515E-08	592.5411	2.936E+10	0.3312	4050000.	0.000
318.000	-2.143E-07	-78.1690	2.2403	3.807E-08	592.5253	2.936E+10	0.1447	4050000.	0.000
324.000	-3.383E-08	-62.1718	2.7428	2.373E-08	592.5017	2.936E+10	0.0228	4050000.	0.000
330.000	7.043E-08	-45.3320	2.6687	1.274E-08	592.4769	2.936E+10	-0.0475	4050000.	0.000
336.000	1.191E-07	-30.1887	2.2849	5.025E-09	592.4546	2.936E+10	-0.0804	4050000.	0.000
342.000	1.307E-07	-17.9293	1.7790	1.079E-10	592.4365	2.936E+10	-0.0882	4050000.	0.000
348.000	1.204E-07	-8.8407	1.2705	-2.628E-09	592.4231	2.936E+10	-0.0813	4050000.	0.000
354.000	9.919E-08	-2.6745	0.8259	-3.805E-09	592.4140	2.936E+10	-0.0670	4050000.	0.000
360.000	7.473E-08	1.0821	0.4737	-3.967E-09	592.4117	2.936E+10	-0.0504	4050000.	0.000
366.000	5.159E-08	3.0225	0.2179	-3.548E-09	592.4145	2.936E+10	-0.0348	4050000.	0.000
372.000	3.215E-08	3.7083	0.0483	-2.860E-09	592.4155	2.936E+10	-0.0217	4050000.	0.000
378.000	1.726E-08	3.6117	-0.0517	-2.112E-09	592.4154	2.936E+10	-0.0117	4050000.	0.000
384.000	6.807E-09	3.0944	-0.1005	-1.427E-09	592.4146	2.936E+10	-0.004595	4050000.	0.000
390.000	1.445E-10	2.4106	-0.1146	-8.641E-10	592.4136	2.936E+10	-9.755E-05	4050000.	0.000
396.000	-3.562E-09	1.7225	-0.1076	-4.417E-10	592.4126	2.936E+10	0.002404	4050000.	0.000
402.000	-5.156E-09	1.1204	-0.0960	-1.512E-10	592.4117	2.936E+10	0.003480	4050000.	0.000
408.000	-5.376E-09	0.6432	-0.0687	2.904E-11	592.4110	2.936E+10	0.003629	4050000.	0.000
414.000	-4.808E-09	0.2965	-0.0480	1.251E-10	592.4105	2.936E+10	0.003245	4050000.	0.000
420.000	-3.878E-09	0.0665	-0.0304	1.622E-10	592.4102	2.936E+10	0.002616	4050000.	0.000
426.000	-2.862E-09	-0.0694	-0.0168	1.619E-10	592.4102	2.936E+10	0.001932	4050000.	0.000
432.000	-1.933E-09	-0.1357	-0.007092	1.409E-10	592.4103	2.936E+10	0.001305	4050000.	0.000
438.000	-1.171E-09	-0.1549	-0.000807	1.112E-10	592.4103	2.936E+10	0.000790	4050000.	0.000
444.000	-5.984E-10	-0.1457	0.002776	8.050E-11	592.4103	2.936E+10	0.000404	4050000.	0.000
450.000	-2.048E-10	-0.1219	0.004403	5.315E-11	592.4102	2.936E+10	0.000138	4050000.	0.000
456.000	3.941E-11	-0.0930	0.004738	3.119E-11	592.4102	2.936E+10	-2.660E-05	4050000.	0.000
462.000	1.695E-10	-0.0651	0.004314	1.503E-11	592.4102	2.936E+10	-0.000114	4050000.	0.000
468.000	2.198E-10	-0.0413	0.003526	4.153E-12	592.4101	2.936E+10	-0.000148	4050000.	0.000
474.000	2.194E-10	-0.0228	0.002637	-2.401E-12	592.4101	2.936E+10	-0.000148	4050000.	0.000
480.000	1.910E-10	-0.009658	0.001806	-5.720E-12	592.4101	2.936E+10	-0.000129	4050000.	0.000
486.000	1.507E-10	-0.001132	0.001114	-6.823E-12	592.4101	2.936E+10	-0.000102	4050000.	0.000
492.000	1.091E-10	0.003733	0.000588	-6.557E-12	592.4101	2.936E+10	-7.363E-05	4050000.	0.000
498.000	7.203E-11	0.005946	0.000221	-5.568E-12	592.4101	2.936E+10	-4.862E-05	4050000.	0.000
504.000	4.226E-11	0.006407	-1.011E-05	-4.305E-12	592.4101	2.936E+10	-2.853E-05	4050000.	0.000
510.000	2.036E-11	0.005839	-0.000137	-3.054E-12	592.4101	2.936E+10	-1.374E-05	4050000.	0.000
516.000	5.618E-12	0.004774	-0.000190	-1.969E-12	592.4101	2.936E+10	-3.792E-06	4050000.	0.000
522.000	-3.270E-12	0.003571	-0.000194	-1.116E-12	592.4101	2.936E+10	2.207E-06	4050000.	0.000
528.000	-7.780E-12	0.002446	-0.000172	0.000	592.4101	2.936E+10	5.251E-06	4050000.	0.000
534.000	-9.289E-12	0.001510	-0.000137	0.000	592.4101	2.936E+10	6.270E-06	4050000.	0.000
540.000	-8.948E-12	0.000798	-0.000100	0.000	592.4101	2.936E+10	6.040E-06	4050000.	0.000
546.000	-7.627E-12	0.000304	-6.686E-05	0.000	592.4101	2.936E+10	5.148E-06	4050000.	0.000
552.000	-5.933E-12	-4.833E-06	-3.940E-05	0.000	592.4101	2.936E+10	4.005E-06	4050000.	0.000
558.000	-4.246E-12	-0.000170	-1.878E-05	0.000	592.4101	2.936E+10	2.866E-06	4050000.	0.000
564.000	-2.766E-12	-0.000231	-4.582E-06	0.000	592.4101	2.936E+10	1.867E-06	4050000.	0.000
570.000	-1.570E-12	-0.000225	4.199E-06	0.000	592.4101	2.936E+10	1.060E-06	4050000.	0.000
576.000	0.000	-0.000181	8.694E-06	0.000	592.4101	2.936E+10	4.388E-07	4050000.	0.000
582.000	0.000	-0.000121	9.914E-06	0.000	592.4101	2.936E+10	-3.215E-08	4050000.	0.000
588.000	0.000	-6.261E-05	8.610E-06	0.000	592.4101	2.936E+10	-4.026E-07	4050000.	0.000
594.000	1.069E-12	-1.833E-05	5.238E-06	0.000	592.4101	2.936E+10	-7.213E-07	4050000.	0.000
600.000	1.518E-12	0.000	0.000	0.000	592.4101	2.936E+10	-1.025E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0035752 radians
Maximum bending moment	=	1117720. inch-lbs
Maximum shear force	=	31357. lbs
Depth of maximum bending moment	=	66.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	15
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	43239.	-0.006370	592.4101	2.936E+10	-603.2289	3619.3736	0.000
6.000	0.4618	258817.	39795.	-0.006343	973.8178	2.936E+10	-544.5915	7075.9425	0.000
12.000	0.4239	497944.	36514.	-0.006266	1326.2086	2.936E+10	-549.2327	7774.3045	0.000
18.000	0.3866	717135.	33209.	-0.006142	1649.2206	2.936E+10	-552.5437	8575.5650	0.000
24.000	0.3502	916198.	29888.	-0.005975	1942.5720	2.936E+10	-554.4729	9500.2461	0.000
30.000	0.3149	1095000.	26559.	-0.005769	2206.0638	2.936E+10	-554.9664	10574.	0.000
36.000	0.2810	1253462.	23232.	-0.005529	2439.5835	2.936E+10	-553.9668	11830.	0.000
42.000	0.2485	1391570.	19916.	-0.005259	2643.1072	2.936E+10	-551.4128	13311.	0.000
48.000	0.2178	1509370.	16620.	-0.004962	2816.7035	2.936E+10	-547.2381	15072.	0.000
54.000	0.1890	1606973.	13354.	-0.004644	2960.5370	2.936E+10	-541.3708	17186.	0.000

60.000	0.1621	1684559.	9992.9699	-0.004307	3074.8715	2.936E+10	-579.1392	21433.	0.000
66.000	0.1373	1740742.	6300.1550	-0.003957	3157.6658	2.936E+10	-651.7992	28481.	0.000
72.000	0.1146	1772888.	2429.7567	-0.003598	3205.0380	2.936E+10	-638.3336	33411.	0.000
78.000	0.0941	1781471.	-1351.8699	-0.003235	3217.6869	2.936E+10	-622.2086	39660.	0.000
84.000	0.0758	1767069.	-5028.1953	-0.002872	3196.4638	2.936E+10	-603.2332	47741.	0.000
90.000	0.0597	1730370.	-8581.3718	-0.002515	3142.3824	2.936E+10	-581.1590	58446.	0.000
96.000	0.0456	1672181.	-11992.	-0.002167	3056.6314	2.936E+10	-555.6448	73060.	0.000
102.000	0.0337	1593439.	-15237.	-0.001834	2940.5926	2.936E+10	-526.1903	93813.	0.000
108.000	0.0236	1495231.	-18292.	-0.001518	2795.8669	2.936E+10	-491.9980	124930.	0.000
114.000	0.0154	1378819.	-21123.	-0.001224	2624.3156	2.936E+10	-451.6456	175530.	0.000
120.000	0.008938	1245694.	-23759.	-0.000956	2428.1360	2.936E+10	-427.1422	286726.	0.000
126.000	0.003966	1096783.	-26255.	-0.000717	2208.6924	2.936E+10	-404.9131	612564.	0.000
132.000	0.000339	932935.	-27986.	-0.000509	1967.2364	2.936E+10	-171.9223	3044220.	0.000
138.000	-0.002144	762591.	-27420.	-0.000336	1716.2077	2.936E+10	360.4243	1008517.	0.000
144.000	-0.003692	604972.	-25074.	-0.000196	1483.9308	2.936E+10	421.5753	685076.	0.000
150.000	-0.004498	462330.	-22454.	-8.709E-05	1273.7262	2.936E+10	451.7350	602548.	0.000
156.000	-0.004737	335799.	-19700.	-5.525E-06	1087.2628	2.936E+10	466.4790	590816.	0.000
162.000	-0.004565	225951.	-16888.	5.188E-05	925.3844	2.936E+10	470.9014	618989.	0.000
168.000	-0.004115	132981.	-14073.	8.856E-05	788.3786	2.936E+10	467.3233	681443.	0.000
174.000	-0.003502	56791.	-11300.	0.000108	676.1007	2.936E+10	456.9669	782972.	0.000
180.000	-0.002819	-2966.7402	-8607.6349	0.000113	596.7820	2.936E+10	440.5069	937509.	0.000
186.000	-0.002140	-46865.	-6031.2631	0.000108	661.4736	2.936E+10	418.2837	1172601.	0.000
192.000	-0.001519	-75690.	-3605.3101	9.584E-05	703.9517	2.936E+10	390.3673	1542113.	0.000
198.000	-0.000990	-90437.	-1364.7334	7.886E-05	725.6837	2.936E+10	356.4916	2160138.	0.000
204.000	-0.000572	-92321.	651.8404	6.019E-05	728.4593	2.936E+10	315.6997	3308860.	0.000
210.000	-0.000268	-82809.	2115.6161	4.229E-05	714.4418	2.936E+10	172.2255	3856504.	0.000
216.000	-6.499E-05	-67069.	2759.6428	2.697E-05	691.2474	2.936E+10	42.4500	3918933.	0.000
222.000	5.572E-05	-49780.	2776.0724	1.503E-05	665.7001	2.936E+10	-36.9733	3981482.	0.000
228.000	0.000115	-33805.	2431.8546	6.489E-06	642.2269	2.936E+10	-77.7658	4043971.	0.000
234.000	0.000134	-20618.	1928.0455	9.272E-07	622.7946	2.936E+10	-90.1706	4050000.	0.000
240.000	0.000127	-10671.	1401.3583	-1.270E-06	608.1360	2.936E+10	-85.3918	4050000.	0.000
246.000	0.000106	-3794.8426	929.8440	-3.749E-06	598.0024	2.936E+10	-71.7796	4050000.	0.000
252.000	8.152E-05	498.8410	549.4273	-4.086E-06	593.1452	2.936E+10	-55.0260	4050000.	0.000
258.000	5.731E-05	2811.4252	268.2934	-3.747E-06	596.5531	2.936E+10	-38.6853	4050000.	0.000
264.000	3.655E-05	3730.4131	78.2215	-3.079E-06	597.9510	2.936E+10	-24.6713	4050000.	0.000
270.000	2.037E-05	3759.9852	-37.0338	-2.313E-06	597.9510	2.936E+10	-13.7465	4050000.	0.000
276.000	8.790E-06	3293.4474	-96.0739	-1.593E-06	597.2633	2.936E+10	-5.9335	4050000.	0.000
282.000	1.255E-06	2612.2203	-116.4148	-9.890E-07	596.2596	2.936E+10	-0.8468	4050000.	0.000
288.000	-3.078E-06	1899.6499	-112.7225	-5.279E-07	595.2095	2.936E+10	2.0776	4050000.	0.000
294.000	-5.081E-06	1261.2480	-96.2014	-2.049E-07	594.2687	2.936E+10	3.4295	4050000.	0.000
300.000	-5.537E-06	745.8919	-74.7012	2.168E-10	593.5093	2.936E+10	3.7373	4050000.	0.000
306.000	-5.078E-06	364.8333	-53.2062	1.137E-07	592.9147	2.936E+10	3.4277	4050000.	0.000
312.000	-4.172E-06	107.0520	-34.4748	1.620E-07	592.5678	2.936E+10	2.8161	4050000.	0.000
318.000	-3.135E-06	-49.3848	-19.6788	1.678E-07	592.4828	2.936E+10	2.1159	4050000.	0.000
324.000	-2.158E-06	-129.6335	-8.9015	1.496E-07	592.6011	2.936E+10	1.4566	4050000.	0.000
330.000	-1.340E-06	-157.4038	-1.8783	1.202E-07	592.6420	2.936E+10	0.9045	4050000.	0.000
336.000	-7.153E-07	-152.5594	2.2837	8.854E-08	592.6349	2.936E+10	0.4828	4050000.	0.000
342.000	-2.776E-07	-130.2842	4.2941	5.963E-08	592.6021	2.936E+10	0.1874	4050000.	0.000
348.000	3.645E-10	-101.2216	4.8554	3.598E-08	592.5592	2.936E+10	-0.0002590	4050000.	0.000
354.000	1.542E-07	-72.1346	4.5425	1.826E-08	592.5164	2.936E+10	-0.1041	4050000.	0.000
360.000	2.195E-07	-46.7698	3.7859	6.108E-09	592.4790	2.936E+10	-0.1481	4050000.	0.000
366.000	2.275E-07	-26.7230	2.8809	-1.402E-09	592.4494	2.936E+10	-0.1535	4050000.	0.000
372.000	2.027E-07	-12.1945	2.0099	-5.380E-09	592.4280	2.936E+10	-0.1368	4050000.	0.000
378.000	1.629E-07	-2.5865	1.2697	-6.890E-09	592.4139	2.936E+10	-0.1100	4050000.	0.000
384.000	1.200E-07	3.0640	0.6969	-6.841E-09	592.4146	2.936E+10	-0.0810	4050000.	0.000
390.000	8.080E-08	5.7981	0.2903	-5.936E-09	592.4191	2.936E+10	-0.0545	4050000.	0.000
396.000	4.874E-08	6.5668	0.0280	-4.672E-09	592.4197	2.936E+10	-0.0329	4050000.	0.000
402.000	2.474E-08	6.1490	-0.1208	-3.373E-09	592.4191	2.936E+10	-0.0167	4050000.	0.000
408.000	8.273E-09	5.1279	-0.1877	-2.220E-09	592.4176	2.936E+10	-0.0055884	4050000.	0.000
414.000	-1.903E-09	3.9042	-0.2006	-1.297E-09	592.4158	2.936E+10	-0.0010285	4050000.	0.000
420.000	-7.291E-09	2.7254	-0.1819	-6.195E-10	592.4141	2.936E+10	0.004922	4050000.	0.000
426.000	-9.337E-09	1.7228	-0.1483	-1.650E-10	592.4126	2.936E+10	0.006303	4050000.	0.000
432.000	-9.271E-09	0.9466	-0.1106	1.079E-10	592.4115	2.936E+10	0.006258	4050000.	0.000
438.000	-8.043E-09	0.3954	-0.0755	2.450E-10	592.4106	2.936E+10	0.005429	4050000.	0.000
444.000	-6.331E-09	0.0395	-0.0464	2.895E-10	592.4101	2.936E+10	0.004273	4050000.	0.000
450.000	-4.570E-09	-0.1625	-0.0243	2.769E-10	592.4103	2.936E+10	0.003085	4050000.	0.000
456.000	-3.008E-09	-0.2535	-0.009002	2.344E-10	592.4103	2.936E+10	0.002030	4050000.	0.000
462.000	-1.757E-09	-0.2713	0.000648	1.807E-10	592.4105	2.936E+10	0.001186	4050000.	0.000
468.000	-8.393E-10	-0.2463	0.005906	1.278E-10	592.4104	2.936E+10	0.000567	4050000.	0.000
474.000	-2.234E-10	-0.2009	0.008058	8.213E-11	592.4101	2.936E+10	0.000151	4050000.	0.000
480.000	1.463E-10	-0.1499	0.008215	4.629E-11	592.4103	2.936E+10	-9.873E-05	4050000.	0.000
486.000	3.321E-10	-0.1024	0.007246	2.050E-11	592.4102	2.936E+10	-0.000224	4050000.	0.000
492.000	3.923E-10	-0.0630	0.005779	3.596E-12	592.4102	2.936E+10	-0.000265	4050000.	0.000
498.000	3.752E-10	-0.0331	0.004225	-6.224E-12	592.4102	2.936E+10	-0.000254	4050000.	0.000
504.000	3.176E-10	-0.0123	0.002822	-1.086E-11	592.4101	2.936E+10	-0.000214	4050000.	0.000
510.000	2.449E-10	0.000808	0.001683	-1.203E-11	592.4101	2.936E+10	-0.000165	4050000.	0.000
516.000	1.732E-10	0.007948	0.000836	-1.114E-11	592.4101	2.936E+10	-0.000117	4050000.	0.000
522.000	1.112E-10	0.0109	0.000260	-9.215E-12	592.4101	2.936E+10	-7.509E-05	4050000.	0.000
528.000	6.262E-11	0.0111	-9.199E-05	-6.969E-12	592.4101	2.936E+10	-4.227E-05	4050000.	0.000
534.000	2.761E-11	0.009795	-0.000275	-4.834E-12	592.4101	2.936E+10	-1.864E-05	4050000.	0.000
540.000	4.611E-12	0.007817	-0.000340	-3.034E-12	592.4101	2.936E+10	-3.113E-06	4050000.	0.000
546.000	-8.801E-12	0.005725	-0.000331	-1.650E-12	592.4101	2.936E+10	5.940E-06	4050000.	0.000
552.000	-1.519E-11	0.003845	-0.000283	0.000	592.4101	2.936E+10	1.025E-05	4050000.	0.000
558.000	-1.687E-11	0.002333	-0.000218	0.000	592.4101	2.936E+10	1.139E-05	4050000.	0.000
564.000	-1.568E-11	0.001229	-0.000152	0.000	592.4101	2.936E+10	1.059E-05	4050000.	0.000
570.000	-1.299E-11	0.000507	-9.399E-05	0.000	592.4101	2.936E+10	8.769E-06	4050000.	0.000
576.000	-9.678E-12	9.982E-05	-4.809E-05	0.000	592.4101	2.936E+10	6.532E-06	4050000.	0.000
582.000	-6.242E-12	-7.202E-05	-1.585E-05	0.000	592.4101	2.936E+10	4.213E-06	4050000.	0.000
588.000	-2.894E-12	-9.217E-05	2.653E-06	0.000	592.4101	2.936E+10	1.954E-06	4050000.	0.000
594.000	0.000	-4.196E-05	7.824E-06	0.000	592.4101	2.936E+10	-2.297E-07	4050000.	0.000
600.000	3.523E-12	0.000	0.000	0.000	592.4101	2.936E+10	-2.378E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0063695 radians
Maximum bending moment	=	1781471. inch-lbs
Maximum shear force	=	43239. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	14
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	59678.	-0.0114	592.4101	2.936E+10	-717.3641	2152.0924	0.000
6.000	0.9319	363406.	55578.	-0.0113	1127.9457	2.936E+10	-649.0877	4179.1343	0.000
12.000	0.8642	703225.	51662.	-0.0112	1628.8702	2.936E+10	-656.3016	4556.3769	0.000
18.000	0.7974	1019387.	47707.	-0.0110	2094.6361	2.936E+10	-662.1830	4982.2696	0.000
24.000	0.7319	1311274.	43720.	-0.0108	2524.7784	2.936E+10	-666.6826	5465.3319	0.000
30.000	0.6680	1578730.	39711.	-0.0105	2918.9170	2.936E+10	-669.7494	6016.0034	0.000
36.000	0.6060	1821557.	35688.	-0.0101	3276.7597	2.936E+10	-671.3299	6647.1818	0.000
42.000	0.5462	2039617.	31660.	-0.009753	3598.1050	2.936E+10	-671.3684	7374.9438	0.000
48.000	0.4889	2232837.	27636.	-0.009316	3882.8452	2.936E+10	-669.8057	8219.5239	0.000
54.000	0.4344	2401210.	23627.	-0.008842	4130.9697	2.936E+10	-666.5792	9206.6579	0.000
60.000	0.3828	2544797.	19474.	-0.008337	4342.5681	2.936E+10	-717.9099	11252.	0.000
66.000	0.3344	2661703.	14877.	-0.007805	4514.8476	2.936E+10	-814.2160	14611.	0.000
72.000	0.2892	2748423.	10021.	-0.007252	4642.6425	2.936E+10	-804.4573	16692.	0.000
78.000	0.2473	2805279.	5231.2054	-0.006684	4726.4285	2.936E+10	-792.1760	19216.	0.000
84.000	0.2090	2832694.	521.9554	-0.006103	4766.8295	2.936E+10	-777.2407	22317.	0.000
90.000	0.1740	2831198.	-4087.2504	-0.005529	4764.6247	2.936E+10	-759.4946	26182.	0.000
96.000	0.1426	2801430.	-8581.9709	-0.004954	4720.7562	2.936E+10	-738.7456	31082.	0.000
102.000	0.1146	2744146.	-12942.	-0.004381	4636.3292	2.936E+10	-714.7489	37420.	0.000
108.000	0.0900	2660229.	-17148.	-0.003835	4512.6745	2.936E+10	-687.1785	45830.	0.000
114.000	0.0686	2550699.	-21177.	-0.003302	4351.2654	2.936E+10	-655.5764	57350.	0.000
120.000	0.0503	2416730.	-25116.	-0.002795	4153.8416	2.936E+10	-657.7537	78400.	0.000
126.000	0.0351	2258888.	-29182.	-0.002317	3920.5523	2.936E+10	-697.4388	119380.	0.000
132.000	0.0225	2073996.	-33187.	-0.001874	3648.7689	2.936E+10	-637.6709	169765.	0.000
138.000	0.0126	1866066.	-36788.	-0.001471	3342.3516	2.936E+10	-562.4363	268574.	0.000
144.000	0.004881	1637751.	-39835.	-0.001113	3005.1923	2.936E+10	-453.2843	557188.	0.000
150.000	-0.000795	1391628.	-40321.	-0.000804	2643.1926	2.936E+10	291.2260	2198382.	0.000
156.000	-0.004764	1156008.	-38046.	-0.000543	2295.9688	2.936E+10	467.2284	588425.	0.000
162.000	-0.007316	936828.	-35053.	-0.000330	1972.9724	2.936E+10	530.2069	434840.	0.000
168.000	-0.008719	736427.	-31770.	-0.000159	1677.6506	2.936E+10	564.3721	388387.	0.000
174.000	-0.009218	556102.	-28328.	-2.645E-05	1411.9130	2.936E+10	582.7877	379320.	0.000
180.000	-0.009036	396574.	-24809.	7.091E-05	1176.8239	2.936E+10	590.3107	391967.	0.000
186.000	-0.008368	258167.	-21270.	0.000138	972.8597	2.936E+10	589.2898	422554.	0.000
192.000	-0.007382	140890.	-17759.	0.000179	800.0333	2.936E+10	581.0129	472219.	0.000
198.000	-0.006224	44483.	-14317.	0.000198	657.9623	2.936E+10	566.2228	545814.	0.000
204.000	-0.005012	-31555.	-10983.	0.000199	638.9113	2.936E+10	545.3330	652857.	0.000
210.000	-0.003838	-87950.	-7791.2403	0.000187	722.0187	2.936E+10	518.5174	810611.	0.000
216.000	-0.002772	-125650.	-4778.5221	0.000165	777.5753	2.936E+10	485.7220	1051349.	0.000
222.000	-0.001860	-145823.	-1981.6085	0.000137	807.3027	2.936E+10	446.5825	1440510.	0.000
228.000	-0.001127	-149870.	558.5213	0.000107	813.2675	2.936E+10	400.1274	2130149.	0.000
234.000	-0.000578	-139464.	2775.8376	7.729E-05	797.9323	2.936E+10	338.9780	3520193.	0.000
240.000	-0.000200	-116809.	4196.8280	5.110E-05	764.5462	2.936E+10	134.6854	4050000.	0.000
246.000	3.546E-05	-89266.	4529.0856	3.004E-05	723.9583	2.936E+10	-23.9329	4050000.	0.000
252.000	0.000161	-62556.	4131.3131	1.453E-05	684.5968	2.936E+10	-108.6579	4050000.	0.000
258.000	0.000210	-39737.	3380.5395	4.073E-06	650.9694	2.936E+10	-141.5999	4050000.	0.000
264.000	0.000210	-22003.	2530.7959	-2.237E-06	624.8350	2.936E+10	-141.6479	4050000.	0.000
270.000	0.000183	-9360.7143	1735.4054	-5.442E-06	606.2045	2.936E+10	-123.4822	4050000.	0.000
276.000	0.000145	-1160.6733	1072.2550	-6.517E-06	594.6205	2.936E+10	-97.5679	4050000.	0.000
282.000	0.000105	3527.3053	567.4731	-6.275E-06	597.6081	2.936E+10	-70.6928	4050000.	0.000
288.000	6.924E-05	5669.1856	215.1825	-5.336E-06	600.7645	2.936E+10	-46.7375	4050000.	0.000
294.000	4.078E-05	6126.4139	-7.4555	-4.130E-06	603.4387	2.936E+10	-27.4750	4050000.	0.000
300.000	1.968E-05	5593.0076	-129.7325	-2.932E-06	600.6522	2.936E+10	-13.2841	4050000.	0.000
306.000	5.516E-06	4579.2948	-180.7539	-1.893E-06	599.1584	2.936E+10	-3.7230	4050000.	0.000
312.000	-3.033E-06	3430.0484	-185.7806	-1.074E-06	597.4648	2.936E+10	2.0474	4050000.	0.000
318.000	-6.376E-06	2353.3825	-164.7026	-4.832E-07	595.8781	2.936E+10	4.9786	4050000.	0.000
324.000	-8.832E-06	1455.1710	-131.8822	-9.401E-08	594.5545	2.936E+10	5.9616	4050000.	0.000
330.000	-8.504E-06	771.0983	-96.7773	1.335E-07	593.5464	2.936E+10	5.7400	4050000.	0.000
336.000	-7.230E-06	293.4139	-64.9165	2.423E-07	592.8425	2.936E+10	4.8802	4050000.	0.000
342.000	-5.596E-06	-8.6794	-38.9434	2.714E-07	592.4229	2.936E+10	3.7775	4050000.	0.000
348.000	-3.973E-06	-174.7802	-19.5651	2.526E-07	592.6676	2.936E+10	2.6820	4050000.	0.000
354.000	-2.565E-06	-244.2732	-6.3260	2.098E-07	592.7700	2.936E+10	1.7311	4050000.	0.000
360.000	-1.475E-06	-251.3664	1.8147	1.592E-07	592.7805	2.936E+10	0.9824	4050000.	0.000
366.000	-6.546E-07	-223.0089	6.0876	1.107E-07	592.7387	2.936E+10	0.4419	4050000.	0.000
372.000	-1.273E-07	-178.6706	7.6710	6.963E-08	592.6734	2.936E+10	0.0859	4050000.	0.000
378.000	1.810E-07	-131.1811	7.5622	3.797E-08	592.6034	2.936E+10	-0.1222	4050000.	0.000
384.000	3.284E-07	-88.0466	6.5307	1.557E-08	592.5398	2.936E+10	-0.2217	4050000.	0.000
390.000	3.678E-07	-52.8626	5.1210	1.165E-09	592.4880	2.936E+10	-0.2482	4050000.	0.000
396.000	3.424E-07	-26.5981	3.6830	-6.955E-09	592.4493	2.936E+10	-0.2311	4050000.	0.000
402.000	2.843E-07	-8.6440	2.4140	-1.059E-08	592.4228	2.936E+10	-0.1919	4050000.	0.000
408.000	2.157E-07	2.4041	1.4016	-1.119E-08	592.4136	2.936E+10	-0.1456	4050000.	0.000
414.000	1.500E-07	8.2108	0.6611	-1.011E-08	592.4222	2.936E+10	-0.1012	4050000.	0.000
420.000	9.435E-08	10.3703	0.1664	-8.211E-09	592.4253	2.936E+10	-0.0637	4050000.	0.000
426.000	5.144E-08	10.2338	-0.1288	-6.105E-09	592.4251	2.936E+10	-0.0347	4050000.	0.000
432.000	2.109E-08	8.8439	-0.2757	-4.156E-09	592.4231	2.936E+10	-0.0142	4050000.	0.000
438.000	1.574E-09	6.9387	-0.3216	-2.543E-09	592.4203	2.936E+10	-0.001062	4050000.	0.000
444.000	-4.429E-09	4.9930	-0.3057	-1.325E-09	592.4174	2.936E+10	0.006364	4050000.	0.000
450.000	-1.431E-08	3.2747	-0.2576	-4.785E-10	592.4149	2.936E+10	0.009657	4050000.	0.000
456.000	-1.517E-08	1.9030	-0.1979	5.062E-11	592.4129	2.936E+10	0.0102	4050000.	0.000
462.000	-1.370E-08	0.8993	-0.1395	3.370E-10	592.4114	2.936E+10	0.009247	4050000.	0.000
468.000	-1.113E-08	0.2283	-0.0892	4.522E-10	592.4104	2.936E+10	0.007510	4050000.	0.000
474.000	-8.273E-09	-0.1725	-0.0499	4.580E-10	592.4103	2.936E+10	0.005584	4050000.	0.000
480.000	-5.631E-09	-0.3722	-0.0218	4.023E-10	592.4106	2.936E+10	0.003801	4050000.	0.000
486.000	-3.445E-09	-0.4349	-0.003380	3.198E-10	592.4107	2.936E+10	0.002326	4050000.	0.000
492.000	-1.793E-09	-0.4137	0.007227	2.331E-10	592.4107	2.936E+10	0.001210	4050000.	0.000
498.000	-6.482E-10	-0.3489	0.0122	1.552E-10	592.4106	2.936E+10	0.000438	4050000.	0.000
504.000	6.879E-11	-0.2682	0.0133	9.209E-11	592.4105	2.936E+10	-4.643E-05	4050000.	0.000
510.000	4.569E-10	-0.1891	0.0123	4.535E-11	592.4103	2.936E+10	-0.000308	4050000.	0.000
516.000	6.130E-10	-0.1210	0.0101	1.367E-11	592.4102	2.936E+10	-0.000414	4050000.	0.000
522.000	6.209E-10	-0.0678	0.007614	-5.621E-12	592.4102	2.936E+10	-0.000419	4050000.	0.000
528.000	5.456E-10	-0.0296	0.005252	-1.557E-11	592.4101	2.936E+10	-0.000368	4050000.	0.000
534.000	4.340E-10	-0.004684	0.003269	-1.907E-11	592.4101	2.936E+10	-0.000293	4050000.	0.000
540.000	3.167E-10	0.009685	0.001748	-1.856E-11	592.4101	2.936E+10	-0.000214	4050000.	0.000
546.000	2.113E-10	0.0164	0.000679	-1.590E-11	592.4101	2.936E+10	-0.000143	4050000.	0.000
552.000	1.259E-10	0.0179	-3.502E-06	-1.240E-11	592.4101	2.936E+10	-8.497E-05	4050000.	0.000
558.000	6.243E-11	0.0164	-0.000385	-8.904E-12	592.4101	2.936E+10	-4.214E-05	4050000.	0.000
564.000	1.903E-11	0.0133	-0.000550	-5.873E-12	592.4101	2.936E+10	-1.285E-05	4050000.	0.000
570.000	-8.056E-12	0.009775	-0.000572	-3.516E-12	592.4101	2.936E+10	5.438E-06	4050000.	0.000
576.000	-2.316E-11	0.006445	-0.000509	-1.858E-12	592.4101	2.936E+10	1.563E-05	4050000.	0.000
582.000	-3.035E-11	0.003676	-0.000400	0.000	592.4101	2.936E+10	2.049E-05	4050000.	0.000
588.000	-3.304E-11	0.001642	-0.000272	0.000	592.4101	2.936E+10	2.230E-05	4050000.	0.000

594.000	-3.371E-11	0.000412	-0.000137	0.000	592.4101	2.936E+10	2.276E-05	4050000.	0.000
600.000	-3.388E-11	0.000	0.000	0.000	592.4101	2.936E+10	2.287E-05	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0113504 radians
Maximum bending moment           =       2832694. inch-lbs
Maximum shear force              =         59678. lbs
Depth of maximum bending moment  =     84.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             22
Number of zero deflection points =              7
```

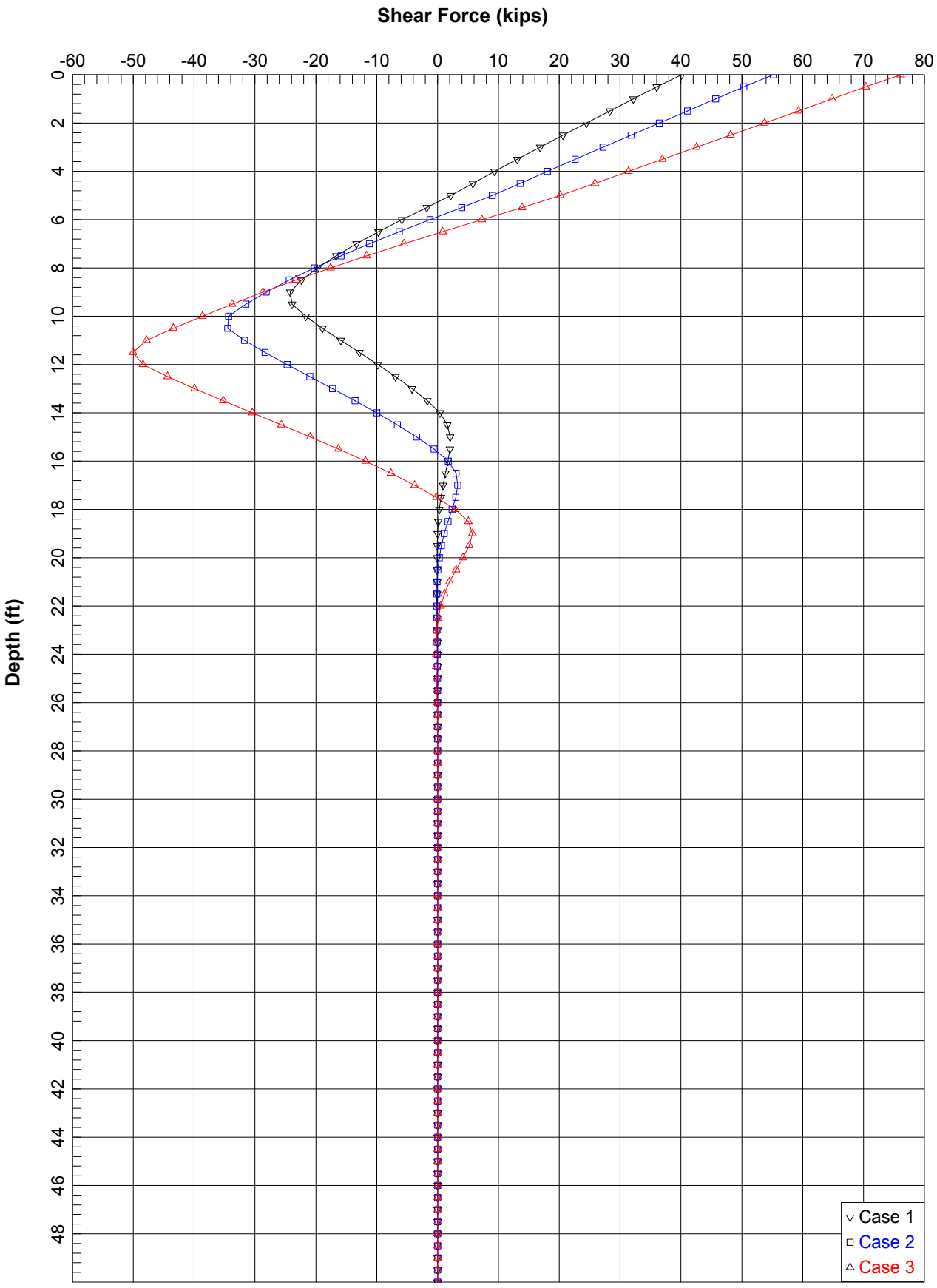
Summary of Pile Response(s)

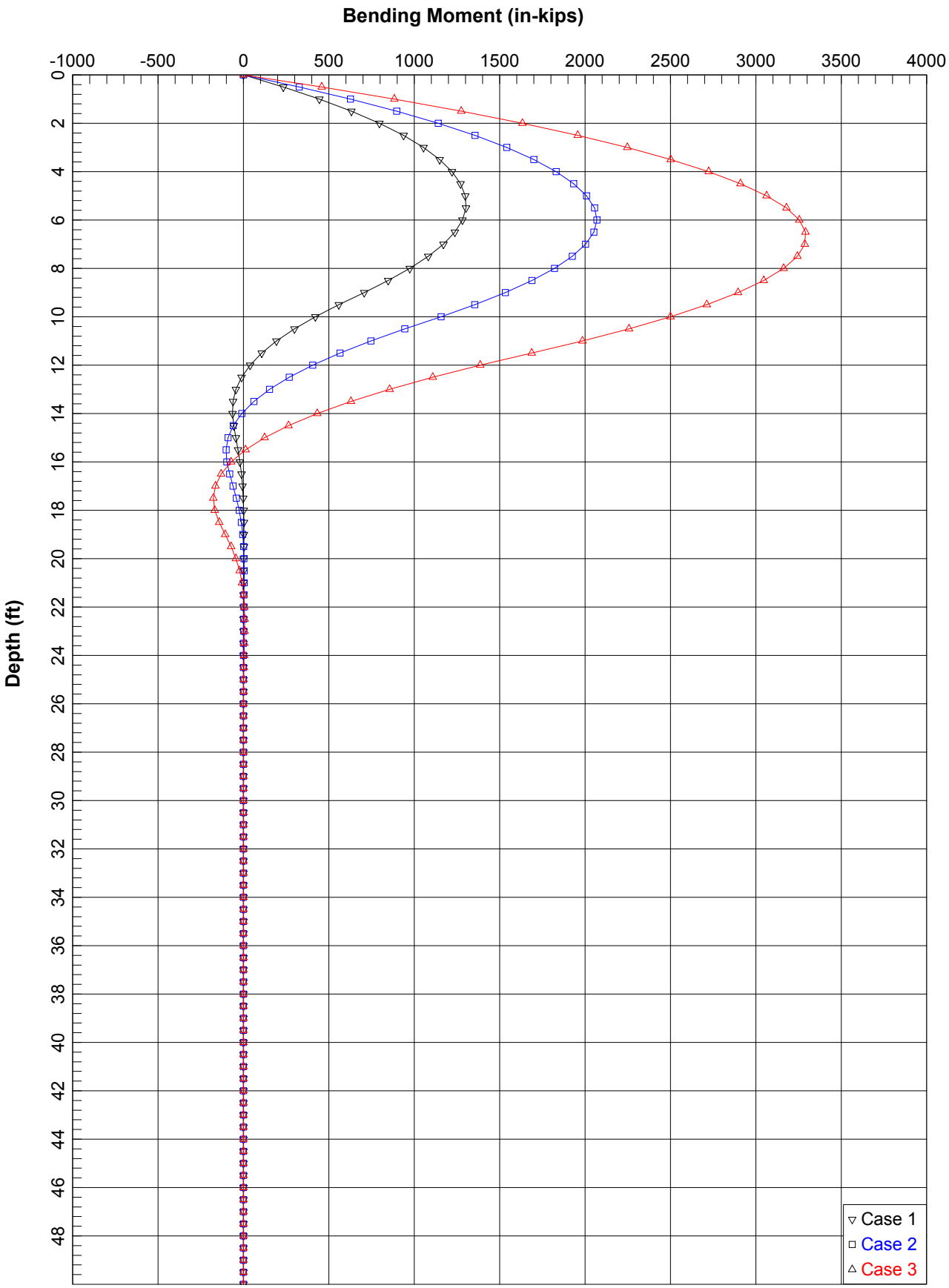
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	268000.	0.25000000	1117720.	31357.	-0.00357516
2	4	y = 0.5000	M = 0.000	268000.	0.50000000	1781471.	43239.	-0.00636952
3	4	y = 1.0000	M = 0.000	268000.	1.00000000	2832694.	59678.	-0.01135036

The analysis ended normally.


Shear Force (kips)
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3L_long_Max P.lp6d
Name of output report file: Bent 3L_long_Max P.lp6o
Name of plot output file: Bent 3L_long_Max P.lp6p
Name of runtime messeage file: Bent 3L_long_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:54:30

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction Test deg.	Uniaxial Test Subgrade psi	RQD % or GSI	Strain Epsilon
		kpy Rock Emass krm		In-situ Test	In-situ Test	Elastic Subgrade Mod. pci			
50	Factor pci psi			Type Property					
1	Stiff Clay w/o Free Water		-5.000	125.000	3250.000	--	--	--	--
0.00700	-- --	--	--	--	--	--	--		
			0.10000	125.000	3250.000	--	--	--	--
0.00700	-- --	--	--	--	--	--	--		
2	Stiff Clay w/o Free Water		0.10000	120.000	2750.000	--	--	--	--
0.00700	-- --	--	--	--	--	--	--		
			5.000	120.000	2750.000	--	--	--	--
0.00700	-- --	--	--	--	--	--	--		
3	Stiff Clay w/o Free Water		5.000	120.000	3750.000	--	--	--	--
0.00700	-- --	--	--	--	--	--	--		
			10.000	120.000	3750.000	--	--	--	--
0.00700	-- --	--	--	--	--	--	--		
4	Stiff Clay w/o Free Water		10.000	125.000	4500.000	--	--	--	--
0.00500	-- --	--	--	--	--	--	--		
			80.000	125.000	4500.000	--	--	--	--

0.00500 -- -- -- -- -- -- --

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6750	1.0000
2	50.000	0.6750	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	268000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	268000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	268000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force V lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	40088.	-0.003866	592.4101	2.936E+10	-713.3246	8559.8952	0.000
6.000	0.2268	233905.	36025.	-0.003842	937.1058	2.936E+10	-641.1173	16960.	0.000
12.000	0.2039	444653.	32172.	-0.003773	1247.6758	2.936E+10	-643.2220	18928.	0.000
18.000	0.1815	632099.	28312.	-0.003663	1523.9066	2.936E+10	-643.2152	21260.	0.000
24.000	0.1599	796181.	24460.	-0.003517	1765.7075	2.936E+10	-641.0095	24046.	0.000
30.000	0.1393	936925.	20627.	-0.003340	1973.1162	2.936E+10	-636.5094	27410.	0.000
36.000	0.1199	1054447.	16829.	-0.003136	2146.3033	2.936E+10	-629.6097	31515.	0.000
42.000	0.1017	1148957.	13079.	-0.002911	2285.5779	2.936E+10	-620.1919	36590.	0.000
48.000	0.0849	1220762.	9394.4767	-0.002669	2391.3937	2.936E+10	-608.1205	42958.	0.000
54.000	0.0697	1270273.	5790.4020	-0.002414	2464.3565	2.936E+10	-593.2377	51087.	0.000
60.000	0.0560	1298010.	2137.7780	-0.002152	2505.2319	2.936E+10	-624.3036	66928.	0.000
66.000	0.0439	1302846.	-1802.4612	-0.001886	2512.3582	2.936E+10	-689.1095	94284.	0.000
72.000	0.0333	1282446.	-5847.6108	-0.001622	2482.2951	2.936E+10	-659.2737	118656.	0.000
78.000	0.0244	1237890.	-9698.6114	-0.001364	2416.6354	2.936E+10	-624.3931	153582.	0.000
84.000	0.0170	1170449.	-13323.	-0.001118	2317.2510	2.936E+10	-583.6208	206379.	0.000
90.000	0.0110	1081614.	-16680.	-0.000888	2186.3376	2.936E+10	-535.4774	292686.	0.000
96.000	0.006313	973145.	-19717.	-0.000678	2026.4925	2.936E+10	-476.9153	453250.	0.000
102.000	0.002843	847188.	-22347.	-0.000492	1840.8749	2.936E+10	-399.6395	843478.	0.000
108.000	0.000411	706566.	-24217.	-0.000333	1633.6454	2.936E+10	-223.7585	3264425.	0.000
114.000	-0.001154	557656.	-23897.	-0.000204	1414.2030	2.936E+10	330.3649	1718010.	0.000
120.000	-0.002035	420455.	-21665.	-0.000104	1212.0169	2.936E+10	413.5356	1219312.	0.000
126.000	-0.002400	298004.	-18924.	-3.047E-05	1031.5659	2.936E+10	500.4389	1250854.	0.000
132.000	-0.002401	193471.	-15889.	1.976E-05	877.5196	2.936E+10	510.9616	1277112.	0.000
138.000	-0.002163	107268.	-12832.	5.049E-05	750.4870	2.936E+10	508.0070	1408934.	0.000
144.000	-0.001795	39319.	-9825.0353	6.547E-05	650.3531	2.936E+10	494.4587	1653119.	0.000
150.000	-0.001378	-10842.	-6926.2693	6.838E-05	608.3882	2.936E+10	471.7966	2054726.	0.000
156.000	-0.000974	-44016.	-4188.5308	6.278E-05	657.2745	2.936E+10	440.7829	2715179.	0.000
162.000	-0.000624	-61307.	-1661.2969	5.201E-05	682.7552	2.936E+10	401.6284	3859525.	0.000
168.000	-0.000350	-64119.	384.7212	3.920E-05	686.8992	2.936E+10	280.3777	4808112.	0.000
174.000	-0.000154	-56816.	1602.9029	2.684E-05	676.1376	2.936E+10	125.6828	4895980.	0.000
180.000	-2.784E-05	-44970.	2049.3335	1.643E-05	658.6808	2.936E+10	23.1274	4983849.	0.000
186.000	4.319E-05	-32277.	2009.1938	8.540E-06	639.9753	2.936E+10	-36.5072	5071719.	0.000
192.000	7.464E-05	-20887.	1707.1203	3.107E-06	623.1909	2.936E+10	-64.1839	5159590.	0.000

198.000	8.047E-05	-11802.	1303.4302	-2.337E-07	609.8015	2.936E+10	-70.3794	5247463.	0.000
204.000	7.183E-05	-5245.4832	900.6630	-1.976E-06	600.1401	2.936E+10	-63.8763	5335335.	0.000
210.000	5.676E-05	-987.2390	555.1169	-2.613E-06	593.8649	2.936E+10	-51.3057	5423209.	0.000
216.000	4.048E-05	1424.3226	289.6545	-2.568E-06	594.5090	2.936E+10	-37.1817	5511083.	0.000
222.000	2.594E-05	2496.8744	105.4772	-2.167E-06	596.0896	2.936E+10	-24.2107	5598959.	0.000
228.000	1.447E-05	2697.0196	-8.3034	-1.637E-06	596.3845	2.936E+10	-13.7162	5686834.	0.000
234.000	6.306E-06	2402.4964	-67.4081	-1.115E-06	595.9505	2.936E+10	-5.9854	5695312.	0.000
240.000	1.086E-06	1891.7103	-88.4566	-6.766E-07	595.1978	2.936E+10	-1.0308	5695312.	0.000
246.000	-1.814E-06	1343.1934	-86.3840	-3.460E-07	594.3895	2.936E+10	1.7217	5695312.	0.000
252.000	-3.066E-06	856.2156	-72.4871	-1.213E-07	593.6718	2.936E+10	2.9106	5695312.	0.000
258.000	-3.269E-06	473.7380	-54.4468	1.466E-08	593.1082	2.936E+10	3.1028	5695312.	0.000
264.000	-2.890E-06	202.8063	-36.9076	8.380E-08	592.7089	2.936E+10	2.7436	5695312.	0.000
270.000	-2.263E-06	30.5770	-22.2321	1.077E-07	592.4551	2.936E+10	2.1483	5695312.	0.000
276.000	-1.599E-06	-64.3248	-11.2352	1.042E-07	592.5049	2.936E+10	1.5173	5695312.	0.000
282.000	-1.013E-06	-104.5810	-3.7993	8.694E-08	592.5642	2.936E+10	0.9613	5695312.	0.000
288.000	-5.552E-07	-110.1955	0.6657	6.499E-08	592.5725	2.936E+10	0.5270	5695312.	0.000
294.000	-2.328E-07	-96.8012	2.9098	4.384E-08	592.5527	2.936E+10	0.2210	5695312.	0.000
300.000	-2.914E-08	-75.4192	3.6557	2.624E-08	592.5212	2.936E+10	0.0277	5695312.	0.000
306.000	8.205E-08	-53.0168	3.5051	1.311E-08	592.4882	2.936E+10	-0.0779	5695312.	0.000
312.000	1.282E-07	-33.4008	2.9062	4.282E-09	592.4593	2.936E+10	-0.1217	5695312.	0.000
318.000	1.334E-07	-18.1556	2.1611	-9.865E-10	592.4368	2.936E+10	-0.1267	5695312.	0.000
324.000	1.164E-07	-7.4643	1.4497	-3.605E-09	592.4211	2.936E+10	-0.1105	5695312.	0.000
330.000	9.018E-08	-0.7478	0.8614	-4.444E-09	592.4112	2.936E+10	-0.0856	5695312.	0.000
336.000	6.306E-08	2.8872	0.4250	-4.225E-09	592.4143	2.936E+10	-0.0599	5695312.	0.000
342.000	3.948E-08	4.3663	0.1330	-3.484E-09	592.4165	2.936E+10	-0.0375	5695312.	0.000
348.000	2.125E-08	4.4949	-0.0399	-2.579E-09	592.4167	2.936E+10	-0.0202	5695312.	0.000
354.000	8.536E-09	3.8959	-0.1247	-1.721E-09	592.4158	2.936E+10	-0.008103	5695312.	0.000
360.000	5.990E-10	3.0039	-0.1507	-1.010E-09	592.4145	2.936E+10	-0.000569	5695312.	0.000
366.000	-3.655E-09	2.0904	-0.1420	-4.953E-10	592.4131	2.936E+10	0.003469	5695312.	0.000
372.000	-5.344E-09	1.3012	-0.1164	-1.487E-10	592.4120	2.936E+10	0.005073	5695312.	0.000
378.000	-5.439E-09	0.6941	-0.0857	5.524E-11	592.4111	2.936E+10	0.005162	5695312.	0.000
384.000	-4.682E-09	0.2727	-0.0569	1.540E-10	592.4105	2.936E+10	0.004444	5695312.	0.000
390.000	-3.590E-09	0.0111	-0.0333	1.830E-10	592.4101	2.936E+10	0.003408	5695312.	0.000
396.000	-2.485E-09	-0.1278	-0.0160	1.711E-10	592.4103	2.936E+10	0.002359	5695312.	0.000
402.000	-1.537E-09	-0.1817	-0.004569	1.395E-10	592.4103	2.936E+10	0.001459	5695312.	0.000
408.000	-8.114E-10	-0.1831	0.002118	1.022E-10	592.4103	2.936E+10	0.000770	5695312.	0.000
414.000	-3.104E-10	-0.1566	0.003313	6.749E-11	592.4103	2.936E+10	0.000295	5695312.	0.000
420.000	-1.533E-11	-0.1195	0.006201	3.926E-11	592.4102	2.936E+10	1.457E-06	5695312.	0.000
426.000	1.608E-10	-0.0823	0.005748	1.863E-11	592.4102	2.936E+10	-0.000153	5695312.	0.000
432.000	2.221E-10	-0.0506	0.004657	5.047E-12	592.4101	2.936E+10	-0.000211	5695312.	0.000
438.000	2.213E-10	-0.0265	0.003395	-2.831E-12	592.4101	2.936E+10	-0.000210	5695312.	0.000
444.000	1.881E-10	-0.009871	0.002229	-6.545E-12	592.4101	2.936E+10	-0.000179	5695312.	0.000
450.000	1.428E-10	0.000301	0.001287	-7.523E-12	592.4101	2.936E+10	-0.000136	5695312.	0.000
456.000	9.783E-11	0.005593	0.000601	-6.920E-12	592.4101	2.936E+10	-9.286E-05	5695312.	0.000
462.000	5.974E-11	0.007541	0.000153	-5.578E-12	592.4101	2.936E+10	-5.670E-05	5695312.	0.000
468.000	3.089E-11	0.007444	-0.000105	-4.047E-12	592.4101	2.936E+10	-2.932E-05	5695312.	0.000
474.000	1.118E-11	0.006290	-0.000225	-2.643E-12	592.4101	2.936E+10	-1.061E-05	5695312.	0.000
480.000	0.000	0.004752	-0.000255	-1.515E-12	592.4101	2.936E+10	7.834E-07	5695312.	0.000
486.000	-7.000E-12	0.003240	-0.000232	0.000	592.4101	2.936E+10	6.645E-06	5695312.	0.000
492.000	-9.203E-12	0.001966	-0.000186	0.000	592.4101	2.936E+10	8.735E-06	5695312.	0.000
498.000	-8.993E-12	0.001006	-0.000134	0.000	592.4101	2.936E+10	8.537E-06	5695312.	0.000
504.000	-7.550E-12	0.000354	-8.723E-05	0.000	592.4101	2.936E+10	7.167E-06	5695312.	0.000
510.000	-5.673E-12	-4.134E-05	-4.958E-05	0.000	592.4101	2.936E+10	5.385E-06	5695312.	0.000
516.000	-3.847E-12	-0.000242	-2.247E-05	0.000	592.4101	2.936E+10	3.652E-06	5695312.	0.000
522.000	-2.318E-12	-0.000312	-4.909E-06	0.000	592.4101	2.936E+10	2.201E-06	5695312.	0.000
528.000	-1.172E-12	-0.000302	5.030E-06	0.000	592.4101	2.936E+10	1.112E-06	5695312.	0.000
534.000	0.000	-0.000252	9.494E-06	0.000	592.4101	2.936E+10	3.755E-07	5695312.	0.000
540.000	0.000	-0.000188	1.042E-05	0.000	592.4101	2.936E+10	-6.790E-08	5695312.	0.000
546.000	0.000	-0.000127	9.337E-06	0.000	592.4101	2.936E+10	-2.920E-07	5695312.	0.000
552.000	0.000	-7.643E-05	7.356E-06	0.000	592.4101	2.936E+10	-3.682E-07	5695312.	0.000
558.000	0.000	-3.891E-05	5.186E-06	0.000	592.4101	2.936E+10	-3.553E-07	5695312.	0.000
564.000	0.000	-1.418E-05	3.228E-06	0.000	592.4101	2.936E+10	-2.972E-07	5695312.	0.000
570.000	0.000	-1.359E-07	1.669E-06	0.000	592.4101	2.936E+10	-2.225E-07	5695312.	0.000
576.000	0.000	5.896E-06	5.587E-07	0.000	592.4101	2.936E+10	-1.477E-07	5695312.	0.000
582.000	0.000	6.608E-06	-1.237E-07	0.000	592.4101	2.936E+10	-7.975E-08	5695312.	0.000
588.000	0.000	4.448E-06	-4.214E-07	0.000	592.4101	2.936E+10	-1.950E-08	5695312.	0.000
594.000	0.000	1.584E-06	-3.732E-07	0.000	592.4101	2.936E+10	3.558E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	592.4101	2.936E+10	8.882E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0038660 radians
Maximum bending moment = 1302846. inch-lbs
Maximum shear force = 40088. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force V lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	55159.	-0.006867	592.4101	2.936E+10	-848.2907	5089.7442	0.000
6.000	0.4588	326726.	50320.	-0.006833	1073.8917	2.936E+10	-764.5923	9999.0429	0.000
12.000	0.4180	625819.	45717.	-0.006736	1514.6521	2.936E+10	-769.6654	11048.	0.000
18.000	0.3780	896998.	41091.	-0.006580	1914.2775	2.936E+10	-772.6448	12265.	0.000
24.000	0.3390	1140067.	36452.	-0.006372	2272.4783	2.936E+10	-773.4482	13688.	0.000
30.000	0.3015	1354918.	31816.	-0.006117	2589.0943	2.936E+10	-771.9883	15363.	0.000
36.000	0.2656	1541532.	27195.	-0.005821	2864.0988	2.936E+10	-768.1716	17352.	0.000
42.000	0.2316	1699984.	22605.	-0.005490	3097.6039	2.936E+10	-761.8966	19734.	0.000
48.000	0.1997	1830450.	18060.	-0.005129	3289.8657	2.936E+10	-753.0525	22620.	0.000
54.000	0.1701	1933205.	13577.	-0.004745	3441.2904	2.936E+10	-741.5165	26157.	0.000

60.000	0.1428	2008629.	8985.0896	-0.004342	3552.4401	2.936e+10	-789.0140	33149.	0.000
66.000	0.1180	2054989.	3970.4773	-0.003926	3620.7584	2.936e+10	-882.5235	44877.	0.000
72.000	0.0957	2068902.	-1251.2855	-0.003505	3641.2621	2.936e+10	-858.0641	53800.	0.000
78.000	0.0759	2051245.	-6313.2799	-0.003084	3615.2420	2.936e+10	-829.2674	65526.	0.000
84.000	0.0587	2003061.	-11188.	-0.002670	3544.2345	2.936e+10	-795.7511	81355.	0.000
90.000	0.0439	1925571.	-15847.	-0.002268	3430.0409	2.936e+10	-756.9812	103465.	0.000
96.000	0.0315	1820197.	-20254.	-0.001885	3274.7556	2.936e+10	-712.1534	135780.	0.000
102.000	0.0213	1688587.	-24370.	-0.001527	3080.8078	2.936e+10	-659.9305	186126.	0.000
108.000	0.0131	1532665.	-28143.	-0.001198	2851.0318	2.936e+10	-597.7708	272778.	0.000
114.000	0.006903	1354719.	-31496.	-0.000902	2588.8007	2.936e+10	-519.7255	451742.	0.000
120.000	0.002319	1157618.	-34344.	-0.000646	2298.3412	2.936e+10	-429.6824	1111848.	0.000
126.000	-0.000846	944667.	-34482.	-0.000431	1984.5257	2.936e+10	383.6372	2721430.	0.000
132.000	-0.002852	745218.	-31730.	-0.000258	1690.6052	2.936e+10	533.5835	1122590.	0.000
138.000	-0.003944	564732.	-28357.	-0.000124	1424.6313	2.936e+10	590.9155	898943.	0.000
144.000	-0.004344	405334.	-24731.	-2.518e-05	1189.7328	2.936e+10	617.6699	853196.	0.000
150.000	-0.004246	268038.	-20999.	4.363e-05	987.4065	2.936e+10	626.3479	885039.	0.000
156.000	-0.003820	153203.	-17255.	8.668e-05	818.1792	2.936e+10	621.8191	976659.	0.000
162.000	-0.003206	60703.	-13570.	0.000109	681.8662	2.936e+10	606.4499	1134953.	0.000
168.000	-0.002518	-9984.1246	-10006.	0.000114	607.1232	2.936e+10	581.4859	1385837.	0.000
174.000	-0.001841	-59735.	-6619.0049	0.000107	680.4389	2.936e+10	547.5311	1784156.	0.000
180.000	-0.001238	-89755.	-3462.3876	9.132e-05	724.6782	2.936e+10	504.6747	2445275.	0.000
186.000	-0.000745	-101577.	-591.4918	7.177e-05	742.1002	2.936e+10	452.2906	3640596.	0.000
192.000	-0.000377	-97084.	1738.1334	5.147e-05	735.4782	2.936e+10	324.2512	5159590.	0.000
198.000	-0.000128	-80885.	3046.1435	3.328e-05	711.6071	2.936e+10	111.7522	5247463.	0.000
204.000	2.232e-05	-60637.	3321.8687	1.882e-05	681.7683	2.936e+10	-19.8438	5335335.	0.000
210.000	9.805e-05	-41083.	2996.4685	8.424e-06	652.9528	2.936e+10	-88.6229	5423209.	0.000
216.000	0.000123	-24707.	2390.5692	1.700e-06	628.8190	2.936e+10	-113.3435	5511083.	0.000
222.000	0.000118	-12402.	1718.9392	-2.092e-06	610.6803	2.936e+10	-110.5332	5598959.	0.000
228.000	9.829e-05	-4072.5175	1107.8519	-3.776e-06	598.4116	2.936e+10	-93.1626	5686834.	0.000
234.000	7.314e-05	904.4077	620.0832	-4.100e-06	593.7429	2.936e+10	-69.4270	5695312.	0.000
240.000	4.910e-05	3381.6647	271.9866	-3.662e-06	597.3935	2.936e+10	-46.6052	5695312.	0.000
246.000	2.920e-05	4180.0218	49.0109	-2.889e-06	598.5700	2.936e+10	-27.7200	5695312.	0.000
252.000	1.443e-05	3979.0858	-75.2508	-2.055e-06	598.2739	2.936e+10	-13.7006	5695312.	0.000
258.000	4.544e-06	3283.6215	-129.2917	-1.313e-06	597.2490	2.936e+10	-4.3131	5695312.	0.000
264.000	-1.319e-06	2431.8070	-138.4748	-7.286e-07	595.9067	2.936e+10	1.2520	5695312.	0.000
270.000	-4.200e-06	1624.2667	-122.7596	-3.141e-07	594.8037	2.936e+10	3.9864	5695312.	0.000
276.000	-5.088e-06	959.7021	-96.3106	-5.004e-08	593.8243	2.936e+10	4.8299	5695312.	0.000
282.000	-4.800e-06	468.7003	-68.1517	9.594e-08	593.1008	2.936e+10	4.5564	5695312.	0.000
288.000	-3.937e-06	141.5736	-43.2710	1.583e-07	592.6187	2.936e+10	3.7372	5695312.	0.000
294.000	-2.900e-06	-51.0612	-23.7999	1.676e-07	592.4853	2.936e+10	2.7532	5695312.	0.000
300.000	-1.926e-06	-144.5640	-10.0544	1.476e-07	592.6231	2.936e+10	1.8287	5695312.	0.000
306.000	-1.130e-06	-172.1880	-1.3512	1.152e-07	592.6803	2.936e+10	1.0724	5695312.	0.000
312.000	-5.442e-07	-161.1494	3.4156	8.112e-08	592.6475	2.936e+10	0.5166	5695312.	0.000
318.000	-1.563e-07	-131.4617	5.4103	5.122e-08	592.6038	2.936e+10	0.1483	5695312.	0.000
324.000	7.046e-08	-96.3910	5.6546	2.794e-08	592.5521	2.936e+10	-0.0669	5695312.	0.000
330.000	1.790e-07	-63.6964	4.9443	1.158e-08	592.5039	2.936e+10	-0.1699	5695312.	0.000
336.000	2.094e-07	-37.0966	3.8385	1.275e-09	592.4647	2.936e+10	-0.1987	5695312.	0.000
342.000	1.943e-07	-17.6390	2.6891	-4.319e-09	592.4361	2.936e+10	-0.1844	5695312.	0.000
348.000	1.575e-07	-4.8141	1.6872	-6.613e-09	592.4172	2.936e+10	-0.1495	5695312.	0.000
354.000	1.149e-07	2.6289	0.9114	-6.837e-09	592.4139	2.936e+10	-0.1091	5695312.	0.000
360.000	7.550e-08	6.1444	0.3692	-5.940e-09	592.4191	2.936e+10	-0.0717	5695312.	0.000
366.000	4.363e-08	7.0778	0.0299	-4.589e-09	592.4205	2.936e+10	-0.0414	5695312.	0.000
372.000	2.044e-08	6.5181	-0.1523	-3.199e-09	592.4197	2.936e+10	-0.0194	5695312.	0.000
378.000	5.236e-09	5.2578	-0.2256	-1.996e-09	592.4178	2.936e+10	-0.004970	5695312.	0.000
384.000	-3.515e-09	3.8170	-0.2305	-1.069e-09	592.4157	2.936e+10	0.003337	5695312.	0.000
390.000	-7.586e-09	2.4949	-0.1989	-4.235e-10	592.4143	2.936e+10	0.007201	5695312.	0.000
396.000	-8.597e-09	1.4313	-0.1528	-2.222e-11	592.4122	2.936e+10	0.008160	5695312.	0.000
402.000	-7.853e-09	0.6610	-0.1060	1.916e-10	592.4110	2.936e+10	0.007454	5695312.	0.000
408.000	-6.298e-09	0.1588	-0.0657	2.754e-10	592.4103	2.936e+10	0.005978	5695312.	0.000
414.000	-4.548e-09	-0.1282	-0.0348	2.785e-10	592.4101	2.936e+10	0.004317	5695312.	0.000
420.000	-2.955e-09	-0.2598	-0.0134	2.389e-10	592.4104	2.936e+10	0.002805	5695312.	0.000
426.000	-1.682e-09	-0.2904	-0.000241	1.826e-10	592.4105	2.936e+10	0.001596	5695312.	0.000
432.000	-7.639e-10	-0.2633	0.006723	1.260e-10	592.4102	2.936e+10	0.000723	5695312.	0.000
438.000	-1.691e-10	-0.2101	0.009381	7.766e-11	592.4104	2.936e+10	0.000161	5695312.	0.000
444.000	1.680e-10	-0.1510	0.009384	4.076e-11	592.4103	2.936e+10	-0.000159	5695312.	0.000
450.000	3.200e-10	-0.0976	0.007994	1.536e-11	592.4102	2.936e+10	-0.000304	5695312.	0.000
456.000	3.523e-10	-0.0551	0.006079	0.000	592.4101	2.936e+10	-0.000334	5695312.	0.000
462.000	3.170e-10	-0.0247	0.004173	-8.402e-12	592.4101	2.936e+10	-0.000301	5695312.	0.000
468.000	2.515e-10	-0.005012	0.002554	-1.143e-11	592.4101	2.936e+10	-0.000239	5695312.	0.000
474.000	1.798e-10	0.006037	0.001326	-1.133e-11	592.4101	2.936e+10	-0.000171	5695312.	0.000
480.000	1.155e-10	0.0109	0.000485	-9.594e-12	592.4101	2.936e+10	-0.000110	5695312.	0.000
486.000	6.469e-11	0.0119	-2.816e-05	-7.261e-12	592.4101	2.936e+10	-6.140E-05	5695312.	0.000
492.000	2.841e-11	0.0106	-0.000293	-4.960e-12	592.4101	2.936e+10	-2.697e-05	5695312.	0.000
498.000	5.165e-12	0.008386	-0.000389	-3.018e-12	592.4101	2.936e+10	-4.903e-06	5695312.	0.000
504.000	-7.799e-12	0.005967	-0.000381	-1.551e-12	592.4101	2.936e+10	7.403e-06	5695312.	0.000
510.000	-1.344e-11	0.003814	-0.000321	0.000	592.4101	2.936e+10	1.276e-05	5695312.	0.000
516.000	-1.441e-11	0.002118	-0.000242	0.000	592.4101	2.936e+10	1.368e-05	5695312.	0.000
522.000	-1.278e-11	0.000915	-0.000164	0.000	592.4101	2.936e+10	1.214e-05	5695312.	0.000
528.000	-1.003e-11	0.000148	-9.914E-05	0.000	592.4101	2.936e+10	9.525e-06	5695312.	0.000
534.000	-7.103e-12	-0.000277	-5.034e-05	0.000	592.4101	2.936e+10	6.742e-06	5695312.	0.000
540.000	-4.510e-12	-0.000458	-1.727e-05	0.000	592.4101	2.936e+10	4.281e-06	5695312.	0.000
546.000	-2.479e-12	-0.000485	2.630E-06	0.000	592.4101	2.936e+10	2.353e-06	5695312.	0.000
552.000	-1.043e-12	-0.000427	1.266e-05	0.000	592.4101	2.936e+10	9.900E-07	5695312.	0.000
558.000	0.000	-0.000334	1.600E-05	0.000	592.4101	2.936e+10	1.242e-07	5695312.	0.000
564.000	0.000	-0.000236	1.532e-05	0.000	592.4101	2.936e+10	-3.530E-07	5695312.	0.000
570.000	0.000	-0.000150	1.259e-05	0.000	592.4101	2.936e+10	-5.559e-07	5695312.	0.000
576.000	0.000	-8.466E-05	9.169e-06	0.000	592.4101	2.936e+10	-5.840e-07	5695312.	0.000
582.000	0.000	-4.014E-05	5.876e-06	0.000	592.4101	2.936e+10	-5.136e-07	5695312.	0.000
588.000	0.000	-1.409E-05	3.146e-06	0.000	592.4101	2.936e+10	-3.964e-07	5695312.	0.000
594.000	0.000	-2.317E-06	1.168e-06	0.000	592.4101	2.936e+10	-2.628e-07	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	592.4101	2.936e+10	-1.266e-07	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0068668 radians
Maximum bending moment	=	2068902. inch-lbs
Maximum shear force	=	55159. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	20
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	76099.	-0.0122	592.4101	2.936E+10	-1008.7933	3026.3800	0.000
6.000	0.9266	458121.	70338.	-0.0122	1267.5225	2.936E+10	-911.4681	5902.3025	0.000
12.000	0.8537	883278.	64844.	-0.0121	1894.0582	2.936E+10	-920.0884	6466.8050	0.000
18.000	0.7819	1275021.	59304.	-0.0118	2471.3539	2.936E+10	-926.6129	7110.7240	0.000
24.000	0.7116	1632988.	53731.	-0.0115	2998.8738	2.936E+10	-930.9615	7849.1952	0.000
30.000	0.6434	1956903.	48139.	-0.0112	3476.2136	2.936E+10	-933.0509	8701.0973	0.000
36.000	0.5776	2246585.	42541.	-0.0107	3903.1058	2.936E+10	-932.7931	9690.2086	0.000
42.000	0.5145	2501949.	36953.	-0.0103	4279.4237	2.936E+10	-930.0946	10847.	0.000
48.000	0.4545	2723006.	31388.	-0.009723	4605.1868	2.936E+10	-924.8555	12210.	0.000
54.000	0.3978	2909874.	25862.	-0.009148	4880.5659	2.936E+10	-916.9680	13830.	0.000
60.000	0.3447	3062775.	20361.	-0.008537	5105.8890	2.936E+10	-983.4204	17118.	0.000
66.000	0.2954	3179266.	13881.	-0.007900	5277.5566	2.936E+10	-1110.0139	22549.	0.000
72.000	0.2499	3254751.	7278.7318	-0.007242	5388.7963	2.936E+10	-1090.7292	26187.	0.000
78.000	0.2085	3289901.	804.5162	-0.006573	5440.5947	2.936E+10	-1067.3427	30722.	0.000
84.000	0.1710	3285545.	-5510.1527	-0.005901	5434.1754	2.936E+10	-1039.5936	36470.	0.000
90.000	0.1376	3242683.	-11657.	-0.005234	5371.0126	2.936E+10	-1007.1545	43904.	0.000
96.000	0.1082	3162499.	-17587.	-0.004579	5252.8481	2.936E+10	-969.5951	53755.	0.000
102.000	0.0827	3046369.	-23275.	-0.003943	5081.7133	2.936E+10	-926.3195	67216.	0.000
108.000	0.0609	2895891.	-28683.	-0.003338	4859.9603	2.936E+10	-876.4454	86370.	0.000
114.000	0.0426	2712909.	-33768.	-0.002764	4590.3077	2.936E+10	-818.5511	115194.	0.000
120.000	0.0277	2499568.	-38614.	-0.002232	4275.9158	2.936E+10	-796.6999	172498.	0.000
126.000	0.0159	2256724.	-43416.	-0.001746	3918.6470	2.936E+10	-804.2751	304387.	0.000
132.000	0.006763	1984184.	-47821.	-0.001312	3516.4171	2.936E+10	-663.7704	588872.	0.000
138.000	0.000106	1687097.	-50043.	-0.000937	3078.6120	2.936e+10	-77.1264	4368793.	0.000
144.000	-0.002448	1386728.	-48404.	-0.000623	2635.6982	2.936e+10	622.7698	833632.	0.000
150.000	-0.007370	1108224.	-44380.	-0.000368	2225.5517	2.936e+10	719.2786	585569.	0.000
156.000	-0.008899	855299.	-39917.	-0.000167	1852.8273	2.936e+10	768.5866	518224.	0.000
162.000	-0.009378	629762.	-35230.	-1.560E-05	1520.4636	2.936e+10	793.4963	507651.	0.000
168.000	-0.009086	432584.	-30444.	9.597e-05	1229.8910	2.936e+10	801.8454	529509.	0.000
174.000	-0.008263	264131.	-25647.	0.000164	981.6482	2.936e+10	797.2798	578938.	0.000
180.000	-0.007116	124292.	-20910.	0.000204	775.5745	2.936e+10	781.7405	659150.	0.000
186.000	-0.005817	12556.	-16296.	0.000218	610.9132	2.936e+10	756.3051	780163.	0.000
192.000	-0.004502	-71958.	-11862.	0.000212	698.4511	2.936e+10	721.5242	961663.	0.000
198.000	-0.003275	-130473.	-7665.1290	0.000191	784.6824	2.936e+10	677.5373	1241217.	0.000
204.000	-0.002209	-164554.	-3760.4338	0.000161	834.9060	2.936e+10	624.0278	1695223.	0.000
210.000	-0.001344	-176116.	-208.6596	0.000126	851.9442	2.936e+10	559.8969	2499683.	0.000
216.000	-0.000695	-167463.	2917.0863	9.101E-05	839.1936	2.936e+10	482.0184	4160307.	0.000
222.000	-0.000252	-141403.	5067.9931	5.945e-05	800.7901	2.936e+10	234.9506	5598959.	0.000
228.000	1.820E-05	-106839.	5721.0971	3.408e-05	749.8536	2.936e+10	-17.2492	5686834.	0.000
234.000	0.000157	-72860.	5221.8206	1.571e-05	699.7804	2.936e+10	-149.1763	5695312.	0.000
240.000	0.000207	-44227.	4185.5007	3.748e-06	657.5860	2.936e+10	-196.2637	5695312.	0.000
246.000	0.000202	-22646.	3021.1070	-3.086e-06	625.7823	2.936e+10	-191.8675	5695312.	0.000
252.000	0.000170	-7964.1344	1961.1744	-6.214e-06	604.1465	2.936e+10	-161.1100	5695312.	0.000
258.000	0.000128	920.2331	1115.5993	-6.934e-06	593.7662	2.936e+10	-121.0817	5695312.	0.000
264.000	8.652e-05	5445.3575	505.9805	-6.284e-06	600.4347	2.936e+10	-82.1246	5695312.	0.000
270.000	5.215e-05	7012.2074	111.0880	-5.011e-06	602.7437	2.936e+10	-49.5062	5695312.	0.000
276.000	2.639e-05	6794.5279	-112.1382	-3.600E-06	603.4229	2.936e+10	-25.0506	5695312.	0.000
282.000	8.959e-06	5672.7938	-213.2471	-2.326e-06	600.7698	2.936e+10	-8.5043	5695312.	0.000
288.000	-1.516e-06	4243.0421	-234.4441	-1.312e-06	598.6629	2.936e+10	1.4386	5695312.	0.000
294.000	-6.787e-06	2863.1849	-210.8018	-5.859E-07	596.6302	2.936e+10	6.4422	5695312.	0.000
300.000	-8.546e-06	1715.3045	-167.1383	-1.179e-07	594.9378	2.936e+10	8.1123	5695312.	0.000
306.000	-8.202e-06	858.4038	-119.4444	1.451e-07	593.6751	2.936e+10	7.7857	5695312.	0.000
312.000	-6.805e-06	281.5051	-76.7080	2.616e-07	592.8249	2.936e+10	6.4598	5695312.	0.000
318.000	-5.063e-06	-62.9332	-42.9099	2.839e-07	592.5028	2.936e+10	4.8062	5695312.	0.000
324.000	-3.399e-06	-234.3262	-18.8133	2.535e-07	592.7554	2.936e+10	3.2259	5695312.	0.000
330.000	-2.021e-06	-289.5084	-3.3803	2.000E-07	592.8367	2.936e+10	1.9184	5695312.	0.000
336.000	-9.986e-07	-275.5327	5.2186	1.422E-07	592.8161	2.936e+10	0.9479	5695312.	0.000
342.000	-3.140E-07	-227.3427	8.9565	9.086E-08	592.7451	2.936e+10	0.2981	5695312.	0.000
348.000	9.170E-08	-168.3464	9.5897	5.042e-08	592.6582	2.936e+10	-0.0870	5695312.	0.000
354.000	2.910E-07	-112.4283	8.4999	2.173e-08	592.5757	2.936e+10	-0.2762	5695312.	0.000
360.000	3.524e-07	-66.4171	6.6677	3.449E-09	592.5079	2.936e+10	-0.3345	5695312.	0.000
366.000	3.324e-07	-32.4267	4.7177	-6.652e-09	592.4579	2.936e+10	-0.3155	5695312.	0.000
372.000	2.726e-07	-9.7837	2.9949	-1.097e-08	592.4245	2.936e+10	-0.2587	5695312.	0.000
378.000	2.008e-07	3.5477	1.6469	-1.160E-08	592.4133	2.936e+10	-0.1906	5695312.	0.000
384.000	1.333e-07	10.0165	0.6954	-1.022e-08	592.4248	2.936e+10	-0.1266	5695312.	0.000
390.000	7.819e-08	11.9254	0.0930	-7.975e-09	592.4276	2.936e+10	-0.0742	5695312.	0.000
396.000	3.765e-08	11.1587	-0.2368	-5.616e-09	592.4265	2.936e+10	-0.0357	5695312.	0.000
402.000	1.080e-08	9.1017	-0.3748	-3.545E-09	592.4235	2.936e+10	-0.0102	5695312.	0.000
408.000	-4.893e-09	6.6728	-0.3916	-1.933e-09	592.4199	2.936e+10	0.004645	5695312.	0.000
414.000	-1.240E-08	4.4089	-0.3423	-8.006e-10	592.4166	2.936e+10	0.0118	5695312.	0.000
420.000	-1.450E-08	2.5672	-0.2657	-8.766e-11	592.4138	2.936e+10	0.0138	5695312.	0.000
426.000	-1.345E-08	1.2203	-0.1861	2.994e-10	592.4119	2.936e+10	0.0128	5695312.	0.000
432.000	-1.091E-08	0.3326	-0.1168	4.581e-10	592.4106	2.936e+10	0.0104	5695312.	0.000
438.000	-7.955E-09	-0.1825	-0.0631	4.734e-10	592.4103	2.936e+10	0.007551	5695312.	0.000
444.000	-5.226E-09	-0.4257	-0.0255	4.116e-10	592.4101	2.936e+10	0.004961	5695312.	0.000
450.000	-3.019E-09	-0.4902	-0.002050	3.177E-10	592.4108	2.936e+10	0.002866	5695312.	0.000
456.000	-1.414E-09	-0.4513	0.0106	2.215e-10	592.4107	2.936e+10	0.001342	5695312.	0.000
462.000	-3.617E-10	-0.3640	0.0156	1.381e-10	592.4106	2.936e+10	0.000343	5695312.	0.000
468.000	2.440E-10	-0.2642	0.0160	7.394E-11	592.4105	2.936e+10	-0.000232	5695312.	0.000
474.000	5.256e-10	-0.1727	0.0138	2.929E-11	592.4103	2.936e+10	-0.000499	5695312.	0.000
480.000	5.954e-10	-0.0991	0.0106	1.514e-12	592.4102	2.936e+10	-0.000565	5695312.	0.000
486.000	5.437e-10	-0.0457	0.007337	-1.328e-11	592.4101	2.936e+10	-0.000516	5695312.	0.000
492.000	4.360E-10	-0.0110	0.004547	-1.907E-11	592.4101	2.936e+10	-0.000414	5695312.	0.000
498.000	3.148E-10	0.008897	0.002409	-1.929E-11	592.4101	2.936e+10	-0.000299	5695312.	0.000
504.000	2.046E-10	0.0180	0.000930	-1.654E-11	592.4101	2.936e+10	-0.000194	5695312.	0.000
510.000	1.164E-10	0.0201	1.561E-05	-1.264E-11	592.4101	2.936e+10	-0.000110	5695312.	0.000
516.000	5.285E-11	0.0182	-0.000466	-8.726E-12	592.4101	2.936e+10	-5.016E-05	5695312.	0.000
522.000	1.167E-11	0.0145	-0.000650	-5.378E-12	592.4101	2.936e+10	-1.107e-05	5695312.	0.000
528.000	-1.169E-11	0.0104	-0.000650	-2.825E-12	592.4101	2.936e+10	1.109e-05	5695312.	0.000
534.000	-2.223E-11	0.006747	-0.000553	-1.068E-12	592.4101	2.936e+10	2.110e-05	5695312.	0.000
540.000	-2.450E-11	0.003808	-0.000420	0.000	592.4101	2.936e+10	2.326e-05	5695312.	0.000
546.000	-2.211E-11	0.001704	-0.000288	0.000	592.4101	2.936e+10	2.098e-05	5695312.	0.000
552.000	-1.762E-11	0.000356	-0.000174	0.000	592.4101	2.936e+10	1.672e-05	5695312.	0.000
558.000	-1.269E-11	-0.000391	-8.810E-05	0.000	592.4101	2.936e+10	1.205e-05	5695312.	0.000
564.000	-8.244E-12	-0.000704	-2.849E-05	0.000	592.4101	2.936e+10	7.825e-06	5695312.	0.000
570.000	-4.660E-12	-0.000735	8.255e-06	0.000	592.4101	2.936e+10	4.424e-06	5695312.	0.000
576.000	-1.978E-12	-0.000606	2.716E-05	0.000	592.4101	2.936e+10	1.878e-06	5695312.	0.000
582.000	0.000	-0.000410	3.291E-05	0.000	592.4101	2.936e+10	3.809E-08	5695312.	0.000
588.000	1.395E-12	-0.000213	2.905E-05	0.000	592.4101	2.936e+10	-1.324E-06	5695312.	0.000

594.000	2.569E-12	-6.237E-05	1.776E-05	0.000	592.4101	2.936E+10	-2.439E-06	5695312.	0.000
600.000	3.667E-12	0.000	0.000	0.000	592.4101	2.936E+10	-3.481E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0122408 radians
Maximum bending moment           =       3289901. inch-lbs
Maximum shear force              =         76099. lbs
Depth of maximum bending moment  =     78.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             15
Number of zero deflection points =              8
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

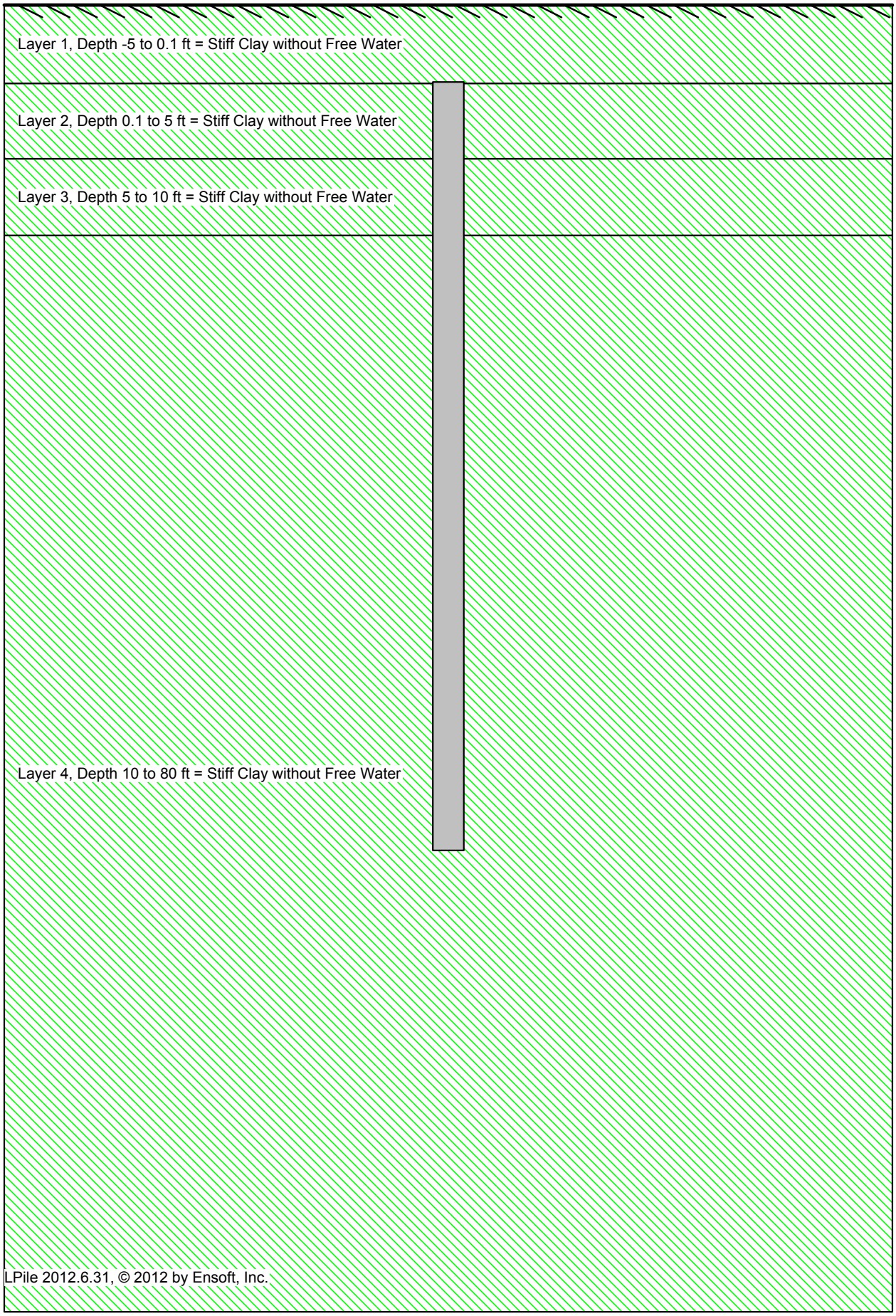
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	268000.	0.25000000	1302846.	40088.	-0.00386596
2	4	y = 0.5000	M = 0.000	268000.	0.50000000	2068902.	55159.	-0.00686678
3	4	y = 1.0000	M = 0.000	268000.	1.00000000	3289901.	76099.	-0.01224081

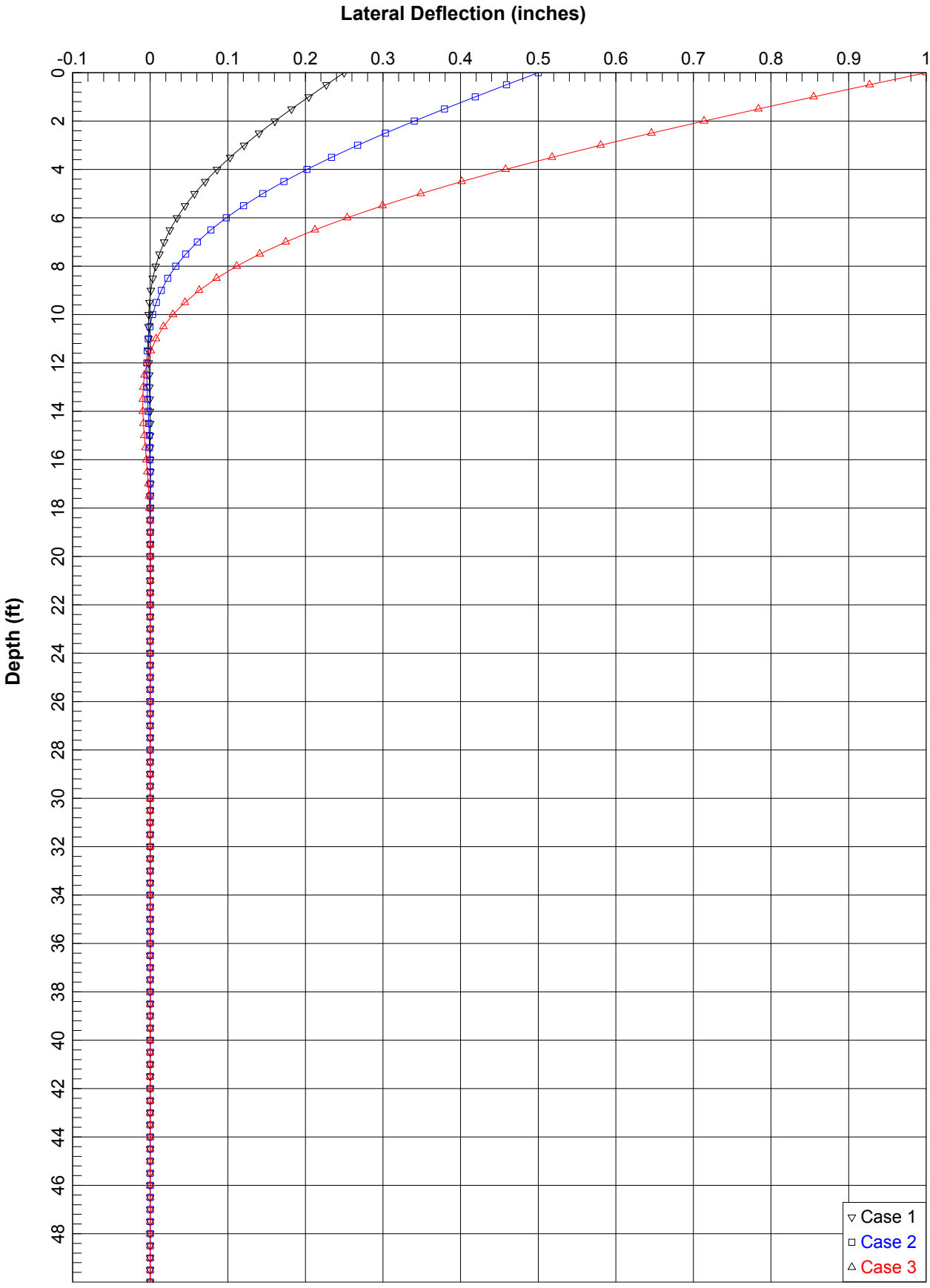
The analysis ended normally.

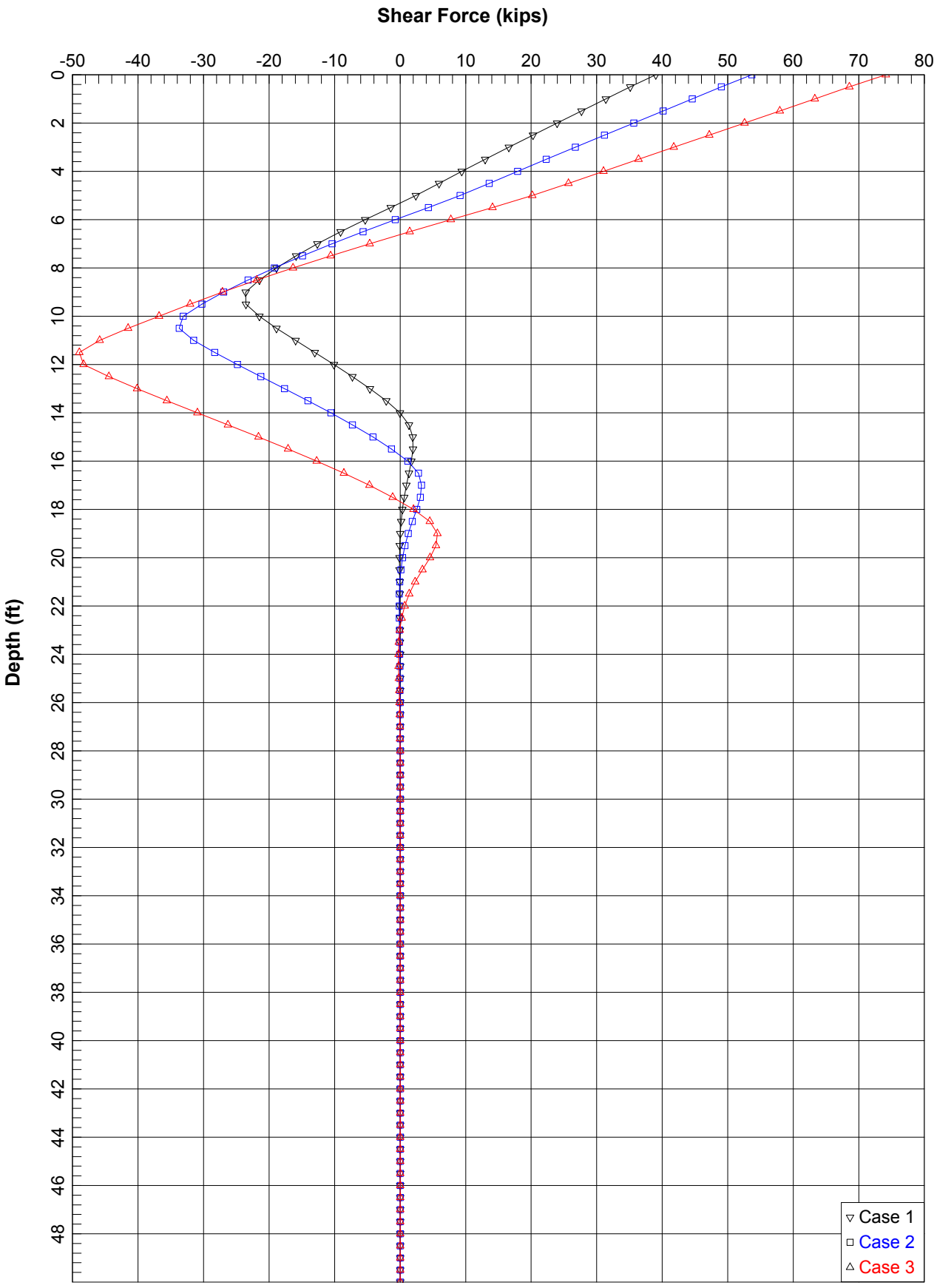
SUPPORT: **BENT 3L**

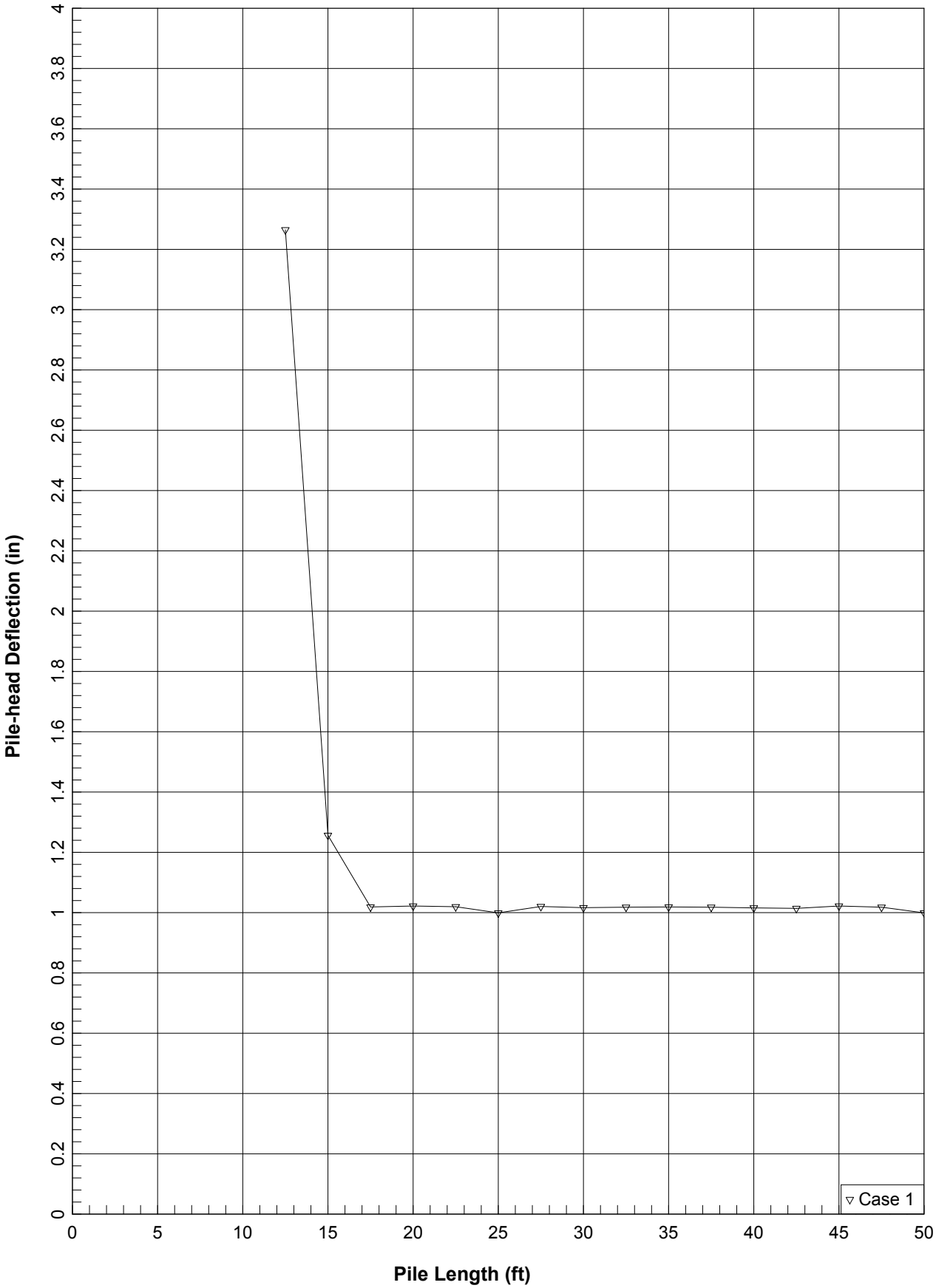
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 5 ft = Stiff Clay without Free Water
Layer 3, Depth 5 to 10 ft = Stiff Clay without Free Water
Layer 4, Depth 10 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3L_transv_Crit length.lp6d
Name of output report file: Bent 3L_transv_Crit length.lp6o
Name of plot output file: Bent 3L_transv_Crit length.lp6p
Name of runtime messeage file: Bent 3L_transv_Crit length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:58:36

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psi	Angle of Friction Test deg.	Uniaxial Strain Test Subgrade psi	RQD % or Rock Mass Mod. pci	Epsilon 50 Factor	J Factor	kpy pci	Rock Emass psi	krm Type	Elastic In-situ Property	In-situ Mod. pci
1	Stiff Clay w/o Free Water	-5.000	120.000	3250.000	--	--	--	0.00700	--	--	--	--	--	--
		0.10000	120.000	3250.000	--	--	--	0.00700	--	--	--	--	--	--
2	Stiff Clay w/o Free Water	0.10000	120.000	2750.000	--	--	--	0.00700	--	--	--	--	--	--
		5.000	120.000	2750.000	--	--	--	0.00700	--	--	--	--	--	--
3	Stiff Clay w/o Free Water	5.000	120.000	3750.000	--	--	--	0.00700	--	--	--	--	--	--
		10.000	120.000	3750.000	--	--	--	0.00700	--	--	--	--	--	--
4	Stiff Clay w/o Free Water	10.000	125.000	4500.000	--	--	--	0.00500	--	--	--	--	--	--
		80.000	125.000	4500.000	--	--	--							

0.00500 -- -- -- -- -- -- --

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6500	1.0000
2	50.000	0.6500	1.0000

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
1	1	V = 74000. lbs	M = 0.0000 in-lbs	268000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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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 = 74000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9995	9.053E-07	74000.	-0.0121	592.4101	2.936E+10	-969.6307	2910.3889	0.000
6.000	0.9267	446063.	68463.	-0.0121	1249.7535	2.936E+10	-875.9008	5671.3138	0.000
12.000	0.8544	860446.	63182.	-0.0120	1860.4129	2.936E+10	-884.4174	6210.8678	0.000
18.000	0.7832	1242708.	57856.	-0.0117	2423.7358	2.936E+10	-890.9378	6825.6180	0.000
24.000	0.7135	1592488.	52497.	-0.0115	2939.1911	2.936E+10	-895.3867	7529.7832	0.000
30.000	0.6457	1909510.	47118.	-0.0111	3406.3733	2.936E+10	-897.6849	8341.0662	0.000
36.000	0.5803	2193589.	41732.	-0.0107	3825.0071	2.936E+10	-897.7491	9281.7225	0.000
42.000	0.5176	2444627.	36352.	-0.0102	4194.9513	2.936E+10	-895.4905	10380.	0.000
48.000	0.4579	2662624.	30993.	-0.009680	4516.2043	2.936E+10	-890.8143	11672.	0.000
54.000	0.4015	2847677.	25670.	-0.009117	4788.9085	2.936E+10	-883.6181	13206.	0.000
60.000	0.3485	2999983.	20175.	-0.008519	5013.3562	2.936E+10	-948.1926	16324.	0.000
66.000	0.2992	3117169.	14117.	-0.007894	5186.0476	2.936E+10	-1071.0086	21475.	0.000
72.000	0.2538	3194774.	7744.7690	-0.007249	5300.4105	2.936E+10	-1053.0446	24897.	0.000
78.000	0.2122	3233419.	1492.0989	-0.006592	5357.3604	2.936E+10	-1031.1787	29151.	0.000
84.000	0.1747	3233879.	-4616.9266	-0.005931	5358.0384	2.936E+10	-1005.1631	34527.	0.000
90.000	0.1411	3197091.	-10556.	-0.005274	5303.8247	2.936E+10	-974.6873	41455.	0.000
96.000	0.1114	3124163.	-16299.	-0.004628	5196.3537	2.936E+10	-939.3452	50599.	0.000
102.000	0.0855	3016391.	-21812.	-0.004000	5037.5357	2.936E+10	-898.5774	63032.	0.000
108.000	0.0634	2875280.	-27063.	-0.003398	4829.5858	2.936E+10	-851.5617	80612.	0.000
114.000	0.0448	2702567.	-32008.	-0.002828	4575.0666	2.936E+10	-796.9876	106846.	0.000
120.000	0.0294	2500275.	-36734.	-0.002297	4276.9569	2.936E+10	-778.0533	158555.	0.000
126.000	0.0172	2269150.	-41436.	-0.001809	3936.3593	2.936E+10	-789.5721	275488.	0.000
132.000	0.007733	2008856.	-45786.	-0.001372	3552.7745	2.936E+10	-660.2126	512263.	0.000
138.000	0.000733	1724134.	-48890.	-0.000990	3133.1914	2.936E+10	-374.6125	3067087.	0.000
144.000	-0.004153	1425359.	-48250.	-0.000669	2692.8995	2.936E+10	588.0371	849592.	0.000
150.000	-0.007291	1147284.	-44415.	-0.000406	2283.1135	2.936E+10	690.3551	568151.	0.000
156.000	-0.009021	893686.	-40117.	-0.000197	1909.3963	2.936E+10	742.2432	493662.	0.000
162.000	-0.009656	666514.	-35582.	-3.768E-05	1574.6236	2.936E+10	769.3197	478034.	0.000
168.000	-0.009473	466819.	-30935.	7.814E-05	1280.3417	2.936E+10	779.9312	493969.	0.000
174.000	-0.008718	295048.	-26261.	0.000156	1027.2103	2.936E+10	777.8803	535340.	0.000
180.000	-0.007601	151184.	-21632.	0.000202	815.2038	2.936E+10	765.1761	603973.	0.000
186.000	-0.006299	34817.	-17108.	0.000221	643.7180	2.936E+10	742.9416	707664.	0.000
192.000	-0.004954	-54816.	-12743.	0.000219	673.1905	2.936E+10	711.7737	862046.	0.000
198.000	-0.003676	-118808.	-8592.4805	0.000201	767.4916	2.936E+10	671.8819	1096568.	0.000
204.000	-0.002544	-158572.	-4707.5904	0.000172	826.0907	2.936E+10	623.0815	1469427.	0.000
210.000	-0.001607	-175853.	-1144.5901	0.000138	851.5575	2.936E+10	564.5853	2108568.	0.000

216.000	-0.000885	-172752.	2031.8325	0.000103	846.9869	2.936E+10	494.2222	3352297.	0.000
222.000	-0.000374	-151802.	4523.1113	6.951E-05	816.1134	2.936E+10	336.2041	5387284.	0.000
228.000	-5.048E-05	-118698.	5669.8262	4.186E-05	767.3302	2.936E+10	46.0342	5471897.	0.000
234.000	0.000128	-83898.	5457.1400	2.116E-05	716.0473	2.936E+10	-116.9297	5484375.	0.000
240.000	0.000203	-53280.	4548.4940	7.140E-06	670.9270	2.936E+10	-185.9524	5484375.	0.000
246.000	0.000214	-29339.	3404.8864	-1.303E-06	635.6461	2.936E+10	-195.2502	5484375.	0.000
252.000	0.000188	-12418.	2304.1560	-5.570E-06	610.7093	2.936E+10	-171.6600	5484375.	0.000
258.000	0.000147	-1671.4842	1386.7253	-7.010E-06	594.8733	2.936E+10	-134.1503	5484375.	0.000
264.000	0.000104	4245.7096	699.9737	-6.747E-06	598.6668	2.936E+10	-94.7669	5484375.	0.000
270.000	6.580E-05	6749.8994	235.2446	-5.623E-06	602.3571	2.936E+10	-60.1428	5484375.	0.000
276.000	3.620E-05	7086.7303	-44.4388	-4.209E-06	602.8535	2.936E+10	-33.0850	5484375.	0.000
282.000	1.528E-05	6230.1713	-185.6073	-2.848E-06	601.5912	2.936E+10	-13.9711	5484375.	0.000
288.000	2.014E-06	4868.6038	-233.0437	-1.714E-06	599.5847	2.936E+10	-1.8410	5484375.	0.000
294.000	-5.286E-06	3439.1594	-224.0719	-8.652E-07	597.4782	2.936E+10	4.8316	5484375.	0.000
300.000	-8.368E-06	2182.5231	-186.6297	-2.907E-07	595.6264	2.936E+10	7.6491	5484375.	0.000
306.000	-8.774E-06	1200.5378	-139.6220	5.505E-08	594.1792	2.936E+10	8.0201	5484375.	0.000
312.000	-7.708E-06	506.8816	-94.4257	2.295E-07	593.1570	2.936E+10	7.0453	5484375.	0.000
318.000	-6.020E-06	66.6912	-56.7825	2.882E-07	592.5083	2.936E+10	5.5024	5484375.	0.000
324.000	-4.250E-06	-175.4353	-28.6213	2.770E-07	592.6686	2.936E+10	3.8847	5484375.	0.000
330.000	-2.695E-06	-277.6557	-9.5765	2.307E-07	592.8192	2.936E+10	2.4636	5484375.	0.000
336.000	-1.481E-06	-291.0947	1.8758	1.726E-07	592.8390	2.936E+10	1.3538	5484375.	0.000
342.000	-6.239E-07	-255.7013	7.6481	1.167E-07	592.7869	2.936E+10	0.5703	5484375.	0.000
348.000	-8.030E-08	-199.6935	9.5791	7.019E-08	592.7043	2.936E+10	0.0734	5484375.	0.000
354.000	2.184E-07	-140.9776	9.2004	3.538E-08	592.6178	2.936E+10	-0.1996	5484375.	0.000
360.000	3.442E-07	-89.4022	7.6576	1.183E-08	592.5418	2.936E+10	-0.3146	5484375.	0.000
366.000	3.604E-07	-49.1246	5.7254	-2.323E-09	592.4825	2.936E+10	-0.3294	5484375.	0.000
372.000	3.163E-07	-20.6903	3.8696	-9.458E-09	592.4406	2.936E+10	-0.2892	5484375.	0.000
378.000	2.469E-07	-2.6589	2.3251	-1.184E-08	592.4140	2.936E+10	-0.2257	5484375.	0.000
384.000	1.742E-07	7.2487	1.1703	-1.138E-08	592.4207	2.936E+10	-0.1592	5484375.	0.000
390.000	1.104E-07	11.4212	0.3898	-9.467E-09	592.4269	2.936E+10	-0.1009	5484375.	0.000
396.000	6.066E-08	11.9569	-0.0791	-7.078E-09	592.4277	2.936E+10	-0.0554	5484375.	0.000
402.000	2.547E-08	10.4946	-0.3151	-4.784E-09	592.4255	2.936E+10	-0.0233	5484375.	0.000
408.000	3.199E-09	8.1907	-0.3937	-2.874E-09	592.4221	2.936E+10	-0.002924	5484375.	0.000
414.000	-9.024E-09	5.7789	-0.3778	-1.447E-09	592.4186	2.936E+10	0.008248	5484375.	0.000
420.000	-1.410E-08	3.6621	-0.3147	-4.817E-10	592.4155	2.936E+10	0.0129	5484375.	0.000
426.000	-1.480E-08	2.0101	-0.2348	9.799E-11	592.4130	2.936E+10	0.0135	5484375.	0.000
432.000	-1.298E-08	0.8445	-0.1586	3.897E-10	592.4113	2.936E+10	0.0119	5484375.	0.000
438.000	-1.013E-08	0.1059	-0.0952	4.868E-10	592.4102	2.936E+10	0.009257	5484375.	0.000
444.000	-7.141E-09	-0.2995	-0.0479	4.671E-10	592.4105	2.936E+10	0.006527	5484375.	0.000
450.000	-4.522E-09	-0.4698	-0.0159	3.884E-10	592.4108	2.936E+10	0.004134	5484375.	0.000
456.000	-2.480E-09	-0.4911	0.003334	2.902E-10	592.4108	2.936E+10	0.002267	5484375.	0.000
462.000	-1.039E-09	-0.4307	0.0130	1.960E-10	592.4107	2.936E+10	0.000950	5484375.	0.000
468.000	-1.273e-10	-0.3360	0.0162	1.177E-10	592.4106	2.936E+10	0.000116	5484375.	0.000
474.000	3.728E-10	-0.2369	0.0155	5.915E-11	592.4104	2.936E+10	-0.000341	5484375.	0.000
480.000	5.824e-10	-0.1500	0.0129	1.961E-11	592.4103	2.936E+10	-0.000532	5484375.	0.000
486.000	6.081e-10	-0.0822	0.009627	-4.129E-12	592.4102	2.936E+10	-0.000556	5484375.	0.000
492.000	5.329e-10	-0.0345	0.006498	-1.606E-11	592.4101	2.936E+10	-0.000487	5484375.	0.000
498.000	4.154e-10	-0.004217	0.003898	-2.001E-11	592.4101	2.936E+10	-0.000380	5484375.	0.000
504.000	2.927e-10	0.0124	0.001956	-1.918E-11	592.4101	2.936E+10	-0.000268	5484375.	0.000
510.000	1.853e-10	0.0193	0.000645	-1.594E-11	592.4101	2.936E+10	-0.000169	5484375.	0.000
516.000	1.015e-10	0.0202	-0.000141	-1.190E-11	592.4101	2.936E+10	-9.275E-05	5484375.	0.000
522.000	4.241e-11	0.0177	-0.000535	-8.038e-12	592.4101	2.936E+10	-3.876E-05	5484375.	0.000
528.000	5.015e-12	0.0138	-0.000665	-4.826E-12	592.4101	2.936E+10	-4.584E-06	5484375.	0.000
534.000	-1.550E-11	0.009697	-0.000637	-2.428E-12	592.4101	2.936E+10	1.417e-05	5484375.	0.000
540.000	-2.412E-11	0.006134	-0.000528	0.000	592.4101	2.936E+10	2.204e-05	5484375.	0.000
546.000	-2.521E-11	0.003363	-0.000393	0.000	592.4101	2.936E+10	2.305E-05	5484375.	0.000
552.000	-2.219E-11	0.001420	-0.000263	0.000	592.4101	2.936E+10	2.028E-05	5484375.	0.000
558.000	-1.742E-11	0.000207	-0.000154	0.000	592.4101	2.936E+10	1.592E-05	5484375.	0.000
564.000	-1.239E-11	-0.000433	-7.247E-05	0.000	592.4101	2.936E+10	1.133E-05	5484375.	0.000
570.000	-7.901E-12	-0.000665	-1.683E-05	0.000	592.4101	2.936E+10	7.222E-06	5484375.	0.000
576.000	-4.224E-12	-0.000637	1.642E-05	0.000	592.4101	2.936E+10	3.861E-06	5484375.	0.000
582.000	-1.328E-12	-0.000470	3.165E-05	0.000	592.4101	2.936E+10	1.214E-06	5484375.	0.000
588.000	0.000	-0.000259	3.257E-05	0.000	592.4101	2.936E+10	-9.063E-07	5484375.	0.000
594.000	2.994E-12	-8.008E-05	2.164E-05	0.000	592.4101	2.936E+10	-2.737E-06	5484375.	0.000
600.000	4.898E-12	0.000	0.000	0.000	592.4101	2.936E+10	-4.477E-06	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9994858 inches
Computed slope at pile head = -0.0121369 radians
Maximum bending moment = 3233879. inch-lbs
Maximum shear force = 74000. lbs
Depth of maximum bending moment = 84.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 30
Number of zero deflection points = 8

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

Boundary Condition Type 1, Shear and Moment

Shear = 74000. lbs
Moment = 0. in-lbs
Axial Load = 268000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9994858	3233879.	74000.
47.500	1.0179123	3230280.	74000.
45.000	1.0218172	3237476.	74000.
42.500	1.0140160	3232381.	74000.
40.000	1.0156754	3237584.	74000.
37.500	1.0180532	3239271.	74000.
35.000	1.0190378	3238536.	74000.
32.500	1.0180671	3240146.	74000.
30.000	1.0163314	3237562.	74000.
27.500	1.0201951	3242317.	74000.
25.000	0.9993949	3246791.	74000.
22.500	1.0194949	3244439.	74000.

20.000	1.0221764	3245340.	74000.
17.500	1.0190636	3244163.	74000.
15.000	1.2561349	3101012.	74000.
12.500	3.2650818	2787124.	74000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 74000.	M = 0.000	268000.	0.99948576	3233879.	74000.	-0.01213688

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3L_transv_Ave P.lp6d
Name of output report file: Bent 3L_transv_Ave P.lp6o
Name of plot output file: Bent 3L_transv_Ave P.lp6p
Name of runtime messeage file: Bent 3L_transv_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:57:12

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Rock Mass Factor J	kpy pci	Rock Emass psi	Layer Depth ft	krm	Effective Unit Wt. pcf	Undrained Cohesion Test psi	Angle of Friction Test deg.	Uniaxial Qu Subgrade Mod. pci	RQD % or GSI	Strain Factor Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	-5.000	--	125.000	3250.000	--	--	--	0.00700
		--	--	--	0.10000	--	125.000	3250.000	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	0.10000	--	120.000	2750.000	--	--	--	0.00700
		--	--	--	5.000	--	120.000	2750.000	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	5.000	--	120.000	3750.000	--	--	--	0.00700
		--	--	--	10.000	--	120.000	3750.000	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	--	--	10.000	--	125.000	4500.000	--	--	--	0.00500
		--	--	--	80.000	--	125.000	4500.000	--	--	--	

0.00500 -- -- -- -- -- -- --

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p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6500	1.0000
2	50.000	0.6500	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	268000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	268000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	268000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	39010.	-0.003832	592.4101	2.936E+10	-686.9052	8242.8621	0.000
6.000	0.2270	227857.	35097.	-0.003809	928.1934	2.936E+10	-617.5109	16321.	0.000
12.000	0.2043	433409.	31385.	-0.003741	1231.1064	2.936E+10	-619.7029	18200.	0.000
18.000	0.1821	616509.	27666.	-0.003634	1500.9333	2.936E+10	-619.8893	20423.	0.000
24.000	0.1607	777091.	23953.	-0.003491	1737.5754	2.936E+10	-617.9877	23075.	0.000
30.000	0.1402	915169.	20257.	-0.003318	1941.0558	2.936E+10	-613.9082	26269.	0.000
36.000	0.1209	1030847.	16593.	-0.003120	2111.5242	2.936E+10	-607.5520	30159.	0.000
42.000	0.1028	1124313.	12973.	-0.002899	2249.2617	2.936E+10	-598.8085	34956.	0.000
48.000	0.0861	1195853.	9414.4193	-0.002662	2354.6868	2.936E+10	-587.5516	40956.	0.000
54.000	0.0708	1245848.	5930.8586	-0.002413	2428.3622	2.936E+10	-573.6353	48588.	0.000
60.000	0.0571	1274782.	2397.1602	-0.002155	2471.0019	2.936E+10	-604.2641	63469.	0.000
66.000	0.0450	1281545.	-1419.0072	-0.001894	2480.9670	2.936E+10	-667.7917	89089.	0.000
72.000	0.0344	1263845.	-5341.9291	-0.001634	2454.8839	2.936E+10	-639.8490	111610.	0.000
78.000	0.0254	1222695.	-9083.0792	-0.001380	2394.2436	2.936E+10	-607.2011	143602.	0.000
84.000	0.0178	1159285.	-12612.	-0.001136	2300.7982	2.936E+10	-569.1112	191382.	0.000
90.000	0.0117	1075005.	-15892.	-0.000908	2176.5989	2.936E+10	-524.3238	268063.	0.000
96.000	0.006948	971497.	-18876.	-0.000699	2024.0628	2.936E+10	-470.3484	406181.	0.000
102.000	0.003351	850736.	-21490.	-0.000512	1846.1034	2.936E+10	-400.8676	717696.	0.000
108.000	0.000798	715265.	-23555.	-0.000352	1646.4653	2.936E+10	-287.4113	2160981.	0.000
114.000	-0.000878	569212.	-23526.	-0.000221	1431.2331	2.936E+10	296.9600	2029052.	0.000
120.000	-0.001856	433662.	-21467.	-0.000119	1231.4794	2.936E+10	389.3296	1258472.	0.000
126.000	-0.002302	311986.	-18868.	-4.249E-05	1052.1703	2.936E+10	477.2045	1243552.	0.000
132.000	-0.002366	207386.	-15964.	1.058E-05	898.0265	2.936E+10	490.6570	1244210.	0.000
138.000	-0.002175	120382.	-13021.	4.408E-05	769.8125	2.936E+10	490.3678	1352464.	0.000
144.000	-0.001837	50992.	-10111.	6.159E-05	667.5549	2.936E+10	479.5437	1566164.	0.000
150.000	-0.001436	-1151.3946	-7293.2703	6.669E-05	594.1068	2.936E+10	459.8033	1920776.	0.000
156.000	-0.001037	-36742.	-4617.8653	6.282E-05	646.5546	2.936E+10	431.9984	2499797.	0.000
162.000	-0.000683	-56768.	-2132.4954	5.326E-05	676.0663	2.936E+10	396.4582	3485273.	0.000
168.000	-0.000398	-62503.	-22.2870	4.107E-05	684.5178	2.936E+10	306.9446	4630034.	0.000
174.000	-0.000190	-57167.	1345.6515	2.884E-05	676.6551	2.936E+10	149.0349	4714648.	0.000
180.000	-5.167E-05	-46448.	1916.7547	1.825E-05	660.8581	2.936E+10	41.3328	4799262.	0.000
186.000	2.936E-05	-34225.	1969.0639	1.001E-05	642.8459	2.936E+10	-23.8964	4883878.	0.000
192.000	6.842E-05	-22851.	1727.4092	4.175E-06	626.0849	2.936E+10	-56.6552	4968495.	0.000

198.000	7.945E-05	-13509.	1356.6994	4.588E-07	612.3184	2.936E+10	-66.9147	5053112.	0.000
204.000	7.392E-05	-6572.2648	966.0574	-1.593E-06	602.0953	2.936E+10	-63.2993	5137730.	0.000
210.000	6.033E-05	-1911.6652	618.6218	-2.460E-06	595.2272	2.936E+10	-52.5126	5222349.	0.000
216.000	4.440E-05	859.1102	343.2773	-2.568E-06	593.6761	2.936E+10	-39.2690	5306969.	0.000
222.000	2.952E-05	2215.9208	145.9026	-2.254E-06	595.6756	2.936E+10	-26.5226	5391590.	0.000
228.000	1.735E-05	2617.1894	18.8246	-1.760E-06	596.2669	2.936E+10	-15.8367	5476211.	0.000
234.000	8.397E-06	2447.4755	-51.7119	-1.242E-06	596.0168	2.936E+10	-7.6754	5484375.	0.000
240.000	2.444E-06	2000.6423	-81.4400	-7.877E-07	595.3583	2.936E+10	-2.2340	5484375.	0.000
246.000	-1.056E-06	1472.7282	-85.2476	-4.328E-07	594.5804	2.936E+10	0.9648	5484375.	0.000
252.000	-2.749E-06	979.0633	-74.8149	-1.822E-07	593.8529	2.936E+10	2.5127	5484375.	0.000
258.000	-3.242E-06	575.5353	-58.3871	-2.332E-08	593.2582	2.936E+10	2.9632	5484375.	0.000
264.000	-3.029E-06	278.4931	-41.1921	6.396E-08	592.8205	2.936E+10	2.7685	5484375.	0.000
270.000	-2.474E-06	81.0250	-26.1018	1.007E-07	592.5295	2.936E+10	2.2616	5484375.	0.000
276.000	-1.820E-06	-35.0519	-14.3252	1.054E-07	592.4617	2.936E+10	1.6639	5484375.	0.000
282.000	-1.209E-06	-91.2168	-6.0171	9.250E-08	592.5445	2.936E+10	1.1055	5484375.	0.000
288.000	-7.104E-07	-107.5542	-0.7526	7.218E-08	592.5686	2.936E+10	0.6493	5484375.	0.000
294.000	-3.432E-07	-100.4806	2.1365	5.092E-08	592.5581	2.936E+10	0.3137	5484375.	0.000
300.000	-9.929E-08	-82.0800	3.3499	3.227E-08	592.5310	2.936E+10	0.0908	5484375.	0.000
306.000	4.398E-08	-60.3852	3.5016	1.771E-08	592.4991	2.936E+10	-0.0402	5484375.	0.000
312.000	1.132E-07	-40.1179	3.0706	7.436E-09	592.4692	2.936E+10	-0.1035	5484375.	0.000
318.000	1.332E-07	-23.5624	2.3948	9.287E-10	592.4448	2.936E+10	-0.1218	5484375.	0.000
324.000	1.243E-07	-11.3830	1.6885	-2.643E-09	592.4268	2.936E+10	-0.1137	5484375.	0.000
330.000	1.015E-07	-3.2916	1.0692	-4.142E-09	592.4149	2.936E+10	-0.0928	5484375.	0.000
336.000	7.464E-08	1.4606	0.5862	-4.329E-09	592.4122	2.936E+10	-0.0682	5484375.	0.000
342.000	4.956E-08	3.7562	0.2456	-3.796E-09	592.4156	2.936E+10	-0.0453	5484375.	0.000
348.000	2.908E-08	4.4199	0.0300	-2.961E-09	592.4166	2.936E+10	-0.0266	5484375.	0.000
354.000	1.403E-08	4.1252	-0.0883	-2.087E-09	592.4161	2.936E+10	-0.0128	5484375.	0.000
360.000	4.033E-09	3.3675	-0.1378	-1.325E-09	592.4176	2.936E+10	-0.003687	5484375.	0.000
366.000	-1.832E-09	2.4759	-0.1438	-7.246E-10	592.4137	2.936E+10	0.001675	5484375.	0.000
372.000	-4.661E-09	1.6439	-0.1260	-3.035E-10	592.4125	2.936E+10	0.004261	5484375.	0.000
378.000	-5.475E-09	0.9646	-0.0982	-3.696E-11	592.4115	2.936E+10	0.005004	5484375.	0.000
384.000	-5.105E-09	0.4653	-0.0692	1.092E-10	592.4108	2.936E+10	0.004666	5484375.	0.000
390.000	-4.165E-09	0.1337	-0.0438	1.704E-10	592.4103	2.936E+10	0.003807	5484375.	0.000
396.000	-3.060E-09	-0.0608	-0.0240	1.778E-10	592.4102	2.936E+10	0.002797	5484375.	0.000
402.000	-2.031E-09	-0.1547	-0.0108	1.558E-10	592.4103	2.936E+10	0.001856	5484375.	0.000
408.000	-1.191E-09	-0.1816	-0.001191	1.214E-10	592.4103	2.936E+10	0.001088	5484375.	0.000
414.000	-5.734E-10	-0.1694	0.003646	8.557E-11	592.4103	2.936E+10	0.000524	5484375.	0.000
420.000	-1.638E-10	-0.1382	0.005668	5.414E-11	592.4103	2.936E+10	0.000150	5484375.	0.000
426.000	7.631E-11	-0.1015	0.005908	2.965E-11	592.4102	2.936E+10	-6.976E-05	5484375.	0.000
432.000	1.919E-10	-0.0674	0.005172	1.239E-11	592.4102	2.936E+10	-0.000175	5484375.	0.000
438.000	2.250E-10	-0.0395	0.004029	1.469E-12	592.4101	2.936E+10	-0.000206	5484375.	0.000
444.000	2.096E-10	-0.0190	0.002837	-4.510E-12	592.4101	2.936E+10	-0.000192	5484375.	0.000
450.000	1.709E-10	-0.005431	0.001794	-7.008E-12	592.4101	2.936E+10	-0.000156	5484375.	0.000
456.000	1.255E-10	0.002534	0.000981	-7.304E-12	592.4101	2.936E+10	-0.000115	5484375.	0.000
462.000	8.320E-11	0.006369	0.000409	-6.395E-12	592.4101	2.936E+10	-7.605E-05	5484375.	0.000
468.000	4.874E-11	0.007464	4.730E-05	-4.981E-12	592.4101	2.936E+10	-4.455E-05	5484375.	0.000
474.000	2.343E-11	0.006953	-0.000151	-3.508E-12	592.4101	2.936E+10	-2.142E-05	5484375.	0.000
480.000	6.653E-12	0.005668	-0.000233	-2.218E-12	592.4101	2.936E+10	-6.081E-06	5484375.	0.000
486.000	-3.178E-12	0.004162	-0.000243	-1.213E-12	592.4101	2.936E+10	2.905E-06	5484375.	0.000
492.000	-7.904E-12	0.002760	-0.000212	0.000	592.4101	2.936E+10	7.225E-06	5484375.	0.000
498.000	-9.246E-12	0.001617	-0.000165	0.000	592.4101	2.936E+10	8.451E-06	5484375.	0.000
504.000	-8.605E-12	0.000777	-0.000116	0.000	592.4101	2.936E+10	7.865E-06	5484375.	0.000
510.000	-7.010E-12	0.000221	-7.347E-05	0.000	592.4101	2.936E+10	6.408E-06	5484375.	0.000
516.000	-5.145E-12	-0.000105	-4.014E-05	0.000	592.4101	2.936E+10	4.703E-06	5484375.	0.000
522.000	-3.409E-12	-0.000262	-1.668E-05	0.000	592.4101	2.936E+10	3.116E-06	5484375.	0.000
528.000	-1.994E-12	-0.000306	-1.866E-06	0.000	592.4101	2.936E+10	1.823E-06	5484375.	0.000
534.000	0.000	-0.000285	6.223E-06	0.000	592.4101	2.936E+10	8.734E-07	5484375.	0.000
540.000	0.000	-0.000232	9.573E-06	0.000	592.4101	2.936E+10	2.432E-07	5484375.	0.000
546.000	0.000	-0.000170	9.922E-06	0.000	592.4101	2.936E+10	-1.267E-07	5484375.	0.000
552.000	0.000	-0.000113	8.625E-06	0.000	592.4101	2.936E+10	-3.057E-07	5484375.	0.000
558.000	0.000	-6.700E-05	6.635E-06	0.000	592.4101	2.936E+10	-3.576E-07	5484375.	0.000
564.000	0.000	-3.362E-05	4.559E-06	0.000	592.4101	2.936E+10	-3.345E-07	5484375.	0.000
570.000	0.000	-1.227E-05	2.734E-06	0.000	592.4101	2.936E+10	-2.737E-07	5484375.	0.000
576.000	0.000	-7.717E-07	1.316E-06	0.000	592.4101	2.936E+10	-1.991E-07	5484375.	0.000
582.000	0.000	3.562E-06	3.477E-07	0.000	592.4101	2.936E+10	-1.237E-07	5484375.	0.000
588.000	0.000	3.444E-06	-1.798E-07	0.000	592.4101	2.936E+10	-5.220E-08	5484375.	0.000
594.000	0.000	1.445E-06	-2.903E-07	0.000	592.4101	2.936E+10	1.539E-08	5484375.	0.000
600.000	0.000	0.000	0.000	0.000	592.4101	2.936E+10	8.136E-08	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0038320 radians
Maximum bending moment = 1281545. inch-lbs
Maximum shear force = 39010. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	53681.	-0.006808	592.4101	2.936E+10	-816.8725	49012.351	0.000
6.000	0.4592	318332.	49022.	-0.006776	1061.5220	2.936E+10	-736.4154	9623.1663	0.000
12.000	0.4187	610048.	44588.	-0.006681	1491.4118	2.936E+10	-741.4669	10625.	0.000
18.000	0.3790	874871.	40130.	-0.006529	1881.6700	2.936E+10	-744.5283	11787.	0.000
24.000	0.3403	1112604.	35660.	-0.006326	2232.0061	2.936E+10	-745.5218	13143.	0.000
30.000	0.3031	1323132.	31190.	-0.006077	2542.2521	2.936E+10	-744.3648	14736.	0.000
36.000	0.2674	1506428.	26734.	-0.005788	2812.3676	2.936E+10	-740.9688	16625.	0.000
42.000	0.2336	1662554.	22305.	-0.005464	3042.4438	2.936E+10	-735.2385	18883.	0.000
48.000	0.2019	1791665.	17919.	-0.005111	3232.7091	2.936E+10	-727.0696	21611.	0.000
54.000	0.1723	1894012.	13588.	-0.004734	3383.5345	2.936E+10	-716.3471	24947.	0.000

60.000	0.1450	1969949.	9150.9882	-0.004339	3495.4391	2.936E+10	-762.7460	31551.	0.000
66.000	0.1202	2017779.	4301.3026	-0.003932	3565.9247	2.936E+10	-853.8158	42613.	0.000
72.000	0.0979	2034209.	-752.9303	-0.003518	3590.1366	2.936E+10	-830.9285	50943.	0.000
78.000	0.0780	2020057.	-5657.5550	-0.003103	3569.2812	2.936E+10	-803.9464	61836.	0.000
84.000	0.0606	1976299.	-10387.	-0.002695	3504.7968	2.936E+10	-772.5213	76454.	0.000
90.000	0.0457	1904081.	-14913.	-0.002298	3398.3716	2.936E+10	-736.1719	96720.	0.000
96.000	0.0330	1804734.	-19204.	-0.001919	3251.9691	2.936E+10	-694.1835	126041.	0.000
102.000	0.0226	1679804.	-23223.	-0.001563	3067.8649	2.936E+10	-645.3913	171071.	0.000
108.000	0.0143	1531088.	-26922.	-0.001235	2848.7081	2.936E+10	-587.6421	246799.	0.000
114.000	0.007814	1360713.	-30233.	-0.000940	2597.6343	2.936E+10	-516.1285	396291.	0.000
120.000	0.003011	1171311.	-33106.	-0.000681	2318.5200	2.936E+10	-441.3254	879386.	0.000
126.000	-0.000356	963635.	-33712.	-0.000462	2015.4254	2.936E+10	239.3526	4037778.	0.000
132.000	-0.002538	768260.	-31497.	-0.000285	1724.5611	2.936E+10	498.9033	1179312.	0.000
138.000	-0.003779	588592.	-28312.	-0.000147	1459.7924	2.936E+10	562.8186	893662.	0.000
144.000	-0.004297	428992.	-24844.	-4.260E-05	1224.5971	2.936E+10	593.0066	827957.	0.000
150.000	-0.004290	290599.	-21252.	3.094E-05	1020.6540	2.936E+10	604.4409	845387.	0.000
156.000	-0.003926	173871.	-17631.	7.841E-05	848.6367	2.936E+10	602.5771	920880.	0.000
162.000	-0.003349	78779.	-14053.	0.000104	708.5029	2.936E+10	589.9940	1057007.	0.000
168.000	-0.002675	4900.0536	-10579.	0.000113	599.6311	2.936E+10	568.0410	1273929.	0.000
174.000	-0.001996	-48531.	-7262.5811	0.000108	663.9277	2.936E+10	537.3977	1615658.	0.000
180.000	-0.001376	-82599.	-4155.6406	9.492E-05	714.1331	2.936E+10	498.2491	2173302.	0.000
186.000	-0.000857	-98704.	-1310.3468	7.639E-05	737.8654	2.936E+10	450.1821	3152928.	0.000
192.000	-0.000459	-98569.	1180.1648	5.623E-05	737.6671	2.936E+10	379.9884	4968495.	0.000
198.000	-0.000182	-84723.	2779.8141	3.750E-05	717.2620	2.936E+10	153.2281	5053112.	0.000
204.000	-8.904E-06	-65332.	3262.3703	2.216E-05	688.6869	2.936E+10	7.6240	5137730.	0.000
210.000	8.401E-05	-45645.	3065.8657	1.082E-05	659.6757	2.936E+10	-73.1255	5222349.	0.000
216.000	0.000121	-28576.	2525.5352	3.236E-06	634.5218	2.936E+10	-106.9846	5306969.	0.000
222.000	0.000123	-15349.	1873.3960	-2.253E-06	615.0203	2.936E+10	-110.3949	5391590.	0.000
228.000	0.000106	-6091.5540	1252.1771	-3.444E-06	601.3869	2.936E+10	-96.6783	5476211.	0.000
234.000	8.153E-05	-312.1622	738.5768	-4.098E-06	592.8701	2.936E+10	-74.5218	5484375.	0.000
240.000	5.675E-05	2784.5470	359.3975	-3.845E-06	596.5115	2.936E+10	-51.8713	5484375.	0.000
246.000	3.538E-05	4012.9753	106.7575	-3.151E-06	598.3238	2.936E+10	-32.3421	5484375.	0.000
252.000	1.894E-05	4075.7696	-42.2026	-2.324E-06	598.4164	2.936E+10	-17.3113	5484375.	0.000
258.000	7.493E-06	3514.0190	-114.6839	-1.548E-06	597.5885	2.936E+10	-6.8492	5484375.	0.000
264.000	3.569E-07	2704.5424	-136.2101	-9.130E-07	596.3250	2.936E+10	-0.3262	5484375.	0.000
270.000	-3.463E-06	1882.4343	-127.6932	-4.442E-07	595.1841	2.936E+10	3.1652	5484375.	0.000
276.000	-4.974E-06	1173.6529	-104.5586	-1.319E-07	594.1396	2.936E+10	4.5464	5484375.	0.000
282.000	-5.046E-06	628.1550	-77.0836	1.223E-08	593.3358	2.936E+10	4.6120	5484375.	0.000
288.000	-4.347E-06	248.4814	-51.3274	1.418E-07	592.7762	2.936E+10	3.9734	5484375.	0.000
294.000	-3.344E-06	11.7697	-30.2380	1.684E-07	592.4274	2.936E+10	3.0564	5484375.	0.000
300.000	-2.326E-06	-114.9167	-14.6906	1.579E-07	592.5794	2.936E+10	2.1261	5484375.	0.000
306.000	-1.449E-06	-165.0256	-4.3384	1.293E-07	592.8201	2.936E+10	1.3247	5484375.	0.000
312.000	-7.748E-07	-167.3926	1.7602	9.530E-08	592.6567	2.936E+10	0.7082	5484375.	0.000
318.000	-3.056E-07	-144.2095	4.7229	6.345E-08	592.6226	2.936E+10	0.2794	5484375.	0.000
324.000	-1.336E-08	-110.9214	5.5977	3.738E-08	592.5735	2.936E+10	0.0122	5484375.	0.000
330.000	1.429E-07	-77.1573	5.2425	1.816E-08	592.5238	2.936E+10	-0.1306	5484375.	0.000
336.000	2.045E-07	-48.0701	4.2897	5.360E-09	592.4809	2.936E+10	-0.1870	5484375.	0.000
342.000	2.072E-07	-25.6976	3.1606	-2.179E-09	592.4479	2.936E+10	-0.1894	5484375.	0.000
348.000	1.784E-07	-10.1355	2.1032	-5.841E-09	592.4250	2.936E+10	-0.1631	5484375.	0.000
354.000	1.371E-07	-0.4403	1.2380	-6.921E-09	592.4107	2.936E+10	-0.1254	5484375.	0.000
360.000	9.534E-08	4.7423	0.6005	-6.482E-09	592.4171	2.936E+10	-0.0871	5484375.	0.000
366.000	5.936E-08	6.7863	0.1763	-5.303E-09	592.4201	2.936E+10	-0.0543	5484375.	0.000
372.000	3.170E-08	6.8748	-0.0734	-3.907E-09	592.4202	2.936E+10	-0.0290	5484375.	0.000
378.000	1.247E-08	5.9181	-0.1945	-2.600E-09	592.4188	2.936E+10	-0.0114	5484375.	0.000
384.000	4.955E-10	4.5492	-0.2300	-1.530E-09	592.4168	2.936E+10	-0.000453	5484375.	0.000
390.000	-5.897E-09	3.1625	-0.2152	-7.422E-10	592.4157	2.936E+10	0.005393	5484375.	0.000
396.000	-8.411E-09	1.9688	-0.1760	-2.178E-10	592.4130	2.936E+10	0.007688	5484375.	0.000
402.000	-8.511E-09	1.0513	-0.1296	9.084E-11	592.4116	2.936E+10	0.007779	5484375.	0.000
408.000	-7.321E-09	0.4134	-0.0862	2.405E-10	592.4107	2.936E+10	0.006692	5484375.	0.000
414.000	-5.624E-09	0.0163	-0.0507	2.844E-10	592.4101	2.936E+10	0.005141	5484375.	0.000
420.000	-3.908E-09	-0.1957	-0.0245	2.661E-10	592.4104	2.936E+10	0.003572	5484375.	0.000
426.000	-2.431E-09	-0.2791	-0.007162	2.176E-10	592.4105	2.936E+10	0.002222	5484375.	0.000
432.000	-1.297E-09	-0.2823	0.003060	1.602E-10	592.4105	2.936E+10	0.001183	5484375.	0.000
438.000	-5.085E-10	-0.2429	0.008009	1.065E-10	592.4104	2.936E+10	0.000465	5484375.	0.000
444.000	-1.817E-11	-0.1866	0.009454	6.265E-11	592.4103	2.936E+10	1.661E-05	5484375.	0.000
450.000	2.433E-10	-0.1296	0.008836	3.034E-11	592.4103	2.936E+10	-0.000222	5484375.	0.000
456.000	3.459E-10	-0.0806	0.007221	8.849E-12	592.4102	2.936E+10	-0.000316	5484375.	0.000
462.000	3.495E-10	-0.0430	0.005314	-3.786E-12	592.4101	2.936E+10	-0.000319	5484375.	0.000
468.000	3.004E-10	-0.0169	0.003531	-9.905E-12	592.4101	2.936E+10	-0.000275	5484375.	0.000
474.000	2.307E-10	-0.000598	0.002075	-1.169E-11	592.4101	2.936E+10	-0.000211	5484375.	0.000
480.000	1.602E-10	0.008075	0.001003	-1.092E-11	592.4101	2.936E+10	-0.000146	5484375.	0.000
486.000	9.957E-11	0.0115	0.000291	-8.927E-12	592.4101	2.936E+10	-9.101E-05	5484375.	0.000
492.000	5.304E-11	0.0116	-0.000128	-6.569E-12	592.4101	2.936E+10	-4.848E-05	5484375.	0.000
498.000	2.074E-11	0.009967	-0.000330	-4.366E-12	592.4101	2.936E+10	-1.898E-05	5484375.	0.000
504.000	0.000	0.007652	-0.000389	-2.565E-12	592.4101	2.936E+10	-6.005E-07	5484375.	0.000
510.000	-1.004E-11	0.005313	-0.000363	-1.240E-12	592.4101	2.936E+10	9.178E-06	5484375.	0.000
516.000	-1.422E-11	0.003303	-0.000296	0.000	592.4101	2.936E+10	1.300E-05	5484375.	0.000
522.000	-1.436E-11	0.001759	-0.000218	0.000	592.4101	2.936E+10	1.312E-05	5484375.	0.000
528.000	-1.233E-11	0.000688	-0.000145	0.000	592.4101	2.936E+10	1.127E-05	5484375.	0.000
534.000	-9.464E-12	2.183E-05	-8.490E-05	0.000	592.4101	2.936E+10	8.651E-06	5484375.	0.000
540.000	-6.569E-12	-0.000333	-4.098E-05	0.000	592.4101	2.936E+10	6.005E-06	5484375.	0.000
546.000	-4.082E-12	-0.000471	-1.173E-05	0.000	592.4101	2.936E+10	3.732E-06	5484375.	0.000
552.000	-2.173E-12	-0.000475	5.426E-06	0.000	592.4101	2.936E+10	1.986E-06	5484375.	0.000
558.000	0.000	-0.000407	1.370E-05	0.000	592.4101	2.936E+10	7.728E-07	5484375.	0.000
564.000	0.000	-0.000311	1.607E-05	0.000	592.4101	2.936E+10	1.517E-08	5484375.	0.000
570.000	0.000	-0.000214	1.493E-05	0.000	592.4101	2.936E+10	-3.942E-07	5484375.	0.000
576.000	0.000	-0.000132	1.206E-05	0.000	592.4101	2.936E+10	-5.635E-07	5484375.	0.000
582.000	0.000	-6.952E-05	8.611E-06	0.000	592.4101	2.936E+10	-5.851E-07	5484375.	0.000
588.000	0.000	-2.837E-05	5.269E-06	0.000	592.4101	2.936E+10	-5.289E-07	5484375.	0.000
594.000	0.000	-6.251E-06	2.360E-06	0.000	592.4101	2.936E+10	-4.408E-07	5484375.	0.000
600.000	0.000	0.000	0.000	0.000	592.4101	2.936E+10	-3.457E-07	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0068081 radians
Maximum bending moment	=	2034209. inch-lbs
Maximum shear force	=	53681. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	17
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	74106.	-0.0121	592.4101	2.936E+10	-971.4306	2914.2918	0.000
6.000	0.9271	446684.	68559.	-0.0121	1250.6696	2.936E+10	-877.8448	5681.0929	0.000
12.000	0.8548	861620.	63266.	-0.0120	1862.1418	2.936E+10	-886.3026	6221.1766	0.000
18.000	0.7835	1244365.	57929.	-0.0118	2426.1207	2.936E+10	-892.7650	6836.5756	0.000
24.000	0.7138	1594561.	52559.	-0.0115	2942.2464	2.936E+10	-897.1558	7541.5289	0.000
30.000	0.6460	1911936.	47170.	-0.0111	3409.9481	2.936E+10	-899.3954	8353.7673	0.000
36.000	0.5805	2196305.	41773.	-0.0107	3829.0095	2.936E+10	-899.3999	9295.5835	0.000
42.000	0.5178	2447573.	36384.	-0.0102	4199.2924	2.936E+10	-897.0805	10395.	0.000
48.000	0.4580	2665741.	31016.	-0.009686	4520.7984	2.936E+10	-892.3417	11689.	0.000
54.000	0.4015	2850910.	25683.	-0.009122	4793.6730	2.936E+10	-885.0810	13225.	0.000
60.000	0.3486	3003278.	20179.	-0.008524	5018.2118	2.936E+10	-949.6437	16347.	0.000
66.000	0.2993	3120473.	14113.	-0.007898	5190.9159	2.936E+10	-1072.4253	21502.	0.000
72.000	0.2538	3198034.	7732.4206	-0.007253	5305.2147	2.936E+10	-1054.3903	24929.	0.000
78.000	0.2122	3236586.	1471.9049	-0.006595	5362.0274	2.936E+10	-1032.4483	29189.	0.000
84.000	0.1746	3236906.	-4644.1934	-0.005933	5362.4995	2.936E+10	-1006.3511	34575.	0.000
90.000	0.1410	3199934.	-10591.	-0.005276	5308.0153	2.936E+10	-975.7878	41517.	0.000
96.000	0.1113	3126782.	-16339.	-0.004629	5200.2140	2.936E+10	-940.3512	50679.	0.000
102.000	0.0855	3018750.	-21859.	-0.004001	5041.0112	2.936E+10	-899.4803	63142.	0.000
108.000	0.0633	2877344.	-27114.	-0.003399	4832.6274	2.936E+10	-852.3501	80771.	0.000
114.000	0.0447	2704308.	-32064.	-0.002828	4577.6315	2.936E+10	-797.6450	107091.	0.000
120.000	0.0294	2501667.	-36793.	-0.002296	4279.0093	2.936E+10	-778.5946	159010.	0.000
126.000	0.0171	2270176.	-41498.	-0.001808	3937.8698	2.936E+10	-789.8784	276558.	0.000
132.000	0.007678	2009502.	-45848.	-0.001371	3553.7265	2.936E+10	-660.0608	515800.	0.000
138.000	0.000684	1724406.	-48941.	-0.000989	3133.5925	2.936E+10	-370.8936	3253729.	0.000
144.000	-0.004196	1419391.	-48285.	-0.000667	2692.9469	2.936E+10	589.5406	843102.	0.000
150.000	-0.007327	1147131.	-44442.	-0.000405	2282.8870	2.936E+10	691.5010	566267.	0.000
156.000	-0.009052	893388.	-40138.	-0.000196	1908.9567	2.936E+10	743.2528	492677.	0.000
162.000	-0.009681	666108.	-35597.	-3.677E-05	1574.0246	2.936E+10	770.2374	477388.	0.000
168.000	-0.009493	466338.	-30944.	7.996E-05	1279.6322	2.936E+10	780.7688	493490.	0.000
174.000	-0.008733	294522.	-26266.	0.000157	1026.4350	2.936E+10	778.6394	534957.	0.000
180.000	-0.007612	150641.	-21633.	0.000202	814.4033	2.936E+10	765.8540	603652.	0.000
186.000	-0.006307	34281.	-17104.	0.000221	642.9284	2.936E+10	743.5335	707389.	0.000
192.000	-0.004959	-55323.	-12737.	0.000219	673.9375	2.936E+10	712.2734	861813.	0.000
198.000	-0.003679	-119267.	-8583.3467	0.000201	768.1692	2.936E+10	672.2814	1096390.	0.000
204.000	-0.002545	-158970.	-4696.3907	0.000173	826.6776	2.936E+10	623.3706	1469351.	0.000
210.000	-0.001607	-176179.	-1132.0743	0.000138	852.0380	2.936E+10	564.7482	2108743.	0.000
216.000	-0.000884	-173000.	2044.8954	0.000103	847.3524	2.936E+10	494.2283	3353296.	0.000
222.000	-0.000374	-151971.	4535.5681	6.954E-05	816.3633	2.936E+10	335.9959	5391590.	0.000
228.000	-4.988E-05	-118797.	5680.1219	4.187E-05	767.4755	2.936E+10	45.5220	5476211.	0.000
234.000	0.000128	-83944.	5464.3896	2.115E-05	716.1151	2.936E+10	-117.4327	5484375.	0.000
240.000	0.000204	-53292.	4553.0186	7.121E-06	670.9441	2.936E+10	-186.3576	5484375.	0.000
246.000	0.000214	-29331.	3407.3119	-1.322E-06	635.6338	2.936E+10	-195.5446	5484375.	0.000
252.000	0.000188	-12400.	2305.1193	-5.587E-06	610.6833	2.936E+10	-171.8529	5484375.	0.000
258.000	0.000147	-1651.5448	1386.7760	-7.023E-06	594.8439	2.936E+10	-134.2615	5484375.	0.000
264.000	0.000104	4263.9691	699.5353	-6.756E-06	598.6937	2.936E+10	-94.8187	5484375.	0.000
270.000	6.581E-05	6764.6068	234.6120	-5.629E-06	602.3788	2.936E+10	-60.1557	5484375.	0.000
276.000	3.619E-05	7937.4158	-45.0817	-4.212E-06	604.8692	2.936E+10	-33.0755	5484375.	0.000
282.000	1.526E-05	6237.1740	-186.1617	-2.850E-06	601.6015	2.936E+10	-13.9512	5484375.	0.000
288.000	1.989E-06	4872.6399	-233.4706	-1.714E-06	599.5907	2.936E+10	-1.8184	5484375.	0.000
294.000	-5.303E-06	3442.0402	-224.5791	-8.647E-07	597.4810	2.936E+10	4.8523	5484375.	0.000
300.000	-8.386E-06	2182.9916	-186.8150	-2.899E-07	595.6270	2.936E+10	7.6657	5484375.	0.000
306.000	-8.787E-06	1200.1922	-139.7213	5.584E-08	594.1787	2.936E+10	8.0322	5484375.	0.000
312.000	-7.716E-06	506.1568	-94.4650	2.302E-07	593.1560	2.936E+10	7.0532	5484375.	0.000
318.000	-6.025E-06	65.8719	-56.7844	2.887E-07	592.5071	2.936E+10	5.5069	5484375.	0.000
324.000	-4.252E-06	-176.1848	-28.6032	2.774E-07	592.6697	2.936E+10	3.8868	5484375.	0.000
330.000	-2.696E-06	-278.2591	-9.5504	2.310E-07	592.8201	2.936E+10	2.4641	5484375.	0.000
336.000	-1.481E-06	-291.5328	1.9022	1.727E-07	592.8397	2.936E+10	1.3534	5484375.	0.000
342.000	-6.230E-07	-255.9882	7.6708	1.168E-07	592.7873	2.936E+10	0.5695	5484375.	0.000
348.000	-7.929E-08	-199.8587	9.5966	7.019E-08	592.7046	2.936E+10	0.0725	5484375.	0.000
354.000	2.193E-07	-141.0545	9.2126	3.535E-08	592.6179	2.936E+10	-0.2005	5484375.	0.000
360.000	3.450E-07	-89.4212	7.6652	1.180E-08	592.5418	2.936E+10	-0.3153	5484375.	0.000
366.000	3.609E-07	-49.1102	5.7294	-2.356E-09	592.4824	2.936E+10	-0.3299	5484375.	0.000
372.000	3.167E-07	-20.6604	3.8712	-9.486E-09	592.4405	2.936E+10	-0.2895	5484375.	0.000
378.000	2.471E-07	-2.6252	2.3251	-1.187E-08	592.4139	2.936E+10	-0.2259	5484375.	0.000
384.000	1.743E-07	7.2794	1.1695	-1.139E-08	592.4208	2.936E+10	-0.1593	5484375.	0.000
390.000	1.104E-07	11.4459	0.3888	-9.477E-09	592.4269	2.936E+10	-0.1009	5484375.	0.000
396.000	6.059E-08	11.9749	-0.0802	-7.083E-09	592.4277	2.936E+10	-0.0554	5484375.	0.000
402.000	2.543E-08	10.5063	-0.3161	-4.786E-09	592.4255	2.936E+10	-0.0232	5484375.	0.000
408.000	3.157E-09	8.1975	-0.3945	-2.874E-09	592.4221	2.936E+10	-0.002886	5484375.	0.000
414.000	-9.062E-09	5.7821	-0.3783	-1.446E-09	592.4186	2.936E+10	0.008283	5484375.	0.000
420.000	-1.419E-08	3.6629	-0.3145	-4.804E-10	592.4155	2.936E+10	0.0130	5484375.	0.000
426.000	-1.483E-08	2.0095	-0.2349	9.933E-11	592.4130	2.936E+10	0.0136	5484375.	0.000
432.000	-1.300E-08	0.8433	-0.1586	3.909E-10	592.4113	2.936E+10	0.0119	5484375.	0.000
438.000	-1.014E-08	0.1045	-0.0952	4.877E-10	592.4102	2.936E+10	0.009265	5484375.	0.000
444.000	-7.141E-09	0.3007	-0.0478	4.672E-10	592.4101	2.936E+10	0.006531	5484375.	0.000
450.000	-4.523E-09	-0.4708	-0.0158	3.888E-10	592.4108	2.936E+10	0.004135	5484375.	0.000
456.000	-2.479E-09	-0.4919	0.003379	2.905E-10	592.4108	2.936E+10	0.002266	5484375.	0.000
462.000	-1.038E-09	-0.4312	0.0130	1.961E-10	592.4107	2.936E+10	0.000949	5484375.	0.000
468.000	-1.256E-10	-0.3362	0.0162	1.177E-10	592.4106	2.936E+10	0.000115	5484375.	0.000
474.000	3.744E-10	-0.2370	0.0155	5.911E-11	592.4104	2.936E+10	-0.000342	5484375.	0.000
480.000	5.837E-10	-0.1500	0.0129	1.955E-11	592.4103	2.936E+10	-0.000534	5484375.	0.000
486.000	6.090E-10	-0.0822	0.009634	-4.184E-12	592.4102	2.936E+10	-0.000557	5484375.	0.000
492.000	5.335E-10	-0.0344	0.006501	-1.610E-11	592.4101	2.936E+10	-0.000488	5484375.	0.000
498.000	4.157E-10	-0.004160	0.003898	-2.005E-11	592.4101	2.936E+10	-0.000380	5484375.	0.000
504.000	2.929E-10	0.0124	0.001955	-1.920E-11	592.4101	2.936E+10	-0.000268	5484375.	0.000
510.000	1.853E-10	0.0194	0.000644	-1.596E-11	592.4101	2.936E+10	-0.000169	5484375.	0.000
516.000	1.014E-10	0.0202	-0.000143	-1.191E-11	592.4101	2.936E+10	-9.272E-05	5484375.	0.000
522.000	4.235E-11	0.0177	-0.000537	-8.041E-12	592.4101	2.936E+10	-3.871E-05	5484375.	0.000
528.000	4.944E-12	0.0138	-0.000667	-4.826E-12	592.4101	2.936E+10	-4.519E-06	5484375.	0.000
534.000	-1.556E-11	0.009702	-0.000638	-2.426E-12	592.4101	2.936E+10	1.422E-05	5484375.	0.000
540.000	-2.417E-11	0.006136	-0.000529	0.000	592.4101	2.936E+10	2.209E-05	5484375.	0.000
546.000	-2.525E-11	0.003362	-0.000393	0.000	592.4101	2.936E+10	2.308E-05	5484375.	0.000
552.000	-2.221E-11	0.001418	-0.000263	0.000	592.4101	2.936E+10	2.030E-05	5484375.	0.000
558.000	-1.743E-11	0.000205	-0.000154	0.000	592.4101	2.936E+10	1.593E-05	5484375.	0.000
564.000	-1.240E-11	-0.000435	-7.242E-05	0.000	592.4101	2.936E+10	1.133E-05	5484375.	0.000
570.000	-7.902E-12	-0.000667	-1.675E-05	0.000	592.4101	2.936E+10	7.223E-06	5484375.	0.000
576.000	-4.222E-12	-0.000638	1.650E-05	0.000	592.4101	2.936E+10	3.860E-06	5484375.	0.000
582.000	-1.325E-12	-0.000470	3.171E-05	0.000	592.4101	2.936E+10	1.211E-06	5484375.	0.000
588.000	0.000	-0.000259	3.262E-05	0.000	592.4101	2.936E+10	-9.099E-07	5484375.	0.000

594.000	2.998E-12	-8.016E-05	2.167E-05	0.000	592.4101	2.936E+10	-2.741E-06	5484375.	0.000
600.000	4.903E-12	0.000	0.000	0.000	592.4101	2.936E+10	-4.482E-06	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0121463 radians
Maximum bending moment           =       3236906. inch-lbs
Maximum shear force              =         74106. lbs
Depth of maximum bending moment  =     84.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             18
Number of zero deflection points =              8
```

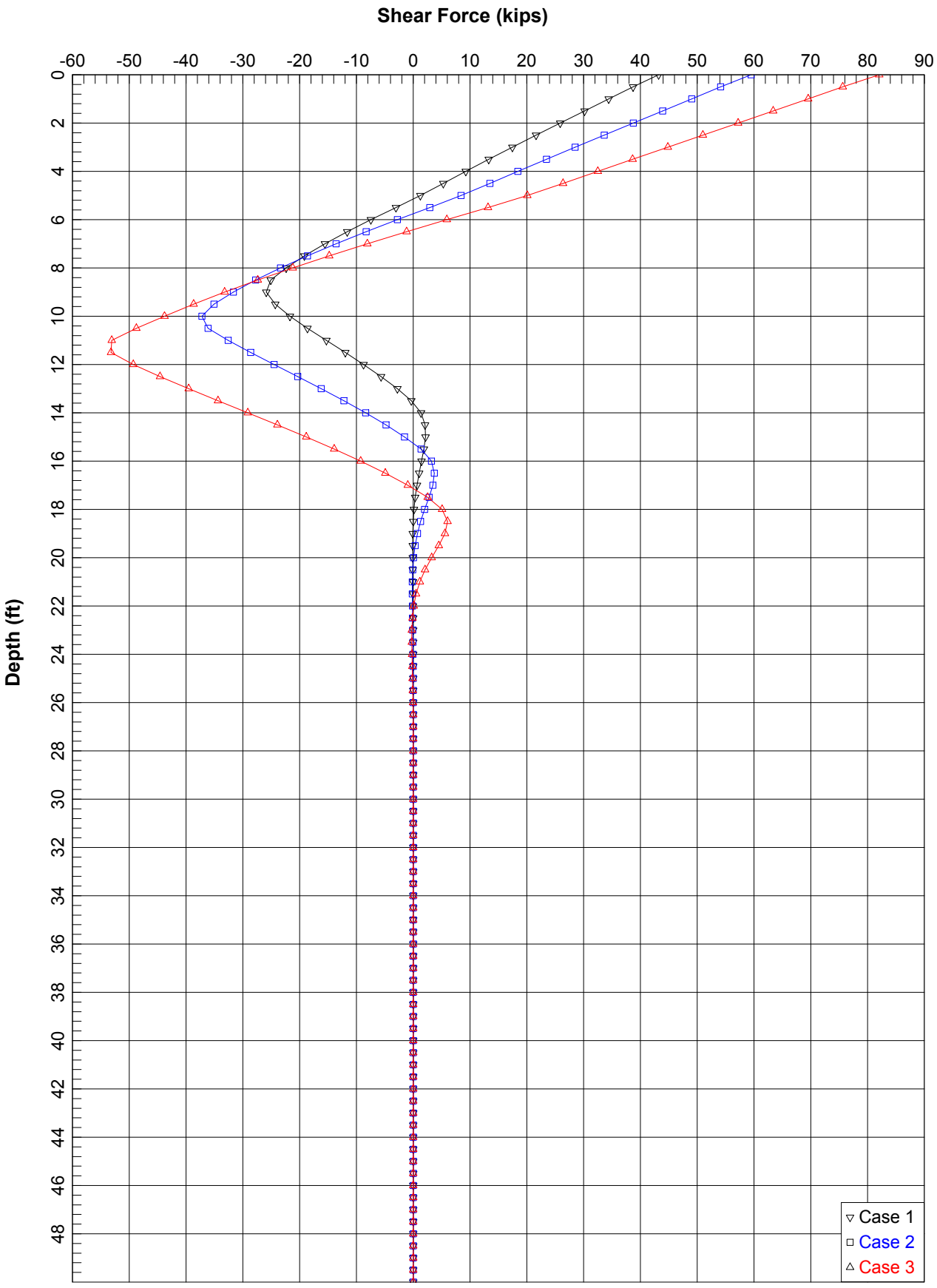
Summary of Pile Response(s)

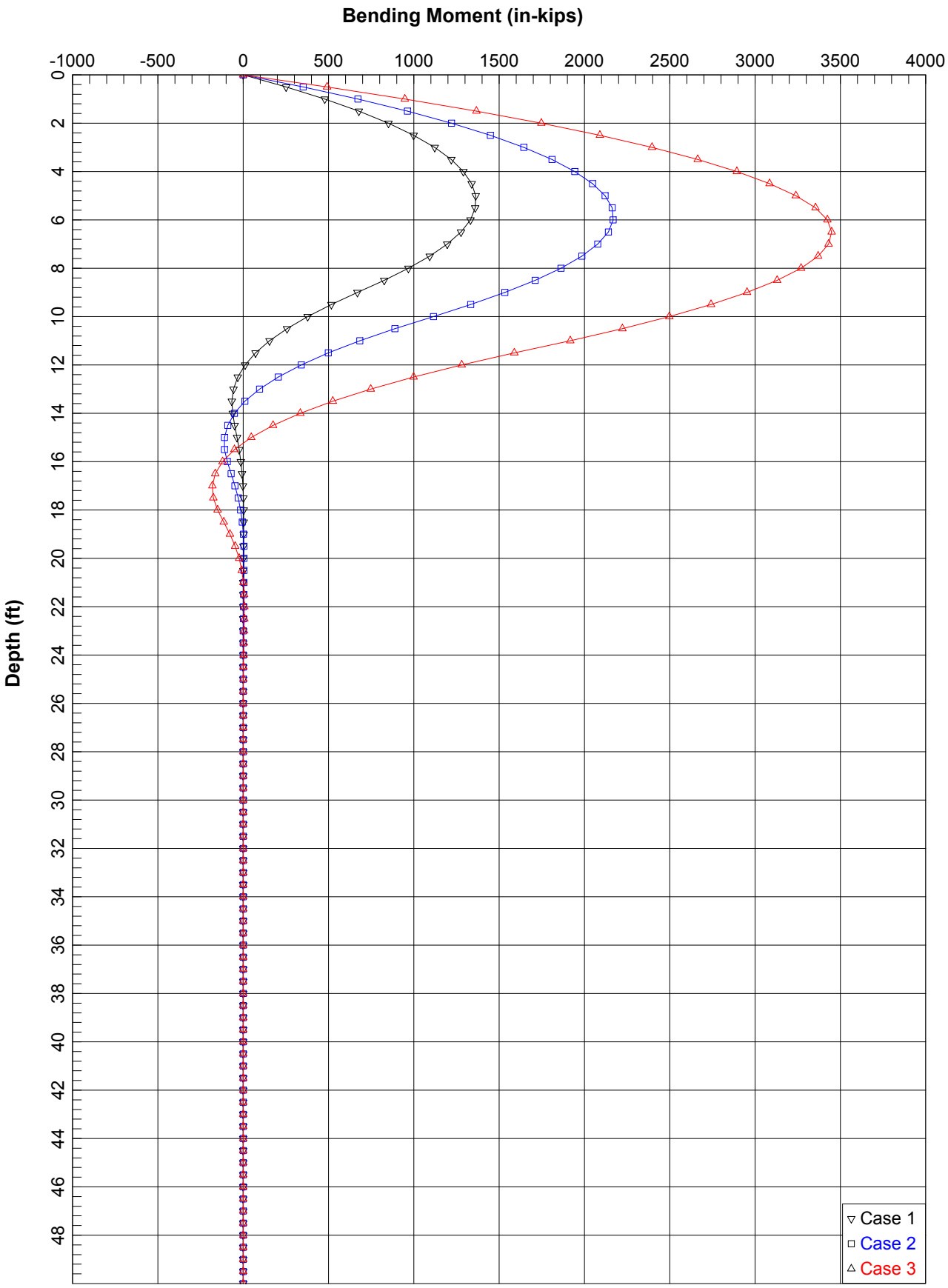
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	268000.	0.25000000	1281545.	39010.	-0.00383198
2	4	y = 0.5000	M = 0.000	268000.	0.50000000	2034209.	53681.	-0.00680806
3	4	y = 1.0000	M = 0.000	268000.	1.00000000	3236906.	74106.	-0.01214626

The analysis ended normally.


Shear Force (kips)
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 3\
Name of input data file: Bent 3L_transv_Max P.lp6d
Name of output report file: Bent 3L_transv_Max P.lp6o
Name of plot output file: Bent 3L_transv_Max P.lp6p
Name of runtime messeage file: Bent 3L_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 20:59:44

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Transv - Pm,avg -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 3250.00000 psi
Undrained cohesion at bottom of layer = 3250.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 5.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 2750.00000 psi
Undrained cohesion at bottom of layer = 2750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 5.00000 ft
Distance from top of pile to bottom of layer = 10.00000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 3750.00000 psi
Undrained cohesion at bottom of layer = 3750.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 10.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer No.	Soil Type (p-y Curve Criteria)	J	kpy pci	Rock Mass Rock Emass psi	Layer Depth ft	krm	Effective Unit Wt. pcf	Undrained Cohesion Test psi	Angle of Friction Test deg.	Uniaxial Compressive Strength Subgrade Mod. psi	RQD % or Type	GSI	Strain Factor 50
1	Stiff Clay w/o Free Water	--	--	--	-5.000	--	125.000	3250.000	--	--	--	--	0.00700
		--	--	--	0.10000	--	125.000	3250.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	0.10000	--	120.000	2750.000	--	--	--	--	0.00700
		--	--	--	5.000	--	120.000	2750.000	--	--	--	--	0.00700
3	Stiff Clay w/o Free Water	--	--	--	5.000	--	120.000	3750.000	--	--	--	--	0.00700
		--	--	--	10.000	--	120.000	3750.000	--	--	--	--	0.00700
4	Stiff Clay w/o Free Water	--	--	--	10.000	--	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	80.000	--	125.000	4500.000	--	--	--	--	

0.00500 -- -- -- -- -- -- --

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.7500	1.0000
2	50.000	0.7500	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs	268000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs	268000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs	268000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force V lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	43226.	-0.003957	592.4101	2.936E+10	-792.5829	9510.9947	0.000
6.000	0.2263	251454.	38713.	-0.003931	962.9673	2.936E+10	-711.9253	18879.	0.000
12.000	0.2028	477197.	34436.	-0.003856	1295.6340	2.936E+10	-713.7555	21114.	0.000
18.000	0.1800	677087.	30155.	-0.003738	1590.2037	2.936E+10	-713.1553	23774.	0.000
24.000	0.1580	851081.	25886.	-0.003582	1846.6113	2.936E+10	-710.0241	26968.	0.000
30.000	0.1370	999234.	21643.	-0.003393	2064.9388	2.936E+10	-704.2516	30844.	0.000
36.000	0.1173	1121707.	17443.	-0.003176	2245.4207	2.936E+10	-695.7155	35601.	0.000
42.000	0.0989	1218764.	13303.	-0.002937	2388.4504	2.936E+10	-684.2774	41522.	0.000
48.000	0.0820	1290787.	9240.7230	-0.002681	2494.5877	2.936E+10	-669.7782	49006.	0.000
54.000	0.0667	1338274.	5275.2954	-0.002412	2564.5671	2.936E+10	-652.0310	58644.	0.000
60.000	0.0531	1361848.	1265.7717	-0.002136	2599.3069	2.936E+10	-684.4769	77402.	0.000
66.000	0.0411	1360333.	-3047.4392	-0.001858	2597.0746	2.936E+10	-753.2601	110026.	0.000
72.000	0.0308	1331254.	-7461.1035	-0.001583	2554.2217	2.936E+10	-717.9614	140027.	0.000
78.000	0.0221	1275891.	-11645.	-0.001316	2472.6350	2.936E+10	-676.7233	183869.	0.000
84.000	0.0150	1195746.	-15561.	-0.001064	2354.5291	2.936E+10	-628.4390	251938.	0.000
90.000	0.009317	1092584.	-19159.	-0.000830	2202.5043	2.936E+10	-571.0730	367777.	0.000
96.000	0.005007	968505.	-22373.	-0.000619	2019.6540	2.936E+10	-500.0768	599302.	0.000
102.000	0.001884	826105.	-25075.	-0.000436	1809.8047	2.936E+10	-400.8191	1276300.	0.000
108.000	-0.000225	669003.	-25870.	-0.000283	1578.2911	2.936E+10	135.9736	3627139.	0.000
114.000	-0.001514	516577.	-24281.	-0.000162	1353.6672	2.936E+10	393.6897	1560492.	0.000
120.000	-0.002169	378154.	-21698.	-7.057E-05	1149.6790	2.936E+10	467.3040	1292681.	0.000
126.000	-0.002361	256429.	-18634.	-5.717E-06	970.2988	2.936E+10	554.1085	1408430.	0.000
132.000	-0.002238	154568.	-15297.	3.628E-05	820.1908	2.936E+10	558.2148	1496819.	0.000
138.000	-0.001925	72752.	-11976.	5.952E-05	699.6222	2.936E+10	548.5997	1709816.	0.000
144.000	-0.001523	10662.	-8747.2027	6.804E-05	608.1225	2.936E+10	527.7439	2078532.	0.000
150.000	-0.001109	-32433.	-5673.1815	6.582E-05	640.2049	2.936E+10	496.9299	2689422.	0.000
156.000	-0.000734	-57628.	-2812.2249	5.661E-05	677.3334	2.936E+10	456.7223	3735337.	0.000
162.000	-0.000429	-66362.	-316.3102	4.394E-05	690.2042	2.936E+10	375.2492	5244717.	0.000
168.000	-0.000206	-61565.	1360.5919	3.087E-05	683.1353	2.936E+10	183.7182	5342347.	0.000
174.000	-5.888E-05	-50134.	2071.8986	1.945E-05	666.2900	2.936E+10	53.3841	5439978.	0.000
180.000	2.709E-05	-36764.	2157.0339	1.057E-05	646.5883	2.936E+10	-25.0056	5537610.	0.000
186.000	6.798E-05	-24283.	1890.4722	4.333E-06	628.1953	2.936E+10	-63.8483	5635244.	0.000
192.000	7.909E-05	-14093.	1472.2243	4.111E-07	613.1779	2.936E+10	-75.5677	5732878.	0.000

198.000	7.291E-05	-6617.9448	1032.9582	-1.705E-06	602.1626	2.936E+10	-70.8543	5830514.	0.000
204.000	5.862E-05	-1691.7432	646.6314	-2.555E-06	594.9031	2.936E+10	-57.9213	5928150.	0.000
210.000	4.226E-05	1149.8484	345.5489	-2.610E-06	594.1045	2.936E+10	-42.4396	6025788.	0.000
216.000	2.730E-05	2463.2374	134.6371	-2.241E-06	596.0400	2.936E+10	-27.8644	6123426.	0.000
222.000	1.537E-05	2772.6996	3.2404	-1.706E-06	596.4961	2.936E+10	-15.9345	6221065.	0.000
228.000	6.834E-06	2507.6082	-66.1544	-1.166E-06	596.1054	2.936E+10	-7.1971	6318705.	0.000
234.000	1.375E-06	1982.5965	-92.0968	-7.072E-07	595.3317	2.936E+10	-1.4503	6328125.	0.000
240.000	-1.652E-06	1404.7209	-91.2192	-3.610E-07	594.4801	2.936E+10	1.7429	6328125.	0.000
246.000	-2.957E-06	889.1269	-76.6331	-1.266E-07	593.7203	2.936E+10	3.1192	6328125.	0.000
252.000	-3.172E-06	485.5314	-57.2390	1.386E-08	593.1256	2.936E+10	3.3455	6328125.	0.000
258.000	-2.791E-06	202.2146	-38.3710	8.414E-08	592.7081	2.936E+10	2.9438	6328125.	0.000
264.000	-2.162E-06	24.8093	-22.6976	1.073E-07	592.4466	2.936E+10	2.2806	6328125.	0.000
270.000	-1.503E-06	-70.5022	-11.0999	1.027E-07	592.5140	2.936E+10	1.5853	6328125.	0.000
276.000	-9.303E-07	-108.7195	-3.4004	8.436E-08	592.5703	2.936E+10	0.9812	6328125.	0.000
282.000	-4.908E-07	-111.5786	1.0962	6.184E-08	592.5745	2.936E+10	0.5177	6328125.	0.000
288.000	-1.882E-07	-95.7645	3.2447	4.065E-08	592.5512	2.936E+10	0.1985	6328125.	0.000
294.000	-3.009E-09	-72.7730	3.8497	2.343E-08	592.5173	2.936E+10	0.003174	6328125.	0.000
300.000	9.294E-08	-49.6434	3.5652	1.092E-08	592.4832	2.936E+10	-0.0980	6328125.	0.000
306.000	1.280E-07	-30.0262	2.8661	2.776E-09	592.4543	2.936E+10	-0.1350	6328125.	0.000
312.000	1.263E-07	-15.2596	2.0615	-1.852E-09	592.4326	2.936E+10	-0.1332	6328125.	0.000
318.000	1.058E-07	-5.2818	1.3273	-3.951E-09	592.4178	2.936E+10	-0.1116	6328125.	0.000
324.000	7.885E-08	0.6810	0.7431	-4.421E-09	592.4111	2.936E+10	-0.0832	6328125.	0.000
330.000	5.274E-08	3.6498	0.3268	-3.978E-09	592.4154	2.936E+10	-0.0556	6328125.	0.000
336.000	3.111E-08	4.6149	0.0615	-3.134E-09	592.4169	2.936E+10	-0.0328	6328125.	0.000
342.000	1.513E-08	4.3975	-0.0848	-2.213E-09	592.4165	2.936E+10	-0.0160	6328125.	0.000
348.000	4.553E-09	3.6040	-0.1471	-1.395E-09	592.4154	2.936E+10	-0.004802	6328125.	0.000
354.000	-1.607E-09	2.6365	-0.1564	-7.573E-10	592.4140	2.936E+10	0.001695	6328125.	0.000
360.000	-4.535E-09	1.7292	-0.1370	-3.113E-10	592.4126	2.936E+10	0.004783	6328125.	0.000
366.000	-5.341E-09	0.9935	-0.1058	-3.291E-11	592.4115	2.936E+10	0.005633	6328125.	0.000
372.000	-4.930E-09	0.4602	-0.0733	1.156E-10	592.4107	2.936E+10	0.005199	6328125.	0.000
378.000	-3.953E-09	0.1139	-0.0452	1.743E-10	592.4102	2.936E+10	0.004170	6328125.	0.000
384.000	-2.838E-09	-0.0822	-0.0237	1.776E-10	592.4102	2.936E+10	0.002993	6328125.	0.000
390.000	-1.823E-09	-0.1706	-0.008921	1.517E-10	592.4103	2.936E+10	0.001922	6328125.	0.000
396.000	-1.017E-09	-0.1898	6.354E-05	1.149E-10	592.4103	2.936E+10	0.001073	6328125.	0.000
402.000	-4.446E-10	-0.1702	0.004686	7.810E-11	592.4103	2.936E+10	0.000468	6328125.	0.000
408.000	-7.978E-11	-0.1338	0.006344	4.703E-11	592.4103	2.936E+10	8.415E-05	6328125.	0.000
414.000	1.204E-10	-0.0943	0.006215	2.372E-11	592.4102	2.936E+10	-0.000127	6328125.	0.000
420.000	2.049E-10	-0.0593	0.005186	8.032E-12	592.4102	2.936E+10	-0.000216	6328125.	0.000
426.000	2.167E-10	-0.0321	0.003852	-1.303E-12	592.4101	2.936E+10	-0.000229	6328125.	0.000
432.000	1.893E-10	-0.0131	0.002567	-5.914E-12	592.4101	2.936E+10	-0.000200	6328125.	0.000
438.000	1.458E-10	-0.001238	0.001507	-7.375E-12	592.4101	2.936E+10	-0.000154	6328125.	0.000
444.000	1.008E-10	0.005049	0.000727	-6.986E-12	592.4101	2.936E+10	-0.000106	6328125.	0.000
450.000	6.194E-11	0.007508	0.000212	-5.703E-12	592.4101	2.936E+10	-6.533E-05	6328125.	0.000
456.000	3.233E-11	0.007612	-8.620E-05	-4.158E-12	592.4101	2.936E+10	-3.410E-05	6328125.	0.000
462.000	1.205E-11	0.006487	-0.000227	-2.717E-12	592.4101	2.936E+10	-1.271E-05	6328125.	0.000
468.000	0.000	0.004901	-0.000264	-1.553E-12	592.4101	2.936E+10	2.826E-07	6328125.	0.000
474.000	-6.580E-12	0.003325	-0.000242	0.000	592.4101	2.936E+10	6.940E-06	6328125.	0.000
480.000	-8.815E-12	0.001996	-0.000194	0.000	592.4101	2.936E+10	9.297E-06	6328125.	0.000
486.000	-8.601E-12	0.001002	-0.000138	0.000	592.4101	2.936E+10	9.071E-06	6328125.	0.000
492.000	-7.158E-12	0.000335	-8.859E-05	0.000	592.4101	2.936E+10	7.550E-06	6328125.	0.000
498.000	-5.305E-12	-6.163E-05	-4.916E-05	0.000	592.4101	2.936E+10	5.596E-06	6328125.	0.000
504.000	-3.528E-12	-0.000256	-2.121E-05	0.000	592.4101	2.936E+10	3.721E-06	6328125.	0.000
510.000	-2.065E-12	-0.000317	-3.509E-06	0.000	592.4101	2.936E+10	2.178E-06	6328125.	0.000
516.000	0.000	-0.000299	6.160E-06	0.000	592.4101	2.936E+10	1.045E-06	6328125.	0.000
522.000	0.000	-0.000244	1.019E-05	0.000	592.4101	2.936E+10	2.987E-07	6328125.	0.000
528.000	0.000	-0.000177	1.069E-05	0.000	592.4101	2.936E+10	-1.325E-07	6328125.	0.000
534.000	0.000	-0.000115	9.288E-06	0.000	592.4101	2.936E+10	-3.347E-07	6328125.	0.000
540.000	0.000	-6.573E-05	7.121E-06	0.000	592.4101	2.936E+10	-3.875E-07	6328125.	0.000
546.000	0.000	-2.997E-05	4.892E-06	0.000	592.4101	2.936E+10	-3.554E-07	6328125.	0.000
552.000	0.000	-6.993E-06	2.973E-06	0.000	592.4101	2.936E+10	-2.844E-07	6328125.	0.000
558.000	0.000	5.746E-06	1.506E-06	0.000	592.4101	2.936E+10	-2.045E-07	6328125.	0.000
564.000	0.000	1.112E-05	4.971E-07	0.000	592.4101	2.936E+10	-1.319E-07	6328125.	0.000
570.000	0.000	1.174E-05	-1.201E-07	0.000	592.4101	2.936E+10	-7.379E-08	6328125.	0.000
576.000	0.000	9.707E-06	-4.340E-07	0.000	592.4101	2.936E+10	-3.083E-08	6328125.	0.000
582.000	0.000	6.556E-06	-5.277E-07	0.000	592.4101	2.936E+10	-4.311E-10	6328125.	0.000
588.000	0.000	3.387E-06	-4.646E-07	0.000	592.4101	2.936E+10	2.149E-08	6328125.	0.000
594.000	0.000	9.912E-07	-2.830E-07	0.000	592.4101	2.936E+10	3.903E-08	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	592.4101	2.936E+10	5.529E-08	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0039565 radians
Maximum bending moment = 1361848. inch-lbs
Maximum shear force = 43226. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force V lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	59514.	-0.007037	592.4101	2.936E+10	-942.5452	5655.2713	0.000
6.000	0.4578	351434.	54139.	-0.007001	1110.3033	2.936E+10	-849.0728	11129.	0.000
12.000	0.4160	672186.	49030.	-0.006897	1582.9816	2.936E+10	-854.1505	12320.	0.000
18.000	0.3750	961968.	43897.	-0.006730	2010.0202	2.936E+10	-856.8126	13708.	0.000
24.000	0.3352	1220588.	38755.	-0.006506	2391.1376	2.936E+10	-856.9627	15338.	0.000
30.000	0.2969	1447956.	33621.	-0.006234	2726.2005	2.936E+10	-854.4981	17266.	0.000
36.000	0.2604	1644087.	28510.	-0.005918	3015.2296	2.936E+10	-849.3075	19567.	0.000
42.000	0.2259	1809102.	23438.	-0.005565	3258.4053	2.936E+10	-841.2696	22342.	0.000
48.000	0.1936	1943237.	18423.	-0.005181	3456.0741	2.936E+10	-830.2504	25724.	0.000
54.000	0.1638	2046844.	13484.	-0.004774	3608.7555	2.936E+10	-816.0998	29902.	0.000

60.000	0.1364	2120399.	8436.0948	-0.004348	3717.1501	2.936E+10	-866.5928	38129.	0.000
66.000	0.1116	2162059.	2935.4937	-0.003910	3778.5435	2.936E+10	-966.9409	51996.	0.000
72.000	0.0894	2168199.	-2777.5230	-0.003468	3787.5920	2.936E+10	-937.3980	62881.	0.000
78.000	0.0700	2139881.	-8297.8246	-0.003027	3745.8599	2.936E+10	-902.7026	77409.	0.000
84.000	0.0531	2078361.	-13593.	-0.002596	3655.2015	2.936E+10	-862.3316	97407.	0.000
90.000	0.0388	1985115.	-18626.	-0.002181	3517.7884	2.936E+10	-815.5233	126065.	0.000
96.000	0.0269	1861857.	-23356.	-0.001788	3336.1489	2.936E+10	-761.0672	169466.	0.000
102.000	0.0174	1710589.	-27730.	-0.001423	3113.2318	2.936E+10	-696.7995	240820.	0.000
108.000	0.009873	1533674.	-31675.	-0.001091	2852.5199	2.936E+10	-618.1315	375639.	0.000
114.000	0.004267	1334003.	-35065.	-0.000798	2558.2723	2.936E+10	-511.8874	719839.	0.000
120.000	0.000296	1115465.	-37195.	-0.000548	2236.2221	2.936E+10	-198.0531	4013999.	0.000
126.000	-0.002307	889430.	-36136.	-0.000343	1903.1246	2.936E+10	550.9649	1433153.	0.000
132.000	-0.003819	682938.	-32568.	-0.000182	1598.8259	2.936E+10	638.3996	1003088.	0.000
138.000	-0.004493	499203.	-28617.	-6.139E-05	1328.0646	2.936E+10	678.6006	906203.	0.000
144.000	-0.004555	339735.	-24497.	2.435E-05	1093.0624	2.936E+10	694.6128	914912.	0.000
150.000	-0.004201	205160.	-20331.	8.003E-05	894.7461	2.936E+10	694.0433	991281.	0.000
156.000	-0.003595	95504.	-16208.	0.000111	733.1505	2.936E+10	680.3363	1135504.	0.000
162.000	-0.002872	10309.	-12201.	0.000122	607.6016	2.936E+10	655.2520	1369013.	0.000
168.000	-0.002136	-51301.	-8376.4392	0.000117	668.0103	2.936E+10	619.6653	1740607.	0.000
174.000	-0.001463	-90586.	-4795.9884	0.000103	725.9029	2.936E+10	573.8183	2353014.	0.000
180.000	-0.000901	-109184.	-1522.9176	8.247E-05	753.3096	2.936E+10	517.2053	3442524.	0.000
186.000	-0.000474	-109126.	1363.0885	6.016E-05	753.2248	2.936E+10	444.7967	5635244.	0.000
192.000	-0.000180	-93020.	3212.1772	3.950E-05	729.4900	2.936E+10	171.5662	5732878.	0.000
198.000	3.921E-07	-70707.	3725.7326	2.277E-05	696.6082	2.936E+10	-0.3810	5830514.	0.000
204.000	9.363E-05	-48385.	3447.0539	1.060E-05	663.7124	2.936E+10	-92.5118	5928150.	0.000
210.000	0.000128	-29377.	2785.2604	2.649E-06	635.7011	2.936E+10	-128.0860	6025788.	0.000
216.000	0.000125	-14970.	2017.0122	-1.883E-06	614.4708	2.936E+10	-127.9967	6123426.	0.000
222.000	0.000105	-5168.4200	1306.0113	-3.941E-06	600.0210	2.936E+10	-108.8036	6221065.	0.000
228.000	7.812E-05	-721.9699	733.3858	-4.395E-06	593.4740	2.936E+10	-82.2716	6318705.	0.000
234.000	5.219E-05	3648.3459	321.4324	-3.949E-06	597.7865	2.936E+10	-55.0462	6328125.	0.000
240.000	3.074E-05	4591.8580	59.0424	-3.107E-06	599.1769	2.936E+10	-32.4171	6328125.	0.000
246.000	1.491E-05	4366.8464	-85.3899	-2.191E-06	598.8453	2.936E+10	-15.7271	6328125.	0.000
252.000	4.442E-06	3574.2258	-146.6265	-1.380E-06	597.6772	2.936E+10	-4.6852	6328125.	0.000
258.000	-1.644E-06	2611.7650	-155.4806	-7.474E-07	596.2589	2.936E+10	1.7338	6328125.	0.000
264.000	-4.527E-06	1710.8629	-135.9551	-3.057E-07	594.9247	2.936E+10	4.7747	6328125.	0.000
270.000	-5.312E-06	981.2870	-104.8229	-3.057E-08	593.8561	2.936E+10	5.6027	6328125.	0.000
276.000	-4.894E-06	453.0864	-72.5301	1.160E-07	593.0778	2.936E+10	5.1615	6328125.	0.000
282.000	-3.920E-06	110.5522	-44.6425	1.736E-07	592.5730	2.936E+10	4.1343	6328125.	0.000
288.000	-2.810E-06	-83.1824	-23.3471	1.764E-07	592.5326	2.936E+10	2.9641	6328125.	0.000
294.000	-1.803E-06	-170.1805	-8.7501	1.505E-07	592.6609	2.936E+10	1.9015	6328125.	0.000
300.000	-1.004E-06	-188.6672	0.1317	1.139E-07	592.6881	2.936E+10	1.0590	6328125.	0.000
306.000	-4.367E-07	-168.9662	4.6906	7.730E-08	592.6823	2.936E+10	0.4600	6328125.	0.000
312.000	-7.648E-08	-132.6287	6.3143	4.648E-08	592.6055	2.936E+10	0.0807	6328125.	0.000
318.000	1.211E-07	-93.3439	6.1731	2.339E-08	592.5476	2.936E+10	-0.1277	6328125.	0.000
324.000	2.042E-07	-58.6264	5.1439	7.859E-09	592.4985	2.936E+10	-0.2154	6328125.	0.000
330.000	2.154E-07	-31.6428	3.8162	-1.366E-09	592.4567	2.936E+10	-0.2272	6328125.	0.000
336.000	1.878E-07	-12.8278	2.5404	-5.911E-09	592.4290	2.936E+10	-0.1981	6328125.	0.000
342.000	1.445E-07	-1.1394	1.4890	-7.338E-09	592.4117	2.936E+10	-0.1524	6328125.	0.000
348.000	9.976E-08	5.0634	0.7162	-6.937E-09	592.4175	2.936E+10	-0.1052	6328125.	0.000
354.000	6.124E-08	7.4770	0.2068	-5.655E-09	592.4211	2.936E+10	-0.0646	6328125.	0.000
360.000	3.189E-08	7.5629	-0.0879	-4.118E-09	592.4212	2.936E+10	-0.0336	6328125.	0.000
366.000	1.182E-08	6.4354	-0.2262	-2.688E-09	592.4195	2.936E+10	-0.0125	6328125.	0.000
372.000	-3.602E-10	4.8569	-0.2625	-1.534E-09	592.4172	2.936E+10	0.0000384	6328125.	0.000
378.000	-6.585E-09	3.2906	-0.2405	-7.011E-10	592.4149	2.936E+10	0.006945	6328125.	0.000
384.000	-8.773E-09	1.9731	-0.1919	-1.632E-10	592.4130	2.936E+10	0.009233	6328125.	0.000
390.000	-8.543E-09	0.9882	-0.1371	1.395E-10	592.4118	2.936E+10	0.009018	6328125.	0.000
396.000	-7.100E-09	0.3272	-0.0876	2.739E-10	592.4105	2.936E+10	0.007488	6328125.	0.000
402.000	-5.256E-09	-0.0643	-0.0485	3.007E-10	592.4102	2.936E+10	0.005544	6328125.	0.000
408.000	-3.491E-09	-0.2561	-0.0209	2.680E-10	592.4104	2.936E+10	0.003682	6328125.	0.000
414.000	-2.040E-09	-0.3154	-0.000354	2.096E-10	592.4105	2.936E+10	0.002152	6328125.	0.000
420.000	-9.759E-10	-0.2971	0.006189	1.470E-10	592.4105	2.936E+10	0.001029	6328125.	0.000
426.000	-2.760E-10	-0.2416	0.0102	9.196E-11	592.4104	2.936E+10	0.000291	6328125.	0.000
432.000	1.276E-10	-0.1756	0.0106	4.933E-11	592.4102	2.936E+10	-0.000131	6328125.	0.000
438.000	3.159E-10	-0.1143	0.009217	1.971E-11	592.4102	2.936E+10	-0.000333	6328125.	0.000
444.000	3.641E-10	-0.0650	0.007065	1.381E-12	592.4102	2.936E+10	-0.000384	6328125.	0.000
450.000	3.325E-10	-0.0295	0.004861	-8.282E-12	592.4101	2.936E+10	-0.000351	6328125.	0.000
456.000	2.647E-10	-0.006660	0.002972	-1.198E-11	592.4101	2.936E+10	-0.000279	6328125.	0.000
462.000	1.887E-10	0.006164	0.001537	-1.203E-11	592.4101	2.936E+10	-0.000199	6328125.	0.000
468.000	1.203E-10	0.0118	0.000559	-1.019E-11	592.4101	2.936E+10	-0.000127	6328125.	0.000
474.000	6.640E-11	0.0129	-3.166E-05	-7.666E-12	592.4101	2.936E+10	-7.003E-05	6328125.	0.000
480.000	2.832E-11	0.0115	-0.000331	-5.176E-12	592.4101	2.936E+10	-2.986E-05	6328125.	0.000
486.000	4.292E-12	0.008947	-0.000435	-3.090E-12	592.4101	2.936E+10	-4.527E-06	6328125.	0.000
492.000	-8.759E-12	0.006262	-0.000420	-1.535E-12	592.4101	2.936E+10	9.238E-06	6328125.	0.000
498.000	-1.413E-11	0.003907	-0.000348	0.000	592.4101	2.936E+10	1.490E-05	6328125.	0.000
504.000	-1.471E-11	0.002088	-0.000257	0.000	592.4101	2.936E+10	1.552E-05	6328125.	0.000
510.000	-1.273E-11	0.000826	-0.000170	0.000	592.4101	2.936E+10	1.343E-05	6328125.	0.000
516.000	-9.738E-12	4.810E-05	-9.878E-05	0.000	592.4101	2.936E+10	1.027E-05	6328125.	0.000
522.000	-6.685E-12	-0.000361	-4.681E-05	0.000	592.4101	2.936E+10	7.051E-06	6328125.	0.000
528.000	-4.075E-12	-0.000515	-1.277E-05	0.000	592.4101	2.936E+10	4.298E-06	6328125.	0.000
534.000	-2.096E-12	-0.000515	6.754E-06	0.000	592.4101	2.936E+10	2.211E-06	6328125.	0.000
540.000	0.000	-0.000435	1.578E-05	0.000	592.4101	2.936E+10	7.900E-07	6328125.	0.000
546.000	0.000	-0.000326	1.792E-05	0.000	592.4101	2.936E+10	-6.807E-08	6328125.	0.000
552.000	0.000	-0.000220	1.621E-05	0.000	592.4101	2.936E+10	-5.038E-07	6328125.	0.000
558.000	0.000	-0.000132	1.273E-05	0.000	592.4101	2.936E+10	-6.546E-07	6328125.	0.000
564.000	0.000	-6.756E-05	8.864E-06	0.000	592.4101	2.936E+10	-6.345E-07	6328125.	0.000
570.000	0.000	-2.577E-05	5.379E-06	0.000	592.4101	2.936E+10	-5.270E-07	6328125.	0.000
576.000	0.000	-2.947E-06	2.640E-06	0.000	592.4101	2.936E+10	-3.862E-07	6328125.	0.000
582.000	0.000	5.976E-06	7.566E-07	0.000	592.4101	2.936E+10	-2.415E-07	6328125.	0.000
588.000	0.000	6.204E-06	-2.816E-07	0.000	592.4101	2.936E+10	-1.046E-07	6328125.	0.000
594.000	0.000	2.664E-06	-5.223E-07	0.000	592.4101	2.936E+10	2.433E-08	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	592.4101	2.936E+10	1.498E-07	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0070370 radians
Maximum bending moment	=	2168199. inch-lbs
Maximum shear force	=	59514. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	15
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	268000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	82037.	-0.0125	592.4101	2.936E+10	-1120.8815	3362.6444	0.000
6.000	0.9248	492188.	75637.	-0.0125	1317.7258	2.936E+10	-1012.2729	6567.2556	0.000
12.000	0.8503	947772.	69536.	-0.0123	1989.1004	2.936E+10	-1021.3035	7206.8572	0.000
18.000	0.7769	1366277.	63389.	-0.0121	2605.8341	2.936E+10	-1027.9239	7938.8751	0.000
24.000	0.7052	1747329.	57209.	-0.0118	3167.3730	2.936E+10	-1032.0418	8781.3839	0.000
30.000	0.6356	2090652.	51012.	-0.0114	3673.3142	2.936E+10	-1033.5603	9757.0548	0.000
36.000	0.5686	2396081.	44814.	-0.0109	4123.4107	2.936E+10	-1032.3722	10895.	0.000
42.000	0.5045	2663556.	38632.	-0.0104	4517.5773	2.936E+10	-1028.3835	12231.	0.000
48.000	0.4437	2893134.	32482.	-0.009839	4855.8965	2.936E+10	-1021.4621	13814.	0.000
54.000	0.3864	3084988.	26384.	-0.009229	5138.6242	2.936E+10	-1011.4864	15706.	0.000
60.000	0.3329	3239415.	20099.	-0.008582	5366.1967	2.936E+10	-1083.2505	19522.	0.000
66.000	0.2834	3353781.	13187.	-0.007908	5534.7321	2.936E+10	-1220.7163	25842.	0.000
72.000	0.2380	3423098.	5933.4649	-0.007216	5636.8821	2.936E+10	-1197.2781	30179.	0.000
78.000	0.1968	3448188.	-1165.6140	-0.006514	5673.8566	2.936E+10	-1169.0816	35636.	0.000
84.000	0.1599	3429058.	-8081.2837	-0.005811	5647.1333	2.936E+10	-1135.8083	42628.	0.000
90.000	0.1271	3369912.	-14779.	-0.005116	5558.5042	2.936E+10	-1097.0511	51785.	0.000
96.000	0.0985	3269164.	-21227.	-0.004437	5410.0366	2.936E+10	-1052.2643	64111.	0.000
102.000	0.0739	3129481.	-27386.	-0.003783	5204.1613	2.936E+10	-1000.6705	81289.	0.000
108.000	0.0531	2952704.	-33211.	-0.003162	4943.6831	2.936E+10	-941.0769	106379.	0.000
114.000	0.0359	2741099.	-38648.	-0.002580	4631.8491	2.936E+10	-871.4647	145574.	0.000
120.000	0.0221	2497220.	-43774.	-0.002045	4272.4549	2.936E+10	-836.8996	227010.	0.000
126.000	0.0114	2223491.	-48753.	-0.001562	3867.4522	2.936E+10	-822.9442	433757.	0.000
132.000	0.003373	1917207.	-53084.	-0.001139	3417.7147	2.936E+10	-620.6227	1104101.	0.000
138.000	-0.002287	1589049.	-53229.	-0.000781	2934.1235	2.936E+10	572.3277	1501480.	0.000
144.000	-0.005998	1280974.	-49279.	-0.000488	2480.1257	2.936E+10	744.1480	744392.	0.000
150.000	-0.008138	999266.	-44589.	-0.000255	2064.9856	2.936E+10	819.1938	603970.	0.000
156.000	-0.009053	746721.	-39559.	-7.612E-05	1692.8212	2.936E+10	857.6548	568441.	0.000
162.000	-0.009052	524807.	-34364.	5.382E-05	1365.7952	2.936E+10	873.9355	579303.	0.000
168.000	-0.008407	334181.	-29120.	0.000142	1084.8786	2.936E+10	873.9250	627722.	0.000
174.000	-0.007352	174907.	-23917.	0.000194	850.1634	2.936E+10	860.5701	702283.	0.000
180.000	-0.006083	46556.	-18829.	0.000216	661.0181	2.936E+10	835.4739	824034.	0.000
186.000	-0.004757	-51733.	-14004.	0.000216	568.6466	2.936E+10	799.4883	1008357.	0.000
192.000	-0.003494	-121224.	-9266.5527	0.000198	771.0519	2.936E+10	752.9392	1292789.	0.000
198.000	-0.002380	-163568.	-4920.8251	0.000169	833.4539	2.936E+10	695.6367	1753363.	0.000
204.000	-0.001467	-180817.	-954.1090	0.000134	858.8719	2.936E+10	626.6020	2562730.	0.000
210.000	-0.000775	-175448.	2554.5748	9.735E-05	850.9601	2.936E+10	542.9593	4201679.	0.000
216.000	-0.000299	-150475.	5098.3465	6.404E-05	814.1585	2.936E+10	304.9646	6123426.	0.000
222.000	-6.823E-06	-114474.	6034.4642	3.697E-05	761.1051	2.936E+10	7.0746	6221065.	0.000
228.000	0.000145	-78180.	5598.2551	1.728E-05	707.6209	2.936E+10	-152.4777	6318705.	0.000
234.000	0.000201	-47350.	4506.3603	4.450E-06	662.1881	2.936E+10	-211.4873	6328125.	0.000
240.000	0.000198	-24118.	3244.8199	-2.854E-06	627.9521	2.936E+10	-209.0262	6328125.	0.000
246.000	0.000166	-8403.2484	2091.6301	-6.177E-06	604.7936	2.936E+10	-175.3704	6328125.	0.000
252.000	0.000124	1001.1792	1172.9818	-6.934E-06	593.8855	2.936E+10	-130.8457	6328125.	0.000
258.000	8.307E-05	5694.8322	517.5967	-6.249E-06	600.8023	2.936E+10	-87.6160	6328125.	0.000
264.000	4.907E-05	7232.4382	99.4928	-4.928E-06	603.0682	2.936E+10	-51.7520	6328125.	0.000
270.000	2.393E-05	6904.5954	-131.4907	-3.484E-06	602.5851	2.936E+10	-25.2425	6328125.	0.000
276.000	7.266E-06	5655.7526	-231.0388	-2.199E-06	598.7594	2.936E+10	-7.6637	6328125.	0.000
282.000	-2.453E-06	4149.1610	-245.4373	-1.196E-06	598.5245	2.936E+10	2.5873	6328125.	0.000
288.000	-7.084E-06	2724.3504	-215.2604	-4.934E-07	596.4248	2.936E+10	7.4716	6328125.	0.000
294.000	-8.372E-06	1567.6236	-166.3487	-5.480E-08	594.7202	2.936E+10	8.8322	6328125.	0.000
300.000	-7.742E-06	728.3423	-115.3562	1.798E-07	593.4834	2.936E+10	8.1653	6328125.	0.000
306.000	-6.216E-06	182.7710	-71.1917	2.729E-07	592.6794	2.936E+10	6.5562	6328125.	0.000
312.000	-4.467E-06	-126.8361	-37.3906	2.787E-07	592.5970	2.936E+10	4.7108	6328125.	0.000
318.000	-2.872E-06	-266.8124	-14.1699	2.384E-07	592.8033	2.936E+10	3.0294	6328125.	0.000
324.000	-1.605E-06	-297.6416	-0.002147	1.807E-07	592.8487	2.936E+10	1.6932	6328125.	0.000
330.000	-7.034E-07	-267.4195	7.3029	1.230E-07	592.8042	2.936E+10	0.7418	6328125.	0.000
336.000	-1.026E-08	-210.4029	9.9377	7.417E-08	592.7201	2.936E+10	0.1364	6328125.	0.000
342.000	1.866E-07	-148.4058	9.7564	3.750E-08	592.6288	2.936E+10	-0.1969	6328125.	0.000
348.000	3.207E-07	-93.4467	8.1513	1.278E-08	592.5478	2.936E+10	-0.3382	6328125.	0.000
354.000	3.401E-07	-50.6318	6.0607	-1.940E-09	592.4847	2.936E+10	-0.3587	6328125.	0.000
360.000	2.974E-07	-20.7122	4.0438	-9.231E-09	592.4406	2.936E+10	-0.3136	6328125.	0.000
366.000	2.293E-07	-2.0768	2.3773	-1.156E-08	592.4131	2.936E+10	-0.2418	6328125.	0.000
372.000	1.587E-07	7.8530	1.1498	-1.097E-08	592.4216	2.936E+10	-0.1673	6328125.	0.000
378.000	9.763E-08	11.7559	0.3387	-8.965E-09	592.4274	2.936E+10	-0.1030	6328125.	0.000
384.000	5.108E-08	11.9467	-0.1319	-6.543E-09	592.4277	2.936E+10	-0.0539	6328125.	0.000
390.000	1.915E-08	10.1941	-0.3541	-4.280E-09	592.4251	2.936E+10	-0.0202	6328125.	0.000
396.000	-2.808E-10	7.7109	-0.4138	-2.450E-09	592.4214	2.936E+10	0.000296	6328125.	0.000
402.000	-1.026E-08	5.2359	-0.3805	-1.127E-09	592.4178	2.936E+10	0.0108	6328125.	0.000
408.000	-1.381E-08	3.1486	-0.3044	-2.705E-10	592.4147	2.936E+10	0.0146	6328125.	0.000
414.000	-1.350E-08	1.5845	-0.2179	2.132E-10	592.4124	2.936E+10	0.0142	6328125.	0.000
420.000	-1.125E-08	0.5326	-0.1396	4.295E-10	592.4109	2.936E+10	0.0119	6328125.	0.000
426.000	-8.348E-09	0.0923	-0.0776	4.745E-10	592.4102	2.936E+10	0.008804	6328125.	0.000
432.000	-5.557E-09	-0.4001	-0.0336	4.242E-10	592.4107	2.936E+10	0.005861	6328125.	0.000
438.000	-3.258E-09	-0.4969	-0.005713	3.325E-10	592.4108	2.936E+10	0.003436	6328125.	0.000
444.000	-1.567E-09	-0.4698	0.000955	2.317E-10	592.4103	2.936E+10	0.001653	6328125.	0.000
450.000	-4.527E-10	-0.3830	0.0159	1.466E-10	592.4106	2.936E+10	0.000477	6328125.	0.000
456.000	1.920E-10	-0.2789	0.0168	7.895E-11	592.4105	2.936E+10	-0.000203	6328125.	0.000
462.000	4.947E-10	-0.1820	0.0146	3.184E-11	592.4103	2.936E+10	-0.000522	6328125.	0.000
468.000	5.741E-10	-0.1039	0.0112	2.615E-12	592.4102	2.936E+10	-0.000605	6328125.	0.000
474.000	5.261E-10	-0.0475	0.007732	-1.286E-11	592.4101	2.936E+10	-0.000555	6328125.	0.000
480.000	4.198E-10	-0.0111	0.004739	-1.884E-11	592.4101	2.936E+10	-0.000443	6328125.	0.000
486.000	3.008E-10	0.009436	0.002462	-1.901E-11	592.4101	2.936E+10	-0.000316	6328125.	0.000
492.000	1.917E-10	0.0185	0.000906	-1.615E-11	592.4101	2.936E+10	-0.000202	6328125.	0.000
498.000	1.062E-10	0.0204	-3.607E-05	-1.217E-11	592.4101	2.936E+10	-0.000112	6328125.	0.000
504.000	4.564E-11	0.0181	-0.000516	-8.236E-12	592.4101	2.936E+10	-4.813E-05	6328125.	0.000
510.000	7.351E-12	0.0142	-0.000684	-4.931E-12	592.4101	2.936E+10	-7.752E-06	6328125.	0.000
516.000	-1.353E-11	0.009956	-0.000665	-2.463E-12	592.4101	2.936E+10	1.427E-05	6328125.	0.000
522.000	-2.220E-11	0.006228	-0.000551	0.000	592.4101	2.936E+10	2.342E-05	6328125.	0.000
528.000	-2.323E-11	0.003341	-0.000408	0.000	592.4101	2.936E+10	2.451E-05	6328125.	0.000
534.000	-2.017E-11	0.001335	-0.000270	0.000	592.4101	2.936E+10	2.127E-05	6328125.	0.000
540.000	-1.547E-11	9.389E-05	-0.000158	0.000	592.4101	2.936E+10	1.632E-05	6328125.	0.000
546.000	-1.066E-11	-0.000559	-7.493E-05	0.000	592.4101	2.936E+10	1.124E-05	6328125.	0.000
552.000	-6.528E-12	-0.000808	-2.056E-05	0.000	592.4101	2.936E+10	6.885E-06	6328125.	0.000
558.000	-3.390E-12	-0.000808	1.082E-05	0.000	592.4101	2.936E+10	3.575E-06	6328125.	0.000
564.000	-1.242E-12	-0.000679	2.548E-05	0.000	592.4101	2.936E+10	1.310E-06	6328125.	0.000
570.000	0.000	-0.000503	2.918E-05	0.000	592.4101	2.936E+10	-7.599E-08	6328125.	0.000
576.000	0.000	-0.000330	2.652E-05	0.000	592.4101	2.936E+10	-8.116E-07	6328125.	0.000
582.000	1.063E-12	-0.000185	2.072E-05	0.000	592.4101	2.936E+10	-1.121E-06	6328125.	0.000
588.000	1.129E-12	-8.104E-05	1.379E-05	0.000	592.4101	2.936E+10	-1.191E-06	6328125.	0.000

594.000	1.096E-12	-1.972E-05	6.751E-06	0.000	592.4101	2.936E+10	-1.155E-06	6328125.	0.000
600.000	1.038E-12	0.000	0.000	0.000	592.4101	2.936E+10	-1.095E-06	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0125273 radians
Maximum bending moment           =       3448188. inch-lbs
Maximum shear force              =         82037. lbs
Depth of maximum bending moment  =     78.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             22
Number of zero deflection points =              8
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

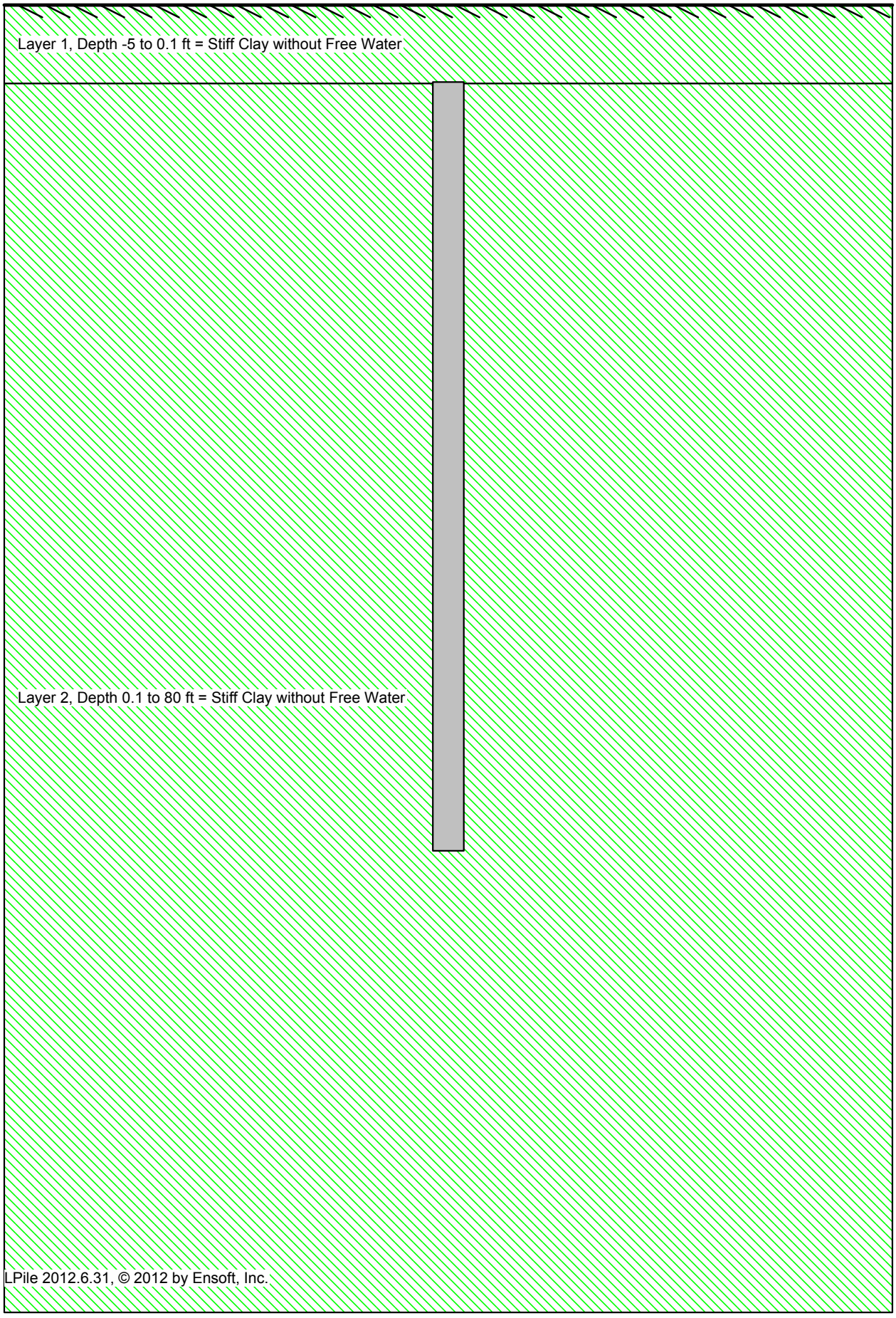
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	268000.	0.25000000	1361848.	43226.	-0.00395655
2	4	y = 0.5000	M = 0.000	268000.	0.50000000	2168199.	59514.	-0.00703703
3	4	y = 1.0000	M = 0.000	268000.	1.00000000	3448188.	82037.	-0.01252726

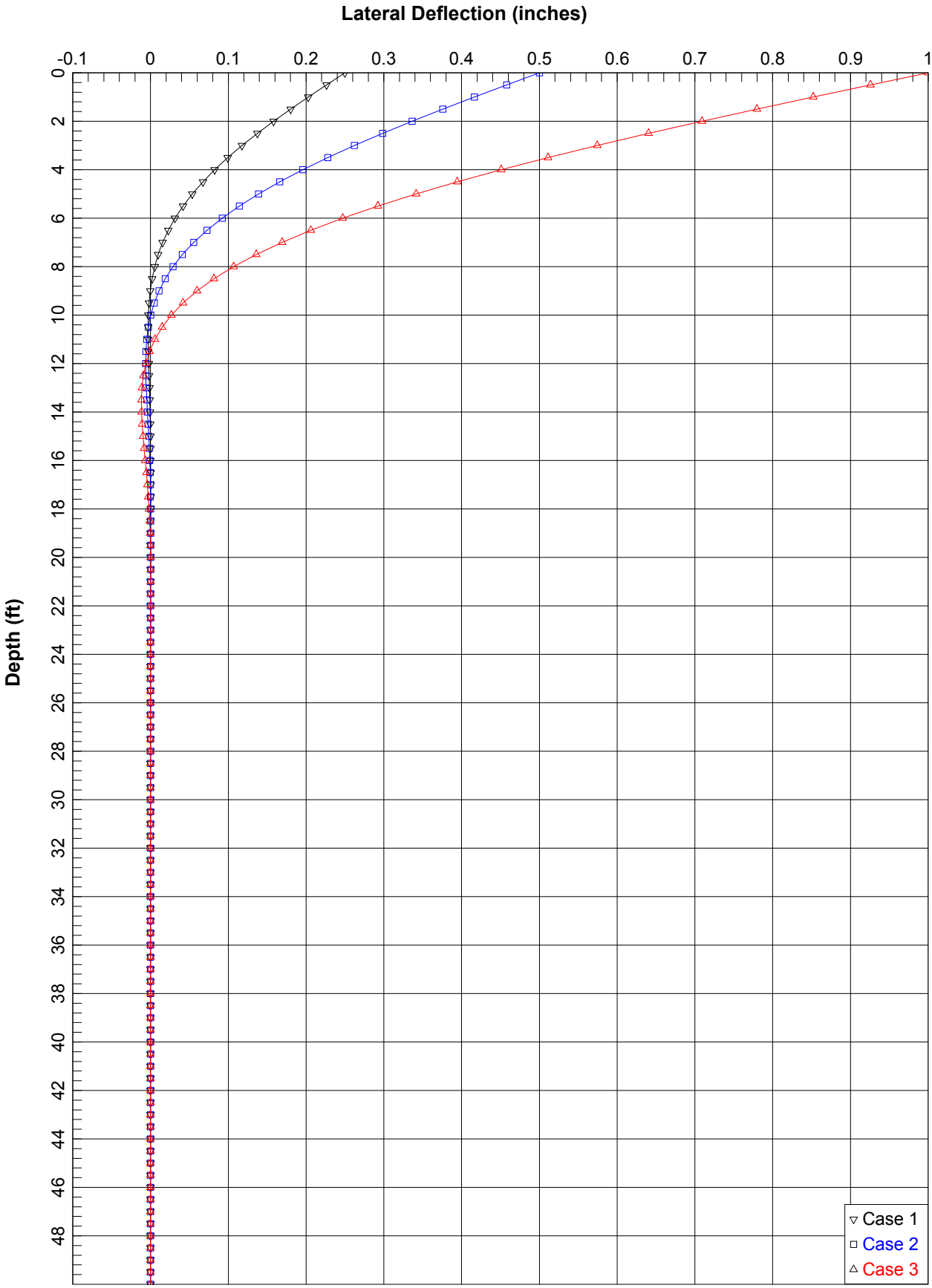
The analysis ended normally.

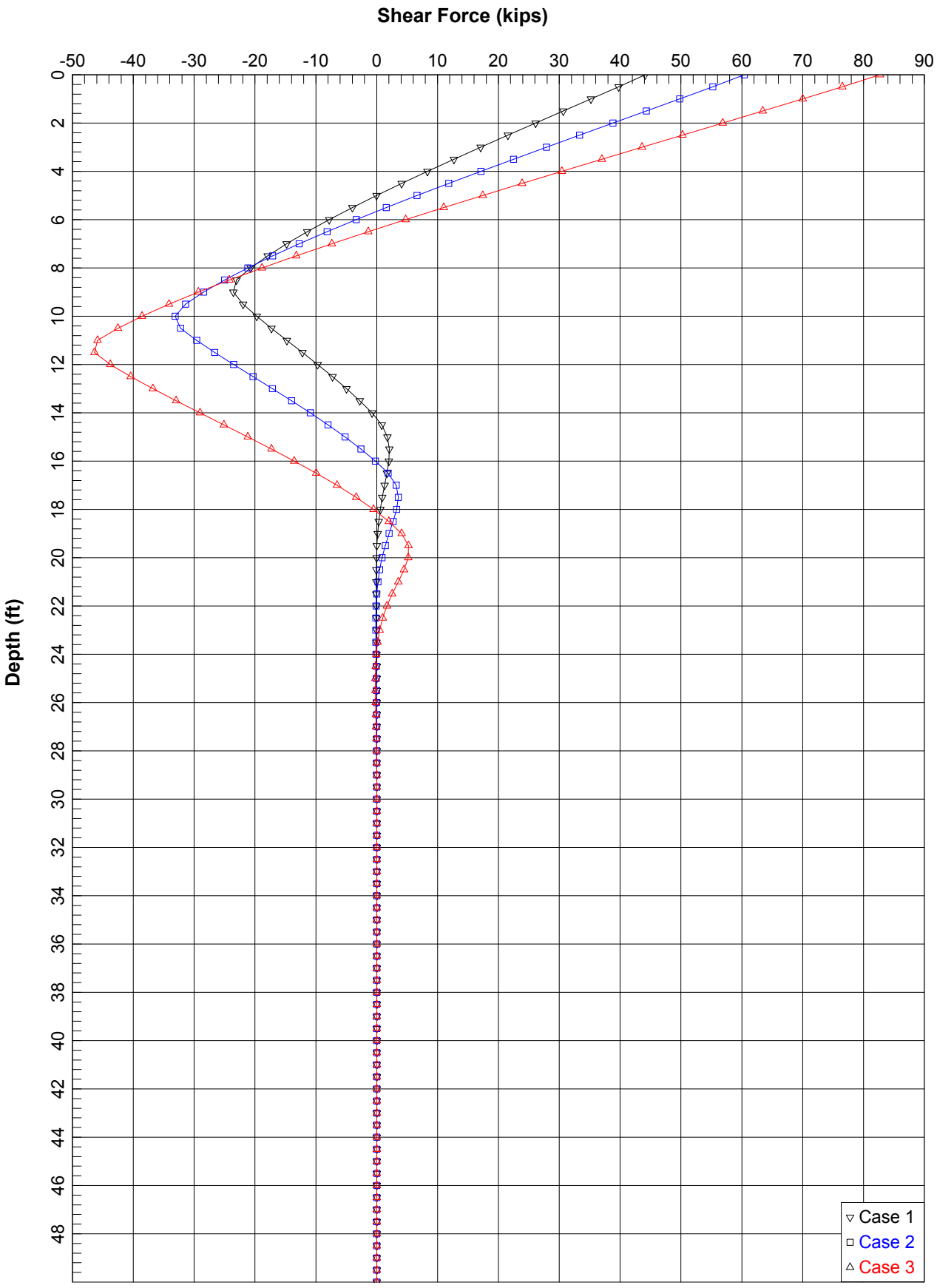
SUPPORT: **BENT 4R**

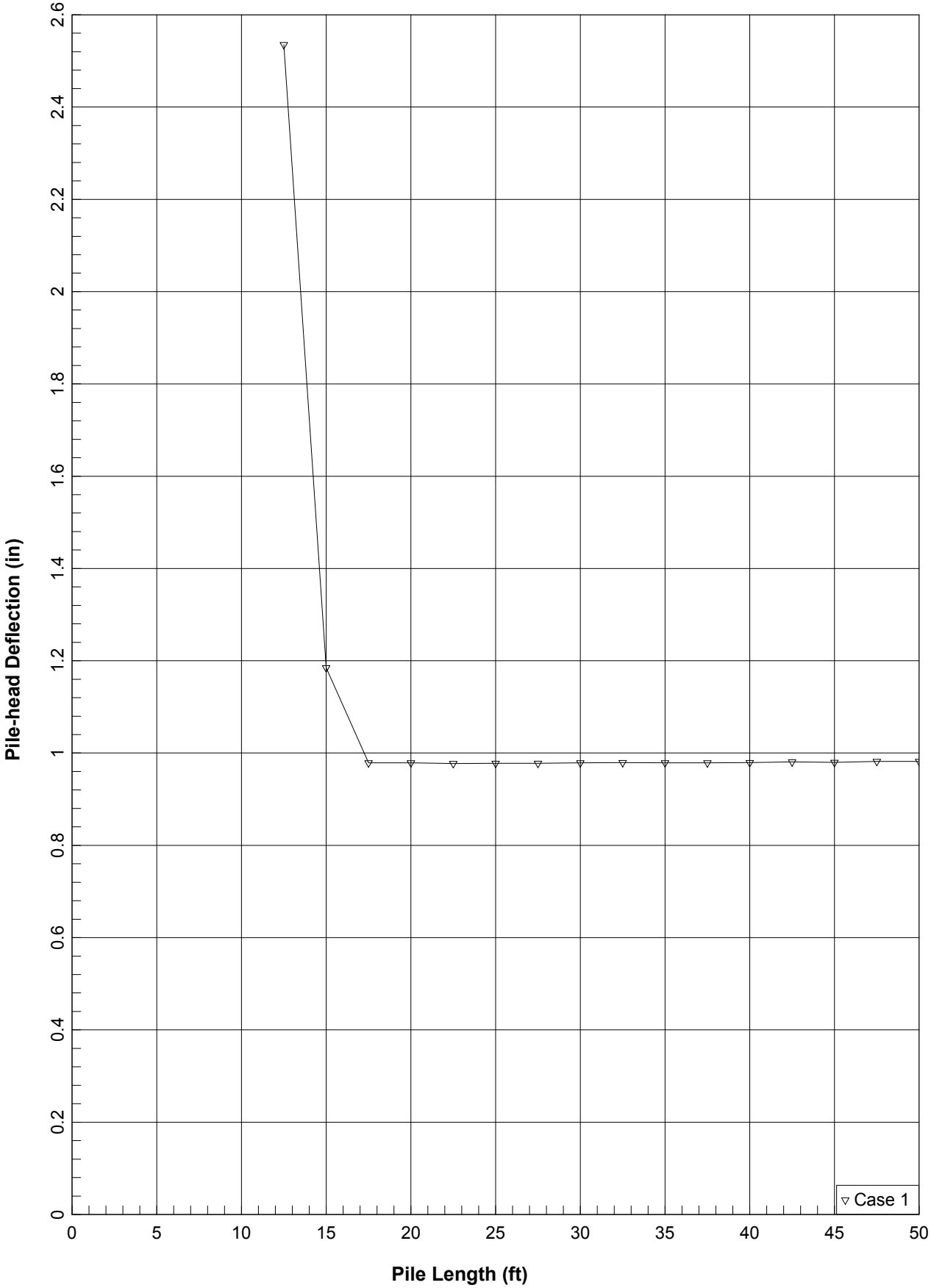
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

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gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4R_long_crit length.lp6d
Name of output report file:    Bent 4R_long_crit length.lp6o
Name of plot output file:      Bent 4R_long_crit length.lp6p
Name of runtime messeage file: Bent 4R_long_crit length.lp6r

--------------------------------------------------------------------------------
                              Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:05:49

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                  Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                        Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                        =          1

Total Pile Length                               =      50.00 ft

Depth of ground surface below top of pile       =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                 =    Elastic Pile
```



```
   Cross-sectional Shape                        =        Circular
   Section Length                               =     50.00000000 ft
   Top Width                                    =     24.00000000 in
   Bottom Width                                 =     24.00000000 in
   Top Area                                     =    452.38934212 in
   Bottom Area                                  =    452.38934212 in
   Moment of Inertia at Top                     =   8143.00815810 in
   Moment of Inertia at Bottom                  =   8143.00815810 in
   Elastic Modulus                              =        3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                              =        0.000 degrees
                                                =        0.000 radians

Pile Batter Angle                               =        0.000 degrees
                                                =        0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer    =     -5.00000 ft
   Distance from top of pile to bottom of layer =      0.10000 ft
   Effective unit weight at top of layer        =    120.00000 pcf
   Effective unit weight at bottom of layer     =    120.00000 pcf
   Undrained cohesion at top of layer           =   4500.00000 psi
   Undrained cohesion at bottom of layer        =   4500.00000 psi
   Epsilon-50 at top of layer                   =      0.00700
   Epsilon-50 at bottom of layer                =      0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer    =      0.10000 ft
   Distance from top of pile to bottom of layer =     80.00000 ft
   Effective unit weight at top of layer        =    125.00000 pcf
   Effective unit weight at bottom of layer     =    125.00000 pcf
   Undrained cohesion at top of layer           =   4500.00000 psi
   Undrained cohesion at bottom of layer        =   4500.00000 psi
   Epsilon-50 at top of layer                   =      0.00500
   Epsilon-50 at bottom of layer                =      0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                 Rock Mass                                In-situ      In-situ       Elastic
Layer                Soil Type          Depth        Unit Wt.     Cohesion     Friction        qu            or
Factor          J          kpy       Rock Emass      krm            Test         Test       Subgrade
 Num.       (p-y Curve Criteria)          ft           pcf          psf          deg.          psi          GSI       Epsilon
50    Factor          pci          psi                Type       Property     Mod. pci
-----  ------  ---------------------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000      120.000     4500.000       --          --          --          --
0.00700       --           --           --           --          --          --          --
                                         0.10000     120.000     4500.000       --          --          --          --
0.00700       --           --           --           --          --          --          --
  2     Stiff Clay w/o Free Water          0.10000     125.000     4500.000       --          --          --          --
0.00500       --           --           --           --          --          --          --
                                        80.000       125.000     4500.000       --          --          --          --
0.00500       --           --           --           --          --          --          --


--------------------------------------------------------------------------------
                        p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----     ----------      ----------      ----------
  1           0.000          0.4800          1.0000
  2          50.000          0.4800          1.0000


--------------------------------------------------------------------------------
                                  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
1	1	V = 82000. lbs	M = 0.0000 in-lbs	169000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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 = 82000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 169000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9818	9.053E-07	82000.	-0.0122	373.5720	2.936E+10	-975.6101	2981.0122	0.000
6.000	0.9087	486791.	75855.	-0.0121	1090.9353	2.936E+10	-1072.7885	7083.1841	0.000
12.000	0.8362	934861.	69387.	-0.0120	1751.2367	2.936E+10	-1083.0252	7770.6688	0.000
18.000	0.7649	1343749.	62866.	-0.0118	2353.7964	2.936E+10	-1090.7377	8555.9899	0.000
24.000	0.6952	1713091.	56306.	-0.0114	2898.0802	2.936E+10	-1095.8386	9457.8203	0.000
30.000	0.6276	2042628.	49724.	-0.0111	3383.7047	2.936E+10	-1098.2365	10499.	0.000
36.000	0.5625	2332205.	43136.	-0.0106	3810.4421	2.936E+10	-1097.8353	11710.	0.000
42.000	0.5003	2581777.	36559.	-0.0101	4178.2253	2.936E+10	-1094.5329	13127.	0.000
48.000	0.4412	2791410.	30011.	-0.009559	4487.1531	2.936E+10	-1088.2195	14799.	0.000
54.000	0.3856	2961289.	23510.	-0.008971	4737.4966	2.936E+10	-1078.7750	16788.	0.000
60.000	0.3335	3091719.	17075.	-0.008353	4929.7048	2.936E+10	-1066.0663	19177.	0.000
66.000	0.2853	3183129.	10727.	-0.007711	5064.4122	2.936E+10	-1049.9425	22079.	0.000
72.000	0.2410	3236082.	4486.4960	-0.007055	5142.4463	2.936E+10	-1030.2285	25648.	0.000
78.000	0.2007	3251276.	-1624.3367	-0.006392	5164.8366	2.936E+10	-1006.7157	30102.	0.000
84.000	0.1643	3229554.	-7581.9231	-0.005730	5132.8261	2.936E+10	-979.1464	35757.	0.000
90.000	0.1319	3171913.	-13361.	-0.005076	5047.8838	2.936E+10	-947.1900	43086.	0.000
96.000	0.1034	3079517.	-18934.	-0.004437	4911.7228	2.936E+10	-910.4012	52833.	0.000
102.000	0.0787	2953707.	-24269.	-0.003821	4726.3229	2.936E+10	-868.1453	66224.	0.000
108.000	0.0575	2796032.	-29332.	-0.003233	4493.9644	2.936E+10	-819.4515	85443.	0.000
114.000	0.0399	2608278.	-34079.	-0.002681	4217.2787	2.936E+10	-762.6929	114804.	0.000
120.000	0.0254	2392526.	-38451.	-0.002170	3899.3343	2.936E+10	-694.7788	164274.	0.000
126.000	0.0138	2151266.	-42361.	-0.001705	3543.8000	2.936E+10	-608.5461	264090.	0.000
132.000	0.004914	1887653.	-45623.	-0.001292	3155.3242	2.936E+10	-478.9495	584833.	0.000
138.000	-0.001684	1606406.	-45942.	-0.000935	2740.8629	2.936E+10	372.6283	1327990.	0.000
144.000	-0.006311	1338241.	-43239.	-0.000634	2345.6795	2.936E+10	528.5062	502474.	0.000
150.000	-0.009297	1088824.	-39875.	-0.000386	1978.1255	2.936E+10	592.8123	382584.	0.000
156.000	-0.0109	860524.	-36211.	-0.000187	1641.6886	2.936E+10	628.4913	344447.	0.000
162.000	-0.0115	654670.	-32382.	-3.236E-05	1338.3314	2.936E+10	647.9554	336793.	0.000
168.000	-0.0113	472008.	-28470.	8.279E-05	1069.1494	2.936E+10	656.0561	347239.	0.000
174.000	-0.0105	312865.	-24536.	0.000163	834.6280	2.936E+10	655.7037	372628.	0.000
180.000	-0.009380	177245.	-20630.	0.000213	634.7708	2.936E+10	646.7467	413690.	0.000
186.000	-0.007993	64871.	-16795.	0.000238	469.1703	2.936E+10	631.4825	474027.	0.000
192.000	-0.006526	-24782.	-13071.	0.000242	410.0892	2.936E+10	609.8745	560696.	0.000
198.000	-0.005090	-92476.	-9495.3073	0.000230	509.8494	2.936E+10	582.1488	686238.	0.000
204.000	-0.003767	-139192.	-6122.1556	0.000206	578.6939	2.936E+10	542.2352	863665.	0.000
210.000	-0.002615	-166360.	-3010.6621	0.000175	618.7293	2.936E+10	494.9293	1135703.	0.000
216.000	-0.001667	-175675.	-199.2292	0.000140	632.4572	2.936E+10	442.2150	1592109.	0.000
222.000	-0.000934	-169035.	2275.1714	0.000105	622.6711	2.936E+10	382.5853	2458401.	0.000
228.000	-0.000408	-148586.	4249.6396	7.240E-05	592.5367	2.936E+10	275.5708	4050000.	0.000
234.000	-6.498E-05	-118186.	5207.9406	4.513E-05	547.7374	2.936E+10	43.8628	4050000.	0.000
240.000	0.000133	-86182.	5069.4901	2.425E-05	500.5750	2.936E+10	-90.0130	4050000.	0.000
246.000	0.000226	-57401.	4341.8047	9.575E-06	458.1616	2.936E+10	-152.5488	4050000.	0.000
252.000	0.000248	-34100.	3381.4515	2.238E-07	423.8236	2.936E+10	-167.5689	4050000.	0.000
258.000	0.000229	-16824.	2415.6594	-4.980E-06	398.3650	2.936E+10	-154.3618	4050000.	0.000
264.000	0.000188	-5101.9087	1570.8904	-7.221E-06	381.0905	2.936E+10	-127.2279	4050000.	0.000
270.000	0.000142	2041.1827	901.5946	-7.534E-06	376.5800	2.936E+10	-95.8707	4050000.	0.000
276.000	9.808E-05	5732.5049	415.3727	-6.739E-06	382.0198	2.936E+10	-66.2032	4050000.	0.000
282.000	6.116E-05	7039.3232	92.9201	-5.434E-06	383.9456	2.936E+10	-41.2810	4050000.	0.000
288.000	3.287E-05	6858.5671	-97.4801	-4.014E-06	383.6792	2.936E+10	-22.1858	4050000.	0.000
294.000	1.299E-05	5877.7019	-190.3413	-2.712E-06	382.2337	2.936E+10	-8.7680	4050000.	0.000
300.000	3.194E-07	4579.9719	-217.2920	-1.644E-06	380.3213	2.936E+10	-0.2156	4050000.	0.000
306.000	-6.734E-06	3273.5310	-204.3023	-8.410E-07	378.3961	2.936E+10	4.5455	4050000.	0.000
312.000	-9.773E-06	2130.0506	-170.8750	-2.888E-07	376.7110	2.936E+10	6.5969	4050000.	0.000
318.000	-1.020E-05	1223.6168	-130.4292	5.390E-08	375.3752	2.936E+10	6.8850	4050000.	0.000
324.000	-9.126E-06	564.7907	-91.2932	2.367E-07	374.4043	2.936E+10	6.1603	4050000.	0.000
330.000	-7.360E-06	127.6181	-57.9083	3.074E-07	373.7601	2.936E+10	4.9680	4050000.	0.000
336.000	-5.437E-06	-130.7320	-31.9938	3.071E-07	373.7647	2.936E+10	3.6701	4050000.	0.000
342.000	-3.675E-06	-256.9307	-13.5422	2.675E-07	373.9506	2.936E+10	2.4804	4050000.	0.000
348.000	-2.227E-06	-293.7808	-1.5906	2.112E-07	374.0050	2.936E+10	1.5034	4050000.	0.000
354.000	-1.140E-06	-276.4468	5.2284	1.529E-07	373.9794	2.936E+10	0.7696	4050000.	0.000
360.000	-3.920E-07	-231.3499	8.3311	1.010E-07	373.9129	2.936E+10	0.2646	4050000.	0.000
366.000	7.238E-08	-176.6788	8.9784	5.935E-08	373.8324	2.936E+10	-0.0489	4050000.	0.000
372.000	3.201E-07	-123.7298	8.1836	2.865E-08	373.7544	2.936E+10	-0.2161	4050000.	0.000
378.000	4.161E-07	-78.5341	6.6927	7.975E-09	373.6878	2.936E+10	-0.2809	4050000.	0.000
384.000	4.158E-07	-43.4340	5.0080	-4.490E-09	373.6360	2.936E+10	-0.2807	4050000.	0.000
390.000	3.622E-07	-18.4291	3.4324	-1.081E-08	373.5992	2.936E+10	-0.2445	4050000.	0.000
396.000	2.861E-07	-2.2229	2.1196	-1.292E-08	373.5753	2.936E+10	-0.1931	4050000.	0.000
402.000	2.072E-07	7.0321	1.1208	-1.243E-08	373.5824	2.936E+10	-0.1398	4050000.	0.000

408.000	1.369E-07	11.2514	0.4240	-1.056E-08	373.5886	2.936E+10	-0.0924	4050000.	0.000
414.000	8.042E-08	12.1416	-0.0161	-8.172E-09	373.5899	2.936E+10	-0.0543	4050000.	0.000
420.000	3.884E-08	11.0750	-0.2576	-5.799E-09	373.5883	2.936E+10	-0.0262	4050000.	0.000
426.000	1.083E-08	9.0624	-0.3582	-3.741E-09	373.5854	2.936E+10	-0.007313	4050000.	0.000
432.000	-6.057E-09	6.7846	-0.3678	-2.122E-09	373.5820	2.936E+10	0.004089	4050000.	0.000
438.000	-1.463E-08	4.6526	-0.3260	-9.530E-10	373.5789	2.936E+10	0.009874	4050000.	0.000
444.000	-1.749E-08	2.8751	-0.2609	-1.837E-10	373.5763	2.936E+10	0.0118	4050000.	0.000
450.000	-1.683E-08	1.5221	-0.1914	2.657E-10	373.5743	2.936E+10	0.0114	4050000.	0.000
456.000	-1.430E-08	0.5777	-0.1284	4.803E-10	373.5729	2.936E+10	0.009656	4050000.	0.000
462.000	-1.107E-08	-0.0191	-0.0770	5.374E-10	373.5720	2.936E+10	0.007471	4050000.	0.000
468.000	-7.856E-09	-0.3470	-0.0386	5.000E-10	373.5725	2.936E+10	0.005303	4050000.	0.000
474.000	-5.069E-09	-0.4839	-0.0125	4.150E-10	373.5727	2.936E+10	0.003422	4050000.	0.000
480.000	-2.876E-09	-0.4975	0.003614	3.147E-10	373.5728	2.936E+10	0.001941	4050000.	0.000
486.000	-1.292E-09	-0.4412	0.0121	2.188E-10	373.5727	2.936E+10	0.000872	4050000.	0.000
492.000	-2.500E-10	-0.3533	0.0152	1.376E-10	373.5725	2.936E+10	0.000169	4050000.	0.000
498.000	3.590E-10	-0.2593	0.0150	7.500E-11	373.5724	2.936E+10	-0.000242	4050000.	0.000
504.000	6.500E-10	-0.1740	0.0129	3.071E-11	373.5723	2.936E+10	-0.000439	4050000.	0.000
510.000	7.275E-10	-0.1044	0.0101	2.259E-12	373.5722	2.936E+10	-0.000491	4050000.	0.000
516.000	6.771E-10	-0.0525	0.007280	-1.378E-11	373.5721	2.936E+10	-0.000457	4050000.	0.000
522.000	5.622E-10	-0.0170	0.004771	-2.089E-11	373.5720	2.936E+10	-0.000329	4050000.	0.000
528.000	4.264E-10	0.004775	0.002769	-2.214E-11	373.5720	2.936E+10	-0.000288	4050000.	0.000
534.000	2.965E-10	0.0162	0.001305	-2.000E-11	373.5720	2.936E+10	-0.000200	4050000.	0.000
540.000	1.865E-10	0.0205	0.000327	-1.624E-11	373.5720	2.936E+10	-0.000126	4050000.	0.000
546.000	1.015E-10	0.0202	-0.000256	-1.209E-11	373.5720	2.936E+10	-6.854E-05	4050000.	0.000
552.000	4.138E-11	0.0174	-0.000546	-8.246E-12	373.5720	2.936E+10	-2.793E-05	4050000.	0.000
558.000	2.581E-12	0.0137	-0.000635	-5.070E-12	373.5720	2.936E+10	-1.742E-06	4050000.	0.000
564.000	-1.947E-11	0.009818	-0.000600	-2.672E-12	373.5720	2.936E+10	1.314E-05	4050000.	0.000
570.000	-2.948E-11	0.006453	-0.000501	-1.009E-12	373.5720	2.936E+10	1.990E-05	4050000.	0.000
576.000	-3.158E-11	0.003804	-0.000378	0.000	373.5720	2.936E+10	2.132E-05	4050000.	0.000
582.000	-2.901E-11	0.001921	-0.000255	0.000	373.5720	2.936E+10	1.958E-05	4050000.	0.000
588.000	-2.409E-11	0.000743	-0.000147	0.000	373.5720	2.936E+10	1.626E-05	4050000.	0.000
594.000	-1.825E-11	0.000150	-6.173E-05	0.000	373.5720	2.936E+10	1.232E-05	4050000.	0.000
600.000	-1.223E-11	0.000	0.000	1.003E-12	373.5720	2.936E+10	8.258E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9818244 inches
Computed slope at pile head = -0.0121817 radians
Maximum bending moment = 3251276. inch-lbs
Maximum shear force = 82000. lbs
Depth of maximum bending moment = 78.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 33
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 82000. lbs
Moment = 0. in-lbs
Axial Load = 169000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9818244	3251276.	82000.
47.500	0.9817138	3247498.	82000.
45.000	0.9800643	3249492.	82000.
42.500	0.9806599	3248817.	82000.
40.000	0.9794801	3249388.	82000.
37.500	0.9790697	3248465.	82000.
35.000	0.9789124	3246148.	82000.
32.500	0.9792805	3246050.	82000.
30.000	0.9789087	3243849.	82000.
27.500	0.9779528	3244352.	82000.
25.000	0.9775789	3244680.	82000.
22.500	0.9773176	3243606.	82000.
20.000	0.9786714	3241691.	82000.
17.500	0.9786890	3241037.	82000.
15.000	1.1847513	3082694.	82000.
12.500	2.5353878	2678980.	82000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 82000.	M = 0.000	169000.	0.98182437	3251276.	82000.	-0.01218170

The analysis ended normally.

```
=============================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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=============================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

-----------------------------------------------------------------------------
                            Files Used for Analysis
-----------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4R_long_ave P.lp6d
Name of output report file:    Bent 4R_long_ave P.lp6o
Name of plot output file:      Bent 4R_long_ave P.lp6p
Name of runtime messeage file: Bent 4R_long_ave P.lp6r

-----------------------------------------------------------------------------
                          Date and Time of Analysis
-----------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:03:09

-----------------------------------------------------------------------------
                               Problem Title
-----------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


-----------------------------------------------------------------------------
                               Program Options
-----------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

-----------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
-----------------------------------------------------------------------------

Total Number of Sections                        =          1

Total Pile Length                               =      50.00 ft

Depth of ground surface below top of pile       =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth             Pile
 No.             X              Diameter
                 ft               in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                 =    Elastic Pile
```



```
   Cross-sectional Shape                        =         Circular
   Section Length                               =      50.00000000 ft
   Top Width                                    =      24.00000000 in
   Bottom Width                                 =      24.00000000 in
   Top Area                                     =     452.38934212 in
   Bottom Area                                  =     452.38934212 in
   Moment of Inertia at Top                     =    8143.00815810 in
   Moment of Inertia at Bottom                  =    8143.00815810 in
   Elastic Modulus                              =         3605000. lbs/in^2


-----------------------------------------------------------------------------
                      Ground Slope and Pile Batter Angles
-----------------------------------------------------------------------------

Ground Slope Angle                              =         0.000 degrees
                                                =         0.000 radians

Pile Batter Angle                               =         0.000 degrees
                                                =         0.000 radians


-----------------------------------------------------------------------------
                        Soil and Rock Layering Information
-----------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer    =      -5.00000 ft
   Distance from top of pile to bottom of layer =       0.10000 ft
   Effective unit weight at top of layer        =     120.00000 pcf
   Effective unit weight at bottom of layer     =     120.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00700
   Epsilon-50 at bottom of layer                =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer    =       0.10000 ft
   Distance from top of pile to bottom of layer =      80.00000 ft
   Effective unit weight at top of layer        =     125.00000 pcf
   Effective unit weight at bottom of layer     =     125.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00500
   Epsilon-50 at bottom of layer                =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


-----------------------------------------------------------------------------
                          Summary of Soil Properties
-----------------------------------------------------------------------------

                     Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                 Rock Mass                              In-situ     In-situ       Elastic
Layer                Soil Type          Depth       Unit Wt.    Cohesion     Friction       qu            or
Factor          J         kpy        Rock Emass      krm          Test         Test       Subgrade
 Num.       (p-y Curve Criteria)          ft           pcf          psf          deg.         psi          GSI        Epsilon
50    Factor          pci          psi                 Type      Property     Mod. pci     ----------   ----------   ----------
-----  ------  ---------------------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000      120.000     4500.000       --          --          --          --
0.00700       --           --          --          --          --          --          --
                                                   0.10000     120.000     4500.000       --          --          --          --
0.00700       --           --          --          --          --          --          --
  2     Stiff Clay w/o Free Water          0.10000     125.000     4500.000       --          --          --          --
0.00500       --           --          --          --          --          --          --
                                                   80.000      125.000     4500.000       --          --          --          --
0.00500       --           --          --          --          --          --          --


-----------------------------------------------------------------------------
                      p-y Modification Factors for Group Action
-----------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----     ----------      ----------      ----------
  1           0.000          0.4800          1.0000
  2          50.000          0.4800          1.0000


-----------------------------------------------------------------------------
                                 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 = 3
```

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	169000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	169000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	169000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness psi*lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	44114.	-0.003950	373.5720	2.936E+10	-693.0262	8316.3150	0.000
6.000	0.2263	256215.	39761.	-0.003924	751.1447	2.936E+10	-757.8340	20093.	0.000
12.000	0.2029	485094.	35208.	-0.003848	1088.4349	2.936E+10	-760.1220	22476.	0.000
18.000	0.1801	686509.	30648.	-0.003728	1385.2511	2.936E+10	-759.8254	25310.	0.000
24.000	0.1582	860428.	26098.	-0.003570	1641.5477	2.936E+10	-756.8460	28708.	0.000
30.000	0.1373	1006922.	21574.	-0.003379	1857.4295	2.936E+10	-751.0769	32825.	0.000
36.000	0.1176	1126169.	17094.	-0.003161	2033.1580	2.936E+10	-742.3997	37868.	0.000
42.000	0.0994	1218455.	12674.	-0.002922	2169.1570	2.936E+10	-730.6810	44127.	0.000
48.000	0.0826	1284185.	8334.9436	-0.002666	2266.0200	2.936E+10	-715.7657	52012.	0.000
54.000	0.0674	1323881.	4095.2392	-0.002399	2324.5182	2.936E+10	-697.4691	62125.	0.000
60.000	0.0538	1338194.	-23.8520	-0.002127	2345.6103	2.936E+10	-675.5613	75373.	0.000
66.000	0.0418	1327909.	-3999.7653	-0.001855	2330.4539	2.936E+10	-649.7431	93188.	0.000
72.000	0.0315	1293958.	-7807.7965	-0.001587	2280.4221	2.936E+10	-619.6006	117945.	0.000
78.000	0.0228	1237433.	-11420.	-0.001328	2197.1242	2.936E+10	-584.5173	153875.	0.000
84.000	0.0156	1159610.	-14804.	-0.001083	2082.4388	2.936E+10	-543.4829	209277.	0.000
90.000	0.009794	1061980.	-17918.	-0.000856	1938.5666	2.936E+10	-494.6145	303023.	0.000
96.000	0.005308	946325.	-20703.	-0.000651	1768.1299	2.936E+10	-433.6489	490201.	0.000
102.000	0.001983	814862.	-23044.	-0.000471	1574.3983	2.936E+10	-346.5606	1048838.	0.000
108.000	-0.000343	670753.	-23552.	-0.000319	1362.0323	2.936E+10	177.1743	3095423.	0.000
114.000	-0.001847	532884.	-21961.	-0.000196	1158.8609	2.936E+10	353.0893	1147129.	0.000
120.000	-0.002697	407616.	-19714.	-9.999E-05	974.2586	2.936E+10	396.0739	881239.	0.000
126.000	-0.003047	296522.	-17277.	-2.803E-05	810.5442	2.936E+10	416.3378	819907.	0.000
132.000	-0.003033	200355.	-14756.	2.275E-05	668.8242	2.936E+10	423.7966	838345.	0.000
138.000	-0.002774	119403.	-12218.	5.542E-05	549.5311	2.936E+10	422.1492	913162.	0.000
144.000	-0.002368	53624.	-9712.2887	7.311E-05	452.5947	2.936E+10	413.1762	1046897.	0.000
150.000	-0.001896	2707.2696	-7279.2568	7.886E-05	377.5616	2.936E+10	397.8345	1258648.	0.000
156.000	-0.001422	-33887.	-4955.8395	7.568E-05	323.5106	2.936E+10	376.6380	1589586.	0.000
162.000	-0.000988	-56916.	-2776.5773	6.640E-05	457.4471	2.936E+10	349.7828	2123406.	0.000
168.000	-0.000625	-67341.	-775.9697	5.370E-05	472.8097	2.936E+10	317.0864	3044613.	0.000
174.000	-0.000344	-66337.	825.9152	4.004E-05	471.3297	2.936E+10	216.8752	3782922.	0.000
180.000	-0.000144	-57511.	1754.2423	2.738E-05	458.3239	2.936E+10	92.5672	3845422.	0.000
186.000	-1.541E-05	-45341.	2062.0600	1.687E-05	440.3897	2.936E+10	10.0387	3907922.	0.000
192.000	5.800E-05	-32801.	1977.0290	8.884E-06	421.9091	2.936E+10	-38.3823	3970422.	0.000
198.000	9.119E-05	-21635.	1677.9957	3.321E-06	405.4747	2.936E+10	-61.2954	4032922.	0.000
204.000	9.785E-05	-12672.	1295.9617	-1.853E-07	392.2456	2.936E+10	-66.0492	4050000.	0.000
210.000	8.897E-05	-6083.1867	917.6515	-2.102E-06	382.5365	2.936E+10	-60.0542	4050000.	0.000
216.000	7.263E-05	-1655.4905	590.4185	-2.893E-06	376.0116	2.936E+10	-49.0235	4050000.	0.000
222.000	5.426E-05	1007.7017	333.4804	-2.959E-06	375.0570	2.936E+10	-36.6225	4050000.	0.000
228.000	3.712E-05	2352.2746	148.4459	-2.616E-06	377.0385	2.936E+10	-25.0557	4050000.	0.000
234.000	2.287E-05	2794.3565	26.9710	-2.090E-06	377.6899	2.936E+10	-15.4360	4050000.	0.000
240.000	1.204E-05	2680.1643	-43.7251	-1.530E-06	377.5217	2.936E+10	-8.1294	4050000.	0.000
246.000	4.506E-06	2272.7582	-77.2376	-1.024E-06	376.9213	2.936E+10	-3.0414	4050000.	0.000
252.000	-2.447E-07	1755.3897	-85.8663	-6.124E-07	376.1589	2.936E+10	0.1652	4050000.	0.000
258.000	-2.843E-06	1243.6046	-79.6145	-3.059E-07	375.4047	2.936E+10	1.9187	4050000.	0.000
264.000	-3.915E-06	800.6365	-65.9297	-9.697E-08	374.7519	2.936E+10	2.6429	4050000.	0.000
270.000	-4.006E-06	452.6453	-49.8885	3.111E-08	374.2391	2.936E+10	2.7042	4050000.	0.000
276.000	-3.542E-06	201.9120	-34.6032	9.800E-08	373.8696	2.936E+10	2.3909	4050000.	0.000
282.000	-2.830E-06	37.2085	-21.0993	1.224E-07	373.6269	2.936E+10	1.9104	4050000.	0.000
288.000	-2.073E-06	-58.7280	-11.7707	1.202E-07	373.6586	2.936E+10	1.3991	4050000.	0.000
294.000	-1.387E-06	-104.2834	-4.7638	1.036E-07	373.7257	2.936E+10	0.9365	4050000.	0.000
300.000	-8.298E-07	-116.1041	-0.2740	8.106E-08	373.7431	2.936E+10	0.5601	4050000.	0.000
306.000	-4.147E-07	-107.7355	2.2462	5.818E-08	373.7308	2.936E+10	0.2799	4050000.	0.000
312.000	-1.317E-07	-89.2677	3.3526	3.805E-08	373.7036	2.936E+10	0.0889	4050000.	0.000
318.000	4.189E-08	-67.5821	3.5343	2.202E-08	373.6716	2.936E+10	-0.0283	4050000.	0.000
324.000	1.326E-07	-46.9004	3.1810	1.032E-08	373.6411	2.936E+10	-0.0895	4050000.	0.000
330.000	1.657E-07	-29.4305	2.5770	2.519E-09	373.6154	2.936E+10	-0.1119	4050000.	0.000
336.000	1.628E-07	-15.9819	1.9117	-2.122E-09	373.5956	2.936E+10	-0.1099	4050000.	0.000
342.000	1.403E-07	-6.4860	1.2980	-4.418E-09	373.5816	2.936E+10	-0.0947	4050000.	0.000
348.000	1.098E-07	-0.3974	0.7916	-5.121E-09	373.5726	2.936E+10	-0.0741	4050000.	0.000
354.000	7.882E-08	3.0235	0.4097	-4.853E-09	373.5765	2.936E+10	-0.0532	4050000.	0.000
360.000	5.155E-08	4.5286	0.1457	-4.081E-09	373.5787	2.936E+10	-0.0348	4050000.	0.000
366.000	2.984E-08	4.7800	-0.0191	-3.130E-09	373.5791	2.936E+10	-0.0201	4050000.	0.000
372.000	1.399E-08	4.3052	-0.1079	-2.201E-09	373.5784	2.936E+10	-0.009445	4050000.	0.000
378.000	3.424E-09	3.4896	-0.1432	-1.405E-09	373.5772	2.936E+10	-0.002312	4050000.	0.000
384.000	-2.865E-09	2.5900	-0.1443	-7.835E-10	373.5758	2.936E+10	0.001934	4050000.	0.000

390.000	-5.978E-09	1.7595	-0.1264	-3.390E-10	373.5746	2.936E+10	0.004035	4050000.	0.000
396.000	-6.933E-09	1.0738	-0.1003	-4.946E-11	373.5736	2.936E+10	0.004680	4050000.	0.000
402.000	-6.571E-09	0.5565	-0.0729	1.171E-10	373.5728	2.936E+10	0.004436	4050000.	0.000
408.000	-5.527E-09	0.1986	-0.0484	1.943E-10	373.5723	2.936E+10	0.003731	4050000.	0.000
414.000	-4.239E-09	-0.0249	-0.0286	2.121E-10	373.5721	2.936E+10	0.002862	4050000.	0.000
420.000	-2.982E-09	-0.1454	-0.0140	1.947E-10	373.5722	2.936E+10	0.002013	4050000.	0.000
426.000	-1.903E-09	-0.1935	-0.004120	1.600E-10	373.5723	2.936E+10	0.001285	4050000.	0.000
432.000	-1.062E-09	-0.1952	0.001885	1.203E-10	373.5723	2.936E+10	0.000717	4050000.	0.000
438.000	-4.598E-10	-0.1711	0.004966	8.287E-11	373.5723	2.936E+10	0.000310	4050000.	0.000
444.000	-6.748E-11	-0.1358	0.006034	5.151E-11	373.5722	2.936E+10	4.555E-05	4050000.	0.000
450.000	1.583E-10	-0.0988	0.005850	2.754E-11	373.5722	2.936E+10	-0.000107	4050000.	0.000
456.000	2.630E-10	-0.0656	0.004997	1.073E-11	373.5721	2.936E+10	-0.000177	4050000.	0.000
462.000	2.871E-10	-0.0389	0.003883	0.000	373.5721	2.936E+10	-0.000194	4050000.	0.000
468.000	2.636E-10	-0.0190	0.002768	-5.864E-12	373.5720	2.936E+10	-0.000178	4050000.	0.000
474.000	2.167E-10	-0.005633	0.001795	-8.386E-12	373.5720	2.936E+10	-0.000146	4050000.	0.000
480.000	1.630E-10	0.002514	0.001026	-8.705E-12	373.5720	2.936E+10	-0.000110	4050000.	0.000
486.000	1.123E-10	0.006699	0.000469	-7.763E-12	373.5720	2.936E+10	-7.578E-05	4050000.	0.000
492.000	6.980E-11	0.008156	0.000100	-6.245E-12	373.5720	2.936E+10	-4.711E-05	4050000.	0.000
498.000	3.733E-11	0.007914	-0.000117	-4.603E-12	373.5720	2.936E+10	-2.520E-05	4050000.	0.000
504.000	1.456E-11	0.006764	-0.000222	-3.103E-12	373.5720	2.936E+10	-9.829E-06	4050000.	0.000
510.000	0.000	0.005258	-0.000252	-1.875E-12	373.5720	2.936E+10	-6.017E-08	4050000.	0.000
516.000	-7.934E-12	0.003749	-0.000236	0.000	373.5720	2.936E+10	5.356E-06	4050000.	0.000
522.000	-1.136E-11	0.002432	-0.000197	0.000	373.5720	2.936E+10	7.668E-06	4050000.	0.000
528.000	-1.180E-11	0.001391	-0.000150	0.000	373.5720	2.936E+10	7.967E-06	4050000.	0.000
534.000	-1.054E-11	0.000637	-0.000104	0.000	373.5720	2.936E+10	7.114E-06	4050000.	0.000
540.000	-8.496E-12	0.000138	-6.586E-05	0.000	373.5720	2.936E+10	5.735E-06	4050000.	0.000
546.000	-6.283E-12	-0.000154	-3.593E-05	0.000	373.5720	2.936E+10	4.241E-06	4050000.	0.000
552.000	-4.259E-12	-0.000294	-1.458E-05	0.000	373.5720	2.936E+10	2.875E-06	4050000.	0.000
558.000	-2.596E-12	-0.000330	-7.015E-07	0.000	373.5720	2.936E+10	1.753E-06	4050000.	0.000
564.000	-1.338E-12	-0.000303	7.266E-06	0.000	373.5720	2.936E+10	9.033E-07	4050000.	0.000
570.000	0.000	-0.000243	1.089E-05	0.000	373.5720	2.936E+10	3.049E-07	4050000.	0.000
576.000	0.000	-0.000173	1.153E-05	0.000	373.5720	2.936E+10	-9.206E-08	4050000.	0.000
582.000	0.000	-0.000105	1.021E-05	0.000	373.5720	2.936E+10	-3.462E-07	4050000.	0.000
588.000	0.000	-5.008E-05	7.636E-06	0.000	373.5720	2.936E+10	-5.134E-07	4050000.	0.000
594.000	0.000	-1.354E-05	4.178E-06	0.000	373.5720	2.936E+10	-6.391E-07	4050000.	0.000
600.000	1.116E-12	0.000	0.000	0.000	373.5720	2.936E+10	-7.536E-07	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0039498 radians
Maximum bending moment = 1338194. inch-lbs
Maximum shear force = 44114. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 16
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness psi*lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	60407.	-0.006992	373.5720	2.936E+10	-824.1517	4944.9105	0.000
6.000	0.4580	354696.	55223.	-0.006956	896.2721	2.936E+10	-903.9180	11841.	0.000
12.000	0.4165	676777.	49781.	-0.006851	1370.9094	2.936E+10	-909.8366	13106.	0.000
18.000	0.3758	965964.	44312.	-0.006683	1797.0717	2.936E+10	-913.2025	14579.	0.000
24.000	0.3363	1222076.	38831.	-0.006459	2174.4922	2.936E+10	-913.9227	16304.	0.000
30.000	0.2983	1445033.	33353.	-0.006187	2503.0542	2.936E+10	-911.8978	18340.	0.000
36.000	0.2621	1634498.	27897.	-0.005872	2782.7973	2.936E+10	-907.0211	20764.	0.000
42.000	0.2279	1791699.	22478.	-0.005522	3013.9220	2.936E+10	-899.1758	23676.	0.000
48.000	0.1958	1915795.	17116.	-0.005143	3196.7968	2.936E+10	-888.2321	27214.	0.000
54.000	0.1662	2007518.	11829.	-0.004742	3331.9643	2.936E+10	-874.0423	31563.	0.000
60.000	0.1389	2067359.	6637.4878	-0.004325	3420.1493	2.936E+10	-856.4343	36986.	0.000
66.000	0.1142	2095939.	1562.5825	-0.003900	3462.2676	2.936E+10	-835.2008	43862.	0.000
72.000	0.0921	2094019.	-3373.2698	-0.003472	3459.4370	2.936E+10	-810.0833	52754.	0.000
78.000	0.0726	2062501.	-8145.7500	-0.003047	3412.9905	2.936E+10	-780.7435	64534.	0.000
84.000	0.0556	2002449.	-12728.	-0.002632	3324.4945	2.936E+10	-746.7145	80621.	0.000
90.000	0.0410	1915100.	-17090.	-0.002231	3195.7724	2.936E+10	-707.3069	103481.	0.000
96.000	0.0288	1801891.	-21196.	-0.001851	3028.9416	2.936E+10	-661.4111	137804.	0.000
102.000	0.0188	1664498.	-25002.	-0.001497	2826.4715	2.936E+10	-607.0264	193783.	0.000
108.000	0.0108	1504908.	-28442.	-0.001173	2591.2893	2.936E+10	-539.8799	299012.	0.000
114.000	0.004717	1325569.	-31405.	-0.000884	2327.0060	2.936E+10	-447.5844	569314.	0.000
120.000	0.000227	1129843.	-33112.	-0.000633	2038.5727	2.936E+10	-121.5797	3220423.	0.000
126.000	-0.002878	929506.	-32246.	-0.000423	1743.3443	2.936E+10	410.4505	855556.	0.000
132.000	-0.004844	743752.	-29585.	-0.000252	1469.6072	2.936E+10	476.5875	590373.	0.000
138.000	-0.005897	575001.	-26625.	-0.000117	1220.9266	2.936E+10	510.0075	518951.	0.000
144.000	-0.006244	424492.	-23514.	-1.460E-05	999.1271	2.936E+10	526.8500	506225.	0.000
150.000	-0.006072	292861.	-20336.	5.871E-05	805.1483	2.936E+10	532.5563	526263.	0.000
156.000	-0.005540	180341.	-17149.	0.000107	639.3330	2.936E+10	529.6418	573631.	0.000
162.000	-0.004787	86851.	-14002.	0.000134	501.5610	2.936E+10	519.4453	651088.	0.000
168.000	-0.003927	12043.	-10936.	0.000144	391.3199	2.936E+10	502.7151	768024.	0.000
174.000	-0.003053	-44669.	-7987.9506	0.000141	439.3991	2.936E+10	479.8415	943010.	0.000
180.000	-0.002234	-84098.	-5195.6126	0.000128	497.5040	2.936E+10	450.9378	1211373.	0.000
186.000	-0.001517	-107276.	-2595.3706	0.000108	531.6602	2.936E+10	415.8095	1644453.	0.000
192.000	-0.000932	-115463.	-226.7547	8.567E-05	543.7243	2.936E+10	373.7291	2405191.	0.000
198.000	-0.000489	-110171.	1862.1567	6.261E-05	535.9261	2.936E+10	322.5746	3957368.	0.000
204.000	-0.000181	-93244.	3196.3048	4.182E-05	510.9812	2.936E+10	122.1414	4050000.	0.000
210.000	1.283E-05	-71900.	3536.7579	2.495E-05	479.5281	2.936E+10	-8.6570	4050000.	0.000
216.000	0.000118	-50853.	3270.9735	1.240E-05	448.5122	2.936E+10	-79.9378	4050000.	0.000
222.000	0.000162	-32674.	2703.7905	3.867E-06	421.7216	2.936E+10	-109.1232	4050000.	0.000
228.000	0.000165	-18416.	2042.6347	-1.354E-06	400.7102	2.936E+10	-111.2620	4050000.	0.000
234.000	0.000145	-8159.1814	1414.3782	-4.070E-06	385.5959	2.936E+10	-98.1568	4050000.	0.000
240.000	0.000116	-1434.7625	885.0152	-5.050E-06	375.6864	2.936E+10	-78.2975	4050000.	0.000
246.000	8.482E-05	2471.2424	478.3707	-4.944E-06	377.2138	2.936E+10	-57.2506	4050000.	0.000

252.000	5.667E-05	4315.7133	191.8710	-4.251E-06	379.9319	2.936E+10	-38.2493	4050000.	0.000
258.000	3.381E-05	4782.3143	8.6615	-3.321E-06	380.6195	2.936E+10	-22.8205	4050000.	0.000
264.000	1.682E-05	4426.3859	-93.8513	-2.380E-06	380.0950	2.936E+10	-11.3504	4050000.	0.000
270.000	5.251E-06	3660.9255	-138.5357	-1.553E-06	378.9670	2.936E+10	-3.5444	4050000.	0.000
276.000	-1.824E-06	2767.1081	-145.4753	-8.964E-07	377.6498	2.936E+10	1.2312	4050000.	0.000
282.000	-5.505E-06	1917.0394	-130.6333	-4.177E-07	376.3971	2.936E+10	3.7162	4050000.	0.000
288.000	-6.836E-06	1200.3555	-105.6419	-9.908E-08	375.3409	2.936E+10	4.6143	4050000.	0.000
294.000	-6.694E-06	649.5372	-78.2428	8.997E-08	374.5292	2.936E+10	4.5188	4050000.	0.000
300.000	-5.756E-06	261.2596	-53.0298	1.830E-07	373.9570	2.936E+10	3.8856	4050000.	0.000
306.000	-4.498E-06	12.8081	-32.2648	2.111E-07	373.5909	2.936E+10	3.0361	4050000.	0.000
312.000	-3.224E-06	-126.3465	-16.6284	1.994E-07	373.7582	2.936E+10	2.1760	4050000.	0.000
318.000	-2.105E-06	-187.1377	-5.8387	1.674E-07	373.8478	2.936E+10	1.4206	4050000.	0.000
324.000	-1.215E-06	-196.7501	0.8829	1.282E-07	373.8620	2.936E+10	0.8200	4050000.	0.000
330.000	-5.663E-07	-176.8023	4.4897	9.001E-08	373.8326	2.936E+10	0.3823	4050000.	0.000
336.000	-1.347E-07	-143.0558	5.9094	5.732E-08	373.7828	2.936E+10	0.0909	4050000.	0.000
342.000	1.215E-07	-106.0060	5.9362	3.187E-08	373.7282	2.936E+10	-0.0820	4050000.	0.000
348.000	2.477E-07	-71.8862	5.1887	1.369E-08	373.6780	2.936E+10	-0.1672	4050000.	0.000
354.000	2.857E-07	-43.7699	4.1086	1.866E-09	373.6365	2.936E+10	-0.1929	4050000.	0.000
360.000	2.701E-07	-22.5872	2.9831	-4.915E-09	373.6053	2.936E+10	-0.1823	4050000.	0.000
366.000	2.267E-07	-7.9625	1.9771	-8.037E-09	373.5838	2.936E+10	-0.1530	4050000.	0.000
372.000	1.736E-07	1.1544	1.1664	-8.733E-09	373.5737	2.936E+10	-0.1172	4050000.	0.000
378.000	1.219E-07	6.0520	0.5679	-7.996E-09	373.5809	2.936E+10	-0.0823	4050000.	0.000
384.000	7.766E-08	7.9854	0.1637	-6.562E-09	373.5838	2.936E+10	-0.0524	4050000.	0.000
390.000	4.319E-08	8.0300	0.0810	-4.925E-09	373.5839	2.936E+10	-0.0292	4050000.	0.000
396.000	1.856E-08	7.0234	-0.2060	-3.387E-09	373.5824	2.936E+10	-0.0125	4050000.	0.000
402.000	2.548E-09	5.5643	-0.2488	-2.100E-09	373.5802	2.936E+10	-0.001720	4050000.	0.000
408.000	-6.643E-09	4.0421	-0.2405	-1.119E-09	373.5780	2.936E+10	0.004484	4050000.	0.000
414.000	-1.088E-08	2.6805	-0.2050	-4.316E-10	373.5766	2.936E+10	0.007342	4050000.	0.000
420.000	-1.182E-08	1.5827	-0.1591	4.029E-12	373.5744	2.936E+10	0.007980	4050000.	0.000
426.000	-1.083E-08	0.7718	-0.1132	2.446E-10	373.5732	2.936E+10	0.007309	4050000.	0.000
432.000	-8.887E-09	0.2239	-0.0733	3.464E-10	373.5727	2.936E+10	0.005999	4050000.	0.000
438.000	-6.671E-09	-0.1081	-0.0418	3.582E-10	373.5722	2.936E+10	0.004503	4050000.	0.000
444.000	-4.588E-09	-0.2780	-0.0190	3.188E-10	373.5724	2.936E+10	0.003097	4050000.	0.000
450.000	-2.846E-09	-0.3363	-0.003907	2.560E-10	373.5725	2.936E+10	0.001921	4050000.	0.000
456.000	-1.516E-09	-0.3254	0.004927	1.884E-10	373.5725	2.936E+10	0.001032	4050000.	0.000
462.000	-5.856E-10	-0.2776	0.009184	1.268E-10	373.5724	2.936E+10	0.000395	4050000.	0.000
468.000	4.699E-12	-0.2154	0.0104	7.637E-11	373.5723	2.936E+10	-3.172E-06	4050000.	0.000
474.000	3.308E-10	-0.1534	0.009681	3.868E-11	373.5722	2.936E+10	-0.000223	4050000.	0.000
480.000	4.688E-10	-0.0994	0.008061	1.285E-11	373.5722	2.936E+10	-0.000316	4050000.	0.000
486.000	4.850E-10	-0.0567	0.006130	-3.096E-12	373.5721	2.936E+10	-0.000327	4050000.	0.000
492.000	4.317E-10	-0.0258	0.004273	-1.152E-11	373.5721	2.936E+10	-0.000291	4050000.	0.000
498.000	3.467E-10	-0.005378	0.002697	-1.471E-11	373.5720	2.936E+10	-0.000234	4050000.	0.000
504.000	2.552E-10	0.006607	0.001478	-1.458E-11	373.5720	2.936E+10	-0.000172	4050000.	0.000
510.000	1.717E-10	0.0124	0.000614	-1.264E-11	373.5720	2.936E+10	-0.000116	4050000.	0.000
516.000	1.035E-10	0.0140	5.613E-05	-9.946E-12	373.5720	2.936E+10	-6.985E-05	4050000.	0.000
522.000	5.238E-11	0.0131	-0.000259	-7.178E-12	373.5720	2.936E+10	-3.536E-05	4050000.	0.000
528.000	1.734E-11	0.0109	-0.000400	-4.727E-12	373.5720	2.936E+10	-1.170E-05	4050000.	0.000
534.000	-4.338E-12	0.008290	-0.000427	-2.766E-12	373.5720	2.936E+10	2.928E-06	4050000.	0.000
540.000	-1.585E-11	0.005784	-0.000386	-1.328E-12	373.5720	2.936E+10	1.070E-05	4050000.	0.000
546.000	-2.027E-11	0.003662	-0.000313	0.000	373.5720	2.936E+10	1.368E-05	4050000.	0.000
552.000	-2.020E-11	0.002031	-0.000231	0.000	373.5720	2.936E+10	1.363E-05	4050000.	0.000
558.000	-1.764E-11	0.000891	-0.000154	0.000	373.5720	2.936E+10	1.191E-05	4050000.	0.000
564.000	-1.398E-11	0.000180	-9.016E-05	0.000	373.5720	2.936E+10	9.439E-06	4050000.	0.000
570.000	-1.011E-11	-0.000192	-4.137E-05	0.000	373.5720	2.936E+10	6.823E-06	4050000.	0.000
576.000	-6.468E-12	-0.000318	-7.805E-06	0.000	373.5720	2.936E+10	4.366E-06	4050000.	0.000
582.000	-3.218E-12	-0.000287	1.181E-05	0.000	373.5720	2.936E+10	2.172E-06	4050000.	0.000
588.000	0.000	-0.000177	1.898E-05	0.000	373.5720	2.936E+10	2.160E-07	4050000.	0.000
594.000	2.361E-12	-5.993E-05	1.484E-05	0.000	373.5720	2.936E+10	-1.594E-06	4050000.	0.000
600.000	4.969E-12	0.000	0.000	0.000	373.5720	2.936E+10	-3.354E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0069923 radians
Maximum bending moment	=	2095939. inch-lbs
Maximum shear force	=	60407. lbs
Depth of maximum bending moment	=	66.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	15
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness psi*in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	82677.	-0.0124	373.5720	2.936E+10	-980.0871	2940.2614	0.000
6.000	0.9258	490962.	76504.	-0.0123	1097.0811	2.936E+10	-1077.7849	6984.9357	0.000
12.000	0.8522	943021.	70006.	-0.0122	1763.2619	2.936E+10	-1088.1543	7661.0972	0.000
18.000	0.7798	1355712.	63454.	-0.0119	2371.4264	2.936E+10	-1096.0009	8433.1045	0.000
24.000	0.7090	1728666.	56862.	-0.0116	2921.0321	2.936E+10	-1101.2376	9319.1773	0.000
30.000	0.6404	2061617.	50247.	-0.0112	3411.6872	2.936E+10	-1103.7732	10342.	0.000
36.000	0.5742	2354404.	43625.	-0.0108	3843.1561	2.936E+10	-1103.5122	11530.	0.000
42.000	0.5110	2606978.	37013.	-0.0103	4215.3625	2.936E+10	-1100.3531	12920.	0.000
48.000	0.4510	2819398.	30430.	-0.009718	4528.3972	2.936E+10	-1094.1868	14558.	0.000
54.000	0.3944	2991843.	23893.	-0.009124	4782.5223	2.936E+10	-1084.8942	16505.	0.000
60.000	0.3415	3124612.	17421.	-0.008499	4978.1783	2.936E+10	-1072.3436	18842.	0.000
66.000	0.2924	3218129.	11033.	-0.007851	5115.9904	2.936E+10	-1056.3859	21677.	0.000
72.000	0.2473	3272949.	4754.8996	-0.007188	5196.7766	2.936E+10	-1036.8486	25160.	0.000
78.000	0.2061	3289765.	-1396.2265	-0.006517	5221.5566	2.936E+10	-1013.5267	29500.	0.000
84.000	0.1691	3269411.	-7395.3104	-0.005847	5191.5626	2.936E+10	-986.1679	35000.	0.000
90.000	0.1360	3212878.	-13217.	-0.005184	5108.2522	2.936E+10	-954.4496	42114.	0.000
96.000	0.1068	3121319.	-18834.	-0.004537	4973.3255	2.936E+10	-917.9397	51548.	0.000
102.000	0.0815	2996067.	-24216.	-0.003912	4788.7472	2.936E+10	-876.0257	64464.	0.000
108.000	0.0599	2838658.	-29328.	-0.003316	4556.7793	2.936E+10	-827.7774	82912.	0.000

114.000	0.0418	2650860.	-34126.	-0.002755	4280.0294	2.936E+10	-771.6517	110895.	0.000
120.000	0.0268	2434733.	-38555.	-0.002235	3961.5325	2.936E+10	-704.7580	157494.	0.000
126.000	0.0149	2192730.	-42531.	-0.001762	3604.9035	2.936E+10	-620.5604	249336.	0.000
132.000	0.005706	1927932.	-45885.	-0.001341	3214.6829	2.936E+10	-497.5655	523169.	0.000
138.000	-0.001156	1644823.	-46365.	-0.000976	2797.4769	2.936E+10	337.6642	1752441.	0.000
144.000	-0.006001	1373529.	-43788.	-0.000667	2397.6822	2.936E+10	521.4996	521376.	0.000
150.000	-0.009162	1120724.	-40452.	-0.000412	2025.1344	2.936E+10	590.3650	386603.	0.000
156.000	-0.0109	888940.	-36796.	-0.000207	1683.5641	2.936E+10	628.2594	344287.	0.000
162.000	-0.0116	679589.	-32964.	-4.661E-05	1375.0525	2.936E+10	649.1529	334464.	0.000
168.000	-0.0115	493466.	-29042.	7.327E-05	1100.7720	2.936E+10	658.3144	343223.	0.000
174.000	-0.0108	330941.	-25092.	0.000158	861.2654	2.936E+10	658.3182	366887.	0.000
180.000	-0.009618	192046.	-21165.	0.000211	656.5826	2.936E+10	650.5931	405861.	0.000
186.000	-0.008234	76534.	-17305.	0.000238	486.3563	2.936E+10	635.9806	463406.	0.000
192.000	-0.006757	-16100.	-13552.	0.000245	397.2977	2.936E+10	614.9729	546075.	0.000
198.000	-0.005299	-86591.	-9944.0085	0.000234	501.1774	2.936E+10	587.8172	665536.	0.000
204.000	-0.003948	-135903.	-6535.3726	0.000211	573.8460	2.936E+10	548.3948	833455.	0.000
210.000	-0.002763	-165444.	-3385.5069	0.000181	617.3798	2.936E+10	501.5604	1089144.	0.000
216.000	-0.001781	-176895.	-532.6931	0.000146	634.2545	2.936E+10	449.3775	1513793.	0.000
222.000	-0.001016	-172132.	1986.9201	0.000110	627.2350	2.936E+10	390.4936	2305740.	0.000
228.000	-0.000462	-153275.	4094.4528	7.665E-05	599.4465	2.936E+10	312.0173	4050000.	0.000
234.000	-9.632E-05	-123154.	5225.5530	4.840E-05	555.0582	2.936E+10	65.0161	4050000.	0.000
240.000	0.000119	-90666.	5180.4792	2.655E-05	507.1831	2.936E+10	-80.0407	4050000.	0.000
246.000	0.000222	-61042.	4490.2208	1.105E-05	463.5266	2.936E+10	-150.0454	4050000.	0.000
252.000	0.000251	-36806.	3531.5216	1.047E-06	427.8116	2.936E+10	-169.5209	4050000.	0.000
258.000	0.000235	-18666.	2547.3719	-4.622E-06	401.0787	2.936E+10	-158.5290	4050000.	0.000
264.000	0.000196	-6228.2831	1675.5273	-7.166E-06	382.7504	2.936E+10	-132.0859	4050000.	0.000
270.000	0.000149	1455.2450	977.8078	-7.653E-06	375.7166	2.936E+10	-100.4872	4050000.	0.000
276.000	0.000104	5520.9311	466.0666	-6.960E-06	381.7080	2.936E+10	-70.0932	4050000.	0.000
282.000	6.558E-05	7062.1190	122.9794	-5.655E-06	383.9792	2.936E+10	-44.2692	4050000.	0.000
288.000	3.599E-05	7008.1513	-82.7018	-4.217E-06	383.8996	2.936E+10	-24.2912	4050000.	0.000
294.000	1.498E-05	6078.2485	-185.9184	-2.879E-06	382.5293	2.936E+10	-10.1144	4050000.	0.000
300.000	1.436E-06	4782.9691	-219.1685	-1.769E-06	380.6205	2.936E+10	-0.9690	4050000.	0.000
306.000	-6.248E-06	3451.8142	-209.4243	-9.278E-07	378.6588	2.936E+10	4.2171	4050000.	0.000
312.000	-9.698E-06	2271.7591	-177.1355	-3.428E-07	376.9198	2.936E+10	6.5458	4050000.	0.000
318.000	-1.030E-05	1326.8833	-136.5116	1.490E-08	375.5274	2.936E+10	6.9941	4050000.	0.000
324.000	-9.398E-06	633.5187	-96.5019	2.253E-07	374.5056	2.936E+10	6.3439	4050000.	0.000
330.000	-7.658E-06	168.4037	-61.9621	3.072E-07	373.8202	2.936E+10	5.1694	4050000.	0.000
336.000	-5.712E-06	-64.6496	-34.8872	3.133E-07	373.7351	2.936E+10	3.8554	4050000.	0.000
342.000	-3.901E-06	-250.8860	-15.4227	2.762E-07	373.9417	2.936E+10	2.6330	4050000.	0.000
348.000	-2.398E-06	-296.2818	-2.6686	2.203E-07	374.0086	2.936E+10	1.6183	4050000.	0.000
354.000	-1.258E-06	-283.3563	4.7330	1.610E-07	373.9896	2.936E+10	0.8489	4050000.	0.000
360.000	-4.652E-07	-239.8120	8.2218	1.078E-07	373.9254	2.936E+10	0.3140	4050000.	0.000
366.000	3.311E-08	-184.9134	9.0968	6.416E-08	373.8445	2.936E+10	-0.0223	4050000.	0.000
372.000	3.047E-07	-130.7811	8.4128	3.189E-08	373.7647	2.936E+10	-0.2056	4050000.	0.000
378.000	4.158E-07	-84.0248	6.9538	9.941E-09	373.6958	2.936E+10	-0.2807	4050000.	0.000
384.000	4.240E-07	-47.3558	5.2532	-3.485E-09	373.6418	2.936E+10	-0.2862	4050000.	0.000
390.000	3.740E-07	-20.9789	3.6374	-1.047E-08	373.6029	2.936E+10	-0.2525	4050000.	0.000
396.000	2.983E-07	-3.6860	2.2759	-1.299E-08	373.5775	2.936E+10	-0.2014	4050000.	0.000
402.000	2.181E-07	6.3585	1.2301	-1.272E-08	373.5614	2.936E+10	-0.1472	4050000.	0.000
408.000	1.457E-07	11.1012	0.4933	-1.093E-08	373.5884	2.936E+10	-0.0984	4050000.	0.000
414.000	8.694E-08	12.3004	0.0222	-8.541E-09	373.5901	2.936E+10	-0.0587	4050000.	0.000
420.000	4.324E-08	11.3844	-0.2415	-6.120E-09	373.5888	2.936E+10	-0.0292	4050000.	0.000
426.000	1.350E-08	9.4154	-0.3563	-3.993E-09	373.5859	2.936E+10	-0.009111	4050000.	0.000
432.000	-4.696E-09	7.1164	-0.3742	-2.305E-09	373.5825	2.936E+10	0.003170	4050000.	0.000
438.000	-1.416E-08	4.9301	-0.3360	-1.074E-09	373.5793	2.936E+10	0.009560	4050000.	0.000
444.000	-1.755E-08	3.0869	-0.2717	-2.546E-10	373.5766	2.936E+10	0.0119	4050000.	0.000
450.000	-1.722E-08	1.6703	-0.2012	2.315E-10	373.5745	2.936E+10	0.0116	4050000.	0.000
456.000	-1.480E-08	0.6717	-0.1364	4.708E-10	373.5730	2.936E+10	0.009993	4050000.	0.000
462.000	-1.157E-08	0.0328	-0.0830	5.428E-10	373.5721	2.936E+10	0.007808	4050000.	0.000
468.000	-8.291E-09	-0.3251	-0.0428	5.130E-10	373.5725	2.936E+10	0.005596	4050000.	0.000
474.000	-5.412E-09	-0.4814	-0.0150	4.306E-10	373.5727	2.936E+10	0.003653	4050000.	0.000
480.000	-3.124E-09	-0.5060	0.002275	3.297E-10	373.5728	2.936E+10	0.002109	4050000.	0.000
486.000	-1.456E-09	-0.4547	0.0115	2.315E-10	373.5727	2.936E+10	0.000983	4050000.	0.000
492.000	-3.462E-10	-0.3679	0.0152	1.474E-10	373.5726	2.936E+10	0.000234	4050000.	0.000
498.000	3.126E-10	-0.2726	0.0153	8.194E-11	373.5724	2.936E+10	-0.000211	4050000.	0.000
504.000	6.371E-10	-0.1849	0.0133	3.519E-11	373.5723	2.936E+10	-0.000430	4050000.	0.000
510.000	7.349E-10	-0.1126	0.0106	4.796E-12	373.5722	2.936E+10	-0.000496	4050000.	0.000
516.000	6.947E-10	-0.0581	0.007671	-1.264E-11	373.5721	2.936E+10	-0.000469	4050000.	0.000
522.000	5.832E-10	-0.0205	0.005083	-2.067E-11	373.5720	2.936E+10	-0.000394	4050000.	0.000
528.000	4.466E-10	0.002958	0.002998	-2.246E-11	373.5720	2.936E+10	-0.000301	4050000.	0.000
534.000	3.137E-10	0.0155	0.001458	-2.057E-11	373.5720	2.936E+10	-0.000212	4050000.	0.000
540.000	1.998E-10	0.0205	0.000419	-1.689E-11	373.5720	2.936E+10	-0.000135	4050000.	0.000
546.000	1.110E-10	0.0206	-0.000211	-1.269E-11	373.5720	2.936E+10	-7.493E-05	4050000.	0.000
552.000	4.753E-11	0.0180	-0.000532	-8.743E-12	373.5720	2.936E+10	-3.207E-05	4050000.	0.000
558.000	6.089E-12	0.0142	-0.000640	-5.449E-12	373.5720	2.936E+10	-4.110E-06	4050000.	0.000
564.000	-1.788E-11	0.0103	-0.000616	-2.939E-12	373.5720	2.936E+10	1.207E-05	4050000.	0.000
570.000	-2.918E-11	0.006846	-0.000521	-1.184E-12	373.5720	2.936E+10	1.970E-05	4050000.	0.000
576.000	-3.209E-11	0.004075	-0.000397	0.000	373.5720	2.936E+10	2.166E-05	4050000.	0.000
582.000	-3.000E-11	0.002082	-0.000271	0.000	373.5720	2.936E+10	2.025E-05	4050000.	0.000
588.000	-2.536E-11	0.000818	-0.000159	0.000	373.5720	2.936E+10	1.711E-05	4050000.	0.000
594.000	-1.971E-11	0.000169	-6.797E-05	0.000	373.5720	2.936E+10	1.330E-05	4050000.	0.000
600.000	-1.386E-11	0.000	0.000	0.000	373.5720	2.936E+10	9.353E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0123653 radians
Maximum bending moment	=	3289765. inch-lbs
Maximum shear force	=	82677. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	22
Number of zero deflection points	=	7

Summary of Pile Response(s)

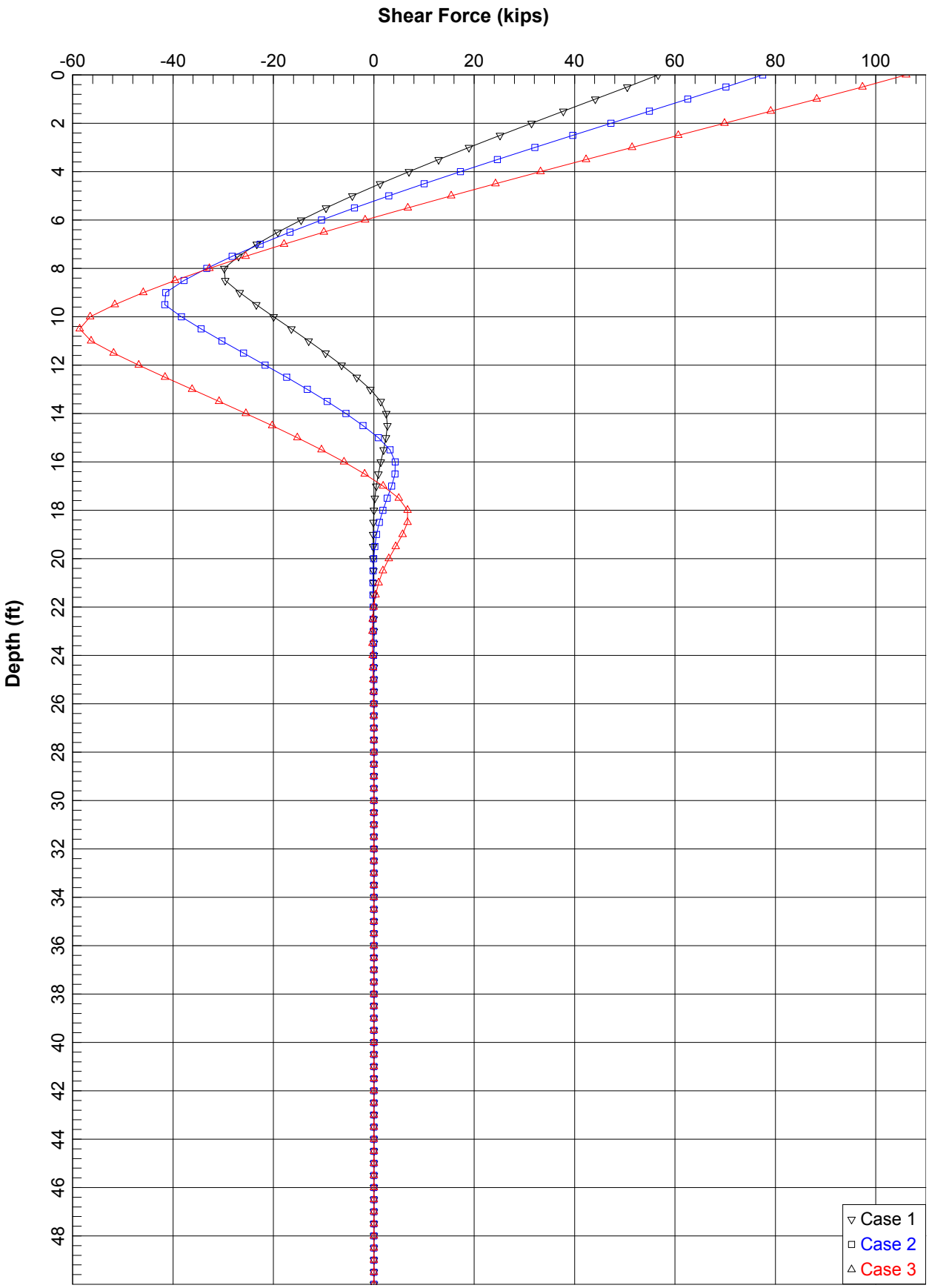
Definitions of Pile-head Loading Conditions:

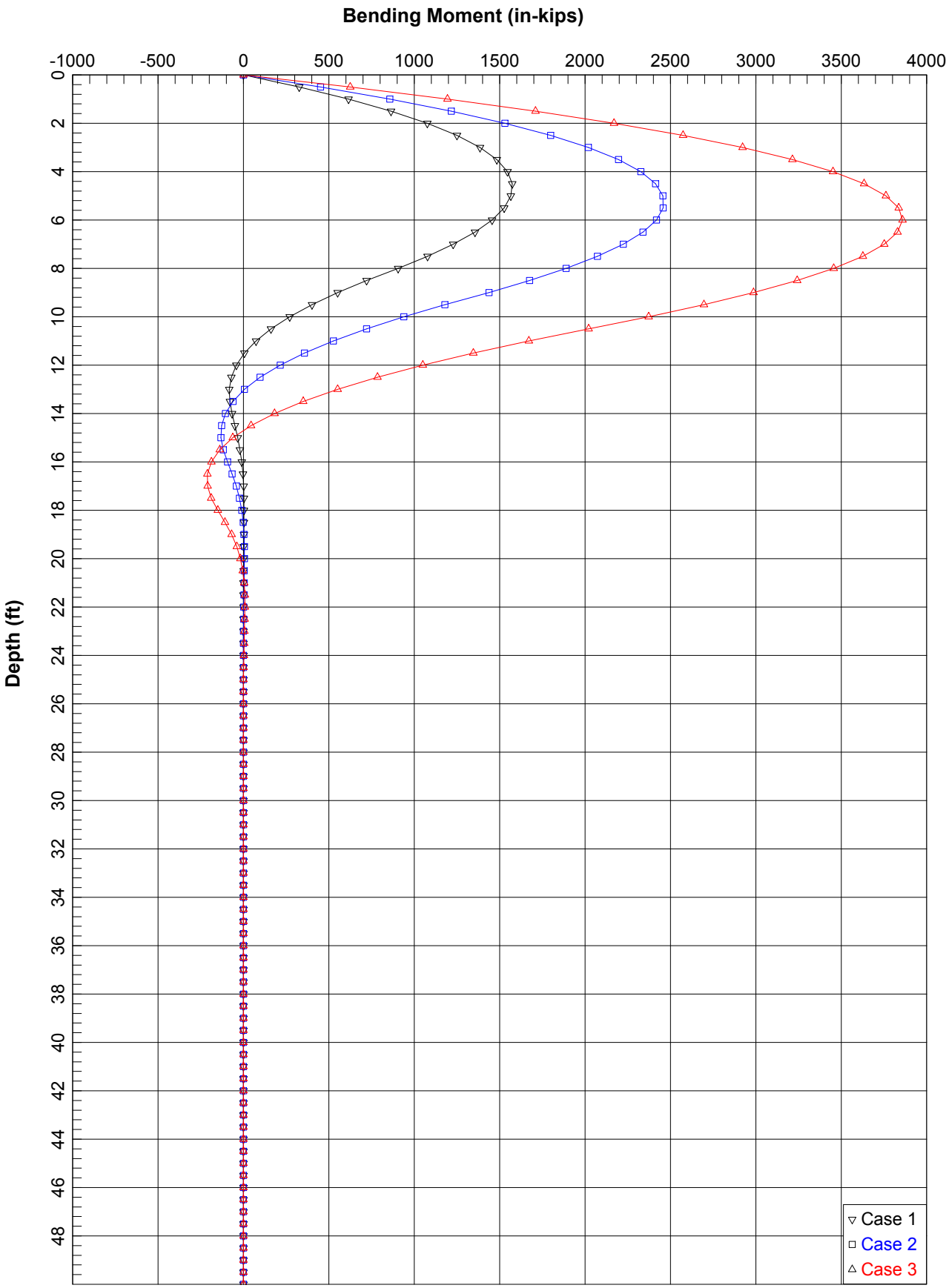
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	169000.	0.25000000	1338194.	44114.	-0.00394981
2	4	y = 0.5000	M = 0.000	169000.	0.50000000	2095939.	60407.	-0.00699229
3	4	y = 1.0000	M = 0.000	169000.	1.00000000	3289765.	82677.	-0.01236533

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4R_long_Max P.lp6d
Name of output report file:    Bent 4R_long_Max P.lp6o
Name of plot output file:      Bent 4R_long_Max P.lp6p
Name of runtime messeage file: Bent 4R_long_Max P.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:07:02

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                  Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                        Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                        =          1

Total Pile Length                               =      50.00 ft

Depth of ground surface below top of pile       =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth             Pile
 No.             X              Diameter
                 ft               in
-----       ----------        ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                 =    Elastic Pile
```



```
   Cross-sectional Shape                        =         Circular
   Section Length                               =      50.00000000 ft
   Top Width                                    =      24.00000000 in
   Bottom Width                                 =      24.00000000 in
   Top Area                                     =     452.38934212 in
   Bottom Area                                  =     452.38934212 in
   Moment of Inertia at Top                     =    8143.00815810 in
   Moment of Inertia at Bottom                  =    8143.00815810 in
   Elastic Modulus                              =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                              =         0.000 degrees
                                                =         0.000 radians

Pile Batter Angle                               =         0.000 degrees
                                                =         0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer    =      -5.00000 ft
   Distance from top of pile to bottom of layer =       0.10000 ft
   Effective unit weight at top of layer        =     120.00000 pcf
   Effective unit weight at bottom of layer     =     120.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00700
   Epsilon-50 at bottom of layer                =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer    =       0.10000 ft
   Distance from top of pile to bottom of layer =      80.00000 ft
   Effective unit weight at top of layer        =     125.00000 pcf
   Effective unit weight at bottom of layer     =     125.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00500
   Epsilon-50 at bottom of layer                =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                              Rock Mass                                  In-situ     In-situ       Elastic
Layer                Soil Type        Depth        Unit Wt.     Cohesion     Friction        qu            or
Factor          J        kpy      Rock Emass      krm             Test         Test       Subgrade
 Num.       (p-y Curve Criteria)        ft           pcf          psf          deg.          psi          GSI        Epsilon
50    Factor          pci          psi                Type       Property     Mod. pci
-----  ---  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water                  -5.000      120.000     4500.000       --          --          --
0.00700       --          --          --          --          --          --          --
                                                  0.10000     120.000     4500.000       --          --          --
0.00700       --          --          --          --          --          --          --
  2     Stiff Clay w/o Free Water                  0.10000     125.000     4500.000       --          --          --
0.00500       --          --          --          --          --          --          --
                                                  80.000      125.000     4500.000       --          --          --
0.00500       --          --          --          --          --          --          --


--------------------------------------------------------------------------------
                      p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----     ----------      ----------      ----------
  1           0.000          0.6750          1.0000
  2          50.000          0.6750          1.0000


--------------------------------------------------------------------------------
                                  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 = 3
```

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	169000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	169000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	169000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	56626.	-0.004288	373.5720	2.936E+10	-974.5682	11695.	0.000
6.000	0.2243	326563.	50513.	-0.004254	854.8139	2.936E+10	-1063.3113	28447.	0.000
12.000	0.1989	614779.	44132.	-0.004158	1279.5456	2.936E+10	-1063.6613	32078.	0.000
18.000	0.1744	864576.	37761.	-0.004007	1647.6606	2.936E+10	-1059.8807	36468.	0.000
24.000	0.1509	1076038.	31426.	-0.003808	1959.2831	2.936E+10	-1051.8045	41830.	0.000
30.000	0.1287	1249412.	25153.	-0.003571	2214.7770	2.936E+10	-1039.2488	48459.	0.000
36.000	0.1080	1385114.	18969.	-0.003302	2414.7555	2.936E+10	-1022.0036	56768.	0.000
42.000	0.0891	1483737.	12904.	-0.003008	2560.0919	2.936E+10	-999.8231	67360.	0.000
48.000	0.0719	1546059.	6986.3475	-0.002699	2651.9329	2.936E+10	-972.4099	81128.	0.000
54.000	0.0567	1573054.	1251.5520	-0.002380	2691.7138	2.936E+10	-939.3886	99455.	0.000
60.000	0.0434	1565905.	-4267.3929	-0.002059	2681.1781	2.936E+10	-900.2597	124584.	0.000
66.000	0.0320	1526021.	-9531.1120	-0.001743	2622.4039	2.936E+10	-854.3133	160376.	0.000
72.000	0.0224	1455067.	-14495.	-0.001439	2517.8409	2.936E+10	-800.4510	214046.	0.000
78.000	0.0147	1354994.	-19107.	-0.001151	2370.3682	2.936E+10	-736.7729	300758.	0.000
84.000	0.008621	1228117.	-23296.	-0.000887	2183.3947	2.936E+10	-659.4326	458969.	0.000
90.000	0.004049	1077245.	-26949.	-0.000652	1961.0621	2.936E+10	-558.3261	827357.	0.000
96.000	0.000798	906051.	-29771.	-0.000449	1708.7804	2.936E+10	-382.2321	2872382.	0.000
102.000	-0.001341	720909.	-29599.	-0.000283	1435.9439	2.936E+10	439.3404	1965735.	0.000
108.000	-0.002596	551433.	-26691.	-0.000153	1186.1950	2.936E+10	530.0255	1224861.	0.000
114.000	-0.003175	400924.	-23394.	-5.554E-05	964.3964	2.936E+10	568.9174	1074973.	0.000
120.000	-0.003263	270813.	-19935.	1.310E-05	772.6573	2.936E+10	584.2358	1074338.	0.000
126.000	-0.003018	161678.	-16430.	5.730E-05	611.8302	2.936E+10	584.1172	1161200.	0.000
132.000	-0.002575	73538.	-12961.	8.134E-05	481.9421	2.936E+10	572.0797	1332889.	0.000
138.000	-0.002042	5977.8533	-9595.3290	8.947E-05	382.3813	2.936E+10	549.9048	1615723.	0.000
144.000	-0.001502	-41787.	-6390.0789	8.581E-05	435.1520	2.936E+10	518.5119	2071832.	0.000
150.000	-0.001012	-70877.	-3399.8365	7.429E-05	478.0206	2.936E+10	478.2356	2834332.	0.000
156.000	-0.000610	-82736.	-678.9868	5.860E-05	495.4903	2.936E+10	428.7143	4216373.	0.000
162.000	-0.000309	-79144.	1402.4799	4.205E-05	490.2028	2.936E+10	265.1079	5143953.	0.000
168.000	-0.000105	-65991.	2473.6270	2.722E-05	470.8207	2.936E+10	91.9411	5231844.	0.000
174.000	1.742E-05	-49515.	2703.1203	1.542E-05	446.5408	2.936E+10	-15.4433	5319734.	0.000
180.000	7.955E-05	-33585.	2441.6927	6.924E-06	423.0651	2.936E+10	-71.6992	5407625.	0.000
186.000	0.000101	-20229.	1950.4405	1.424E-06	403.3829	2.936E+10	-92.0515	5495515.	0.000
192.000	9.664E-05	-10183.	1404.4900	-1.684E-06	388.5780	2.936E+10	-89.9320	5583406.	0.000
198.000	8.029E-05	-3371.9005	907.0062	-3.069E-06	378.5410	2.936E+10	-75.8959	5671297.	0.000
204.000	5.981E-05	707.4715	508.9934	-3.341E-06	374.6146	2.936E+10	-56.7750	5695312.	0.000
210.000	4.020E-05	2742.7967	224.1996	-2.989E-06	377.6140	2.936E+10	-38.1562	5695312.	0.000
216.000	2.395E-05	3403.9285	41.5400	-2.361E-06	378.5882	2.936E+10	-22.7303	5695312.	0.000
222.000	1.187E-05	3246.0645	-60.4511	-1.681E-06	378.3556	2.936E+10	-11.2667	5695312.	0.000
228.000	3.773E-06	2681.9249	-104.9968	-1.075E-06	377.5243	2.936E+10	-3.5818	5695312.	0.000
234.000	-1.034E-06	1988.2834	-112.7989	-5.980E-07	376.5021	2.936E+10	0.9811	5695312.	0.000
240.000	-3.402E-06	1329.5503	-100.1668	-2.589E-07	375.5313	2.936E+10	3.2296	5695312.	0.000
246.000	-4.141E-06	786.8068	-78.6870	-4.264E-08	374.7315	2.936E+10	3.9304	5695312.	0.000
252.000	-3.914E-06	385.3931	-55.7502	7.716E-08	374.1400	2.936E+10	3.7152	5695312.	0.000
258.000	-3.215E-06	117.6480	-35.4500	1.286E-07	373.7454	2.936E+10	3.0515	5695312.	0.000
264.000	-2.371E-06	-40.2680	-19.5432	1.365E-07	373.6314	2.936E+10	2.2508	5695312.	0.000
270.000	-1.577E-06	-117.1471	-8.2999	1.204E-07	373.7447	2.936E+10	1.4970	5695312.	0.000
276.000	-9.266E-07	-140.1113	-1.1705	9.410E-08	373.7785	2.936E+10	0.8795	5695312.	0.000
282.000	-4.479E-07	-131.3840	2.7415	6.635E-08	373.7656	2.936E+10	0.4252	5695312.	0.000
288.000	-1.304E-07	-107.3241	4.3901	4.196E-08	373.7302	2.936E+10	0.1237	5695312.	0.000
294.000	5.557E-08	-78.7874	4.6031	2.294E-08	373.6881	2.936E+10	-0.0527	5695312.	0.000
300.000	1.449E-07	-52.1334	4.0323	9.556E-09	373.6488	2.936E+10	-0.1375	5695312.	0.000
306.000	1.702E-07	-30.4193	3.1349	1.120E-09	373.6168	2.936E+10	-0.1616	5695312.	0.000
312.000	1.583E-07	-14.5166	2.1993	-3.472E-09	373.5934	2.936E+10	-0.1503	5695312.	0.000
318.000	1.286E-07	-4.0208	1.3823	-5.367E-09	373.5779	2.936E+10	-0.1221	5695312.	0.000
324.000	9.391E-08	2.0819	0.7487	-5.565E-09	373.5751	2.936E+10	-0.0891	5695312.	0.000
330.000	6.180E-08	4.9750	0.3053	-4.844E-09	373.5794	2.936E+10	-0.0587	5695312.	0.000
336.000	3.579E-08	5.7552	0.0274	-3.747E-09	373.5805	2.936E+10	-0.0340	5695312.	0.000
342.000	1.684E-08	5.3111	-0.1225	-2.616E-09	373.5798	2.936E+10	-0.0160	5695312.	0.000
348.000	4.396E-09	4.2907	-0.1830	-1.635E-09	373.5783	2.936E+10	-0.004173	5695312.	0.000
354.000	-2.783E-09	3.1190	-0.1875	-8.777E-10	373.5766	2.936E+10	0.002641	5695312.	0.000
360.000	-6.136E-09	2.0419	-0.1621	-3.503E-10	373.5750	2.936E+10	0.005825	5695312.	0.000
366.000	-6.986E-09	1.1740	-0.1248	-2.163E-11	373.5737	2.936E+10	0.006631	5695312.	0.000
372.000	-6.396E-09	0.5446	-0.0867	1.540E-10	373.5728	2.936E+10	0.006071	5695312.	0.000
378.000	-5.138E-09	0.1336	-0.0538	2.233E-10	373.5722	2.936E+10	0.004877	5695312.	0.000
384.000	-3.716E-09	-0.1018	-0.0286	2.266E-10	373.5722	2.936E+10	0.003527	5695312.	0.000

390.000	-2.419E-09	-0.2102	-0.0111	1.947E-10	373.5723	2.936E+10	0.002296	5695312.	0.000
396.000	-1.380E-09	-0.2359	-0.000326	1.491E-10	373.5724	2.936E+10	0.001310	5695312.	0.000
402.000	-6.302E-10	-0.2144	0.005398	1.031E-10	373.5723	2.936E+10	0.000598	5695312.	0.000
408.000	-1.434E-10	-0.1714	0.007601	6.362E-11	373.5723	2.936E+10	0.000136	5695312.	0.000
414.000	1.333E-10	-0.1234	0.007630	3.350E-11	373.5722	2.936E+10	-0.000127	5695312.	0.000
420.000	2.587E-10	-0.0799	0.006513	1.273E-11	373.5721	2.936E+10	-0.000246	5695312.	0.000
426.000	2.861E-10	-0.0452	0.004962	0.000	373.5721	2.936E+10	-0.000272	5695312.	0.000
432.000	2.581E-10	-0.0203	0.003412	-6.751E-12	373.5720	2.936E+10	-0.000245	5695312.	0.000
438.000	2.051E-10	-0.004264	0.002093	-9.265E-12	373.5720	2.936E+10	-0.000195	5695312.	0.000
444.000	1.469E-10	0.004801	0.001091	-9.210E-12	373.5720	2.936E+10	-0.000139	5695312.	0.000
450.000	9.458E-11	0.008844	0.000403	-7.816E-12	373.5720	2.936E+10	-8.978E-05	5695312.	0.000
456.000	5.311E-11	0.009655	-1.736E-05	-5.926E-12	373.5720	2.936E+10	-5.041E-05	5695312.	0.000
462.000	2.347E-11	0.008648	-0.000235	-4.055E-12	373.5720	2.936E+10	-2.228E-05	5695312.	0.000
468.000	4.445E-12	0.006838	-0.000315	-2.472E-12	373.5720	2.936E+10	-4.220E-06	5695312.	0.000
474.000	-6.196E-12	0.004874	-0.000310	-1.276E-12	373.5720	2.936E+10	5.882E-06	5695312.	0.000
480.000	-1.086E-11	0.003121	-0.000261	0.000	373.5720	2.936E+10	1.031E-05	5695312.	0.000
486.000	-1.170E-11	0.001739	-0.000197	0.000	373.5720	2.936E+10	1.110E-05	5695312.	0.000
492.000	-1.040E-11	0.000756	-0.000134	0.000	373.5720	2.936E+10	9.874E-06	5695312.	0.000
498.000	-8.180E-12	0.000128	-8.128E-05	0.000	373.5720	2.936E+10	7.765E-06	5695312.	0.000
504.000	-5.802E-12	-0.000221	-4.146E-05	0.000	373.5720	2.936E+10	5.507E-06	5695312.	0.000
510.000	-3.693E-12	-0.000371	-1.442E-05	0.000	373.5720	2.936E+10	3.506E-06	5695312.	0.000
516.000	-2.040E-12	-0.000394	1.902E-06	0.000	373.5720	2.936E+10	1.936E-06	5695312.	0.000
522.000	0.000	-0.000348	1.019E-05	0.000	373.5720	2.936E+10	8.251E-07	5695312.	0.000
528.000	0.000	-0.000272	1.302E-05	0.000	373.5720	2.936E+10	1.195E-07	5695312.	0.000
534.000	0.000	-0.000192	1.257E-05	0.000	373.5720	2.936E+10	-2.690E-07	5695312.	0.000
540.000	0.000	-0.000122	1.046E-05	0.000	373.5720	2.936E+10	-4.339E-07	5695312.	0.000
546.000	0.000	-6.664E-05	7.788E-06	0.000	373.5720	2.936E+10	-4.573E-07	5695312.	0.000
552.000	0.000	-2.813E-05	5.207E-06	0.000	373.5720	2.936E+10	-4.030E-07	5695312.	0.000
558.000	0.000	-4.127E-06	3.050E-06	0.000	373.5720	2.936E+10	-3.160E-07	5695312.	0.000
564.000	0.000	8.503E-06	1.430E-06	0.000	373.5720	2.936E+10	-2.242E-07	5695312.	0.000
570.000	0.000	1.306E-05	3.301E-07	0.000	373.5720	2.936E+10	-1.423E-07	5695312.	0.000
576.000	0.000	1.249E-05	-3.236E-07	0.000	373.5720	2.936E+10	-7.561E-08	5695312.	0.000
582.000	0.000	9.198E-06	-6.208E-07	0.000	373.5720	2.936E+10	-2.346E-08	5695312.	0.000
588.000	0.000	5.058E-06	-6.372E-07	0.000	373.5720	2.936E+10	1.799E-08	5695312.	0.000
594.000	0.000	1.565E-06	-4.226E-07	0.000	373.5720	2.936E+10	5.356E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	373.5720	2.936E+10	8.730E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042876 radians
Maximum bending moment = 1573054. inch-lbs
Maximum shear force = 56626. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	77450.	-0.007575	373.5720	2.936E+10	-1158.9634	6953.7803	0.000
6.000	0.4545	451522.	70167.	-0.007529	1038.9601	2.936E+10	-1268.7029	16747.	0.000
12.000	0.4097	857276.	62539.	-0.007395	1636.9034	2.936E+10	-1274.1478	18662.	0.000
18.000	0.3658	1215984.	54890.	-0.007183	2156.9893	2.936E+10	-1275.5390	20922.	0.000
24.000	0.3235	1530520.	47245.	-0.006903	2629.0341	2.936E+10	-1272.7246	23609.	0.000
30.000	0.2830	1797921.	39630.	-0.006562	3023.0912	2.936E+10	-1265.5404	26834.	0.000
36.000	0.2447	2019390.	32072.	-0.006172	3349.4603	2.936E+10	-1253.8066	30743.	0.000
42.000	0.2089	2195303.	24599.	-0.005742	3608.6960	2.936E+10	-1237.3227	35537.	0.000
48.000	0.1758	2326218.	17239.	-0.005279	3801.6193	2.936E+10	-1215.8599	41496.	0.000
54.000	0.1456	2412880.	10024.	-0.004795	3929.3288	2.936E+10	-1189.1502	49019.	0.000
60.000	0.1183	2456232.	2986.0367	-0.004298	3993.2149	2.936E+10	-1156.8682	58693.	0.000
66.000	0.0940	2457428.	-3840.3790	-0.003795	3994.9771	2.936E+10	-1118.6036	71413.	0.000
72.000	0.0727	2417844.	-10418.	-0.003297	3936.6450	2.936E+10	-1073.8110	88602.	0.000
78.000	0.0544	2339103.	-16704.	-0.002811	3820.6069	2.936E+10	-1021.7194	112655.	0.000
84.000	0.0390	2223095.	-22653.	-0.002345	3649.6506	2.936E+10	-961.1508	147927.	0.000
90.000	0.0263	2072024.	-28207.	-0.001906	3427.0247	2.936E+10	-890.1148	203230.	0.000
96.000	0.0161	1888480.	-33291.	-0.001501	3156.5439	2.936E+10	-804.7437	299637.	0.000
102.000	0.008266	1675574.	-37792.	-0.001137	2842.7933	2.936E+10	-695.6596	504979.	0.000
108.000	0.002472	1437277.	-41458.	-0.000819	2491.6251	2.936E+10	-526.0631	1277016.	0.000
114.000	-0.001560	1179744.	-41611.	-0.000551	2112.1094	2.936E+10	474.9302	1827067.	0.000
120.000	-0.004144	939063.	-38326.	-0.000335	1757.4292	2.936E+10	620.0741	897746.	0.000
126.000	-0.005577	720511.	-34422.	-0.000165	1435.3581	2.936E+10	681.1416	732784.	0.000
132.000	-0.006127	526331.	-30247.	-3.777E-05	1149.2027	2.936E+10	710.7265	696051.	0.000
138.000	-0.006030	357627.	-25951.	5.257E-05	900.5918	2.936E+10	721.1996	717565.	0.000
144.000	-0.005496	214813.	-21635.	0.000111	690.1324	2.936E+10	717.5905	783438.	0.000
150.000	-0.004698	97787.	-17375.	0.000143	517.6768	2.936E+10	702.4023	897145.	0.000
156.000	-0.003780	6027.7997	-13236.	0.000154	382.4549	2.936E+10	676.9794	1074701.	0.000
162.000	-0.002854	-61362.	-9279.4865	0.000148	463.9980	2.936E+10	642.0043	1349644.	0.000
168.000	-0.002004	-105626.	-5560.4978	0.000131	529.2287	2.936E+10	597.6586	1789467.	0.000
174.000	-0.001283	-128353.	-2136.9069	0.000107	562.7204	2.936E+10	543.5383	2541338.	0.000
180.000	-0.000720	-131486.	927.9278	8.044E-05	567.3372	2.936E+10	478.0733	3983788.	0.000
186.000	-0.000318	-117381.	3236.0189	5.500E-05	546.5514	2.936E+10	291.2904	5495515.	0.000
192.000	-5.998E-05	-92765.	4277.3444	3.353E-05	510.2762	2.936E+10	55.8180	5583406.	0.000
198.000	8.430E-05	-66121.	4205.7450	1.729E-05	471.0115	2.936E+10	-79.6845	5671297.	0.000
204.000	0.000148	-42331.	3546.6573	6.207E-06	435.9540	2.936E+10	-140.0114	5695312.	0.000
210.000	0.000159	-23574.	2674.4505	-5.281E-07	408.3114	2.936E+10	-150.7242	5695312.	0.000
216.000	0.000141	-10237.	1820.2910	-3.983E-06	388.6578	2.936E+10	-133.9957	5695312.	0.000
222.000	0.000111	-1722.0221	1102.2522	-5.206E-06	376.1097	2.936E+10	-105.3506	5695312.	0.000
228.000	7.870E-05	3000.6368	562.0972	-5.075E-06	377.9939	2.936E+10	-74.7010	5695312.	0.000
234.000	5.009E-05	5033.4363	195.3609	-4.254E-06	380.9896	2.936E+10	-47.5444	5695312.	0.000
240.000	2.765E-05	5353.5938	-26.0135	-3.192E-06	381.4614	2.936E+10	-26.2470	5695312.	0.000
246.000	1.178E-05	4727.7483	-138.2995	-2.162E-06	380.5391	2.936E+10	-11.1816	5695312.	0.000

252.000	1.706E-06	3698.3845	-176.7033	-1.301E-06	379.0222	2.936E+10	-1.6196	5695312.	0.000
258.000	-3.832E-06	2609.9472	-170.6507	-6.563E-07	377.4182	2.936E+10	3.6372	5695312.	0.000
264.000	-6.169E-06	1651.9076	-142.1716	-2.207E-07	376.0064	2.936E+10	5.8558	5695312.	0.000
270.000	-6.481E-06	904.3358	-106.1494	4.049E-08	374.9047	2.936E+10	6.1516	5695312.	0.000
276.000	-5.683E-06	378.0329	-71.5109	1.715E-07	374.1291	2.936E+10	5.3946	5695312.	0.000
282.000	-4.422E-06	45.8565	-42.7346	2.149E-07	373.6396	2.936E+10	4.1975	5695312.	0.000
288.000	-3.105E-06	-135.2180	-21.3006	2.057E-07	373.7713	2.936E+10	2.9471	5695312.	0.000
294.000	-1.953E-06	-210.1684	-6.8970	1.704E-07	373.8817	2.936E+10	1.8541	5695312.	0.000
300.000	-1.060E-06	-218.3276	1.6825	1.266E-07	373.8938	2.936E+10	1.0057	5695312.	0.000
306.000	-4.335E-07	-190.2354	5.9342	8.489E-08	373.8524	2.936E+10	0.4115	5695312.	0.000
312.000	-4.081E-08	-147.2894	7.2849	5.040E-08	373.7891	2.936E+10	0.0387	5695312.	0.000
318.000	1.713E-07	-102.9183	6.9134	2.483E-08	373.7237	2.936E+10	-0.1626	5695312.	0.000
324.000	2.572E-07	-64.3787	5.6934	7.733E-09	373.6669	2.936E+10	-0.2441	5695312.	0.000
330.000	2.641E-07	-34.6132	4.2091	-2.383E-09	373.6230	2.936E+10	-0.2507	5695312.	0.000
336.000	2.286E-07	-13.8645	2.8063	-7.338E-09	373.5925	2.936E+10	-0.2169	5695312.	0.000
342.000	1.760E-07	-0.9230	1.6542	-8.849E-09	373.5734	2.936E+10	-0.1671	5695312.	0.000
348.000	1.224E-07	6.0036	0.8045	-8.330E-09	373.5809	2.936E+10	-0.1162	5695312.	0.000
354.000	7.607E-08	8.7474	0.2394	-6.822E-09	373.5849	2.936E+10	-0.0722	5695312.	0.000
360.000	4.050E-08	8.8899	-0.0926	-5.020E-09	373.5851	2.936E+10	-0.0384	5695312.	0.000
366.000	1.584E-08	7.6465	-0.2530	-3.330E-09	373.5833	2.936E+10	-0.0150	5695312.	0.000
372.000	5.468E-10	5.8603	-0.2997	-1.949E-09	373.5807	2.936E+10	-0.000519	5695312.	0.000
378.000	-7.556E-09	4.0543	-0.2797	-9.361E-10	373.5780	2.936E+10	0.007172	5695312.	0.000
384.000	-1.069E-08	2.5056	-0.2278	-2.657E-10	373.5757	2.936E+10	0.0101	5695312.	0.000
390.000	-1.074E-08	1.3216	-0.1667	1.254E-10	373.5740	2.936E+10	0.0102	5695312.	0.000
396.000	-9.182E-09	0.5044	-0.1100	3.120E-10	373.5728	2.936E+10	0.008715	5695312.	0.000
402.000	-7.000E-09	0.000889	-0.0639	3.636E-10	373.5720	2.936E+10	0.006645	5695312.	0.000
408.000	-4.818E-09	-0.2634	-0.0303	3.368E-10	373.5724	2.936E+10	0.004573	5695312.	0.000
414.000	-2.959E-09	-0.3630	-0.008124	2.728E-10	373.5731	2.936E+10	0.002808	5695312.	0.000
420.000	-1.544E-09	-0.3614	0.004699	1.988E-10	373.5726	2.936E+10	0.001466	5695312.	0.000
426.000	-5.734E-10	-0.3070	0.0107	1.304E-10	373.5725	2.936E+10	0.000544	5695312.	0.000
432.000	2.103E-11	-0.2330	0.0123	7.526E-11	373.5724	2.936E+10	-1.996E-05	5695312.	0.000
438.000	3.298E-10	-0.1595	0.0113	3.515E-11	373.5723	2.936E+10	-0.000313	5695312.	0.000
444.000	4.429E-10	-0.0974	0.009103	8.896E-12	373.5722	2.936E+10	-0.000420	5695312.	0.000
450.000	4.365E-10	-0.0503	0.006599	-6.199E-12	373.5721	2.936E+10	-0.000414	5695312.	0.000
456.000	3.685E-10	-0.0182	0.004307	-1.320E-11	373.5720	2.936E+10	-0.000350	5695312.	0.000
462.000	2.781E-10	0.001388	0.002466	-1.491E-11	373.5720	2.936E+10	-0.000264	5695312.	0.000
468.000	1.895E-10	0.0114	0.001134	-1.360E-11	373.5720	2.936E+10	-0.000180	5695312.	0.000
474.000	1.149E-10	0.0150	0.000267	-1.090E-11	373.5720	2.936E+10	-0.000109	5695312.	0.000
480.000	5.872E-11	0.0147	-0.000227	-7.863E-12	373.5720	2.936E+10	-5.574E-05	5695312.	0.000
486.000	2.054E-11	0.0123	-0.000453	-5.105E-12	373.5720	2.936E+10	-1.950E-05	5695312.	0.000
492.000	-2.536E-12	0.009251	-0.000504	-2.901E-12	373.5720	2.936E+10	2.407E-06	5695312.	0.000
498.000	-1.427E-11	0.006272	-0.000456	-1.314E-12	373.5720	2.936E+10	1.354E-05	5695312.	0.000
504.000	-1.831E-11	0.003779	-0.000363	0.000	373.5720	2.936E+10	1.738E-05	5695312.	0.000
510.000	-1.771E-11	0.001911	-0.000261	0.000	373.5720	2.936E+10	1.681E-05	5695312.	0.000
516.000	-1.477E-11	0.000648	-0.000168	0.000	373.5720	2.936E+10	1.402E-05	5695312.	0.000
522.000	-1.104E-11	-0.000111	-9.490E-05	0.000	373.5720	2.936E+10	1.048E-05	5695312.	0.000
528.000	-7.444E-12	-0.000492	-4.226E-05	0.000	373.5720	2.936E+10	7.066E-06	5695312.	0.000
534.000	-4.451E-12	-0.000619	-8.388E-06	0.000	373.5720	2.936E+10	4.225E-06	5695312.	0.000
540.000	-2.219E-12	-0.000594	1.061E-05	0.000	373.5720	2.936E+10	2.106E-06	5695312.	0.000
546.000	0.000	-0.000493	1.896E-05	0.000	373.5720	2.936E+10	6.777E-07	5695312.	0.000
552.000	0.000	-0.000367	2.046E-05	0.000	373.5720	2.936E+10	-1.768E-07	5695312.	0.000
558.000	0.000	-0.000247	1.812E-05	0.000	373.5720	2.936E+10	-6.043E-07	5695312.	0.000
564.000	0.000	-0.000150	1.407E-05	0.000	373.5720	2.936E+10	-7.437E-07	5695312.	0.000
570.000	0.000	-7.858E-05	9.713E-06	0.000	373.5720	2.936E+10	-7.090E-07	5693312.	0.000
576.000	0.000	-3.304E-05	5.838E-06	0.000	373.5720	2.936E+10	-5.828E-07	5693312.	0.000
582.000	0.000	-8.473E-06	2.835E-06	0.000	373.5720	2.936E+10	-4.181E-07	5695312.	0.000
588.000	0.000	1.042E-06	8.498E-07	0.000	373.5720	2.936E+10	-2.436E-07	5695312.	0.000
594.000	0.000	1.786E-06	-9.192E-08	0.000	373.5720	2.936E+10	-7.030E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	373.5720	2.936E+10	1.009E-07	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0075752 radians
Maximum bending moment	=	2457428. inch-lbs
Maximum shear force	=	77450. lbs
Depth of maximum bending moment	=	66.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	20
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	169000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	106014.	-0.0134	373.5720	2.936E+10	-1378.2475	4134.7425	0.000
6.000	0.9196	624867.	97340.	-0.0133	1294.4112	2.936E+10	-1513.0834	9872.3163	0.000
12.000	0.8399	1195133.	88227.	-0.0132	2134.7881	2.936E+10	-1524.6776	10891.	0.000
18.000	0.7618	1710263.	79056.	-0.0129	2893.9132	2.936E+10	-1532.2698	12069.	0.000
24.000	0.6857	2169877.	69852.	-0.0125	3571.2266	2.936E+10	-1535.7166	13438.	0.000
30.000	0.6123	2573756.	60641.	-0.0120	4166.4049	2.936E+10	-1534.8669	15041.	0.000
36.000	0.5420	2921846.	51447.	-0.0114	4679.3699	2.936E+10	-1529.5597	16932.	0.000
42.000	0.4753	3214266.	42300.	-0.0108	5110.2969	2.936E+10	-1519.6208	19182.	0.000
48.000	0.4126	3451313.	33226.	-0.0101	5459.6239	2.936E+10	-1504.8591	21884.	0.000
54.000	0.3541	3633471.	24257.	-0.009379	5728.0614	2.936E+10	-1485.0612	25164.	0.000
60.000	0.3000	3761413.	15421.	-0.008624	5916.6043	2.936E+10	-1459.9830	29195.	0.000
66.000	0.2506	3836016.	6753.4274	-0.007847	6026.5439	2.936E+10	-1429.3383	34220.	0.000
72.000	0.2059	3858368.	-1712.9293	-0.007061	6059.4832	2.936E+10	-1392.7806	40590.	0.000
78.000	0.1659	3829781.	-9940.8922	-0.006275	6017.3547	2.936E+10	-1349.8737	48826.	0.000
84.000	0.1306	3751804.	-17891.	-0.005500	5902.4435	2.936E+10	-1300.0434	59736.	0.000
90.000	0.0999	3626248.	-25518.	-0.004746	5717.4170	2.936E+10	-1242.4905	74642.	0.000
96.000	0.0736	3455211.	-32774.	-0.004023	5465.3668	2.936E+10	-1176.0241	95843.	0.000
102.000	0.0516	3241120.	-39598.	-0.003338	5149.8713	2.936E+10	-1098.7105	127747.	0.000
108.000	0.0336	2986805.	-45915.	-0.002702	4775.0975	2.936E+10	-1007.0236	180032.	0.000

114.000	0.0192	2695617.	-51616.	-0.002121	4345.9872	2.936E+10	-893.3139	279431.	0.000
120.000	0.008107	2371712.	-56500.	-0.001603	3868.6619	2.936E+10	-734.6750	543720.	0.000
126.000	-5.849E-05	2020867.	-58569.	-0.001154	3351.6364	2.936E+10	45.0058	4616610.	0.000
132.000	-0.005746	1671223.	-56335.	-0.000777	2836.3814	2.936E+10	699.6146	730553.	0.000
138.000	-0.009384	1346419.	-51819.	-0.000469	2357.7317	2.936E+10	805.7924	515222.	0.000
144.000	-0.0114	1050344.	-46819.	-0.000224	1921.4193	2.936E+10	860.9402	454299.	0.000
150.000	-0.0121	785046.	-41567.	-3.622E-05	1530.4605	2.936E+10	889.5817	442239.	0.000
156.000	-0.0118	551610.	-36198.	0.000100	1186.4557	2.936E+10	900.2730	457566.	0.000
162.000	-0.0109	350469.	-30806.	0.000193	890.0433	2.936E+10	897.0320	495387.	0.000
168.000	-0.009494	181549.	-25469.	0.000247	641.1130	2.936E+10	882.0205	557401.	0.000
174.000	-0.007901	44344.	-20253.	0.000270	438.9198	2.936E+10	856.4624	650369.	0.000
180.000	-0.006254	-62038.	-15221.	0.000268	464.9942	2.936E+10	821.0180	787678.	0.000
186.000	-0.004683	-138850.	-10430.	0.000248	578.1888	2.936E+10	775.9293	994211.	0.000
192.000	-0.003282	-187700.	-5939.1191	0.000214	650.1768	2.936E+10	721.0205	1318263.	0.000
198.000	-0.002111	-210554.	-1809.5608	0.000174	683.8560	2.936E+10	655.4990	1863209.	0.000
204.000	-0.001198	-209766.	1869.4298	0.000131	682.6957	2.936E+10	570.8312	2858283.	0.000
210.000	-0.000543	-188386.	4983.9326	8.997E-05	651.1877	2.936E+10	467.3364	5164795.	0.000
216.000	-0.000119	-150142.	6723.6116	5.538E-05	594.8293	2.936E+10	112.5566	5695312.	0.000
222.000	0.000122	-107815.	6714.9256	2.902E-05	532.4537	2.936E+10	-115.4519	5695312.	0.000
228.000	0.000230	-69621.	5714.6994	1.088E-05	476.1701	2.936E+10	-217.9568	5695312.	0.000
234.000	0.000252	-39260.	4342.5760	-2.441E-07	431.4281	2.936E+10	-239.4177	5695312.	0.000
240.000	0.000227	-17510.	2978.7924	-6.046E-06	399.3757	2.936E+10	-215.1769	5695312.	0.000
246.000	0.000180	-3502.4690	1821.6022	-8.193E-06	378.7335	2.936E+10	-170.5532	5695312.	0.000
252.000	0.000128	4365.8564	944.3850	-8.105E-06	380.0058	2.936E+10	-121.8525	5695312.	0.000
258.000	8.242E-05	7846.5871	344.1257	-6.857E-06	385.1352	2.936E+10	-78.2339	5695312.	0.000
264.000	4.609E-05	8509.2706	-21.8239	-5.185E-06	386.1118	2.936E+10	-43.7493	5695312.	0.000
270.000	2.020E-05	7595.2157	-210.5820	-3.540E-06	384.7648	2.936E+10	-19.1701	5695312.	0.000
276.000	5.988E-06	5989.4644	-278.3888	-2.150E-06	382.5984	2.936E+10	-3.4322	5695312.	0.000
282.000	-5.619E-06	4258.9132	-272.6847	-1.104E-06	379.8482	2.936E+10	5.3336	5695312.	0.000
288.000	-9.631E-06	2719.4871	-229.2592	-3.907E-07	377.5796	2.936E+10	9.1416	5695312.	0.000
294.000	-1.031E-05	1508.5957	-172.4823	4.138E-08	375.7952	2.936E+10	9.7840	5695312.	0.000
300.000	-9.134E-06	649.6161	-117.1193	2.619E-07	374.5293	2.936E+10	8.6703	5695312.	0.000
306.000	-7.164E-06	102.6326	-70.7073	3.388E-07	373.7233	2.936E+10	6.8004	5695312.	0.000
312.000	-5.068E-06	-199.5583	-35.8731	3.289E-07	373.8661	2.936E+10	4.8110	5695312.	0.000
318.000	-3.217E-06	-328.1117	-12.2778	2.674E-07	374.0561	2.936E+10	3.0539	5695312.	0.000
324.000	-1.769E-06	-347.4558	1.9212	2.059E-07	374.0840	2.936E+10	1.6792	5695312.	0.000
330.000	-7.470E-07	-305.8751	9.0860	1.391E-07	374.0228	2.936E+10	0.7090	5695312.	0.000
336.000	-9.999E-08	-234.7057	11.4978	8.344E-08	373.9238	2.936E+10	0.0949	5695312.	0.000
342.000	2.543E-07	-168.0709	11.0582	4.187E-08	373.8197	2.936E+10	-0.2414	5695312.	0.000
348.000	4.025E-07	-106.0916	9.1880	1.385E-08	373.7284	2.936E+10	-0.3820	5695312.	0.000
354.000	4.205E-07	-57.8435	6.8444	-2.902E-09	373.6573	2.936E+10	-0.3992	5695312.	0.000
360.000	3.676E-07	-23.9534	4.5999	-1.126E-08	373.6073	2.936E+10	-0.3490	5695312.	0.000
366.000	2.854E-07	-2.6214	2.7403	-1.398E-08	373.5759	2.936E+10	-0.2709	5695312.	0.000
372.000	1.999E-07	8.9591	1.3584	-1.333E-08	373.5852	2.936E+10	-0.1898	5695312.	0.000
378.000	1.254E-07	13.7063	0.4319	-1.101E-08	373.5922	2.936E+10	-0.1191	5695312.	0.000
384.000	6.775E-08	14.1646	-0.1182	-8.165E-09	373.5929	2.936E+10	-0.0643	5695312.	0.000
390.000	2.745E-08	12.3047	-0.3893	-5.460E-09	373.5902	2.936E+10	-0.0261	5695312.	0.000
396.000	2.230E-09	9.5045	-0.4738	-3.231E-09	373.5860	2.936E+10	-0.002117	5695312.	0.000
402.000	-1.131E-08	6.6260	-0.4479	-1.503E-09	373.5818	2.936E+10	0.0108	5695312.	0.000
408.000	-1.676E-08	4.1334	-0.3679	-4.833E-10	373.5781	2.936E+10	0.0159	5695312.	0.000
414.000	-1.713E-08	2.2127	-0.2713	1.652E-10	373.5753	2.936E+10	0.0163	5695312.	0.000
420.000	-1.478E-08	0.8770	-0.1805	4.810E-10	373.5733	2.936E+10	0.0140	5695312.	0.000
426.000	-1.136E-08	0.0461	-0.1080	5.753E-10	373.5721	2.936E+10	0.0108	5695312.	0.000
432.000	-7.877E-09	-0.3966	-0.0513	5.395E-10	373.5726	2.936E+10	0.007477	5695312.	0.000
438.000	-4.883E-09	-0.5701	-0.0149	4.407E-10	373.5729	2.936E+10	0.004635	5695312.	0.000
444.000	-2.588E-09	-0.5766	0.000355	3.236E-10	373.5729	2.936E+10	0.002457	5695312.	0.000
450.000	-1.001E-09	-0.4945	0.0166	2.141E-10	373.5727	2.936E+10	0.000950	5695312.	0.000
456.000	-1.926E-11	-0.3781	0.0195	1.249E-10	373.5726	2.936E+10	1.828E-05	5695312.	0.000
462.000	4.985E-10	-0.2610	0.0181	5.962E-11	373.5724	2.936E+10	-0.000473	5695312.	0.000
468.000	6.962E-10	-0.1608	0.0147	1.652E-11	373.5723	2.936E+10	-0.000661	5695312.	0.000
474.000	6.967E-10	-0.0844	0.0107	-8.545E-12	373.5721	2.936E+10	-0.000661	5695312.	0.000
480.000	5.937E-10	-0.0318	0.007072	-2.043E-11	373.5721	2.936E+10	-0.000564	5695312.	0.000
486.000	4.516E-10	0.000476	0.004096	-2.363E-11	373.5720	2.936E+10	-0.000429	5695312.	0.000
492.000	3.101E-10	0.0174	0.001927	-2.181E-11	373.5720	2.936E+10	-0.000294	5695312.	0.000
498.000	1.899E-10	0.0236	0.000503	-1.762E-11	373.5721	2.936E+10	-0.000180	5695312.	0.000
504.000	9.864E-11	0.0234	-0.000318	-1.281E-11	373.5721	2.936E+10	-9.363E-05	5695312.	0.000
510.000	3.615E-11	0.0198	-0.000702	-8.386E-12	373.5720	2.936E+10	-3.432E-05	5695312.	0.000
516.000	-1.995E-12	0.0150	-0.000799	-4.822E-12	373.5720	2.936E+10	1.893E-06	5695312.	0.000
522.000	-2.172E-11	0.0103	-0.000732	-2.238E-12	373.5720	2.936E+10	2.061E-05	5695312.	0.000
528.000	-2.885E-11	0.006244	-0.000588	0.000	373.5720	2.936E+10	2.739E-05	5695312.	0.000
534.000	-2.833E-11	0.003210	-0.000425	0.000	373.5720	2.936E+10	2.689E-05	5695312.	0.000
540.000	-2.387E-11	0.001142	-0.000276	0.000	373.5720	2.936E+10	2.266E-05	5695312.	0.000
546.000	-1.802E-11	-0.000109	-0.000157	0.000	373.5720	2.936E+10	1.710E-05	5695312.	0.000
552.000	-1.229E-11	-0.000745	-7.082E-05	0.000	373.5720	2.936E+10	1.167E-05	5695312.	0.000
558.000	-7.481E-12	-0.000961	-1.452E-05	0.000	373.5720	2.936E+10	7.101E-06	5695312.	0.000
564.000	-3.848E-12	-0.000921	1.774E-05	0.000	373.5720	2.936E+10	3.653E-06	5695312.	0.000
570.000	-1.344E-12	-0.000749	3.253E-05	0.000	373.5720	2.936E+10	1.276E-06	5695312.	0.000
576.000	0.000	-0.000531	3.567E-05	0.000	373.5720	2.936E+10	-2.285E-07	5695312.	0.000
582.000	1.174E-12	-0.000321	3.164E-05	0.000	373.5720	2.936E+10	-1.115E-06	5695312.	0.000
588.000	1.714E-12	-0.000152	2.342E-05	0.000	373.5720	2.936E+10	-1.627E-06	5695312.	0.000
594.000	2.068E-12	-4.048E-05	1.264E-05	0.000	373.5720	2.936E+10	-1.963E-06	5695312.	0.000
600.000	2.372E-12	0.000	0.000	0.000	373.5720	2.936E+10	-2.252E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0134014 radians
Maximum bending moment	=	3858368. inch-lbs
Maximum shear force	=	106014. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	16
Number of zero deflection points	=	8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

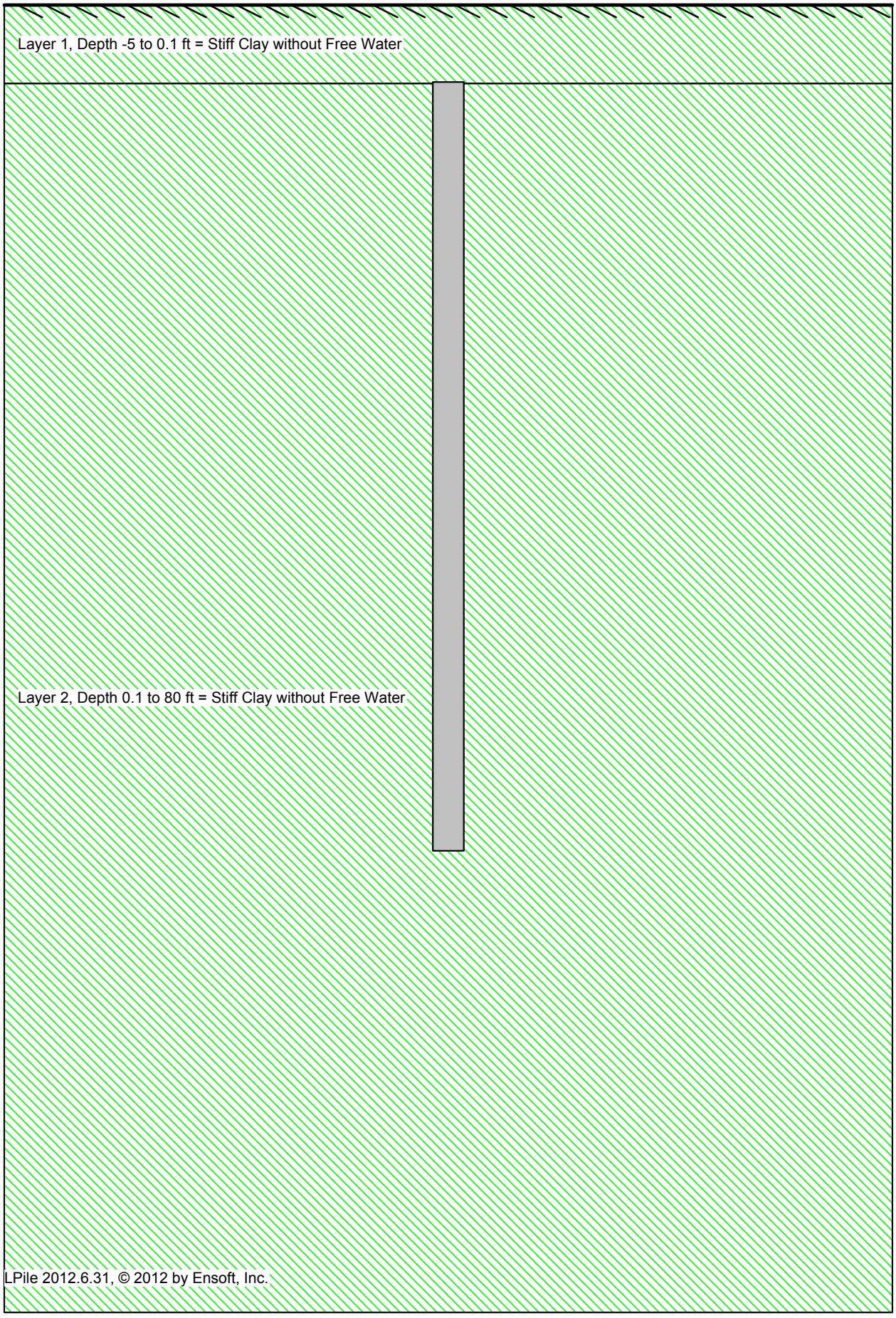
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	169000.	0.25000000	1573054.	56626.	-0.00428756
2	4	y = 0.5000	M = 0.000	169000.	0.50000000	2457428.	77450.	-0.00757520
3	4	y = 1.0000	M = 0.000	169000.	1.00000000	3858368.	106014.	-0.01340138

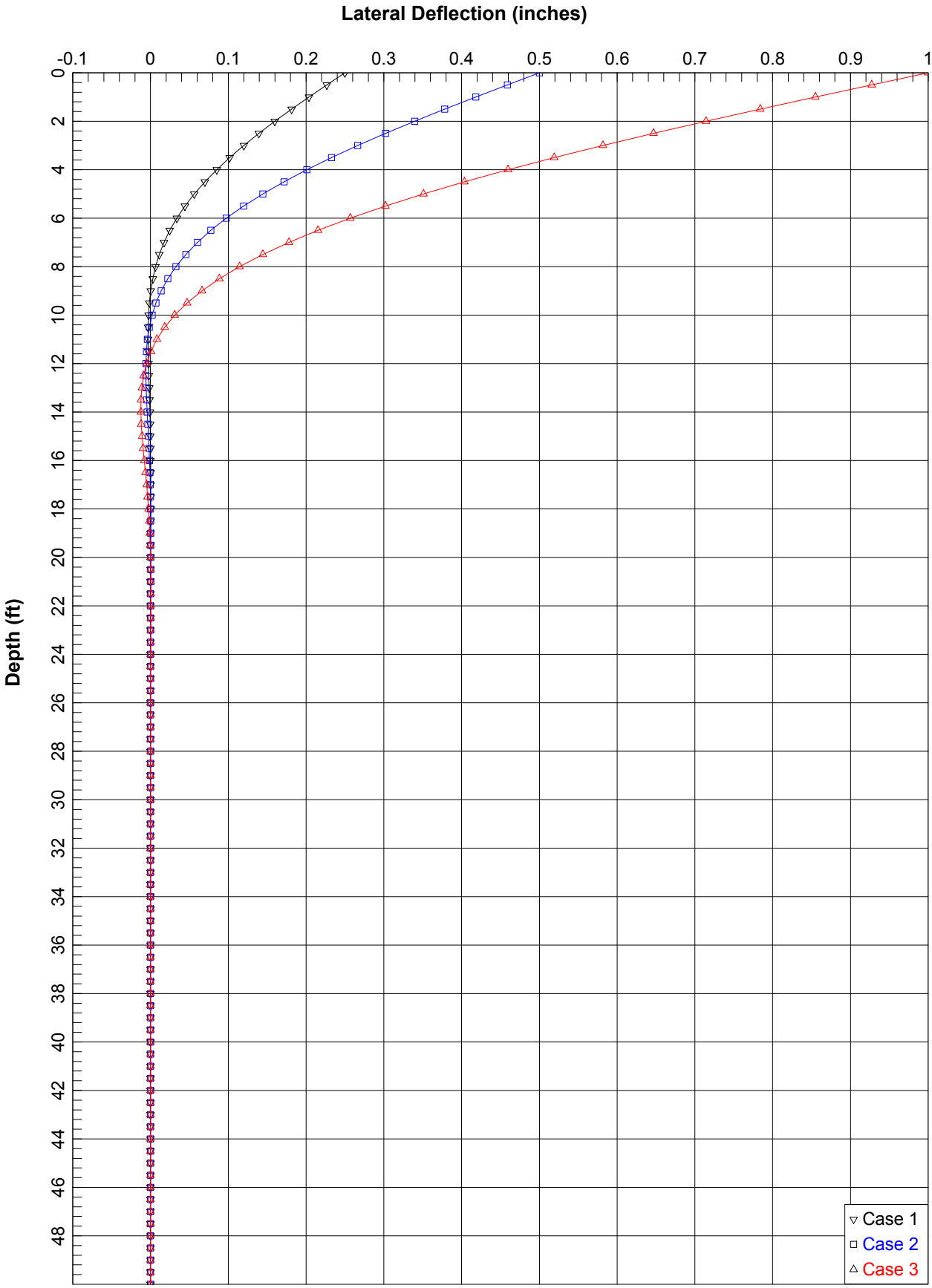
The analysis ended normally.

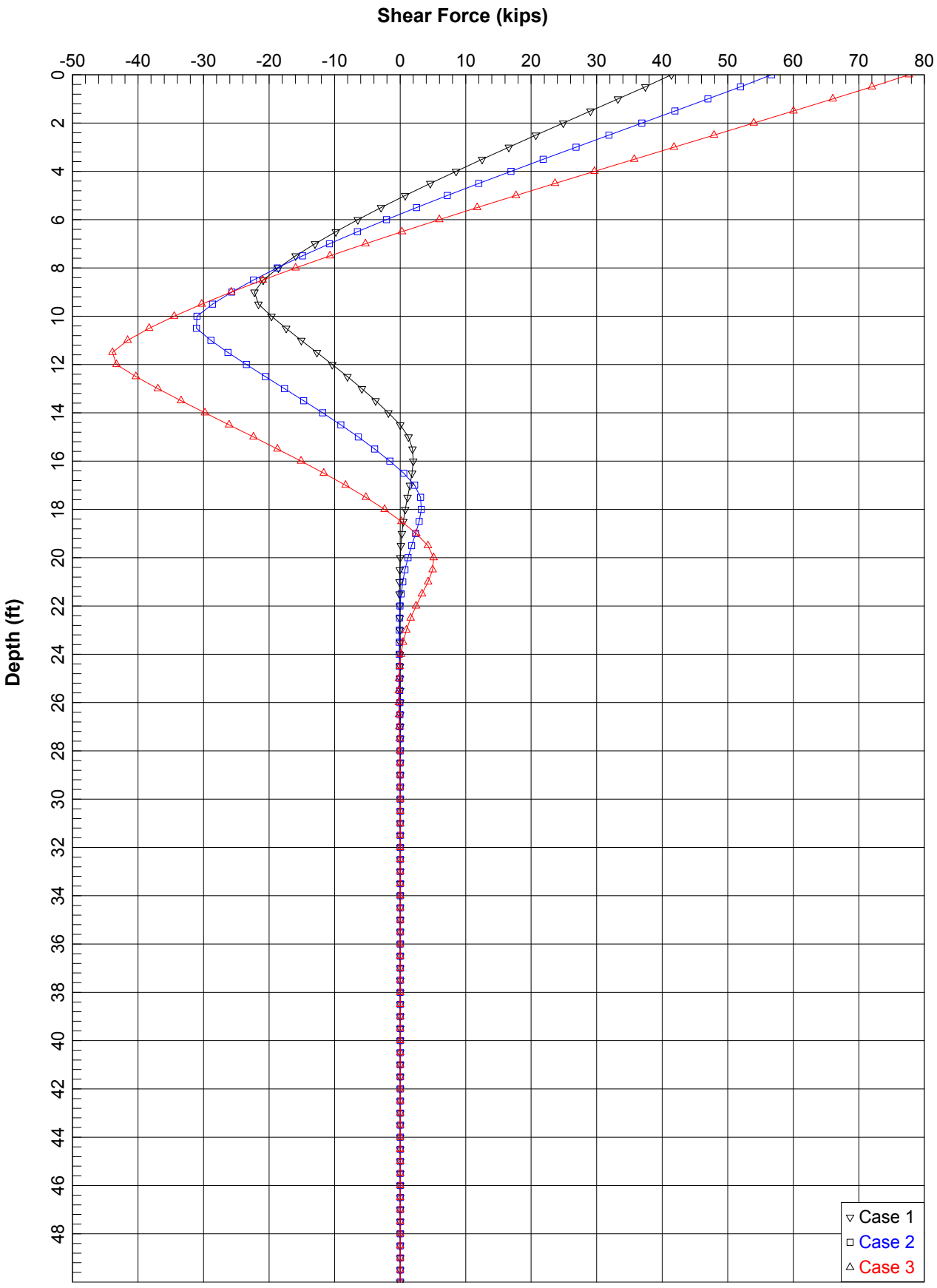
SUPPORT: **BENT 4R**

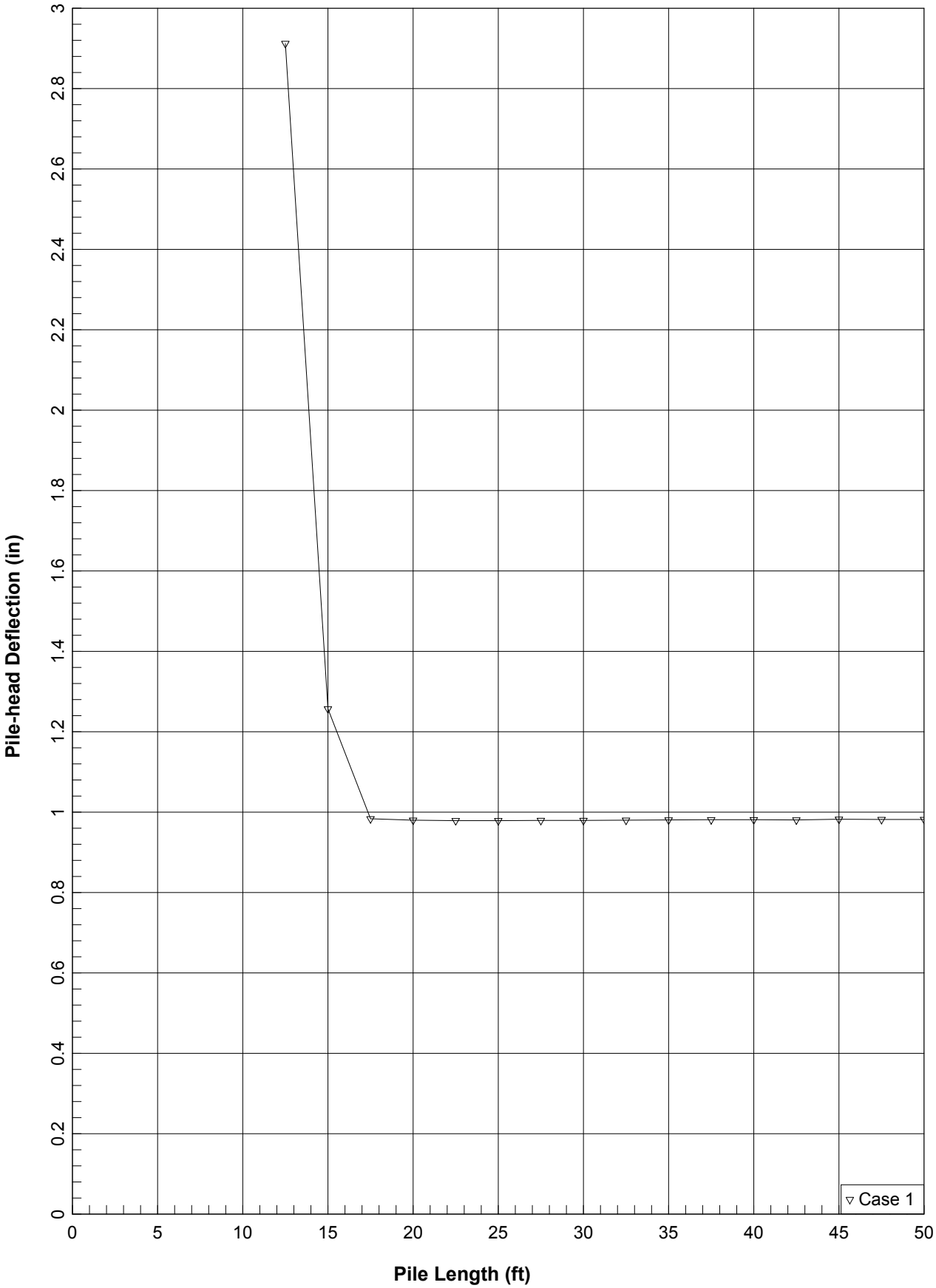
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4R_transv_crit length.lp6d
Name of output report file:    Bent 4R_transv_crit length.lp6o
Name of plot output file:      Bent 4R_transv_crit length.lp6p
Name of runtime messeage file: Bent 4R_transv_crit length.lp6r

--------------------------------------------------------------------------------
                             Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:11:21

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                  Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                        Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ----------        ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =         Circular
   Section Length                              =      50.00000000 ft
   Top Width                                   =       24.00000000 in
   Bottom Width                                =       24.00000000 in
   Top Area                                    =     452.38934212 in
   Bottom Area                                 =     452.38934212 in
   Moment of Inertia at Top                    =    8143.00815810 in
   Moment of Inertia at Bottom                 =    8143.00815810 in
   Elastic Modulus                             =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =         0.000 degrees
                                               =         0.000 radians

Pile Batter Angle                              =         0.000 degrees
                                               =         0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =      -5.00000 ft
   Distance from top of pile to bottom of layer=       0.10000 ft
   Effective unit weight at top of layer       =     120.00000 pcf
   Effective unit weight at bottom of layer    =     120.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00700
   Epsilon-50 at bottom of layer               =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =       0.10000 ft
   Distance from top of pile to bottom of layer=      80.00000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00500
   Epsilon-50 at bottom of layer               =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                 Rock Mass                              In-situ     In-situ       Elastic
Layer                Soil Type           Depth       Unit Wt.    Cohesion    Friction       qu            or
Factor       J          kpy          Rock Emass      krm          Test        Test       Subgrade
 Num.          (p-y Curve Criteria)        ft          pcf          psf         deg.         psi          GSI        Epsilon
50    Factor          pci          psi                Type       Property     Mod. pci
-----  ---  ---------------------  ---------  ---------  ---  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water                 -5.000      120.000     4500.000       --          --          --
0.00700       --           --          --          --           --          --          --
                                                0.10000      120.000     4500.000       --          --          --
0.00700       --           --          --          --           --          --          --
  2     Stiff Clay w/o Free Water                 0.10000      125.000     4500.000       --          --          --
0.00500       --           --          --          --           --          --          --
                                                 80.000      125.000     4500.000       --          --          --
0.00500       --           --          --          --           --          --          --


--------------------------------------------------------------------------------
                        p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----     ----------      ----------      ----------
  1           0.000          0.4400          1.0000
  2          50.000          0.4400          1.0000


--------------------------------------------------------------------------------
                                  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
1	1	V = 77000. lbs	M = 0.0000 in-lbs	169000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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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 = 77000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 169000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness p lb-in^2	Soil Res. lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9820	1.267E-06	77000.	-0.0119	373.5720	2.936E+10	-894.3440	2732.2499	0.000
6.000	0.9103	458016.	71366.	-0.0119	1048.5311	2.936E+10	-983.8108	6484.5131	0.000
12.000	0.8392	880521.	65433.	-0.0118	1671.1576	2.936E+10	-993.6411	7104.3790	0.000
18.000	0.7691	1267072.	59449.	-0.0115	2240.8008	2.936E+10	-1001.2232	7810.5003	0.000
24.000	0.7006	1617316.	53425.	-0.0112	2756.9405	2.936E+10	-1006.4789	8618.9927	0.000
30.000	0.6341	1930992.	47378.	-0.0109	3219.1909	2.936E+10	-1009.3270	9549.8587	0.000
36.000	0.5700	2207931.	41321.	-0.0105	3627.3051	2.936E+10	-1009.6824	10628.	0.000
42.000	0.5086	2448065.	35270.	-0.009988	3981.1796	2.936E+10	-1007.4542	11886.	0.000
48.000	0.4501	2651423.	29240.	-0.009467	4280.8593	2.936E+10	-1002.5452	13363.	0.000
54.000	0.3950	2818139.	23247.	-0.008908	4526.5426	2.936E+10	-994.8495	15113.	0.000
60.000	0.3432	2948458.	17310.	-0.008319	4718.5867	2.936E+10	-984.2495	17205.	0.000
66.000	0.2951	3042732.	11446.	-0.007706	4857.5143	2.936E+10	-970.6129	19732.	0.000
72.000	0.2508	3101433.	5672.3599	-0.007079	4944.0199	2.936E+10	-953.7867	22820.	0.000
78.000	0.2102	3125155.	10.2312	-0.006442	4978.9784	2.936E+10	-933.5895	26648.	0.000
84.000	0.1735	3114620.	-5519.9364	-0.005805	4963.4539	2.936E+10	-909.7997	31469.	0.000
90.000	0.1405	3070687.	-10896.	-0.005172	4898.7117	2.936E+10	-882.1353	37658.	0.000
96.000	0.1114	2994361.	-16093.	-0.004553	4786.2330	2.936E+10	-850.2226	45794.	0.000
102.000	0.0859	2886806.	-21084.	-0.003952	4627.7341	2.936E+10	-813.5386	56813.	0.000
108.000	0.0640	2749366.	-25839.	-0.003376	4425.1939	2.936E+10	-771.3028	72334.	0.000
114.000	0.0454	2583589.	-30319.	-0.002831	4180.8951	2.936E+10	-722.2513	95429.	0.000
120.000	0.0300	2391275.	-34478.	-0.002322	3897.4906	2.936E+10	-664.0986	132770.	0.000
126.000	0.0175	2174558.	-38247.	-0.001856	3578.1242	2.936E+10	-591.9651	202444.	0.000
132.000	0.007745	1936080.	-41498.	-0.001435	3226.0690	2.936E+10	-491.7037	380941.	0.000
138.000	0.000319	1679499.	-43471.	-0.001066	2848.5768	2.936E+10	-166.0119	3123929.	0.000
144.000	-0.005047	1416593.	-42594.	-0.000750	2461.1444	2.936E+10	458.2862	544799.	0.000
150.000	-0.008676	1169893.	-39616.	-0.000485	2097.5922	2.936E+10	534.2078	369436.	0.000
156.000	-0.0109	942181.	-36288.	-0.000269	1762.0233	2.936E+10	575.1839	317483.	0.000
162.000	-0.0119	734980.	-32767.	-9.801E-05	1456.6811	2.936E+10	598.6891	301635.	0.000
168.000	-0.0120	549181.	-29139.	3.323E-05	1182.8758	2.936E+10	610.6687	304162.	0.000
174.000	-0.0115	385251.	-25465.	0.000129	941.2905	2.936E+10	613.9025	320015.	0.000
180.000	-0.0105	243342.	-21793.	0.000193	732.1747	2.936E+10	609.9034	348464.	0.000
186.000	-0.009195	123339.	-18165.	0.000230	555.3317	2.936E+10	599.5622	391249.	0.000
192.000	-0.007736	24895.	-14616.	0.000246	410.2287	2.936E+10	583.4157	452475.	0.000
198.000	-0.006248	-52551.	-11180.	0.000243	451.0147	2.936E+10	561.7690	539509.	0.000
204.000	-0.004823	-109763.	-7908.7402	0.000226	535.3253	2.936E+10	528.8143	657835.	0.000
210.000	-0.003534	-147915.	-4854.5683	0.000200	591.5479	2.936E+10	489.2430	830751.	0.000
216.000	-0.002425	-168423.	-2050.9016	0.000168	621.7701	2.936E+10	445.3126	1101726.	0.000
222.000	-0.001523	-172865.	474.3930	0.000133	628.3164	2.936E+10	396.4523	1561462.	0.000
228.000	-0.000834	-163000.	2686.7219	9.831E-05	613.7774	2.936E+10	340.9907	2454355.	0.000
234.000	-0.000344	-140824.	4347.6871	6.726E-05	581.0985	2.936E+10	212.6643	3712500.	0.000
240.000	-2.650E-05	-110964.	5034.8730	4.153E-05	537.0944	2.936E+10	16.3976	3712500.	0.000
246.000	0.000155	-80490.	4797.0565	2.196E-05	492.1865	2.936E+10	-95.6698	3712500.	0.000
252.000	0.000237	-53444.	4070.0627	8.273E-06	452.3295	2.936E+10	-146.6615	3712500.	0.000
258.000	0.000254	-31666.	3158.7779	-4.243E-07	420.2367	2.936E+10	-157.1001	3712500.	0.000
264.000	0.000232	-15537.	2256.9455	-5.248E-06	396.4687	2.936E+10	-143.5107	3712500.	0.000
270.000	0.000191	-4571.9367	1472.0189	-7.303E-06	380.3095	2.936E+10	-118.1315	3712500.	0.000
276.000	0.000144	2141.6895	849.7751	-7.552E-06	376.7281	2.936E+10	-89.2831	3712500.	0.000
282.000	0.000100	5640.6799	395.7463	-6.756E-06	381.8844	2.936E+10	-62.0598	3712500.	0.000
288.000	6.322E-05	6904.3471	92.2166	-5.474E-06	383.7467	2.936E+10	-39.1167	3712500.	0.000
294.000	3.461E-05	6758.3812	-89.3715	-4.078E-06	383.5316	2.936E+10	-21.4126	3712500.	0.000
300.000	1.428E-05	5840.1600	-180.1197	-2.791E-06	382.1784	2.936E+10	-8.8368	3712500.	0.000
306.000	1.119E-06	4602.6037	-208.7076	-1.723E-06	380.3547	2.936E+10	-0.6925	3712500.	0.000
312.000	-6.399E-06	3339.1642	-198.9069	-9.118E-07	378.4928	2.936E+10	3.9594	3712500.	0.000
318.000	-9.822E-06	2217.5704	-168.7963	-3.439E-07	376.8400	2.936E+10	6.0775	3712500.	0.000
324.000	-1.053E-05	1314.3062	-131.0252	1.703E-08	375.5089	2.936E+10	6.5129	3712500.	0.000
330.000	-9.618E-06	645.2334	-93.6336	2.173E-07	374.5229	2.936E+10	5.9510	3712500.	0.000
336.000	-7.918E-06	190.2627	-61.0821	3.027E-07	373.8524	2.936E+10	4.8995	3712500.	0.000
342.000	-5.986E-06	-88.3654	-35.2727	3.131E-07	373.7022	2.936E+10	3.7036	3712500.	0.000
348.000	-4.161E-06	-233.6443	-16.4373	2.802E-07	373.9163	2.936E+10	2.5748	3712500.	0.000
354.000	-2.624E-06	-286.1811	-3.8429	2.271E-07	373.9938	2.936E+10	1.6233	3712500.	0.000
360.000	-1.437E-06	-280.2198	3.6938	1.692E-07	373.9850	2.936E+10	0.8889	3712500.	0.000
366.000	-5.934E-07	-242.1989	7.4621	1.158E-07	373.9289	2.936E+10	0.3672	3712500.	0.000
372.000	-4.725E-08	-190.9089	8.6514	7.152E-08	373.8534	2.936E+10	0.0292	3712500.	0.000
378.000	2.648E-07	-138.5269	8.2475	3.786E-08	373.7762	2.936E+10	-0.1639	3712500.	0.000
384.000	4.070E-07	-92.0152	7.0004	1.430E-08	373.7076	2.936E+10	-0.2518	3712500.	0.000
390.000	4.364E-07	-54.5507	5.4349	-6.831E-10	373.6524	2.936E+10	-0.2700	3712500.	0.000
396.000	3.988E-07	-26.7951	3.8846	-8.996E-09	373.6115	2.936E+10	-0.2468	3712500.	0.000
402.000	3.284E-07	-7.9178	2.5346	-1.254E-08	373.5837	2.936E+10	-0.2032	3712500.	0.000

408.000	2.483E-07	3.6458	1.4641	-1.298E-08	373.5774	2.936E+10	-0.1536	3712500.	0.000
414.000	1.727E-07	9.6778	0.6827	-1.162E-08	373.5863	2.936E+10	-0.1068	3712500.	0.000
420.000	1.089E-07	11.8620	0.1601	-9.417E-09	373.5895	2.936E+10	-0.0674	3712500.	0.000
426.000	5.964E-08	11.6186	-0.1527	-7.018E-09	373.5891	2.936E+10	-0.0369	3712500.	0.000
432.000	2.466E-08	10.0443	-0.3091	-4.804E-09	373.5868	2.936E+10	-0.0153	3712500.	0.000
438.000	1.994E-09	7.9186	-0.3586	-2.968E-09	373.5837	2.936E+10	-0.001234	3712500.	0.000
444.000	-1.096E-08	5.7469	-0.3420	-1.572E-09	373.5805	2.936E+10	0.006781	3712500.	0.000
450.000	-1.687E-08	3.8180	-0.2903	-5.942E-10	373.5776	2.936E+10	0.0104	3712500.	0.000
456.000	-1.809E-08	2.2641	-0.2254	2.736E-11	373.5754	2.936E+10	0.0112	3712500.	0.000
462.000	-1.654E-08	1.1127	-0.1612	3.725E-10	373.5737	2.936E+10	0.0102	3712500.	0.000
468.000	-1.362E-08	0.3295	-0.1052	5.198E-10	373.5725	2.936E+10	0.008428	3712500.	0.000
474.000	-1.030E-08	-0.1504	-0.0608	5.381E-10	373.5722	2.936E+10	0.006373	3712500.	0.000
480.000	-7.163E-09	-0.4009	-0.0284	4.818E-10	373.5726	2.936E+10	0.004432	3712500.	0.000
486.000	-4.518E-09	-0.4917	-0.006672	3.906E-10	373.5727	2.936E+10	0.002796	3712500.	0.000
492.000	-2.476E-09	-0.4817	0.006311	2.911E-10	373.5727	2.936E+10	0.001532	3712500.	0.000
498.000	-1.025E-09	-0.4165	0.0128	1.993E-10	373.5726	2.936E+10	0.000634	3712500.	0.000
504.000	-8.413E-11	-0.3284	0.0149	1.232E-10	373.5725	2.936E+10	5.206E-05	3712500.	0.000
510.000	4.537E-10	-0.2384	0.0142	6.528E-11	373.5724	2.936E+10	-0.000281	3712500.	0.000
516.000	6.992E-10	-0.1584	0.0120	2.474E-11	373.5723	2.936E+10	-0.000433	3712500.	0.000
522.000	7.505E-10	-0.0939	0.009350	-1.044E-12	373.5722	2.936E+10	-0.000464	3712500.	0.000
528.000	6.867E-10	-0.0462	0.006683	-1.536E-11	373.5721	2.936E+10	-0.000425	3712500.	0.000
534.000	5.662E-10	-0.0137	0.004357	-2.147E-11	373.5720	2.936E+10	-0.000350	3712500.	0.000
540.000	4.290E-10	0.006169	0.002509	-2.224E-11	373.5720	2.936E+10	-0.000265	3712500.	0.000
546.000	2.993E-10	0.0165	0.001157	-1.993E-11	373.5720	2.936E+10	-0.000185	3712500.	0.000
552.000	1.899E-10	0.0201	0.000249	-1.619E-11	373.5720	2.936E+10	-0.000117	3712500.	0.000
558.000	1.050E-10	0.0195	-0.000298	-1.215E-11	373.5720	2.936E+10	-6.499E-05	3712500.	0.000
564.000	4.411E-11	0.0165	-0.000575	-8.462E-12	373.5720	2.936E+10	-2.729E-05	3712500.	0.000
570.000	3.480E-12	0.0126	-0.000663	-5.482E-12	373.5720	2.936E+10	-2.153E-06	3712500.	0.000
576.000	-2.168E-11	0.008600	-0.000629	-3.314E-12	373.5720	2.936E+10	1.341E-05	3712500.	0.000
582.000	-3.629E-11	0.005067	-0.000522	-1.918E-12	373.5720	2.936E+10	2.246E-05	3712500.	0.000
588.000	-4.469E-11	0.002342	-0.000371	-1.161E-12	373.5720	2.936E+10	2.765E-05	3712500.	0.000
594.000	-5.022E-11	0.000612	-0.000195	0.000	373.5720	2.936E+10	3.107E-05	3712500.	0.000
600.000	-5.500E-11	0.000	0.000	0.000	373.5720	2.936E+10	3.403E-05	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9819863 inches
Computed slope at pile head = -0.0119474 radians
Maximum bending moment = 3125155. inch-lbs
Maximum shear force = 77000. lbs
Depth of maximum bending moment = 78.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 29
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 77000. lbs
Moment = 0. in-lbs
Axial Load = 169000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9819863	3125155.	77000.
47.500	0.9815364	3124907.	77000.
45.000	0.9821988	3121374.	77000.
42.500	0.9807549	3120928.	77000.
40.000	0.9813978	3119369.	77000.
37.500	0.9811937	3119172.	77000.
35.000	0.9803406	3120638.	77000.
32.500	0.9800742	3119499.	77000.
30.000	0.9796607	3119430.	77000.
27.500	0.9793186	3118751.	77000.
25.000	0.9786980	3117851.	77000.
22.500	0.9785428	3117227.	77000.
20.000	0.9801179	3115318.	77000.
17.500	0.9836752	3110873.	77000.
15.000	1.2571296	2924772.	77000.
12.500	2.9120810	2538790.	77000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 77000.	M = 0.000	169000.	0.98198631	3125155.	77000.	-0.01194740

The analysis ended normally.

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                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

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gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

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                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4R_transv_ave P.lp6d
Name of output report file:    Bent 4R_transv_ave P.lp6o
Name of plot output file:      Bent 4R_transv_ave P.lp6p
Name of runtime messeage file: Bent 4R_transv_ave P.lp6r

--------------------------------------------------------------------------------
                             Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:09:13

--------------------------------------------------------------------------------
                                  Problem Title
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Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


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                                  Program Options
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Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

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                        Pile Structural Properties and Geometry
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Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
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Pile Section No. 1:

   Section Type                                =    Elastic Pile
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   Cross-sectional Shape                       =         Circular
   Section Length                              =      50.00000000 ft
   Top Width                                   =      24.00000000 in
   Bottom Width                                =      24.00000000 in
   Top Area                                    =     452.38934212 in
   Bottom Area                                 =     452.38934212 in
   Moment of Inertia at Top                    =    8143.00815810 in
   Moment of Inertia at Bottom                 =    8143.00815810 in
   Elastic Modulus                             =         3605000. lbs/in^2


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                        Ground Slope and Pile Batter Angles
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Ground Slope Angle                             =         0.000 degrees
                                               =         0.000 radians

Pile Batter Angle                              =         0.000 degrees
                                               =         0.000 radians


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                          Soil and Rock Layering Information
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The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =      -5.00000 ft
   Distance from top of pile to bottom of layer=       0.10000 ft
   Effective unit weight at top of layer       =     120.00000 pcf
   Effective unit weight at bottom of layer    =     120.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00700
   Epsilon-50 at bottom of layer               =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =       0.10000 ft
   Distance from top of pile to bottom of layer=      80.00000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00500
   Epsilon-50 at bottom of layer               =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


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                            Summary of Soil Properties
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                      Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                 Rock Mass                                In-situ      In-situ       Elastic
Layer                Soil Type           Depth        Unit Wt.     Cohesion     Friction        qu            or
Factor          J          kpy      Rock Emass      krm              Test         Test       Subgrade
 Num.       (p-y Curve Criteria)          ft           pcf          psf          deg.          psi          GSI        Epsilon
50    Factor          pci          psi                 Type       Property     Mod. pci
-----  ------  ---------- ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000      120.000     4500.000       --          --          --          --
0.00700       --          --          --          --          --          --          --
                                                  0.10000     120.000     4500.000       --          --          --          --
0.00700       --          --          --          --          --          --          --
  2     Stiff Clay w/o Free Water          0.10000     125.000     4500.000       --          --          --          --
0.00500       --          --          --          --          --          --          --
                                                  80.000      125.000     4500.000       --          --          --          --
0.00500       --          --          --          --          --          --          --


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                        p-y Modification Factors for Group Action
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Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
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  1           0.000          0.4400          1.0000
  2          50.000          0.4400          1.0000


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


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                      Pile-head Loading and Pile-head Fixity Conditions
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Number of loads specified = 3
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Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs		169000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs		169000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs		169000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	41415.	-0.003872	373.5720	2.936E+10	-635.2741	7623.2887	0.000
6.000	0.2268	240982.	37424.	-0.003848	728.6961	2.936E+10	-695.0371	18390.	0.000
12.000	0.2038	456892.	33246.	-0.003776	1046.8737	2.936E+10	-697.5591	20534.	0.000
18.000	0.1815	647595.	29060.	-0.003663	1327.9051	2.936E+10	-697.7813	23073.	0.000
24.000	0.1599	813044.	24880.	-0.003514	1571.7202	2.936E+10	-695.6169	26107.	0.000
30.000	0.1393	953283.	20720.	-0.003334	1778.3834	2.936E+10	-690.9708	29766.	0.000
36.000	0.1199	1068448.	16596.	-0.003127	1948.0983	2.936E+10	-683.7382	34226.	0.000
42.000	0.1018	1158778.	12524.	-0.002899	2081.2135	2.936E+10	-673.8013	39730.	0.000
48.000	0.0851	1224611.	8519.0719	-0.002656	2178.2285	2.936E+10	-661.0238	46622.	0.000
54.000	0.0699	1266393.	4600.2675	-0.002401	2239.8010	2.936E+10	-645.2443	55397.	0.000
60.000	0.0563	1284684.	785.7434	-0.002141	2266.7555	2.936E+10	-626.2637	66796.	0.000
66.000	0.0442	1280163.	-2904.5234	-0.001878	2260.0933	2.936E+10	-603.8252	81970.	0.000
72.000	0.0337	1253639.	-6448.7367	-0.001620	2221.0062	2.936E+10	-577.5792	102794.	0.000
78.000	0.0248	1206063.	-9822.5201	-0.001368	2150.8947	2.936E+10	-547.0153	132534.	0.000
84.000	0.0173	1138544.	-12998.	-0.001129	2051.3948	2.936E+10	-511.3203	177390.	0.000
90.000	0.0112	1052381.	-15939.	-0.000905	1924.4207	2.936E+10	-469.0404	250789.	0.000
96.000	0.006439	949115.	-18597.	-0.000700	1772.2419	2.936E+10	-417.0961	388662.	0.000
102.000	0.002820	830637.	-20888.	-0.000518	1597.6456	2.936E+10	-346.7019	737589.	0.000
108.000	0.000220	699505.	-22241.	-0.000362	1404.4024	2.936E+10	-104.1666	2837471.	0.000
114.000	-0.001522	564478.	-21629.	-0.000233	1205.4194	2.936E+10	308.2517	1215247.	0.000
120.000	-0.002572	440432.	-19628.	-0.000130	1022.6173	2.936E+10	358.7484	836938.	0.000
126.000	-0.003082	329209.	-17403.	-5.133E-05	858.7128	2.936E+10	382.7043	745120.	0.000
132.000	-0.003188	231695.	-15075.	5.995E-06	715.2024	2.936E+10	393.3129	740288.	0.000
138.000	-0.003010	148292.	-12711.	4.483E-05	592.1041	2.936E+10	394.9177	787279.	0.000
144.000	-0.002650	79076.	-10357.	6.806E-05	490.1031	2.936E+10	389.5039	881947.	0.000
150.000	-0.002193	23866.	-8054.5308	7.858E-05	408.7417	2.936E+10	378.1180	1034535.	0.000
156.000	-0.001707	-17738.	-5836.1745	7.921E-05	399.7128	2.936E+10	361.3341	1270191.	0.000
162.000	-0.001242	-46329.	-3733.8926	7.266E-05	441.8452	2.936E+10	339.4265	1639151.	0.000
168.000	-0.000835	-62692.	-1778.4333	6.152E-05	465.9580	2.936E+10	312.3933	2245076.	0.000
174.000	-0.000504	-67795.	-1.9074	4.819E-05	473.4787	2.936E+10	279.7820	3329511.	0.000
180.000	-0.000257	-62812.	1289.7561	3.484E-05	466.1358	2.936E+10	150.7724	3524970.	0.000
186.000	-8.612E-05	-52389.	1896.3182	2.307E-05	450.7749	2.936E+10	51.4149	3582262.	0.000
192.000	2.016E-05	-40103.	2013.8800	1.361E-05	432.6704	2.936E+10	-12.2276	3639554.	0.000
198.000	7.725E-05	-28250.	1834.4040	6.629E-06	415.2024	2.936E+10	-47.5977	3696845.	0.000
204.000	9.970E-05	-18104.	1506.5414	1.891E-06	400.2509	2.936E+10	-61.6899	3712500.	0.000
210.000	9.995E-05	-10175.	1135.9419	-9.985E-07	388.5666	2.936E+10	-61.8433	3712500.	0.000
216.000	8.772E-05	-4470.5127	787.5844	-2.495E-06	380.1600	2.936E+10	-54.2759	3712500.	0.000
222.000	7.001E-05	-718.9790	494.8080	-3.026E-06	374.6311	2.936E+10	-43.3163	3712500.	0.000
228.000	5.141E-05	1473.3187	269.4260	-2.948E-06	375.7432	2.936E+10	-31.8111	3712500.	0.000
234.000	3.462E-05	2520.1130	109.7214	-2.540E-06	377.2858	2.936E+10	-21.4238	3712500.	0.000
240.000	2.093E-05	2795.1277	6.6035	-1.997E-06	377.6911	2.936E+10	-12.9488	3712500.	0.000
246.000	1.066E-05	2603.4048	-52.0275	-1.445E-06	377.4085	2.936E+10	-6.5948	3712500.	0.000
252.000	3.582E-06	2173.7295	-78.4606	-9.573E-07	376.7754	2.936E+10	-2.2162	3712500.	0.000
258.000	-8.289E-07	1663.8191	-83.5706	-5.651E-07	376.0239	2.936E+10	0.5129	3712500.	0.000
264.000	-3.199E-06	1172.0285	-76.0932	-2.753E-07	375.2992	2.936E+10	1.9795	3712500.	0.000
270.000	-4.132E-06	751.2586	-62.4841	-7.873E-08	374.6791	2.936E+10	2.5568	3712500.	0.000
276.000	-4.144E-06	422.3792	-47.1213	4.121E-08	374.1945	2.936E+10	2.5641	3712500.	0.000
282.000	-3.638E-06	185.7194	-32.6766	1.034E-07	373.8457	2.936E+10	2.2508	3712500.	0.000
288.000	-2.904E-06	30.0508	-20.5341	1.254E-07	373.6163	2.936E+10	1.7966	3712500.	0.000
294.000	-2.133E-06	-60.9446	-11.1852	1.223E-07	373.6618	2.936E+10	1.3197	3712500.	0.000
300.000	-1.437E-06	-104.4196	-4.5594	1.054E-07	373.7259	2.936E+10	0.8889	3712500.	0.000
306.000	-8.686E-07	-115.8716	-0.2804	8.284E-08	373.7418	2.936E+10	0.5374	3712500.	0.000
312.000	-4.426E-07	-107.9525	2.1534	5.997E-08	373.7311	2.936E+10	0.2738	3712500.	0.000
318.000	-1.490E-07	-90.1530	3.2514	3.972E-08	373.7049	2.936E+10	0.0922	3712500.	0.000
324.000	3.409E-08	-69.0167	3.4646	2.345E-08	373.6737	2.936E+10	-0.0211	3712500.	0.000
330.000	1.325E-07	-48.6253	3.1554	1.143E-08	373.6437	2.936E+10	-0.0820	3712500.	0.000
336.000	1.713E-07	-31.1751	2.5915	3.277E-09	373.6180	2.936E+10	-0.1060	3712500.	0.000
342.000	1.718E-07	-17.5335	1.9547	-1.701E-09	373.5979	2.936E+10	-0.1063	3712500.	0.000
348.000	1.509E-07	-7.7154	1.3557	-4.281E-09	373.5834	2.936E+10	-0.0933	3712500.	0.000
354.000	1.204E-07	-1.2559	0.8521	-5.198E-09	373.5739	2.936E+10	-0.0745	3712500.	0.000
360.000	8.848E-08	2.5210	0.4644	-5.069E-09	373.5757	2.936E+10	-0.0547	3712500.	0.000
366.000	5.961E-08	4.3266	0.1895	-4.369E-09	373.5784	2.936E+10	-0.0369	3712500.	0.000
372.000	3.605E-08	4.8034	0.0119	-3.436E-09	373.5791	2.936E+10	-0.0223	3712500.	0.000
378.000	1.838E-08	4.4763	-0.0891	-2.488E-09	373.5786	2.936E+10	-0.0114	3712500.	0.000
384.000	6.195E-09	3.7390	-0.1347	-1.648E-09	373.5775	2.936E+10	-0.003833	3712500.	0.000

390.000	-1.401E-09	2.8629	-0.1436	-9.735E-10	373.5762	2.936E+10	0.000867	3712500.	0.000
396.000	-5.487E-09	2.0174	-0.1308	-4.748E-10	373.5750	2.936E+10	0.003395	3712500.	0.000
402.000	-7.099E-09	1.2937	-0.1075	-1.364E-10	373.5739	2.936E+10	0.004392	3712500.	0.000
408.000	-7.124E-09	0.7278	-0.0811	7.021E-11	373.5731	2.936E+10	0.004408	3712500.	0.000
414.000	-6.256E-09	0.3205	-0.0562	1.773E-10	373.5725	2.936E+10	0.003871	3712500.	0.000
420.000	-4.995E-09	0.0525	-0.0354	2.155E-10	373.5721	2.936E+10	0.003091	3712500.	0.000
426.000	-3.670E-09	-0.1043	-0.0193	2.102E-10	373.5722	2.936E+10	0.002271	3712500.	0.000
432.000	-2.473E-09	-0.1793	-0.007873	1.812E-10	373.5723	2.936E+10	0.001530	3712500.	0.000
438.000	-1.496E-09	-0.1991	-0.000505	1.425E-10	373.5723	2.936E+10	0.000926	3712500.	0.000
444.000	-7.631E-10	-0.1856	0.003689	1.032E-10	373.5723	2.936E+10	0.000472	3712500.	0.000
450.000	-2.576E-10	-0.1551	0.005583	6.839E-11	373.5722	2.936E+10	0.000159	3712500.	0.000
456.000	5.762E-11	-0.1188	0.005955	4.041E-11	373.5722	2.936E+10	-3.563E-05	3712500.	0.000
462.000	2.272E-10	-0.0837	0.005426	1.972E-11	373.5721	2.936E+10	-0.000141	3712500.	0.000
468.000	2.942E-10	-0.0537	0.004458	5.676E-12	373.5721	2.936E+10	-0.000182	3712500.	0.000
474.000	2.954E-10	-0.0302	0.003364	-2.897E-12	373.5721	2.936E+10	-0.000183	3712500.	0.000
480.000	2.594E-10	-0.0133	0.002334	-7.346E-12	373.5720	2.936E+10	-0.000161	3712500.	0.000
486.000	2.072E-10	-0.002194	0.001467	-8.931E-12	373.5720	2.936E+10	-0.000128	3712500.	0.000
492.000	1.523E-10	0.004312	0.000800	-8.714E-12	373.5720	2.936E+10	-9.422E-05	3712500.	0.000
498.000	1.026E-10	0.007426	0.000327	-7.515E-12	373.5720	2.936E+10	-6.350E-05	3712500.	0.000
504.000	6.210E-11	0.008252	2.126E-05	-5.912E-12	373.5720	2.936E+10	-3.842E-05	3712500.	0.000
510.000	3.168E-11	0.007693	-0.000153	-4.283E-12	373.5720	2.936E+10	-1.960E-05	3712500.	0.000
516.000	1.070E-11	0.006427	-0.000231	-2.840E-12	373.5720	2.936E+10	-6.622E-06	3712500.	0.000
522.000	-2.396E-12	0.004921	-0.000247	-1.680E-12	373.5720	2.936E+10	1.482E-06	3712500.	0.000
528.000	-9.459E-12	0.003468	-0.000225	0.000	373.5720	2.936E+10	5.853E-06	3712500.	0.000
534.000	-1.227E-11	0.002224	-0.000185	0.000	373.5720	2.936E+10	7.592E-06	3712500.	0.000
540.000	-1.235E-11	0.001253	-0.000139	0.000	373.5720	2.936E+10	7.643E-06	3712500.	0.000
546.000	-1.090E-11	0.000557	-9.571E-05	0.000	373.5720	2.936E+10	6.744E-06	3712500.	0.000
552.000	-8.763E-12	0.000104	-5.921E-05	0.000	373.5720	2.936E+10	5.422E-06	3712500.	0.000
558.000	-6.499E-12	-0.000154	-3.088E-05	0.000	373.5720	2.936E+10	4.021E-06	3712500.	0.000
564.000	-4.424E-12	-0.000267	-1.060E-05	0.000	373.5720	2.936E+10	2.737E-06	3712500.	0.000
570.000	-2.676E-12	-0.000282	2.578E-06	0.000	373.5720	2.936E+10	1.656E-06	3712500.	0.000
576.000	-1.274E-12	-0.000237	9.910E-06	0.000	373.5720	2.936E+10	7.882E-07	3712500.	0.000
582.000	0.000	-0.000163	1.258E-05	0.000	373.5720	2.936E+10	1.003E-07	3712500.	0.000
588.000	0.000	-8.624E-05	1.149E-05	0.000	373.5720	2.936E+10	-4.636E-07	3712500.	0.000
594.000	1.555E-12	-2.581E-05	7.209E-06	0.000	373.5720	2.936E+10	-9.620E-07	3712500.	0.000
600.000	2.329E-12	0.000	0.000	0.000	373.5720	2.936E+10	-1.441E-06	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0038723 radians
Maximum bending moment = 1284684. inch-lbs
Maximum shear force = 41415. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	56686.	-0.006848	373.5720	2.936E+10	-755.4724	4532.8346	0.000
6.000	0.4589	333462.	51933.	-0.006814	864.9813	2.936E+10	-828.9833	10838.	0.000
12.000	0.4182	637012.	46941.	-0.006715	1312.3098	2.936E+10	-834.8704	11977.	0.000
18.000	0.3783	910375.	41921.	-0.006557	1715.1525	2.936E+10	-838.4908	13298.	0.000
24.000	0.3396	1153363.	36886.	-0.006346	2073.2339	2.936E+10	-839.7627	14839.	0.000
30.000	0.3022	1365881.	31851.	-0.006088	2386.4121	2.936E+10	-838.5994	16651.	0.000
36.000	0.2665	1547926.	26831.	-0.005791	2654.6842	2.936E+10	-834.9081	18798.	0.000
42.000	0.2327	1699594.	21840.	-0.005459	2878.1902	2.936E+10	-828.5880	21365.	0.000
48.000	0.2010	1821080.	16896.	-0.005099	3057.2192	2.936E+10	-819.5278	24465.	0.000
54.000	0.1715	1912686.	12015.	-0.004717	3192.2147	2.936E+10	-807.6022	28252.	0.000
60.000	0.1444	1974822.	7213.7597	-0.004320	3283.7813	2.936E+10	-792.6667	32941.	0.000
66.000	0.1197	2008012.	2512.1105	-0.003913	3332.6926	2.936E+10	-774.5497	38834.	0.000
72.000	0.0974	2012902.	-2070.6609	-0.003502	3339.8995	2.936E+10	-753.0407	46377.	0.000
78.000	0.0776	1990266.	-6513.3934	-0.003093	3306.5415	2.936E+10	-727.8701	56245.	0.000
84.000	0.0603	1941014.	-10793.	-0.002691	3233.9609	2.936E+10	-698.6749	69509.	0.000
90.000	0.0454	1866208.	-14884.	-0.002302	3123.7217	2.936E+10	-664.9361	87969.	0.000
96.000	0.0327	1767077.	-18756.	-0.001931	2977.6363	2.936E+10	-625.8525	114892.	0.000
102.000	0.0222	1645049.	-22374.	-0.001582	2797.8091	2.936E+10	-580.0598	156896.	0.000
108.000	0.0137	1501797.	-25689.	-0.001261	2586.7062	2.936E+10	-524.8919	229902.	0.000
114.000	0.007056	1339339.	-28625.	-0.000970	2347.2982	2.936E+10	-453.8393	385893.	0.000
120.000	0.002057	1160265.	-31009.	-0.000715	2083.4042	2.936E+10	-340.7352	994018.	0.000
126.000	-0.001520	968684.	-31071.	-0.000497	1801.0793	2.936E+10	319.9878	1262990.	0.000
132.000	-0.003909	788421.	-28869.	-0.000318	1535.4345	2.936E+10	413.8742	635253.	0.000
138.000	-0.005331	622895.	-26260.	-0.000173	1291.5055	2.936E+10	455.8010	532990.	0.000
144.000	-0.005989	473648.	-23459.	-6.129E-05	1071.5673	2.936E+10	477.9439	478800.	0.000
150.000	-0.006067	341510.	-20561.	2.202E-05	876.8401	2.936E+10	488.1496	482793.	0.000
156.000	-0.005725	226874.	-17627.	8.010E-05	707.9058	2.936E+10	489.6562	513171.	0.000
162.000	-0.005105	129818.	-14706.	0.000117	564.8792	2.936E+10	484.1039	568938.	0.000
168.000	-0.004326	50163.	-11837.	0.000135	447.4955	2.936E+10	472.4056	655147.	0.000
174.000	-0.003486	-12495.	-9054.1806	0.000139	391.9856	2.936E+10	455.0762	783273.	0.000
180.000	-0.002661	-58768.	-6391.8549	0.000132	460.1764	2.936E+10	432.3657	974955.	0.000
186.000	-0.001908	-89464.	-3881.8765	0.000116	505.4115	2.936E+10	404.2938	1271511.	0.000
192.000	-0.001264	-105587.	-1557.2562	9.643E-05	529.1708	2.936E+10	370.5797	1758470.	0.000
198.000	-0.000751	-108347.	545.5112	7.457E-05	533.2380	2.936E+10	330.3428	2640686.	0.000
204.000	-0.000370	-99192.	2222.6085	5.336E-05	519.7469	2.936E+10	228.6896	3712500.	0.000
210.000	-0.000110	-81784.	3113.3442	3.487E-05	494.0931	2.936E+10	68.2223	3712500.	0.000
216.000	4.879E-05	-61903.	3227.4483	2.018E-05	464.7951	2.936E+10	-30.1876	3712500.	0.000
222.000	0.000132	-43095.	2892.0080	9.451E-06	437.0796	2.936E+10	-81.6258	3712500.	0.000
228.000	0.000162	-27218.	2346.0405	2.266E-06	413.6814	2.936E+10	-100.3634	3712500.	0.000
234.000	0.000159	-14947.	1749.6058	-2.043E-06	395.5993	2.936E+10	-98.4482	3712500.	0.000
240.000	0.000138	-6218.1597	1198.6883	-4.206E-06	382.7355	2.936E+10	-85.1910	3712500.	0.000
246.000	0.000109	-554.5576	741.4692	-4.899E-06	374.3892	2.936E+10	-67.2154	3712500.	0.000

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252.000	7.890E-05	2689.4050	393.3659	-4.680E-06	377.5353	2.936E+10	-48.8190	3712500.	0.000
258.000	5.247E-05	4175.3246	149.5185	-3.979E-06	379.7250	2.936E+10	-32.4634	3712500.	0.000
264.000	3.115E-05	4491.6966	-5.6996	-3.093E-06	380.1912	2.936E+10	-19.2760	3712500.	0.000
270.000	1.535E-05	4113.2019	-92.0183	-2.214E-06	379.6335	2.936E+10	-9.4969	3712500.	0.000
276.000	4.588E-06	3391.9665	-129.0236	-1.447E-06	378.5706	2.936E+10	-2.8389	3712500.	0.000
282.000	-2.013E-06	2567.8281	-133.8065	-8.377E-07	377.3561	2.936E+10	1.2453	3712500.	0.000
288.000	-5.464E-06	1787.9879	-119.9276	-3.926E-07	376.2069	2.936E+10	3.3810	3712500.	0.000
294.000	-6.723E-06	1129.4930	-97.3047	-9.440E-08	375.2365	2.936E+10	4.1600	3712500.	0.000
300.000	-6.597E-06	620.5232	-72.5790	8.445E-08	374.4865	2.936E+10	4.0819	3712500.	0.000
306.000	-5.710E-06	258.3733	-49.7344	1.743E-07	373.9528	2.936E+10	3.5330	3712500.	0.000
312.000	-4.506E-06	23.3566	-30.7716	2.031E-07	373.6064	2.936E+10	2.7880	3712500.	0.000
318.000	-3.273E-06	-111.2974	-16.3318	1.941E-07	373.7360	2.936E+10	2.0253	3712500.	0.000
324.000	-2.177E-06	-173.0183	-6.2149	1.650E-07	373.8270	2.936E+10	1.3470	3712500.	0.000
330.000	-1.293E-06	-186.2107	0.2263	1.283E-07	373.8464	2.936E+10	0.8001	3712500.	0.000
336.000	-6.374E-07	-170.5625	3.8096	9.184E-08	373.8234	2.936E+10	0.3944	3712500.	0.000
342.000	-1.909E-07	-140.6813	5.3472	6.003E-08	373.7793	2.936E+10	0.1181	3712500.	0.000
348.000	8.302E-08	-106.5181	5.5475	3.477E-08	373.7290	2.936E+10	-0.0514	3712500.	0.000
354.000	2.263E-07	-74.1822	4.9732	1.630E-08	373.6813	2.936E+10	-0.1400	3712500.	0.000
360.000	2.787E-07	-46.8724	4.0358	3.933E-09	373.6411	2.936E+10	-0.1724	3712500.	0.000
366.000	2.735E-07	-25.7603	3.0108	-3.490E-09	373.6100	2.936E+10	-0.1692	3712500.	0.000
372.000	2.368E-07	-10.7357	2.0635	-7.219E-09	373.5878	2.936E+10	-0.1465	3712500.	0.000
378.000	1.869E-07	-0.9835	1.2770	-8.417E-09	373.5735	2.936E+10	-0.1156	3712500.	0.000
384.000	1.358E-07	4.6059	0.6781	-8.047E-09	373.5788	2.936E+10	-0.0840	3712500.	0.000
390.000	9.033E-08	7.1696	0.2583	-6.844E-09	373.5826	2.936E+10	-0.0559	3712500.	0.000
396.000	5.367E-08	7.7197	-0.008970	-5.322E-09	373.5834	2.936E+10	-0.0332	3712500.	0.000
402.000	2.647E-08	7.0727	-0.1577	-3.810E-09	373.5824	2.936E+10	-0.0164	3712500.	0.000
408.000	7.944E-09	5.8347	-0.2216	-2.491E-09	373.5806	2.936E+10	-0.004916	3712500.	0.000
414.000	-3.424E-09	4.4186	-0.2300	-1.443E-09	373.5797	2.936E+10	0.002139	3712500.	0.000
420.000	-9.375E-09	3.0778	-0.2062	-6.772E-10	373.5766	2.936E+10	0.005801	3712500.	0.000
426.000	-1.155E-08	1.9451	-0.1674	-1.639E-10	373.5749	2.936E+10	0.007147	3712500.	0.000
432.000	-1.134E-08	1.0694	-0.1249	1.442E-10	373.5727	2.936E+10	0.007017	3712500.	0.000
438.000	-9.820E-09	0.4461	-0.0856	2.991E-10	373.5727	2.936E+10	0.006076	3712500.	0.000
444.000	-7.752E-09	0.0414	-0.0530	3.489E-10	373.5721	2.936E+10	0.004797	3712500.	0.000
450.000	-5.633E-09	-0.1906	-0.0282	3.337E-10	373.5723	2.936E+10	0.003486	3712500.	0.000
456.000	-3.748E-09	-0.2971	-0.0107	2.838E-10	373.5724	2.936E+10	0.002313	3712500.	0.000
462.000	-2.227E-09	-0.3200	0.000355	2.208E-10	373.5725	2.936E+10	0.001378	3712500.	0.000
468.000	-1.099E-09	-0.2933	0.006530	1.581E-10	373.5725	2.936E+10	0.000680	3712500.	0.000
474.000	-3.306E-10	-0.2420	0.009834	1.034E-10	373.5724	2.936E+10	0.000205	3712500.	0.000
480.000	1.413E-10	-0.1833	0.009535	5.991E-11	373.5723	2.936E+10	-8.741E-05	3712500.	0.000
486.000	3.883E-10	-0.1277	0.008552	2.813E-11	373.5722	2.936E+10	-0.000240	3712500.	0.000
492.000	4.788E-10	-0.0807	0.006942	6.827E-12	373.5721	2.936E+10	-0.000296	3712500.	0.000
498.000	4.703E-10	-0.0444	0.005181	-5.959E-12	373.5721	2.936E+10	-0.000291	3712500.	0.000
504.000	4.073E-10	-0.0185	0.003552	-1.239E-11	373.5720	2.936E+10	-0.000252	3712500.	0.000
510.000	3.216E-10	-0.001754	0.002199	-1.447E-11	373.5720	2.936E+10	-0.000199	3712500.	0.000
516.000	2.337E-10	0.007873	0.001168	-1.384E-11	373.5720	2.936E+10	-0.000145	3712500.	0.000
522.000	1.555E-10	0.0123	0.000446	-1.178E-11	373.5720	2.936E+10	-9.620E-05	3712500.	0.000
528.000	9.233E-11	0.0132	-1.417E-05	-9.170E-12	373.5720	2.936E+10	-5.713E-05	3712500.	0.000
534.000	4.543E-11	0.0121	-0.000270	-6.576E-12	373.5720	2.936E+10	-2.811E-05	3712500.	0.000
540.000	1.342E-11	0.0100	-0.000379	-4.311E-12	373.5720	2.936E+10	-8.300E-06	3712500.	0.000
546.000	-6.306E-12	0.007600	-0.000392	-2.510E-12	373.5720	2.936E+10	3.902E-06	3712500.	0.000
552.000	-1.671E-11	0.005319	-0.000350	-1.190E-12	373.5720	2.936E+10	1.034E-05	3712500.	0.000
558.000	-2.058E-11	0.003408	-0.000280	0.000	373.5720	2.936E+10	1.274E-05	3712500.	0.000
564.000	-2.028E-11	0.001955	-0.000204	0.000	373.5720	2.936E+10	1.255E-05	3712500.	0.000
570.000	-1.758E-11	0.000953	-0.000134	0.000	373.5720	2.936E+10	1.088E-05	3712500.	0.000
576.000	-1.372E-11	0.000343	-7.611E-05	0.000	373.5720	2.936E+10	8.487E-06	3712500.	0.000
582.000	-9.427E-12	3.869E-05	-3.315E-05	0.000	373.5720	2.936E+10	5.833E-06	3712500.	0.000
588.000	-5.091E-12	-5.593E-05	-6.198E-06	0.000	373.5720	2.936E+10	3.150E-06	3712500.	0.000
594.000	0.000	-3.714E-05	4.780E-06	0.000	373.5720	2.936E+10	5.095E-07	3712500.	0.000
600.000	3.399E-12	0.000	0.000	0.000	373.5720	2.936E+10	-2.103E-06	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0068481 radians
Maximum bending moment	=	2012902. inch-lbs
Maximum shear force	=	56686. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	21
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness psi	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	77650.	-0.0121	373.5720	2.936E+10	-898.4132	2695.2396	0.000
6.000	0.9272	462028.	71990.	-0.0121	1054.4432	2.936E+10	-988.3441	6395.5785	0.000
12.000	0.8550	888380.	66030.	-0.0119	1682.7399	2.936E+10	-998.2856	7005.5709	0.000
18.000	0.7839	1278610.	60017.	-0.0117	2257.8047	2.936E+10	-1005.9781	7700.1659	0.000
24.000	0.7143	1632360.	53965.	-0.0114	2779.1101	2.936E+10	-1011.3436	8495.1234	0.000
30.000	0.6467	1949363.	47888.	-0.0111	3246.2613	2.936E+10	-1014.3008	9409.9929	0.000
36.000	0.5816	2229447.	41801.	-0.0106	3659.0112	2.936E+10	-1014.7642	10469.	0.000
42.000	0.5191	2472537.	35719.	-0.0102	4017.2431	2.936E+10	-1012.6431	11704.	0.000
48.000	0.4597	2678660.	29657.	-0.009627	4320.9975	2.936E+10	-1007.8402	13154.	0.000
54.000	0.4036	2847945.	23633.	-0.009062	4570.4661	2.936E+10	-1000.2492	14870.	0.000
60.000	0.3510	2980631.	17663.	-0.008466	4766.0001	2.936E+10	-989.7527	16920.	0.000
66.000	0.3020	3077069.	11765.	-0.007847	4908.1157	2.936E+10	-976.2180	19394.	0.000
72.000	0.2568	3137725.	5957.7556	-0.007212	4997.5016	2.936E+10	-959.4922	22417.	0.000
78.000	0.2155	3163188.	261.0973	-0.006568	5035.0265	2.936E+10	-939.3939	26159.	0.000
84.000	0.1780	3154178.	-5304.1884	-0.005923	5021.7489	2.936E+10	-915.7013	30868.	0.000
90.000	0.1444	3111550.	-10716.	-0.005282	4958.9285	2.936E+10	-888.1333	36906.	0.000
96.000	0.1146	3036303.	-15949.	-0.004654	4848.0408	2.936E+10	-856.3172	44832.	0.000
102.000	0.0885	2929600.	-20977.	-0.004044	4690.7967	2.936E+10	-819.7326	55550.	0.000
108.000	0.0661	2792779.	-25769.	-0.003460	4489.1698	2.936E+10	-777.6054	70617.	0.000

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114.000	0.0470	2627385.	-30288.	-0.002906	4245.4366	2.936E+10	-728.6870	92976.	0.000
120.000	0.0312	2435215.	-34486.	-0.002388	3962.2429	2.936E+10	-670.7320	128983.	0.000
126.000	0.0184	2218393.	-38296.	-0.001913	3642.7220	2.936E+10	-598.9895	195708.	0.000
132.000	0.008247	1979548.	-41592.	-0.001484	3290.7462	2.936E+10	-499.9344	363709.	0.000
138.000	0.000558	1722295.	-43881.	-0.001105	2911.6435	2.936E+10	-263.0380	2826691.	0.000
144.000	-0.005018	1455215.	-43299.	-0.000781	2518.0602	2.936E+10	456.9680	546342.	0.000
150.000	-0.008811	1204285.	-40321.	-0.000509	2148.2753	2.936E+10	535.8297	364895.	0.000
156.000	-0.0111	972395.	-36979.	-0.000287	1806.5492	2.936E+10	578.1720	311794.	0.000
162.000	-0.0122	761118.	-33437.	-0.000109	1495.1991	2.936E+10	602.5808	295168.	0.000
168.000	-0.0124	571376.	-29783.	2.681E-05	1215.5845	2.936E+10	615.2544	296786.	0.000
174.000	-0.0119	403665.	-26080.	0.000126	968.4357	2.936E+10	619.0668	311425.	0.000
180.000	-0.0109	258156.	-22376.	0.000194	754.0060	2.936E+10	615.5758	338202.	0.000
186.000	-0.0099598	134755.	-18713.	0.000234	572.1548	2.936E+10	605.6971	378640.	0.000
192.000	-0.008110	33131.	-15125.	0.000251	422.3957	2.936E+10	589.9839	436493.	0.000
198.000	-0.006581	-47261.	-11649.	0.000250	443.2179	2.936E+10	568.7534	518532.	0.000
204.000	-0.005110	-107167.	-8334.6340	0.000234	531.4998	2.936E+10	536.1275	629463.	0.000
210.000	-0.003771	-147751.	-5235.6839	0.000208	591.3065	2.936E+10	496.8559	790550.	0.000
216.000	-0.002613	-170418.	-2385.3585	0.000176	624.7090	2.936E+10	453.2526	1040846.	0.000
222.000	-0.001664	-176732.	188.8231	0.000140	634.0137	2.936E+10	404.8079	1459985.	0.000
228.000	-0.000931	-168436.	2453.3541	0.000105	621.7887	2.936E+10	350.0358	2255475.	0.000
234.000	-0.000405	-147504.	4255.7537	7.257E-05	590.9423	2.936E+10	250.7641	3712500.	0.000
240.000	-6.028E-05	-117514.	5119.9375	4.549E-05	546.7473	2.936E+10	37.2972	3712500.	0.000
246.000	0.000141	-86157.	4970.8288	2.468E-05	500.5378	2.936E+10	-87.0001	3712500.	0.000
252.000	0.000236	-57914.	4272.0643	9.953E-06	458.9175	2.936E+10	-145.9214	3712500.	0.000
258.000	0.000260	-34912.	3351.6078	4.661E-07	425.0209	2.936E+10	-160.8975	3712500.	0.000
264.000	0.000241	-17696.	2420.7694	-4.910E-06	399.6495	2.936E+10	-149.3820	3712500.	0.000
270.000	0.000201	-5853.1954	1599.3065	-7.317E-06	382.1976	2.936E+10	-124.4390	3712500.	0.000
276.000	0.000154	1510.7677	940.8258	-7.049E-06	375.7984	2.936E+10	-95.0546	3712500.	0.000
282.000	0.000108	5452.4533	455.2126	-7.049E-06	381.6071	2.936E+10	-66.8165	3712500.	0.000
288.000	6.904E-05	6987.6142	126.6157	-5.778E-06	383.8694	2.936E+10	-42.7158	3712500.	0.000
294.000	3.865E-05	6983.5582	-73.2836	-4.350E-06	383.8634	2.936E+10	-23.9173	3712500.	0.000
300.000	1.684E-05	6117.0328	-176.2891	-3.011E-06	382.5864	2.936E+10	-10.4179	3712500.	0.000
306.000	2.521E-06	4874.1957	-212.2231	-1.888E-06	380.7549	2.936E+10	-1.5601	3712500.	0.000
312.000	-5.817E-06	3574.1846	-206.1060	-1.024E-06	378.8391	2.936E+10	3.5991	3712500.	0.000
318.000	-9.772E-06	2403.0567	-177.1693	-4.113E-07	377.1132	2.936E+10	6.0463	3712500.	0.000
324.000	-1.078E-05	1448.9869	-139.0207	-1.993E-08	375.7073	2.936E+10	6.6700	3712500.	0.000
330.000	-1.001E-05	734.7931	-100.4278	2.032E-07	374.6549	2.936E+10	6.1943	3712500.	0.000
336.000	-8.343E-06	243.4415	-66.3619	3.032E-07	373.9308	2.936E+10	5.1610	3712500.	0.000
342.000	-6.372E-06	-62.1649	-39.0501	3.217E-07	373.6636	2.936E+10	3.9430	3712500.	0.000
348.000	-4.480E-06	-225.8117	-18.9049	2.923E-07	373.9048	2.936E+10	2.7721	3712500.	0.000
354.000	-2.865E-06	-289.6160	-5.2708	2.396E-07	373.9988	2.936E+10	1.7726	3712500.	0.000
360.000	-1.605E-06	-289.5468	3.0256	1.840E-07	373.9987	2.936E+10	0.9928	3712500.	0.000
366.000	-6.995E-07	-253.6750	7.3025	1.249E-07	373.9458	2.936E+10	0.4328	3712500.	0.000
372.000	-1.055E-07	-202.1697	8.7967	7.834E-08	373.8699	2.936E+10	0.0653	3712500.	0.000
378.000	2.406E-07	-148.2734	8.5458	4.253E-08	373.7905	2.936E+10	-0.1489	3712500.	0.000
384.000	4.049E-07	-99.7065	7.3475	1.719E-08	373.7190	2.936E+10	-0.2505	3712500.	0.000
390.000	4.469E-07	-60.1380	5.7664	8.518E-10	373.6606	2.936E+10	-0.2765	3712500.	0.000
396.000	4.151E-07	-30.5113	4.1663	-8.412E-09	373.6170	2.936E+10	-0.2569	3712500.	0.000
402.000	3.459E-07	-7.1250	2.7536	-1.256E-08	373.5869	2.936E+10	-0.2140	3712500.	0.000
408.000	2.643E-07	2.5578	1.6208	-1.334E-08	373.5758	2.936E+10	-0.1636	3712500.	0.000
414.000	1.859E-07	9.3519	0.7851	-1.212E-08	373.5858	2.936E+10	-0.1150	3712500.	0.000
420.000	1.189E-07	12.0037	0.2194	-9.939E-09	373.5897	2.936E+10	-0.0736	3712500.	0.000
426.000	6.661E-08	12.0050	-0.1249	-7.485E-09	373.5897	2.936E+10	-0.0412	3712500.	0.000
432.000	2.906E-08	10.5200	-0.3025	-5.183E-09	373.5875	2.936E+10	-0.0180	3712500.	0.000
438.000	4.411E-09	8.3855	-0.3646	-3.251E-09	373.5844	2.936E+10	-0.002729	3712500.	0.000
444.000	-9.955E-09	6.1511	-0.3543	-1.766E-09	373.5811	2.936E+10	0.006160	3712500.	0.000
450.000	-1.678E-08	4.1371	-0.3047	-7.142E-10	373.5781	2.936E+10	0.0104	3712500.	0.000
456.000	-1.853E-08	2.4959	-0.2392	-3.637E-11	373.5757	2.936E+10	0.0115	3712500.	0.000
462.000	-1.721E-08	1.2669	-0.1728	3.482E-10	373.5739	2.936E+10	0.0107	3712500.	0.000
468.000	-1.435E-08	0.4211	-0.1143	5.207E-10	373.5726	2.936E+10	0.008877	3712500.	0.000
474.000	-1.097E-08	-0.1052	-0.0673	5.530E-10	373.5722	2.936E+10	0.006785	3712500.	0.000
480.000	-7.712E-09	-0.3873	-0.0326	5.026E-10	373.5726	2.936E+10	0.004772	3712500.	0.000
486.000	-4.933E-09	-0.4975	-0.009132	4.122E-10	373.5726	2.936E+10	0.003053	3712500.	0.000
492.000	-2.765E-09	-0.4977	0.005159	3.105E-10	373.5728	2.936E+10	0.001711	3712500.	0.000
498.000	-1.207E-09	-0.4362	0.0125	2.151E-10	373.5727	2.936E+10	0.000747	3712500.	0.000
504.000	-1.845E-10	-0.3478	0.0151	1.349E-10	373.5725	2.936E+10	0.000114	3712500.	0.000
510.000	4.119E-10	-0.2551	0.0147	7.333E-11	373.5724	2.936E+10	-0.000255	3712500.	0.000
516.000	6.955E-10	-0.1716	0.0126	2.972E-11	373.5723	2.936E+10	-0.000430	3712500.	0.000
522.000	7.686E-10	-0.1035	0.009920	1.607E-12	373.5722	2.936E+10	-0.000476	3712500.	0.000
528.000	7.148E-10	-0.0525	0.007167	-1.434E-11	373.5721	2.936E+10	-0.000442	3712500.	0.000
534.000	5.965E-10	-0.0175	0.004733	-2.150E-11	373.5720	2.936E+10	-0.000369	3712500.	0.000
540.000	4.568E-10	0.004294	0.002778	-2.285E-11	373.5720	2.936E+10	-0.000283	3712500.	0.000
546.000	3.223E-10	0.0159	0.001332	-2.078E-11	373.5720	2.936E+10	-0.000199	3712500.	0.000
552.000	2.074E-10	0.0203	0.000348	-1.708E-11	373.5720	2.936E+10	-0.000128	3712500.	0.000
558.000	1.174E-10	0.0201	-0.000255	-1.295E-11	373.5720	2.936E+10	-7.261E-05	3712500.	0.000
564.000	5.198E-11	0.0173	-0.000569	-9.129E-12	373.5720	2.936E+10	-3.216E-05	3712500.	0.000
570.000	7.801E-12	0.0133	-0.000680	-6.004E-12	373.5720	2.936E+10	-4.827E-06	3712500.	0.000
576.000	-2.007E-11	0.009139	-0.000657	-3.710E-12	373.5720	2.936E+10	1.242E-05	3712500.	0.000
582.000	-3.672E-11	0.005423	-0.000552	-2.222E-12	373.5720	2.936E+10	2.272E-05	3712500.	0.000
588.000	-4.673E-11	0.002523	-0.000397	-1.410E-12	373.5720	2.936E+10	2.891E-05	3712500.	0.000
594.000	-5.364E-11	0.000664	-0.000210	-1.084E-12	373.5720	2.936E+10	3.319E-05	3712500.	0.000
600.000	-5.974E-11	0.000	0.000	-1.016E-12	373.5720	2.936E+10	3.697E-05	1856250.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0121311 radians
Maximum bending moment	=	3163188. inch-lbs
Maximum shear force	=	77650. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	16
Number of zero deflection points	=	7

Summary of Pile Response(s)

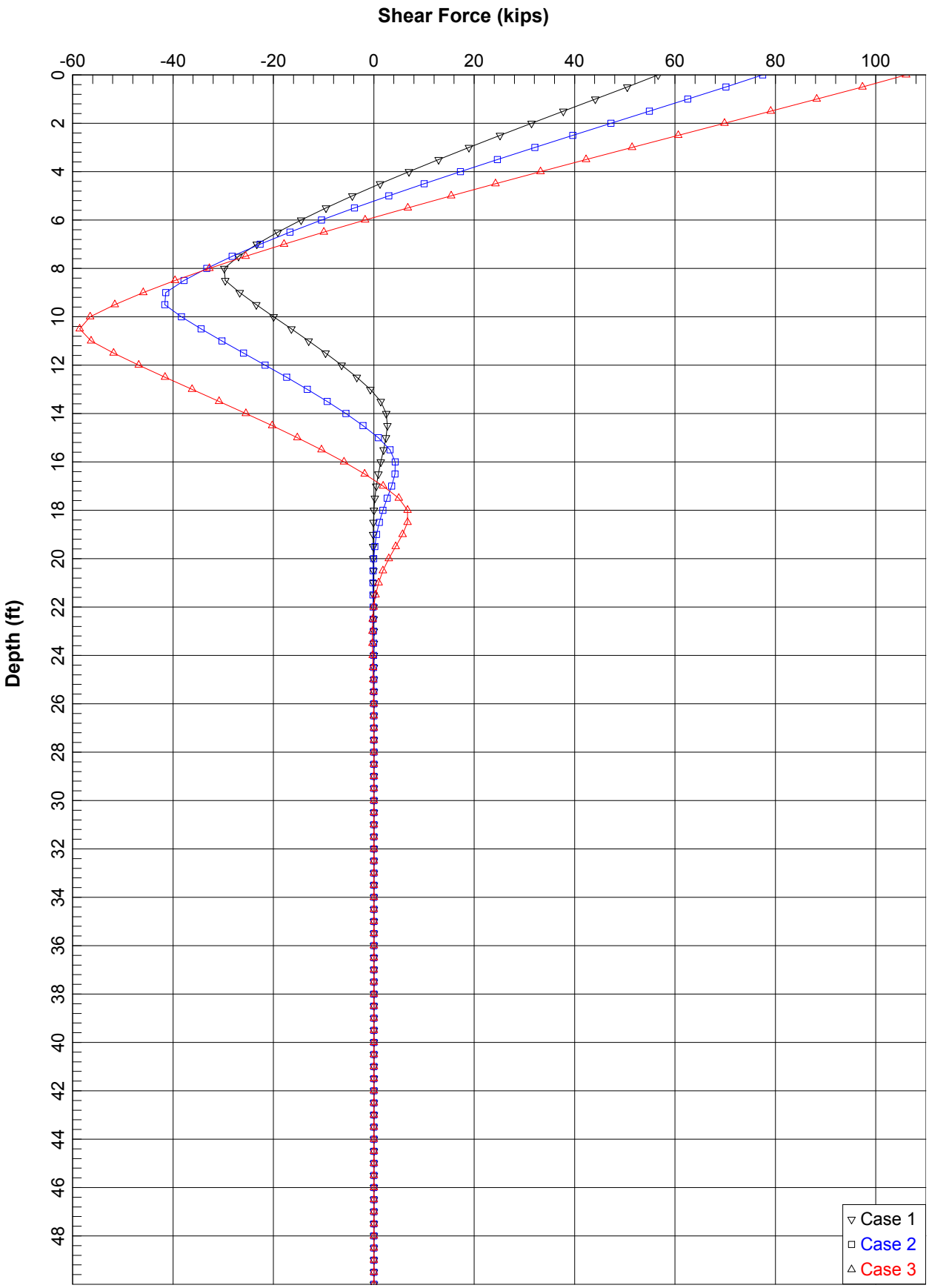
Definitions of Pile-head Loading Conditions:

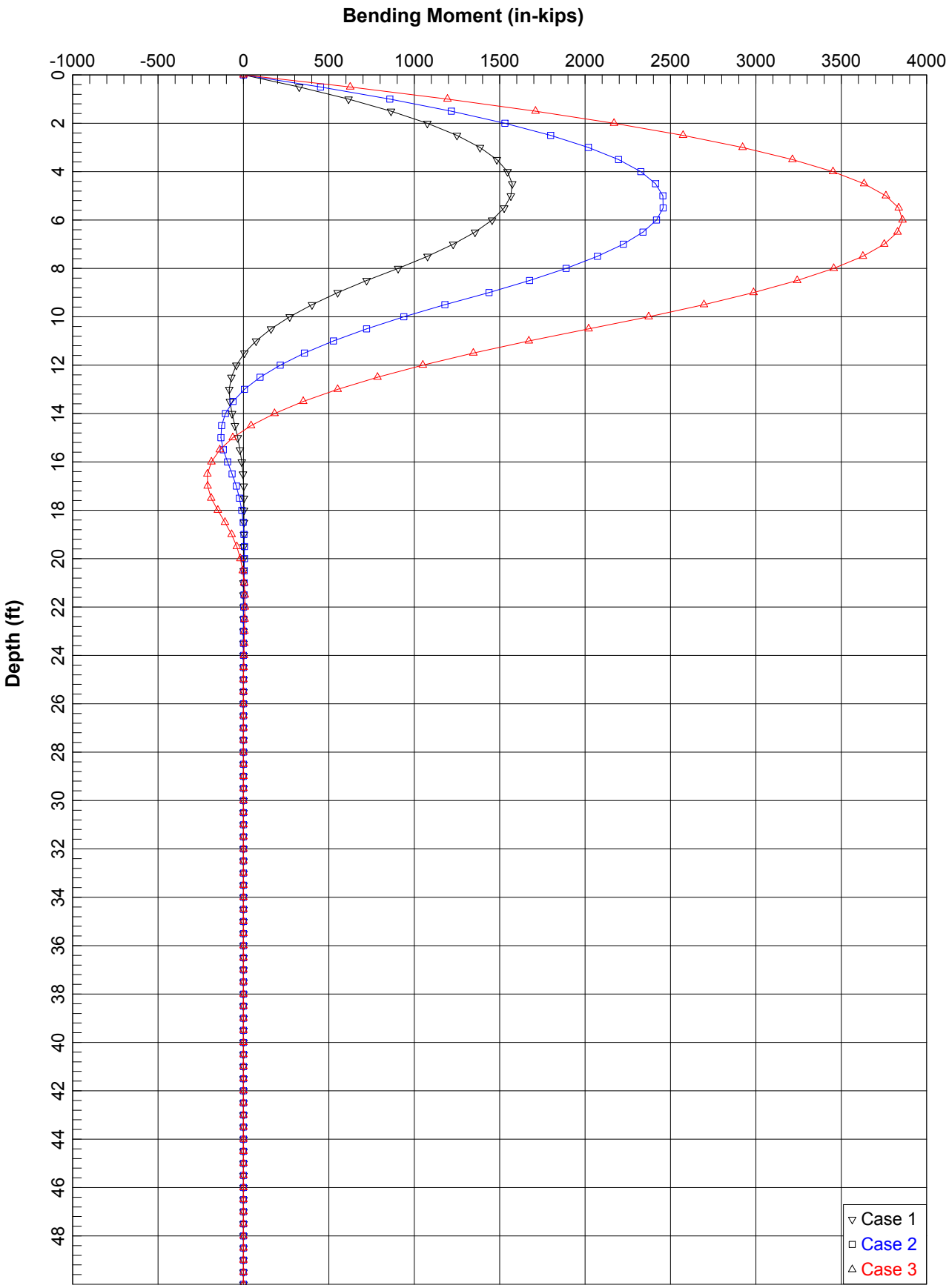
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	169000.	0.25000000	1284684.	41415.	-0.00387226
2	4	y = 0.5000	M = 0.000	169000.	0.50000000	2012902.	56686.	-0.00684807
3	4	y = 1.0000	M = 0.000	169000.	1.00000000	3163188.	77650.	-0.01213114

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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                              All Rights Reserved

================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4R_transv_Max P.lp6d
Name of output report file:    Bent 4R_transv_Max P.lp6o
Name of plot output file:      Bent 4R_transv_Max P.lp6p
Name of runtime messeage file: Bent 4R_transv_Max P.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:12:27

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                  Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                        Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ----------        ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =         Circular
   Section Length                              =      50.00000000 ft
   Top Width                                   =      24.00000000 in
   Bottom Width                                =      24.00000000 in
   Top Area                                    =     452.38934212 in
   Bottom Area                                 =     452.38934212 in
   Moment of Inertia at Top                    =    8143.00815810 in
   Moment of Inertia at Bottom                 =    8143.00815810 in
   Elastic Modulus                             =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =         0.000 degrees
                                               =         0.000 radians

Pile Batter Angle                              =         0.000 degrees
                                               =         0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =      -5.00000 ft
   Distance from top of pile to bottom of layer=       0.10000 ft
   Effective unit weight at top of layer       =     120.00000 pcf
   Effective unit weight at bottom of layer    =     120.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00700
   Epsilon-50 at bottom of layer               =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =       0.10000 ft
   Distance from top of pile to bottom of layer=      80.00000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00500
   Epsilon-50 at bottom of layer               =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                     Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                 Rock Mass                              In-situ      In-situ       Elastic
Layer                Soil Type          Depth        Unit Wt.     Cohesion     Friction        qu           or
Factor          J          kpy      Rock Emass      krm             Test         Test       Subgrade
 Num.       (p-y Curve Criteria)          ft           pcf          psf          deg.          psi          GSI       Epsilon
50    Factor          pci          psi                Type       Property     Mod. pci
-----  ------  ---------- ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000      120.000     4500.000       --          --          --
0.00700       --         --          --          --          --          --          --
                                                0.10000     120.000     4500.000       --          --          --
0.00700       --         --          --          --          --          --          --
  2     Stiff Clay w/o Free Water          0.10000     125.000     4500.000       --          --          --
0.00500       --         --          --          --          --          --          --
                                               80.000      125.000     4500.000       --          --          --
0.00500       --         --          --          --          --          --          --


--------------------------------------------------------------------------------
                      p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----     ----------      ----------      ----------
  1           0.000          0.6750          1.0000
  2          50.000          0.6750          1.0000


--------------------------------------------------------------------------------
                                  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 = 3
```

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	169000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	169000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	169000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	56626.	-0.004288	373.5720	2.936E+10	-974.5682	11695.	0.000
6.000	0.2243	326563.	50513.	-0.004254	854.8139	2.936E+10	-1063.3113	28447.	0.000
12.000	0.1989	614779.	44132.	-0.004158	1279.5456	2.936E+10	-1063.6613	32078.	0.000
18.000	0.1744	864576.	37761.	-0.004007	1647.6606	2.936E+10	-1059.8807	36468.	0.000
24.000	0.1509	1076038.	31426.	-0.003808	1959.2831	2.936E+10	-1051.8045	41830.	0.000
30.000	0.1287	1249412.	25153.	-0.003571	2214.7770	2.936E+10	-1039.2488	48459.	0.000
36.000	0.1080	1385114.	18969.	-0.003302	2414.7555	2.936E+10	-1022.0036	56768.	0.000
42.000	0.0891	1483737.	12904.	-0.003008	2560.0919	2.936E+10	-999.8231	67360.	0.000
48.000	0.0719	1546059.	6986.3475	-0.002699	2651.9329	2.936E+10	-972.4099	81128.	0.000
54.000	0.0567	1573054.	1251.5520	-0.002380	2691.7138	2.936E+10	-939.3886	99455.	0.000
60.000	0.0434	1565905.	-4267.3929	-0.002059	2681.1781	2.936E+10	-900.2597	124584.	0.000
66.000	0.0320	1526021.	-9531.1120	-0.001743	2622.4039	2.936E+10	-854.3133	160376.	0.000
72.000	0.0224	1455067.	-14495.	-0.001439	2517.8409	2.936E+10	-800.4510	214046.	0.000
78.000	0.0147	1354994.	-19107.	-0.001151	2370.3682	2.936E+10	-736.7729	300758.	0.000
84.000	0.008621	1228117.	-23296.	-0.000887	2183.3947	2.936E+10	-659.4326	458969.	0.000
90.000	0.004049	1077245.	-26949.	-0.000652	1961.0621	2.936E+10	-558.3261	827357.	0.000
96.000	0.000798	906051.	-29771.	-0.000449	1708.7804	2.936E+10	-382.2321	2872382.	0.000
102.000	-0.001341	720909.	-29599.	-0.000283	1435.9439	2.936E+10	439.3404	1965735.	0.000
108.000	-0.002596	551433.	-26691.	-0.000153	1186.1950	2.936E+10	530.0255	1224861.	0.000
114.000	-0.003175	400924.	-23394.	-5.554E-05	964.3964	2.936E+10	568.9174	1074973.	0.000
120.000	-0.003263	270813.	-19935.	1.310E-05	772.6573	2.936E+10	584.2358	1074338.	0.000
126.000	-0.003018	161678.	-16430.	5.730E-05	611.8302	2.936E+10	584.1172	1161200.	0.000
132.000	-0.002575	73538.	-12961.	8.134E-05	481.9421	2.936E+10	572.0797	1332889.	0.000
138.000	-0.002042	5977.8533	-9595.3290	8.947E-05	382.3813	2.936E+10	549.9048	1615723.	0.000
144.000	-0.001502	-41787.	-6390.0789	8.581E-05	435.1520	2.936E+10	518.5119	2071832.	0.000
150.000	-0.001012	-70877.	-3399.8365	7.429E-05	478.0206	2.936E+10	478.2356	2834332.	0.000
156.000	-0.000610	-82736.	-678.9868	5.860E-05	495.4903	2.936E+10	428.7143	4216373.	0.000
162.000	-0.000309	-79144.	1402.4799	4.205E-05	490.2028	2.936E+10	265.1079	5143953.	0.000
168.000	-0.000105	-65991.	2473.6270	2.722E-05	470.8207	2.936E+10	91.9411	5231844.	0.000
174.000	1.742E-05	-49515.	2703.1203	1.542E-05	446.5408	2.936E+10	-15.4433	5319734.	0.000
180.000	7.955E-05	-33585.	2441.6927	6.924E-06	423.0651	2.936E+10	-71.6992	5407625.	0.000
186.000	0.000101	-20229.	1950.4405	1.424E-06	403.3829	2.936E+10	-92.0515	5495515.	0.000
192.000	9.664E-05	-10183.	1404.4900	-1.684E-06	388.5780	2.936E+10	-89.9320	5583406.	0.000
198.000	8.029E-05	-3371.9005	907.0062	-3.069E-06	378.5410	2.936E+10	-75.8959	5671297.	0.000
204.000	5.981E-05	707.4715	508.9934	-3.341E-06	374.6146	2.936E+10	-56.7750	5695312.	0.000
210.000	4.020E-05	2742.7967	224.1996	-2.989E-06	377.6140	2.936E+10	-38.1562	5695312.	0.000
216.000	2.395E-05	3403.9285	41.5400	-2.361E-06	378.5882	2.936E+10	-22.7303	5695312.	0.000
222.000	1.187E-05	3246.0645	-60.4511	-1.681E-06	378.3556	2.936E+10	-11.2667	5695312.	0.000
228.000	3.773E-06	2681.9249	-104.9968	-1.075E-06	377.5243	2.936E+10	-3.5818	5695312.	0.000
234.000	-1.034E-06	1988.2834	-112.7989	-5.980E-07	376.5021	2.936E+10	0.9811	5695312.	0.000
240.000	-3.402E-06	1329.5503	-100.1668	-2.589E-07	375.5313	2.936E+10	3.2296	5695312.	0.000
246.000	-4.141E-06	786.8068	-78.6870	-4.264E-08	374.7315	2.936E+10	3.9304	5695312.	0.000
252.000	-3.914E-06	385.3931	-55.7502	7.716E-08	374.1400	2.936E+10	3.7152	5695312.	0.000
258.000	-3.215E-06	117.6480	-35.4500	1.286E-07	373.7454	2.936E+10	3.0515	5695312.	0.000
264.000	-2.371E-06	-40.2680	-19.5432	1.365E-07	373.6314	2.936E+10	2.2508	5695312.	0.000
270.000	-1.577E-06	-117.1471	-8.2999	1.204E-07	373.7447	2.936E+10	1.4970	5695312.	0.000
276.000	-9.266E-07	-140.1113	-1.1705	9.410E-08	373.7785	2.936E+10	0.8795	5695312.	0.000
282.000	-4.479E-07	-131.3840	2.7435	6.635E-08	373.7656	2.936E+10	0.4252	5695312.	0.000
288.000	-1.304E-07	-107.3241	4.3901	4.196E-08	373.7302	2.936E+10	0.1237	5695312.	0.000
294.000	5.557E-08	-78.7874	4.6031	2.294E-08	373.6881	2.936E+10	-0.0527	5695312.	0.000
300.000	1.449E-07	-52.1334	4.0323	9.556E-09	373.6488	2.936E+10	-0.1375	5695312.	0.000
306.000	1.702E-07	-30.4193	3.1349	1.120E-09	373.6183	2.936E+10	-0.1616	5695312.	0.000
312.000	1.583E-07	-14.5166	2.1993	-3.472E-09	373.5934	2.936E+10	-0.1503	5695312.	0.000
318.000	1.286E-07	-4.0208	1.3823	-5.367E-09	373.5779	2.936E+10	-0.1221	5695312.	0.000
324.000	9.391E-08	2.0819	0.7487	-5.565E-09	373.5751	2.936E+10	-0.0891	5695312.	0.000
330.000	6.180E-08	4.9750	0.3053	-4.844E-09	373.5794	2.936E+10	-0.0587	5695312.	0.000
336.000	3.579E-08	5.7552	0.0274	-3.747E-09	373.5805	2.936E+10	-0.0340	5695312.	0.000
342.000	1.684E-08	5.3111	-0.1225	-2.616E-09	373.5798	2.936E+10	-0.0160	5695312.	0.000
348.000	4.396E-09	4.2907	-0.1830	-1.635E-09	373.5783	2.936E+10	-0.004173	5695312.	0.000
354.000	-2.783E-09	3.1190	-0.1875	-8.777E-10	373.5766	2.936E+10	0.002641	5695312.	0.000
360.000	-6.136E-09	2.0419	-0.1621	-3.503E-10	373.5750	2.936E+10	0.005825	5695312.	0.000
366.000	-6.986E-09	1.1740	-0.1248	-2.163E-11	373.5737	2.936E+10	0.006631	5695312.	0.000
372.000	-6.396E-09	0.5446	-0.0867	1.540E-10	373.5728	2.936E+10	0.006071	5695312.	0.000
378.000	-5.138E-09	0.1336	-0.0538	2.233E-10	373.5722	2.936E+10	0.004877	5695312.	0.000
384.000	-3.716E-09	-0.1018	-0.0286	2.266E-10	373.5722	2.936E+10	0.003527	5695312.	0.000

390.000	-2.419E-09	-0.2102	-0.0111	1.947E-10	373.5723	2.936E+10	0.002296	5695312.	0.000
396.000	-1.380E-09	-0.2359	-0.000326	1.491E-10	373.5724	2.936E+10	0.001310	5695312.	0.000
402.000	-6.302E-10	-0.2144	0.005398	1.031E-10	373.5723	2.936E+10	0.000598	5695312.	0.000
408.000	-1.434E-10	-0.1714	0.007601	6.362E-11	373.5723	2.936E+10	0.000136	5695312.	0.000
414.000	1.333E-10	-0.1234	0.007630	3.350E-11	373.5722	2.936E+10	-0.000127	5695312.	0.000
420.000	2.587E-10	-0.0799	0.006513	1.273E-11	373.5721	2.936E+10	-0.000246	5695312.	0.000
426.000	2.861E-10	-0.0452	0.004962	0.000	373.5721	2.936E+10	-0.000272	5695312.	0.000
432.000	2.581E-10	-0.0203	0.003412	-6.751E-12	373.5720	2.936E+10	-0.000245	5695312.	0.000
438.000	2.051E-10	-0.004264	0.002093	-9.265E-12	373.5720	2.936E+10	-0.000195	5695312.	0.000
444.000	1.469E-10	0.004801	0.001091	-9.210E-12	373.5720	2.936E+10	-0.000139	5695312.	0.000
450.000	9.458E-11	0.008844	0.000403	-7.816E-12	373.5720	2.936E+10	-8.978E-05	5695312.	0.000
456.000	5.311E-11	0.009655	-1.736E-05	-5.926E-12	373.5720	2.936E+10	-5.041E-05	5695312.	0.000
462.000	2.347E-11	0.008648	-0.000235	-4.055E-12	373.5720	2.936E+10	-2.228E-05	5695312.	0.000
468.000	4.445E-12	0.006838	-0.000315	-2.472E-12	373.5720	2.936E+10	-4.220E-06	5695312.	0.000
474.000	-6.196E-12	0.004874	-0.000310	-1.276E-12	373.5720	2.936E+10	5.882E-06	5695312.	0.000
480.000	-1.086E-11	0.003121	-0.000261	0.000	373.5720	2.936E+10	1.031E-05	5695312.	0.000
486.000	-1.170E-11	0.001739	-0.000197	0.000	373.5720	2.936E+10	1.110E-05	5695312.	0.000
492.000	-1.040E-11	0.000756	-0.000134	0.000	373.5720	2.936E+10	9.874E-06	5695312.	0.000
498.000	-8.180E-12	0.000128	-8.128E-05	0.000	373.5720	2.936E+10	7.765E-06	5695312.	0.000
504.000	-5.802E-12	-0.000221	-4.146E-05	0.000	373.5720	2.936E+10	5.507E-06	5695312.	0.000
510.000	-3.693E-12	-0.000371	-1.442E-05	0.000	373.5720	2.936E+10	3.506E-06	5695312.	0.000
516.000	-2.040E-12	-0.000394	1.902E-06	0.000	373.5720	2.936E+10	1.936E-06	5695312.	0.000
522.000	0.000	-0.000348	1.019E-05	0.000	373.5720	2.936E+10	8.251E-07	5695312.	0.000
528.000	0.000	-0.000272	1.302E-05	0.000	373.5720	2.936E+10	1.195E-07	5695312.	0.000
534.000	0.000	-0.000192	1.257E-05	0.000	373.5720	2.936E+10	-2.690E-07	5695312.	0.000
540.000	0.000	-0.000122	1.046E-05	0.000	373.5720	2.936E+10	-4.339E-07	5695312.	0.000
546.000	0.000	-6.664E-05	7.788E-06	0.000	373.5720	2.936E+10	-4.573E-07	5695312.	0.000
552.000	0.000	-2.813E-05	5.207E-06	0.000	373.5720	2.936E+10	-4.030E-07	5695312.	0.000
558.000	0.000	-4.127E-06	3.050E-06	0.000	373.5720	2.936E+10	-3.160E-07	5695312.	0.000
564.000	0.000	8.503E-06	1.430E-06	0.000	373.5720	2.936E+10	-2.242E-07	5695312.	0.000
570.000	0.000	1.306E-05	3.301E-07	0.000	373.5720	2.936E+10	-1.423E-07	5695312.	0.000
576.000	0.000	1.249E-05	-3.236E-07	0.000	373.5720	2.936E+10	-7.561E-08	5695312.	0.000
582.000	0.000	9.198E-06	-6.208E-07	0.000	373.5720	2.936E+10	-2.346E-08	5695312.	0.000
588.000	0.000	5.058E-06	-6.372E-07	0.000	373.5720	2.936E+10	1.799E-08	5695312.	0.000
594.000	0.000	1.565E-06	-4.226E-07	0.000	373.5720	2.936E+10	5.356E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	373.5720	2.936E+10	8.730E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042876 radians
Maximum bending moment = 1573054. inch-lbs
Maximum shear force = 56626. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 169000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	77450.	-0.007575	373.5720	2.936E+10	-1158.9634	6953.7803	0.000
6.000	0.4545	451522.	70167.	-0.007529	1038.9601	2.936E+10	-1268.7029	16747.	0.000
12.000	0.4097	857276.	62539.	-0.007395	1636.9034	2.936E+10	-1274.1478	18662.	0.000
18.000	0.3658	1221984.	54890.	-0.007183	2156.9893	2.936E+10	-1271.5390	20922.	0.000
24.000	0.3235	1530520.	47245.	-0.006903	2629.0341	2.936E+10	-1272.7246	23609.	0.000
30.000	0.2830	1797921.	39630.	-0.006562	3023.0912	2.936E+10	-1265.5404	26834.	0.000
36.000	0.2447	2019390.	32072.	-0.006172	3349.4603	2.936E+10	-1253.8066	30743.	0.000
42.000	0.2089	2195303.	24599.	-0.005742	3608.6960	2.936E+10	-1237.3227	35537.	0.000
48.000	0.1758	2326218.	17239.	-0.005279	3801.6193	2.936E+10	-1215.8599	41496.	0.000
54.000	0.1456	2412880.	10024.	-0.004795	3929.3288	2.936E+10	-1189.1502	49019.	0.000
60.000	0.1183	2456232.	2986.0367	-0.004298	3993.2149	2.936E+10	-1156.8682	58693.	0.000
66.000	0.0940	2457428.	-3840.3790	-0.003795	3994.9771	2.936E+10	-1118.6036	71413.	0.000
72.000	0.0727	2417844.	-10418.	-0.003297	3936.6450	2.936E+10	-1073.8110	88602.	0.000
78.000	0.0544	2339103.	-16704.	-0.002811	3820.6069	2.936E+10	-1021.7194	112655.	0.000
84.000	0.0390	2223095.	-22653.	-0.002345	3649.6506	2.936E+10	-961.1508	147927.	0.000
90.000	0.0263	2072024.	-28207.	-0.001906	3427.0247	2.936E+10	-890.1148	203230.	0.000
96.000	0.0161	1888480.	-33291.	-0.001501	3156.5439	2.936E+10	-804.7437	299637.	0.000
102.000	0.008266	1675574.	-37792.	-0.001137	2842.7933	2.936E+10	-695.6596	504979.	0.000
108.000	0.002472	1437277.	-41458.	-0.000819	2491.6251	2.936E+10	-526.0631	1277016.	0.000
114.000	-0.001560	1179744.	-41611.	-0.000551	2112.1094	2.936E+10	474.9302	1827067.	0.000
120.000	-0.004144	939063.	-38326.	-0.000335	1757.4292	2.936E+10	620.0741	897746.	0.000
126.000	-0.005577	720511.	-34422.	-0.000165	1435.3581	2.936E+10	681.1416	732784.	0.000
132.000	-0.006127	526331.	-30247.	-3.777E-05	1149.2027	2.936E+10	710.7265	696051.	0.000
138.000	-0.006030	357627.	-25951.	5.257E-05	900.5918	2.936E+10	721.1996	717565.	0.000
144.000	-0.005496	214813.	-21635.	0.000111	690.1324	2.936E+10	717.5905	783438.	0.000
150.000	-0.004698	97787.	-17375.	0.000143	517.6768	2.936E+10	702.4023	897145.	0.000
156.000	-0.003780	6027.7997	-13236.	0.000154	382.4549	2.936E+10	676.9794	1074701.	0.000
162.000	-0.002854	-61362.	-9279.4865	0.000148	463.9980	2.936E+10	642.0043	1349644.	0.000
168.000	-0.002004	-105626.	-5560.4978	0.000131	529.2287	2.936E+10	597.6586	1789467.	0.000
174.000	-0.001283	-128353.	-2136.9069	0.000107	562.7204	2.936E+10	543.5383	2541338.	0.000
180.000	-0.000720	-131486.	927.9278	8.044E-05	567.3372	2.936E+10	478.0733	3983788.	0.000
186.000	-0.000318	-117381.	3236.0189	5.500E-05	546.5514	2.936E+10	291.2904	5495515.	0.000
192.000	-5.998E-05	-92765.	4277.3444	3.353E-05	510.2762	2.936E+10	55.8180	5583406.	0.000
198.000	8.430E-05	-66121.	4205.7450	1.729E-05	471.0115	2.936E+10	-79.6845	5671297.	0.000
204.000	0.000148	-42331.	3546.6573	6.207E-06	435.9540	2.936E+10	-140.0114	5695312.	0.000
210.000	0.000159	-23574.	2674.4505	-5.281E-07	408.3114	2.936E+10	-150.7242	5695312.	0.000
216.000	0.000141	-10237.	1820.2910	-3.983E-06	388.6578	2.936E+10	-133.9957	5695312.	0.000
222.000	0.000111	-1722.0221	1102.2522	-5.206E-06	376.1097	2.936E+10	-105.3506	5695312.	0.000
228.000	7.870E-05	3000.6368	562.0972	-5.075E-06	377.9939	2.936E+10	-74.7010	5695312.	0.000
234.000	5.009E-05	5033.4363	195.3609	-4.254E-06	380.9896	2.936E+10	-47.5444	5695312.	0.000
240.000	2.765E-05	5353.5938	-26.0135	-3.192E-06	381.4614	2.936E+10	-26.2470	5695312.	0.000
246.000	1.178E-05	4727.7483	-138.2995	-2.162E-06	380.5391	2.936E+10	-11.1816	5695312.	0.000

252.000	1.706E-06	3698.3845	-176.7033	-1.301E-06	379.0222	2.936E+10	-1.6196	5695312.	0.000
258.000	-3.832E-06	2609.9472	-170.6507	-6.563E-07	377.4182	2.936E+10	3.6372	5695312.	0.000
264.000	-6.169E-06	1651.9076	-142.1716	-2.207E-07	376.0064	2.936E+10	5.8558	5695312.	0.000
270.000	-6.481E-06	904.3358	-106.1494	4.049E-08	374.9047	2.936E+10	6.1516	5695312.	0.000
276.000	-5.683E-06	378.0329	-71.5109	1.715E-07	374.1291	2.936E+10	5.3946	5695312.	0.000
282.000	-4.422E-06	45.8565	-42.7346	2.149E-07	373.6396	2.936E+10	4.1975	5695312.	0.000
288.000	-3.105E-06	-135.2180	-21.3006	2.057E-07	373.7713	2.936E+10	2.9471	5695312.	0.000
294.000	-1.953E-06	-210.1684	-6.8970	1.704E-07	373.8817	2.936E+10	1.8541	5695312.	0.000
300.000	-1.060E-06	-218.3276	1.6825	1.266E-07	373.8938	2.936E+10	1.0057	5695312.	0.000
306.000	-4.335E-07	-190.2354	5.9342	8.489E-08	373.8524	2.936E+10	0.4115	5695312.	0.000
312.000	-4.081E-08	-147.2894	7.2849	5.040E-08	373.7891	2.936E+10	0.0387	5695312.	0.000
318.000	1.713E-07	-102.9183	6.9134	2.483E-08	373.7237	2.936E+10	-0.1626	5695312.	0.000
324.000	2.572E-07	-64.3787	5.6934	7.733E-09	373.6669	2.936E+10	-0.2441	5695312.	0.000
330.000	2.641E-07	-34.6132	4.2091	-2.383E-09	373.6230	2.936E+10	-0.2507	5695312.	0.000
336.000	2.286E-07	-13.8645	2.8063	-7.338E-09	373.5925	2.936E+10	-0.2169	5695312.	0.000
342.000	1.760E-07	-0.9230	1.6542	-8.849E-09	373.5734	2.936E+10	-0.1671	5695312.	0.000
348.000	1.224E-07	6.0036	0.8045	-8.330E-09	373.5809	2.936E+10	-0.1162	5695312.	0.000
354.000	7.607E-08	8.7474	0.2394	-6.822E-09	373.5849	2.936E+10	-0.0722	5695312.	0.000
360.000	4.050E-08	8.8899	-0.0926	-5.020E-09	373.5851	2.936E+10	-0.0384	5695312.	0.000
366.000	1.584E-08	7.6465	-0.2530	-3.330E-09	373.5833	2.936E+10	-0.0150	5695312.	0.000
372.000	5.468E-10	5.8603	-0.2997	-1.949E-09	373.5807	2.936E+10	-0.000519	5695312.	0.000
378.000	-7.556E-09	4.0543	-0.2797	-9.361E-10	373.5780	2.936E+10	0.007172	5695312.	0.000
384.000	-1.069E-08	2.5056	-0.2278	-2.657E-10	373.5757	2.936E+10	0.0101	5695312.	0.000
390.000	-1.074E-08	1.3216	-0.1667	1.254E-10	373.5740	2.936E+10	0.0102	5695312.	0.000
396.000	-9.182E-09	0.5044	-0.1100	3.120E-10	373.5728	2.936E+10	0.008715	5693312.	0.000
402.000	-7.000E-09	0.000889	-0.0639	3.636E-10	373.5720	2.936E+10	0.006645	5693312.	0.000
408.000	-4.818E-09	-0.2634	-0.0303	3.368E-10	373.5724	2.936E+10	0.004573	5693312.	0.000
414.000	-2.959E-09	-0.3630	-0.008124	2.728E-10	373.5720	2.936E+10	0.002808	5693312.	0.000
420.000	-1.544E-09	-0.3614	0.004699	1.988E-10	373.5726	2.936E+10	0.001466	5693312.	0.000
426.000	-5.734E-10	-0.3070	0.0107	1.304E-10	373.5725	2.936E+10	0.000544	5693312.	0.000
432.000	2.103E-11	-0.2330	0.0123	7.526E-11	373.5724	2.936E+10	-1.996E-05	5695312.	0.000
438.000	3.298E-10	-0.1595	0.0113	3.515E-11	373.5723	2.936E+10	-0.000313	5695312.	0.000
444.000	4.429E-10	-0.0974	0.009103	8.896E-12	373.5722	2.936E+10	-0.000420	5695312.	0.000
450.000	4.365E-10	-0.0503	0.006599	-6.199E-12	373.5721	2.936E+10	-0.000414	5695312.	0.000
456.000	3.685E-10	-0.0182	0.004307	-1.320E-11	373.5720	2.936E+10	-0.000350	5695312.	0.000
462.000	2.781E-10	0.001388	0.002466	-1.491E-11	373.5720	2.936E+10	-0.000264	5695312.	0.000
468.000	1.895E-10	0.0114	0.001134	-1.360E-11	373.5720	2.936E+10	-0.000180	5695312.	0.000
474.000	1.149E-10	0.0150	0.000267	-1.090E-11	373.5720	2.936E+10	-0.000109	5695312.	0.000
480.000	5.872E-11	0.0147	-0.000227	-7.863E-12	373.5720	2.936E+10	-5.574E-05	5695312.	0.000
486.000	2.054E-11	0.0123	-0.000453	-5.105E-12	373.5720	2.936E+10	-1.950E-05	5695312.	0.000
492.000	-2.536E-12	0.009251	-0.000504	-2.901E-12	373.5720	2.936E+10	2.407E-06	5695312.	0.000
498.000	-1.427E-11	0.006272	-0.000456	-1.314E-12	373.5720	2.936E+10	1.354E-05	5695312.	0.000
504.000	-1.831E-11	0.003779	-0.000363	0.000	373.5720	2.936E+10	1.738E-05	5695312.	0.000
510.000	-1.771E-11	0.001911	-0.000261	0.000	373.5720	2.936E+10	1.681E-05	5695312.	0.000
516.000	-1.477E-11	0.000648	-0.000168	0.000	373.5720	2.936E+10	1.402E-05	5695312.	0.000
522.000	-1.104E-11	-0.000111	-9.490E-05	0.000	373.5720	2.936E+10	1.048E-05	5695312.	0.000
528.000	-7.444E-12	-0.000492	-4.226E-05	0.000	373.5720	2.936E+10	7.066E-06	5695312.	0.000
534.000	-4.451E-12	-0.000619	-8.388E-06	0.000	373.5720	2.936E+10	4.225E-06	5695312.	0.000
540.000	-2.219E-12	-0.000594	1.061E-05	0.000	373.5720	2.936E+10	2.106E-06	5695312.	0.000
546.000	0.000	-0.000493	1.896E-05	0.000	373.5720	2.936E+10	6.777E-07	5695312.	0.000
552.000	0.000	-0.000367	2.046E-05	0.000	373.5720	2.936E+10	-1.768E-07	5695312.	0.000
558.000	0.000	-0.000247	1.812E-05	0.000	373.5720	2.936E+10	-6.043E-07	5695312.	0.000
564.000	0.000	-0.000150	1.407E-05	0.000	373.5720	2.936E+10	-7.437E-07	5695312.	0.000
570.000	0.000	-7.858E-05	9.713E-06	0.000	373.5720	2.936E+10	-7.090E-07	5693312.	0.000
576.000	0.000	-3.304E-05	5.838E-06	0.000	373.5720	2.936E+10	-5.828E-07	5693312.	0.000
582.000	0.000	-8.473E-06	2.835E-06	0.000	373.5720	2.936E+10	-4.181E-07	5695312.	0.000
588.000	0.000	1.042E-06	8.498E-07	0.000	373.5720	2.936E+10	-2.436E-07	5695312.	0.000
594.000	0.000	1.786E-06	-9.192E-08	0.000	373.5720	2.936E+10	-7.030E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	373.5720	2.936E+10	1.009E-07	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0075752 radians
Maximum bending moment	=	2457428. inch-lbs
Maximum shear force	=	77450. lbs
Depth of maximum bending moment	=	66.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	20
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	169000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	106014.	-0.0134	373.5720	2.936E+10	-1378.2475	4134.7425	0.000
6.000	0.9196	624867.	97340.	-0.0133	1294.4112	2.936E+10	-1513.0834	9872.3163	0.000
12.000	0.8399	1195133.	88227.	-0.0132	2134.7881	2.936E+10	-1524.6776	10891.	0.000
18.000	0.7618	1710263.	79056.	-0.0129	2893.9132	2.936E+10	-1532.2698	12069.	0.000
24.000	0.6857	2169877.	69852.	-0.0125	3571.2266	2.936E+10	-1535.7166	13438.	0.000
30.000	0.6123	2573756.	60641.	-0.0120	4166.4049	2.936E+10	-1534.8669	15041.	0.000
36.000	0.5420	2921846.	51447.	-0.0114	4679.3699	2.936E+10	-1529.5597	16932.	0.000
42.000	0.4753	3214266.	42300.	-0.0108	5110.2969	2.936E+10	-1519.6208	19182.	0.000
48.000	0.4126	3451313.	33226.	-0.0101	5459.6239	2.936E+10	-1504.8591	21884.	0.000
54.000	0.3541	3633471.	24257.	-0.009379	5728.0614	2.936E+10	-1485.0612	25164.	0.000
60.000	0.3000	3761413.	15421.	-0.008624	5916.6043	2.936E+10	-1459.9830	29195.	0.000
66.000	0.2506	3836016.	6753.4274	-0.007847	6026.5439	2.936E+10	-1429.3383	34220.	0.000
72.000	0.2059	3858368.	-1712.9293	-0.007061	6059.4832	2.936E+10	-1392.7806	40590.	0.000
78.000	0.1659	3829781.	-9940.8922	-0.006275	6017.3547	2.936E+10	-1349.8737	48826.	0.000
84.000	0.1306	3751804.	-17891.	-0.005500	5902.4435	2.936E+10	-1300.0434	59736.	0.000
90.000	0.0999	3626248.	-25518.	-0.004746	5717.4170	2.936E+10	-1242.4905	74642.	0.000
96.000	0.0736	3455211.	-32774.	-0.004023	5465.3668	2.936E+10	-1176.0241	95843.	0.000
102.000	0.0516	3241120.	-39598.	-0.003338	5149.8713	2.936E+10	-1098.7105	127747.	0.000
108.000	0.0336	2986805.	-45915.	-0.002702	4775.0975	2.936E+10	-1007.0236	180032.	0.000

114.000	0.0192	2695617.	-51616.	-0.002121	4345.9872	2.936E+10	-893.3139	279431.	0.000
120.000	0.008107	2371712.	-56500.	-0.001603	3868.6619	2.936E+10	-734.6750	543720.	0.000
126.000	-5.849E-05	2020867.	-58569.	-0.001154	3351.6364	2.936E+10	45.0058	4616610.	0.000
132.000	-0.005746	1671223.	-56335.	-0.000777	2836.3814	2.936E+10	699.6146	730553.	0.000
138.000	-0.009384	1346419.	-51819.	-0.000469	2357.7317	2.936E+10	805.7924	515222.	0.000
144.000	-0.0114	1050344.	-46819.	-0.000224	1921.4193	2.936E+10	860.9402	454299.	0.000
150.000	-0.0121	785046.	-41567.	-3.622E-05	1530.4605	2.936E+10	889.5817	442239.	0.000
156.000	-0.0118	551610.	-36198.	0.000100	1186.4557	2.936E+10	900.2730	457566.	0.000
162.000	-0.0109	350469.	-30806.	0.000193	890.0433	2.936E+10	897.0320	495387.	0.000
168.000	-0.009494	181549.	-25469.	0.000247	641.1130	2.936E+10	882.0205	557401.	0.000
174.000	-0.007901	44344.	-20253.	0.000270	438.9198	2.936E+10	856.4624	650369.	0.000
180.000	-0.006254	-62038.	-15221.	0.000268	464.9942	2.936E+10	821.0180	787678.	0.000
186.000	-0.004683	-138850.	-10430.	0.000248	578.1888	2.936E+10	775.9293	994211.	0.000
192.000	-0.003282	-187700.	-5939.1191	0.000214	650.1768	2.936E+10	721.0205	1318263.	0.000
198.000	-0.002111	-210554.	-1809.5608	0.000174	683.8560	2.936E+10	655.4990	1863209.	0.000
204.000	-0.001198	-209766.	1869.4298	0.000131	682.6957	2.936E+10	570.8312	2858283.	0.000
210.000	-0.000543	-188386.	4983.9326	8.997E-05	651.1877	2.936E+10	467.3364	5164795.	0.000
216.000	-0.000119	-150142.	6723.6116	5.538E-05	594.8293	2.936E+10	112.5566	5695312.	0.000
222.000	0.000122	-107815.	6714.9256	2.902E-05	532.4537	2.936E+10	-115.4519	5695312.	0.000
228.000	0.000230	-69621.	5714.6994	1.088E-05	476.1701	2.936E+10	-217.9568	5695312.	0.000
234.000	0.000252	-39260.	4342.5760	-2.441E-07	431.4281	2.936E+10	-239.4177	5695312.	0.000
240.000	0.000227	-17510.	2978.7924	-6.046E-06	399.3757	2.936E+10	-215.1769	5695312.	0.000
246.000	0.000180	-3502.4690	1821.6022	-8.193E-06	378.7335	2.936E+10	-170.5532	5695312.	0.000
252.000	0.000128	4365.8564	944.3850	-8.105E-06	380.0058	2.936E+10	-121.8525	5695312.	0.000
258.000	8.242E-05	7846.5871	344.1257	-6.857E-06	385.1352	2.936E+10	-78.2339	5695312.	0.000
264.000	4.609E-05	8509.2706	-21.8239	-5.185E-06	386.1118	2.936E+10	-43.7493	5695312.	0.000
270.000	2.020E-05	7595.2157	-210.5820	-3.540E-06	384.7648	2.936E+10	-19.1701	5695312.	0.000
276.000	5.988E-06	5989.4644	-278.3888	-2.150E-06	382.3984	2.936E+10	-3.4322	5695312.	0.000
282.000	-5.619E-06	4258.9132	-272.6847	-1.104E-06	379.8482	2.936E+10	5.3336	5695312.	0.000
288.000	-9.631E-06	2719.4871	-229.2592	-3.907E-07	377.5796	2.936E+10	9.1416	5695312.	0.000
294.000	-1.031E-05	1508.5957	-172.4823	4.138E-08	375.7952	2.936E+10	9.7840	5695312.	0.000
300.000	-9.134E-06	649.6161	-117.1193	2.619E-07	374.5293	2.936E+10	8.6703	5695312.	0.000
306.000	-7.164E-06	102.6326	-70.7073	3.388E-07	373.7233	2.936E+10	6.8004	5695312.	0.000
312.000	-5.068E-06	-199.5583	-35.8731	3.289E-07	373.8661	2.936E+10	4.8110	5695312.	0.000
318.000	-3.217E-06	-328.1117	-12.2778	2.704E-07	374.0561	2.936E+10	3.0539	5695312.	0.000
324.000	-1.769E-06	-347.4558	1.9212	2.059E-07	374.0840	2.936E+10	1.6792	5695312.	0.000
330.000	-7.470E-07	-305.8751	9.0860	1.391E-07	374.0228	2.936E+10	0.7090	5695312.	0.000
336.000	-9.990E-08	-240.7057	11.4978	8.344E-08	373.9238	2.936E+10	0.0949	5695312.	0.000
342.000	2.543E-07	-168.0709	11.0582	4.187E-08	373.8197	2.936E+10	-0.2414	5695312.	0.000
348.000	4.025E-07	-106.0916	9.1880	1.385E-08	373.7284	2.936E+10	-0.3820	5695312.	0.000
354.000	4.205E-07	-57.8435	6.8444	-2.902E-09	373.6573	2.936E+10	-0.3992	5695312.	0.000
360.000	3.676E-07	-23.9534	4.5999	-1.126E-08	373.6073	2.936E+10	-0.3490	5695312.	0.000
366.000	2.854E-07	-2.6214	2.7403	-1.398E-08	373.5759	2.936E+10	-0.2709	5695312.	0.000
372.000	1.999E-07	8.9591	1.3584	-1.333E-08	373.5852	2.936E+10	-0.1898	5695312.	0.000
378.000	1.254E-07	13.7063	0.4319	-1.101E-08	373.5922	2.936E+10	-0.1191	5695312.	0.000
384.000	6.775E-08	14.1646	-0.1182	-8.165E-09	373.5929	2.936E+10	-0.0643	5695312.	0.000
390.000	2.745E-08	12.3047	-0.3893	-5.460E-09	373.5902	2.936E+10	-0.0261	5695312.	0.000
396.000	2.230E-09	9.5045	-0.4738	-3.231E-09	373.5860	2.936E+10	-0.002117	5695312.	0.000
402.000	-1.131E-08	6.6260	-0.4479	-1.503E-09	373.5818	2.936E+10	0.0108	5695312.	0.000
408.000	-1.676E-08	4.1334	-0.3679	-4.833E-10	373.5781	2.936E+10	0.0159	5695312.	0.000
414.000	-1.713E-08	2.2127	-0.2713	1.652E-10	373.5753	2.936E+10	0.0163	5695312.	0.000
420.000	-1.478E-08	0.8770	-0.1805	4.810E-10	373.5733	2.936E+10	0.0140	5695312.	0.000
426.000	-1.136E-08	0.0461	-0.1060	5.753E-10	373.5721	2.936E+10	0.0108	5695312.	0.000
432.000	-7.877E-09	-0.3966	-0.0513	5.395E-10	373.5726	2.936E+10	0.007477	5695312.	0.000
438.000	-4.883E-09	-0.5701	-0.0149	4.407E-10	373.5729	2.936E+10	0.004635	5695312.	0.000
444.000	-2.588E-09	-0.5766	0.000355	3.236E-10	373.5729	2.936E+10	0.002457	5695312.	0.000
450.000	-1.001E-09	-0.4945	0.0166	2.141E-10	373.5727	2.936E+10	0.000950	5695312.	0.000
456.000	-1.926E-11	-0.3781	0.0195	1.249E-10	373.5726	2.936E+10	1.828E-05	5695312.	0.000
462.000	4.985E-10	-0.2610	0.0181	5.962E-11	373.5724	2.936E+10	-0.000473	5695312.	0.000
468.000	6.962E-10	-0.1608	0.0147	1.652E-11	373.5723	2.936E+10	-0.000661	5695312.	0.000
474.000	6.967E-10	-0.0844	0.0107	-8.545E-12	373.5721	2.936E+10	-0.000661	5695312.	0.000
480.000	5.937E-10	-0.0318	0.007072	-2.043E-11	373.5721	2.936E+10	-0.000564	5695312.	0.000
486.000	4.516E-10	0.000476	0.004096	-2.363E-11	373.5720	2.936E+10	-0.000429	5695312.	0.000
492.000	3.101E-10	0.0174	0.001927	-2.181E-11	373.5720	2.936E+10	-0.000294	5695312.	0.000
498.000	1.899E-10	0.0236	0.000503	-1.762E-11	373.5721	2.936E+10	-0.000180	5695312.	0.000
504.000	9.864E-11	0.0234	-0.000318	-1.281E-11	373.5721	2.936E+10	-9.363E-05	5695312.	0.000
510.000	3.615E-11	0.0198	-0.000702	-8.386E-12	373.5720	2.936E+10	-3.432E-05	5695312.	0.000
516.000	-1.995E-12	0.0150	-0.000799	-4.822E-12	373.5720	2.936E+10	1.893E-06	5695312.	0.000
522.000	-2.172E-11	0.0103	-0.000732	-2.238E-12	373.5720	2.936E+10	2.061E-05	5695312.	0.000
528.000	-2.885E-11	0.006244	-0.000588	0.000	373.5720	2.936E+10	2.739E-05	5695312.	0.000
534.000	-2.833E-11	0.003210	-0.000425	0.000	373.5720	2.936E+10	2.689E-05	5695312.	0.000
540.000	-2.387E-11	0.001142	-0.000276	0.000	373.5720	2.936E+10	2.266E-05	5695312.	0.000
546.000	-1.802E-11	-0.000109	-0.000157	0.000	373.5720	2.936E+10	1.710E-05	5695312.	0.000
552.000	-1.229E-11	-0.000745	-7.082E-05	0.000	373.5720	2.936E+10	1.167E-05	5695312.	0.000
558.000	-7.481E-12	-0.000961	-1.452E-05	0.000	373.5720	2.936E+10	7.101E-06	5695312.	0.000
564.000	-3.848E-12	-0.000921	1.774E-05	0.000	373.5720	2.936E+10	3.653E-06	5695312.	0.000
570.000	-1.344E-12	-0.000749	3.253E-05	0.000	373.5720	2.936E+10	1.276E-06	5695312.	0.000
576.000	0.000	-0.000531	3.567E-05	0.000	373.5720	2.936E+10	-2.285E-07	5695312.	0.000
582.000	1.174E-12	-0.000321	3.164E-05	0.000	373.5720	2.936E+10	-1.115E-06	5695312.	0.000
588.000	1.714E-12	-0.000152	2.342E-05	0.000	373.5720	2.936E+10	-1.627E-06	5695312.	0.000
594.000	2.068E-12	-4.048E-05	1.264E-05	0.000	373.5720	2.936E+10	-1.963E-06	5695312.	0.000
600.000	2.372E-12	0.000	0.000	0.000	373.5720	2.936E+10	-2.252E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0134014 radians
Maximum bending moment	=	3858368. inch-lbs
Maximum shear force	=	106014. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	16
Number of zero deflection points	=	8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

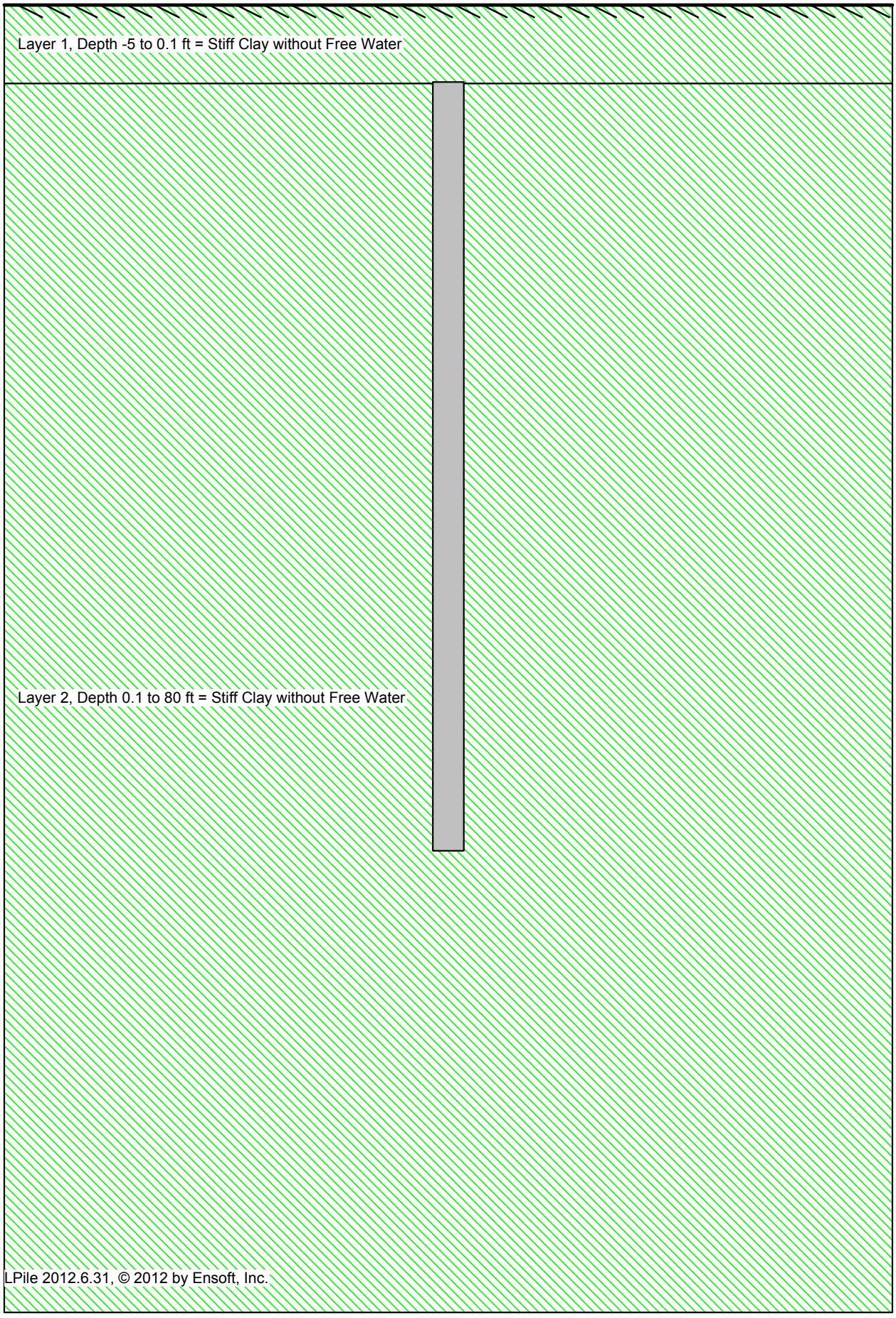
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	169000.	0.25000000	1573054.	56626.	-0.00428756
2	4	y = 0.5000	M = 0.000	169000.	0.50000000	2457428.	77450.	-0.00757520
3	4	y = 1.0000	M = 0.000	169000.	1.00000000	3858368.	106014.	-0.01340138

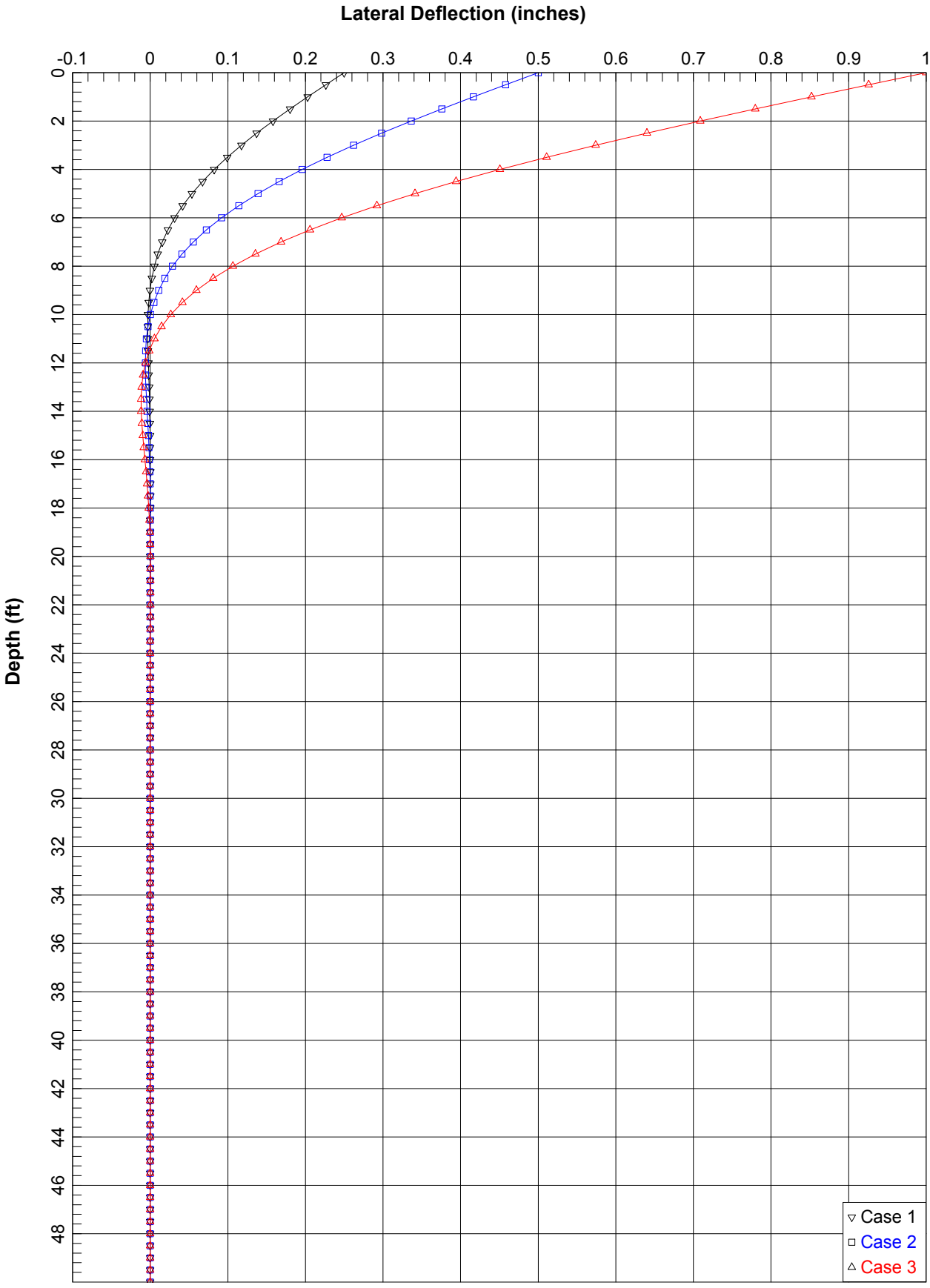
The analysis ended normally.

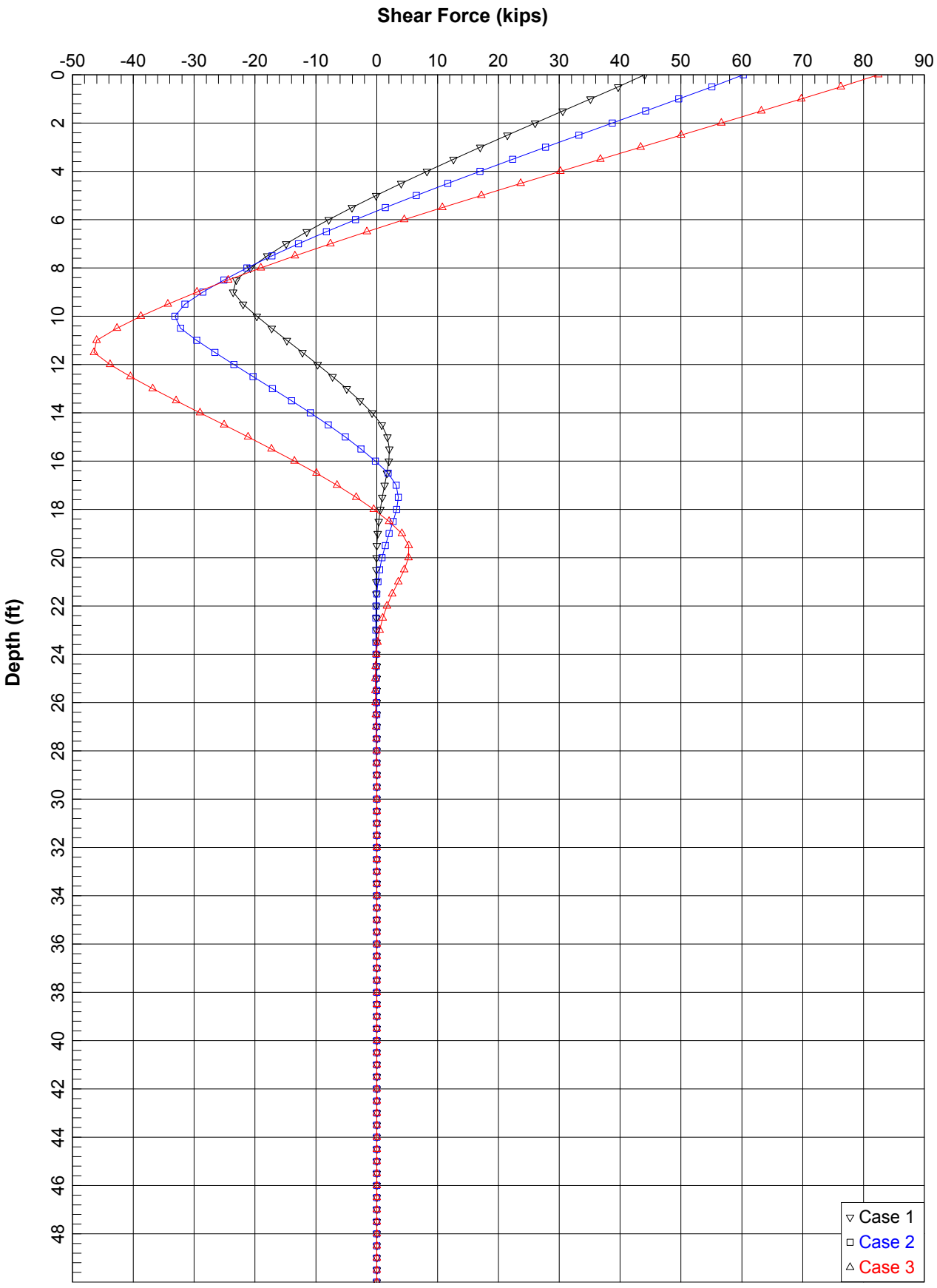
SUPPORT: **BENT 4L**

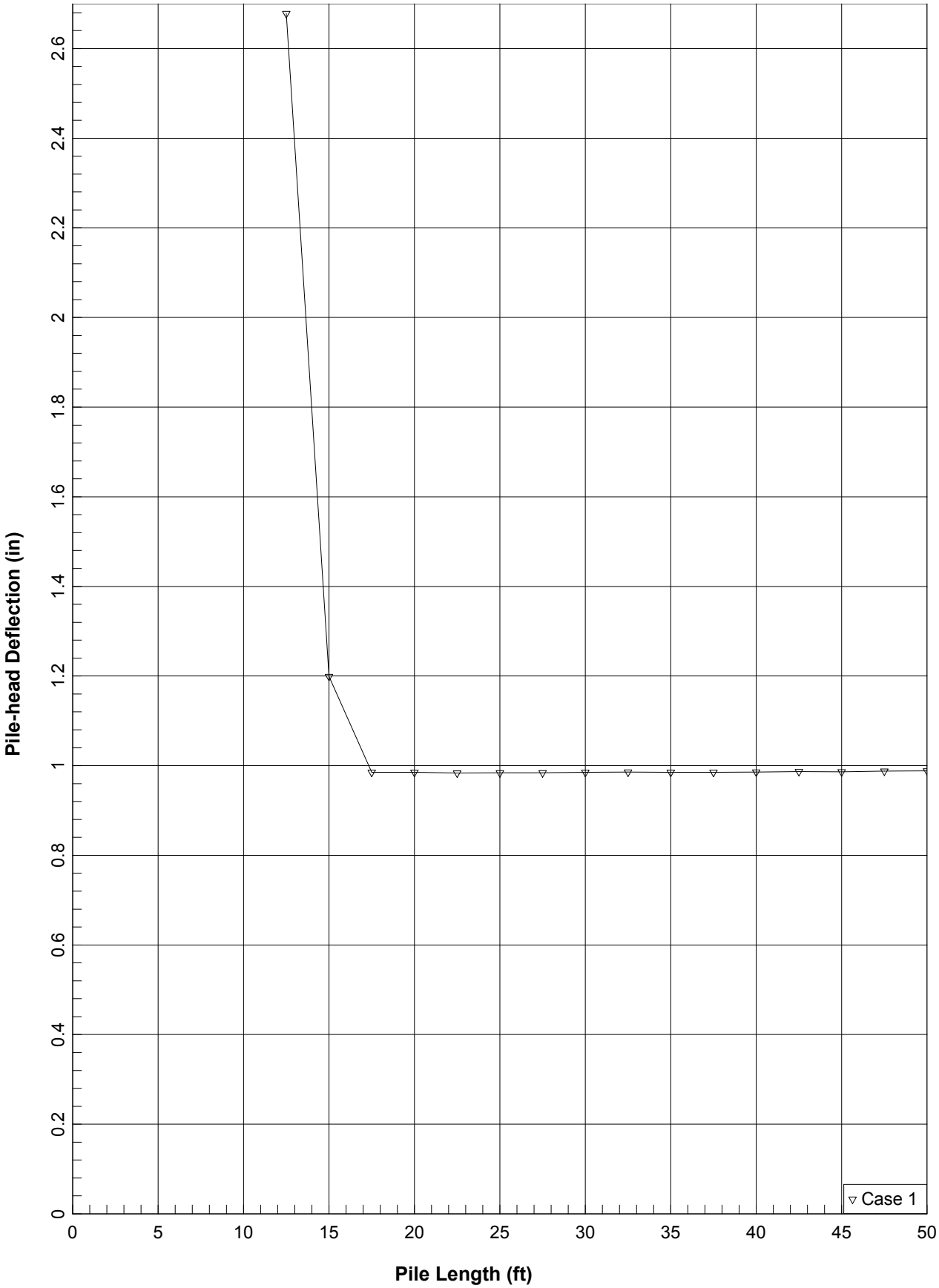
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

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gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4L_long_crit length.lp6d
Name of output report file:    Bent 4L_long_crit length.lp6o
Name of plot output file:      Bent 4L_long_crit length.lp6p
Name of runtime messeage file: Bent 4L_long_crit length.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:15:45

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                  Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                        Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                       =          1

Total Pile Length                              =      50.00 ft

Depth of ground surface below top of pile      =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                =    Elastic Pile
```



```
   Cross-sectional Shape                       =         Circular
   Section Length                              =      50.00000000 ft
   Top Width                                   =      24.00000000 in
   Bottom Width                                =      24.00000000 in
   Top Area                                    =     452.38934212 in
   Bottom Area                                 =     452.38934212 in
   Moment of Inertia at Top                    =    8143.00815810 in
   Moment of Inertia at Bottom                 =    8143.00815810 in
   Elastic Modulus                             =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                             =        0.000 degrees
                                               =        0.000 radians

Pile Batter Angle                              =        0.000 degrees
                                               =        0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer   =      -5.00000 ft
   Distance from top of pile to bottom of layer=       0.10000 ft
   Effective unit weight at top of layer       =     120.00000 pcf
   Effective unit weight at bottom of layer    =     120.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00700
   Epsilon-50 at bottom of layer               =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer   =       0.10000 ft
   Distance from top of pile to bottom of layer=      80.00000 ft
   Effective unit weight at top of layer       =     125.00000 pcf
   Effective unit weight at bottom of layer    =     125.00000 pcf
   Undrained cohesion at top of layer          =    4500.00000 psi
   Undrained cohesion at bottom of layer       =    4500.00000 psi
   Epsilon-50 at top of layer                  =       0.00500
   Epsilon-50 at bottom of layer               =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                              Rock Mass                                  In-situ     In-situ       Elastic
Layer                Soil Type        Depth        Unit Wt.     Cohesion     Friction         qu            or
Factor       J          kpy       Rock Emass      krm            Test         Test        Subgrade
 Num.          (p-y Curve Criteria)      ft           pcf          psf          deg.          psi          GSI        Epsilon
50    Factor          pci          psi                Type      Property     Mod. pci
-----  ------  ---------------------------  ----------  ----  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water            -5.000      120.000     4500.000       --          --          --
0.00700       --           --          --          --          --          --          --
                                            0.10000     120.000     4500.000       --          --          --          --
0.00700       --           --          --          --          --          --          --
  2     Stiff Clay w/o Free Water            0.10000     125.000     4500.000       --          --          --          --
0.00500       --           --          --          --          --          --          --
                                            80.000      125.000     4500.000       --          --          --          --
0.00500       --           --          --          --          --          --          --


--------------------------------------------------------------------------------
                        p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----      ----------      ----------      ----------
  1           0.000           0.4800          1.0000
  2          50.000           0.4800          1.0000


--------------------------------------------------------------------------------
                                  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
1	1	V = 82000. lbs	M = 0.0000 in-lbs	198000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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 = 82000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9882	0.000	82000.	-0.0123	437.6761	2.936E+10	-977.1960	2966.5238	0.000
6.000	0.9147	488969.	75845.	-0.0122	1158.2490	2.936E+10	-1074.5434	7048.5422	0.000
12.000	0.8418	939136.	69367.	-0.0121	1821.6406	2.936E+10	-1084.8094	7732.3949	0.000
18.000	0.7700	1350022.	62835.	-0.0118	2427.1453	2.936E+10	-1092.5489	8513.5145	0.000
24.000	0.6999	1721248.	56264.	-0.0115	2974.2054	2.936E+10	-1097.6742	9410.4575	0.000
30.000	0.6319	2052540.	49671.	-0.0111	3462.4161	2.936E+10	-1100.0938	10446.	0.000
36.000	0.5664	2343730.	43071.	-0.0107	3891.5306	2.936E+10	-1099.7115	11650.	0.000
42.000	0.5037	2594762.	36483.	-0.0102	4261.4649	2.936E+10	-1096.4249	13059.	0.000
48.000	0.4443	2805692.	29923.	-0.009620	4572.3036	2.936E+10	-1090.1241	14721.	0.000
54.000	0.3883	2976697.	23411.	-0.009029	4824.3055	2.936E+10	-1080.6887	16699.	0.000
60.000	0.3360	3108073.	16965.	-0.008407	5017.9099	2.936E+10	-1067.9855	19074.	0.000
66.000	0.2874	3200248.	10605.	-0.007762	5153.7438	2.936E+10	-1051.8633	21958.	0.000
72.000	0.2428	3253779.	4353.1660	-0.007103	5232.6294	2.936E+10	-1032.1468	25505.	0.000
78.000	0.2022	3269362.	-1769.1546	-0.006436	5255.5937	2.936E+10	-1008.6268	29931.	0.000
84.000	0.1656	3247841.	-7738.1706	-0.005770	5223.8788	2.936E+10	-981.0452	35550.	0.000
90.000	0.1330	3190213.	-13529.	-0.005112	5138.9557	2.936E+10	-949.0709	42831.	0.000
96.000	0.1042	3097644.	-19113.	-0.004469	5002.5412	2.936E+10	-912.2576	52511.	0.000
102.000	0.0793	2971482.	-24459.	-0.003849	4816.6215	2.936E+10	-869.9694	65808.	0.000
108.000	0.0580	2813280.	-29533.	-0.003258	4583.4853	2.936E+10	-821.2336	84888.	0.000
114.000	0.0402	2624830.	-34290.	-0.002702	4305.7746	2.936E+10	-764.4208	114027.	0.000
120.000	0.0256	2408223.	-38672.	-0.002188	3986.5709	2.936E+10	-696.4361	163105.	0.000
126.000	0.0140	2165960.	-42592.	-0.001720	3629.5583	2.936E+10	-610.1110	262064.	0.000
132.000	0.004974	1901207.	-45864.	-0.001305	3239.4033	2.936E+10	-480.4182	579492.	0.000
138.000	-0.001689	1618698.	-46186.	-0.000945	2823.0811	2.936E+10	372.9013	1324977.	0.000
144.000	-0.006366	1349219.	-43478.	-0.000642	2425.9626	2.936E+10	529.6640	499181.	0.000
150.000	-0.009390	1098482.	-40107.	-0.000392	2056.4709	2.936E+10	594.2817	379751.	0.000
156.000	-0.0111	868871.	-36433.	-0.000191	1718.0938	2.936E+10	630.1740	341694.	0.000
162.000	-0.0117	661736.	-32593.	-3.412E-05	1412.8476	2.936E+10	649.8091	333918.	0.000
168.000	-0.0115	477833.	-28670.	8.233E-05	1141.8380	2.936E+10	658.0574	344080.	0.000
174.000	-0.0107	317504.	-24723.	0.000164	905.5684	2.936E+10	657.1372	369011.	0.000
180.000	-0.009512	180763.	-20804.	0.000215	704.0580	2.936E+10	649.0024	409391.	0.000
186.000	-0.008114	67341.	-16956.	0.000240	536.9137	2.936E+10	633.8528	468729.	0.000
192.000	-0.006633	-23278.	-13217.	0.000244	471.9601	2.936E+10	612.3542	553912.	0.000
198.000	-0.005181	-91847.	-9626.0019	0.000233	573.0269	2.936E+10	584.7350	677173.	0.000
204.000	-0.003842	-139343.	-6237.1030	0.000209	643.0197	2.936E+10	544.8980	851067.	0.000
210.000	-0.002673	-167189.	-3109.4247	0.000178	684.0549	2.936E+10	497.6615	1117105.	0.000
216.000	-0.001709	-177078.	-281.3381	0.000142	698.6285	2.936E+10	445.0341	1562054.	0.000
222.000	-0.000963	-170903.	2210.4236	0.000107	689.5290	2.936E+10	385.5532	2402090.	0.000
228.000	-0.000426	-150807.	4230.2518	7.405E-05	659.9140	2.936E+10	287.7229	4050000.	0.000
234.000	-7.441E-05	-120316.	5244.0994	4.635E-05	614.9810	2.936E+10	50.2264	4050000.	0.000
240.000	0.000130	-87988.	5131.7551	2.506E-05	567.3403	2.936E+10	-87.6745	4050000.	0.000
246.000	0.000226	-58795.	4410.5105	1.006E-05	524.3194	2.936E+10	-152.7404	4050000.	0.000
252.000	0.000251	-35086.	3444.8783	4.630E-07	489.3805	2.936E+10	-169.1370	4050000.	0.000
258.000	0.000232	-17457.	2467.9963	-4.907E-06	463.4022	2.936E+10	-156.4903	4050000.	0.000
264.000	0.000192	-5458.1901	1610.3473	-7.249E-06	445.7196	2.936E+10	-129.3927	4050000.	0.000
270.000	0.000145	1884.0990	928.8384	-7.614E-06	440.4526	2.936E+10	-97.7769	4050000.	0.000
276.000	0.000100	5705.9610	432.3452	-6.838E-06	446.0847	2.936E+10	-67.7208	4050000.	0.000
282.000	6.280E-05	7088.4894	102.0191	-5.531E-06	448.1221	2.936E+10	-42.3879	4050000.	0.000
288.000	3.396E-05	6943.3313	-93.9130	-4.097E-06	447.9082	2.936E+10	-22.9228	4050000.	0.000
294.000	1.364E-05	5971.2668	-190.2971	-2.777E-06	446.4757	2.936E+10	-9.2052	4050000.	0.000
300.000	6.379E-07	4666.3643	-219.2044	-1.690E-06	444.5527	2.936E+10	-0.4306	4050000.	0.000
306.000	-6.639E-06	3344.8282	-207.0521	-8.710E-07	442.6052	2.936E+10	4.4814	4050000.	0.000
312.000	-9.814E-06	2183.8087	-173.7346	-3.060E-07	440.8943	2.936E+10	6.6245	4050000.	0.000
318.000	-1.031E-05	1260.7404	-132.9814	4.602E-08	439.5340	2.936E+10	6.9599	4050000.	0.000
324.000	-9.262E-06	587.9226	-93.3466	2.349E-07	438.5425	2.936E+10	6.2517	4050000.	0.000
330.000	-7.492E-06	140.0231	-59.4210	3.093E-07	437.8824	2.936E+10	5.0568	4050000.	0.000
336.000	-5.550E-06	-125.8647	-33.0124	3.108E-07	437.8616	2.936E+10	3.7460	4050000.	0.000
342.000	-3.762E-06	-256.8646	-14.1560	2.717E-07	438.0546	2.936E+10	2.5394	4050000.	0.000
348.000	-2.290E-06	-296.3820	-1.9012	2.151E-07	438.1129	2.936E+10	1.5455	4050000.	0.000
354.000	-1.181E-06	-280.1904	5.1258	1.562E-07	438.0890	2.936E+10	0.7968	4050000.	0.000
360.000	-4.150E-07	-235.2441	8.3568	1.035E-07	438.0228	2.936E+10	0.2802	4050000.	0.000
366.000	6.193E-08	-180.1551	9.0718	6.109E-08	437.9416	2.936E+10	-0.0418	4050000.	0.000
372.000	3.180E-07	-126.5271	8.3025	2.974E-08	437.8626	2.936E+10	-0.2146	4050000.	0.000
378.000	4.189E-07	-80.5953	6.8105	8.577E-09	437.7949	2.936E+10	-0.2827	4050000.	0.000
384.000	4.209E-07	-44.8220	5.1100	-4.240E-09	437.7421	2.936E+10	-0.2841	4050000.	0.000
390.000	3.680E-07	-19.2657	3.5125	-1.079E-08	437.7045	2.936E+10	-0.2484	4050000.	0.000
396.000	2.914E-07	-2.6465	2.1772	-1.303E-08	437.6800	2.936E+10	-0.1967	4050000.	0.000
402.000	2.116E-07	6.8919	1.1586	-1.260E-08	437.6862	2.936E+10	-0.1428	4050000.	0.000

408.000	1.403E-07	11.2861	0.4459	-1.074E-08	437.6927	2.936E+10	-0.0947	4050000.	0.000
414.000	8.278E-08	12.2688	-0.005742	-8.330E-09	437.6942	2.936E+10	-0.0559	4050000.	0.000
420.000	4.032E-08	11.2370	-0.2550	-5.928E-09	437.6927	2.936E+10	-0.0272	4050000.	0.000
426.000	1.164E-08	9.2228	-0.3602	-3.837E-09	437.6897	2.936E+10	-0.007857	4050000.	0.000
432.000	-5.728E-09	6.9235	-0.3722	-2.187E-09	437.6863	2.936E+10	0.003866	4050000.	0.000
438.000	-1.460E-08	4.7617	-0.3310	-9.929E-10	437.6831	2.936E+10	0.009858	4050000.	0.000
444.000	-1.764E-08	2.9536	-0.2657	-2.044E-10	437.6804	2.936E+10	0.0119	4050000.	0.000
450.000	-1.706E-08	1.5736	-0.1954	2.582E-10	437.6784	2.936E+10	0.0115	4050000.	0.000
456.000	-1.454E-08	0.6076	-0.1315	4.811E-10	437.6770	2.936E+10	0.009817	4050000.	0.000
462.000	-1.128E-08	-0.005029	-0.0792	5.427E-10	437.6761	2.936E+10	0.007617	4050000.	0.000
468.000	-8.031E-09	-0.3435	-0.0400	5.071E-10	437.6766	2.936E+10	0.005421	4050000.	0.000
474.000	-5.199E-09	-0.4867	-0.0132	4.223E-10	437.6768	2.936E+10	0.003509	4050000.	0.000
480.000	-2.964E-09	-0.5035	0.003282	3.211E-10	437.6768	2.936E+10	0.002001	4050000.	0.000
486.000	-1.346E-09	-0.4481	0.0120	2.238E-10	437.6768	2.936E+10	0.000909	4050000.	0.000
492.000	-2.777E-10	-0.3599	0.0153	1.413E-10	437.6766	2.936E+10	0.000187	4050000.	0.000
498.000	3.492E-10	-0.2648	0.0152	7.743E-11	437.6765	2.936E+10	-0.000236	4050000.	0.000
504.000	6.514E-10	-0.1782	0.0131	3.215E-11	437.6764	2.936E+10	-0.000440	4050000.	0.000
510.000	7.350E-10	-0.1074	0.0103	2.958E-12	437.6763	2.936E+10	-0.000496	4050000.	0.000
516.000	6.869E-10	-0.0544	0.007439	-1.358E-11	437.6762	2.936E+10	-0.000464	4050000.	0.000
522.000	5.721E-10	-0.0181	0.004890	-2.099E-11	437.6761	2.936E+10	-0.000386	4050000.	0.000
528.000	4.350E-10	0.004322	0.002851	-2.240E-11	437.6761	2.936E+10	-0.000294	4050000.	0.000
534.000	3.033E-10	0.0162	0.001356	-2.030E-11	437.6761	2.936E+10	-0.000205	4050000.	0.000
540.000	1.914E-10	0.0206	0.000354	-1.654E-11	437.6761	2.936E+10	-0.000129	4050000.	0.000
546.000	1.048E-10	0.0204	-0.000246	-1.234E-11	437.6761	2.936E+10	-7.076E-05	4050000.	0.000
552.000	4.332E-11	0.0177	-0.000546	-8.442E-12	437.6761	2.936E+10	-2.924E-05	4050000.	0.000
558.000	3.526E-12	0.0139	-0.000641	-5.210E-12	437.6761	2.936E+10	-2.380E-06	4050000.	0.000
564.000	-1.920E-11	0.0100	-0.000609	-2.763E-12	437.6761	2.936E+10	1.296E-05	4050000.	0.000
570.000	-2.964E-11	0.006608	-0.000510	-1.063E-12	437.6761	2.936E+10	2.000E-05	4050000.	0.000
576.000	-3.196E-11	0.003906	-0.000386	0.000	437.6761	2.936E+10	2.157E-05	4050000.	0.000
582.000	-2.950E-11	0.001979	-0.000261	0.000	437.6761	2.936E+10	1.991E-05	4050000.	0.000
588.000	-2.461E-11	0.000769	-0.000152	0.000	437.6761	2.936E+10	1.661E-05	4050000.	0.000
594.000	-1.878E-11	0.000156	-6.386E-05	0.000	437.6761	2.936E+10	1.268E-05	4050000.	0.000
600.000	-1.276E-11	0.000	0.000	1.004E-12	437.6761	2.936E+10	8.610E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9882233 inches
Computed slope at pile head = -0.0122549 radians
Maximum bending moment = 3269362. inch-lbs
Maximum shear force = 82000. lbs
Depth of maximum bending moment = 78.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 33
Number of zero deflection points = 7

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

Boundary Condition Type 1, Shear and Moment

Shear = 82000. lbs
Moment = 0. in-lbs
Axial Load = 198000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9882233	3269362.	82000.
47.500	0.9881051	3265665.	82000.
45.000	0.9864384	3267457.	82000.
42.500	0.9870471	3266798.	82000.
40.000	0.9858532	3267386.	82000.
37.500	0.9854257	3266453.	82000.
35.000	0.9852807	3264057.	82000.
32.500	0.9856454	3264082.	82000.
30.000	0.9852776	3261924.	82000.
27.500	0.9842981	3262270.	82000.
25.000	0.9839291	3262692.	82000.
22.500	0.9836691	3261621.	82000.
20.000	0.9850640	3259634.	82000.
17.500	0.9851435	3258974.	82000.
15.000	1.1993007	3099477.	82000.
12.500	2.6781387	2705280.	82000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 82000.	M = 0.000	198000.	0.98822331	3269362.	82000.	-0.01225486

The analysis ended normally.

```
=============================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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=============================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

-----------------------------------------------------------------------------
                            Files Used for Analysis
-----------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4L_long_ave P.lp6d
Name of output report file:    Bent 4L_long_ave P.lp6o
Name of plot output file:      Bent 4L_long_ave P.lp6p
Name of runtime messeage file: Bent 4L_long_ave P.lp6r

-----------------------------------------------------------------------------
                          Date and Time of Analysis
-----------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:14:28

-----------------------------------------------------------------------------
                               Problem Title
-----------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


-----------------------------------------------------------------------------
                            Program Options
-----------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

-----------------------------------------------------------------------------
                    Pile Structural Properties and Geometry
-----------------------------------------------------------------------------

Total Number of Sections                      =          1

Total Pile Length                             =      50.00 ft

Depth of ground surface below top of pile     =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                               =    Elastic Pile
```



```
   Cross-sectional Shape                      =        Circular
   Section Length                             =      50.00000000 ft
   Top Width                                  =      24.00000000 in
   Bottom Width                               =      24.00000000 in
   Top Area                                   =     452.38934212 in
   Bottom Area                                =     452.38934212 in
   Moment of Inertia at Top                   =    8143.00815810 in
   Moment of Inertia at Bottom                =    8143.00815810 in
   Elastic Modulus                            =        3605000. lbs/in^2


-----------------------------------------------------------------------------
                    Ground Slope and Pile Batter Angles
-----------------------------------------------------------------------------

Ground Slope Angle                            =         0.000 degrees
                                              =         0.000 radians

Pile Batter Angle                             =         0.000 degrees
                                              =         0.000 radians


-----------------------------------------------------------------------------
                      Soil and Rock Layering Information
-----------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer          =      -5.00000 ft
   Distance from top of pile to bottom of layer       =       0.10000 ft
   Effective unit weight at top of layer              =     120.00000 pcf
   Effective unit weight at bottom of layer           =     120.00000 pcf
   Undrained cohesion at top of layer                 =    4500.00000 psi
   Undrained cohesion at bottom of layer              =    4500.00000 psi
   Epsilon-50 at top of layer                         =       0.00700
   Epsilon-50 at bottom of layer                      =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer          =       0.10000 ft
   Distance from top of pile to bottom of layer       =      80.00000 ft
   Effective unit weight at top of layer              =     125.00000 pcf
   Effective unit weight at bottom of layer           =     125.00000 pcf
   Undrained cohesion at top of layer                 =    4500.00000 psi
   Undrained cohesion at bottom of layer              =    4500.00000 psi
   Epsilon-50 at top of layer                         =       0.00500
   Epsilon-50 at bottom of layer                      =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


-----------------------------------------------------------------------------
                        Summary of Soil Properties
-----------------------------------------------------------------------------

                      Layer                    Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                              Rock Mass                          In-situ      In-situ       Elastic
Layer                Soil Type        Depth      Unit Wt.    Cohesion     Friction      qu            or
Factor          J        kpy      Rock Emass      krm          Test         Test       Subgrade
 Num.       (p-y Curve Criteria)        ft          pcf          psf          deg.        psi          GSI        Epsilon
50    Factor          pci          psi              Type      Property     Mod. pci    ----------    ----------    ----------
-----  ------  ---------------  ---------  ------  ---------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water          -5.000     120.000     4500.000       --          --          --
0.00700       --          --          --       --         --          --          --
                                          0.10000     120.000     4500.000       --          --          --
0.00700       --          --          --       --         --          --          --
  2     Stiff Clay w/o Free Water          0.10000     125.000     4500.000       --          --          --
0.00500       --          --          --       --         --          --          --
                                         80.000       125.000     4500.000       --          --          --
0.00500       --          --          --       --         --          --          --


-----------------------------------------------------------------------------
                    p-y Modification Factors for Group Action
-----------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----      ----------      ----------      ----------
  1           0.000          0.4800          1.0000
  2          50.000          0.4800          1.0000


-----------------------------------------------------------------------------
                                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 = 3
```

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	198000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	198000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	198000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	44036.	-0.003951	437.6761	2.936E+10	-693.0262	8316.3150	0.000
6.000	0.2263	256435.	39683.	-0.003925	815.5736	2.936E+10	-757.8267	20093.	0.000
12.000	0.2029	485526.	35130.	-0.003849	1153.1754	2.936E+10	-760.1060	22477.	0.000
18.000	0.1801	687136.	30570.	-0.003729	1450.2786	2.936E+10	-759.7991	25312.	0.000
24.000	0.1581	861226.	26020.	-0.003571	1706.8273	2.936E+10	-756.8076	28713.	0.000
30.000	0.1372	1007861.	21497.	-0.003380	1922.9179	2.936E+10	-751.0245	32832.	0.000
36.000	0.1176	1127215.	17016.	-0.003162	2098.8048	2.936E+10	-742.3314	37879.	0.000
42.000	0.0993	1219572.	12598.	-0.002922	2234.9065	2.936E+10	-730.5944	44143.	0.000
48.000	0.0825	1285331.	8258.9310	-0.002666	2331.8125	2.936E+10	-715.6584	52037.	0.000
54.000	0.0673	1325014.	4019.9411	-0.002399	2390.2918	2.936E+10	-697.3382	62161.	0.000
60.000	0.0537	1339271.	-98.2842	-0.002127	2411.3020	2.936E+10	-675.4036	75429.	0.000
66.000	0.0418	1328888.	-4073.1579	-0.001854	2396.0016	2.936E+10	-649.5543	93274.	0.000
72.000	0.0315	1294799.	-7879.9470	-0.001586	2345.7659	2.936E+10	-619.3754	118082.	0.000
78.000	0.0227	1238098.	-11491.	-0.001327	2262.2079	2.936E+10	-584.2477	154102.	0.000
84.000	0.0155	1160063.	-14873.	-0.001082	2147.2116	2.936E+10	-543.1563	209682.	0.000
90.000	0.009759	1062194.	-17985.	-0.000855	2002.9849	2.936E+10	-494.2062	303837.	0.000
96.000	0.005279	946274.	-20767.	-0.000650	1832.1596	2.936E+10	-433.0979	492258.	0.000
102.000	0.001959	814534.	-23103.	-0.000470	1638.0192	2.936E+10	-345.6150	1058548.	0.000
108.000	-0.000362	670153.	-23580.	-0.000318	1425.2519	2.936E+10	186.7700	3095423.	0.000
114.000	-0.001861	532334.	-21958.	-0.000195	1222.1532	2.936E+10	353.7013	1140233.	0.000
120.000	-0.002708	407118.	-19708.	-9.945E-05	1037.6285	2.936E+10	396.4149	878462.	0.000
126.000	-0.003055	296075.	-17269.	-2.759E-05	873.9886	2.936E+10	416.5571	818209.	0.000
132.000	-0.003039	199955.	-14748.	2.310E-05	732.3417	2.936E+10	423.9406	837097.	0.000
138.000	-0.002777	119049.	-12209.	5.570E-05	613.1141	2.936E+10	422.2385	912147.	0.000
144.000	-0.002370	53315.	-9702.6148	7.332E-05	516.2443	2.936E+10	413.2210	1046029.	0.000
150.000	-0.001898	2443.8275	-7269.4313	7.902E-05	441.2775	2.936E+10	397.8402	1257904.	0.000
156.000	-0.001422	-34106.	-4946.0901	7.578E-05	387.8163	2.936E+10	376.0069	1580110.	0.000
162.000	-0.000988	-57089.	-2767.1261	6.646E-05	521.8061	2.936E+10	349.7144	2123171.	0.000
168.000	-0.000625	-67469.	-767.0529	5.373E-05	537.1026	2.936E+10	316.9766	3045282.	0.000
174.000	-0.000344	-66422.	833.6205	4.005E-05	535.5587	2.936E+10	216.5812	3782922.	0.000
180.000	-0.000144	-57561.	1760.1527	2.738E-05	522.5012	2.936E+10	92.2628	3845422.	0.000
186.000	-1.499E-05	-45365.	2066.2315	1.686E-05	504.5283	2.936E+10	9.7634	3907922.	0.000
192.000	5.834E-05	-32806.	1979.6963	8.870E-06	486.0212	2.936E+10	-38.6085	3970422.	0.000
198.000	9.145E-05	-21630.	1679.4720	3.307E-06	469.5506	2.936E+10	-61.4663	4032922.	0.000
204.000	9.802E-05	-12660.	1296.5743	-1.976E-07	456.3332	2.936E+10	-66.1663	4050000.	0.000
210.000	8.908E-05	-6070.1773	917.6974	-2.112E-06	446.6215	2.936E+10	-60.1260	4050000.	0.000
216.000	7.268E-05	-1643.0147	590.1369	-2.900E-06	440.0973	2.936E+10	-49.0609	4050000.	0.000
222.000	5.428E-05	1018.3557	333.0472	-2.964E-06	439.1768	2.936E+10	-36.6357	4050000.	0.000
228.000	3.712E-05	2360.5938	147.9796	-2.619E-06	441.1548	2.936E+10	-25.0535	4050000.	0.000
234.000	2.285E-05	2800.3324	26.5430	-2.091E-06	441.8028	2.936E+10	-15.4254	4050000.	0.000
240.000	1.202E-05	2684.0778	-44.0791	-1.531E-06	441.6315	2.936E+10	-8.1153	4050000.	0.000
246.000	4.485E-06	2275.0206	-77.5061	-1.024E-06	441.0287	2.936E+10	-3.0271	4050000.	0.000
252.000	-2.636E-07	1756.4367	-86.0535	-6.119E-07	440.2645	2.936E+10	0.1780	4050000.	0.000
258.000	-2.858E-06	1243.8326	-79.7326	-3.052E-07	439.5091	2.936E+10	1.9290	4050000.	0.000
264.000	-3.927E-06	800.3712	-65.9941	-9.634E-08	438.8556	2.936E+10	2.6505	4050000.	0.000
270.000	-4.014E-06	452.1322	-49.9146	3.166E-08	438.3424	2.936E+10	2.7094	4050000.	0.000
276.000	-3.547E-06	201.3211	-34.6044	9.844E-08	437.9728	2.936E+10	2.3940	4050000.	0.000
282.000	-2.833E-06	36.6460	-21.6862	1.228E-07	437.7301	2.936E+10	1.9120	4050000.	0.000
288.000	-2.074E-06	-59.2054	-11.7511	1.205E-07	437.7633	2.936E+10	1.3997	4050000.	0.000
294.000	-1.387E-06	-104.6538	-4.7430	1.037E-07	437.8303	2.936E+10	0.9364	4050000.	0.000
300.000	-8.291E-07	-116.3682	-0.2550	8.112E-08	437.8476	2.936E+10	0.5597	4050000.	0.000
306.000	-4.137E-07	-107.9069	2.2618	5.820E-08	437.8313	2.936E+10	0.2793	4050000.	0.000
312.000	-1.307E-07	-89.3654	3.3643	3.804E-08	437.8078	2.936E+10	0.0882	4050000.	0.000
318.000	4.273E-08	-67.6260	3.5424	2.200E-08	437.7758	2.936E+10	-0.0288	4050000.	0.000
324.000	1.332E-07	-46.9084	3.1861	1.029E-08	437.7452	2.936E+10	-0.0899	4050000.	0.000
330.000	1.662E-07	-29.4172	2.5797	2.491E-09	437.7194	2.936E+10	-0.1122	4050000.	0.000
336.000	1.631E-07	-15.9581	1.9127	-2.146E-09	437.6996	2.936E+10	-0.1101	4050000.	0.000
342.000	1.405E-07	-6.4593	1.2979	-4.437E-09	437.6856	2.936E+10	-0.0948	4050000.	0.000
348.000	1.099E-07	-0.3723	0.7910	-5.135E-09	437.6766	2.936E+10	-0.0742	4050000.	0.000
354.000	7.885E-08	3.0446	0.4088	-4.862E-09	437.6806	2.936E+10	-0.0532	4050000.	0.000
360.000	5.154E-08	4.5448	0.1448	-4.087E-09	437.6828	2.936E+10	-0.0348	4050000.	0.000
366.000	2.981E-08	4.7914	-0.0200	-3.132E-09	437.6832	2.936E+10	-0.0201	4050000.	0.000
372.000	1.395E-08	4.3126	-0.1086	-2.202E-09	437.6824	2.936E+10	-0.009417	4050000.	0.000
378.000	3.382E-09	3.4937	-0.1437	-1.404E-09	437.6812	2.936E+10	-0.002283	4050000.	0.000
384.000	-2.901E-09	2.5918	-0.1447	-7.824E-10	437.6799	2.936E+10	0.001958	4050000.	0.000

390.000	-6.007E-09	1.7597	-0.1266	-3.377E-10	437.6787	2.936E+10	0.004054	4050000.	0.000
396.000	-6.954E-09	1.0732	-0.1004	-4.821E-11	437.6777	2.936E+10	0.004694	4050000.	0.000
402.000	-6.585E-09	0.5554	-0.0730	1.182E-10	437.6769	2.936E+10	0.004445	4050000.	0.000
408.000	-5.535E-09	0.1974	-0.0484	1.951E-10	437.6764	2.936E+10	0.003736	4050000.	0.000
414.000	-4.243E-09	-0.0260	-0.0286	2.127E-10	437.6761	2.936E+10	0.002864	4050000.	0.000
420.000	-2.983E-09	-0.1464	-0.0140	1.951E-10	437.6763	2.936E+10	0.002014	4050000.	0.000
426.000	-1.903E-09	-0.1942	-0.004079	1.603E-10	437.6764	2.936E+10	0.001284	4050000.	0.000
432.000	-1.060E-09	-0.1957	0.001921	1.204E-10	437.6764	2.936E+10	0.000716	4050000.	0.000
438.000	-4.579E-10	-0.1714	0.004995	8.289E-11	437.6763	2.936E+10	0.000309	4050000.	0.000
444.000	-6.562E-11	-0.1359	0.006055	5.148E-11	437.6763	2.936E+10	4.430E-05	4050000.	0.000
450.000	1.599E-10	-0.0989	0.005864	2.749E-11	437.6762	2.936E+10	-0.000108	4050000.	0.000
456.000	2.642E-10	-0.0656	0.005006	1.067E-11	437.6762	2.936E+10	-0.000178	4050000.	0.000
462.000	2.880E-10	-0.0388	0.003887	0.000	437.6762	2.936E+10	-0.000194	4050000.	0.000
468.000	2.642E-10	-0.0190	0.002769	-5.911E-12	437.6761	2.936E+10	-0.000178	4050000.	0.000
474.000	2.171E-10	-0.005579	0.001795	-8.422E-12	437.6761	2.936E+10	-0.000147	4050000.	0.000
480.000	1.631E-10	0.002562	0.001025	-8.730E-12	437.6761	2.936E+10	-0.000110	4050000.	0.000
486.000	1.123E-10	0.006739	0.000467	-7.780E-12	437.6761	2.936E+10	-7.581E-05	4050000.	0.000
492.000	6.976E-11	0.008185	9.837E-05	-6.254E-12	437.6761	2.936E+10	-4.709E-05	4050000.	0.000
498.000	3.725E-11	0.007934	-0.000118	-4.607E-12	437.6761	2.936E+10	-2.515E-05	4050000.	0.000
504.000	1.448E-11	0.006776	-0.000223	-3.104E-12	437.6761	2.936E+10	-9.771E-06	4050000.	0.000
510.000	0.000	0.005265	-0.000252	-1.873E-12	437.6761	2.936E+10	-5.549E-09	4050000.	0.000
516.000	-8.003E-12	0.003752	-0.000236	0.000	437.6761	2.936E+10	5.402E-06	4050000.	0.000
522.000	-1.141E-11	0.002432	-0.000197	0.000	437.6761	2.936E+10	7.704E-06	4050000.	0.000
528.000	-1.184E-11	0.001390	-0.000150	0.000	437.6761	2.936E+10	7.992E-06	4050000.	0.000
534.000	-1.056E-11	0.000634	-0.000104	0.000	437.6761	2.936E+10	7.130E-06	4050000.	0.000
540.000	-8.509E-12	0.000135	-6.583E-05	0.000	437.6761	2.936E+10	5.744E-06	4050000.	0.000
546.000	-6.289E-12	-0.000157	-3.586E-05	0.000	437.6761	2.936E+10	4.245E-06	4050000.	0.000
552.000	-4.260E-12	-0.000296	-1.450E-05	0.000	437.6761	2.936E+10	2.876E-06	4050000.	0.000
558.000	-2.594E-12	-0.000331	-6.242E-07	0.000	437.6761	2.936E+10	1.751E-06	4050000.	0.000
564.000	-1.335E-12	-0.000304	7.332E-06	0.000	437.6761	2.936E+10	9.009E-07	4050000.	0.000
570.000	0.000	-0.000244	1.094E-05	0.000	437.6761	2.936E+10	3.023E-07	4050000.	0.000
576.000	0.000	-0.000173	1.156E-05	0.000	437.6761	2.936E+10	-9.451E-08	4050000.	0.000
582.000	0.000	-0.000105	1.024E-05	0.000	437.6761	2.936E+10	-3.483E-07	4050000.	0.000
588.000	0.000	-5.012E-05	7.647E-06	0.000	437.6761	2.936E+10	-5.149E-07	4050000.	0.000
594.000	0.000	-1.354E-05	4.182E-06	0.000	437.6761	2.936E+10	-6.401E-07	4050000.	0.000
600.000	1.117E-12	0.000	0.000	0.000	437.6761	2.936E+10	-7.540E-07	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0039513 radians
Maximum bending moment = 1339271. inch-lbs
Maximum shear force = 44036. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 16
Number of zero deflection points = 8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	60267.	-0.006995	437.6761	2.936E+10	-824.1517	4944.9105	0.000
6.000	0.4580	355076.	55083.	-0.006959	960.9370	2.936E+10	-903.9089	11841.	0.000
12.000	0.4165	677526.	49641.	-0.006854	1436.1169	2.936E+10	-909.8166	13107.	0.000
18.000	0.3758	967058.	44172.	-0.006686	1862.7872	2.936E+10	-913.1700	14580.	0.000
24.000	0.3363	1223480.	38691.	-0.006462	2240.6662	2.936E+10	-913.8756	16306.	0.000
30.000	0.2982	1446706.	33214.	-0.006189	2569.6249	2.936E+10	-911.8341	18344.	0.000
36.000	0.2620	1636755.	27758.	-0.005874	2849.6916	2.936E+10	-906.9187	20770.	0.000
42.000	0.2278	1793757.	22340.	-0.005523	3081.0580	2.936E+10	-899.0723	23685.	0.000
48.000	0.1957	1917956.	16978.	-0.005144	3264.0852	2.936E+10	-888.1050	27225.	0.000
54.000	0.1660	2009718.	11692.	-0.004742	3399.3108	2.936E+10	-873.8890	31579.	0.000
60.000	0.1388	2069532.	6501.9084	-0.004325	3487.4560	2.936E+10	-856.2518	37010.	0.000
66.000	0.1141	2098018.	1428.1949	-0.003900	3529.4350	2.936E+10	-834.9860	43896.	0.000
72.000	0.0920	2095936.	-3506.2602	-0.003471	3526.3660	2.936E+10	-809.8324	52804.	0.000
78.000	0.0725	2064190.	-8277.1131	-0.003046	3479.5840	2.936E+10	-780.4519	64608.	0.000
84.000	0.0555	2003847.	-12858.	-0.002630	3390.6591	2.936E+10	-746.3766	80733.	0.000
90.000	0.0409	1916148.	-17217.	-0.002229	3261.4207	2.936E+10	-706.9142	103657.	0.000
96.000	0.0287	1802535.	-21321.	-0.001849	3093.9937	2.936E+10	-660.9502	138099.	0.000
102.000	0.0187	1664689.	-25123.	-0.001495	2890.8572	2.936E+10	-606.4719	194330.	0.000
108.000	0.0108	1504607.	-28560.	-0.001171	2654.9507	2.936E+10	-539.1719	300233.	0.000
114.000	0.004670	1324749.	-31517.	-0.000882	2389.9018	2.936E+10	-446.5090	573635.	0.000
120.000	0.000190	1128495.	-33163.	-0.000631	2100.6909	2.936E+10	-102.0585	3220423.	0.000
126.000	-0.002906	928293.	-32235.	-0.000421	1805.6618	2.936E+10	411.3763	849337.	0.000
132.000	-0.004864	742675.	-29570.	-0.000250	1532.1247	2.936E+10	477.0439	588467.	0.000
138.000	-0.005911	574051.	-26608.	-0.000116	1283.6298	2.936E+10	510.2771	517961.	0.000
144.000	-0.006254	423657.	-23496.	-1.388E-05	1062.0006	2.936E+10	527.0099	505600.	0.000
150.000	-0.006078	292132.	-20317.	5.927E-05	868.1785	2.936E+10	532.6387	525838.	0.000
156.000	-0.005543	179712.	-17130.	0.000107	702.5092	2.936E+10	529.6626	573344.	0.000
162.000	-0.004788	86315.	-13983.	0.000135	564.8751	2.936E+10	519.4131	650926.	0.000
168.000	-0.003927	11597.	-10912.	0.000145	454.6558	2.936E+10	502.6340	768006.	0.000
174.000	-0.003052	-45030.	-7969.7105	0.000141	504.0342	2.936E+10	479.7127	943199.	0.000
180.000	-0.002232	-84375.	-5178.2930	0.000128	562.0164	2.936E+10	450.7597	1211912.	0.000
186.000	-0.001515	-107473.	-2579.2845	0.000108	596.0549	2.936E+10	415.5765	1645681.	0.000
192.000	-0.000930	-115584.	-212.2708	8.564E-05	608.0078	2.936E+10	373.4281	2408022.	0.000
198.000	-0.000488	-110224.	1874.5263	6.256E-05	600.1085	2.936E+10	322.1709	3965073.	0.000
204.000	-0.000180	-93239.	3205.0103	4.177E-05	575.0780	2.936E+10	121.3238	4050000.	0.000
210.000	1.369E-05	-71863.	3541.2541	2.489E-05	543.5777	2.936E+10	-9.2425	4050000.	0.000
216.000	0.000119	-50803.	3272.5613	1.236E-05	512.5420	2.936E+10	-80.3218	4050000.	0.000
222.000	0.000162	-32622.	2703.5540	3.833E-06	485.7494	2.936E+10	-109.3473	4050000.	0.000
228.000	0.000165	-18369.	2041.4045	-1.378E-06	464.7461	2.936E+10	-111.3692	4050000.	0.000
234.000	0.000145	-8121.6366	1412.7413	-4.085E-06	449.6446	2.936E+10	-98.1853	4050000.	0.000
240.000	0.000116	-1406.6843	883.3503	-5.059E-06	439.7491	2.936E+10	-78.2784	4050000.	0.000
246.000	8.475E-05	2490.5878	476.8939	-4.948E-06	441.3464	2.936E+10	-57.2071	4050000.	0.000

252.000	5.659E-05	4327.8001	190.6803	-4.251E-06	444.0538	2.936E+10	-38.1975	4050000.	0.000
258.000	3.373E-05	4788.8533	7.7771	-3.320E-06	444.7332	2.936E+10	-22.7703	4050000.	0.000
264.000	1.675E-05	4429.0131	-94.4556	-2.378E-06	444.2029	2.936E+10	-11.3073	4050000.	0.000
270.000	5.201E-06	3661.0358	-138.9089	-1.551E-06	443.0712	2.936E+10	-3.5105	4050000.	0.000
276.000	-1.860E-06	2765.7917	-145.6732	-8.942E-07	441.7519	2.936E+10	1.2557	4050000.	0.000
282.000	-5.530E-06	1915.0825	-130.7085	-4.158E-07	440.4983	2.936E+10	3.7325	4050000.	0.000
288.000	-6.850E-06	1198.2780	-105.6391	-9.766E-08	439.4419	2.936E+10	4.6240	4050000.	0.000
294.000	-6.702E-06	647.6455	-78.1965	9.098E-08	438.6305	2.936E+10	4.5235	4050000.	0.000
300.000	-5.759E-06	259.7035	-52.9649	1.837E-07	438.0588	2.936E+10	3.8870	4050000.	0.000
306.000	-4.497E-06	11.6308	-32.1974	2.114E-07	437.6932	2.936E+10	3.0355	4050000.	0.000
312.000	-3.221E-06	-127.1671	-16.5678	1.996E-07	437.8635	2.936E+10	2.1743	4050000.	0.000
318.000	-2.101E-06	-187.6575	-5.7894	1.675E-07	437.9526	2.936E+10	1.4185	4050000.	0.000
324.000	-1.212E-06	-197.0373	0.9199	1.281E-07	437.9665	2.936E+10	0.8179	4050000.	0.000
330.000	-5.637E-07	-176.9237	4.5152	8.993E-08	437.9368	2.936E+10	0.3805	4050000.	0.000
336.000	-1.326E-07	-143.0691	5.9252	5.723E-08	437.8869	2.936E+10	0.0895	4050000.	0.000
342.000	1.230E-07	-105.9570	5.9447	3.178E-08	437.8322	2.936E+10	-0.0830	4050000.	0.000
348.000	2.487E-07	-71.8081	5.1920	1.361E-08	437.7819	2.936E+10	-0.1679	4050000.	0.000
354.000	2.863E-07	-43.6851	4.1086	1.807E-09	437.7405	2.936E+10	-0.1933	4050000.	0.000
360.000	2.704E-07	-22.5091	2.9813	-4.958E-09	437.7093	2.936E+10	-0.1825	4050000.	0.000
366.000	2.268E-07	-7.8977	1.9745	-8.065E-09	437.6877	2.936E+10	-0.1531	4050000.	0.000
372.000	1.736E-07	1.2038	1.1636	-8.749E-09	437.6779	2.936E+10	-0.1172	4050000.	0.000
378.000	1.218E-07	6.0867	0.5654	-8.004E-09	437.6851	2.936E+10	-0.0822	4050000.	0.000
384.000	7.754E-08	8.0076	0.1617	-6.564E-09	437.6879	2.936E+10	-0.0523	4050000.	0.000
390.000	4.306E-08	8.0424	-0.0825	-4.924E-09	437.6879	2.936E+10	-0.0291	4050000.	0.000
396.000	1.845E-08	7.0287	-0.2071	-3.384E-09	437.6865	2.936E+10	-0.0125	4050000.	0.000
402.000	2.460E-09	5.5650	-0.2495	-2.097E-09	437.6843	2.936E+10	-0.001661	4050000.	0.000
408.000	-6.707E-09	4.0402	-0.2409	-1.115E-09	437.6820	2.936E+10	0.004527	4050000.	0.000
414.000	-1.092E-08	2.6773	-0.2052	-4.285E-10	437.6807	2.936E+10	0.007377	4050000.	0.000
420.000	-1.185E-08	1.5792	-0.1591	6.515E-12	437.6784	2.936E+10	0.007998	4050000.	0.000
426.000	-1.084E-08	0.7685	-0.1131	2.464E-10	437.6772	2.936E+10	0.007318	4050000.	0.000
432.000	-8.891E-09	0.2212	-0.0732	3.476E-10	437.6763	2.936E+10	0.006002	4050000.	0.000
438.000	-6.670E-09	-0.1102	-0.0416	3.589E-10	437.6763	2.936E+10	0.004502	4050000.	0.000
444.000	-4.584E-09	-0.2794	-0.0189	3.191E-10	437.6765	2.936E+10	0.003094	4050000.	0.000
450.000	-2.841E-09	-0.3372	-0.003821	2.561E-10	437.6766	2.936E+10	0.001918	4050000.	0.000
456.000	-1.511E-09	-0.3259	0.004991	1.883E-10	437.6766	2.936E+10	0.001027	4050000.	0.000
462.000	-5.811E-10	-0.2778	0.009228	1.266E-10	437.6765	2.936E+10	0.000392	4050000.	0.000
468.000	8.335E-12	-0.2155	0.0104	7.621E-11	437.6764	2.936E+10	-5.626E-06	4050000.	0.000
474.000	3.335E-10	-0.1533	0.009696	3.852E-11	437.6763	2.936E+10	-0.000257	4050000.	0.000
480.000	4.706E-10	-0.0992	0.008067	1.272E-11	437.6762	2.936E+10	-0.000318	4050000.	0.000
486.000	4.861E-10	-0.0565	0.006130	-3.200E-12	437.6762	2.936E+10	-0.000328	4050000.	0.000
492.000	4.322E-10	-0.0257	0.004270	-1.160E-11	437.6761	2.936E+10	-0.000292	4050000.	0.000
498.000	3.469E-10	-0.005265	0.002692	-1.476E-11	437.6761	2.936E+10	-0.000234	4050000.	0.000
504.000	2.551E-10	0.006693	0.001473	-1.461E-11	437.6761	2.936E+10	-0.000172	4050000.	0.000
510.000	1.716E-10	0.0125	0.000609	-1.266E-11	437.6761	2.936E+10	-0.000116	4050000.	0.000
516.000	1.033E-10	0.0140	5.280E-05	-9.950E-12	437.6761	2.936E+10	-6.970E-05	4050000.	0.000
522.000	5.217E-11	0.0131	-0.000262	-7.176E-12	437.6761	2.936E+10	-3.521E-05	4050000.	0.000
528.000	1.715E-11	0.0109	-0.000402	-4.721E-12	437.6761	2.936E+10	-1.158E-05	4050000.	0.000
534.000	-4.490E-12	0.008291	-0.000428	-2.759E-12	437.6761	2.936E+10	3.031E-06	4050000.	0.000
540.000	-1.596E-11	0.005780	-0.000387	-1.321E-12	437.6761	2.936E+10	1.077E-06	4050000.	0.000
546.000	-2.034E-11	0.003656	-0.000313	0.000	437.6761	2.936E+10	1.373E-05	4050000.	0.000
552.000	-2.024E-11	0.002025	-0.000231	0.000	437.6761	2.936E+10	1.367E-05	4050000.	0.000
558.000	-1.766E-11	0.000886	-0.000154	0.000	437.6761	2.936E+10	1.192E-05	4050000.	0.000
564.000	-1.399E-11	0.000175	-8.995E-05	0.000	437.6761	2.936E+10	9.444E-06	4050000.	0.000
570.000	-1.011E-11	-0.000195	-4.116E-05	0.000	437.6761	2.936E+10	6.821E-06	4050000.	0.000
576.000	-6.460E-12	-0.000320	-7.611E-06	0.000	437.6761	2.936E+10	4.361E-06	4050000.	0.000
582.000	-3.207E-12	-0.000288	1.197E-05	0.000	437.6761	2.936E+10	2.165E-06	4050000.	0.000
588.000	0.000	-0.000178	1.908E-05	0.000	437.6761	2.936E+10	2.076E-07	4050000.	0.000
594.000	2.374E-12	-6.002E-05	1.490E-05	0.000	437.6761	2.936E+10	-1.603E-06	4050000.	0.000
600.000	4.983E-12	0.000	0.000	0.000	437.6761	2.936E+10	-3.363E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0069954 radians
Maximum bending moment	=	2098018. inch-lbs
Maximum shear force	=	60267. lbs
Depth of maximum bending moment	=	66.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	15
Number of zero deflection points	=	8

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	82436.	-0.0124	437.6761	2.936E+10	-980.0871	2940.2614	0.000
6.000	0.9258	491673.	76262.	-0.0123	1162.2336	2.936E+10	-1077.7700	6985.2263	0.000
12.000	0.8521	944427.	69765.	-0.0122	1829.4377	2.936E+10	-1088.1218	7661.7839	0.000
18.000	0.7796	1357780.	63212.	-0.0119	2438.5772	2.936E+10	-1095.9480	8434.3264	0.000
24.000	0.7088	1731348.	56621.	-0.0116	2989.0891	2.936E+10	-1101.1611	9321.1183	0.000
30.000	0.6401	2064854.	50006.	-0.0112	3480.5629	2.936E+10	-1103.6690	10345.	0.000
36.000	0.5740	2358127.	43385.	-0.0108	3912.7465	2.936E+10	-1103.3783	11534.	0.000
42.000	0.5107	2611106.	36775.	-0.0103	4285.5501	2.936E+10	-1100.1846	12926.	0.000
48.000	0.4506	2823844.	30192.	-0.009723	4599.0529	2.936E+10	-1093.9790	14566.	0.000
54.000	0.3940	2996513.	23656.	-0.009128	4853.5078	2.936E+10	-1084.6422	16517.	0.000
60.000	0.3411	3129407.	17186.	-0.008502	5049.3484	2.936E+10	-1072.0417	18858.	0.000
66.000	0.2920	3222948.	10802.	-0.007853	5187.1956	2.936E+10	-1056.0274	21699.	0.000
72.000	0.2469	3277689.	4524.6730	-0.007188	5267.8656	2.936E+10	-1036.4259	25191.	0.000
78.000	0.2057	3294324.	-1623.6954	-0.006517	5292.3787	2.936E+10	-1013.0303	29543.	0.000
84.000	0.1687	3273689.	-7619.5447	-0.005845	5261.9700	2.936E+10	-985.5861	35062.	0.000
90.000	0.1356	3216778.	-13438.	-0.005182	5178.1029	2.936E+10	-953.7675	42205.	0.000
96.000	0.1065	3124750.	-19050.	-0.004534	5042.4859	2.936E+10	-917.1371	51684.	0.000
102.000	0.0812	2998947.	-24427.	-0.003908	4857.0951	2.936E+10	-875.0736	64674.	0.000
108.000	0.0596	2840913.	-29532.	-0.003311	4624.2070	2.936E+10	-826.6314	83257.	0.000

114.000	0.0414	2652430.	-34323.	-0.002750	4346.4483	2.936E+10	-770.2365	111508.	0.000
120.000	0.0266	2435575.	-38742.	-0.002230	4026.8782	2.936E+10	-702.9275	158730.	0.000
126.000	0.0147	2192823.	-42705.	-0.001757	3669.1450	2.936E+10	-617.9555	252512.	0.000
132.000	0.005485	1927292.	-46037.	-0.001336	3277.8437	2.936E+10	-492.7004	538932.	0.000
138.000	-0.001349	1643556.	-46461.	-0.000971	2859.7141	2.936E+10	351.2543	1561935.	0.000
144.000	-0.006168	1372066.	-43832.	-0.000663	2459.6311	2.936E+10	525.1028	510772.	0.000
150.000	-0.009305	1119147.	-40479.	-0.000408	2086.9147	2.936E+10	592.6512	382161.	0.000
156.000	-0.0111	887291.	-36811.	-0.000203	1745.2389	2.936E+10	629.9745	341490.	0.000
162.000	-0.0117	677899.	-32969.	-4.336E-05	1436.6668	2.936E+10	650.5342	332343.	0.000
168.000	-0.0116	491762.	-29039.	7.617E-05	1162.3641	2.936E+10	659.4686	341428.	0.000
174.000	-0.0108	329246.	-25083.	0.000160	922.8712	2.936E+10	659.3020	365250.	0.000
180.000	-0.009668	190385.	-21151.	0.000213	718.2377	2.936E+10	651.4398	404283.	0.000
186.000	-0.008272	74929.	-17286.	0.000240	548.0959	2.936E+10	636.7107	461817.	0.000
192.000	-0.006785	-17623.	-13529.	0.000246	463.6463	2.936E+10	615.5990	544414.	0.000
198.000	-0.005318	-88009.	-9917.6175	0.000235	567.3714	2.936E+10	588.3465	663746.	0.000
204.000	-0.003960	-137194.	-6506.1028	0.000212	639.8523	2.936E+10	548.8251	831502.	0.000
210.000	-0.002770	-166587.	-3353.9557	0.000181	683.1681	2.936E+10	501.8906	1087003.	0.000
216.000	-0.001785	-177872.	-499.4780	0.000146	699.7981	2.936E+10	449.6020	1511538.	0.000
222.000	-0.001017	-172928.	2021.1082	0.000110	692.5123	2.936E+10	390.5934	2303986.	0.000
228.000	-0.000462	-153880.	4127.9145	7.685E-05	664.4430	2.936E+10	311.6753	4050000.	0.000
234.000	-9.502E-05	-123575.	5255.3487	4.849E-05	619.7838	2.936E+10	64.1361	4050000.	0.000
240.000	0.000120	-90931.	5204.4279	2.657E-05	571.6779	2.936E+10	-81.1097	4050000.	0.000
246.000	0.000224	-61185.	4507.8470	1.102E-05	527.8424	2.936E+10	-151.0840	4050000.	0.000
252.000	0.000252	-36863.	3543.3649	1.005E-06	492.0002	2.936E+10	-170.4101	4050000.	0.000
258.000	0.000236	-18667.	2554.4710	-4.670E-06	465.1854	2.936E+10	-159.2212	4050000.	0.000
264.000	0.000196	-6198.7440	1679.0678	-7.212E-06	446.8109	2.936E+10	-132.5798	4050000.	0.000
270.000	0.000149	1498.5455	978.9065	-7.692E-06	439.8844	2.936E+10	-100.8072	4050000.	0.000
276.000	0.000104	5566.4103	465.6595	-7.191E-06	445.8791	2.936E+10	-70.2751	4050000.	0.000
282.000	6.570E-05	7103.0194	121.7818	-5.675E-06	448.1435	2.936E+10	-44.3508	4050000.	0.000
288.000	3.601E-05	7041.2764	-84.1890	-4.230E-06	448.0525	2.936E+10	-24.3062	4050000.	0.000
294.000	1.495E-05	6102.8018	-187.3781	-2.886E-06	446.6695	2.936E+10	-10.0902	4050000.	0.000
300.000	1.372E-06	4799.5979	-220.4268	-1.772E-06	444.7491	2.936E+10	-0.9260	4050000.	0.000
306.000	-6.319E-06	3461.8909	-210.4097	-9.280E-07	442.7777	2.936E+10	4.2651	4050000.	0.000
312.000	-9.764E-06	2276.8869	-177.8427	-3.415E-07	441.0314	2.936E+10	6.5905	4050000.	0.000
318.000	-1.041E-05	1328.5898	-136.9774	2.697E-08	439.6340	2.936E+10	7.0312	4050000.	0.000
324.000	-9.440E-06	633.0943	-96.7673	2.274E-07	438.6091	2.936E+10	6.3721	4050000.	0.000
330.000	-7.687E-06	166.8418	-62.0840	3.092E-07	437.9220	2.936E+10	5.1890	4050000.	0.000
336.000	-5.720E-06	-62.6483	-34.9140	3.147E-07	437.8421	2.936E+10	3.8677	4050000.	0.000
342.000	-3.911E-06	-252.8742	-15.3919	2.774E-07	438.0487	2.936E+10	2.6397	4050000.	0.000
348.000	-2.401E-06	-298.0106	-2.6100	2.211E-07	438.1153	2.936E+10	1.6210	4050000.	0.000
354.000	-1.258E-06	-284.7198	4.7998	1.615E-07	438.0957	2.936E+10	0.8490	4050000.	0.000
360.000	-4.632E-07	-240.7974	8.2845	1.078E-07	438.0309	2.936E+10	0.3126	4050000.	0.000
366.000	3.610E-08	-185.5618	9.1493	6.425E-08	437.9495	2.936E+10	-0.0244	4050000.	0.000
372.000	3.078E-07	-131.1584	8.4529	3.188E-08	437.8694	2.936E+10	-0.2078	4050000.	0.000
378.000	4.186E-07	-84.2026	6.9819	9.870E-09	437.8002	2.936E+10	-0.2826	4050000.	0.000
384.000	4.262E-07	-47.3993	5.2710	-3.579E-09	437.7459	2.936E+10	-0.2877	4050000.	0.000
390.000	3.757E-07	-20.9418	3.6471	-1.056E-08	437.7070	2.936E+10	-0.2536	4050000.	0.000
396.000	2.995E-07	-3.6086	2.2799	-1.307E-08	437.6814	2.936E+10	-0.2021	4050000.	0.000
402.000	2.188E-07	6.4485	1.2304	-1.278E-08	437.6656	2.936E+10	-0.1477	4050000.	0.000
408.000	1.461E-07	11.1868	0.4915	-1.098E-08	437.6926	2.936E+10	-0.0986	4050000.	0.000
414.000	8.706E-08	12.3727	0.0194	-8.572E-09	437.6943	2.936E+10	-0.0588	4050000.	0.000
420.000	4.321E-08	11.4400	-0.2444	-6.139E-09	437.6930	2.936E+10	-0.0292	4050000.	0.000
426.000	1.339E-08	9.4546	-0.3590	-4.314E-09	437.6900	2.936E+10	-0.009039	4050000.	0.000
432.000	-4.832E-09	7.1414	-0.3763	-2.307E-09	437.6866	2.936E+10	0.003262	4050000.	0.000
438.000	-1.430E-08	4.9440	-0.3376	-1.072E-09	437.6834	2.936E+10	0.009651	4050000.	0.000
444.000	-1.770E-08	3.0928	-0.2728	-1.511E-10	437.6807	2.936E+10	0.0119	4050000.	0.000
450.000	-1.731E-08	1.6710	-0.2019	2.357E-10	437.6786	2.936E+10	0.0117	4050000.	0.000
456.000	-1.487E-08	0.6694	-0.1367	4.749E-10	437.6771	2.936E+10	0.0100	4050000.	0.000
462.000	-1.161E-08	0.0291	-0.0831	5.463E-10	437.6761	2.936E+10	0.007838	4050000.	0.000
468.000	-8.317E-09	-0.3290	-0.0427	5.157E-10	437.6759	2.936E+10	0.005614	4050000.	0.000
474.000	-5.424E-09	-0.4850	-0.0149	4.325E-10	437.6768	2.936E+10	0.003661	4050000.	0.000
480.000	-3.127E-09	-0.5090	0.002402	3.309E-10	437.6768	2.936E+10	0.002111	4050000.	0.000
486.000	-1.454E-09	-0.4570	0.0117	2.322E-10	437.6768	2.936E+10	0.000981	4050000.	0.000
492.000	-3.410E-10	-0.3695	0.0153	1.477E-10	437.6766	2.936E+10	0.000230	4050000.	0.000
498.000	3.187E-10	-0.2736	0.0154	8.199E-11	437.6765	2.936E+10	-0.000215	4050000.	0.000
504.000	6.430E-10	-0.1854	0.0134	3.509E-11	437.6764	2.936E+10	-0.000434	4050000.	0.000
510.000	7.399E-10	-0.1127	0.0106	4.626E-12	437.6763	2.936E+10	-0.000499	4050000.	0.000
516.000	6.985E-10	-0.0581	0.007697	-1.283E-11	437.6762	2.936E+10	-0.000471	4050000.	0.000
522.000	5.859E-10	-0.0204	0.005096	-2.085E-11	437.6761	2.936E+10	-0.000395	4050000.	0.000
528.000	4.483E-10	0.003127	0.003001	-2.261E-11	437.6761	2.936E+10	-0.000303	4050000.	0.000
534.000	3.146E-10	0.0157	0.001456	-2.068E-11	437.6761	2.936E+10	-0.000212	4050000.	0.000
540.000	2.002E-10	0.0207	0.000414	-1.696E-11	437.6761	2.936E+10	-0.000135	4050000.	0.000
546.000	1.111E-10	0.0207	-0.000216	-1.274E-11	437.6761	2.936E+10	-7.497E-05	4050000.	0.000
552.000	4.739E-11	0.0181	-0.000537	-8.769E-12	437.6761	2.936E+10	-3.196E-05	4050000.	0.000
558.000	5.833E-12	0.0143	-0.000645	-5.459E-12	437.6761	2.936E+10	-3.937E-06	4050000.	0.000
564.000	-1.816E-11	0.0104	-0.000620	-2.939E-12	437.6761	2.936E+10	1.226E-05	4050000.	0.000
570.000	-2.944E-11	0.006866	-0.000523	-1.178E-12	437.6761	2.936E+10	1.987E-05	4050000.	0.000
576.000	-3.230E-11	0.004084	-0.000398	0.000	437.6761	2.936E+10	2.180E-05	4050000.	0.000
582.000	-3.015E-11	0.002085	-0.000272	0.000	437.6761	2.936E+10	2.035E-05	4050000.	0.000
588.000	-2.544E-11	0.000818	-0.000159	0.000	437.6761	2.936E+10	1.718E-05	4050000.	0.000
594.000	-1.974E-11	0.000169	-6.796E-05	0.000	437.6761	2.936E+10	1.332E-05	4050000.	0.000
600.000	-1.382E-11	0.000	0.000	0.000	437.6761	2.936E+10	9.331E-06	2025000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0123739 radians
Maximum bending moment	=	3294324. inch-lbs
Maximum shear force	=	82436. lbs
Depth of maximum bending moment	=	78.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	22
Number of zero deflection points	=	7

Summary of Pile Response(s)

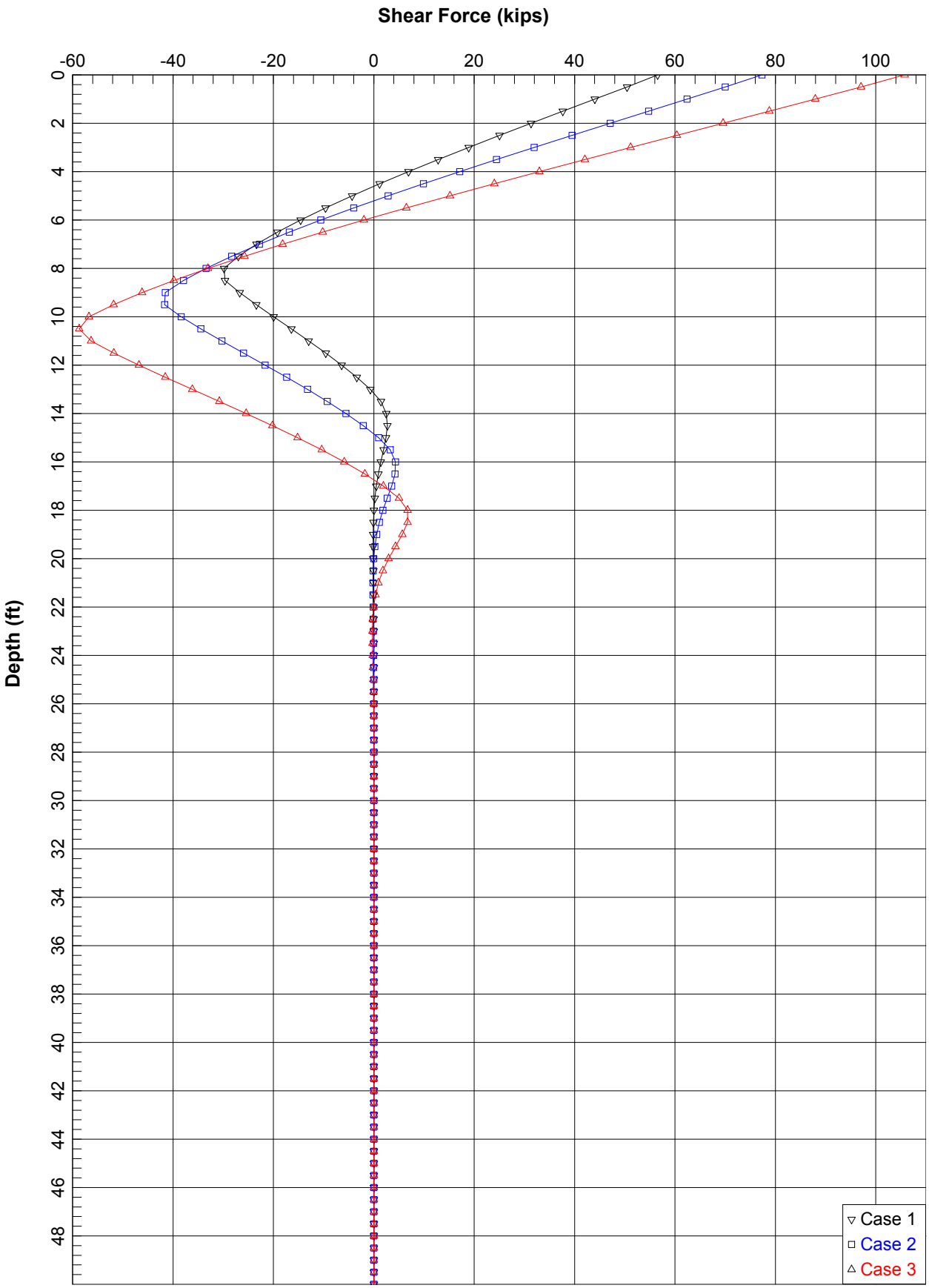
Definitions of Pile-head Loading Conditions:

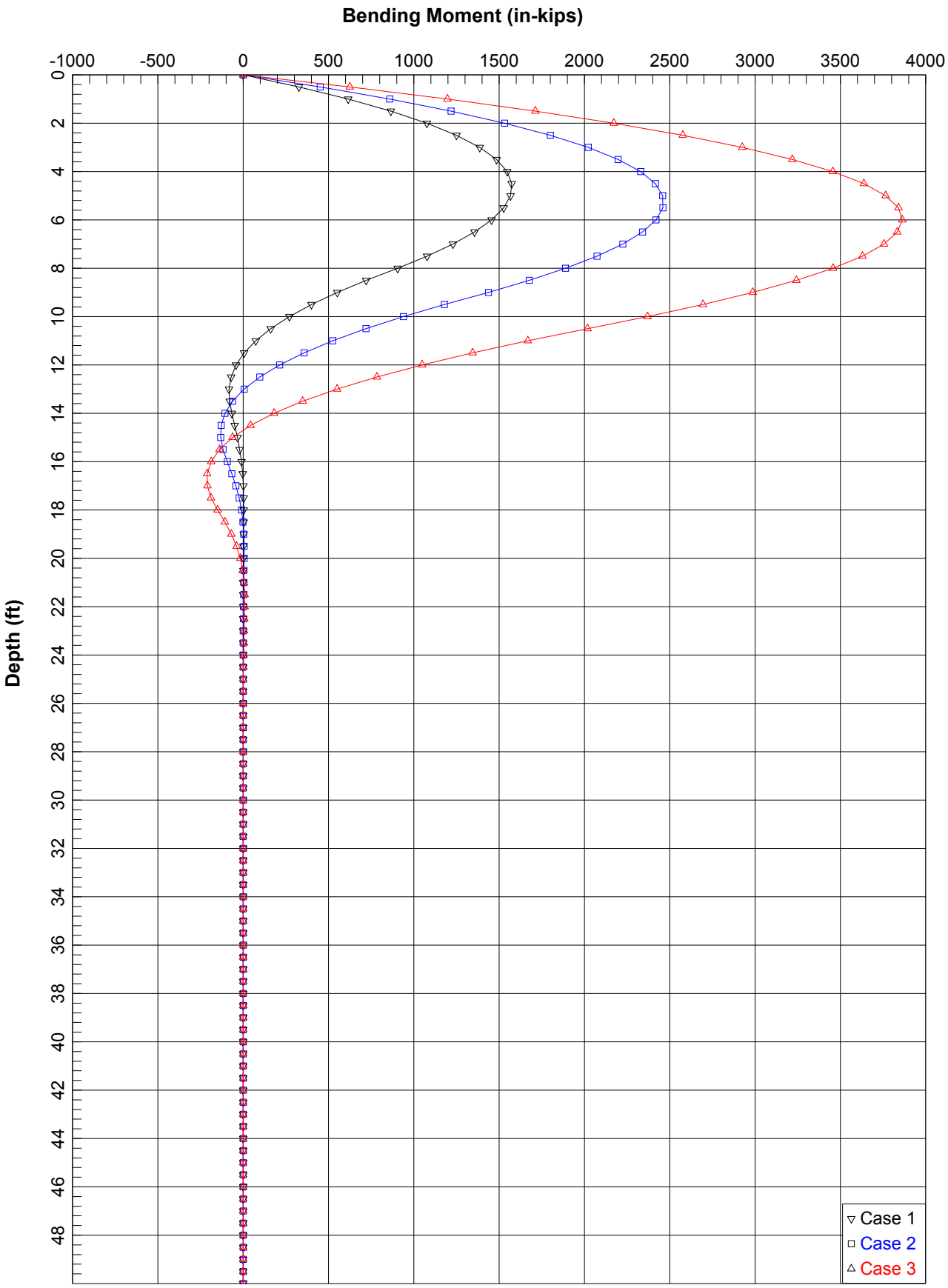
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	198000.	0.25000000	1339271.	44036.	-0.00395130
2	4	y = 0.5000	M = 0.000	198000.	0.50000000	2098018.	60267.	-0.00699538
3	4	y = 1.0000	M = 0.000	198000.	1.00000000	3294324.	82436.	-0.01237389

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4L_long_Max P.lp6d
Name of output report file:    Bent 4L_long_Max P.lp6o
Name of plot output file:      Bent 4L_long_Max P.lp6p
Name of runtime messeage file: Bent 4L_long_Max P.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:17:04

--------------------------------------------------------------------------------
                                  Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                  Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                        Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                        =          1

Total Pile Length                               =      50.00 ft

Depth of ground surface below top of pile       =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth             Pile
 No.             X              Diameter
                 ft               in
-----       ----------        ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                 =    Elastic Pile
```



```
   Cross-sectional Shape                        =        Circular
   Section Length                               =      50.00000000 ft
   Top Width                                    =      24.00000000 in
   Bottom Width                                 =      24.00000000 in
   Top Area                                     =     452.38934212 in
   Bottom Area                                  =     452.38934212 in
   Moment of Inertia at Top                     =    8143.00815810 in
   Moment of Inertia at Bottom                  =    8143.00815810 in
   Elastic Modulus                              =        3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                              =         0.000 degrees
                                                =         0.000 radians

Pile Batter Angle                               =         0.000 degrees
                                                =         0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer    =      -5.00000 ft
   Distance from top of pile to bottom of layer =       0.10000 ft
   Effective unit weight at top of layer        =     120.00000 pcf
   Effective unit weight at bottom of layer     =     120.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00700
   Epsilon-50 at bottom of layer                =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer    =       0.10000 ft
   Distance from top of pile to bottom of layer =      80.00000 ft
   Effective unit weight at top of layer        =     125.00000 pcf
   Effective unit weight at bottom of layer     =     125.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00500
   Epsilon-50 at bottom of layer                =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                      Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                              Rock Mass                                  In-situ     In-situ       Elastic
Layer                Soil Type        Depth        Unit Wt.     Cohesion     Friction         qu            or
Factor       J          kpy      Rock Emass      krm              Test         Test        Subgrade
 Num.          (p-y Curve Criteria)      ft          pcf          psf          deg.          psi          GSI        Epsilon
50    Factor          pci          psi                    Type         Property     Mod. pci
-----  ------  ---------------------------  ----------  ----  ----------  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water            -5.000      120.000     4500.000        --          --          --
0.00700       --           --          --          --          --          --          --
                                          0.10000      120.000     4500.000        --          --          --
0.00700       --           --          --          --          --          --          --
  2     Stiff Clay w/o Free Water            0.10000     125.000     4500.000        --          --          --
0.00500       --           --          --          --          --          --          --
                                          80.000       125.000     4500.000        --          --          --
0.00500       --           --          --          --          --          --          --


--------------------------------------------------------------------------------
                      p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----     ----------      ----------      ----------
  1           0.000          0.6750          1.0000
  2          50.000          0.6750          1.0000


--------------------------------------------------------------------------------
                                  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 = 3
```

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	198000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	198000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	198000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	56543.	-0.004289	437.6761	2.936E+10	-974.5682	11695.	0.000
6.000	0.2243	326810.	50429.	-0.004256	919.2818	2.936E+10	-1063.2998	28448.	0.000
12.000	0.1989	615262.	44048.	-0.004159	1344.3608	2.936E+10	-1063.6358	32081.	0.000
18.000	0.1744	865273.	37678.	-0.004008	1712.7920	2.936E+10	-1059.8383	36473.	0.000
24.000	0.1508	1076920.	31343.	-0.003810	2024.6874	2.936E+10	-1051.7421	41837.	0.000
30.000	0.1286	1250444.	25070.	-0.003572	2280.4008	2.936E+10	-1039.1626	48470.	0.000
36.000	0.1080	1386253.	18887.	-0.003302	2480.5375	2.936E+10	-1021.8894	56787.	0.000
42.000	0.0890	1484938.	12823.	-0.003009	2625.9652	2.936E+10	-999.6759	67389.	0.000
48.000	0.0719	1547274.	6906.9378	-0.002699	2717.8271	2.936E+10	-972.2235	81173.	0.000
54.000	0.0566	1574234.	1172.8021	-0.002380	2757.5573	2.936E+10	-939.1551	99527.	0.000
60.000	0.0433	1567003.	-4344.5690	-0.002059	2746.9005	2.936E+10	-899.9686	124702.	0.000
66.000	0.0319	1526992.	-9606.3230	-0.001743	2687.9381	2.936E+10	-853.9494	160576.	0.000
72.000	0.0224	1455868.	-14568.	-0.001438	2583.1259	2.936E+10	-799.9905	214406.	0.000
78.000	0.0147	1355591.	-19177.	-0.001151	2435.3519	2.936E+10	-736.1739	301471.	0.000
84.000	0.008578	1228482.	-23361.	-0.000887	2248.0377	2.936E+10	-658.6064	460645.	0.000
90.000	0.004012	1077366.	-27008.	-0.000651	2025.3437	2.936E+10	-557.0119	833042.	0.000
96.000	0.000767	905935.	-29814.	-0.000448	1772.7137	2.936E+10	-378.3325	2961484.	0.000
102.000	-0.001368	720665.	-29624.	-0.000282	1499.6885	2.936E+10	441.6441	1937195.	0.000
108.000	-0.002618	551118.	-26705.	-0.000152	1249.8353	2.936E+10	531.2105	1217210.	0.000
114.000	-0.003193	400562.	-23402.	-5.486E-05	1027.9665	2.936E+10	569.7579	1070555.	0.000
120.000	-0.003277	270419.	-19938.	1.371E-05	836.1810	2.936E+10	584.8964	1070986.	0.000
126.000	-0.003029	161267.	-16430.	5.783E-05	675.3284	2.936E+10	584.6605	1158253.	0.000
132.000	-0.002583	73124.	-12958.	8.178E-05	545.4291	2.936E+10	572.5353	1330036.	0.000
138.000	-0.002047	5573.8704	-9589.7727	8.983E-05	445.8901	2.936E+10	550.2875	1612762.	0.000
144.000	-0.001505	-42167.	-6382.4258	8.609E-05	499.8158	2.936E+10	518.8282	2068601.	0.000
150.000	-0.001014	-71220.	-3390.4855	7.450E-05	542.6296	2.936E+10	478.4853	2830729.	0.000
156.000	-0.000611	-83030.	-668.3621	5.874E-05	560.8236	2.936E+10	428.8892	4212616.	0.000
162.000	-0.000309	-79380.	1413.9612	4.214E-05	554.6545	2.936E+10	265.2185	5143953.	0.000
168.000	-0.000105	-66162.	2484.7967	2.727E-05	535.1768	2.936E+10	91.7267	5231844.	0.000
174.000	1.783E-05	-49627.	2712.5531	1.543E-05	510.8091	2.936E+10	-15.8078	5319734.	0.000
180.000	7.999E-05	-33648.	2448.8431	6.922E-06	487.2623	2.936E+10	-72.0955	5407625.	0.000
186.000	0.000101	-20257.	1955.3285	1.413E-06	467.5283	2.936E+10	-92.4094	5495515.	0.000
192.000	9.695E-05	-10188.	1407.4464	-1.698E-06	452.6895	2.936E+10	-90.2180	5583406.	0.000
198.000	8.051E-05	-3363.8471	908.4873	-3.083E-06	442.6332	2.936E+10	-76.1018	5671297.	0.000
204.000	5.995E-05	721.3149	509.4634	-3.353E-06	438.7391	2.936E+10	-56.9061	5695312.	0.000
210.000	4.027E-05	2757.6816	224.0616	-2.998E-06	441.7400	2.936E+10	-38.2278	5695312.	0.000
216.000	2.398E-05	3417.1762	41.0989	-2.367E-06	442.7118	2.936E+10	-22.7597	5695312.	0.000
222.000	1.187E-05	3256.4913	-60.9885	-1.685E-06	442.4750	2.936E+10	-11.0694	5695312.	0.000
228.000	3.761E-06	2689.3170	-105.5064	-1.077E-06	441.6392	2.936E+10	-3.5699	5695312.	0.000
234.000	-1.053E-06	1992.9738	-113.2188	-5.986E-07	440.6131	2.936E+10	0.9991	5695312.	0.000
240.000	-3.422E-06	1332.1139	-100.4772	-2.588E-07	439.6392	2.936E+10	3.2481	5695312.	0.000
246.000	-4.158E-06	787.8623	-78.8935	-4.210E-08	438.8371	2.936E+10	3.9464	5695312.	0.000
252.000	-3.927E-06	385.4917	-55.8712	7.781E-08	438.2442	2.936E+10	3.7277	5695312.	0.000
258.000	-3.224E-06	117.2234	-35.5077	1.292E-07	437.8488	2.936E+10	3.0601	5695312.	0.000
264.000	-2.377E-06	-40.9081	-19.5588	1.370E-07	437.7364	2.936E+10	2.2562	5695312.	0.000
270.000	-1.580E-06	-117.8076	-8.2909	1.208E-07	437.8497	2.936E+10	1.4998	5695312.	0.000
276.000	-9.277E-07	-140.6854	-1.1497	9.435E-08	437.8834	2.936E+10	0.8806	5695312.	0.000
282.000	-4.479E-07	-131.8277	2.7675	6.650E-08	437.8704	2.936E+10	0.4251	5695312.	0.000
288.000	-1.297E-07	-107.6332	4.4123	4.203E-08	437.8347	2.936E+10	0.1231	5695312.	0.000
294.000	5.643E-08	-78.9795	4.6211	2.296E-08	437.7925	2.936E+10	-0.0536	5695312.	0.000
300.000	1.457E-07	-52.2351	4.0454	9.546E-09	437.7531	2.936E+10	-0.1383	5695312.	0.000
306.000	1.710E-07	-30.4580	3.1435	1.095E-09	437.7210	2.936E+10	-0.1623	5695312.	0.000
312.000	1.589E-07	-14.5161	2.2042	-3.501E-09	437.6975	2.936E+10	-0.1508	5695312.	0.000
318.000	1.290E-07	-3.9996	1.3845	-5.394E-09	437.6820	2.936E+10	-0.1224	5695312.	0.000
324.000	9.415E-08	2.1111	0.7492	-5.587E-09	437.6792	2.936E+10	-0.0894	5695312.	0.000
330.000	6.192E-08	5.0040	0.3048	-4.860E-09	437.6835	2.936E+10	-0.0588	5695312.	0.000
336.000	3.583E-08	5.7799	0.0264	-3.757E-09	437.6846	2.936E+10	-0.0340	5695312.	0.000
342.000	1.683E-08	5.3299	-0.1236	-2.622E-09	437.6839	2.936E+10	-0.0160	5695312.	0.000
348.000	4.366E-09	4.3035	-0.1839	-1.638E-09	437.6824	2.936E+10	-0.004144	5695312.	0.000
354.000	-2.821E-09	3.1269	-0.1883	-8.783E-10	437.6807	2.936E+10	0.002678	5695312.	0.000
360.000	-6.174E-09	2.0459	-0.1627	-3.497E-10	437.6791	2.936E+10	0.005860	5695312.	0.000
366.000	-7.017E-09	1.1754	-0.1251	-2.046E-11	437.6778	2.936E+10	0.006661	5695312.	0.000
372.000	-6.419E-09	0.5444	-0.0869	1.553E-10	437.6769	2.936E+10	0.006093	5695312.	0.000
378.000	-5.154E-09	0.1326	-0.0539	2.245E-10	437.6763	2.936E+10	0.004892	5695312.	0.000
384.000	-3.725E-09	-0.1031	-0.0286	2.275E-10	437.6762	2.936E+10	0.003536	5695312.	0.000

390.000	-2.424E-09	-0.2115	-0.0111	1.953E-10	437.6764	2.936E+10	0.002301	5695312.	0.000
396.000	-1.381E-09	-0.2370	-0.000282	1.495E-10	437.6764	2.936E+10	0.001311	5695312.	0.000
402.000	-6.297E-10	-0.2152	0.005445	1.033E-10	437.6764	2.936E+10	0.000598	5695312.	0.000
408.000	-1.419E-10	-0.1719	0.007642	6.373E-11	437.6763	2.936E+10	0.000135	5695312.	0.000
414.000	1.350E-10	-0.1237	0.007662	3.352E-11	437.6763	2.936E+10	-0.000128	5695312.	0.000
420.000	2.603E-10	-0.0800	0.006536	1.270E-11	437.6762	2.936E+10	-0.000247	5695312.	0.000
426.000	2.874E-10	-0.0453	0.004976	0.000	437.6762	2.936E+10	-0.000273	5695312.	0.000
432.000	2.591E-10	-0.0203	0.003420	-6.808E-12	437.6761	2.936E+10	-0.000246	5695312.	0.000
438.000	2.058E-10	-0.004216	0.002096	-9.315E-12	437.6761	2.936E+10	-0.000195	5695312.	0.000
444.000	1.473E-10	0.004858	0.001091	-9.250E-12	437.6761	2.936E+10	-0.000140	5695312.	0.000
450.000	9.476E-11	0.008899	0.000402	-7.844E-12	437.6761	2.936E+10	-8.995E-05	5695312.	0.000
456.000	5.315E-11	0.009700	-1.933E-05	-5.943E-12	437.6761	2.936E+10	-5.045E-05	5695312.	0.000
462.000	2.344E-11	0.008681	-0.000237	-4.064E-12	437.6761	2.936E+10	-2.225E-05	5695312.	0.000
468.000	4.379E-12	0.006860	-0.000317	-2.476E-12	437.6761	2.936E+10	-4.157E-06	5695312.	0.000
474.000	-6.272E-12	0.004887	-0.000311	-1.276E-12	437.6761	2.936E+10	5.953E-06	5695312.	0.000
480.000	-1.093E-11	0.003127	-0.000262	0.000	437.6761	2.936E+10	1.038E-05	5695312.	0.000
486.000	-1.175E-11	0.001740	-0.000198	0.000	437.6761	2.936E+10	1.116E-05	5695312.	0.000
492.000	-1.044E-11	0.000755	-0.000135	0.000	437.6761	2.936E+10	9.913E-06	5695312.	0.000
498.000	-8.207E-12	0.000126	-8.139E-05	0.000	437.6761	2.936E+10	7.790E-06	5695312.	0.000
504.000	-5.817E-12	-0.000223	-4.146E-05	0.000	437.6761	2.936E+10	5.521E-06	5695312.	0.000
510.000	-3.700E-12	-0.000373	-1.436E-05	0.000	437.6761	2.936E+10	3.512E-06	5695312.	0.000
516.000	-2.041E-12	-0.000396	1.990E-06	0.000	437.6761	2.936E+10	1.937E-06	5695312.	0.000
522.000	0.000	-0.000350	1.027E-05	0.000	437.6761	2.936E+10	8.236E-07	5695312.	0.000
528.000	0.000	-0.000273	1.309E-05	0.000	437.6761	2.936E+10	1.167E-07	5695312.	0.000
534.000	0.000	-0.000193	1.263E-05	0.000	437.6761	2.936E+10	-2.722E-07	5695312.	0.000
540.000	0.000	-0.000122	1.050E-05	0.000	437.6761	2.936E+10	-4.368E-07	5695312.	0.000
546.000	0.000	-6.669E-05	7.812E-06	0.000	437.6761	2.936E+10	-4.595E-07	5695312.	0.000
552.000	0.000	-2.808E-05	5.219E-06	0.000	437.6761	2.936E+10	-4.046E-07	5695312.	0.000
558.000	0.000	-4.029E-06	3.054E-06	0.000	437.6761	2.936E+10	-3.171E-07	5695312.	0.000
564.000	0.000	8.609E-06	1.429E-06	0.000	437.6761	2.936E+10	-2.248E-07	5695312.	0.000
570.000	0.000	1.315E-05	3.266E-07	0.000	437.6761	2.936E+10	-1.426E-07	5695312.	0.000
576.000	0.000	1.256E-05	-3.281E-07	0.000	437.6761	2.936E+10	-7.565E-08	5695312.	0.000
582.000	0.000	9.241E-06	-6.251E-07	0.000	437.6761	2.936E+10	-2.335E-08	5695312.	0.000
588.000	0.000	5.079E-06	-6.405E-07	0.000	437.6761	2.936E+10	1.820E-08	5695312.	0.000
594.000	0.000	1.570E-06	-4.244E-07	0.000	437.6761	2.936E+10	5.383E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	8.764E-08	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042892 radians
Maximum bending moment = 1574234. inch-lbs
Maximum shear force = 56543. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 17
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	77303.	-0.007579	437.6761	2.936E+10	-1158.9634	6953.7803	0.000
6.000	0.4545	451961.	70020.	-0.007533	1103.7116	2.936E+10	-1268.6876	16747.	0.000
12.000	0.4096	858140.	62392.	-0.007399	1702.2794	2.936E+10	-1274.1141	18663.	0.000
18.000	0.3657	1218242.	54743.	-0.007187	2232.9462	2.936E+10	-1271.4835	20924.	0.000
24.000	0.3234	1532130.	47099.	-0.006906	2695.5107	2.936E+10	-1272.6434	23613.	0.000
30.000	0.2829	1799832.	39484.	-0.006565	3090.0111	2.936E+10	-1265.4293	26841.	0.000
36.000	0.2446	2021511.	31927.	-0.006174	3415.7343	2.936E+10	-1253.6608	30753.	0.000
42.000	0.2088	2197628.	24455.	-0.005743	3676.2254	2.936E+10	-1237.1366	35553.	0.000
48.000	0.1757	2328644.	17096.	-0.005281	3869.2980	2.936E+10	-1215.6271	41520.	0.000
54.000	0.1454	2415332.	9882.9431	-0.004796	3997.0464	2.936E+10	-1188.8628	49054.	0.000
60.000	0.1181	2458634.	2846.8040	-0.004298	4060.8593	2.936E+10	-1156.5169	58747.	0.000
66.000	0.0938	2459705.	-3977.2743	-0.003795	4062.4373	2.936E+10	-1118.1759	71495.	0.000
72.000	0.0726	2419924.	-10552.	-0.003297	4003.8141	2.936E+10	-1073.2904	88730.	0.000
78.000	0.0543	2340917.	-16835.	-0.002810	3887.3852	2.936E+10	-1021.0823	112865.	0.000
84.000	0.0389	2224583.	-22779.	-0.002343	3715.9485	2.936E+10	-960.3607	148291.	0.000
90.000	0.0262	2073136.	-28328.	-0.001904	3492.7671	2.936E+10	-889.1084	203918.	0.000
96.000	0.0160	1889177.	-33405.	-0.001499	3221.6752	2.936E+10	-803.3937	301146.	0.000
102.000	0.008170	1675838.	-37896.	-0.001135	2907.2859	2.936E+10	-693.6279	509423.	0.000
108.000	0.002388	1437121.	-41542.	-0.000817	2555.4989	2.936E+10	-521.5571	1310690.	0.000
114.000	-0.001632	1179279.	-41665.	-0.000549	2175.5281	2.936E+10	480.4715	1766371.	0.000
120.000	-0.004205	938447.	-38356.	-0.000333	1820.6252	2.936E+10	622.3822	887959.	0.000
126.000	-0.005628	719794.	-34441.	-0.000164	1498.4049	2.936E+10	682.7079	727829.	0.000
132.000	-0.006168	525543.	-30257.	-3.627E-05	1212.1458	2.936E+10	711.9378	692561.	0.000
138.000	-0.006063	356794.	-25955.	5.391E-05	963.4682	2.936E+10	722.1920	714662.	0.000
144.000	-0.005521	213958.	-21633.	0.000112	752.9763	2.936E+10	718.4273	780756.	0.000
150.000	-0.004716	96933.	-17368.	0.000144	580.5216	2.936E+10	703.1170	894472.	0.000
156.000	-0.003793	5196.3947	-13226.	0.000154	445.3338	2.936E+10	677.5908	1071868.	0.000
162.000	-0.002863	-62148.	-9265.7992	0.000149	529.2608	2.936E+10	642.5220	1346482.	0.000
168.000	-0.002009	-106346.	-5543.9774	0.000131	594.3941	2.936E+10	598.0853	1785783.	0.000
174.000	-0.001286	-128988.	-2118.1143	0.000107	627.7599	2.936E+10	543.8691	2536935.	0.000
180.000	-0.000721	-132019.	948.3639	8.068E-05	632.2265	2.936E+10	478.2903	3978797.	0.000
186.000	-0.000318	-117799.	3257.3946	5.515E-05	611.2717	2.936E+10	291.3866	5495515.	0.000
192.000	-5.948E-05	-93061.	4297.5911	3.360E-05	574.8162	2.936E+10	55.3455	5583406.	0.000
198.000	8.506E-05	-66308.	4222.4253	1.731E-05	535.3912	2.936E+10	-80.4008	5671297.	0.000
204.000	0.000148	-42433.	3558.9717	6.200E-06	500.2079	2.936E+10	-140.7504	5695312.	0.000
210.000	0.000159	-23615.	2682.6272	-5.497E-07	472.4765	2.936E+10	-151.3645	5695312.	0.000
216.000	0.000142	-10240.	1825.0666	-4.010E-06	452.7667	2.936E+10	-134.4891	5695312.	0.000
222.000	0.000111	-1704.6562	1104.5194	-5.230E-06	440.1882	2.936E+10	-105.6933	5695312.	0.000
228.000	7.892E-05	3026.4011	562.6998	-5.095E-06	442.1360	2.936E+10	-74.9132	5695312.	0.000
234.000	5.021E-05	3059.8476	194.9920	-4.269E-06	445.1326	2.936E+10	-47.6561	5695312.	0.000
240.000	2.770E-05	5376.4472	-26.8430	-3.202E-06	445.5991	2.936E+10	-26.2889	5695312.	0.000
246.000	1.178E-05	4745.3401	-139.2508	-2.168E-06	444.6691	2.936E+10	-11.1803	5695312.	0.000

Bent 4L_long_Max P

252.000	1.681E-06	3710.5888	-177.5787	-1.304E-06	443.1442	2.936E+10	-1.5956	5695312.	0.000
258.000	-3.866E-06	2617.4933	-171.3566	-6.570E-07	441.5334	2.936E+10	3.6697	5695312.	0.000
264.000	-6.203E-06	1655.8701	-142.6836	-2.203E-07	440.1163	2.936E+10	5.8880	5695312.	0.000
270.000	-6.509E-06	905.8137	-106.4830	4.151E-08	439.0110	2.936E+10	6.1788	5695312.	0.000
276.000	-5.705E-06	377.9756	-71.7008	1.727E-07	438.2331	2.936E+10	5.4152	5695312.	0.000
282.000	-4.437E-06	44.9940	-42.8202	2.159E-07	437.7424	2.936E+10	4.2116	5695312.	0.000
288.000	-3.114E-06	-136.3799	-21.3184	2.066E-07	437.8771	2.936E+10	2.9556	5695312.	0.000
294.000	-1.958E-06	-211.3173	-6.8761	1.711E-07	437.9875	2.936E+10	1.8584	5695312.	0.000
300.000	-1.061E-06	-219.3001	1.7207	1.271E-07	437.9993	2.936E+10	1.0072	5695312.	0.000
306.000	-4.332E-07	-190.9707	5.9760	8.512E-08	437.9575	2.936E+10	0.4112	5695312.	0.000
312.000	-3.960E-08	-147.7905	7.3225	5.050E-08	437.8939	2.936E+10	0.0376	5695312.	0.000
318.000	1.728E-07	-103.2213	6.9431	2.485E-08	437.8282	2.936E+10	-0.1640	5695312.	0.000
324.000	2.586E-07	-64.5320	5.7146	7.708E-09	437.7712	2.936E+10	-0.2455	5695312.	0.000
330.000	2.653E-07	-34.6646	4.2227	-2.430E-09	437.7272	2.936E+10	-0.2518	5695312.	0.000
336.000	2.295E-07	-13.8543	2.8138	-7.388E-09	437.6965	2.936E+10	-0.2178	5695312.	0.000
342.000	1.766E-07	-0.8816	1.6574	-8.894E-09	437.6774	2.936E+10	-0.1677	5695312.	0.000
348.000	1.227E-07	6.0553	0.8049	-8.366E-09	437.6850	2.936E+10	-0.1165	5695312.	0.000
354.000	7.625E-08	8.7970	0.2383	-6.848E-09	437.6891	2.936E+10	-0.0724	5695312.	0.000
360.000	4.055E-08	8.9310	-0.0943	-5.036E-09	437.6893	2.936E+10	-0.0385	5695312.	0.000
366.000	1.581E-08	7.6771	-0.2548	-3.339E-09	437.6874	2.936E+10	-0.0150	5695312.	0.000
372.000	4.900E-10	5.8808	-0.3013	-1.953E-09	437.6848	2.936E+10	-0.000465	5695312.	0.000
378.000	-7.623E-09	4.0664	-0.2810	-9.366E-10	437.6821	2.936E+10	0.007236	5695312.	0.000
384.000	-1.075E-08	2.5115	-0.2286	-2.644E-10	437.6798	2.936E+10	0.0102	5695312.	0.000
390.000	-1.080E-08	1.3233	-0.1673	1.275E-10	437.6780	2.936E+10	0.0102	5695312.	0.000
396.000	-9.219E-09	0.5037	-0.1103	3.142E-10	437.6768	2.936E+10	0.008751	5695312.	0.000
402.000	-7.025E-09	-0.001045	-0.0640	3.656E-10	437.6761	2.936E+10	0.006668	5695312.	0.000
408.000	-4.832E-09	-0.2657	-0.0303	3.383E-10	437.6765	2.936E+10	0.004587	5695312.	0.000
414.000	-2.965E-09	-0.3651	-0.008970	2.739E-10	437.6774	2.936E+10	0.002815	5695312.	0.000
420.000	-1.546E-09	-0.3632	0.004777	1.994E-10	437.6766	2.936E+10	0.001467	5695312.	0.000
426.000	-5.721E-10	-0.3083	0.0108	1.308E-10	437.6765	2.936E+10	0.000543	5695312.	0.000
432.000	2.364E-11	-0.2338	0.0124	7.540E-11	437.6764	2.936E+10	-2.244E-05	5695312.	0.000
438.000	3.327E-10	-0.1600	0.0114	3.516E-11	437.6763	2.936E+10	-0.000316	5695312.	0.000
444.000	4.455E-10	-0.0976	0.009139	8.830E-12	437.6762	2.936E+10	-0.000423	5695312.	0.000
450.000	4.387E-10	-0.0504	0.006621	-6.293E-12	437.6762	2.936E+10	-0.000416	5695312.	0.000
456.000	3.700E-10	-0.0181	0.004319	-1.329E-11	437.6760	2.936E+10	-0.000351	5695312.	0.000
462.000	2.791E-10	0.001476	0.002470	-1.500E-11	437.6761	2.936E+10	-0.000265	5695312.	0.000
468.000	1.901E-10	0.0115	0.001134	-1.367E-11	437.6761	2.936E+10	-0.000180	5695312.	0.000
474.000	1.151E-10	0.0151	0.000263	-1.094E-11	437.6761	2.936E+10	-0.000108	5695312.	0.000
480.000	5.877E-11	0.0147	-0.000231	-7.889E-12	437.6761	2.936E+10	-5.578E-05	5695312.	0.000
486.000	2.047E-11	0.0124	-0.000456	-5.118E-12	437.6761	2.936E+10	-1.943E-05	5695312.	0.000
492.000	-2.654E-12	0.009285	-0.000507	-2.906E-12	437.6761	2.936E+10	2.519E-06	5695312.	0.000
498.000	-1.439E-11	0.006291	-0.000458	-1.314E-12	437.6761	2.936E+10	1.366E-05	5695312.	0.000
504.000	-1.842E-11	0.003788	-0.000365	0.000	437.6761	2.936E+10	1.748E-05	5695312.	0.000
510.000	-1.780E-11	0.001912	-0.000262	0.000	437.6761	2.936E+10	1.690E-05	5695312.	0.000
516.000	-1.484E-11	0.000645	-0.000169	0.000	437.6761	2.936E+10	1.408E-05	5695312.	0.000
522.000	-1.108E-11	-0.000115	-9.505E-05	0.000	437.6761	2.936E+10	1.052E-05	5695312.	0.000
528.000	-7.466E-12	-0.000497	-4.223E-05	0.000	437.6761	2.936E+10	7.087E-06	5695312.	0.000
534.000	-4.461E-12	-0.000623	-8.268E-06	0.000	437.6761	2.936E+10	4.234E-06	5695312.	0.000
540.000	-2.220E-12	-0.000597	1.076E-05	0.000	437.6761	2.936E+10	2.107E-06	5695312.	0.000
546.000	0.000	-0.000495	1.910E-05	0.000	437.6761	2.936E+10	6.745E-07	5695312.	0.000
552.000	0.000	-0.000368	2.058E-05	0.000	437.6761	2.936E+10	-1.820E-07	5695312.	0.000
558.000	0.000	-0.000248	1.820E-05	0.000	437.6761	2.936E+10	-6.097E-07	5695312.	0.000
564.000	0.000	-0.000150	1.413E-05	0.000	437.6761	2.936E+10	-7.485E-07	5695312.	0.000
570.000	0.000	-7.867E-05	9.745E-06	0.000	437.6761	2.936E+10	-7.127E-07	5695312.	0.000
576.000	0.000	-3.300E-05	5.850E-06	0.000	437.6761	2.936E+10	-5.854E-07	5695312.	0.000
582.000	0.000	-8.399E-06	2.835E-06	0.000	437.6761	2.936E+10	-4.196E-07	5695312.	0.000
588.000	0.000	1.097E-06	8.443E-07	0.000	437.6761	2.936E+10	-2.441E-07	5695312.	0.000
594.000	0.000	1.806E-06	-9.744E-08	0.000	437.6761	2.936E+10	-6.984E-08	5695312.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	1.023E-07	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection             =      0.5000000 inches
Computed slope at pile head      =     -0.0075788 radians
Maximum bending moment           =      2459705. inch-lbs
Maximum shear force              =        77303. lbs
Depth of maximum bending moment  =     66.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =            20
Number of zero deflection points =             9
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	105745.	-0.0134	437.6761	2.936E+10	-1378.2475	4134.7425	0.000
6.000	0.9196	625592.	97071.	-0.0133	1359.5838	2.936E+10	-1513.0681	9872.6151	0.000
12.000	0.8399	1196561.	87958.	-0.0132	2200.9970	2.936E+10	-1524.6442	10892.	0.000
18.000	0.7617	1712353.	78788.	-0.0129	2961.0971	2.936E+10	-1532.2154	12070.	0.000
24.000	0.6856	2172569.	69584.	-0.0125	3639.2979	2.936E+10	-1535.6381	13440.	0.000
30.000	0.6121	2576975.	60373.	-0.0120	4235.2531	2.936E+10	-1534.7611	15044.	0.000
36.000	0.5418	2925504.	51180.	-0.0114	4748.8647	2.936E+10	-1529.4231	16936.	0.000
42.000	0.4751	3218263.	42034.	-0.0108	5180.2910	2.936E+10	-1519.4498	19188.	0.000
48.000	0.4124	3455540.	32961.	-0.0101	5529.9564	2.936E+10	-1504.6501	21893.	0.000
54.000	0.3539	3637811.	23993.	-0.009381	5798.5611	2.936E+10	-1484.8101	25176.	0.000
60.000	0.2998	3765745.	15160.	-0.008624	5987.0925	2.936E+10	-1459.6858	29213.	0.000
66.000	0.2504	3840217.	6493.5642	-0.007847	6096.8377	2.936E+10	-1428.9906	34245.	0.000
72.000	0.2056	3862312.	-1970.5407	-0.007060	6129.3985	2.936E+10	-1392.3777	40625.	0.000
78.000	0.1657	3833344.	-10196.	-0.006273	6086.7093	2.936E+10	-1349.4102	48876.	0.000
84.000	0.1304	3754866.	-18143.	-0.005498	5971.0599	2.936E+10	-1299.5133	59809.	0.000
90.000	0.0997	3628694.	-25767.	-0.004743	5785.1257	2.936E+10	-1241.8857	74750.	0.000
96.000	0.0735	3456933.	-33019.	-0.004019	5532.0089	2.936E+10	-1175.3335	96011.	0.000
102.000	0.0515	3242020.	-39838.	-0.003334	5215.3018	2.936E+10	-1097.9158	128021.	0.000
108.000	0.0334	2986796.	-46150.	-0.002698	4839.1883	2.936E+10	-1006.0891	180527.	0.000

Bent 4L_long_Max P

114.000	0.0191	2694627.	-51845.	-0.002117	4408.6314	2.936E+10	-892.1506	280501.	0.000
120.000	0.008033	2369686.	-56720.	-0.001600	3929.7802	2.936E+10	-732.9411	547464.	0.000
126.000	-0.000112	2017784.	-58661.	-0.001151	3411.1973	2.936E+10	86.0169	4616610.	0.000
132.000	-0.005782	1668489.	-56301.	-0.000774	2896.4558	2.936E+10	700.7859	727228.	0.000
138.000	-0.009406	1344016.	-51779.	-0.000467	2418.2950	2.936E+10	806.3267	514362.	0.000
144.000	-0.0114	1048246.	-46777.	-0.000222	1982.4303	2.936E+10	861.2092	454008.	0.000
150.000	-0.0121	783224.	-41524.	-3.499E-05	1591.8791	2.936E+10	889.6933	442208.	0.000
156.000	-0.0118	550041.	-36154.	0.000101	1248.2473	2.936E+10	900.2742	457717.	0.000
162.000	-0.0109	349134.	-30762.	0.000193	952.1797	2.936E+10	896.9473	495716.	0.000
168.000	-0.009483	180433.	-25426.	0.000247	703.5718	2.936E+10	881.8638	557944.	0.000
174.000	-0.007889	43434.	-20212.	0.000270	501.6836	2.936E+10	856.2419	651212.	0.000
180.000	-0.006241	-62750.	-15181.	0.000268	530.1473	2.936E+10	820.7376	788981.	0.000
186.000	-0.004671	-139372.	-10392.	0.000248	643.0621	2.936E+10	775.5898	996287.	0.000
192.000	-0.003271	-188039.	-5903.1363	0.000214	714.7807	2.936E+10	720.6185	1321757.	0.000
198.000	-0.002102	-210718.	-1776.2072	0.000173	748.2020	2.936E+10	655.0246	1869639.	0.000
204.000	-0.001191	-209765.	1899.6586	0.000130	746.7978	2.936E+10	570.2640	2871890.	0.000
210.000	-0.000538	-188232.	5010.2377	8.967E-05	715.0651	2.936E+10	466.5956	5204005.	0.000
216.000	-0.000115	-149855.	6738.5368	5.512E-05	658.5113	2.936E+10	109.5041	5695312.	0.000
222.000	0.000123	-107500.	6715.4587	2.882E-05	596.0946	2.936E+10	-117.1967	5695312.	0.000
228.000	0.000230	-69338.	5707.5889	1.075E-05	539.8568	2.936E+10	-218.7599	5695312.	0.000
234.000	0.000252	-39035.	4332.4838	-3.285E-07	495.1999	2.936E+10	-239.6085	5695312.	0.000
240.000	0.000227	-17348.	2968.6042	-6.091E-06	463.2406	2.936E+10	-215.0180	5695312.	0.000
246.000	0.000179	-3396.9966	1812.8489	-8.211E-06	442.6821	2.936E+10	-170.2337	5695312.	0.000
252.000	0.000128	4426.0559	937.6624	-8.105E-06	444.1986	2.936E+10	-121.4951	5695312.	0.000
258.000	8.208E-05	7874.2104	339.4511	-6.848E-06	449.2800	2.936E+10	-77.9087	5695312.	0.000
264.000	4.581E-05	8515.7402	-24.7402	-5.173E-06	450.2254	2.936E+10	-43.4884	5695312.	0.000
270.000	2.000E-05	7589.6198	-212.1485	-3.527E-06	448.8606	2.936E+10	-18.9810	5695312.	0.000
276.000	5.394E-06	5978.3397	-279.0177	-2.246E-06	446.6011	2.936E+10	-3.3085	5695312.	0.000
282.000	-5.694E-06	4246.5025	-272.7279	-1.096E-06	443.9340	2.936E+10	5.4049	5695312.	0.000
288.000	-9.666E-06	2708.2089	-228.9884	-3.852E-07	441.6671	2.936E+10	9.1750	5695312.	0.000
294.000	-1.032E-05	1499.5566	-172.0859	4.481E-08	439.8859	2.936E+10	9.7925	5695312.	0.000
300.000	-9.128E-06	643.0719	-116.7146	2.638E-07	438.6238	2.936E+10	8.6645	5695312.	0.000
306.000	-7.151E-06	98.3542	-70.3572	3.395E-07	437.8210	2.936E+10	6.7879	5695312.	0.000
312.000	-5.053E-06	-202.0215	-35.6028	3.290E-07	437.9738	2.936E+10	4.7969	5695312.	0.000
318.000	-3.204E-06	-329.6611	-12.0898	2.705E-07	438.1619	2.936E+10	3.0409	5695312.	0.000
324.000	-1.758E-06	-347.7468	2.0398	2.054E-07	438.1886	2.936E+10	1.6688	5695312.	0.000
330.000	-7.389E-07	-305.6720	9.1503	1.386E-07	438.1265	2.936E+10	0.7014	5695312.	0.000
336.000	-9.467E-08	-252.3723	11.5241	8.303E-08	438.0272	2.936E+10	0.0899	5695312.	0.000
342.000	2.574E-07	-167.5796	11.0608	4.155E-08	437.9230	2.936E+10	-0.2443	5695312.	0.000
348.000	4.039E-07	-105.6414	9.1776	1.363E-08	437.8318	2.936E+10	-0.3834	5695312.	0.000
354.000	4.209E-07	-57.4804	6.8287	-3.042E-09	437.7608	2.936E+10	-0.3995	5695312.	0.000
360.000	3.674E-07	-23.6892	4.5838	-1.134E-08	437.7110	2.936E+10	-0.3488	5695312.	0.000
366.000	2.849E-07	-2.4476	2.7263	-1.401E-08	437.6797	2.936E+10	-0.2704	5695312.	0.000
372.000	1.993E-07	9.0599	1.3475	-1.333E-08	437.6894	2.936E+10	-0.1892	5695312.	0.000
378.000	1.249E-07	13.7541	0.4243	-1.100E-08	437.6964	2.936E+10	-0.1185	5695312.	0.000
384.000	6.731E-08	14.1775	-0.1230	-8.147E-09	437.6970	2.936E+10	-0.0639	5695312.	0.000
390.000	2.712E-08	12.2974	-0.3919	-5.441E-09	437.6942	2.936E+10	-0.0257	5695312.	0.000
396.000	2.015E-09	9.4875	-0.4749	-3.215E-09	437.6901	2.936E+10	-0.001913	5695312.	0.000
402.000	-1.416E-08	6.6065	-0.4480	-1.570E-09	437.6858	2.936E+10	0.0109	5695312.	0.000
408.000	-1.682E-08	4.1154	-0.3675	-4.743E-10	437.6822	2.936E+10	0.0160	5695312.	0.000
414.000	-1.715E-08	2.1981	-0.2707	1.709E-10	437.6793	2.936E+10	0.0163	5695312.	0.000
420.000	-1.477E-08	0.8663	-0.1798	4.841E-10	437.6774	2.936E+10	0.0140	5695312.	0.000
426.000	-1.134E-08	0.0391	-0.1105	5.766E-10	437.6762	2.936E+10	0.0108	5695312.	0.000
432.000	-7.854E-09	-0.4007	-0.0508	5.397E-10	437.6767	2.936E+10	0.007455	5695312.	0.000
438.000	-4.861E-09	-0.5721	-0.0146	4.403E-10	437.6769	2.936E+10	0.004615	5695312.	0.000
444.000	-2.571E-09	-0.5771	0.000656	3.228E-10	437.6765	2.936E+10	0.002440	5695312.	0.000
450.000	-9.875E-10	-0.4942	0.0167	2.133E-10	437.6768	2.936E+10	0.000937	5695312.	0.000
456.000	-1.053E-11	-0.3774	0.0195	1.243E-10	437.6766	2.936E+10	9.997E-06	5695312.	0.000
462.000	5.036E-10	-0.2602	0.0181	5.910E-11	437.6765	2.936E+10	-0.000478	5695312.	0.000
468.000	6.987E-10	-0.1601	0.0147	1.615E-11	437.6763	2.936E+10	-0.000663	5695312.	0.000
474.000	6.974E-10	-0.0838	0.0107	-8.777E-12	437.6762	2.936E+10	-0.000662	5695312.	0.000
480.000	5.934E-10	-0.0314	0.007046	-2.055E-11	437.6761	2.936E+10	-0.000563	5695312.	0.000
486.000	4.508E-10	0.000763	0.004073	-2.369E-11	437.6761	2.936E+10	-0.000428	5695312.	0.000
492.000	3.091E-10	0.0175	0.001909	-2.182E-11	437.6761	2.936E+10	-0.000293	5695312.	0.000
498.000	1.890E-10	0.0237	0.000491	-1.760E-11	437.6761	2.936E+10	-0.000179	5695312.	0.000
504.000	9.792E-11	0.0235	-0.000326	-1.278E-11	437.6761	2.936E+10	-9.294E-05	5695312.	0.000
510.000	3.562E-11	0.0198	-0.000707	-8.356E-12	437.6761	2.936E+10	-3.381E-05	5695312.	0.000
516.000	-2.350E-12	0.0150	-0.000801	-4.796E-12	437.6761	2.936E+10	2.230E-06	5695312.	0.000
522.000	-2.193E-11	0.0102	-0.000732	-2.217E-12	437.6761	2.936E+10	2.081E-05	5695312.	0.000
528.000	-2.896E-11	0.006215	-0.000587	0.000	437.6761	2.936E+10	2.749E-05	5695312.	0.000
534.000	-2.836E-11	0.003186	-0.000424	0.000	437.6761	2.936E+10	2.692E-05	5695312.	0.000
540.000	-2.386E-11	0.001125	-0.000275	0.000	437.6761	2.936E+10	2.265E-05	5695312.	0.000
546.000	-1.798E-11	-0.000121	-0.000156	0.000	437.6761	2.936E+10	1.707E-05	5695312.	0.000
552.000	-1.225E-11	-0.000752	-7.011E-05	0.000	437.6761	2.936E+10	1.163E-05	5695312.	0.000
558.000	-7.444E-12	-0.000964	-1.402E-05	0.000	437.6761	2.936E+10	7.066E-06	5695312.	0.000
564.000	-3.818E-12	-0.000922	1.805E-05	0.000	437.6761	2.936E+10	3.624E-06	5695312.	0.000
570.000	-1.322E-12	-0.000749	3.269E-05	0.000	437.6761	2.936E+10	1.255E-06	5695312.	0.000
576.000	0.000	-0.000530	3.573E-05	0.000	437.6761	2.936E+10	-2.425E-07	5695312.	0.000
582.000	1.182E-12	-0.000321	3.163E-05	0.000	437.6761	2.936E+10	-1.122E-06	5695312.	0.000
588.000	1.716E-12	-0.000151	2.338E-05	0.000	437.6761	2.936E+10	-1.629E-06	5695312.	0.000
594.000	2.065E-12	-4.032E-05	1.261E-05	0.000	437.6761	2.936E+10	-1.960E-06	5695312.	0.000
600.000	2.363E-12	0.000	0.000	0.000	437.6761	2.936E+10	-2.243E-06	2847656.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0134076 radians
Maximum bending moment           =      3862312. inch-lbs
Maximum shear force              =       105745. lbs
Depth of maximum bending moment  =     72.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =            18
Number of zero deflection points =             8
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

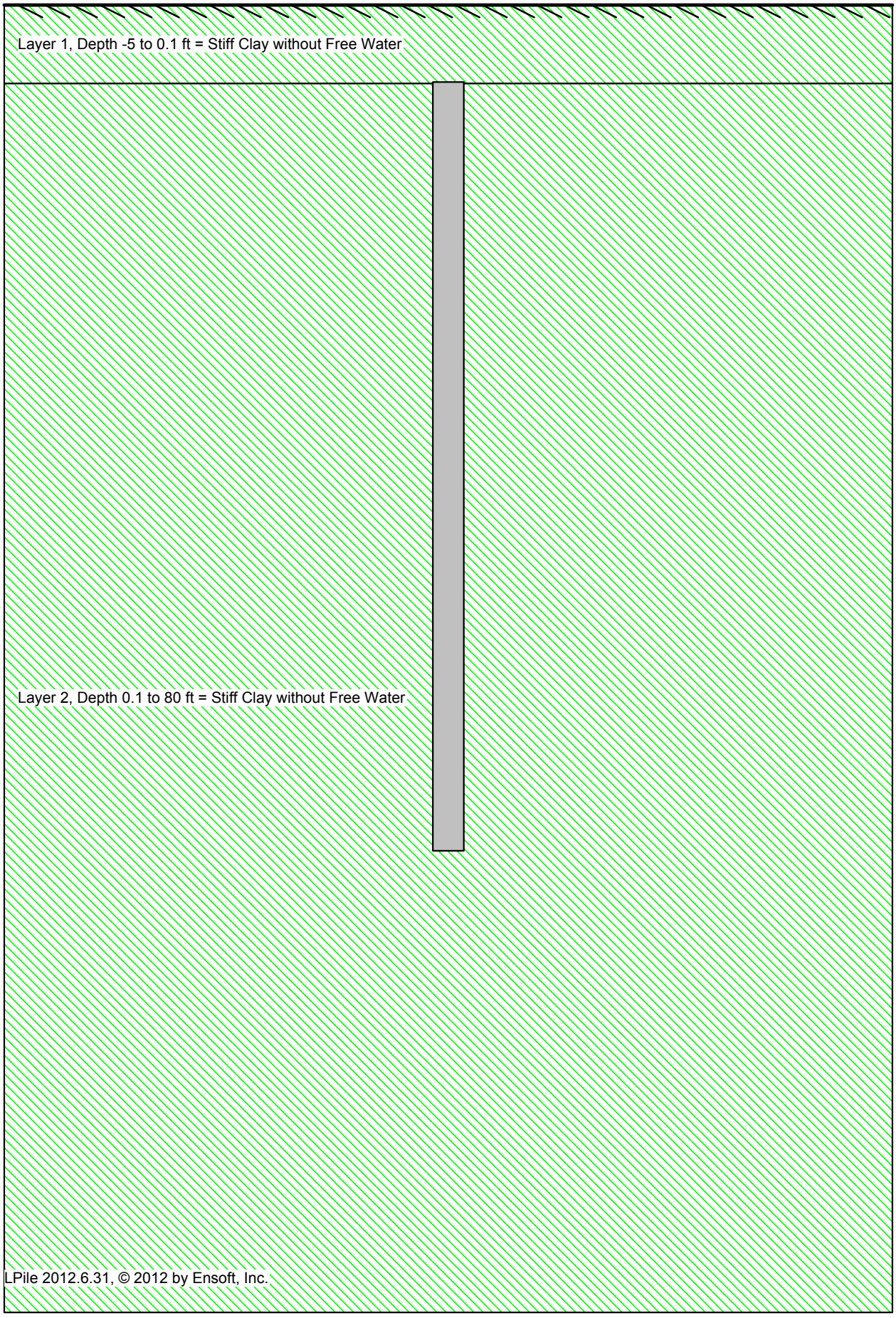
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	198000.	0.25000000	1574234.	56543.	-0.00428916
2	4	y = 0.5000	M = 0.000	198000.	0.50000000	2459705.	77303.	-0.00757885
3	4	y = 1.0000	M = 0.000	198000.	1.00000000	3862312.	105745.	-0.01340756

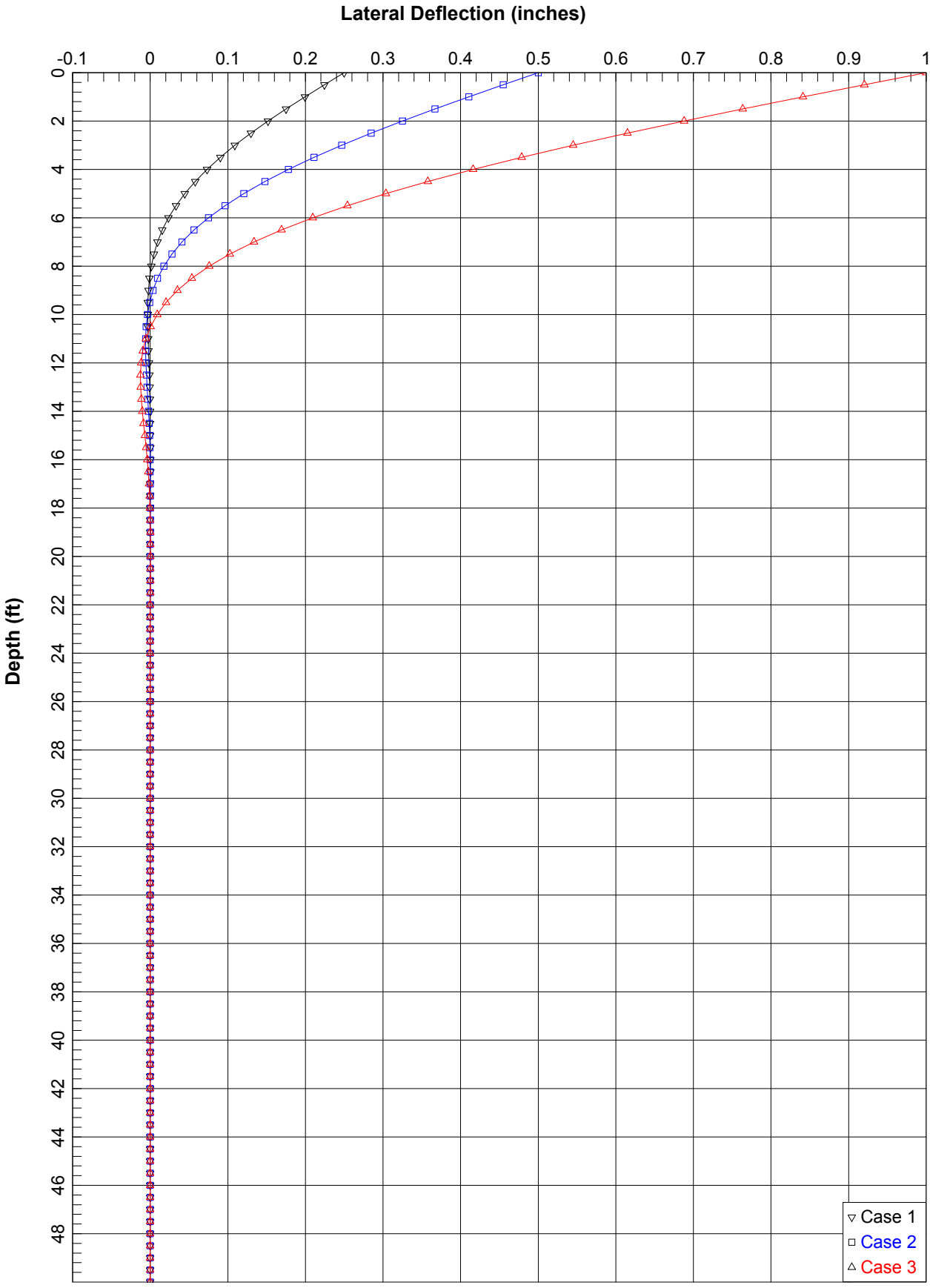
The analysis ended normally.

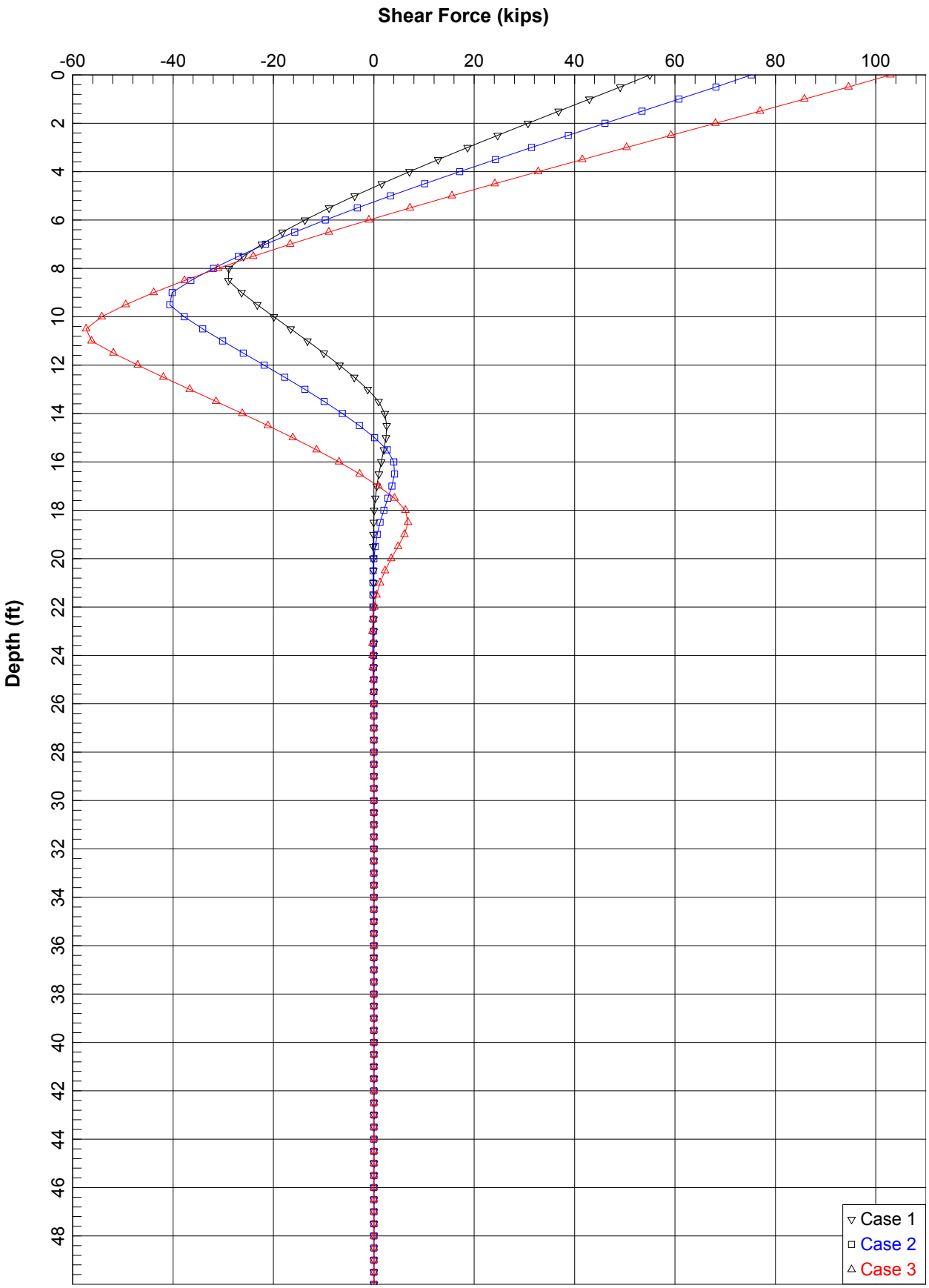
SUPPORT: **BENT 4L**

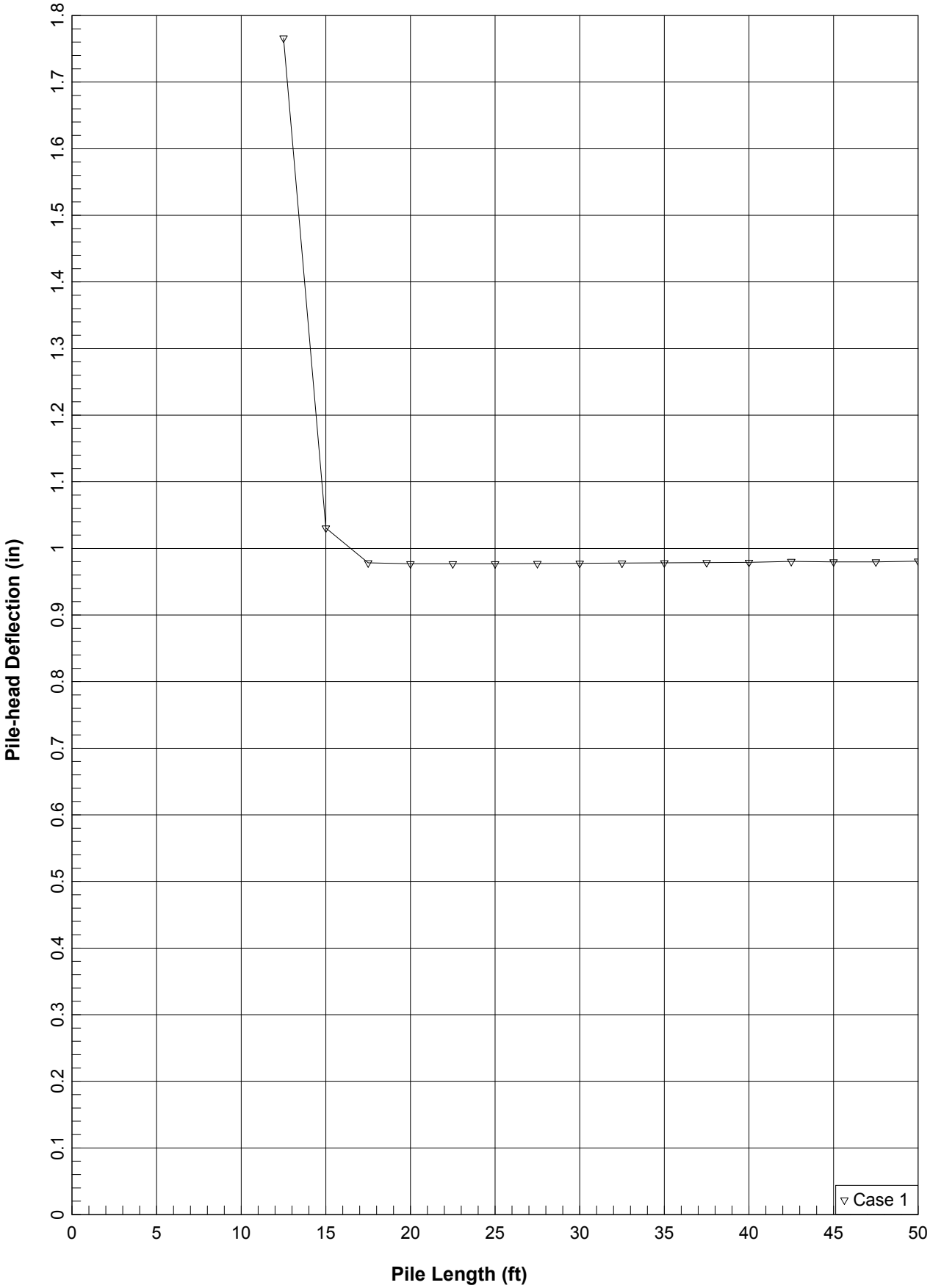
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5 to 0.1 ft = Stiff Clay without Free Water
Layer 2, Depth 0.1 to 80 ft = Stiff Clay without Free Water
LPile 2012.6.31, © 2012 by Ensoft, Inc.


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4L_transv_crit length.lp6d
Name of output report file:    Bent 4L_transv_crit length.lp6o
Name of plot output file:      Bent 4L_transv_crit length.lp6p
Name of runtime messeage file: Bent 4L_transv_crit length.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:23:01

--------------------------------------------------------------------------------
                                 Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                 Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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


--------------------------------------------------------------------------------
                      Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                        =          1

Total Pile Length                               =      50.00 ft

Depth of ground surface below top of pile       =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ----------        ----------
  1           0.00000         24.0000000
  2          50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                 =    Elastic Pile
```



```
   Cross-sectional Shape                        =         Circular
   Section Length                               =      50.00000000 ft
   Top Width                                    =       24.00000000 in
   Bottom Width                                 =       24.00000000 in
   Top Area                                     =     452.38934212 in
   Bottom Area                                  =     452.38934212 in
   Moment of Inertia at Top                     =    8143.00815810 in
   Moment of Inertia at Bottom                  =    8143.00815810 in
   Elastic Modulus                              =         3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                              =         0.000 degrees
                                                =         0.000 radians

Pile Batter Angle                               =         0.000 degrees
                                                =         0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer    =      -5.00000 ft
   Distance from top of pile to bottom of layer =       0.10000 ft
   Effective unit weight at top of layer        =     120.00000 pcf
   Effective unit weight at bottom of layer     =     120.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00700
   Epsilon-50 at bottom of layer                =       0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer    =       0.10000 ft
   Distance from top of pile to bottom of layer =      80.00000 ft
   Effective unit weight at top of layer        =     125.00000 pcf
   Effective unit weight at bottom of layer     =     125.00000 pcf
   Undrained cohesion at top of layer           =    4500.00000 psi
   Undrained cohesion at bottom of layer        =    4500.00000 psi
   Epsilon-50 at top of layer                   =       0.00500
   Epsilon-50 at bottom of layer                =       0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                    Layer                                Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                  Rock Mass                                  In-situ     In-situ       Elastic
Layer                Soil Type           Depth          Unit Wt.     Cohesion     Friction         qu            or
Factor          J          kpy          Rock Emass       krm           Test         Test        Subgrade
 Num.       (p-y Curve Criteria)            ft            pcf          psf          deg.          psi          GSI        Epsilon
50    Factor          pci          psi                   Type       Property     Mod. pci     ----------    ----------
-----  ---  ----------  ----------  ----------  ----------  ----  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water                    -5.000      120.000     4500.000        --          --          --
0.00700        --          --          --          --          --          --          --
                                                    0.10000     120.000     4500.000        --          --          --
0.00700        --          --          --          --          --          --          --
  2     Stiff Clay w/o Free Water                    0.10000     125.000     4500.000        --          --          --
0.00500        --          --          --          --          --          --          --
                                                    80.000      125.000     4500.000        --          --          --
0.00500        --          --          --          --          --          --          --


--------------------------------------------------------------------------------
                      p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point      Depth X          p-mult          y-mult
 No.          ft
-----     ----------      ----------      ----------
  1          0.000          0.6500          1.0000
  2         50.000          0.6500          1.0000


--------------------------------------------------------------------------------
                                  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
1	1	V = 102000. lbs	M = 0.0000 in-lbs	198000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---
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 = 102000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force V lbs	Slope S radians	Total Stress psi*	Bending Stiffness p lb-in^2	Soil Res. Es'h lb/in	Soil Spr. Es'h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9808	-1.811E-07	102000.	-0.0131	437.6761	2.936E+10	-1320.7799	4040.0587	0.000
6.000	0.9023	603771.	93687.	-0.0130	1327.4273	2.936E+10	-1450.1353	9643.4289	0.000
12.000	0.8245	1155190.	84953.	-0.0128	2140.0304	2.936E+10	-1461.4118	10635.	0.000
18.000	0.7481	1653719.	76162.	-0.0126	2874.6898	2.936E+10	-1468.8778	11780.	0.000
24.000	0.6738	2098966.	67338.	-0.0122	3530.8311	2.936E+10	-1472.3963	13111.	0.000
30.000	0.6021	2490697.	58505.	-0.0117	4108.1083	2.936E+10	-1471.8234	14668.	0.000
36.000	0.5334	2828837.	49689.	-0.0112	4606.4116	2.936E+10	-1467.0045	16503.	0.000
42.000	0.4681	3113479.	40914.	-0.0106	5025.8756	2.936E+10	-1457.7735	18684.	0.000
48.000	0.4067	3344885.	32209.	-0.009893	5366.8883	2.936E+10	-1443.9477	21301.	0.000
54.000	0.3494	3523496.	23601.	-0.009191	5630.1002	2.936E+10	-1425.3228	24475.	0.000
60.000	0.2964	3649940.	15121.	-0.008458	5816.4357	2.936E+10	-1401.6654	28371.	0.000
66.000	0.2479	3725038.	6797.4035	-0.007704	5927.1044	2.936E+10	-1372.7015	33221.	0.000
72.000	0.2040	3749815.	-1334.9989	-0.006940	5963.6161	2.936E+10	-1338.0993	39360.	0.000
78.000	0.1646	3725509.	-9241.6219	-0.006176	5927.7977	2.936E+10	-1297.4417	47285.	0.000
84.000	0.1299	3653590.	-16884.	-0.005422	5821.8147	2.936E+10	-1250.1796	57763.	0.000
90.000	0.0996	3535778.	-24222.	-0.004688	5648.2003	2.936E+10	-1195.5499	72046.	0.000
96.000	0.0736	3374068.	-31206.	-0.003981	5409.8949	2.936E+10	-1132.4189	92308.	0.000
102.000	0.0518	3170772.	-37780.	-0.003313	5110.3054	2.936E+10	-1058.9524	122689.	0.000
108.000	0.0339	2928583.	-43872.	-0.002689	4753.4021	2.936E+10	-971.8250	172230.	0.000
114.000	0.0195	2650697.	-49379.	-0.002119	4343.8940	2.936E+10	-863.8894	265602.	0.000
120.000	0.008426	2341068.	-54113.	-0.001609	3887.6066	2.936E+10	-714.1394	508530.	0.000
126.000	0.000207	2005161.	-56717.	-0.001165	3392.5953	2.936E+10	-153.6429	4445625.	0.000
132.000	-0.005552	1663236.	-55172.	-0.000790	2888.7155	2.936E+10	668.3772	722286.	0.000
138.000	-0.009272	1344969.	-50845.	-0.000483	2419.6990	2.936E+10	774.0026	500863.	0.000
144.000	-0.0113	1054239.	-46036.	-0.000237	1991.2634	2.936E+10	828.9353	438495.	0.000
150.000	-0.0121	793096.	-40976.	-4.855E-05	1606.4769	2.936E+10	857.9730	424737.	0.000
156.000	-0.0119	562646.	-35793.	9.000E-05	1266.8235	2.936E+10	869.6214	437544.	0.000
162.000	-0.0110	363367.	-30581.	0.000185	973.1536	2.936E+10	867.8498	471657.	0.000
168.000	-0.009709	195241.	-25413.	0.000242	725.3946	2.936E+10	854.7921	528227.	0.000
174.000	-0.008139	57841.	-20313.	0.000268	522.9139	2.936E+10	831.4643	613072.	0.000
180.000	-0.006498	-49633.	-15461.	0.000268	510.8186	2.936E+10	799.1386	737858.	0.000
186.000	-0.004918	-128327.	-10791.	0.000250	626.7855	2.936E+10	757.4961	924117.	0.000
192.000	-0.003495	-179719.	-6398.4887	0.000219	702.5001	2.936E+10	706.6467	1212980.	0.000
198.000	-0.002293	-205628.	-2340.5818	0.000179	740.7016	2.936E+10	645.9890	1690286.	0.000
204.000	-0.001343	-208232.	1299.9486	0.000137	744.5388	2.936E+10	567.5212	2535701.	0.000
210.000	-0.000648	-190355.	4421.6682	9.635E-05	718.1935	2.936E+10	473.0520	4379784.	0.000
216.000	-0.000187	-155401.	6352.6896	6.102E-05	666.6839	2.936E+10	170.6218	5484375.	0.000
222.000	8.415E-05	-114267.	6633.8080	3.346E-05	606.0669	2.936E+10	-76.9156	5484375.	0.000
228.000	0.000215	-75875.	5813.9676	1.403E-05	549.4896	2.936E+10	-196.3645	5484375.	0.000
234.000	0.000252	-44533.	4532.5909	1.721E-06	503.3025	2.936E+10	-230.7611	5484375.	0.000
240.000	0.000235	-21488.	3194.5932	-5.026E-06	469.3418	2.936E+10	-215.2381	5484375.	0.000
246.000	0.000192	-6185.9708	2021.9939	-7.854E-06	446.7921	2.936E+10	-175.6283	5484375.	0.000
252.000	0.000141	2794.7653	1107.8562	-8.201E-06	441.7946	2.936E+10	-129.0843	5484375.	0.000
258.000	9.373E-05	7127.7891	463.5843	-7.187E-06	448.1800	2.936E+10	-85.6730	5484375.	0.000
264.000	5.498E-05	8374.8527	55.8099	-5.603E-06	450.0178	2.936E+10	-50.2517	5484375.	0.000
270.000	2.650E-05	7810.8197	-167.6002	-3.949E-06	449.1866	2.936E+10	-24.2183	5484375.	0.000
276.000	7.593E-06	6373.0316	-261.0764	-2.499E-06	447.0678	2.936E+10	-6.9404	5484375.	0.000
282.000	-3.494E-06	4683.8412	-272.3168	-1.369E-06	444.5785	2.936E+10	3.1936	5484375.	0.000
288.000	-8.837E-06	3108.4826	-238.5045	-5.728E-07	442.2569	2.936E+10	8.0772	5484375.	0.000
294.000	-1.037E-05	1823.1487	-185.8438	-6.880E-08	440.3628	2.936E+10	9.4764	5484375.	0.000
300.000	-9.662E-06	878.5209	-130.9192	2.077E-07	438.9707	2.936E+10	8.8318	5484375.	0.000
306.000	-7.880E-06	251.6261	-82.8160	3.228E-07	438.0469	2.936E+10	7.2025	5484375.	0.000
312.000	-5.789E-06	-116.0384	-45.3349	3.367E-07	437.8471	2.936E+10	5.2912	5484375.	0.000
318.000	-3.840E-06	-293.1922	-18.9316	2.948E-07	438.1082	2.936E+10	3.5099	5484375.	0.000
324.000	-2.251E-06	-343.9187	-2.2302	2.297E-07	438.1829	2.936E+10	2.0573	5484375.	0.000
330.000	-1.083E-06	-320.5003	6.9120	1.618E-07	438.1484	2.936E+10	0.9901	5484375.	0.000
336.000	-3.088E-07	-261.3588	10.7294	1.024E-07	438.0612	2.936E+10	0.2823	5484375.	0.000
342.000	1.450E-07	-191.9912	11.1785	5.603E-08	437.9590	2.936E+10	-0.1326	5484375.	0.000
348.000	3.635E-07	-127.3497	9.7841	2.339E-08	437.8638	2.936E+10	-0.3322	5484375.	0.000
354.000	4.257E-07	-74.6380	7.6199	2.749E-09	437.7861	2.936E+10	-0.3892	5484375.	0.000
360.000	3.965E-07	-35.9176	5.3652	-8.549E-09	437.7290	2.936E+10	-0.3624	5484375.	0.000
366.000	3.231E-07	-10.2347	3.3919	-1.327E-08	437.6912	2.936E+10	-0.2954	5484375.	0.000
372.000	2.373E-07	4.8171	1.8551	-1.382E-08	437.6832	2.936E+10	-0.2169	5484375.	0.000
378.000	1.573E-07	12.0599	0.7731	-1.209E-08	437.6939	2.936E+10	-0.1438	5484375.	0.000
384.000	9.214E-08	14.1232	0.0891	-9.419E-09	437.6969	2.936E+10	-0.0842	5484375.	0.000
390.000	4.429E-08	13.1510	-0.2850	-6.632E-09	437.6955	2.936E+10	-0.0405	5484375.	0.000
396.000	1.256E-08	10.7183	-0.4409	-4.192E-09	437.6919	2.936E+10	-0.0115	5484375.	0.000
402.000	-6.020E-09	7.8697	-0.4589	-2.293E-09	437.6877	2.936E+10	0.005503	5484375.	0.000

408.000	-1.495E-08	5.2173	-0.4014	-9.552E-10	437.6838	2.936E+10	0.0137	5484375.	0.000
414.000	-1.748E-08	3.0556	-0.3124	-1.098E-10	437.6806	2.936E+10	0.0160	5484375.	0.000
420.000	-1.627E-08	1.4684	-0.2199	3.526E-10	437.6783	2.936E+10	0.0149	5484375.	0.000
426.000	-1.325E-08	0.4163	-0.1389	5.452E-10	437.6767	2.936E+10	0.0121	5484375.	0.000
432.000	-9.726E-09	-0.1999	-0.0759	5.673E-10	437.6764	2.936E+10	0.008890	5484375.	0.000
438.000	-6.445E-09	-0.4961	-0.0316	4.962E-10	437.6768	2.936E+10	0.005891	5484375.	0.000
444.000	-3.772E-09	-0.5800	-0.003554	3.862E-10	437.6769	2.936E+10	0.003448	5484375.	0.000
450.000	-1.811E-09	-0.5396	0.0118	2.718E-10	437.6769	2.936E+10	0.001655	5484375.	0.000
456.000	-5.108E-10	-0.4396	0.0181	1.717E-10	437.6767	2.936E+10	0.000467	5484375.	0.000
462.000	2.499E-10	-0.3226	0.0188	9.382E-11	437.6766	2.936E+10	-0.000228	5484375.	0.000
468.000	6.150E-10	-0.2137	0.0165	3.901E-11	437.6764	2.936E+10	-0.000562	5484375.	0.000
474.000	7.179E-10	-0.1251	0.0128	4.380E-12	437.6763	2.936E+10	-0.000656	5484375.	0.000
480.000	6.675E-10	-0.0600	0.009011	-1.454E-11	437.6762	2.936E+10	-0.000610	5484375.	0.000
486.000	5.435E-10	-0.0169	0.005690	-2.240E-11	437.6761	2.936E+10	-0.000497	5484375.	0.000
492.000	3.987E-10	0.008297	0.003106	-2.329E-11	437.6761	2.936E+10	-0.000364	5484375.	0.000
498.000	2.640E-10	0.0204	0.001289	-2.035E-11	437.6761	2.936E+10	-0.000241	5484375.	0.000
504.000	1.544E-10	0.0238	0.000142	-1.583E-11	437.6761	2.936E+10	-0.000141	5484375.	0.000
510.000	7.403E-11	0.0221	-0.000485	-1.114E-11	437.6761	2.936E+10	-6.767E-05	5484375.	0.000
516.000	2.077E-11	0.0180	-0.000745	-7.034E-12	437.6761	2.936E+10	-1.899E-05	5484375.	0.000
522.000	-1.038E-11	0.0132	-0.000773	-3.842E-12	437.6761	2.936E+10	9.489E-06	5484375.	0.000
528.000	-2.533E-11	0.008750	-0.000675	-1.597E-12	437.6761	2.936E+10	2.315E-05	5484375.	0.000
534.000	-2.954E-11	0.005115	-0.000525	0.000	437.6761	2.936E+10	2.700E-05	5484375.	0.000
540.000	-2.748E-11	0.002450	-0.000369	0.000	437.6761	2.936E+10	2.512E-05	5484375.	0.000
546.000	-2.242E-11	0.000690	-0.000232	0.000	437.6761	2.936E+10	2.049E-05	5484375.	0.000
552.000	-1.651E-11	-0.000334	-0.000125	0.000	437.6761	2.936E+10	1.509E-05	5484375.	0.000
558.000	-1.101E-11	-0.000813	-4.955E-05	0.000	437.6761	2.936E+10	1.007E-05	5484375.	0.000
564.000	-6.512E-12	-0.000930	-1.491E-06	0.000	437.6761	2.936E+10	5.953E-06	5484375.	0.000
570.000	-3.151E-12	-0.000833	2.501E-05	0.000	437.6761	2.936E+10	2.880E-06	5484375.	0.000
576.000	0.000	-0.000631	3.587E-05	0.000	437.6761	2.936E+10	7.410E-07	5484375.	0.000
582.000	0.000	-0.000403	3.602E-05	0.000	437.6761	2.936E+10	-6.907E-07	5484375.	0.000
588.000	1.828E-12	-0.000199	2.894E-05	0.000	437.6761	2.936E+10	-1.671E-06	5484375.	0.000
594.000	2.655E-12	-5.602E-05	1.664E-05	0.000	437.6761	2.936E+10	-2.427E-06	5484375.	0.000
600.000	3.414E-12	0.000	0.000	0.000	437.6761	2.936E+10	-3.121E-06	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.9807629 inches
Computed slope at pile head = -0.0130850 radians
Maximum bending moment = 3749815. inch-lbs
Maximum shear force = 102000. lbs
Depth of maximum bending moment = 72.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 28
Number of zero deflection points = 8

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

Boundary Condition Type 1, Shear and Moment

Shear = 102000. lbs
Moment = 0. in-lbs
Axial Load = 198000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs
50.000	0.9807629	3749815.	102000.
47.500	0.9798375	3746719.	102000.
45.000	0.9799001	3745779.	102000.
42.500	0.9805876	3745208.	102000.
40.000	0.9790105	3746286.	102000.
37.500	0.9788513	3745027.	102000.
35.000	0.9784879	3743837.	102000.
32.500	0.9781197	3740944.	102000.
30.000	0.9777530	3742152.	102000.
27.500	0.9772524	3741103.	102000.
25.000	0.9770302	3740231.	102000.
22.500	0.9770863	3737997.	102000.
20.000	0.9769425	3737531.	102000.
17.500	0.9782387	3735132.	102000.
15.000	1.0307517	3679406.	102000.
12.500	1.7660238	3268880.	102000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 102000.	M = 0.000	198000.	0.98076291	3749815.	102000.	-0.01308500

The analysis ended normally.

```
================================================================================

                    Pile Plus for Windows, Version 2012-06.031

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

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================================================================================

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device:        161633771
Company Name Stored in Security Device:  Group Delta Consultants

--------------------------------------------------------------------------------
                              Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file:       Bent 4L_transv_ave P.lp6d
Name of output report file:    Bent 4L_transv_ave P.lp6o
Name of plot output file:      Bent 4L_transv_ave P.lp6p
Name of runtime messeage file: Bent 4L_transv_ave P.lp6r

--------------------------------------------------------------------------------
                            Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  September 13, 2014     Time:  21:19:17

--------------------------------------------------------------------------------
                                 Problem Title
--------------------------------------------------------------------------------

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm


--------------------------------------------------------------------------------
                                 Program Options
--------------------------------------------------------------------------------

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

--------------------------------------------------------------------------------
                       Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Total Number of Sections                        =          1

Total Pile Length                               =      50.00 ft

Depth of ground surface below top of pile       =      -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point          Depth              Pile
 No.             X              Diameter
                 ft                in
-----       ---------         ----------
  1          0.00000         24.0000000
  2         50.000000        24.0000000


Input Structural Properties:
----------------------------

Pile Section No. 1:

   Section Type                                 =    Elastic Pile
```



```
   Cross-sectional Shape                        =        Circular
   Section Length                               =     50.00000000 ft
   Top Width                                    =     24.00000000 in
   Bottom Width                                 =     24.00000000 in
   Top Area                                     =    452.38934212 in
   Bottom Area                                  =    452.38934212 in
   Moment of Inertia at Top                     =   8143.00815810 in
   Moment of Inertia at Bottom                  =   8143.00815810 in
   Elastic Modulus                              =        3605000. lbs/in^2


--------------------------------------------------------------------------------
                        Ground Slope and Pile Batter Angles
--------------------------------------------------------------------------------

Ground Slope Angle                              =        0.000 degrees
                                                =        0.000 radians

Pile Batter Angle                               =        0.000 degrees
                                                =        0.000 radians


--------------------------------------------------------------------------------
                          Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

   Distance from top of pile to top of layer    =     -5.00000 ft
   Distance from top of pile to bottom of layer =      0.10000 ft
   Effective unit weight at top of layer        =    120.00000 pcf
   Effective unit weight at bottom of layer     =    120.00000 pcf
   Undrained cohesion at top of layer           =   4500.00000 psi
   Undrained cohesion at bottom of layer        =   4500.00000 psi
   Epsilon-50 at top of layer                   =      0.00700
   Epsilon-50 at bottom of layer                =      0.00700


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer    =      0.10000 ft
   Distance from top of pile to bottom of layer =     80.00000 ft
   Effective unit weight at top of layer        =    125.00000 pcf
   Effective unit weight at bottom of layer     =    125.00000 pcf
   Undrained cohesion at top of layer           =   4500.00000 psi
   Undrained cohesion at bottom of layer        =   4500.00000 psi
   Epsilon-50 at top of layer                   =      0.00500
   Epsilon-50 at bottom of layer                =      0.00500


   (Depth of lowest soil layer extends    30.00 ft below pile tip)


--------------------------------------------------------------------------------
                            Summary of Soil Properties
--------------------------------------------------------------------------------

                     Layer                          Layer      Effective    Undrained    Angle of      Uniaxial      RQD %
Strain                                 Rock Mass                              In-situ      In-situ       Elastic
Layer                Soil Type          Depth        Unit Wt.    Cohesion     Friction        qu            or
Factor       J          kpy          Rock Emass      krm          Test         Test        Subgrade
 Num.          (p-y Curve Criteria)        ft           pcf          psf          deg.          psi          GSI        Epsilon
50    Factor          pci          psi                 Type       Property     Mod. pci      ----------   ----------
-----  ---  ---------------------  ----------  ----------  ---  ----------  ----------  ----------  ----------  ----------
  1     Stiff Clay w/o Free Water                  -5.000      120.000     4500.000        --          --          --
0.00700       --           --          --          --           --          --          --
                                                  0.10000     120.000     4500.000        --          --          --
0.00700       --           --          --          --           --          --          --
  2     Stiff Clay w/o Free Water                  0.10000     125.000     4500.000        --          --          --
0.00500       --           --          --          --           --          --          --
                                                  80.000      125.000     4500.000        --          --          --
0.00500       --           --          --          --           --          --          --


--------------------------------------------------------------------------------
                      p-y Modification Factors for Group Action
--------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points

Point       Depth X          p-mult          y-mult
 No.           ft
-----      ----------      ----------      ----------
  1           0.000          0.6500          1.0000
  2          50.000          0.6500          1.0000


--------------------------------------------------------------------------------
                                  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 = 3
```

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	198000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	198000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	198000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	54985.	-0.004248	437.6761	2.936E+10	-938.4730	11262.	0.000
6.000	0.2245	318064.	49097.	-0.004216	906.3936	2.936E+10	-1024.1995	27371.	0.000
12.000	0.1994	599180.	42950.	-0.004122	1320.6619	2.936E+10	-1024.8621	30836.	0.000
18.000	0.1750	843255.	36810.	-0.003974	1680.3451	2.936E+10	-1021.6053	35017.	0.000
24.000	0.1517	1050348.	30703.	-0.003781	1985.5287	2.936E+10	-1014.2748	40111.	0.000
30.000	0.1297	1220672.	24652.	-0.003549	2236.5276	2.936E+10	-1002.6986	46394.	0.000
36.000	0.1091	1354602.	18684.	-0.003286	2433.8948	2.936E+10	-986.6819	54247.	0.000
42.000	0.0902	1452683.	12826.	-0.002999	2578.4322	2.936E+10	-965.9982	64222.	0.000
48.000	0.0731	1515635.	7106.5250	-0.002695	2671.2020	2.936E+10	-940.3753	77136.	0.000
54.000	0.0579	1544366.	1556.9798	-0.002383	2713.5411	2.936E+10	-909.4731	94241.	0.000
60.000	0.0446	1539980.	-3789.9736	-0.002068	2707.0784	2.936E+10	-872.8447	117545.	0.000
66.000	0.0331	1503798.	-8898.0986	-0.001756	2653.7589	2.936E+10	-829.8636	150461.	0.000
72.000	0.0235	1437376.	-13726.	-0.001456	2555.8756	2.936E+10	-779.5787	199244.	0.000
78.000	0.0156	1342540.	-18226.	-0.001172	2416.1201	2.936E+10	-720.3845	276679.	0.000
84.000	0.009415	1221445.	-22335.	-0.000910	2237.6665	2.936E+10	-649.1463	413710.	0.000
90.000	0.004705	1076683.	-25957.	-0.000675	2024.3377	2.936E+10	-558.1550	711807.	0.000
96.000	0.001316	911567.	-28879.	-0.000472	1781.0125	2.936E+10	-415.9949	1897318.	0.000
102.000	-0.000956	731253.	-28964.	-0.000304	1515.2919	2.936E+10	387.9150	2434911.	0.000
108.000	-0.002331	564726.	-26310.	-0.000171	1269.8892	2.936E+10	496.5902	1278486.	0.000
114.000	-0.003013	415940.	-23199.	-7.117E-05	1050.6293	2.936E+10	540.5653	1076603.	0.000
120.000	-0.003185	286513.	-19899.	6.127E-07	859.8985	2.936E+10	559.1079	1053390.	0.000
126.000	-0.003005	177145.	-16537.	4.800E-05	698.7267	2.936E+10	561.8124	1121657.	0.000
132.000	-0.002609	87958.	-13193.	7.509E-05	567.2967	2.936E+10	552.6160	1271032.	0.000
138.000	-0.002104	18645.	-9935.1793	8.598E-05	465.1523	2.936E+10	533.4753	1521174.	0.000
144.000	-0.001577	-31468.	-6818.5027	8.467E-05	484.0491	2.936E+10	505.4169	1923118.	0.000
150.000	-0.001088	-63378.	-3895.5908	7.498E-05	531.0739	2.936E+10	468.8871	2585473.	0.000
156.000	-0.000677	-78393.	-1217.7107	6.049E-05	553.2008	2.936E+10	423.1396	3754839.	0.000
162.000	-0.000362	-78135.	950.6493	4.449E-05	552.8196	2.936E+10	299.0470	4953437.	0.000
168.000	-0.000143	-67091.	2208.4400	2.965E-05	536.5454	2.936E+10	120.2165	5038072.	0.000
174.000	-6.386E-06	-51704.	2585.4476	1.751E-05	513.8696	2.936E+10	5.4527	5122707.	0.000
180.000	6.699E-05	-36107.	2427.3850	8.539E-06	490.8860	2.936E+10	-58.1402	5207343.	0.000
186.000	9.609E-05	-22595.	1998.7197	2.540E-06	470.9739	2.936E+10	-84.7482	5291978.	0.000
192.000	9.747E-05	-12129.	1482.4336	-1.008E-06	455.5498	2.936E+10	-87.3465	5376613.	0.000
198.000	8.399E-05	-4803.7481	991.0604	-2.739E-06	444.7552	2.936E+10	-76.4453	5461249.	0.000
204.000	6.461E-05	-229.5636	584.5563	-3.253E-06	438.0144	2.936E+10	-59.0561	5484375.	0.000
210.000	4.495E-05	2218.6573	284.1305	-3.050E-06	440.9456	2.936E+10	-41.0859	5484375.	0.000
216.000	2.801E-05	3187.2487	84.0650	-2.497E-06	442.3730	2.936E+10	-25.6026	5484375.	0.000
222.000	1.498E-05	3233.3711	-33.8195	-1.841E-06	442.4410	2.936E+10	-13.6922	5484375.	0.000
228.000	5.914E-06	2785.7898	-91.1146	-1.226E-06	441.7814	2.936E+10	-5.4062	5484375.	0.000
234.000	2.658E-07	2142.9091	-108.0620	-7.225E-07	440.8340	2.936E+10	-0.2429	5484375.	0.000
240.000	-2.755E-06	1490.7619	-101.2363	-3.511E-07	439.8730	2.936E+10	2.5182	5484375.	0.000
246.000	-3.947E-06	928.9075	-82.8570	-1.038E-07	439.0450	2.936E+10	3.6083	5484375.	0.000
252.000	-4.001E-06	496.7248	-61.0611	4.187E-08	438.4081	2.936E+10	3.6571	5484375.	0.000
258.000	-3.445E-06	196.0754	-40.6428	1.127E-07	437.9650	2.936E+10	3.1490	5484375.	0.000
264.000	-2.649E-06	8.7441	-23.9319	1.336E-07	437.6899	2.936E+10	2.4212	5484375.	0.000
270.000	-1.842E-06	-91.4245	-11.6172	1.251E-07	437.8108	2.936E+10	1.6836	5484375.	0.000
276.000	-1.147E-06	-130.9596	-3.4207	1.024E-07	437.8691	2.936E+10	1.0485	5484375.	0.000
282.000	-6.129E-07	-132.7159	1.4055	7.548E-08	437.8717	2.936E+10	0.5602	5484375.	0.000
288.000	-2.414E-07	-114.2724	3.7482	5.023E-08	437.8445	2.936E+10	0.2207	5484375.	0.000
294.000	-1.007E-08	-87.8573	4.4378	2.958E-08	437.8056	2.936E+10	0.009206	5484375.	0.000
300.000	1.135E-07	-61.0895	4.1541	1.436E-08	437.7661	2.936E+10	-0.1038	5484375.	0.000
306.000	1.622E-07	-38.0424	3.3980	4.225E-09	437.7321	2.936E+10	-0.1483	5484375.	0.000
312.000	1.642E-07	-20.3233	2.5029	-1.740E-09	437.7060	2.936E+10	-0.1501	5484375.	0.000
318.000	1.413E-07	-8.0031	1.6651	-4.635E-09	437.6879	2.936E+10	-0.1292	5484375.	0.000
324.000	1.086E-07	-0.3311	0.9798	-5.486E-09	437.6766	2.936E+10	-0.0993	5484375.	0.000
330.000	7.548E-08	3.7672	0.4750	-5.135E-09	437.6816	2.936E+10	-0.0690	5484375.	0.000
336.000	4.698E-08	5.3809	0.1392	-4.200E-09	437.6840	2.936E+10	-0.0429	5484375.	0.000
342.000	2.508E-08	5.4474	-0.0584	-3.094E-09	437.6841	2.936E+10	-0.0229	5484375.	0.000
348.000	9.853E-09	4.6874	-0.1542	-2.058E-09	437.6830	2.936E+10	-0.009006	5484375.	0.000
354.000	3.791E-10	3.6021	-0.1822	-1.211E-09	437.6814	2.936E+10	-0.000347	5484375.	0.000
360.000	-4.678E-09	2.5034	-0.1705	-5.869E-10	437.6798	2.936E+10	0.004276	5484375.	0.000
366.000	-6.664E-09	1.5580	-0.1394	-1.719E-10	437.6784	2.936E+10	0.006092	5484375.	0.000
372.000	-6.740E-09	0.8315	-0.1026	7.230E-11	437.6773	2.936E+10	0.006161	5484375.	0.000
378.000	-5.797E-09	0.3266	-0.0682	1.907E-10	437.6766	2.936E+10	0.005299	5484375.	0.000
384.000	-4.453E-09	0.0125	-0.0401	2.253E-10	437.6761	2.936E+10	0.004070	5484375.	0.000

390.000	-3.093E-09	-0.1552	-0.0194	2.107E-10	437.6763	2.936E+10	0.002827	5484375.	0.000
396.000	-1.924E-09	-0.2211	-0.005663	1.723E-10	437.6764	2.936E+10	0.001759	5484375.	0.000
402.000	-1.026E-09	-0.2236	0.002426	1.268E-10	437.6764	2.936E+10	0.000938	5484375.	0.000
408.000	-4.022E-10	-0.1923	0.006343	8.432E-11	437.6764	2.936E+10	0.000368	5484375.	0.000
414.000	-1.415E-11	-0.1477	0.007484	4.957E-11	437.6763	2.936E+10	1.294E-05	5484375.	0.000
420.000	1.927E-10	-0.1026	0.006994	2.400E-11	437.6762	2.936E+10	-0.000176	5484375.	0.000
426.000	2.738E-10	-0.0638	0.005715	6.994E-12	437.6762	2.936E+10	-0.000250	5484375.	0.000
432.000	2.767E-10	-0.0340	0.004205	-3.003E-12	437.6761	2.936E+10	-0.000253	5484375.	0.000
438.000	2.378E-10	-0.0133	0.002795	-7.843E-12	437.6761	2.936E+10	-0.000217	5484375.	0.000
444.000	1.825E-10	-0.000465	0.001642	-9.253E-12	437.6761	2.936E+10	-0.000167	5484375.	0.000
450.000	1.267E-10	0.006396	0.000794	-8.646E-12	437.6761	2.936E+10	-0.000116	5484375.	0.000
456.000	7.879E-11	0.009084	0.000230	-7.064E-12	437.6761	2.936E+10	-7.202E-05	5484375.	0.000
462.000	4.198E-11	0.009177	-0.000101	-5.198E-12	437.6761	2.936E+10	-3.837E-05	5484375.	0.000
468.000	1.641E-11	0.007887	-0.000261	-3.454E-12	437.6761	2.936E+10	-1.500E-05	5484375.	0.000
474.000	0.000	0.006055	-0.000307	-2.030E-12	437.6761	2.936E+10	-4.784E-07	5484375.	0.000
480.000	-7.941E-12	0.004204	-0.000287	0.000	437.6761	2.936E+10	7.259E-06	5484375.	0.000
486.000	-1.125E-11	0.002613	-0.000234	0.000	437.6761	2.936E+10	1.028E-05	5484375.	0.000
492.000	-1.136E-11	0.001392	-0.000172	0.000	437.6761	2.936E+10	1.038E-05	5484375.	0.000
498.000	-9.754E-12	0.000544	-0.000114	0.000	437.6761	2.936E+10	8.916E-06	5484375.	0.000
504.000	-7.485E-12	1.724E-05	-6.722E-05	0.000	437.6761	2.936E+10	6.841E-06	5484375.	0.000
510.000	-5.194E-12	-0.000263	-3.245E-05	0.000	437.6761	2.936E+10	4.748E-06	5484375.	0.000
516.000	-3.227E-12	-0.000373	-9.361E-06	0.000	437.6761	2.936E+10	2.950E-06	5484375.	0.000
522.000	-1.717E-12	-0.000376	4.196E-06	0.000	437.6761	2.936E+10	1.569E-06	5484375.	0.000
528.000	0.000	-0.000323	1.074E-05	0.000	437.6761	2.936E+10	6.113E-07	5484375.	0.000
534.000	0.000	-0.000248	1.262E-05	0.000	437.6761	2.936E+10	1.538E-08	5484375.	0.000
540.000	0.000	-0.000172	1.176E-05	0.000	437.6761	2.936E+10	-3.027E-07	5484375.	0.000
546.000	0.000	-0.000107	9.565E-06	0.000	437.6761	2.936E+10	-4.279E-07	5484375.	0.000
552.000	0.000	-5.722E-05	6.981E-06	0.000	437.6761	2.936E+10	-4.333E-07	5484375.	0.000
558.000	0.000	-2.312E-05	4.558E-06	0.000	437.6761	2.936E+10	-3.746E-07	5484375.	0.000
564.000	0.000	-2.494E-06	2.564E-06	0.000	437.6761	2.936E+10	-2.900E-07	5484375.	0.000
570.000	0.000	7.689E-06	1.086E-06	0.000	437.6761	2.936E+10	-2.025E-07	5484375.	0.000
576.000	0.000	1.058E-05	1.075E-07	0.000	437.6761	2.936E+10	-1.237E-07	5484375.	0.000
582.000	0.000	9.011E-06	-4.341E-07	0.000	437.6761	2.936E+10	-5.679E-08	5484375.	0.000
588.000	0.000	5.397E-06	-6.043E-07	0.000	437.6761	2.936E+10	5.676E-11	5484375.	0.000
594.000	0.000	1.783E-06	-4.515E-07	0.000	437.6761	2.936E+10	5.086E-08	5484375.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	9.965E-08	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0042481 radians
Maximum bending moment = 1544366. inch-lbs
Maximum shear force = 54985. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 18
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	75175.	-0.007507	437.6761	2.936E+10	-1116.0388	6696.2329	0.000
6.000	0.4550	439882.	68161.	-0.007462	1085.9109	2.936E+10	-1221.9883	16116.	0.000
12.000	0.4105	831665.	60813.	-0.007332	1669.1598	2.936E+10	-1227.5578	17944.	0.000
18.000	0.3670	1187053.	53442.	-0.007125	2186.9856	2.936E+10	-1229.2784	20098.	0.000
24.000	0.3250	1493900.	46073.	-0.006851	2639.1715	2.936E+10	-1227.0067	22656.	0.000
30.000	0.2848	1756211.	38730.	-0.006519	3025.7281	2.936E+10	-1220.5889	25718.	0.000
36.000	0.2467	1974154.	31439.	-0.006138	3346.9021	2.936E+10	-1209.8569	29422.	0.000
42.000	0.2111	2148064.	24226.	-0.005716	3603.1847	2.936E+10	-1194.6241	33952.	0.000
48.000	0.1781	2278445.	17118.	-0.005264	3795.3219	2.936E+10	-1174.6788	39566.	0.000
54.000	0.1479	2365984.	10144.	-0.004789	3924.3251	2.936E+10	-1149.7744	46630.	0.000
60.000	0.1207	2411557.	3336.2673	-0.004301	3991.4844	2.936E+10	-1119.6143	55674.	0.000
66.000	0.0963	2416239.	-3274.0584	-0.003808	3998.3833	2.936E+10	-1083.8276	67506.	0.000
72.000	0.0750	2381316.	-9651.3229	-0.003317	3946.9188	2.936E+10	-1041.9272	83391.	0.000
78.000	0.0565	2308305.	-15757.	-0.002838	3839.3262	2.936E+10	-993.2341	105434.	0.000
84.000	0.0409	2198978.	-21547.	-0.002378	3678.2149	2.936E+10	-936.7287	137388.	0.000
90.000	0.0280	2055394.	-26969.	-0.001943	3466.6218	2.936E+10	-870.7280	186640.	0.000
96.000	0.0176	1879965.	-31957.	-0.001541	3208.0997	2.936E+10	-792.0694	270098.	0.000
102.000	0.009504	1675565.	-36434.	-0.001177	2905.8842	2.936E+10	-693.5179	437820.	0.000
108.000	0.003468	1445792.	-40147.	-0.000858	2568.2770	2.936E+10	-550.6890	952754.	0.000
114.000	-0.000795	1195842.	-40643.	-0.000588	2199.9374	2.936E+10	385.4470	2908485.	0.000
120.000	-0.003592	959479.	-37758.	-0.000368	1851.6185	2.936E+10	576.1770	962495.	0.000
126.000	-0.005212	743625.	-34094.	-0.000194	1533.5235	2.936E+10	644.9801	742532.	0.000
132.000	-0.005920	550809.	-30123.	-6.171E-05	1249.3796	2.936E+10	678.6469	687845.	0.000
138.000	-0.005952	382291.	-26010.	3.364E-05	1001.0419	2.936E+10	692.3258	697872.	0.000
144.000	-0.005516	238604.	-21858.	9.710E-05	789.2965	2.936E+10	691.7525	752444.	0.000
150.000	-0.004787	119762.	-17744.	0.000134	614.1643	2.936E+10	679.6962	851899.	0.000
156.000	-0.003911	25360.	-13732.	0.000149	475.0483	2.936E+10	657.6344	1008795.	0.000
162.000	-0.003005	-45373.	-9879.9193	0.000147	504.5404	2.936E+10	626.3427	1250787.	0.000
168.000	-0.002153	-93547.	-6242.5818	0.000132	575.5322	2.936E+10	586.1032	1633097.	0.000
174.000	-0.001417	-120598.	-2874.2167	0.000110	615.3968	2.936E+10	536.6852	2272719.	0.000
180.000	-0.000828	-128300.	166.7157	8.499E-05	626.7462	2.936E+10	476.9590	3455140.	0.000
186.000	-0.000397	-118800.	2648.0648	5.973E-05	612.7462	2.936E+10	350.1574	5291978.	0.000
192.000	-0.000111	-96665.	3998.1235	3.772E-05	580.3272	2.936E+10	99.8621	5376613.	0.000
198.000	5.558E-05	-70912.	4145.9426	2.059E-05	542.1759	2.936E+10	-50.5891	5461249.	0.000
204.000	0.000136	-46963.	3622.2312	8.544E-06	506.8830	2.936E+10	-123.9813	5484375.	0.000
210.000	0.000158	-27465.	2816.7386	9.374E-07	478.1507	2.936E+10	-144.5162	5484375.	0.000
216.000	0.000147	-13164.	1980.3991	-3.215E-06	457.0754	2.936E+10	-134.2636	5484375.	0.000
222.000	0.000120	-3692.9834	1249.8442	-4.937E-06	443.1183	2.936E+10	-109.2547	5484375.	0.000
228.000	8.764E-05	1845.8113	681.7617	-5.126E-06	440.3962	2.936E+10	-80.1061	5484375.	0.000
234.000	5.801E-05	4500.3375	282.3636	-4.478E-06	444.3080	2.936E+10	-53.0266	5484375.	0.000
240.000	3.391E-05	5244.8130	30.3084	-3.482E-06	445.4051	2.936E+10	-30.9918	5484375.	0.000
246.000	1.623E-05	4872.3110	-107.1754	-2.448E-06	444.8562	2.936E+10	-14.8361	5484375.	0.000

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252.000	4.532E-06	3964.5247	-164.1102	-1.545E-06	443.5184	2.936E+10	-4.1422	5484375.	0.000
258.000	-2.306E-06	2906.6583	-170.2134	-8.425E-07	441.9595	2.936E+10	2.1078	5484375.	0.000
264.000	-5.579E-06	1923.9662	-148.5916	-3.489E-07	440.5114	2.936E+10	5.0995	5484375.	0.000
270.000	-6.492E-06	1124.3884	-115.4896	-3.735E-08	439.3331	2.936E+10	5.9345	5484375.	0.000
276.000	-6.027E-06	538.1797	-81.1587	1.326E-07	438.4692	2.936E+10	5.5091	5484375.	0.000
282.000	-4.902E-06	150.1693	-51.1898	2.029E-07	437.8974	2.936E+10	4.4805	5484375.	0.000
288.000	-3.592E-06	-76.5797	-27.8977	2.104E-07	437.7889	2.936E+10	3.2835	5484375.	0.000
294.000	-2.377E-06	-185.1034	-11.5300	1.837E-07	437.9489	2.936E+10	2.1724	5484375.	0.000
300.000	-1.388E-06	-215.3762	-1.2066	1.428E-07	437.9935	2.936E+10	1.2687	5484375.	0.000
306.000	-6.636E-07	-199.9218	4.4192	1.003E-07	437.9707	2.936E+10	0.6065	5484375.	0.000
312.000	-1.843E-07	-162.5837	6.7441	6.327E-08	437.9157	2.936E+10	0.1684	5484375.	0.000
318.000	9.566E-08	-119.1428	6.9871	3.448E-08	437.8517	2.936E+10	-0.0874	5484375.	0.000
324.000	2.295E-07	-78.8208	6.0955	1.425E-08	437.7922	2.936E+10	-0.2097	5484375.	0.000
330.000	2.666E-07	-46.0304	4.7352	1.487E-09	437.7439	2.936E+10	-0.2437	5484375.	0.000
336.000	2.473E-07	-22.0019	3.3260	-5.466E-09	437.7085	2.936E+10	-0.2261	5484375.	0.000
342.000	2.010E-07	-6.1060	2.0966	-8.338E-09	437.6851	2.936E+10	-0.1837	5484375.	0.000
348.000	1.472E-07	3.1767	1.1416	-8.638E-09	437.6808	2.936E+10	-0.1346	5484375.	0.000
354.000	9.737E-08	7.6134	0.4708	-7.535E-09	437.6873	2.936E+10	-0.0890	5484375.	0.000
360.000	5.682E-08	8.8443	0.0480	-5.853E-09	437.6891	2.936E+10	-0.0519	5484375.	0.000
366.000	2.713E-08	8.2032	-0.1822	-4.111E-09	437.6882	2.936E+10	-0.0248	5484375.	0.000
372.000	7.492E-09	6.6675	-0.2771	-2.591E-09	437.6859	2.936E+10	-0.006848	5484375.	0.000
378.000	-3.968E-09	4.8836	-0.2868	-1.411E-09	437.6833	2.936E+10	0.003627	5484375.	0.000
384.000	-9.438E-09	3.2291	-0.2500	-5.817E-10	437.6809	2.936E+10	0.008627	5484375.	0.000
390.000	-1.095E-08	1.8844	-0.1941	-5.913E-11	437.6789	2.936E+10	0.0100	5484375.	0.000
396.000	-1.015E-08	0.8995	-0.1363	2.254E-10	437.6774	2.936E+10	0.009275	5484375.	0.000
402.000	-8.244E-09	0.2483	-0.0859	3.427E-10	437.6765	2.936E+10	0.007535	5484375.	0.000
408.000	-6.035E-09	-0.1318	-0.0467	3.546E-10	437.6763	2.936E+10	0.005517	5484375.	0.000
414.000	-3.989E-09	-0.3131	-0.0192	3.091E-10	437.6763	2.936E+10	0.003546	5484375.	0.000
420.000	-2.326E-09	-0.3632	-0.001907	2.400E-10	437.6766	2.936E+10	0.002126	5484375.	0.000
426.000	-1.109E-09	-0.3366	0.007513	1.685E-10	437.6766	2.936E+10	0.001014	5484375.	0.000
432.000	-3.046E-10	-0.2734	0.0134	1.061E-10	437.6765	2.936E+10	0.000278	5484375.	0.000
438.000	1.645E-10	-0.2002	0.0118	5.773E-11	437.6764	2.936E+10	-0.000150	5484375.	0.000
444.000	3.882E-10	-0.1323	0.0103	2.375E-11	437.6763	2.936E+10	-0.000355	5484375.	0.000
450.000	4.496E-10	-0.0771	0.007960	2.349E-12	437.6762	2.936E+10	-0.000411	5484375.	0.000
456.000	4.164E-10	-0.0368	0.005586	-9.292E-12	437.6761	2.936E+10	-0.000381	5484375.	0.000
462.000	3.381E-10	-0.0101	0.003517	-1.408E-11	437.6761	2.936E+10	-0.000309	5484375.	0.000
468.000	2.474E-10	0.005464	0.001911	-1.455E-11	437.6761	2.936E+10	-0.000226	5484375.	0.000
474.000	1.634E-10	0.0129	0.000781	-1.268E-11	437.6761	2.936E+10	-0.000149	5484375.	0.000
480.000	9.523E-11	0.0149	7.571E-05	-9.840E-12	437.6761	2.936E+10	-8.705E-05	5484375.	0.000
486.000	4.534E-11	0.0138	-0.000310	-6.904E-12	437.6761	2.936E+10	-4.144E-05	5484375.	0.000
492.000	1.238E-11	0.0112	-0.000468	-4.347E-12	437.6761	2.936E+10	-1.132E-05	5484375.	0.000
498.000	-6.824E-12	0.008205	-0.000483	-2.362E-12	437.6761	2.936E+10	6.237E-06	5484375.	0.000
504.000	-1.597E-11	0.005420	-0.000421	0.000	437.6761	2.936E+10	1.459E-05	5484375.	0.000
510.000	-1.846E-11	0.003158	-0.000326	0.000	437.6761	2.936E+10	1.688E-05	5484375.	0.000
516.000	-1.709E-11	0.001504	-0.000229	0.000	437.6761	2.936E+10	1.562E-05	5484375.	0.000
522.000	-1.386E-11	0.000411	-0.000144	0.000	437.6761	2.936E+10	1.267E-05	5484375.	0.000
528.000	-1.014E-11	-0.000226	-7.818E-05	0.000	437.6761	2.936E+10	9.269E-06	5484375.	0.000
534.000	-6.692E-12	-0.000529	-3.202E-05	0.000	437.6761	2.936E+10	6.117E-06	5484375.	0.000
540.000	-3.893E-12	-0.000611	-2.997E-06	0.000	437.6761	2.936E+10	3.558E-06	5484375.	0.000
546.000	-1.844E-12	-0.000566	1.273E-05	0.000	437.6761	2.936E+10	1.685E-06	5484375.	0.000
552.000	0.000	-0.000459	1.913E-05	0.000	437.6761	2.936E+10	4.460E-07	5484375.	0.000
558.000	0.000	-0.000337	1.963E-05	0.000	437.6761	2.936E+10	-2.783E-07	5484375.	0.000
564.000	0.000	-0.000224	1.692E-05	0.000	437.6761	2.936E+10	-6.254E-07	5484375.	0.000
570.000	0.000	-0.000134	1.288E-05	0.000	437.6761	2.936E+10	-7.214E-07	5484375.	0.000
576.000	0.000	-6.938E-05	8.712E-06	0.000	437.6761	2.936E+10	-6.675E-07	5484375.	0.000
582.000	0.000	-2.910E-05	5.102E-06	0.000	437.6761	2.936E+10	-5.359E-07	5484375.	0.000
588.000	0.000	-8.100E-06	2.379E-06	0.000	437.6761	2.936E+10	-3.717E-07	5484375.	0.000
594.000	0.000	-4.791E-07	6.687E-07	0.000	437.6761	2.936E+10	-1.984E-07	5484375.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	-2.452E-08	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0075070 radians
Maximum bending moment	=	2416239. inch-lbs
Maximum shear force	=	75175. lbs
Depth of maximum bending moment	=	66.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	21
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	102919.	-0.0133	437.6761	2.936E+10	-1327.2013	3981.6039	0.000
6.000	0.9202	609424.	94565.	-0.0132	1335.7575	2.936E+10	-1457.2827	9501.9897	0.000
12.000	0.8411	1166237.	85787.	-0.0131	2156.3097	2.936E+10	-1468.7278	10477.	0.000
18.000	0.7635	1669893.	76952.	-0.0128	2898.5261	2.936E+10	-1476.3609	11602.	0.000
24.000	0.6879	2119995.	68083.	-0.0124	3561.8215	2.936E+10	-1480.0447	12909.	0.000
30.000	0.6150	2516300.	59204.	-0.0119	4145.8396	2.936E+10	-1479.6347	14436.	0.000
36.000	0.5451	2858728.	50340.	-0.0114	4650.4602	2.936E+10	-1474.9763	16236.	0.000
42.000	0.4787	3147362.	41517.	-0.0107	5075.8080	2.936E+10	-1465.9027	18374.	0.000
48.000	0.4162	3382460.	32763.	-0.0101	5422.2610	2.936E+10	-1452.2306	20938.	0.000
54.000	0.3578	3564455.	24105.	-0.009366	5690.4604	2.936E+10	-1433.7551	24045.	0.000
60.000	0.3038	3693971.	15573.	-0.008624	5881.3213	2.936E+10	-1410.2419	27855.	0.000
66.000	0.2543	3771820.	7197.9054	-0.007861	5996.0447	2.936E+10	-1381.4159	32595.	0.000
72.000	0.2094	3799023.	-987.1756	-0.007087	6036.1321	2.936E+10	-1346.9444	38588.	0.000
78.000	0.1692	3776813.	-8947.2346	-0.006313	6003.4025	2.936E+10	-1306.4086	46315.	0.000
84.000	0.1337	3706655.	-16644.	-0.005548	5900.0143	2.936E+10	-1259.2583	56520.	0.000
90.000	0.1027	3590264.	-24036.	-0.004802	5728.4940	2.936E+10	-1204.7296	70408.	0.000
96.000	0.0761	3429631.	-31075.	-0.004085	5491.7761	2.936E+10	-1141.6897	90073.	0.000
102.000	0.0536	3227065.	-37705.	-0.003405	5193.2625	2.936E+10	-1068.3120	119489.	0.000
108.000	0.0352	2985256.	-43854.	-0.002770	4836.9184	2.936E+10	-981.2991	167293.	0.000

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114.000	0.0204	2707395.	-49419.	-0.002188	4427.4466	2.936E+10	-873.6136	256871.	0.000
120.000	0.008938	2397426.	-54214.	-0.001666	3970.6594	2.936E+10	-724.8579	486617.	0.000
126.000	0.000409	2060780.	-57299.	-0.001211	3474.5594	2.936E+10	-303.1745	4445625.	0.000
132.000	-0.005592	1712720.	-56200.	-0.000825	2961.6381	2.936E+10	669.2194	718055.	0.000
138.000	-0.009493	1388336.	-51858.	-0.000508	2483.6072	2.936E+10	778.2619	491914.	0.000
144.000	-0.0117	1091632.	-47018.	-0.000255	2046.3675	2.936E+10	834.9092	428495.	0.000
150.000	-0.0126	824720.	-41918.	-5.896E-05	1653.0305	2.936E+10	865.1341	413602.	0.000
156.000	-0.0124	588752.	-36690.	8.549E-05	1305.2952	2.936E+10	877.7237	424763.	0.000
162.000	-0.0115	384240.	-31426.	0.000185	1003.9139	2.936E+10	876.7560	456472.	0.000
168.000	-0.0102	211197.	-26203.	0.000246	748.9085	2.936E+10	864.4196	509524.	0.000
174.000	-0.008575	69223.	-21084.	0.000274	539.6864	2.936E+10	841.9636	589132.	0.000
180.000	-0.006886	-42458.	-16127.	0.000277	500.2451	2.936E+10	810.0856	705865.	0.000
186.000	-0.005249	-124966.	-11390.	0.000260	621.8329	2.936E+10	769.0926	879149.	0.000
192.000	-0.003765	-179756.	-6925.8814	0.000229	702.5743	2.936E+10	718.9309	1145665.	0.000
198.000	-0.002502	-208620.	-2791.8828	0.000189	745.1109	2.936E+10	659.0687	1580609.	0.000
204.000	-0.001494	-213708.	929.8897	0.000146	752.6082	2.936E+10	581.5222	2334869.	0.000
210.000	-0.000749	-197809.	4140.7444	0.000104	729.1783	2.936E+10	488.7627	3915482.	0.000
216.000	-0.000246	-164266.	6282.0532	6.701E-05	679.7479	2.936E+10	225.0068	5484375.	0.000
222.000	5.520E-05	-122583.	6805.7047	3.770E-05	618.3218	2.936E+10	-50.4563	5484375.	0.000
228.000	0.000206	-82687.	6088.8084	1.672E-05	559.5286	2.936E+10	-188.5091	5484375.	0.000
234.000	0.000256	-49557.	4821.6613	3.207E-06	510.7066	2.936E+10	-233.8733	5484375.	0.000
240.000	0.000245	-24835.	3448.9839	-4.396E-06	474.2742	2.936E+10	-223.6859	5484375.	0.000
246.000	0.000203	-8159.0844	2220.9474	-7.767E-06	449.6998	2.936E+10	-185.6597	5484375.	0.000
252.000	0.000152	1834.9441	1248.5059	-8.414E-06	440.3802	2.936E+10	-138.4875	5484375.	0.000
258.000	0.000102	6842.9771	552.9267	-7.527E-06	447.7603	2.936E+10	-93.3722	5484375.	0.000
264.000	6.119E-05	8487.9484	105.0272	-5.960E-06	450.1844	2.936E+10	-55.9276	5484375.	0.000
270.000	3.063E-05	8117.4642	-146.7486	-4.263E-06	449.6385	2.936E+10	-27.9976	5484375.	0.000
276.000	1.003E-05	6737.3940	-258.2424	-2.742E-06	447.6043	2.936E+10	-9.1670	5484375.	0.000
282.000	-2.310E-06	5025.0776	-279.4080	-1.543E-06	445.0813	2.936E+10	2.1117	5484375.	0.000
288.000	-8.487E-06	3387.8637	-249.8002	-6.832E-07	442.6686	2.936E+10	7.7576	5484375.	0.000
294.000	-1.051E-05	2029.0990	-197.7104	-1.296E-07	440.8663	2.936E+10	9.6057	5484375.	0.000
300.000	-1.004E-05	1015.6474	-141.3551	1.815E-07	439.1728	2.936E+10	9.1794	5484375.	0.000
306.000	-8.330E-06	332.4060	-90.9736	3.193E-07	438.1659	2.936E+10	7.6145	5484375.	0.000
312.000	-6.211E-06	-76.7941	-51.0990	3.454E-07	437.7893	2.936E+10	5.6770	5484375.	0.000
318.000	-4.256E-06	-285.6026	-22.5159	3.008E-07	437.8911	2.936E+10	3.8256	5484375.	0.000
324.000	-2.505E-06	-348.6195	-4.2443	2.444E-07	438.1898	2.936E+10	2.2899	5484375.	0.000
330.000	-1.253E-06	-333.1148	6.0604	1.747E-07	438.1670	2.936E+10	1.1450	5484375.	0.000
336.000	-4.088E-07	-276.0998	10.6157	1.124E-07	438.0833	2.936E+10	0.3735	5484375.	0.000
342.000	9.665E-08	-205.9933	11.4710	6.315E-08	437.9797	2.936E+10	-0.0883	5484375.	0.000
348.000	3.492E-07	-138.8073	10.2483	2.791E-08	437.8806	2.936E+10	-0.3192	5484375.	0.000
354.000	4.316E-07	-83.0801	8.1070	5.238E-09	437.7985	2.936E+10	-0.3945	5484375.	0.000
360.000	4.121E-07	-41.5356	5.7934	-7.497E-09	437.7373	2.936E+10	-0.3767	5484375.	0.000
366.000	3.417E-07	-13.5419	3.7264	-1.313E-08	437.6960	2.936E+10	-0.3123	5484375.	0.000
372.000	2.546E-07	3.2126	2.0914	-1.418E-08	437.6808	2.936E+10	-0.2327	5484375.	0.000
378.000	1.715E-07	11.5883	0.9230	-1.267E-08	437.6932	2.936E+10	-0.1567	5484375.	0.000
384.000	1.026E-07	14.3185	0.1715	-1.002E-08	437.6972	2.936E+10	-0.0938	5484375.	0.000
390.000	5.123E-08	13.6699	-0.2503	-7.161E-09	437.6962	2.936E+10	-0.0468	5484375.	0.000
396.000	1.664E-08	11.3323	-0.4364	-4.606E-09	437.6928	2.936E+10	-0.0152	5484375.	0.000
402.000	-4.040E-09	8.4443	-0.4709	-2.585E-09	437.6885	2.936E+10	0.003694	5484375.	0.000
408.000	-1.437E-08	5.6872	-0.4204	-1.140E-09	437.6845	2.936E+10	0.0131	5484375.	0.000
414.000	-1.773E-08	3.4016	-0.3324	-2.116E-10	437.6811	2.936E+10	0.0162	5484375.	0.000
420.000	-1.691E-08	1.6986	-0.2374	3.096E-10	437.6786	2.936E+10	0.0155	5484375.	0.000
426.000	-1.401E-08	0.5517	-0.1526	5.396E-10	437.6769	2.936E+10	0.0128	5484375.	0.000
432.000	-1.044E-08	-0.1343	-0.0856	5.822E-10	437.6763	2.936E+10	0.009540	5484375.	0.000
438.000	-7.026E-09	-0.4769	-0.0377	5.197E-10	437.6768	2.936E+10	0.006422	5484375.	0.000
444.000	-4.209E-09	-0.5881	-0.000692	4.096E-10	437.6770	2.936E+10	0.003839	5484375.	0.000
450.000	-2.095E-09	-0.5610	0.0103	2.935E-10	437.6769	2.936E+10	0.001915	5484375.	0.000
456.000	-6.780E-10	-0.4648	0.0179	1.887E-10	437.6768	2.936E+10	0.000620	5484375.	0.000
462.000	1.690E-10	-0.3462	0.0193	1.058E-10	437.6766	2.936E+10	-0.000154	5484375.	0.000
468.000	5.914E-10	-0.2330	0.0172	4.659E-11	437.6764	2.936E+10	-0.000541	5484375.	0.000
474.000	7.281E-10	-0.1393	0.0136	8.549E-12	437.6763	2.936E+10	-0.000666	5484375.	0.000
480.000	6.940E-10	-0.0695	0.009731	-1.278E-11	437.6762	2.936E+10	-0.000634	5484375.	0.000
486.000	5.747E-10	-0.0225	0.006252	-2.218E-11	437.6761	2.936E+10	-0.000525	5484375.	0.000
492.000	4.278E-10	0.005615	0.003503	-2.390E-11	437.6761	2.936E+10	-0.000391	5484375.	0.000
498.000	2.879E-10	0.0196	0.001540	-2.132E-11	437.6761	2.936E+10	-0.000263	5484375.	0.000
504.000	1.720E-10	0.0242	0.000280	-1.685E-11	437.6761	2.936E+10	-0.000157	5484375.	0.000
510.000	8.568E-11	0.0230	-0.000427	-1.203E-11	437.6761	2.936E+10	-7.831E-05	5484375.	0.000
516.000	2.762E-11	0.0191	-0.000738	-7.729E-12	437.6761	2.936E+10	-2.524E-05	5484375.	0.000
522.000	-7.074E-12	0.0142	-0.000794	-4.332E-12	437.6761	2.936E+10	6.466E-06	5484375.	0.000
528.000	-2.437E-11	0.009540	-0.000708	-1.908E-12	437.6761	2.936E+10	2.228E-05	5484375.	0.000
534.000	-2.997E-11	0.005695	-0.000559	0.000	437.6761	2.936E+10	2.739E-05	5484375.	0.000
540.000	-2.858E-11	0.002836	-0.000398	0.000	437.6761	2.936E+10	2.613E-05	5484375.	0.000
546.000	-2.372E-11	0.000916	-0.000255	0.000	437.6761	2.936E+10	2.168E-05	5484375.	0.000
552.000	-1.773E-11	-0.000223	-0.000141	0.000	437.6761	2.936E+10	1.621E-05	5484375.	0.000
558.000	-1.201E-11	-0.000779	-5.953E-05	0.000	437.6761	2.936E+10	1.098E-05	5484375.	0.000
564.000	-7.255E-12	-0.000940	-6.694E-06	0.000	437.6761	2.936E+10	6.631E-06	5484375.	0.000
570.000	-3.648E-12	-0.000861	2.320E-05	0.000	437.6761	2.936E+10	3.334E-06	5484375.	0.000
576.000	-1.097E-12	-0.000662	3.621E-05	0.000	437.6761	2.936E+10	1.003E-06	5484375.	0.000
582.000	0.000	-0.000427	3.746E-05	0.000	437.6761	2.936E+10	-5.867E-07	5484375.	0.000
588.000	1.856E-12	-0.000213	3.061E-05	0.000	437.6761	2.936E+10	-1.697E-06	5484375.	0.000
594.000	2.809E-12	-6.050E-05	1.782E-05	0.000	437.6761	2.936E+10	-2.568E-06	5484375.	0.000
600.000	3.688E-12	0.000	0.000	0.000	437.6761	2.936E+10	-3.371E-06	2742187.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0133006 radians
Maximum bending moment	=	3799023. inch-lbs
Maximum shear force	=	102919. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	15
Number of zero deflection points	=	8

Summary of Pile Response(s)

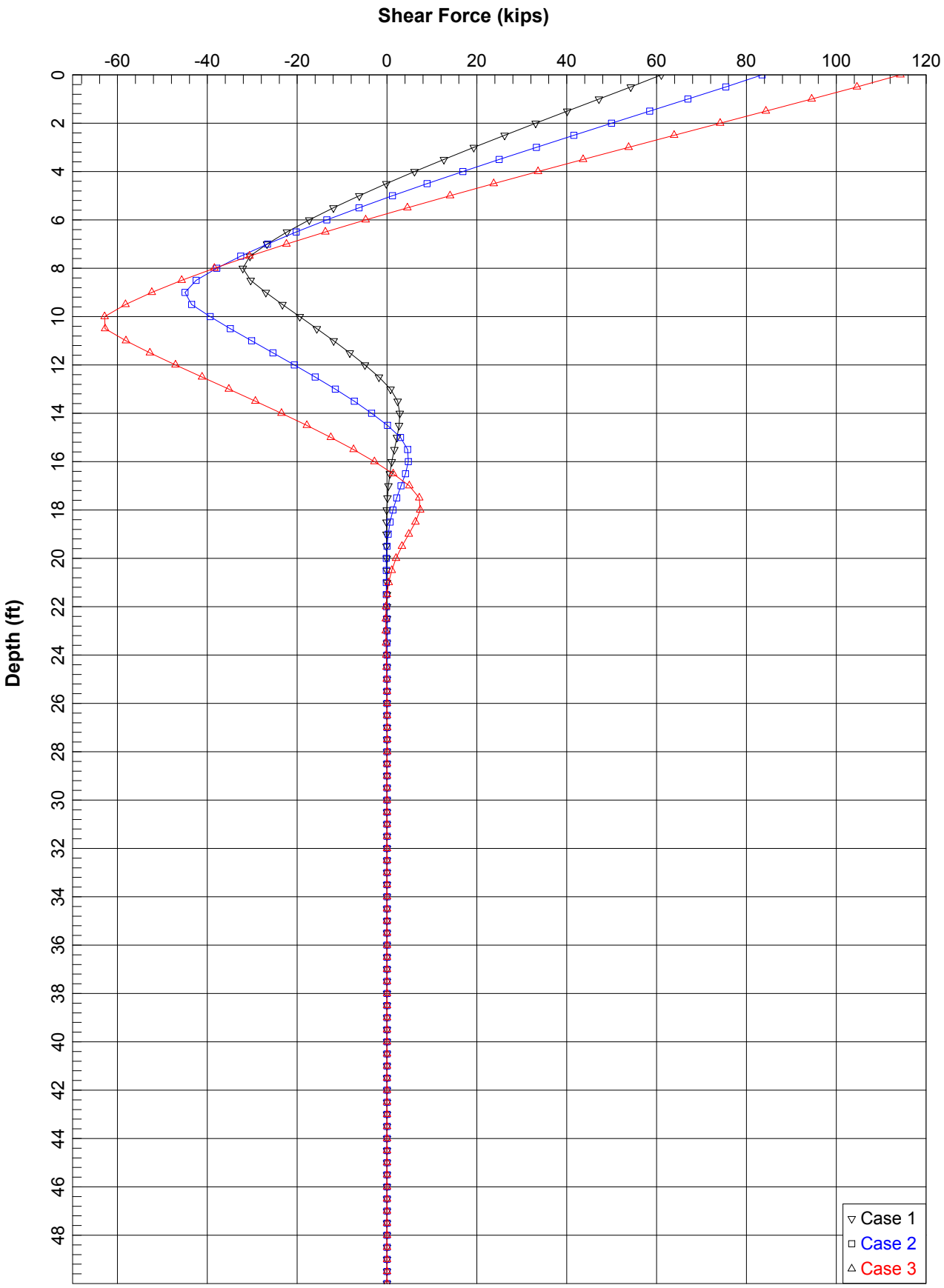
Definitions of Pile-head Loading Conditions:

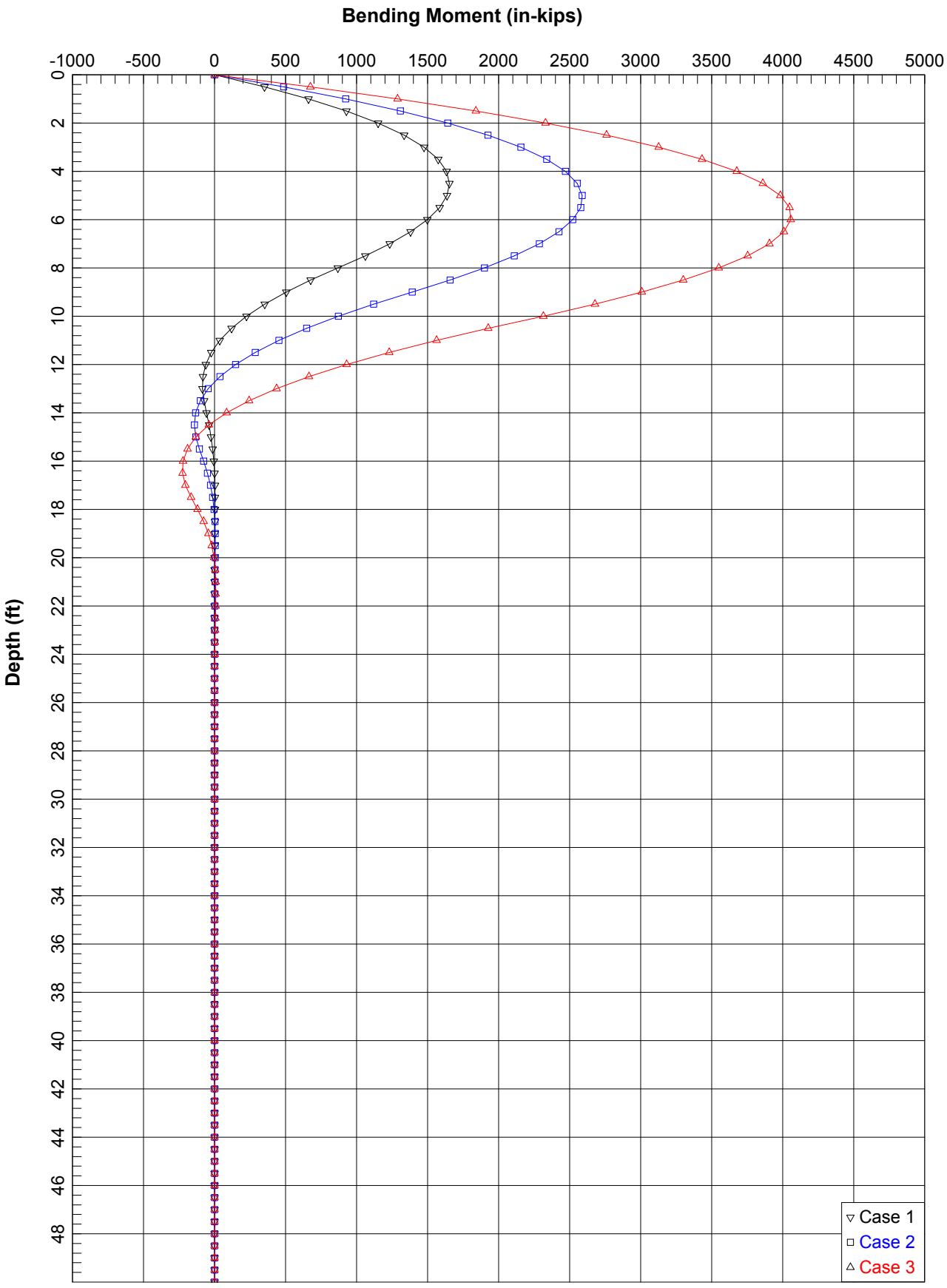
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	198000.	0.25000000	1544366.	54985.	-0.00424813
2	4	y = 0.5000	M = 0.000	198000.	0.50000000	2416239.	75175.	-0.00750702
3	4	y = 1.0000	M = 0.000	198000.	1.00000000	3799023.	102919.	-0.01330061

The analysis ended normally.


Shear Force (kips)
-60
-40
-20
0
20
40
60
80
100
120
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Bent 4\
Name of input data file: Bent 4L_transv_Max P.lp6d
Name of output report file: Bent 4L_transv_Max P.lp6o
Name of plot output file: Bent 4L_transv_Max P.lp6p
Name of runtime messeage file: Bent 4L_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 21:24:44

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

24Inch CIDH Lateral Capacity Analysis-Bent 2-Free Head- Longit.-Avg Pm

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point No.	Depth X ft	Pile Diameter in
1	0.00000	24.0000000
2	50.000000	24.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Elastic Pile

Cross-sectional Shape = Circular
Section Length = 50.00000000 ft
Top Width = 24.00000000 in
Bottom Width = 24.00000000 in
Top Area = 452.38934212 in
Bottom Area = 452.38934212 in
Moment of Inertia at Top = 8143.00815810 in
Moment of Inertia at Bottom = 8143.00815810 in
Elastic Modulus = 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.00000 ft
Distance from top of pile to bottom of layer = 0.10000 ft
Effective unit weight at top of layer = 120.00000 pcf
Effective unit weight at bottom of layer = 120.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.10000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J Factor	kpy pci	Rock Mass Rock Emass psi	krm	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction Test deg.	Uniaxial qu Test psi	RQD % or Subgrade Mod. pci	Strain Elastic In-situ Property GSI	Strain Elastic In-situ Property Epsilon 50
1	Stiff Clay w/o Free Water	--	--	--	--	-5.000	120.000	4500.000	--	--	--	--	0.00700
		--	--	--	--	0.10000	120.000	4500.000	--	--	--	--	0.00700
2	Stiff Clay w/o Free Water	--	--	--	--	0.10000	125.000	4500.000	--	--	--	--	0.00500
		--	--	--	--	80.000	125.000	4500.000	--	--	--	--	0.00500

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.7500	1.0000
2	50.000	0.7500	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2		Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y =	0.25000 in	M =	0.0000 in-lbs	198000.	False
2	4	y =	0.50000 in	M =	0.0000 in-lbs	198000.	False
3	4	y =	1.00000 in	M =	0.0000 in-lbs	198000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	61042.	-0.004394	437.6761	2.936E+10	-1082.8535	12994.	0.000
6.000	0.2236	351981.	54252.	-0.004358	956.3752	2.936E+10	-1180.6123	31675.	0.000
12.000	0.1977	661374.	47170.	-0.004255	1412.3148	2.936E+10	-1179.9850	35811.	0.000
18.000	0.1726	928128.	40106.	-0.004092	1805.4177	2.936E+10	-1174.5904	40836.	0.000
24.000	0.1486	1152370.	33090.	-0.003880	2135.8745	2.936E+10	-1164.2377	47010.	0.000
30.000	0.1260	1334421.	26151.	-0.003625	2404.1543	2.936E+10	-1148.7129	54690.	0.000
36.000	0.1051	1474793.	19321.	-0.003338	2611.0154	2.936E+10	-1127.7702	64388.	0.000
42.000	0.0860	1574208.	12635.	-0.003027	2757.5187	2.936E+10	-1101.1196	76854.	0.000
48.000	0.0688	1633600.	6126.0518	-0.002699	2845.0425	2.936E+10	-1068.4066	93216.	0.000
54.000	0.0536	1654133.	-166.7024	-0.002363	2875.3011	2.936E+10	-1029.1781	115254.	0.000
60.000	0.0404	1637214.	-6202.6966	-0.002027	2850.3682	2.936E+10	-982.8200	145910.	0.000
66.000	0.0293	1584516.	-11936.	-0.001697	2772.7092	2.936E+10	-928.4383	190389.	0.000
72.000	0.0200	1498009.	-17316.	-0.001382	2645.2280	2.936E+10	-864.6026	258774.	0.000
78.000	0.0127	1380013.	-22276.	-0.001088	2471.3422	2.936E+10	-788.7167	373455.	0.000
84.000	0.006989	1233288.	-26727.	-0.000821	2255.1199	2.936E+10	-695.1123	596768.	0.000
90.000	0.002818	1061240.	-30512.	-0.000587	2001.5795	2.936E+10	-566.5148	1206066.	0.000
96.000	-5.068E-05	868539.	-32094.	-0.000389	1717.6047	2.936E+10	39.1998	4641286.	0.000
102.000	-0.001855	677039.	-30385.	-0.000231	1435.3988	2.936E+10	530.4496	1716156.	0.000
108.000	-0.002828	504470.	-26988.	-0.000111	1181.0918	2.936E+10	601.9960	1277155.	0.000
114.000	-0.003183	353451.	-23284.	-2.304E-05	958.5412	2.936E+10	632.6526	1192529.	0.000
120.000	-0.003105	225121.	-19462.	3.609E-05	769.4274	2.936E+10	641.1406	1239092.	0.000
126.000	-0.002750	119818.	-15637.	7.134E-05	614.2466	2.936E+10	633.9940	1383271.	0.000
132.000	-0.002248	37309.	-11892.	8.740E-05	492.6573	2.936E+10	614.2376	1639097.	0.000
138.000	-0.001701	-23096.	-8299.1795	8.885E-05	471.7111	2.936E+10	583.4215	2057723.	0.000
144.000	-0.001182	-62492.	-4922.1077	8.011E-05	529.7677	2.936E+10	542.2691	2752151.	0.000
150.000	-0.000740	-82351.	-1822.9783	6.530E-05	559.0336	2.936E+10	490.7741	3979864.	0.000
156.000	-0.000399	-84523.	768.8530	4.825E-05	562.2472	2.936E+10	373.1697	5617848.	0.000
162.000	-0.000161	-73240.	2348.1090	3.213E-05	545.6062	2.936E+10	153.2490	5715504.	0.000
168.000	-1.302E-05	-56422.	2845.6910	1.888E-05	520.8225	2.936E+10	12.6116	5813160.	0.000
174.000	6.565E-05	-39136.	2689.5015	9.112E-06	495.3495	2.936E+10	-64.6748	5910816.	0.000
180.000	9.632E-05	-24169.	2206.0977	2.642E-06	473.2936	2.936E+10	-96.4598	6008472.	0.000
186.000	9.736E-05	-12669.	1619.4816	-1.123E-06	456.3464	2.936E+10	-99.0789	6106128.	0.000
192.000	8.285E-05	-4732.9990	1065.2439	-2.901E-06	444.6509	2.936E+10	-85.6670	6203785.	0.000
198.000	6.254E-05	-120.4795	611.1818	-3.372E-06	437.8536	2.936E+10	-65.6870	6301441.	0.000
204.000	4.238E-05	2609.1950	280.0138	-3.093E-06	441.5212	2.936E+10	-44.7023	6328125.	0.000
210.000	2.542E-05	3487.9956	65.4649	-2.470E-06	442.8162	2.936E+10	-26.8141	6328125.	0.000
216.000	1.274E-05	3400.6428	-55.2892	-1.766E-06	442.6875	2.936E+10	-13.4373	6328125.	0.000
222.000	4.228E-06	2828.7221	-108.9778	-1.130E-06	441.8447	2.936E+10	-4.4589	6328125.	0.000
228.000	-8.161E-07	2095.5933	-119.7724	-6.265E-07	440.7643	2.936E+10	0.8607	6328125.	0.000
234.000	-3.290E-06	1392.9422	-106.7803	-2.700E-07	439.7288	2.936E+10	3.4699	6328125.	0.000
240.000	-4.056E-06	814.8707	-83.5380	-4.434E-08	438.8769	2.936E+10	4.2775	6328125.	0.000
246.000	-3.822E-06	390.5912	-58.6123	7.885E-08	438.2517	2.936E+10	4.0311	6328125.	0.000
252.000	-3.109E-06	111.3360	-36.6805	1.301E-07	437.8402	2.936E+10	3.2795	6328125.	0.000
258.000	-2.260E-06	-49.8845	-19.6904	1.364E-07	437.7496	2.936E+10	2.3839	6328125.	0.000
264.000	-1.472E-06	-125.2731	-7.8804	1.185E-07	437.8607	2.936E+10	1.5528	6328125.	0.000
270.000	-8.379E-07	-144.7304	-0.5707	9.094E-08	437.8894	2.936E+10	0.8838	6328125.	0.000
276.000	-3.811E-07	-132.3375	3.2862	6.262E-08	437.8711	2.936E+10	0.4019	6328125.	0.000
282.000	-8.647E-08	-103.4444	4.7655	3.832E-08	437.8315	2.936E+10	0.0912	6328125.	0.000
288.000	7.880E-08	-75.2423	4.7898	1.986E-08	437.7870	2.936E+10	-0.0831	6328125.	0.000
294.000	1.518E-07	-48.0137	4.0602	7.259E-09	437.7468	2.936E+10	-0.1601	6328125.	0.000
300.000	1.659E-07	-26.5369	3.0550	-3.594E-10	437.7152	2.936E+10	-0.1750	6328125.	0.000
306.000	1.475E-07	-11.3529	2.0634	-4.232E-09	437.6923	2.936E+10	-0.1555	6328125.	0.000
312.000	1.151E-07	-1.7658	1.2325	-5.572E-09	437.6787	2.936E+10	-0.1214	6328125.	0.000
318.000	8.061E-08	3.4504	0.6132	-5.400E-09	437.6812	2.936E+10	-0.0850	6328125.	0.000
324.000	5.033E-08	5.6051	0.1989	-4.475E-09	437.6844	2.936E+10	-0.0531	6328125.	0.000
330.000	2.692E-08	5.8475	-0.0455	-3.304E-09	437.6847	2.936E+10	-0.0284	6328125.	0.000
336.000	1.068E-08	5.0665	-0.1645	-2.189E-09	437.6836	2.936E+10	-0.0113	6328125.	0.000
342.000	6.500E-10	3.8788	-0.2003	-1.275E-09	437.6818	2.936E+10	-0.000686	6328125.	0.000
348.000	-4.620E-09	2.6655	-0.1878	-6.059E-10	437.6800	2.936E+10	0.004873	6328125.	0.000
354.000	-6.621E-09	1.6271	-0.1522	-1.673E-10	437.6785	2.936E+10	0.006983	6328125.	0.000
360.000	-6.627E-09	0.8396	-0.1103	8.483E-11	437.6773	2.936E+10	0.006989	6328125.	0.000
366.000	-5.603E-09	0.3035	-0.0716	2.016E-10	437.6765	2.936E+10	0.005910	6328125.	0.000
372.000	-4.207E-09	-0.0199	-0.0405	2.306E-10	437.6761	2.936E+10	0.004437	6328125.	0.000
378.000	-2.836E-09	-0.1835	-0.0183	2.098E-10	437.6764	2.936E+10	0.002991	6328125.	0.000
384.000	-1.689E-09	-0.2395	-0.003939	1.666E-10	437.6764	2.936E+10	0.001782	6328125.	0.000

390.000	-8.365E-10	-0.2312	0.004053	1.185E-10	437.6764	2.936E+10	0.000882	6328125.	0.000
396.000	-2.672E-10	-0.1911	0.007545	7.535E-11	437.6764	2.936E+10	0.000282	6328125.	0.000
402.000	6.767E-11	-0.1408	0.008176	4.142E-11	437.6763	2.936E+10	-7.137E-05	6328125.	0.000
408.000	2.298E-10	-0.0931	0.007235	1.751E-11	437.6762	2.936E+10	-0.000242	6328125.	0.000
414.000	2.778E-10	-0.0541	0.005629	2.474E-12	437.6762	2.936E+10	-0.000293	6328125.	0.000
420.000	2.595E-10	-0.0256	0.003929	-5.662E-12	437.6761	2.936E+10	-0.000274	6328125.	0.000
426.000	2.099E-10	-0.006905	0.002443	-8.980E-12	437.6761	2.936E+10	-0.000221	6328125.	0.000
432.000	1.518E-10	0.003782	0.001299	-9.299E-12	437.6761	2.936E+10	-0.000160	6328125.	0.000
438.000	9.829E-11	0.008706	0.000508	-8.023E-12	437.6761	2.936E+10	-0.000104	6328125.	0.000
444.000	5.549E-11	0.009896	2.125E-05	-6.122E-12	437.6761	2.936E+10	-5.853E-05	6328125.	0.000
450.000	2.483E-11	0.008976	-0.000233	-4.193E-12	437.6761	2.936E+10	-2.619E-05	6328125.	0.000
456.000	5.176E-12	0.007111	-0.000328	-2.549E-12	437.6761	2.936E+10	-5.459E-06	6328125.	0.000
462.000	-5.760E-12	0.005048	-0.000326	-1.307E-12	437.6761	2.936E+10	6.075E-06	6328125.	0.000
468.000	-1.051E-11	0.003202	-0.000275	0.000	437.6761	2.936E+10	1.108E-05	6328125.	0.000
474.000	-1.132E-11	0.001754	-0.000205	0.000	437.6761	2.936E+10	1.194E-05	6328125.	0.000
480.000	-9.992E-12	0.000736	-0.000138	0.000	437.6761	2.936E+10	1.054E-05	6328125.	0.000
486.000	-7.757E-12	9.710E-05	-8.187E-05	0.000	437.6761	2.936E+10	8.181E-06	6328125.	0.000
492.000	-5.403E-12	-0.000247	-4.024E-05	0.000	437.6761	2.936E+10	5.698E-06	6328125.	0.000
498.000	-3.352E-12	-0.000387	-1.254E-05	0.000	437.6761	2.936E+10	3.535E-06	6328125.	0.000
504.000	-1.775E-12	-0.000398	3.688E-06	0.000	437.6761	2.936E+10	1.873E-06	6328125.	0.000
510.000	0.000	-0.000343	1.148E-05	0.000	437.6761	2.936E+10	7.251E-07	6328125.	0.000
516.000	0.000	-0.000261	1.372E-05	0.000	437.6761	2.936E+10	2.121E-08	6328125.	0.000
522.000	0.000	-0.000178	1.275E-05	0.000	437.6761	2.936E+10	-3.450E-07	6328125.	0.000
528.000	0.000	-0.000108	1.027E-05	0.000	437.6761	2.936E+10	-4.805E-07	6328125.	0.000
534.000	0.000	-5.519E-05	7.402E-06	0.000	437.6761	2.936E+10	-4.761E-07	6328125.	0.000
540.000	0.000	-1.933E-05	4.773E-06	0.000	437.6761	2.936E+10	-4.003E-07	6328125.	0.000
546.000	0.000	2.118E-06	2.674E-06	0.000	437.6761	2.936E+10	-2.994E-07	6328125.	0.000
552.000	0.000	1.279E-05	1.172E-06	0.000	437.6761	2.936E+10	-2.013E-07	6328125.	0.000
558.000	0.000	1.621E-05	2.083E-07	0.000	437.6761	2.936E+10	-1.198E-07	6328125.	0.000
564.000	0.000	1.532E-05	-3.287E-07	0.000	437.6761	2.936E+10	-5.921E-08	6328125.	0.000
570.000	0.000	1.229E-05	-5.617E-07	0.000	437.6761	2.936E+10	-1.844E-08	6328125.	0.000
576.000	0.000	8.588E-06	-5.977E-07	0.000	437.6761	2.936E+10	6.445E-09	6328125.	0.000
582.000	0.000	5.121E-06	-5.177E-07	0.000	437.6761	2.936E+10	2.022E-08	6328125.	0.000
588.000	0.000	2.380E-06	-3.749E-07	0.000	437.6761	2.936E+10	2.737E-08	6328125.	0.000
594.000	0.000	6.241E-07	-1.985E-07	0.000	437.6761	2.936E+10	3.144E-08	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	3.471E-08	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection = 0.2500000 inches
Computed slope at pile head = -0.0043941 radians
Maximum bending moment = 1654133. inch-lbs
Maximum shear force = 61042. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 198000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	83499.	-0.007772	437.6761	2.936E+10	-1287.7371	7726.4226	0.000
6.000	0.4534	487046.	75409.	-0.007723	1155.4150	2.936E+10	-1408.7494	18644.	0.000
12.000	0.4073	923259.	66942.	-0.007579	1798.2431	2.936E+10	-1413.7036	20824.	0.000
18.000	0.3624	1308354.	58459.	-0.007351	2365.7415	2.936E+10	-1413.9705	23409.	0.000
24.000	0.3191	1642229.	49989.	-0.007049	2857.7583	2.936E+10	-1409.3713	26498.	0.000
30.000	0.2778	1924968.	41561.	-0.006684	3274.4180	2.936E+10	-1399.7118	30228.	0.000
36.000	0.2389	2156849.	33208.	-0.006267	3617.1319	2.936E+10	-1384.7774	34778.	0.000
42.000	0.2026	2338355.	24961.	-0.005808	3883.6093	2.936E+10	-1364.3262	40399.	0.000
48.000	0.1692	2470177.	16854.	-0.005316	4077.8701	2.936E+10	-1338.0790	47446.	0.000
54.000	0.1388	2553229.	8922.1567	-0.004803	4200.2598	2.936E+10	-1305.7033	56431.	0.000
60.000	0.1116	2588656.	1204.6807	-0.004278	4252.4662	2.936E+10	-1266.7887	68122.	0.000
66.000	0.0875	2577849.	-6258.0978	-0.003750	4236.5411	2.936E+10	-1220.8042	83715.	0.000
72.000	0.0666	2522468.	-13422.	-0.003228	4154.9278	2.936E+10	-1167.0241	105169.	0.000
78.000	0.0488	2424461.	-20236.	-0.002723	4010.4994	2.936E+10	-1104.3837	135907.	0.000
84.000	0.0339	2286107.	-26642.	-0.002241	3806.6141	2.936E+10	-1031.1766	182479.	0.000
90.000	0.0219	2110077.	-32569.	-0.001792	3547.2051	2.936E+10	-944.3227	259210.	0.000
96.000	0.0124	1899538.	-37914.	-0.001382	3236.9432	2.936E+10	-837.2030	405127.	0.000
102.000	0.005269	1658399.	-42496.	-0.001019	2881.5866	2.936E+10	-690.3536	786099.	0.000
108.000	0.000173	1392004.	-44986.	-0.000707	2489.0122	2.936E+10	-139.5247	4836599.	0.000
114.000	-0.003216	1120248.	-43501.	-0.000450	2088.5377	2.936E+10	634.5302	1183838.	0.000
120.000	-0.005231	871064.	-39404.	-0.000247	1721.3252	2.936E+10	730.9699	838396.	0.000
126.000	-0.006178	647983.	-34881.	-9.162E-05	1392.5801	2.936E+10	776.8358	754427.	0.000
132.000	-0.006331	452710.	-30161.	2.087E-05	1104.8156	2.936E+10	796.4404	754850.	0.000
138.000	-0.005928	286000.	-25378.	9.636E-05	859.1416	2.936E+10	798.0434	807767.	0.000
144.000	-0.005174	147949.	-20627.	0.000141	655.7028	2.936E+10	785.4461	910798.	0.000
150.000	-0.004239	38139.	-15989.	0.000160	493.8802	2.936E+10	760.6286	1076553.	0.000
156.000	-0.003257	-44298.	-11533.	0.000159	502.9556	2.936E+10	724.6231	1334690.	0.000
162.000	-0.002330	-100637.	-7325.8631	0.000144	585.9809	2.936E+10	677.8244	1745426.	0.000
168.000	-0.001526	-132551.	-3432.4168	0.000120	633.0105	2.936E+10	619.9911	2437639.	0.000
174.000	-0.000885	-142112.	76.9487	9.239E-05	647.1011	2.936E+10	549.7974	3729197.	0.000
180.000	-0.000417	-131847.	2980.3089	6.439E-05	631.9732	2.936E+10	417.9893	6008472.	0.000
186.000	-0.000112	-106502.	4575.9347	4.003E-05	594.6231	2.936E+10	113.8859	6106128.	0.000
192.000	6.298E-05	-77031.	4722.2381	2.128E-05	551.1931	2.936E+10	-65.1181	6203785.	0.000
198.000	0.000143	-49885.	4075.0755	8.305E-06	511.1901	2.936E+10	-150.6028	6301441.	0.000
204.000	0.000163	-28150.	3108.6610	3.303E-07	479.1590	2.936E+10	-171.5354	6328125.	0.000
210.000	0.000147	-12582.	2127.7909	-3.832E-06	456.2181	2.936E+10	-155.4213	6328125.	0.000
216.000	0.000117	-2607.0564	1292.4278	-5.385E-06	441.5180	2.936E+10	-123.0331	6328125.	0.000
222.000	8.275E-05	2939.6278	661.5097	-5.351E-06	442.0081	2.936E+10	-87.2729	6328125.	0.000
228.000	5.245E-05	5343.7734	233.7464	-4.504E-06	445.5510	2.936E+10	-55.3149	6328125.	0.000
234.000	2.870E-05	5755.2861	-23.0038	-3.370E-06	446.1574	2.936E+10	-30.2685	6328125.	0.000
240.000	1.201E-05	5075.7348	-151.8076	-2.263E-06	445.1560	2.936E+10	-12.6661	6328125.	0.000
246.000	1.544E-06	3938.9711	-194.6921	-1.342E-06	443.4808	2.936E+10	-1.6287	6328125.	0.000

252.000	-4.090E-06	2742.6177	-186.6362	-6.588E-07	441.7178	2.936E+10	4.3140	6328125.	0.000
258.000	-6.361E-06	1700.9022	-153.5661	-2.047E-07	440.1826	2.936E+10	6.7094	6328125.	0.000
264.000	-6.547E-06	900.3111	-112.7236	6.113E-08	439.0028	2.936E+10	6.9048	6328125.	0.000
270.000	-5.628E-06	348.0732	-74.2022	1.887E-07	438.1890	2.936E+10	5.9357	6328125.	0.000
276.000	-4.282E-06	9.4365	-42.8457	2.252E-07	437.6900	2.936E+10	4.5164	6328125.	0.000
282.000	-2.925E-06	-166.6103	-20.0414	2.092E-07	437.9216	2.936E+10	3.0850	6328125.	0.000
288.000	-1.772E-06	-231.5574	-5.1795	1.685E-07	438.0173	2.936E+10	1.8690	6328125.	0.000
294.000	-9.031E-07	-229.1642	3.2851	1.214E-07	438.0138	2.936E+10	0.9525	6328125.	0.000
300.000	-3.152E-07	-192.4243	7.1401	7.832E-08	437.9597	2.936E+10	0.3325	6328125.	0.000
306.000	3.673E-08	-143.6693	8.0212	4.397E-08	437.8878	2.936E+10	-0.0387	6328125.	0.000
312.000	2.125E-07	-96.2739	7.2327	1.945E-08	437.8180	2.936E+10	-0.2241	6328125.	0.000
318.000	2.702E-07	-56.9227	5.7036	3.798E-09	437.7600	2.936E+10	-0.2849	6328125.	0.000
324.000	2.581E-07	-27.8157	4.0343	-4.862E-09	437.7171	2.936E+10	-0.2722	6328125.	0.000
330.000	2.118E-07	-8.4998	2.5476	-8.573E-09	437.6886	2.936E+10	-0.2234	6328125.	0.000
336.000	1.552E-07	2.7754	1.3864	-9.158E-09	437.6802	2.936E+10	-0.1637	6328125.	0.000
342.000	1.019E-07	8.1584	0.5729	-8.041E-09	437.6881	2.936E+10	-0.1075	6328125.	0.000
348.000	5.868E-08	9.6696	0.0648	-6.219E-09	437.6903	2.936E+10	-0.0619	6328125.	0.000
354.000	2.729E-08	8.9505	-0.2072	-4.316E-09	437.6893	2.936E+10	-0.0288	6328125.	0.000
360.000	6.882E-09	7.1930	-0.3154	-2.666E-09	437.6867	2.936E+10	-0.007258	6328125.	0.000
366.000	-4.706E-09	5.1724	-0.3222	-1.403E-09	437.6837	2.936E+10	0.004964	6328125.	0.000
372.000	-9.952E-09	3.3293	-0.2759	-5.340E-10	437.6810	2.936E+10	0.0105	6328125.	0.000
378.000	-1.111E-08	1.8633	-0.2092	-3.297E-12	437.6788	2.936E+10	0.0117	6328125.	0.000
384.000	-9.991E-09	0.8188	-0.1424	2.708E-10	437.6773	2.936E+10	0.0105	6328125.	0.000
390.000	-7.864E-09	0.1534	-0.0859	3.702E-10	437.6763	2.936E+10	0.008294	6328125.	0.000
396.000	-5.549E-09	-0.2134	-0.0435	3.640E-10	437.6764	2.936E+10	0.005853	6328125.	0.000
402.000	-3.496E-09	-0.3694	-0.0149	3.045E-10	437.6766	2.936E+10	0.003687	6328125.	0.000
408.000	-1.896E-09	-0.3926	0.002183	2.266E-10	437.6767	2.936E+10	0.002000	6328125.	0.000
414.000	-7.771E-10	-0.3438	0.0106	1.513E-10	437.6767	2.936E+10	0.000820	6328125.	0.000
420.000	-7.991E-11	-0.2653	0.0134	8.908E-11	437.6765	2.936E+10	8.428E-05	6328125.	0.000
426.000	2.919E-10	-0.1838	0.0127	4.319E-11	437.6764	2.936E+10	-0.000308	6328125.	0.000
432.000	4.384E-10	-0.1132	0.0104	1.284E-11	437.6763	2.936E+10	-0.000462	6328125.	0.000
438.000	4.460E-10	-0.0593	0.007573	-4.799E-12	437.6762	2.936E+10	-0.000470	6328125.	0.000
444.000	3.808E-10	-0.0224	0.004957	-1.315E-11	437.6761	2.936E+10	-0.000402	6328125.	0.000
450.000	2.882E-10	0.000172	0.002840	-1.542E-11	437.6761	2.936E+10	-0.000304	6328125.	0.000
456.000	1.958E-10	0.0118	0.001309	-1.420E-11	437.6761	2.936E+10	-0.000200	6328125.	0.000
462.000	1.178E-10	0.0159	0.000317	-1.137E-11	437.6761	2.936E+10	-0.000124	6328125.	0.000
468.000	5.937E-11	0.0156	-0.000244	-8.148E-12	437.6761	2.936E+10	-6.261E-05	6328125.	0.000
474.000	2.004E-11	0.0130	-0.000495	-5.226E-12	437.6761	2.936E+10	-2.111E-05	6328125.	0.000
480.000	-3.346E-12	0.009659	-0.000548	-2.910E-12	437.6761	2.936E+10	3.529E-06	6328125.	0.000
486.000	-1.488E-11	0.006437	-0.000490	-1.265E-12	437.6761	2.936E+10	1.570E-05	6328125.	0.000
492.000	-1.852E-11	0.003779	-0.000385	0.000	437.6761	2.936E+10	1.954E-05	6328125.	0.000
498.000	-1.753E-11	0.001823	-0.000271	0.000	437.6761	2.936E+10	1.849E-05	6328125.	0.000
504.000	-1.430E-11	0.000532	-0.000170	0.000	437.6761	2.936E+10	1.509E-05	6328125.	0.000
510.000	-1.042E-11	-0.000216	-9.153E-05	0.000	437.6761	2.936E+10	1.099E-05	6328125.	0.000
516.000	-6.808E-12	-0.000568	-3.701E-05	0.000	437.6761	2.936E+10	7.180E-06	6328125.	0.000
522.000	-3.889E-12	-0.000661	-3.165E-06	0.000	437.6761	2.936E+10	4.102E-06	6328125.	0.000
528.000	-1.781E-12	-0.000607	1.477E-05	0.000	437.6761	2.936E+10	1.878E-06	6328125.	0.000
534.000	0.000	-0.000485	2.172E-05	0.000	437.6761	2.936E+10	4.391E-07	6328125.	0.000
540.000	0.000	-0.000347	2.192E-05	0.000	437.6761	2.936E+10	-3.727E-07	6328125.	0.000
546.000	0.000	-0.000222	1.860E-05	0.000	437.6761	2.936E+10	-7.364E-07	6328125.	0.000
552.000	0.000	-0.000124	1.395E-05	0.000	437.6761	2.936E+10	-8.131E-07	6328125.	0.000
558.000	0.000	-5.444E-05	9.318E-06	0.000	437.6761	2.936E+10	-7.301E-07	6328125.	0.000
564.000	0.000	-1.164E-05	5.397E-06	0.000	437.6761	2.936E+10	-5.767E-07	6328125.	0.000
570.000	0.000	1.039E-05	2.442E-06	0.000	437.6761	2.936E+10	-4.082E-07	6328125.	0.000
576.000	0.000	1.772E-05	4.579E-07	0.000	437.6761	2.936E+10	-2.532E-07	6328125.	0.000
582.000	0.000	1.594E-05	-6.651E-07	0.000	437.6761	2.936E+10	-1.211E-07	6328125.	0.000
588.000	0.000	9.789E-06	-1.057E-06	0.000	437.6761	2.936E+10	-9.640E-09	6328125.	0.000
594.000	0.000	3.290E-06	-8.188E-07	0.000	437.6761	2.936E+10	8.918E-08	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	1.837E-07	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0077725 radians
Maximum bending moment	=	2588656. inch-lbs
Maximum shear force	=	83499. lbs
Depth of maximum bending moment	=	60.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	15
Number of zero deflection points	=	9

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	198000.000 lbs

Depth x inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	114237.	-0.0138	437.6761	2.936E+10	-1531.3861	4594.1584	0.000
6.000	0.9175	674192.	104602.	-0.0137	1431.2044	2.936E+10	-1680.2469	10988.	0.000
12.000	0.8358	1287732.	94485.	-0.0135	2335.3516	2.936E+10	-1692.0034	12146.	0.000
18.000	0.7557	1840047.	84312.	-0.0132	3149.2744	2.936E+10	-1699.1366	13490.	0.000
24.000	0.6779	2330747.	74110.	-0.0127	3872.3968	2.936E+10	-1701.4786	15060.	0.000
30.000	0.6029	2759627.	63909.	-0.0122	4504.4190	2.936E+10	-1698.8511	16907.	0.000
36.000	0.5313	3126678.	53739.	-0.0116	5045.3268	2.936E+10	-1691.0645	19097.	0.000
42.000	0.4635	3432092.	43632.	-0.0109	5495.4021	2.936E+10	-1677.9101	21718.	0.000
48.000	0.4000	3676268.	33621.	-0.0102	5855.2334	2.936E+10	-1659.1586	24888.	0.000
54.000	0.3409	3859821.	23740.	-0.009446	6125.7281	2.936E+10	-1634.5506	28765.	0.000
60.000	0.2866	3983593.	14025.	-0.008645	6308.1260	2.936E+10	-1603.7863	33572.	0.000
66.000	0.2372	4048662.	4514.1819	-0.007824	6404.0150	2.936E+10	-1566.5082	39624.	0.000
72.000	0.1927	4056354.	-4752.1703	-0.006996	6415.3494	2.936E+10	-1522.2758	47387.	0.000
78.000	0.1533	4008258.	-13731.	-0.006172	6344.4732	2.936E+10	-1470.5219	57571.	0.000
84.000	0.1187	3906250.	-22374.	-0.005363	6194.1490	2.936E+10	-1410.4784	71305.	0.000
90.000	0.0889	3752517.	-30628.	-0.004580	5967.5989	2.936E+10	-1341.0383	90504.	0.000
96.000	0.0637	3549595.	-38433.	-0.003834	5668.5617	2.936E+10	-1260.4765	118679.	0.000
102.000	0.0429	3300434.	-45712.	-0.003134	5301.3840	2.936E+10	-1165.8178	163056.	0.000
108.000	0.0261	3008503.	-52362.	-0.002489	4871.1768	2.936E+10	-1051.1340	241457.	0.000

114.000	0.0130	2678000.	-58220.	-0.001908	4384.1287	2.936E+10	-901.4265	415077.	0.000
120.000	0.003225	2314395.	-62872.	-0.001398	3848.3002	2.936E+10	-649.2305	1207908.	0.000
126.000	-0.003742	1926856.	-62766.	-0.000964	3277.2007	2.936E+10	684.7157	1097827.	0.000
132.000	-0.008346	1563499.	-58151.	-0.000608	2741.7371	2.936E+10	853.3995	613491.	0.000
138.000	-0.0110	1230485.	-52794.	-0.000322	2250.9882	2.936E+10	932.3267	507018.	0.000
144.000	-0.0122	930735.	-47075.	-0.000101	1809.2606	2.936E+10	973.8740	478531.	0.000
150.000	-0.0122	665819.	-41177.	6.199E-05	1418.8655	2.936E+10	992.1792	486080.	0.000
156.000	-0.0115	436460.	-35221.	0.000175	1080.8688	2.936E+10	993.2613	519718.	0.000
162.000	-0.0102	242753.	-29301.	0.000244	795.4102	2.936E+10	980.2056	579347.	0.000
168.000	-0.008538	84273.	-23496.	0.000277	561.8662	2.936E+10	954.7278	670899.	0.000
174.000	-0.006822	-39856.	-17878.	0.000282	496.4102	2.936E+10	917.7738	807207.	0.000
180.000	-0.005154	-130936.	-12516.	0.000265	630.6308	2.936E+10	869.7625	1012482.	0.000
186.000	-0.003647	-190673.	-7474.4746	0.000232	718.6622	2.936E+10	810.6363	1333577.	0.000
192.000	-0.002374	-221180.	-2823.4509	0.000190	763.6198	2.936E+10	739.7050	1869525.	0.000
198.000	-0.001372	-225005.	1360.7013	0.000144	769.2556	2.936E+10	655.0124	2864442.	0.000
204.000	-0.000646	-205194.	4959.8954	0.000100	740.0615	2.936E+10	544.7189	5059409.	0.000
210.000	-0.000172	-165724.	7136.9795	6.213E-05	681.8957	2.936E+10	180.9758	6328125.	0.000
216.000	9.957E-05	-119698.	7364.8627	3.296E-05	614.0695	2.936E+10	-105.0147	6328125.	0.000
222.000	0.000224	-77423.	6341.2576	1.282E-05	551.7717	2.936E+10	-236.1870	6328125.	0.000
228.000	0.000253	-43633.	4831.0400	4.447E-07	501.9763	2.936E+10	-267.2189	6328125.	0.000
234.000	0.000229	-19452.	3303.9371	-6.002E-06	466.3417	2.936E+10	-241.8154	6328125.	0.000
240.000	0.000181	-3971.6128	2004.7340	-8.396E-06	443.5289	2.936E+10	-191.2523	6328125.	0.000
246.000	0.000129	4624.7054	1024.3197	-8.329E-06	444.4913	2.936E+10	-135.5524	6328125.	0.000
252.000	8.138E-05	8340.0142	360.1602	-7.004E-06	449.9664	2.936E+10	-85.8341	6328125.	0.000
258.000	4.447E-05	8963.2706	-38.0506	-5.236E-06	450.8849	2.936E+10	-46.9028	6328125.	0.000
264.000	1.855E-05	7895.8482	-237.4534	-3.513E-06	449.3119	2.936E+10	-19.5648	6328125.	0.000
270.000	2.313E-06	6122.1766	-303.4656	-2.081E-06	446.6981	2.936E+10	-2.4393	6328125.	0.000
276.000	-4.771E-06	4259.2046	-290.4802	-1.042E-06	443.5527	2.936E+10	6.7677	6328125.	0.000
282.000	-9.923E-06	2638.8371	-238.7794	-3.147E-07	441.5648	2.936E+10	10.4659	6328125.	0.000
288.000	-1.019E-05	1394.5999	-175.1291	9.748E-08	439.7313	2.936E+10	10.7509	6328125.	0.000
294.000	-8.753E-06	537.0559	-115.1801	2.949E-07	438.4675	2.936E+10	9.2321	6328125.	0.000
300.000	-6.655E-06	11.7376	-66.4276	3.510E-07	437.6934	2.936E+10	7.0187	6328125.	0.000
306.000	-4.542E-06	-260.9098	-31.0011	3.255E-07	438.0606	2.936E+10	4.7901	6328125.	0.000
312.000	-2.749E-06	-361.0490	-7.9337	2.619E-07	438.2082	2.936E+10	2.8990	6328125.	0.000
318.000	-1.398E-06	156.2761	5.3783	1.796E-07	438.2018	2.936E+10	1.4749	6328125.	0.000
324.000	-4.856E-07	-299.2409	11.1491	1.216E-07	438.1171	2.936E+10	0.5122	6328125.	0.000
330.000	6.024E-08	-223.2356	12.4949	6.816E-08	438.0051	2.936E+10	-0.0635	6328125.	0.000
336.000	3.323E-07	-149.4635	11.2529	3.007E-08	437.8964	2.936E+10	-0.3505	6328125.	0.000
342.000	4.211E-07	-88.2727	8.8690	5.776E-09	437.8062	2.936E+10	-0.4441	6328125.	0.000
348.000	4.016E-07	-43.0489	6.2659	-7.645E-09	437.7395	2.936E+10	-0.4236	6328125.	0.000
354.000	3.294E-07	-13.0639	3.9530	-1.338E-08	437.6953	2.936E+10	-0.3474	6328125.	0.000
360.000	2.411E-07	4.4191	2.1481	-1.420E-08	437.6826	2.936E+10	-0.2543	6328125.	0.000
366.000	1.582E-07	12.7477	0.8848	-1.251E-08	437.6949	2.936E+10	-0.1669	6328125.	0.000
372.000	9.097E-08	15.0665	0.0964	-9.666E-09	437.6983	2.936E+10	-0.0959	6328125.	0.000
378.000	4.221E-08	13.0276	-0.3250	-6.703E-09	437.6966	2.936E+10	-0.0445	6328125.	0.000
384.000	1.054E-08	11.1825	-0.4919	-4.137E-09	437.6926	2.936E+10	-0.0111	6328125.	0.000
390.000	-7.428E-09	8.0347	-0.5017	-2.173E-09	437.6879	2.936E+10	0.007834	6328125.	0.000
396.000	-1.554E-08	5.1670	-0.4291	-8.237E-10	437.6837	2.936E+10	0.0164	6328125.	0.000
402.000	-1.731E-08	2.8879	-0.3251	0.000	437.6803	2.936E+10	0.0183	6328125.	0.000
408.000	-1.554E-08	1.2655	-0.2212	4.240E-10	437.6780	2.936E+10	0.0164	6328125.	0.000
414.000	-1.222E-08	0.2330	-0.1333	5.771E-10	437.6764	2.936E+10	0.0129	6328125.	0.000
420.000	-8.619E-09	-0.3354	-0.0673	5.667E-10	437.6766	2.936E+10	0.009090	6328125.	0.000
426.000	-5.423E-09	-0.5765	-0.0229	4.735E-10	437.6769	2.936E+10	0.005721	6328125.	0.000
432.000	-2.937E-09	-0.6114	0.003547	3.521E-10	437.6770	2.936E+10	0.003098	6328125.	0.000
438.000	-1.200E-09	-0.5347	0.0166	2.349E-10	437.6769	2.936E+10	0.001266	6328125.	0.000
444.000	-1.183E-10	-0.4123	0.0208	1.381E-10	437.6767	2.936E+10	0.000125	6328125.	0.000
450.000	4.577E-10	-0.2854	0.0197	6.684E-11	437.6765	2.936E+10	-0.000483	6328125.	0.000
456.000	6.837E-10	-0.1757	0.0161	1.972E-11	437.6764	2.936E+10	-0.000721	6328125.	0.000
462.000	6.943E-10	-0.0919	0.0118	-7.625E-12	437.6762	2.936E+10	-0.000732	6328125.	0.000
468.000	5.922E-10	-0.0345	0.007694	-2.054E-11	437.6761	2.936E+10	-0.000625	6328125.	0.000
474.000	4.478E-10	0.000465	0.004403	-2.402E-11	437.6761	2.936E+10	-0.000472	6328125.	0.000
480.000	3.040E-10	0.0184	0.002024	-2.209E-11	437.6761	2.936E+10	-0.000321	6328125.	0.000
486.000	1.827E-10	0.0248	0.000484	-1.767E-11	437.6761	2.936E+10	-0.000193	6328125.	0.000
492.000	9.191E-11	0.0243	-0.000385	-1.266E-11	437.6761	2.936E+10	-9.694E-05	6328125.	0.000
498.000	3.085E-11	0.0202	-0.000773	-8.111E-12	437.6761	2.936E+10	-3.254E-05	6328125.	0.000
504.000	-5.414E-12	0.0150	-0.000854	-4.510E-12	437.6761	2.936E+10	5.710E-06	6328125.	0.000
510.000	-2.327E-11	0.009994	-0.000763	-1.955E-12	437.6761	2.936E+10	2.454E-05	6328125.	0.000
516.000	-2.887E-11	0.005860	-0.000598	0.000	437.6761	2.936E+10	3.045E-05	6328125.	0.000
522.000	-2.729E-11	0.002821	-0.000420	0.000	437.6761	2.936E+10	2.878E-05	6328125.	0.000
528.000	-2.224E-11	0.000818	-0.000263	0.000	437.6761	2.936E+10	2.346E-05	6328125.	0.000
534.000	-1.619E-11	-0.000342	-0.000142	0.000	437.6761	2.936E+10	1.708E-05	6328125.	0.000
540.000	-1.056E-11	-0.000886	-5.711E-05	0.000	437.6761	2.936E+10	1.114E-05	6328125.	0.000
546.000	-6.023E-12	-0.001029	-4.623E-06	0.000	437.6761	2.936E+10	6.352E-06	6328125.	0.000
552.000	-2.743E-12	-0.000943	2.311E-05	0.000	437.6761	2.936E+10	2.895E-06	6328125.	0.000
558.000	0.000	-0.000753	3.375E-05	0.000	437.6761	2.936E+10	6.534E-07	6328125.	0.000
564.000	0.000	-0.000539	3.387E-05	0.000	437.6761	2.936E+10	-6.127E-07	6328125.	0.000
570.000	1.121E-12	-0.000347	2.849E-05	0.000	437.6761	2.936E+10	-1.182E-06	6328125.	0.000
576.000	1.236E-12	-0.000197	2.104E-05	0.000	437.6761	2.936E+10	-1.303E-06	6328125.	0.000
582.000	1.109E-12	-9.413E-05	1.362E-05	0.000	437.6761	2.936E+10	-1.170E-06	6328125.	0.000
588.000	0.000	-3.343E-05	7.366E-06	0.000	437.6761	2.936E+10	-9.142E-07	6328125.	0.000
594.000	0.000	-5.634E-06	2.776E-06	0.000	437.6761	2.936E+10	-6.157E-07	6328125.	0.000
600.000	0.000	0.000	0.000	0.000	437.6761	2.936E+10	-3.098E-07	3164062.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0137504 radians
Maximum bending moment	=	4056354. inch-lbs
Maximum shear force	=	114237. lbs
Depth of maximum bending moment	=	72.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	23
Number of zero deflection points	=	8

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Bent 4L_transv_Max P

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

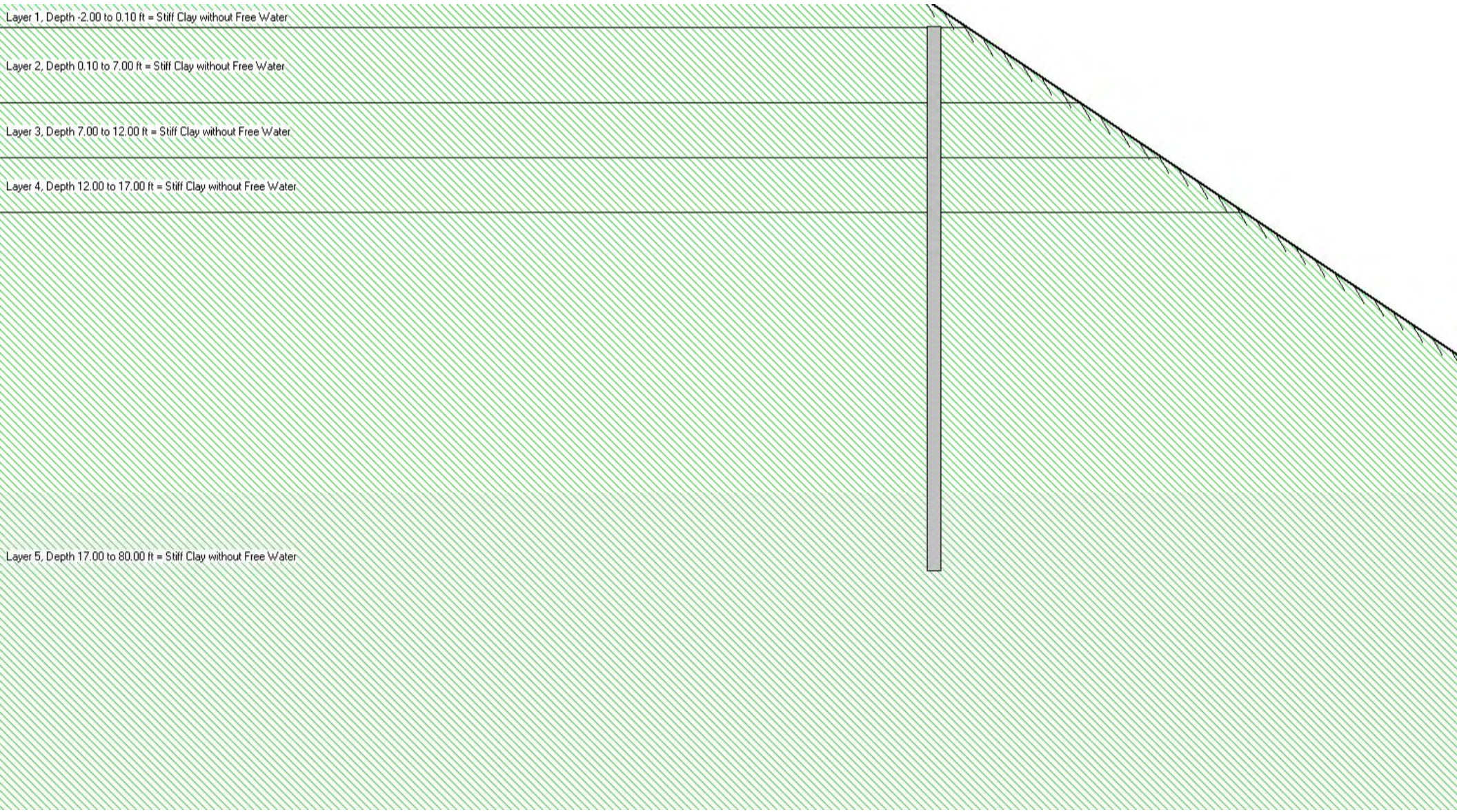
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	198000.	0.25000000	1654133.	61042.	-0.00439415
2	4	y = 0.5000	M = 0.000	198000.	0.50000000	2588656.	83499.	-0.00777248
3	4	y = 1.0000	M = 0.000	198000.	1.00000000	4056354.	114237.	-0.01375038

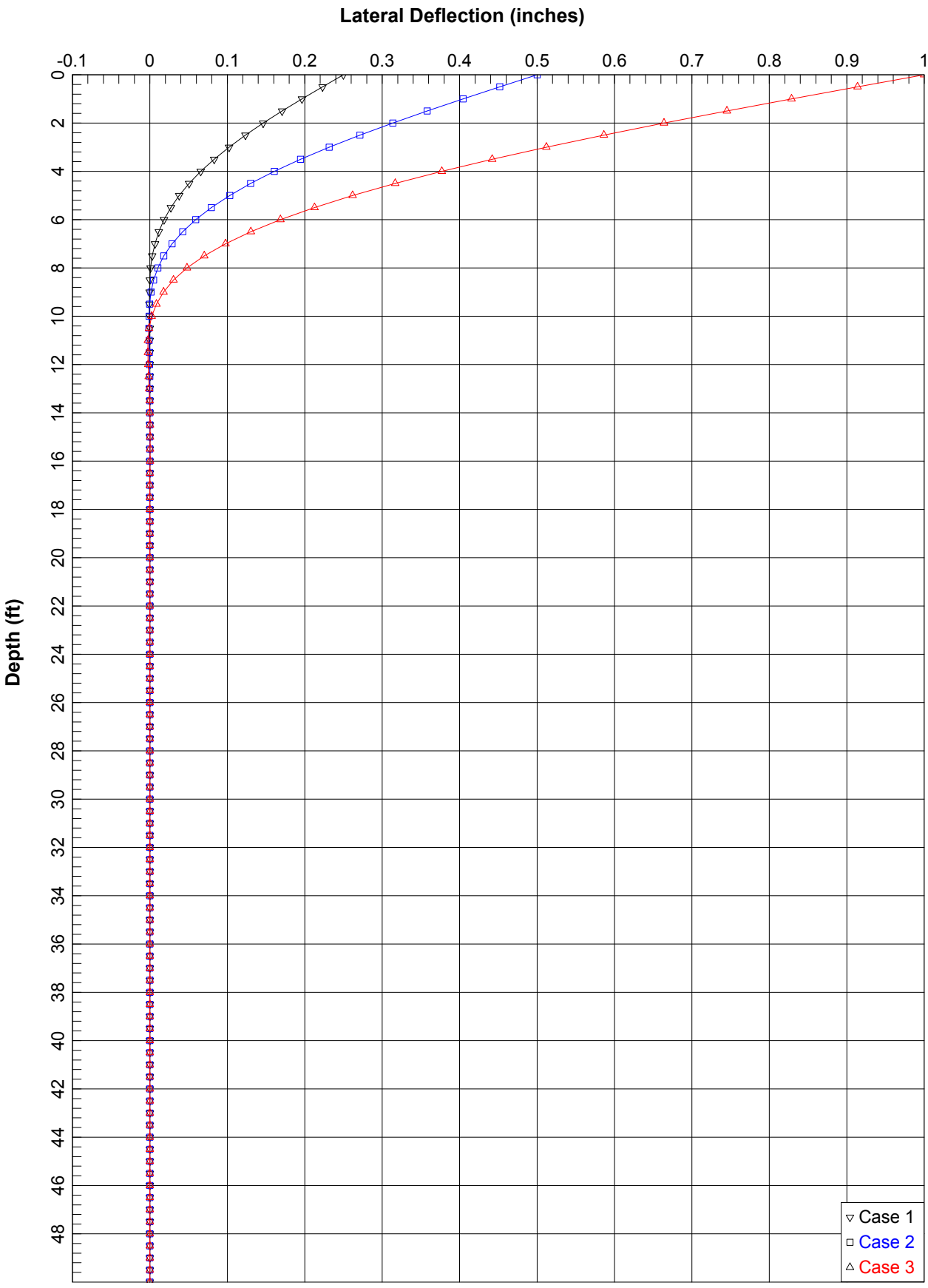
The analysis ended normally.

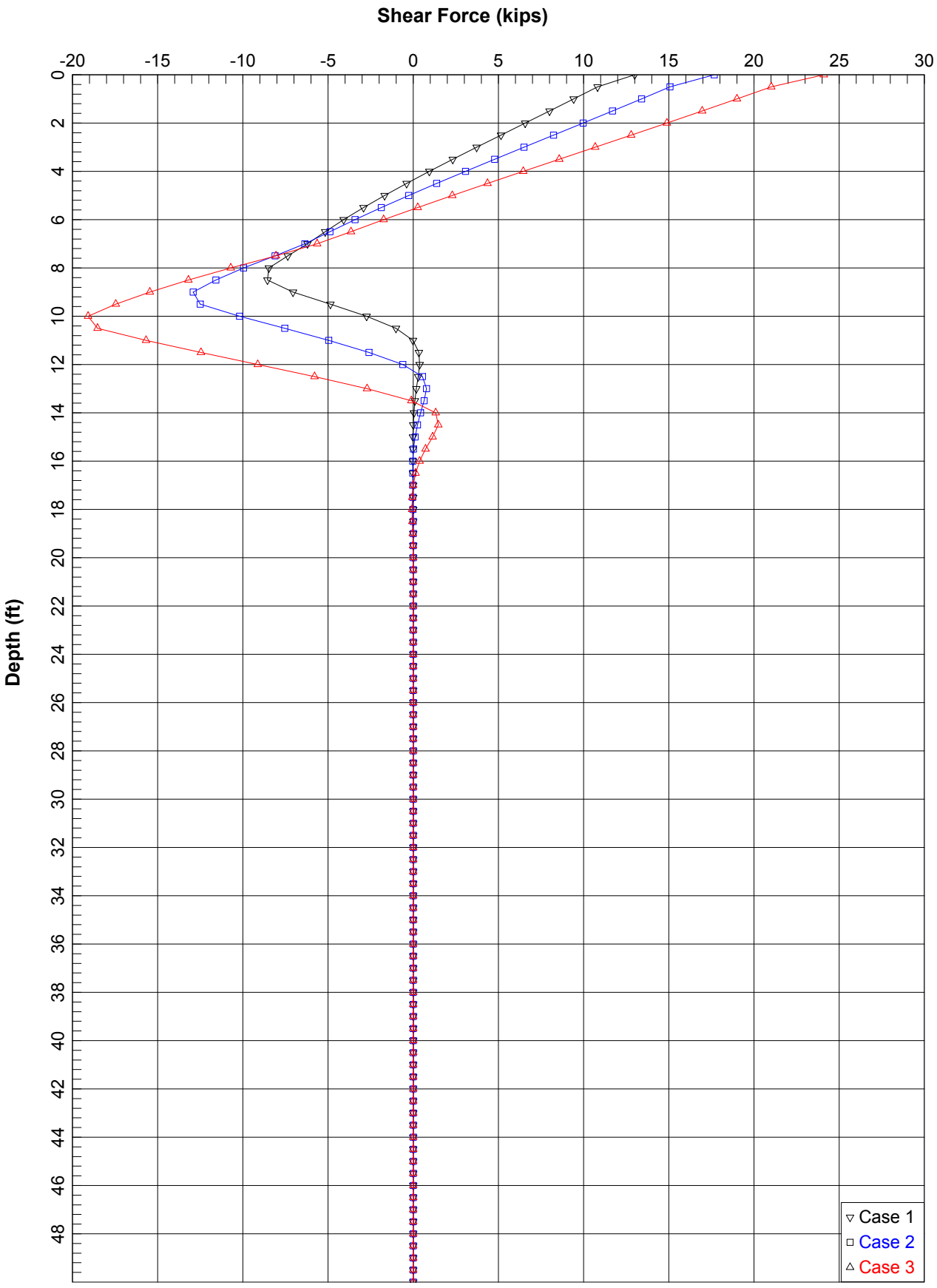
SUPPORT: **ABUTMENT 5R**

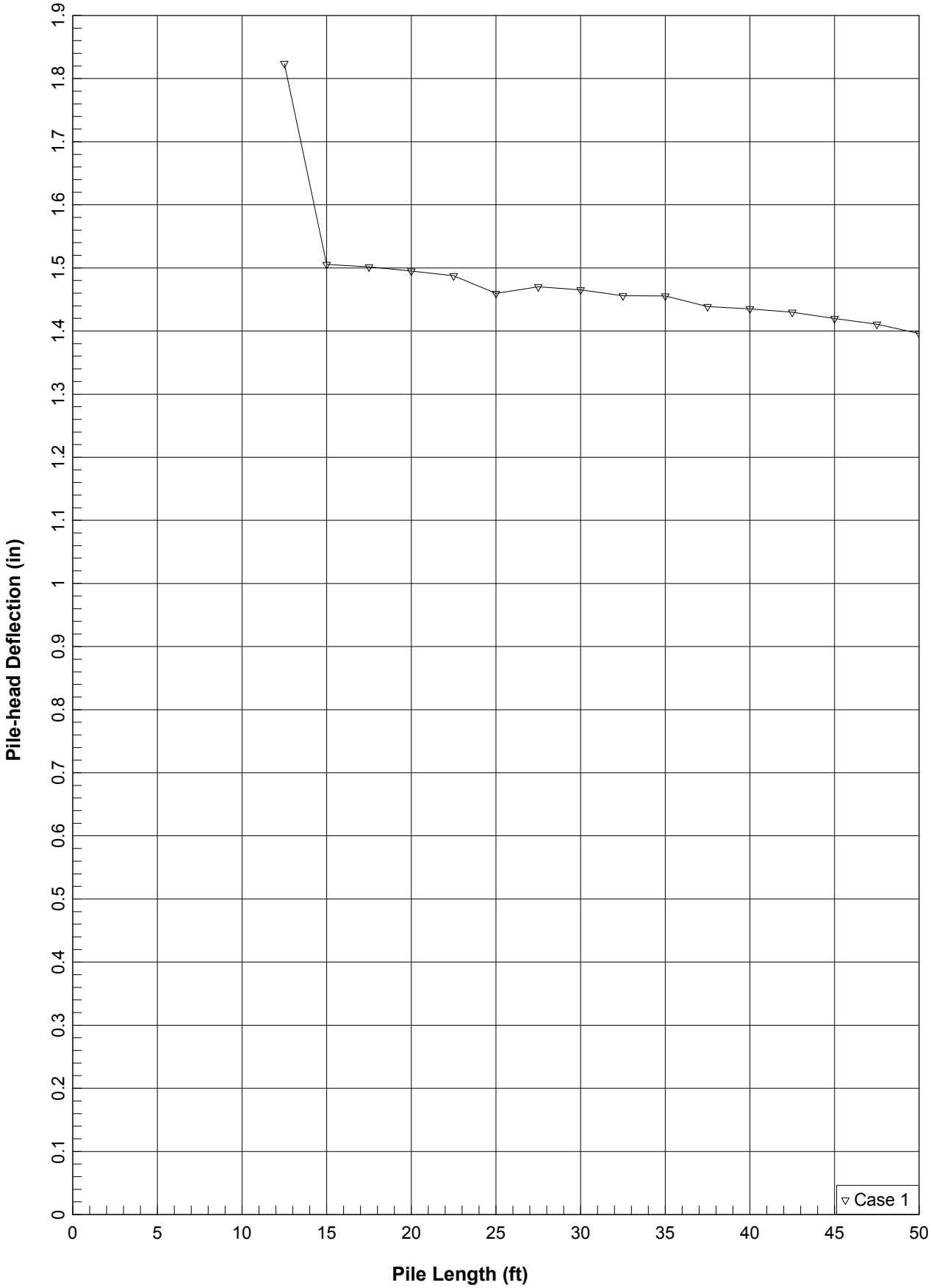
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -2.00 to 0.10 ft = Stiff Clay without Free Water
Layer 2, Depth 0.10 to 7.00 ft = Stiff Clay without Free Water
Layer 3, Depth 7.00 to 12.00 ft = Stiff Clay without Free Water
Layer 4, Depth 12.00 to 17.00 ft = Stiff Clay without Free Water
Layer 5, Depth 17.00 to 80.00 ft = Stiff Clay without Free Water


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5R_long_Critical Length.lp6d
Name of output report file: Abut 5R_long_Critical Length.lp6o
Name of plot output file: Abut 5R_long_Critical Length.lp6p
Name of runtime messeage file: Abut 5R_long_Critical Length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 9:40:38

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 33.700 degrees
= 0.588 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Rock Mass Depth Rock Emass ft	Effective Unit Wt. krm pcf	Undrained In-situ Cohesion Test psf	Angle of In-situ Friction Test deg.	Elastic Property Type	Uniaxial qu Subgrade Mod. pci psi	RQD % or GSI
1	Stiff Clay w/o Free Water				-2.000	120.000	4000.000	--		--	--
		0.00700	--	--	--	--	--	--	--	--	
					0.10000	120.000	4000.000	--		--	--
		0.00700	--	--	--	--	--	--	--	--	
2	Stiff Clay w/o Free Water				0.10000	120.000	1500.000	--		--	--
		0.00700	--	--	--	--	--	--	--		
					7.000	120.000	1500.000	--		--	--
		0.00700	--	--	--	--	--	--	--		
3	Stiff Clay w/o Free Water				7.000	120.000	3500.000	--		--	--
		0.00700	--	--	--	--	--	--	--		
					12.000	120.000	3500.000	--		--	--
		0.00700	--	--	--	--	--	--	--		
4	Stiff Clay w/o Free Water				12.000	125.000	4000.000	--		--	--
		0.00700	--	--	--	--	--	--	--		
					17.000	125.000	4000.000	--		--	--
		0.00700	--	--	--	--	--	--	--		
5	Stiff Clay w/o Free Water				17.000	125.000	4500.000	--		--	--
		0.00500	--	--	--	--	--	--	--		
					80.000	125.000	4500.000	--		--	--
		0.00500	--	--	--	--	--	--	--		

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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
1	1	V = 28000. lbs	M = 0.0000 in-lbs	157000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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 = 28000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.3960	2.504E-07	28000.	-0.0190	780.8539	5.799E+09	-758.9903	1631.0111	0.000
6.000	1.2819	172259.	24643.	-0.0189	1637.6019	5.799E+09	-359.9358	1684.6973	0.000
12.000	1.1688	331393.	22459.	-0.0187	2429.0686	5.799E+09	-367.9781	1888.9689	0.000
18.000	1.0578	476957.	20231.	-0.0183	3153.0425	5.799E+09	-374.7666	2125.7301	0.000
24.000	0.9497	608564.	17966.	-0.0177	3807.6024	5.799E+09	-380.2403	2402.1720	0.000
30.000	0.8455	725889.	15672.	-0.0170	4391.1305	5.799E+09	-384.3357	2727.5280	0.000
36.000	0.7457	828671.	13359.	-0.0162	4902.3244	5.799E+09	-386.9863	3113.8092	0.000
42.000	0.6511	916713.	11033.	-0.0153	5340.2115	5.799E+09	-388.1217	3576.8641	0.000
48.000	0.5621	989890.	8705.8438	-0.0143	5704.1616	5.799E+09	-387.6661	4137.9413	0.000
54.000	0.4793	1048145.	6386.2344	-0.0133	5993.9016	5.799E+09	-385.5371	4826.0421	0.000
60.000	0.4030	1091500.	4084.6916	-0.0121	6209.5301	5.799E+09	-381.6439	5681.5578	0.000
66.000	0.3335	1120052.	1812.1046	-0.0110	6351.5342	5.799E+09	-375.8851	6762.0530	0.000
72.000	0.2710	1133980.	-419.9862	-0.009839	6420.8065	5.799E+09	-368.1452	8151.7690	0.000
78.000	0.2155	1133549.	-2599.2945	-0.008666	6418.6653	5.799E+09	-358.2909	9977.8284	0.000
84.000	0.1670	1119115.	-4860.4313	-0.007501	6346.8772	5.799E+09	-395.4213	14209.	0.000
90.000	0.1254	1089356.	-7629.1860	-0.006358	6198.8638	5.799E+09	-527.4969	25230.	0.000
96.000	0.0907	1039544.	-10725.	-0.005257	5951.1215	5.799E+09	-504.3965	33376.	0.000
102.000	0.0624	970561.	-13665.	-0.004217	5608.0278	5.799E+09	-475.7378	45772.	0.000
108.000	0.0401	883505.	-16414.	-0.003258	5175.0484	5.799E+09	-440.6331	65974.	0.000
114.000	0.0233	779726.	-18929.	-0.002397	4658.8909	5.799E+09	-397.4763	102484.	0.000
120.000	0.0113	660877.	-21149.	-0.001652	4067.7856	5.799E+09	-342.5852	181767.	0.000
126.000	0.003449	529051.	-22964.	-0.001036	3412.1368	5.799E+09	-262.6084	456802.	0.000
132.000	-0.001125	387255.	-24232.	-0.000562	2706.9035	5.799E+09	440.2299	2347188.	0.000
138.000	-0.003296	260930.	-19382.	-0.000227	2070.6156	5.799E+09	576.2748	1049120.	0.000
144.000	-0.003846	155097.	-15728.	-1.150E-05	1552.2444	5.799E+09	641.7981	1001185.	0.000
150.000	-0.003434	72218.	-11806.	0.000106	1140.0348	5.799E+09	665.4631	1162787.	0.000
156.000	-0.002573	13224.	-7952.2590	0.000150	846.6259	5.799E+09	619.1487	1443789.	0.000
162.000	-0.001630	-23493.	-4437.6651	0.000145	897.6970	5.799E+09	552.3826	2033146.	0.000
168.000	-0.000833	-40301.	-1379.3926	0.000112	981.2943	5.799E+09	467.0415	3363648.	0.000
174.000	-0.000286	-40256.	1008.6282	7.031E-05	981.0728	5.799E+09	328.9654	6894920.	0.000
180.000	1.064E-05	-28330.	1976.9925	3.483E-05	921.7550	5.799E+09	-6.1773	3484581.	0.000
186.000	0.000132	-16598.	1722.9326	1.158E-05	863.4060	5.799E+09	-78.5093	3577858.	0.000
192.000	0.000150	-7676.4787	1212.7414	-9.757E-07	819.0336	5.799E+09	-91.5544	3671140.	0.000
198.000	0.000120	-2043.3493	712.3059	-6.004E-06	791.0167	5.799E+09	-75.2574	3764426.	0.000
204.000	7.758E-05	882.5049	329.5819	-6.605E-06	785.2432	5.799E+09	-52.3173	4046127.	0.000
210.000	4.069E-05	1924.0777	79.3233	-5.153E-06	790.4235	5.799E+09	-31.1023	4586121.	0.000
216.000	1.575E-05	1844.0927	-50.9814	-3.203E-06	790.0257	5.799E+09	-12.3326	4699310.	0.000
222.000	2.250E-06	1318.3358	-93.3934	-1.567E-06	787.4108	5.799E+09	-1.8047	4812503.	0.000
228.000	-3.061E-06	726.3247	-85.8924	-5.095E-07	784.4664	5.799E+09	4.3050	8437500.	0.000
234.000	-3.863E-06	288.5867	-56.6785	1.563E-08	782.2893	5.799E+09	5.4329	8437500.	0.000
240.000	-2.874E-06	46.1534	-28.2556	1.888E-07	781.0835	5.799E+09	4.0413	8437500.	0.000
246.000	-1.598E-06	-50.8363	-9.3911	1.864E-07	781.1068	5.799E+09	2.2468	8437500.	0.000
252.000	-6.372E-07	-66.8914	0.0376	1.255E-07	781.1866	5.799E+09	0.8961	8437500.	0.000

258.000	-9.201E-08	-50.6217	3.1140	6.468E-08	781.1057	5.799E+09	0.1294	8437500.	0.000
264.000	1.389E-07	-29.6448	3.1128	2.315E-08	781.0014	5.799E+09	-0.1298	5604937.	0.000
270.000	1.858E-07	-13.3113	2.1922	9.292E-10	780.9201	5.799E+09	-0.1771	5718152.	0.000
276.000	1.501E-07	-3.3405	1.2233	-7.686E-09	780.8706	5.799E+09	-0.1459	5831369.	0.000
282.000	9.360E-08	1.3824	0.5075	-8.699E-09	780.8608	5.799E+09	-0.0927	5944587.	0.000
288.000	4.570E-08	2.7654	0.0908	-6.553E-09	780.8677	5.799E+09	-0.0461	6057807.	0.000
294.000	1.497E-08	2.4847	-0.0938	-3.837E-09	780.8663	5.799E+09	-0.0154	6171029.	0.000
300.000	-3.405E-10	1.6474	-0.1385	-1.699E-09	780.8621	5.799E+09	0.000479	8437500.	0.000
306.000	-5.420E-09	0.8257	-0.1142	-4.194E-10	780.8580	5.799E+09	0.007622	8437500.	0.000
312.000	-5.373E-09	0.2776	-0.0687	1.514E-10	780.8553	5.799E+09	0.007556	8437500.	0.000
318.000	-3.603E-09	0.001264	-0.0308	2.957E-10	780.8539	5.799E+09	0.005067	8437500.	0.000
324.000	-1.825E-09	-0.0927	-0.007914	2.484E-10	780.8544	5.799E+09	0.002566	8437500.	0.000
330.000	-6.220E-10	-0.0942	0.002408	1.517E-10	780.8544	5.799E+09	0.000875	8437500.	0.000
336.000	-3.985E-12	-0.0641	0.005049	6.986E-11	780.8543	5.799E+09	5.603E-06	8437500.	0.000
342.000	2.162E-10	-0.0337	0.004301	1.926E-11	780.8541	5.799E+09	-0.000255	7076854.	0.000
348.000	2.271E-10	-0.0125	0.002719	-4.653E-12	780.8540	5.799E+09	-0.000272	7190087.	0.000
354.000	1.604E-10	-0.001080	0.001317	-1.168E-11	780.8539	5.799E+09	-0.000195	7303321.	0.000
360.000	8.697E-11	0.000317	0.000408	-1.052E-11	780.8540	5.799E+09	-0.000107	7416557.	0.000
366.000	3.412E-11	0.003841	-4.253E-05	-6.821E-12	780.8540	5.799E+09	-4.281E-05	7529793.	0.000
372.000	5.110E-12	0.002819	-0.000191	-3.376E-12	780.8540	5.799E+09	-6.509E-06	7643030.	0.000
378.000	-6.394E-12	0.001561	-0.000183	-1.110E-12	780.8539	5.799E+09	8.991E-06	8437500.	0.000
384.000	-8.207E-12	0.000625	-0.000121	0.000	780.8539	5.799E+09	1.154E-05	8437500.	0.000
390.000	-6.143E-12	0.000103	-6.092E-05	0.000	780.8539	5.799E+09	8.638E-06	8437500.	0.000
396.000	-3.437E-12	-0.000107	-2.051E-05	0.000	780.8539	5.799E+09	4.834E-06	8437500.	0.000
402.000	-1.398E-12	-0.000144	-1.090E-07	0.000	780.8539	5.799E+09	1.966E-06	8437500.	0.000
408.000	0.000	-0.000109	6.843E-06	0.000	780.8539	5.799E+09	3.516E-07	8437500.	0.000
414.000	0.000	-6.174E-05	6.967E-06	0.000	780.8539	5.799E+09	-3.105E-07	8435710.	0.000
420.000	0.000	-2.554E-05	4.734E-06	0.000	780.8539	5.799E+09	-4.337E-07	8437500.	0.000
426.000	0.000	-4.927E-06	2.432E-06	0.000	780.8539	5.799E+09	-3.339E-07	8437500.	0.000
432.000	0.000	3.670E-06	8.572E-07	0.000	780.8539	5.799E+09	-1.910E-07	8437500.	0.000
438.000	0.000	5.387E-06	4.342E-08	0.000	780.8539	5.799E+09	-8.023E-08	8437500.	0.000
444.000	0.000	4.211E-06	-2.467E-07	0.000	780.8539	5.799E+09	-1.647E-08	8437500.	0.000
450.000	0.000	2.437E-06	-2.645E-07	0.000	780.8539	5.799E+09	1.053E-08	8437500.	0.000
456.000	0.000	1.040E-06	-1.842E-07	0.000	780.8539	5.799E+09	1.624E-08	8437500.	0.000
462.000	0.000	2.269E-07	-9.685E-08	0.000	780.8539	5.799E+09	1.288E-08	8437500.	0.000
468.000	0.000	-1.229E-07	-3.561E-08	0.000	780.8539	5.799E+09	7.534E-09	8437500.	0.000
474.000	0.000	-2.014E-07	-3.217E-09	0.000	780.8539	5.799E+09	3.262E-09	8437500.	0.000
480.000	0.000	-1.623E-07	8.815E-09	0.000	780.8539	5.799E+09	7.487E-10	8437500.	0.000
486.000	0.000	-9.603E-08	1.002E-08	0.000	780.8539	5.799E+09	-3.480E-10	8437500.	0.000
492.000	0.000	-4.222E-08	7.155E-09	0.000	780.8539	5.799E+09	-6.062E-10	8437500.	0.000
498.000	0.000	-1.019E-08	3.849E-09	0.000	780.8539	5.799E+09	-4.959E-10	8437500.	0.000
504.000	0.000	3.997E-09	1.471E-09	0.000	780.8539	5.799E+09	-2.966E-10	8437500.	0.000
510.000	0.000	7.503E-09	1.846E-10	0.000	780.8539	5.799E+09	-1.322E-10	8437500.	0.000
516.000	0.000	6.242E-09	-3.118E-10	0.000	780.8539	5.799E+09	-3.329E-11	8437500.	0.000
522.000	0.000	3.777E-09	-3.784E-10	0.000	780.8539	5.799E+09	1.111E-11	8437500.	0.000
528.000	0.000	1.708E-09	-2.774E-10	0.000	780.8539	5.799E+09	2.254E-11	8437500.	0.000
534.000	0.000	4.489E-10	-1.526E-10	0.000	780.8539	5.799E+09	1.906E-11	8437500.	0.000
540.000	0.000	-1.245E-10	-6.048E-11	0.000	780.8539	5.799E+09	1.166E-11	8437500.	0.000
546.000	0.000	-2.783E-10	-9.488E-12	0.000	780.8539	5.799E+09	5.341E-12	8437500.	0.000
552.000	0.000	-2.395E-10	1.090E-11	0.000	780.8539	5.799E+09	1.455E-12	8437500.	0.000
558.000	0.000	-1.482E-10	1.425E-11	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
564.000	0.000	-6.880E-11	1.072E-11	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
570.000	0.000	-1.957E-11	5.987E-12	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
576.000	0.000	3.092E-12	2.376E-12	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
582.000	0.000	8.927E-12	0.000	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
588.000	0.000	6.718E-12	0.000	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
594.000	0.000	2.451E-12	0.000	0.000	780.8539	5.799E+09	0.000	8437500.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	4218750.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      1.3960487 inches
Computed slope at pile head      =     -0.0190247 radians
Maximum bending moment           =       1133980. inch-lbs
Maximum shear force              =          28000. lbs
Depth of maximum bending moment  =     72.0000000 inches below pile head
Depth of maximum shear force     =      0.0000000 inches below pile head
Number of iterations             =             35
Number of zero deflection points =             13
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          28000. lbs
Moment     =              0. in-lbs
Axial Load =         157000. lbs
```

Pile Length	Pile Head Deflection	Maximum Moment	Maximum Shear

feet	inches	ln-lbs	lbs
50.000	1.3960487	1133980.	28000.
47.500	1.4108173	1137782.	28000.
45.000	1.4199638	1141270.	28000.
42.500	1.4298070	1144054.	28000.
40.000	1.4349594	1148183.	28000.
37.500	1.4388000	1152954.	28000.
35.000	1.4556777	1155589.	28000.
32.500	1.4558633	1160429.	28000.
30.000	1.4653221	1164174.	28000.
27.500	1.4702558	1168522.	28000.
25.000	1.4595166	1175571.	28000.
22.500	1.4875131	1176170.	28000.
20.000	1.4950895	1179975.	28000.
17.500	1.5018350	1184295.	28000.
15.000	1.5053539	1188996.	28000.
12.500	1.8238960	1158218.	-28914.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 28000.	M = 0.000	157000.	1.39604867	1133980.	28000.	-0.01902466

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5R_long_Ave P.lp6d
Name of output report file: Abut 5R_long_Ave P.lp6o
Name of plot output file: Abut 5R_long_Ave P.lp6p
Name of runtime messeage file: Abut 5R_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 9:30:36

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 33.700 degrees
= 0.588 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 130.00000 pcf
Effective unit weight at bottom of layer = 130.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm psf	Undrained Cohesion In-situ Test psf	Angle of Friction In-situ Test Property deg.	Uniaxial qu Elastic Subgrade Mod. psi	RQD % or GSI
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	130.000	4000.000	--	--	--
		0.00500	--	--	80.000	130.000	4000.000	--	--	--

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		157000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		157000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		157000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13005.	-0.004496	780.8539	5.799E+09	-493.7350	5924.8206	0.000
6.000	0.2230	73377.	10826.	-0.004458	1145.7991	5.799E+09	-232.4603	6253.8493	0.000
12.000	0.1965	138313.	9421.9233	-0.004348	1468.7667	5.799E+09	-235.6292	7194.6133	0.000
18.000	0.1708	194632.	8002.2910	-0.004176	1748.8745	5.799E+09	-237.5815	8343.8304	0.000
24.000	0.1464	242208.	6574.7830	-0.003950	1985.5000	5.799E+09	-238.2545	9765.1496	0.000
30.000	0.1234	280972.	5147.2757	-0.003679	2178.2920	5.799E+09	-237.5813	11548.	0.000
36.000	0.1022	310908.	3728.0617	-0.003373	2327.1831	5.799E+09	-235.4900	13820.	0.000
42.000	0.0830	332064.	2325.8873	-0.003041	2432.4026	5.799E+09	-231.9014	16772.	0.000
48.000	0.0657	344547.	950.0048	-0.002691	2494.4906	5.799E+09	-226.7260	20690.	0.000
54.000	0.0507	348533.	-389.7529	-0.002332	2514.3132	5.799E+09	-219.8599	26031.	0.000
60.000	0.0378	344264.	-1682.8639	-0.001974	2493.0803	5.799E+09	-211.1772	33551.	0.000
66.000	0.0270	332056.	-2917.9512	-0.001624	2432.3674	5.799E+09	-200.5186	44572.	0.000
72.000	0.0183	312307.	-4082.5121	-0.001290	2334.1420	5.799E+09	-187.6684	61593.	0.000
78.000	0.0115	285497.	-5162.4400	-0.000981	2200.8008	5.799E+09	-172.3076	89827.	0.000
84.000	0.006509	252206.	-6206.7531	-0.000703	2035.2239	5.799E+09	-175.7968	162039.	0.000
90.000	0.003075	212340.	-7360.9239	-0.000462	1836.9481	5.799E+09	-208.9268	407607.	0.000
96.000	0.000960	164746.	-8474.2534	-0.000267	1600.2347	5.799E+09	-162.1831	1013989.	0.000
102.000	-0.000133	111153.	-8558.8236	-0.000125	1333.6838	5.799E+09	133.9930	6033055.	0.000
108.000	-0.000536	62275.	-7062.0025	-3.492E-05	1090.5855	5.799E+09	364.9474	4084377.	0.000
114.000	-0.000552	26475.	-4863.4884	1.099E-05	912.5288	5.799E+09	367.8907	3996363.	0.000
120.000	-0.000404	3892.6514	-2739.0138	2.670E-05	800.2144	5.799E+09	340.2675	5050992.	0.000
126.000	-0.000232	-6443.6678	-1018.7013	2.538E-05	812.9021	5.799E+09	233.1700	6033055.	0.000
132.000	-9.959E-05	-8379.5871	-18.7732	1.771E-05	822.5306	5.799E+09	100.1394	6033055.	0.000
138.000	-1.931E-05	-6702.3215	339.9017	9.912E-06	814.1886	5.799E+09	19.4189	6033055.	0.000
144.000	1.936E-05	-4319.4417	368.5030	4.210E-06	802.3371	5.799E+09	-9.8851	3064339.	0.000
150.000	3.121E-05	-2288.2165	286.5364	7.913E-07	792.2346	5.799E+09	-17.4371	3352619.	0.000
156.000	2.885E-05	-882.4958	184.5161	-8.491E-07	785.2431	5.799E+09	-16.5697	3445901.	0.000
162.000	2.102E-05	-72.4237	97.6151	-1.343E-06	781.2141	5.799E+09	-12.3973	3539189.	0.000
168.000	1.273E-05	291.4159	37.2958	-1.230E-06	782.3033	5.799E+09	-7.7091	3632480.	0.000
174.000	6.259E-06	377.4433	2.5081	-8.838E-07	782.7312	5.799E+09	-3.8868	3725775.	0.000
180.000	2.128E-06	323.1784	-13.2163	-5.213E-07	782.4613	5.799E+09	-1.3547	3819074.	0.000
186.000	3.640E-09	219.8304	-17.2874	-2.404E-07	781.9473	5.799E+09	-0.002373	3912376.	0.000
192.000	-7.562E-07	116.1827	-14.6875	-6.653E-08	781.4318	5.799E+09	0.8600	6894920.	0.000
198.000	-7.947E-07	43.7053	-9.3408	1.619E-08	781.0713	5.799E+09	0.9133	6894920.	0.000
204.000	-5.619E-07	4.0630	-4.5876	4.090E-08	780.8741	5.799E+09	0.6711	7165821.	0.000
210.000	-3.039E-07	-11.4235	-1.4347	3.710E-08	780.9108	5.799E+09	0.3799	7500000.	0.000
216.000	-1.168E-07	-13.2236	0.1428	2.434E-08	780.9197	5.799E+09	0.1460	7500000.	0.000
222.000	-1.177E-08	-9.7556	0.6249	1.245E-08	780.9025	5.799E+09	0.0147	7500000.	0.000
228.000	3.268E-08	-5.7483	0.5935	4.434E-09	780.8825	5.799E+09	-0.0252	4625398.	0.000
234.000	4.143E-08	-2.6423	0.4200	9.276E-11	780.8671	5.799E+09	-0.0326	4727130.	0.000

240.000	3.379E-08	-0.7089	0.2405	-1.641E-09	780.8575	5.799E+09	-0.0272	4828868.	0.000
246.000	2.174E-08	0.2462	0.1053	-1.880E-09	780.8552	5.799E+09	-0.0179	4930612.	0.000
252.000	1.122E-08	0.5579	0.0234	-1.464E-09	780.8567	5.799E+09	-0.009414	5032360.	0.000
258.000	4.169E-09	0.5301	-0.0155	-9.015E-10	780.8566	5.799E+09	-0.003567	5134113.	0.000
264.000	4.051E-10	0.3734	-0.0273	-4.341E-10	780.8558	5.799E+09	-0.000353	5235871.	0.000
270.000	-1.040E-09	0.2037	-0.0244	-1.355E-10	780.8550	5.799E+09	0.001300	7500000.	0.000
276.000	-1.221E-09	0.0805	-0.0160	1.148E-11	780.8543	5.799E+09	0.001526	7500000.	0.000
282.000	-9.024E-10	0.0122	-0.007990	5.943E-11	780.8540	5.799E+09	0.001128	7500000.	0.000
288.000	-5.080E-10	-0.0155	-0.002700	5.771E-11	780.8540	5.799E+09	0.000635	7500000.	0.000
294.000	-2.099E-10	-0.0203	-8.092E-06	3.918E-11	780.8540	5.799E+09	0.000262	7500000.	0.000
300.000	-3.789E-11	-0.0157	0.000921	2.056E-11	780.8540	5.799E+09	4.737E-05	7500000.	0.000
306.000	3.678E-11	-0.009308	0.000954	7.631E-12	780.8540	5.799E+09	-3.647E-05	5948278.	0.000
312.000	5.368E-11	-0.004244	0.000682	0.000	780.8540	5.799E+09	-5.412E-05	6050063.	0.000
318.000	4.422E-11	-0.001125	0.000384	-2.158E-12	780.8539	5.799E+09	-4.534E-05	6151851.	0.000
324.000	2.778E-11	0.000363	0.000161	-2.552E-12	780.8539	5.799E+09	-2.895E-05	6253641.	0.000
330.000	1.359E-11	0.000809	3.069E-05	-1.945E-12	780.8539	5.799E+09	-1.440E-05	6355433.	0.000
336.000	4.433E-12	0.000735	-2.683E-05	-1.146E-12	780.8539	5.799E+09	-4.771E-06	6457228.	0.000
342.000	0.000	0.000489	-4.053E-05	0.000	780.8539	5.799E+09	2.038E-07	7500000.	0.000
348.000	-1.722E-12	0.000250	-3.346E-05	0.000	780.8539	5.799E+09	2.153E-06	7500000.	0.000
354.000	-1.730E-12	8.794E-05	-2.051E-05	0.000	780.8539	5.799E+09	2.162E-06	7500000.	0.000
360.000	-1.191E-12	3.678E-06	-9.562E-06	0.000	780.8539	5.799E+09	1.489E-06	7500000.	0.000
366.000	0.000	-2.698E-05	-2.734E-06	0.000	780.8539	5.799E+09	7.872E-07	7500000.	0.000
372.000	0.000	-2.928E-05	5.119E-07	0.000	780.8539	5.799E+09	2.949E-07	7500000.	0.000
378.000	0.000	-2.094E-05	1.486E-06	0.000	780.8539	5.799E+09	2.984E-08	7500000.	0.000
384.000	0.000	-1.150E-05	1.364E-06	0.000	780.8539	5.799E+09	-7.051E-08	7271654.	0.000
390.000	0.000	-4.584E-06	8.986E-07	0.000	780.8539	5.799E+09	-8.461E-08	7373464.	0.000
396.000	0.000	-7.122E-07	4.539E-07	0.000	780.8539	5.799E+09	-6.362E-08	7475276.	0.000
402.000	0.000	8.695E-07	1.548E-07	0.000	780.8539	5.799E+09	-3.608E-08	7500000.	0.000
408.000	0.000	1.152E-06	1.374E-09	0.000	780.8539	5.799E+09	-1.507E-08	7500000.	0.000
414.000	0.000	8.901E-07	-5.280E-08	0.000	780.8539	5.799E+09	-2.993E-09	7500000.	0.000
420.000	0.000	5.201E-07	-5.526E-08	0.000	780.8539	5.799E+09	2.173E-09	7500000.	0.000
426.000	0.000	2.277E-07	-3.884E-08	0.000	780.8539	5.799E+09	3.303E-09	7500000.	0.000
432.000	0.000	5.408E-08	-2.093E-08	0.000	780.8539	5.799E+09	2.665E-09	7500000.	0.000
438.000	0.000	-2.367E-08	-8.112E-09	0.000	780.8539	5.799E+09	1.608E-09	7500000.	0.000
444.000	0.000	-4.350E-08	-1.083E-09	0.000	780.8539	5.799E+09	7.348E-10	7500000.	0.000
450.000	0.000	-3.684E-08	1.718E-09	0.000	780.8539	5.799E+09	1.989E-10	7500000.	0.000
456.000	0.000	-2.298E-08	2.162E-09	0.000	780.8539	5.799E+09	-5.102E-11	7500000.	0.000
462.000	0.000	-1.094E-08	1.641E-09	0.000	780.8539	5.799E+09	-1.226E-10	7500000.	0.000
468.000	0.000	-3.296E-09	9.452E-10	0.000	780.8539	5.799E+09	-1.093E-10	7500000.	0.000
474.000	0.000	4.118E-10	4.057E-10	0.000	780.8539	5.799E+09	-7.048E-11	7500000.	0.000
480.000	0.000	1.582E-09	8.981E-11	0.000	780.8539	5.799E+09	-3.482E-11	7500000.	0.000
486.000	0.000	1.497E-09	-4.895E-11	0.000	780.8539	5.799E+09	-1.143E-11	7500000.	0.000
492.000	0.000	9.988E-10	-8.225E-11	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
498.000	0.000	5.119E-10	-6.818E-11	0.000	780.8539	5.799E+09	4.354E-12	7500000.	0.000
504.000	0.000	1.812E-10	-4.192E-11	0.000	780.8539	5.799E+09	4.399E-12	7500000.	0.000
510.000	0.000	8.628E-12	-1.961E-11	0.000	780.8539	5.799E+09	3.039E-12	7500000.	0.000
516.000	0.000	-5.451E-11	-5.658E-12	0.000	780.8539	5.799E+09	1.612E-12	7500000.	0.000
522.000	0.000	-5.958E-11	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
528.000	0.000	-4.271E-11	3.019E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
534.000	0.000	-2.344E-11	2.782E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
540.000	0.000	-9.359E-12	1.829E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
546.000	0.000	-1.498E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
552.000	0.000	1.724E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
558.000	0.000	2.312E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
564.000	0.000	1.794E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
570.000	0.000	1.053E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
576.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
582.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
588.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
594.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3750000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

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Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0044959 radians
Maximum bending moment            =         348533. inch-lbs
Maximum shear force               =          13005. lbs
Depth of maximum bending moment   =     54.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             14
Number of zero deflection points  =             14
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Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	17669.	-0.008019	780.8539	5.799E+09	-587.1532	3522.9194	0.000
6.000	0.4519	102999.	15076.	-0.007966	1293.1296	5.799E+09	-277.3429	3682.4736	0.000
12.000	0.4044	195914.	13397.	-0.007811	1755.2479	5.799E+09	-282.2212	4187.1461	0.000
18.000	0.3582	278477.	11693.	-0.007566	2165.8850	5.799E+09	-285.8754	4789.1697	0.000
24.000	0.3136	350478.	9970.1645	-0.007240	2523.9862	5.799E+09	-288.2436	5514.4652	0.000
30.000	0.2713	411760.	8237.6506	-0.006846	2828.7786	5.799E+09	-289.2610	6397.9524	0.000
36.000	0.2315	462227.	6503.2914	-0.006394	3079.7828	5.799E+09	-288.8587	7487.5364	0.000
42.000	0.1945	501845.	4775.8292	-0.005895	3276.8263	5.799E+09	-286.9621	8850.3021	0.000
48.000	0.1607	530643.	3064.4759	-0.005361	3420.0565	5.799E+09	-283.4891	10582.	0.000
54.000	0.1302	548718.	1378.9662	-0.004802	3509.9558	5.799E+09	-278.3475	12826.	0.000
60.000	0.1031	556238.	-270.3690	-0.004231	3547.3571	5.799E+09	-271.4309	15796.	0.000
66.000	0.0794	553445.	-1872.5013	-0.003657	3533.4623	5.799E+09	-262.6132	19833.	0.000
72.000	0.0592	540657.	-3415.5581	-0.003091	3469.8637	5.799E+09	-251.7391	25504.	0.000
78.000	0.0424	518281.	-4886.6034	-0.002543	3358.5795	5.799E+09	-238.6094	33798.	0.000
84.000	0.0287	486809.	-6366.4661	-0.002023	3202.0419	5.799E+09	-254.6782	53222.	0.000
90.000	0.0181	445694.	-8105.9249	-0.001540	2997.5533	5.799E+09	-325.1414	107864.	0.000
96.000	0.0102	392439.	-9958.7302	-0.001107	2732.6878	5.799E+09	-292.4604	171562.	0.000
102.000	0.004807	328274.	-11589.	-0.000734	2413.5549	5.799E+09	-256.9200	313226.	0.000
108.000	0.001423	254755.	-12917.	-0.000432	2047.9036	5.799E+09	-191.8776	809111.	0.000
114.000	-0.000379	174081.	-12496.	-0.000210	1646.6618	5.799E+09	332.2398	5257853.	0.000
120.000	-0.001100	105197.	-10189.	-6.578E-05	1304.0633	5.799E+09	436.8696	2382083.	0.000
126.000	-0.001169	51939.	-7546.7088	1.551E-05	1039.1760	5.799E+09	443.8438	2278970.	0.000
132.000	-0.000914	14608.	-4962.5926	4.994E-05	853.5069	5.799E+09	417.5282	2740189.	0.000
138.000	-0.000569	-7706.4653	-2597.2518	5.351E-05	819.1828	5.799E+09	370.9187	3909646.	0.000
144.000	-0.000272	-16660.	-605.1191	4.091E-05	863.7144	5.799E+09	293.1255	6463988.	0.000
150.000	-7.837E-05	-15045.	544.4190	2.450E-05	855.6814	5.799E+09	90.0538	6894920.	0.000
156.000	2.195E-05	-10173.	778.2348	1.146E-05	831.4514	5.799E+09	-12.1152	3311758.	0.000
162.000	5.911E-05	-5727.7266	641.2616	3.229E-06	809.3413	5.799E+09	-33.5425	3405033.	0.000
168.000	6.070E-05	-2484.1724	434.4585	-1.019E-06	793.2092	5.799E+09	-35.3919	3498313.	0.000
174.000	4.687E-05	-512.3040	244.1062	-2.570E-06	783.4019	5.799E+09	-28.0589	3591597.	0.000
180.000	2.987E-05	449.9434	104.9015	-2.602E-06	783.0918	5.799E+09	-18.3427	3684886.	0.000
186.000	1.565E-05	751.4158	20.3037	-1.980E-06	784.5912	5.799E+09	-9.8566	3778178.	0.000
192.000	6.104E-06	697.3182	-21.0820	-1.231E-06	784.3221	5.799E+09	-3.9386	3871474.	0.000
198.000	8.844E-07	500.7506	-34.6511	-6.109E-07	783.3445	5.799E+09	-0.5844	3964773.	0.000
204.000	-1.226E-06	282.6564	-32.0101	-2.056E-07	782.2598	5.799E+09	1.4647	7165821.	0.000
210.000	-1.582E-06	117.0172	-21.6817	1.208E-09	781.4359	5.799E+09	1.9780	7500000.	0.000
216.000	-1.212E-06	22.4732	-11.2029	7.338E-08	780.9657	5.799E+09	1.5149	7500000.	0.000
222.000	-7.019E-07	-17.5556	-4.9259	7.592E-08	780.9413	5.799E+09	0.8774	7500000.	0.000
228.000	-3.009E-07	-25.9810	-0.2654	5.340E-08	780.9832	5.799E+09	0.3761	7500000.	0.000
234.000	-6.117E-08	-20.8407	1.0924	2.917E-08	780.9576	5.799E+09	0.0765	7500000.	0.000
240.000	4.917E-08	-12.9274	1.2071	1.170E-08	780.9182	5.799E+09	-0.0382	4665891.	0.000
246.000	7.925E-08	-6.3779	0.9035	1.714E-09	780.8857	5.799E+09	-0.0630	4767618.	0.000
252.000	6.973E-08	-2.8891	0.5448	-2.667E-09	780.8643	5.799E+09	-0.0566	4869350.	0.000
258.000	4.724E-08	0.1644	0.2576	-3.663E-09	780.8548	5.799E+09	-0.0391	4971088.	0.000
264.000	2.578E-08	1.0087	0.0748	-3.056E-09	780.8590	5.799E+09	-0.0218	5072831.	0.000
270.000	1.057E-08	1.0674	-0.0180	-1.982E-09	780.8592	5.799E+09	-0.009120	5174579.	0.000
276.000	1.999E-09	0.7967	-0.0506	-1.017E-09	780.8579	5.799E+09	-0.001758	5276331.	0.000
282.000	-1.631E-09	0.4620	-0.0498	-3.659E-10	780.8562	5.799E+09	0.002039	7500000.	0.000
288.000	-2.393E-09	0.2003	-0.0347	-2.330E-11	780.8549	5.799E+09	0.002991	7500000.	0.000
294.000	-1.911E-09	0.0460	-0.0185	1.041E-10	780.8542	5.799E+09	0.002388	7500000.	0.000
300.000	-1.144E-09	-0.0224	-0.007084	1.163E-10	780.8541	5.799E+09	0.001429	7500000.	0.000
306.000	-5.154E-10	-0.0393	-0.000863	8.438E-11	780.8541	5.799E+09	0.000644	7500000.	0.000
312.000	-1.310E-10	-0.0329	0.001561	4.704E-11	780.8541	5.799E+09	0.000164	7500000.	0.000
318.000	4.911E-11	-0.0206	0.001905	1.935E-11	780.8540	5.799E+09	-4.901E-05	5988702.	0.000
324.000	1.012E-10	-0.0101	0.001450	3.466E-12	780.8540	5.799E+09	-0.000103	6090482.	0.000
330.000	9.070E-11	-0.003226	0.000861	-3.418E-12	780.8540	5.799E+09	-9.360E-05	6192265.	0.000
336.000	6.018E-11	0.000261	0.000391	-4.952E-12	780.8539	5.799E+09	-6.313E-05	6294050.	0.000
342.000	3.127E-11	0.001475	0.000102	-4.054E-12	780.8539	5.799E+09	-3.334E-05	6395838.	0.000
348.000	1.153E-11	0.001487	-3.590E-05	-2.521E-12	780.8539	5.799E+09	-1.249E-05	6497628.	0.000
354.000	1.017E-12	0.001049	-7.671E-05	-1.209E-12	780.8539	5.799E+09	-1.119E-06	6599420.	0.000
360.000	-2.984E-12	0.000569	-6.888E-05	0.000	780.8539	5.799E+09	3.729E-06	7500000.	0.000
366.000	-3.452E-12	0.000223	-4.475E-05	0.000	780.8539	5.799E+09	4.315E-06	7500000.	0.000
372.000	-2.536E-12	3.195E-05	-2.229E-05	0.000	780.8539	5.799E+09	3.170E-06	7500000.	0.000
378.000	-1.422E-12	-4.494E-05	-7.455E-06	0.000	780.8539	5.799E+09	1.777E-06	7500000.	0.000
384.000	0.000	-5.781E-05	7.430E-08	0.000	780.8539	5.799E+09	7.328E-07	7500000.	0.000
390.000	0.000	-4.425E-05	2.685E-06	0.000	780.8539	5.799E+09	1.374E-07	7500000.	0.000
396.000	0.000	-2.570E-05	2.762E-06	0.000	780.8539	5.799E+09	-1.118E-07	7312020.	0.000
402.000	0.000	-1.115E-05	1.930E-06	0.000	780.8539	5.799E+09	-1.654E-07	7413826.	0.000
408.000	0.000	-2.539E-06	1.034E-06	0.000	780.8539	5.799E+09	-1.334E-07	7500000.	0.000
414.000	0.000	1.272E-06	3.946E-07	0.000	780.8539	5.799E+09	-7.978E-08	7500000.	0.000
420.000	0.000	2.208E-06	4.712E-08	0.000	780.8539	5.799E+09	-3.604E-08	7500000.	0.000
426.000	0.000	1.846E-06	-8.934E-08	0.000	780.8539	5.799E+09	-9.445E-09	7500000.	0.000
432.000	0.000	1.141E-06	-1.092E-07	0.000	780.8539	5.799E+09	2.827E-09	7500000.	0.000
438.000	0.000	5.375E-07	-1.199E-08	0.000	780.8539	5.799E+09	6.241E-09	7500000.	0.000
444.000	0.000	1.578E-07	-4.681E-08	0.000	780.8539	5.799E+09	5.485E-09	7500000.	0.000
450.000	0.000	-2.458E-08	-1.984E-08	0.000	780.8539	5.799E+09	3.504E-09	7500000.	0.000
456.000	0.000	-8.078E-08	-4.187E-09	0.000	780.8539	5.799E+09	1.714E-09	7500000.	0.000
462.000	0.000	-7.519E-08	2.607E-09	0.000	780.8539	5.799E+09	5.506E-10	7500000.	0.000
468.000	0.000	-4.971E-08	4.171E-09	0.000	780.8539	5.799E+09	-2.915E-11	7500000.	0.000
474.000	0.000	-2.524E-08	3.414E-09	0.000	780.8539	5.799E+09	-2.231E-10	7500000.	0.000
480.000	0.000	-8.766E-09	2.081E-09	0.000	780.8539	5.799E+09	-2.213E-10	7500000.	0.000
486.000	0.000	-2.539E-10	9.629E-10	0.000	780.8539	5.799E+09	-1.514E-10	7500000.	0.000
492.000	0.000	2.807E-09	2.700E-10	0.000	780.8539	5.799E+09	-7.957E-11	7500000.	0.000
498.000	0.000	3.001E-09	-5.721E-11	0.000	780.8539	5.799E+09	-2.951E-11	7500000.	0.000
504.000	0.000	2.131E-09	-1.539E-10	0.000	780.8539	5.799E+09	-2.738E-12	7500000.	0.000
510.000	0.000	1.159E-09	-1.397E-10	0.000	780.8539	5.799E+09	7.495E-12	7500000.	0.000
516.000	0.000	4.560E-10	-9.097E-11	0.000	780.8539	5.799E+09	8.735E-12	7500000.	0.000

522.000	0.000	6.708E-11	-4.545E-11	0.000	780.8539	5.799E+09	6.437E-12	7500000.	0.000
528.000	0.000	-9.014E-11	-1.529E-11	0.000	780.8539	5.799E+09	3.618E-12	7500000.	0.000
534.000	0.000	-1.170E-10	0.000	0.000	780.8539	5.799E+09	1.499E-12	7500000.	0.000
540.000	0.000	-8.982E-11	5.420E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
546.000	0.000	-5.219E-11	5.601E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
552.000	0.000	-2.268E-11	3.913E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
558.000	0.000	-5.249E-12	2.096E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
564.000	0.000	2.495E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
570.000	0.000	4.413E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
576.000	0.000	3.676E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
582.000	0.000	2.227E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
588.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
594.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3750000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0080190 radians
Maximum bending moment = 556238. inch-lbs
Maximum shear force = 17669. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 20
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	24095.	-0.0144	780.8539	5.799E+09	-698.2468	2094.7404	0.000
6.000	0.9138	145529.	21008.	-0.0143	1504.6582	5.799E+09	-330.7329	2171.4860	0.000
12.000	0.8286	279011.	19003.	-0.0141	2168.5394	5.799E+09	-337.6510	2445.0054	0.000
18.000	0.7451	400065.	16960.	-0.0137	2770.6119	5.799E+09	-343.3267	2764.7931	0.000
24.000	0.6640	508369.	14887.	-0.0132	3309.2725	5.799E+09	-347.6985	3141.7077	0.000
30.000	0.5861	603660.	12792.	-0.0127	3783.2134	5.799E+09	-350.7027	3589.8957	0.000
36.000	0.5120	685738.	10683.	-0.0120	4191.4349	5.799E+09	-352.2718	4128.0553	0.000
42.000	0.4421	754466.	8569.1703	-0.0113	4533.2579	5.799E+09	-352.3339	4781.3007	0.000
48.000	0.3769	809774.	6459.7350	-0.0104	4808.3383	5.799E+09	-350.8112	5583.9802	0.000
54.000	0.3168	851663.	4364.4461	-0.009587	5016.6806	5.799E+09	-347.6184	6584.0434	0.000
60.000	0.2619	880209.	2293.6112	-0.008691	5158.6533	5.799E+09	-342.6599	7850.0150	0.000
66.000	0.2125	895560.	258.1507	-0.007772	5235.0059	5.799E+09	-335.8270	9482.5149	0.000
72.000	0.1686	897949.	-1730.3100	-0.006844	5246.8874	5.799E+09	-326.9933	11634.	0.000
78.000	0.1304	887691.	-3659.3159	-0.005920	5195.8678	5.799E+09	-316.0087	14545.	0.000
84.000	0.0976	865192.	-5644.6205	-0.005014	5083.9638	5.799E+09	-345.7595	21257.	0.000
90.000	0.0702	829401.	-8050.7033	-0.004137	4905.9574	5.799E+09	-456.2681	38998.	0.000
96.000	0.0480	776377.	-10710.	-0.003306	4642.2358	5.799E+09	-430.1768	53825.	0.000
102.000	0.0305	707109.	-13195.	-0.002539	4297.7276	5.799E+09	-307.9951	78226.	0.000
108.000	0.0175	622825.	-15463.	-0.001850	3878.5306	5.799E+09	-358.2484	122896.	0.000
114.000	0.008321	525036.	-17461.	-0.001257	3392.1702	5.799E+09	-307.5414	221764.	0.000
120.000	0.002411	415664.	-19083.	-0.000770	2848.1995	5.799E+09	-233.2477	580484.	0.000
126.000	-0.000918	297491.	-18533.	-0.000401	2260.4508	5.799E+09	416.7335	2722557.	0.000
132.000	-0.002401	194029.	-15687.	-0.000147	1745.8758	5.799E+09	531.6378	1328668.	0.000
138.000	-0.002679	109518.	-12453.	1.037E-05	1325.5495	5.799E+09	546.6130	1224431.	0.000
144.000	-0.002276	44577.	-9125.7878	9.009E-05	1002.5630	5.799E+09	562.3568	1482245.	0.000
150.000	-0.001597	-161.6326	-5791.7868	0.000113	781.6578	5.799E+09	548.9769	2061939.	0.000
156.000	-0.000920	-25137.	-2710.6414	9.998E-05	905.8761	5.799E+09	478.0716	3119392.	0.000
162.000	-0.000398	-32878.	-113.9437	6.997E-05	944.3742	5.799E+09	387.4943	5846051.	0.000
168.000	-7.997E-05	-26636.	1324.2195	3.917E-05	913.3322	5.799E+09	91.8934	6894920.	0.000
174.000	7.240E-05	-17061.	1474.7261	1.657E-05	865.7077	5.799E+09	-41.7245	3457929.	0.000
180.000	0.000119	-8970.8394	1138.5360	3.099E-06	825.4712	5.799E+09	-70.3388	3551207.	0.000
186.000	0.000110	-3404.2702	727.8161	-3.303E-06	797.7854	5.799E+09	-66.5678	3644490.	0.000
192.000	7.921E-05	-230.8231	380.0841	-5.184E-06	782.0020	5.799E+09	-49.3429	3737776.	0.000
198.000	4.739E-05	1166.5047	141.2809	-4.700E-06	786.6557	5.799E+09	-30.2582	3831066.	0.000
204.000	2.281E-05	1473.4011	5.8031	-3.334E-06	788.1820	5.799E+09	-14.9011	3919175.	0.000
210.000	7.384E-06	1242.4225	-54.4198	-1.929E-06	787.0332	5.799E+09	-5.1732	4203635.	0.000
216.000	-3.313E-07	823.9971	-68.6969	-8.596E-07	784.9522	5.799E+09	0.4142	7500000.	0.000
222.000	-2.931E-06	419.6785	-56.4636	-2.161E-07	782.9412	5.799E+09	3.6636	7500000.	0.000
228.000	-2.925E-06	146.8414	-34.5041	7.696E-08	781.5843	5.799E+09	3.6562	7500000.	0.000
234.000	-2.007E-06	5.4840	-16.0079	1.558E-07	780.8812	5.799E+09	2.5092	7500000.	0.000
240.000	-1.056E-06	-45.5475	-4.5214	1.350E-07	781.0805	5.799E+09	1.3197	7500000.	0.000
246.000	-3.869E-07	-49.0271	0.8883	8.611E-08	781.0978	5.799E+09	0.4836	7500000.	0.000
252.000	-2.237E-08	-35.0505	2.4229	4.261E-08	781.0283	5.799E+09	0.0280	7500000.	0.000

258.000	1.245E-07	-20.0330	2.1944	1.412E-08	780.9536	5.799E+09	-0.1041	5017404.	0.000
264.000	1.470E-07	-8.7444	1.5057	-7.728E-10	780.8974	5.799E+09	-0.1254	5119151.	0.000
270.000	1.152E-07	-1.9628	0.8286	-6.312E-09	780.8637	5.799E+09	-0.1003	5220902.	0.000
276.000	7.127E-08	1.2108	0.3381	-6.701E-09	780.8600	5.799E+09	-0.0632	5322658.	0.000
282.000	3.482E-08	2.1071	0.0540	-4.985E-09	780.8644	5.799E+09	-0.0315	5424419.	0.000
288.000	1.145E-08	1.8681	-0.0721	-2.928E-09	780.8632	5.799E+09	-0.0105	5526182.	0.000
294.000	-3.154E-10	1.2475	-0.1026	-1.316E-09	780.8601	5.799E+09	0.000394	7500000.	0.000
300.000	-4.340E-09	0.6398	-0.0851	-3.397E-10	780.8571	5.799E+09	0.005425	7500000.	0.000
306.000	-4.392E-09	0.2268	-0.0524	1.086E-10	780.8551	5.799E+09	0.005490	7500000.	0.000
312.000	-3.036E-09	0.0113	-0.0245	2.319E-10	780.8540	5.799E+09	0.003795	7500000.	0.000
318.000	-1.610E-09	-0.0676	-0.007080	2.027E-10	780.8543	5.799E+09	0.002012	7500000.	0.000
324.000	-6.036E-10	-0.0740	0.001221	1.294E-10	780.8543	5.799E+09	0.000755	7500000.	0.000
330.000	-5.701E-11	-0.0532	0.003698	6.357E-11	780.8542	5.799E+09	7.126E-05	7500000.	0.000
336.000	1.592E-10	-0.0298	0.003407	2.062E-11	780.8541	5.799E+09	-0.000168	6340409.	0.000
342.000	1.905E-10	-0.0124	0.002289	-1.188E-12	780.8540	5.799E+09	-0.000205	6442199.	0.000
348.000	1.449E-10	-0.002314	0.001201	-8.787E-12	780.8540	5.799E+09	-0.000158	6543992.	0.000
354.000	8.504E-11	0.002057	0.000444	-8.920E-12	780.8539	5.799E+09	-9.420E-05	6645786.	0.000
360.000	3.791E-11	0.003035	3.389E-05	-6.285E-12	780.8540	5.799E+09	-4.263E-05	6747583.	0.000
366.000	9.620E-12	0.002476	-0.000127	-3.434E-12	780.8540	5.799E+09	-1.098E-05	6849382.	0.000
372.000	-3.300E-12	0.001518	-0.000148	-1.368E-12	780.8539	5.799E+09	4.125E-06	7500000.	0.000
378.000	-6.793E-12	0.000708	-0.000110	0.000	780.8539	5.799E+09	8.492E-06	7500000.	0.000
384.000	-5.892E-12	0.000203	-6.211E-05	0.000	780.8539	5.799E+09	7.365E-06	7500000.	0.000
390.000	-3.733E-12	-3.783E-05	-2.601E-05	0.000	780.8539	5.799E+09	4.666E-06	7500000.	0.000
396.000	-1.809E-12	-0.000110	-5.230E-06	0.000	780.8539	5.799E+09	2.261E-06	7500000.	0.000
402.000	0.000	-0.000101	3.686E-06	0.000	780.8539	5.799E+09	7.111E-07	7500000.	0.000
408.000	0.000	-6.627E-05	5.657E-06	0.000	780.8539	5.799E+09	-5.431E-08	7500000.	0.000
414.000	0.000	-3.334E-05	4.577E-06	0.000	780.8539	5.799E+09	-3.055E-07	7500000.	0.000
420.000	0.000	-1.137E-05	2.767E-06	0.000	780.8539	5.799E+09	-2.979E-07	7500000.	0.000
426.000	0.000	-1.206E-07	1.267E-06	0.000	780.8539	5.799E+09	-2.020E-07	7500000.	0.000
432.000	0.000	3.859E-06	3.455E-07	0.000	780.8539	5.799E+09	-1.053E-07	7500000.	0.000
438.000	0.000	4.046E-06	-8.552E-08	0.000	780.8539	5.799E+09	-3.842E-08	7500000.	0.000
444.000	0.000	2.846E-06	-2.098E-07	0.000	780.8539	5.799E+09	-2.991E-09	7500000.	0.000
450.000	0.000	1.535E-06	-1.877E-07	0.000	780.8539	5.799E+09	1.036E-08	7500000.	0.000
456.000	0.000	5.956E-07	-1.212E-07	0.000	780.8539	5.799E+09	1.179E-08	7500000.	0.000
462.000	0.000	8.020E-08	-6.002E-08	0.000	780.8539	5.799E+09	8.607E-09	7500000.	0.000
468.000	0.000	-1.254E-07	-1.980E-08	0.000	780.8539	5.799E+09	4.798E-09	7500000.	0.000
474.000	0.000	-1.582E-07	4.814E-10	0.000	780.8539	5.799E+09	1.963E-09	7500000.	0.000
480.000	0.000	-1.202E-07	7.436E-09	0.000	780.8539	5.799E+09	3.555E-10	7500000.	0.000
486.000	0.000	-6.930E-08	7.546E-09	0.000	780.8539	5.799E+09	-3.188E-10	7500000.	0.000
492.000	0.000	-2.978E-08	5.224E-09	0.000	780.8539	5.799E+09	-4.553E-10	7500000.	0.000
498.000	0.000	-6.617E-09	2.776E-09	0.000	780.8539	5.799E+09	-3.606E-10	7500000.	0.000
504.000	0.000	3.566E-09	1.058E-09	0.000	780.8539	5.799E+09	-2.147E-10	7500000.	0.000
510.000	0.000	6.018E-09	1.170E-10	0.000	780.8539	5.799E+09	-9.638E-11	7500000.	0.000
516.000	0.000	4.994E-09	-2.465E-10	0.000	780.8539	5.799E+09	-2.479E-11	7500000.	0.000
522.000	0.000	3.073E-09	-2.967E-10	0.000	780.8539	5.799E+09	8.046E-12	7500000.	0.000
528.000	0.000	1.439E-09	-2.215E-10	0.000	780.8539	5.799E+09	1.703E-11	7500000.	0.000
534.000	0.000	4.161E-10	-1.258E-10	0.000	780.8539	5.799E+09	1.485E-11	7500000.	0.000
540.000	0.000	-7.228E-11	-5.296E-11	0.000	780.8539	5.799E+09	9.441E-12	7500000.	0.000
546.000	0.000	-2.207E-10	-1.086E-11	0.000	780.8539	5.799E+09	4.593E-12	7500000.	0.000
552.000	0.000	-2.036E-10	7.286E-12	0.000	780.8539	5.799E+09	1.457E-12	7500000.	0.000
558.000	0.000	-1.339E-10	1.136E-11	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
564.000	0.000	-6.758E-11	9.215E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
570.000	0.000	-2.337E-11	5.544E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
576.000	0.000	-1.026E-12	2.464E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
582.000	0.000	6.244E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
588.000	0.000	5.528E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
594.000	0.000	2.177E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3750000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0143595 radians
Maximum bending moment = 897949. inch-lbs
Maximum shear force = 24095. lbs
Depth of maximum bending moment = 72.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 23
Number of zero deflection points = 13

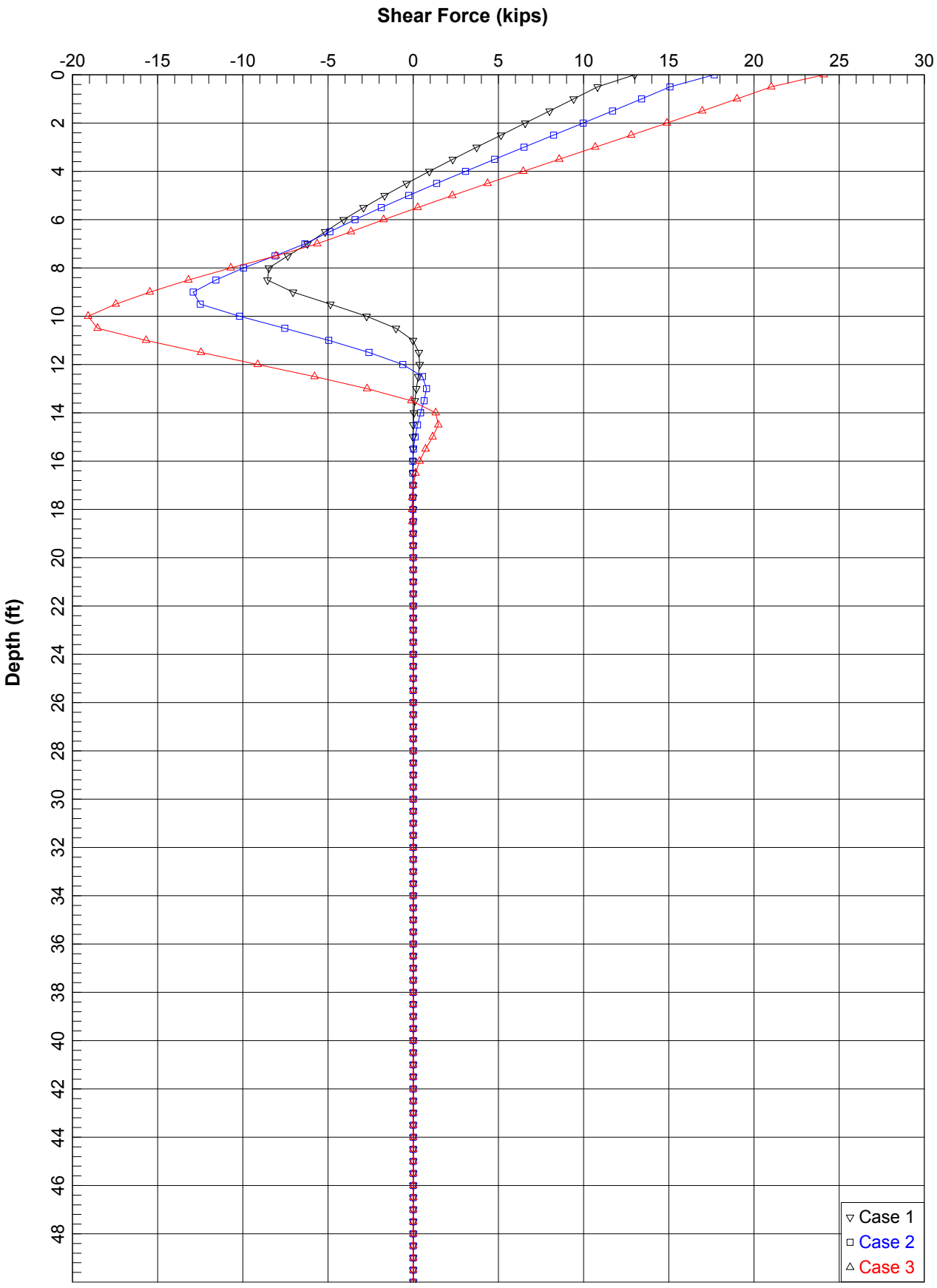
Summary of Pile Response(s)

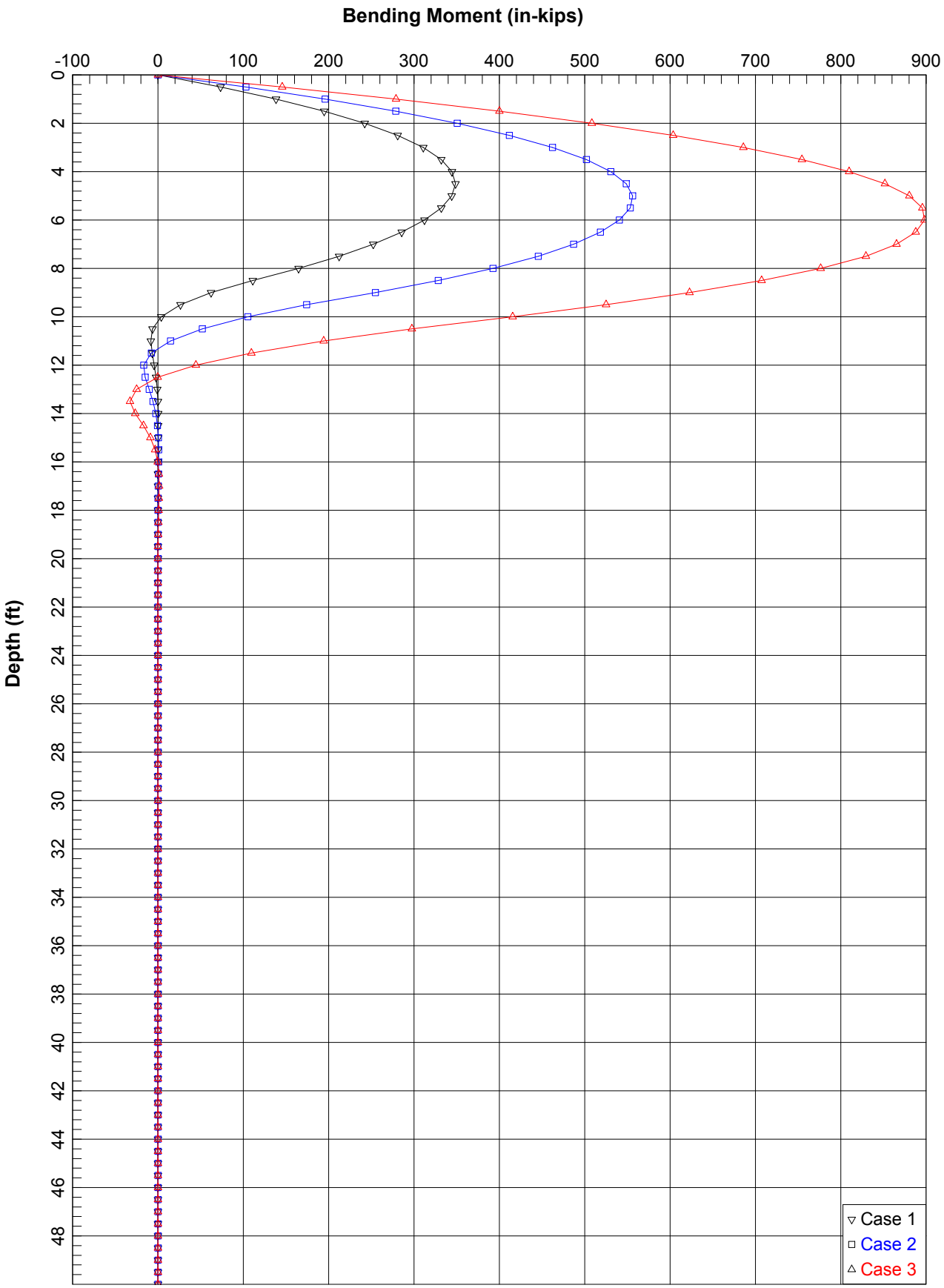
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	157000.	0.25000000	348533.	13005.	-0.00449590
2	4	y = 0.5000	M = 0.000	157000.	0.50000000	556238.	17669.	-0.00801905
3	4	y = 1.0000	M = 0.000	157000.	1.00000000	897949.	24095.	-0.01435949

The analysis ended normally.


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5R_long_Ave P.lp6d
Name of output report file: Abut 5R_long_Ave P.lp6o
Name of plot output file: Abut 5R_long_Ave P.lp6p
Name of runtime messeage file: Abut 5R_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 9:30:36

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 33.700 degrees
= 0.588 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 130.00000 pcf
Effective unit weight at bottom of layer = 130.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm psf	Undrained Cohesion In-situ Test psf	Angle of Friction In-situ Test Property deg.	Uniaxial qu Elastic Subgrade Mod. psi	RQD % or GSI
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	130.000	4000.000	--	--	--
		0.00500	--	--	80.000	130.000	4000.000	--	--	--

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		157000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		157000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		157000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13005.	-0.004496	780.8539	5.799E+09	-493.7350	5924.8206	0.000
6.000	0.2230	73377.	10826.	-0.004458	1145.7991	5.799E+09	-232.4603	6253.8493	0.000
12.000	0.1965	138313.	9421.9233	-0.004348	1468.7667	5.799E+09	-235.6292	7194.6133	0.000
18.000	0.1708	194632.	8002.2910	-0.004176	1748.8745	5.799E+09	-237.5815	8343.8304	0.000
24.000	0.1464	242208.	6574.7830	-0.003950	1985.5000	5.799E+09	-238.2545	9765.1496	0.000
30.000	0.1234	280972.	5147.2757	-0.003679	2178.2920	5.799E+09	-237.5813	11548.	0.000
36.000	0.1022	310908.	3728.0617	-0.003373	2327.1831	5.799E+09	-235.4900	13820.	0.000
42.000	0.0830	332064.	2325.8873	-0.003041	2432.4026	5.799E+09	-231.9014	16772.	0.000
48.000	0.0657	344547.	950.0048	-0.002691	2494.4906	5.799E+09	-226.7260	20690.	0.000
54.000	0.0507	348533.	-389.7529	-0.002332	2514.3132	5.799E+09	-219.8599	26031.	0.000
60.000	0.0378	344264.	-1682.8639	-0.001974	2493.0803	5.799E+09	-211.1772	33551.	0.000
66.000	0.0270	332056.	-2917.9512	-0.001624	2432.3674	5.799E+09	-200.5186	44572.	0.000
72.000	0.0183	312307.	-4082.5121	-0.001290	2334.1420	5.799E+09	-187.6684	61593.	0.000
78.000	0.0115	285497.	-5162.4400	-0.000981	2200.8008	5.799E+09	-172.3076	89827.	0.000
84.000	0.006509	252206.	-6206.7531	-0.000703	2035.2239	5.799E+09	-175.7968	162039.	0.000
90.000	0.003075	212340.	-7360.9239	-0.000462	1836.9481	5.799E+09	-208.9268	407607.	0.000
96.000	0.000960	164746.	-8474.2534	-0.000267	1600.2347	5.799E+09	-162.1831	1013989.	0.000
102.000	-0.000133	111153.	-8558.8236	-0.000125	1333.6838	5.799E+09	133.9930	6033055.	0.000
108.000	-0.000536	62275.	-7062.0025	-3.492E-05	1090.5855	5.799E+09	364.9474	4084377.	0.000
114.000	-0.000552	26475.	-4863.4884	1.099E-05	912.5288	5.799E+09	367.8907	3996363.	0.000
120.000	-0.000404	3892.6514	-2739.0138	2.670E-05	800.2144	5.799E+09	340.2675	5050992.	0.000
126.000	-0.000232	-6443.6678	-1018.7013	2.538E-05	812.9021	5.799E+09	233.1700	6033055.	0.000
132.000	-9.959E-05	-8379.5871	-18.7732	1.771E-05	822.5306	5.799E+09	100.1394	6033055.	0.000
138.000	-1.931E-05	-6702.3215	339.9017	9.912E-06	814.1886	5.799E+09	19.4189	6033055.	0.000
144.000	1.936E-05	-4319.4417	368.5030	4.210E-06	802.3371	5.799E+09	-9.8851	3064339.	0.000
150.000	3.121E-05	-2288.2165	286.5364	7.913E-07	792.2346	5.799E+09	-17.4371	3352619.	0.000
156.000	2.885E-05	-882.4958	184.5161	-8.491E-07	785.2431	5.799E+09	-16.5697	3445901.	0.000
162.000	2.102E-05	-72.4237	97.6151	-1.343E-06	781.2141	5.799E+09	-12.3973	3539189.	0.000
168.000	1.273E-05	291.4159	37.2958	-1.230E-06	782.3033	5.799E+09	-7.7091	3632480.	0.000
174.000	6.259E-06	377.4433	2.5081	-8.838E-07	782.7312	5.799E+09	-3.8868	3725775.	0.000
180.000	2.128E-06	323.1784	-13.2163	-5.213E-07	782.4613	5.799E+09	-1.3547	3819074.	0.000
186.000	3.640E-09	219.8304	-17.2874	-2.404E-07	781.9473	5.799E+09	-0.002373	3912376.	0.000
192.000	-7.562E-07	116.1827	-14.6875	-6.653E-08	781.4318	5.799E+09	0.8600	6894920.	0.000
198.000	-7.947E-07	43.7053	-9.3408	1.619E-08	781.0713	5.799E+09	0.9133	6894920.	0.000
204.000	-5.619E-07	4.0630	-4.5876	4.090E-08	780.8741	5.799E+09	0.6711	7165821.	0.000
210.000	-3.039E-07	-11.4235	-1.4347	3.710E-08	780.9108	5.799E+09	0.3799	7500000.	0.000
216.000	-1.168E-07	-13.2236	0.1428	2.434E-08	780.9197	5.799E+09	0.1460	7500000.	0.000
222.000	-1.177E-08	-9.7556	0.6249	1.245E-08	780.9025	5.799E+09	0.0147	7500000.	0.000
228.000	3.268E-08	-5.7483	0.5935	4.434E-09	780.8825	5.799E+09	-0.0252	4625398.	0.000
234.000	4.143E-08	-2.6423	0.4200	9.276E-11	780.8671	5.799E+09	-0.0326	4727130.	0.000

240.000	3.379E-08	-0.7089	0.2405	-1.641E-09	780.8575	5.799E+09	-0.0272	4828868.	0.000
246.000	2.174E-08	0.2462	0.1053	-1.880E-09	780.8552	5.799E+09	-0.0179	4930612.	0.000
252.000	1.122E-08	0.5579	0.0234	-1.464E-09	780.8567	5.799E+09	-0.009414	5032360.	0.000
258.000	4.169E-09	0.5301	-0.0155	-9.015E-10	780.8566	5.799E+09	-0.003567	5134113.	0.000
264.000	4.051E-10	0.3734	-0.0273	-4.341E-10	780.8558	5.799E+09	-0.000353	5235871.	0.000
270.000	-1.040E-09	0.2037	-0.0244	-1.355E-10	780.8550	5.799E+09	0.001300	7500000.	0.000
276.000	-1.221E-09	0.0805	-0.0160	1.148E-11	780.8543	5.799E+09	0.001526	7500000.	0.000
282.000	-9.024E-10	0.0122	-0.007990	5.943E-11	780.8540	5.799E+09	0.001128	7500000.	0.000
288.000	-5.080E-10	-0.0155	-0.002700	5.771E-11	780.8540	5.799E+09	0.000635	7500000.	0.000
294.000	-2.099E-10	-0.0203	-8.092E-06	3.918E-11	780.8540	5.799E+09	0.000262	7500000.	0.000
300.000	-3.789E-11	-0.0157	0.000921	2.056E-11	780.8540	5.799E+09	4.737E-05	7500000.	0.000
306.000	3.678E-11	-0.009308	0.000954	7.631E-12	780.8540	5.799E+09	-3.647E-05	5948278.	0.000
312.000	5.368E-11	-0.004244	0.000682	0.000	780.8540	5.799E+09	-5.412E-05	6050063.	0.000
318.000	4.422E-11	-0.001125	0.000384	-2.158E-12	780.8539	5.799E+09	-4.534E-05	6151851.	0.000
324.000	2.778E-11	0.000363	0.000161	-2.552E-12	780.8539	5.799E+09	-2.895E-05	6253641.	0.000
330.000	1.359E-11	0.000809	3.069E-05	-1.945E-12	780.8539	5.799E+09	-1.440E-05	6355433.	0.000
336.000	4.433E-12	0.000735	-2.683E-05	-1.146E-12	780.8539	5.799E+09	-4.771E-06	6457228.	0.000
342.000	0.000	0.000489	-4.053E-05	0.000	780.8539	5.799E+09	2.038E-07	7500000.	0.000
348.000	-1.722E-12	0.000250	-3.346E-05	0.000	780.8539	5.799E+09	2.153E-06	7500000.	0.000
354.000	-1.730E-12	8.794E-05	-2.051E-05	0.000	780.8539	5.799E+09	2.162E-06	7500000.	0.000
360.000	-1.191E-12	3.678E-06	-9.562E-06	0.000	780.8539	5.799E+09	1.489E-06	7500000.	0.000
366.000	0.000	-2.698E-05	-2.734E-06	0.000	780.8539	5.799E+09	7.872E-07	7500000.	0.000
372.000	0.000	-2.928E-05	5.119E-07	0.000	780.8539	5.799E+09	2.949E-07	7500000.	0.000
378.000	0.000	-2.094E-05	1.486E-06	0.000	780.8539	5.799E+09	2.984E-08	7500000.	0.000
384.000	0.000	-1.150E-05	1.364E-06	0.000	780.8539	5.799E+09	-7.051E-08	7271654.	0.000
390.000	0.000	-4.584E-06	8.986E-07	0.000	780.8539	5.799E+09	-8.461E-08	7373464.	0.000
396.000	0.000	-7.122E-07	4.539E-07	0.000	780.8539	5.799E+09	-6.362E-08	7475276.	0.000
402.000	0.000	8.695E-07	1.548E-07	0.000	780.8539	5.799E+09	-3.608E-08	7500000.	0.000
408.000	0.000	1.152E-06	1.374E-09	0.000	780.8539	5.799E+09	-1.507E-08	7500000.	0.000
414.000	0.000	8.901E-07	-5.280E-08	0.000	780.8539	5.799E+09	-2.993E-09	7500000.	0.000
420.000	0.000	5.201E-07	-5.526E-08	0.000	780.8539	5.799E+09	2.173E-09	7500000.	0.000
426.000	0.000	2.277E-07	-3.884E-08	0.000	780.8539	5.799E+09	3.303E-09	7500000.	0.000
432.000	0.000	5.408E-08	-2.093E-08	0.000	780.8539	5.799E+09	2.665E-09	7500000.	0.000
438.000	0.000	-2.367E-08	-8.112E-09	0.000	780.8539	5.799E+09	1.608E-09	7500000.	0.000
444.000	0.000	-4.350E-08	-1.083E-09	0.000	780.8539	5.799E+09	7.348E-10	7500000.	0.000
450.000	0.000	-3.684E-08	1.718E-09	0.000	780.8539	5.799E+09	1.989E-10	7500000.	0.000
456.000	0.000	-2.298E-08	2.162E-09	0.000	780.8539	5.799E+09	-5.102E-11	7500000.	0.000
462.000	0.000	-1.094E-08	1.641E-09	0.000	780.8539	5.799E+09	-1.226E-10	7500000.	0.000
468.000	0.000	-3.296E-09	9.452E-10	0.000	780.8539	5.799E+09	-1.093E-10	7500000.	0.000
474.000	0.000	4.118E-10	4.057E-10	0.000	780.8539	5.799E+09	-7.048E-11	7500000.	0.000
480.000	0.000	1.582E-09	8.981E-11	0.000	780.8539	5.799E+09	-3.482E-11	7500000.	0.000
486.000	0.000	1.497E-09	-4.895E-11	0.000	780.8539	5.799E+09	-1.143E-11	7500000.	0.000
492.000	0.000	9.988E-10	-8.225E-11	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
498.000	0.000	5.119E-10	-6.818E-11	0.000	780.8539	5.799E+09	4.354E-12	7500000.	0.000
504.000	0.000	1.812E-10	-4.192E-11	0.000	780.8539	5.799E+09	4.399E-12	7500000.	0.000
510.000	0.000	8.628E-12	-1.961E-11	0.000	780.8539	5.799E+09	3.039E-12	7500000.	0.000
516.000	0.000	-5.451E-11	-5.658E-12	0.000	780.8539	5.799E+09	1.612E-12	7500000.	0.000
522.000	0.000	-5.958E-11	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
528.000	0.000	-4.271E-11	3.019E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
534.000	0.000	-2.344E-11	2.782E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
540.000	0.000	-9.359E-12	1.829E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
546.000	0.000	-1.498E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
552.000	0.000	1.724E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
558.000	0.000	2.312E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
564.000	0.000	1.794E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
570.000	0.000	1.053E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
576.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
582.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
588.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
594.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3750000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0044959 radians
Maximum bending moment            =         348533. inch-lbs
Maximum shear force               =          13005. lbs
Depth of maximum bending moment   =     54.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             14
Number of zero deflection points  =             14
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Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	17669.	-0.008019	780.8539	5.799E+09	-587.1532	3522.9194	0.000
6.000	0.4519	102999.	15076.	-0.007966	1293.1296	5.799E+09	-277.3429	3682.4736	0.000
12.000	0.4044	195914.	13397.	-0.007811	1755.2479	5.799E+09	-282.2212	4187.1461	0.000
18.000	0.3582	278477.	11693.	-0.007566	2165.8850	5.799E+09	-285.8754	4789.1697	0.000
24.000	0.3136	350478.	9970.1645	-0.007240	2523.9862	5.799E+09	-288.2436	5514.4652	0.000
30.000	0.2713	411760.	8237.6506	-0.006846	2828.7786	5.799E+09	-289.2610	6397.9524	0.000
36.000	0.2315	462227.	6503.2914	-0.006394	3079.7828	5.799E+09	-288.8587	7487.5364	0.000
42.000	0.1945	501845.	4775.8292	-0.005895	3276.8263	5.799E+09	-286.9621	8850.3021	0.000
48.000	0.1607	530643.	3064.4759	-0.005361	3420.0565	5.799E+09	-283.4891	10582.	0.000
54.000	0.1302	548718.	1378.9662	-0.004802	3509.9558	5.799E+09	-278.3475	12826.	0.000
60.000	0.1031	556238.	-270.3690	-0.004231	3547.3571	5.799E+09	-271.4309	15796.	0.000
66.000	0.0794	553445.	-1872.5013	-0.003657	3533.4623	5.799E+09	-262.6132	19833.	0.000
72.000	0.0592	540657.	-3415.5581	-0.003091	3469.8637	5.799E+09	-251.7391	25504.	0.000
78.000	0.0424	518281.	-4886.6034	-0.002543	3358.5795	5.799E+09	-238.6094	33798.	0.000
84.000	0.0287	486809.	-6366.4661	-0.002023	3202.0419	5.799E+09	-254.6782	53222.	0.000
90.000	0.0181	445694.	-8105.9249	-0.001540	2997.5533	5.799E+09	-325.1414	107864.	0.000
96.000	0.0102	392439.	-9958.7302	-0.001107	2732.6878	5.799E+09	-292.4604	171562.	0.000
102.000	0.004807	328274.	-11589.	-0.000734	2413.5549	5.799E+09	-256.9200	313226.	0.000
108.000	0.001423	254755.	-12917.	-0.000432	2047.9036	5.799E+09	-191.8776	809111.	0.000
114.000	-0.000379	174081.	-12496.	-0.000210	1646.6618	5.799E+09	332.2398	5257853.	0.000
120.000	-0.001100	105197.	-10189.	-6.578E-05	1304.0633	5.799E+09	436.8696	2382083.	0.000
126.000	-0.001169	51939.	-7546.7088	1.551E-05	1039.1760	5.799E+09	443.8438	2278970.	0.000
132.000	-0.000914	14608.	-4962.5926	4.994E-05	853.5069	5.799E+09	417.5282	2740189.	0.000
138.000	-0.000569	-7706.4653	-2597.2518	5.351E-05	819.1828	5.799E+09	370.9187	3909646.	0.000
144.000	-0.000272	-16660.	-605.1191	4.091E-05	863.7144	5.799E+09	293.1255	6463988.	0.000
150.000	-7.837E-05	-15045.	544.4190	2.450E-05	855.6814	5.799E+09	90.0538	6894920.	0.000
156.000	2.195E-05	-10173.	778.2348	1.146E-05	831.4514	5.799E+09	-12.1152	3311758.	0.000
162.000	5.911E-05	-5727.7266	641.2616	3.229E-06	809.3413	5.799E+09	-33.5425	3405033.	0.000
168.000	6.070E-05	-2484.1724	434.4585	-1.019E-06	793.2092	5.799E+09	-35.3919	3498313.	0.000
174.000	4.687E-05	-512.3040	244.1062	-2.570E-06	783.4019	5.799E+09	-28.0589	3591597.	0.000
180.000	2.987E-05	449.9434	104.9015	-2.602E-06	783.0918	5.799E+09	-18.3427	3684886.	0.000
186.000	1.565E-05	751.4158	20.3037	-1.980E-06	784.5912	5.799E+09	-9.8566	3778178.	0.000
192.000	6.104E-06	697.3182	-21.0820	-1.231E-06	784.3221	5.799E+09	-3.9386	3871474.	0.000
198.000	8.844E-07	500.7506	-34.6511	-6.109E-07	783.3445	5.799E+09	-0.5844	3964773.	0.000
204.000	-1.226E-06	282.6564	-32.0101	-2.056E-07	782.2598	5.799E+09	1.4647	7165821.	0.000
210.000	-1.582E-06	117.0172	-21.6817	1.208E-09	781.4359	5.799E+09	1.9780	7500000.	0.000
216.000	-1.212E-06	22.4732	-11.2029	7.338E-08	780.9657	5.799E+09	1.5149	7500000.	0.000
222.000	-7.019E-07	-17.5556	-4.9259	7.592E-08	780.9413	5.799E+09	0.8774	7500000.	0.000
228.000	-3.009E-07	-25.9810	-0.2654	5.340E-08	780.9832	5.799E+09	0.3761	7500000.	0.000
234.000	-6.117E-08	-20.8407	1.0924	2.917E-08	780.9576	5.799E+09	0.0765	7500000.	0.000
240.000	4.917E-08	-12.9274	1.2071	1.170E-08	780.9182	5.799E+09	-0.0382	4665891.	0.000
246.000	7.925E-08	-6.3779	0.9035	1.714E-09	780.8857	5.799E+09	-0.0630	4767618.	0.000
252.000	6.973E-08	-2.8891	0.5448	-2.667E-09	780.8643	5.799E+09	-0.0566	4869350.	0.000
258.000	4.724E-08	0.1644	0.2576	-3.663E-09	780.8548	5.799E+09	-0.0391	4971088.	0.000
264.000	2.578E-08	1.0087	0.0748	-3.056E-09	780.8590	5.799E+09	-0.0218	5072831.	0.000
270.000	1.057E-08	1.0674	-0.0180	-1.982E-09	780.8592	5.799E+09	-0.009120	5174579.	0.000
276.000	1.999E-09	0.7967	-0.0506	-1.017E-09	780.8579	5.799E+09	-0.001758	5276331.	0.000
282.000	-1.631E-09	0.4620	-0.0498	-3.659E-10	780.8562	5.799E+09	0.002039	7500000.	0.000
288.000	-2.393E-09	0.2003	-0.0347	-2.330E-11	780.8549	5.799E+09	0.002991	7500000.	0.000
294.000	-1.911E-09	0.0460	-0.0185	1.041E-10	780.8542	5.799E+09	0.002388	7500000.	0.000
300.000	-1.144E-09	-0.0224	-0.007084	1.163E-10	780.8541	5.799E+09	0.001429	7500000.	0.000
306.000	-5.154E-10	-0.0393	-0.000863	8.438E-11	780.8541	5.799E+09	0.000644	7500000.	0.000
312.000	-1.310E-10	-0.0329	0.001561	4.704E-11	780.8541	5.799E+09	0.000164	7500000.	0.000
318.000	4.911E-11	-0.0206	0.001905	1.935E-11	780.8540	5.799E+09	-4.901E-05	5988702.	0.000
324.000	1.012E-10	-0.0101	0.001450	3.466E-12	780.8540	5.799E+09	-0.000103	6090482.	0.000
330.000	9.070E-11	-0.003226	0.000861	-3.418E-12	780.8540	5.799E+09	-9.360E-05	6192265.	0.000
336.000	6.018E-11	0.000261	0.000391	-4.952E-12	780.8539	5.799E+09	-6.313E-05	6294050.	0.000
342.000	3.127E-11	0.001475	0.000102	-4.054E-12	780.8539	5.799E+09	-3.334E-05	6395838.	0.000
348.000	1.153E-11	0.001487	-3.590E-05	-2.521E-12	780.8539	5.799E+09	-1.249E-05	6497628.	0.000
354.000	1.017E-12	0.001049	-7.671E-05	-1.209E-12	780.8539	5.799E+09	-1.119E-06	6599420.	0.000
360.000	-2.984E-12	0.000569	-6.888E-05	0.000	780.8539	5.799E+09	3.729E-06	7500000.	0.000
366.000	-3.452E-12	0.000223	-4.475E-05	0.000	780.8539	5.799E+09	4.315E-06	7500000.	0.000
372.000	-2.536E-12	3.195E-05	-2.229E-05	0.000	780.8539	5.799E+09	3.170E-06	7500000.	0.000
378.000	-1.422E-12	-4.494E-05	-7.455E-06	0.000	780.8539	5.799E+09	1.777E-06	7500000.	0.000
384.000	0.000	-5.781E-05	7.430E-08	0.000	780.8539	5.799E+09	7.328E-07	7500000.	0.000
390.000	0.000	-4.425E-05	2.685E-06	0.000	780.8539	5.799E+09	1.374E-07	7500000.	0.000
396.000	0.000	-2.570E-05	2.762E-06	0.000	780.8539	5.799E+09	-1.118E-07	7312020.	0.000
402.000	0.000	-1.115E-05	1.930E-06	0.000	780.8539	5.799E+09	-1.654E-07	7413826.	0.000
408.000	0.000	-2.539E-06	1.034E-06	0.000	780.8539	5.799E+09	-1.334E-07	7500000.	0.000
414.000	0.000	1.272E-06	3.946E-07	0.000	780.8539	5.799E+09	-7.978E-08	7500000.	0.000
420.000	0.000	2.208E-06	4.712E-08	0.000	780.8539	5.799E+09	-3.604E-08	7500000.	0.000
426.000	0.000	1.846E-06	-8.934E-08	0.000	780.8539	5.799E+09	-9.445E-09	7500000.	0.000
432.000	0.000	1.141E-06	-1.092E-07	0.000	780.8539	5.799E+09	2.827E-09	7500000.	0.000
438.000	0.000	5.375E-07	-1.199E-08	0.000	780.8539	5.799E+09	6.241E-09	7500000.	0.000
444.000	0.000	1.578E-07	-4.681E-08	0.000	780.8539	5.799E+09	5.485E-09	7500000.	0.000
450.000	0.000	-2.458E-08	-1.984E-08	0.000	780.8539	5.799E+09	3.504E-09	7500000.	0.000
456.000	0.000	-8.078E-08	-4.187E-09	0.000	780.8539	5.799E+09	1.714E-09	7500000.	0.000
462.000	0.000	-7.519E-08	2.607E-09	0.000	780.8539	5.799E+09	5.506E-10	7500000.	0.000
468.000	0.000	-4.971E-08	4.171E-09	0.000	780.8539	5.799E+09	-2.915E-11	7500000.	0.000
474.000	0.000	-2.524E-08	3.414E-09	0.000	780.8539	5.799E+09	-2.231E-10	7500000.	0.000
480.000	0.000	-8.766E-09	2.081E-09	0.000	780.8539	5.799E+09	-2.213E-10	7500000.	0.000
486.000	0.000	-2.539E-10	9.629E-10	0.000	780.8539	5.799E+09	-1.514E-10	7500000.	0.000
492.000	0.000	2.807E-09	2.700E-10	0.000	780.8539	5.799E+09	-7.957E-11	7500000.	0.000
498.000	0.000	3.001E-09	-5.721E-11	0.000	780.8539	5.799E+09	-2.951E-11	7500000.	0.000
504.000	0.000	2.131E-09	-1.539E-10	0.000	780.8539	5.799E+09	-2.738E-12	7500000.	0.000
510.000	0.000	1.159E-09	-1.397E-10	0.000	780.8539	5.799E+09	7.495E-12	7500000.	0.000
516.000	0.000	4.560E-10	-9.097E-11	0.000	780.8539	5.799E+09	8.735E-12	7500000.	0.000

522.000	0.000	6.708E-11	-4.545E-11	0.000	780.8539	5.799E+09	6.437E-12	7500000.	0.000
528.000	0.000	-9.014E-11	-1.529E-11	0.000	780.8539	5.799E+09	3.618E-12	7500000.	0.000
534.000	0.000	-1.170E-10	0.000	0.000	780.8539	5.799E+09	1.499E-12	7500000.	0.000
540.000	0.000	-8.982E-11	5.420E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
546.000	0.000	-5.219E-11	5.601E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
552.000	0.000	-2.268E-11	3.913E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
558.000	0.000	-5.249E-12	2.096E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
564.000	0.000	2.495E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
570.000	0.000	4.413E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
576.000	0.000	3.676E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
582.000	0.000	2.227E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
588.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
594.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3750000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0080190 radians
Maximum bending moment = 556238. inch-lbs
Maximum shear force = 17669. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 20
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	24095.	-0.0144	780.8539	5.799E+09	-698.2468	2094.7404	0.000
6.000	0.9138	145529.	21008.	-0.0143	1504.6582	5.799E+09	-330.7329	2171.4860	0.000
12.000	0.8286	279011.	19003.	-0.0141	2168.5394	5.799E+09	-337.6510	2445.0054	0.000
18.000	0.7451	400065.	16960.	-0.0137	2770.6119	5.799E+09	-343.3267	2764.7931	0.000
24.000	0.6640	508369.	14887.	-0.0132	3309.2725	5.799E+09	-347.6985	3141.7077	0.000
30.000	0.5861	603660.	12792.	-0.0127	3783.2134	5.799E+09	-350.7027	3589.8957	0.000
36.000	0.5120	685738.	10683.	-0.0120	4191.4349	5.799E+09	-352.2718	4128.0553	0.000
42.000	0.4421	754466.	8569.1703	-0.0113	4533.2579	5.799E+09	-352.3339	4781.3007	0.000
48.000	0.3769	809774.	6459.7350	-0.0104	4808.3383	5.799E+09	-350.8112	5583.9802	0.000
54.000	0.3168	851663.	4364.4461	-0.009587	5016.6806	5.799E+09	-347.6184	6584.0434	0.000
60.000	0.2619	880209.	2293.6112	-0.008691	5158.6533	5.799E+09	-342.6599	7850.0150	0.000
66.000	0.2125	895560.	258.1507	-0.007772	5235.0059	5.799E+09	-335.8270	9482.5149	0.000
72.000	0.1686	897949.	-1730.3100	-0.006844	5246.8874	5.799E+09	-326.9933	11634.	0.000
78.000	0.1304	887691.	-3659.3159	-0.005920	5195.8678	5.799E+09	-316.0087	14545.	0.000
84.000	0.0976	865192.	-5644.6205	-0.005014	5083.9638	5.799E+09	-345.7595	21257.	0.000
90.000	0.0702	829401.	-8050.7033	-0.004137	4905.9574	5.799E+09	-456.2681	38998.	0.000
96.000	0.0480	776377.	-10710.	-0.003306	4642.2358	5.799E+09	-430.1768	53825.	0.000
102.000	0.0305	707109.	-13195.	-0.002539	4297.7276	5.799E+09	-307.9951	78226.	0.000
108.000	0.0175	622825.	-15463.	-0.001850	3878.5306	5.799E+09	-358.2484	122896.	0.000
114.000	0.008321	525036.	-17461.	-0.001257	3392.1702	5.799E+09	-307.5414	221764.	0.000
120.000	0.002411	415664.	-19083.	-0.000770	2848.1995	5.799E+09	-233.2477	580484.	0.000
126.000	-0.000918	297491.	-18533.	-0.000401	2260.4508	5.799E+09	416.7335	2722557.	0.000
132.000	-0.002401	194029.	-15687.	-0.000147	1745.8758	5.799E+09	531.6378	1328668.	0.000
138.000	-0.002679	109518.	-12453.	1.037E-05	1325.5495	5.799E+09	546.6130	1224431.	0.000
144.000	-0.002276	44577.	-9125.7878	9.009E-05	1002.5630	5.799E+09	562.3568	1482245.	0.000
150.000	-0.001597	-161.6326	-5791.7868	0.000113	781.6578	5.799E+09	548.9769	2061939.	0.000
156.000	-0.000920	-25137.	-2710.6414	9.998E-05	905.8761	5.799E+09	478.0716	3119392.	0.000
162.000	-0.000398	-32878.	-113.9437	6.997E-05	944.3742	5.799E+09	387.4943	5846051.	0.000
168.000	-7.997E-05	-26636.	1324.2195	3.917E-05	913.3322	5.799E+09	91.8934	6894920.	0.000
174.000	7.240E-05	-17061.	1474.7261	1.657E-05	865.7077	5.799E+09	-41.7245	3457929.	0.000
180.000	0.000119	-8970.8394	1138.5360	3.099E-06	825.4712	5.799E+09	-70.3388	3551207.	0.000
186.000	0.000110	-3404.2702	727.8161	-3.303E-06	797.7854	5.799E+09	-66.5678	3644490.	0.000
192.000	7.921E-05	-230.8231	380.0841	-5.184E-06	782.0020	5.799E+09	-49.3429	3737776.	0.000
198.000	4.739E-05	1166.5047	141.2809	-4.700E-06	786.6557	5.799E+09	-30.2582	3831066.	0.000
204.000	2.281E-05	1473.4011	5.8031	-3.334E-06	788.1820	5.799E+09	-14.9011	3919175.	0.000
210.000	7.384E-06	1242.4225	-54.4198	-1.929E-06	787.0332	5.799E+09	-5.1732	4203635.	0.000
216.000	-3.313E-07	823.9971	-68.6969	-8.596E-07	784.9522	5.799E+09	0.4142	7500000.	0.000
222.000	-2.931E-06	419.6785	-56.4636	-2.161E-07	782.9412	5.799E+09	3.6636	7500000.	0.000
228.000	-2.925E-06	146.8414	-34.5041	7.696E-08	781.5843	5.799E+09	3.6562	7500000.	0.000
234.000	-2.007E-06	5.4840	-16.0079	1.558E-07	780.8812	5.799E+09	2.5092	7500000.	0.000
240.000	-1.056E-06	-45.5475	-4.5214	1.350E-07	781.0805	5.799E+09	1.3197	7500000.	0.000
246.000	-3.869E-07	-49.0271	0.8883	8.611E-08	781.0978	5.799E+09	0.4836	7500000.	0.000
252.000	-2.237E-08	-35.0505	2.4229	4.261E-08	781.0283	5.799E+09	0.0280	7500000.	0.000

258.000	1.245E-07	-20.0330	2.1944	1.412E-08	780.9536	5.799E+09	-0.1041	5017404.	0.000
264.000	1.470E-07	-8.7444	1.5057	-7.728E-10	780.8974	5.799E+09	-0.1254	5119151.	0.000
270.000	1.152E-07	-1.9628	0.8286	-6.312E-09	780.8637	5.799E+09	-0.1003	5220902.	0.000
276.000	7.127E-08	1.2108	0.3381	-6.701E-09	780.8600	5.799E+09	-0.0632	5322658.	0.000
282.000	3.482E-08	2.1071	0.0540	-4.985E-09	780.8644	5.799E+09	-0.0315	5424419.	0.000
288.000	1.145E-08	1.8681	-0.0721	-2.928E-09	780.8632	5.799E+09	-0.0105	5526182.	0.000
294.000	-3.154E-10	1.2475	-0.1026	-1.316E-09	780.8601	5.799E+09	0.000394	7500000.	0.000
300.000	-4.340E-09	0.6398	-0.0851	-3.397E-10	780.8571	5.799E+09	0.005425	7500000.	0.000
306.000	-4.392E-09	0.2268	-0.0524	1.086E-10	780.8551	5.799E+09	0.005490	7500000.	0.000
312.000	-3.036E-09	0.0113	-0.0245	2.319E-10	780.8540	5.799E+09	0.003795	7500000.	0.000
318.000	-1.610E-09	-0.0676	-0.007080	2.027E-10	780.8543	5.799E+09	0.002012	7500000.	0.000
324.000	-6.036E-10	-0.0740	0.001221	1.294E-10	780.8543	5.799E+09	0.000755	7500000.	0.000
330.000	-5.701E-11	-0.0532	0.003698	6.357E-11	780.8542	5.799E+09	7.126E-05	7500000.	0.000
336.000	1.592E-10	-0.0298	0.003407	2.062E-11	780.8541	5.799E+09	-0.000168	6340409.	0.000
342.000	1.905E-10	-0.0124	0.002289	-1.188E-12	780.8540	5.799E+09	-0.000205	6442199.	0.000
348.000	1.449E-10	-0.002314	0.001201	-8.787E-12	780.8540	5.799E+09	-0.000158	6543992.	0.000
354.000	8.504E-11	0.002057	0.000444	-8.920E-12	780.8539	5.799E+09	-9.420E-05	6645786.	0.000
360.000	3.791E-11	0.003035	3.389E-05	-6.285E-12	780.8540	5.799E+09	-4.263E-05	6747583.	0.000
366.000	9.620E-12	0.002476	-0.000127	-3.434E-12	780.8540	5.799E+09	-1.098E-05	6849382.	0.000
372.000	-3.300E-12	0.001518	-0.000148	-1.368E-12	780.8539	5.799E+09	4.125E-06	7500000.	0.000
378.000	-6.793E-12	0.000708	-0.000110	0.000	780.8539	5.799E+09	8.492E-06	7500000.	0.000
384.000	-5.892E-12	0.000203	-6.211E-05	0.000	780.8539	5.799E+09	7.365E-06	7500000.	0.000
390.000	-3.733E-12	-3.783E-05	-2.601E-05	0.000	780.8539	5.799E+09	4.666E-06	7500000.	0.000
396.000	-1.809E-12	-0.000110	-5.230E-06	0.000	780.8539	5.799E+09	2.261E-06	7500000.	0.000
402.000	0.000	-0.000101	3.686E-06	0.000	780.8539	5.799E+09	7.111E-07	7500000.	0.000
408.000	0.000	-6.627E-05	5.657E-06	0.000	780.8539	5.799E+09	-5.431E-08	7500000.	0.000
414.000	0.000	-3.334E-05	4.577E-06	0.000	780.8539	5.799E+09	-3.055E-07	7500000.	0.000
420.000	0.000	-1.137E-05	2.767E-06	0.000	780.8539	5.799E+09	-2.979E-07	7500000.	0.000
426.000	0.000	-1.206E-07	1.267E-06	0.000	780.8539	5.799E+09	-2.020E-07	7500000.	0.000
432.000	0.000	3.859E-06	3.455E-07	0.000	780.8539	5.799E+09	-1.053E-07	7500000.	0.000
438.000	0.000	4.046E-06	-8.552E-08	0.000	780.8539	5.799E+09	-3.842E-08	7500000.	0.000
444.000	0.000	2.846E-06	-2.098E-07	0.000	780.8539	5.799E+09	-2.991E-09	7500000.	0.000
450.000	0.000	1.535E-06	-1.877E-07	0.000	780.8539	5.799E+09	1.036E-08	7500000.	0.000
456.000	0.000	5.956E-07	-1.212E-07	0.000	780.8539	5.799E+09	1.179E-08	7500000.	0.000
462.000	0.000	8.020E-08	-6.002E-08	0.000	780.8539	5.799E+09	8.607E-09	7500000.	0.000
468.000	0.000	-1.254E-07	-1.980E-08	0.000	780.8539	5.799E+09	4.798E-09	7500000.	0.000
474.000	0.000	-1.582E-07	4.814E-10	0.000	780.8539	5.799E+09	1.963E-09	7500000.	0.000
480.000	0.000	-1.202E-07	7.436E-09	0.000	780.8539	5.799E+09	3.555E-10	7500000.	0.000
486.000	0.000	-6.930E-08	7.546E-09	0.000	780.8539	5.799E+09	-3.188E-10	7500000.	0.000
492.000	0.000	-2.978E-08	5.224E-09	0.000	780.8539	5.799E+09	-4.553E-10	7500000.	0.000
498.000	0.000	-6.617E-09	2.776E-09	0.000	780.8539	5.799E+09	-3.606E-10	7500000.	0.000
504.000	0.000	3.566E-09	1.058E-09	0.000	780.8539	5.799E+09	-2.147E-10	7500000.	0.000
510.000	0.000	6.018E-09	1.170E-10	0.000	780.8539	5.799E+09	-9.638E-11	7500000.	0.000
516.000	0.000	4.994E-09	-2.465E-10	0.000	780.8539	5.799E+09	-2.479E-11	7500000.	0.000
522.000	0.000	3.073E-09	-2.967E-10	0.000	780.8539	5.799E+09	8.046E-12	7500000.	0.000
528.000	0.000	1.439E-09	-2.215E-10	0.000	780.8539	5.799E+09	1.703E-11	7500000.	0.000
534.000	0.000	4.161E-10	-1.258E-10	0.000	780.8539	5.799E+09	1.485E-11	7500000.	0.000
540.000	0.000	-7.228E-11	-5.296E-11	0.000	780.8539	5.799E+09	9.441E-12	7500000.	0.000
546.000	0.000	-2.207E-10	-1.086E-11	0.000	780.8539	5.799E+09	4.593E-12	7500000.	0.000
552.000	0.000	-2.036E-10	7.286E-12	0.000	780.8539	5.799E+09	1.457E-12	7500000.	0.000
558.000	0.000	-1.339E-10	1.136E-11	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
564.000	0.000	-6.758E-11	9.215E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
570.000	0.000	-2.337E-11	5.544E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
576.000	0.000	-1.026E-12	2.464E-12	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
582.000	0.000	6.244E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
588.000	0.000	5.528E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
594.000	0.000	2.177E-12	0.000	0.000	780.8539	5.799E+09	0.000	7500000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3750000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0143595 radians
Maximum bending moment = 897949. inch-lbs
Maximum shear force = 24095. lbs
Depth of maximum bending moment = 72.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 23
Number of zero deflection points = 13

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

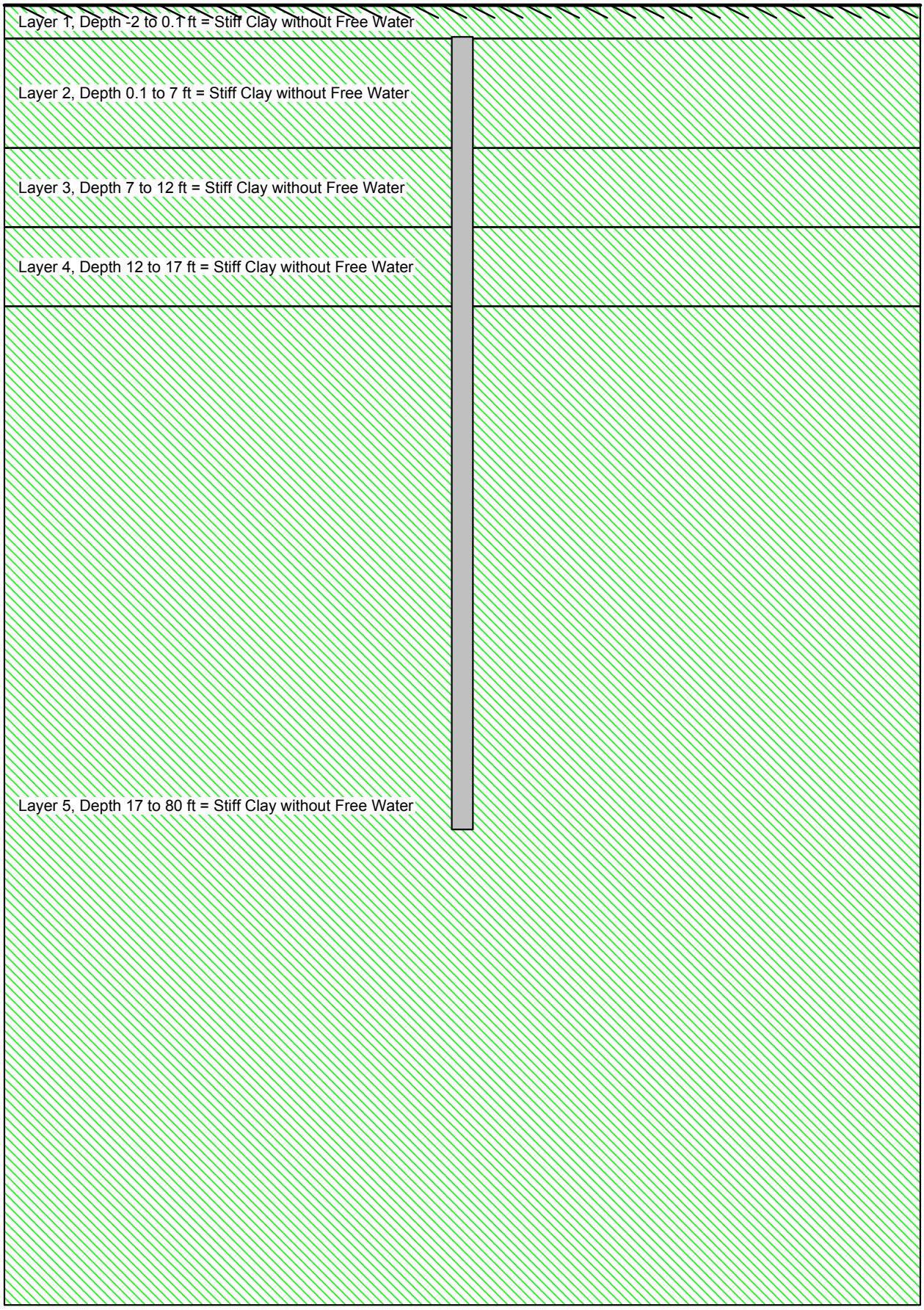
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	157000.	0.25000000	348533.	13005.	-0.00449590
2	4	y = 0.5000	M = 0.000	157000.	0.50000000	556238.	17669.	-0.00801905
3	4	y = 1.0000	M = 0.000	157000.	1.00000000	897949.	24095.	-0.01435949

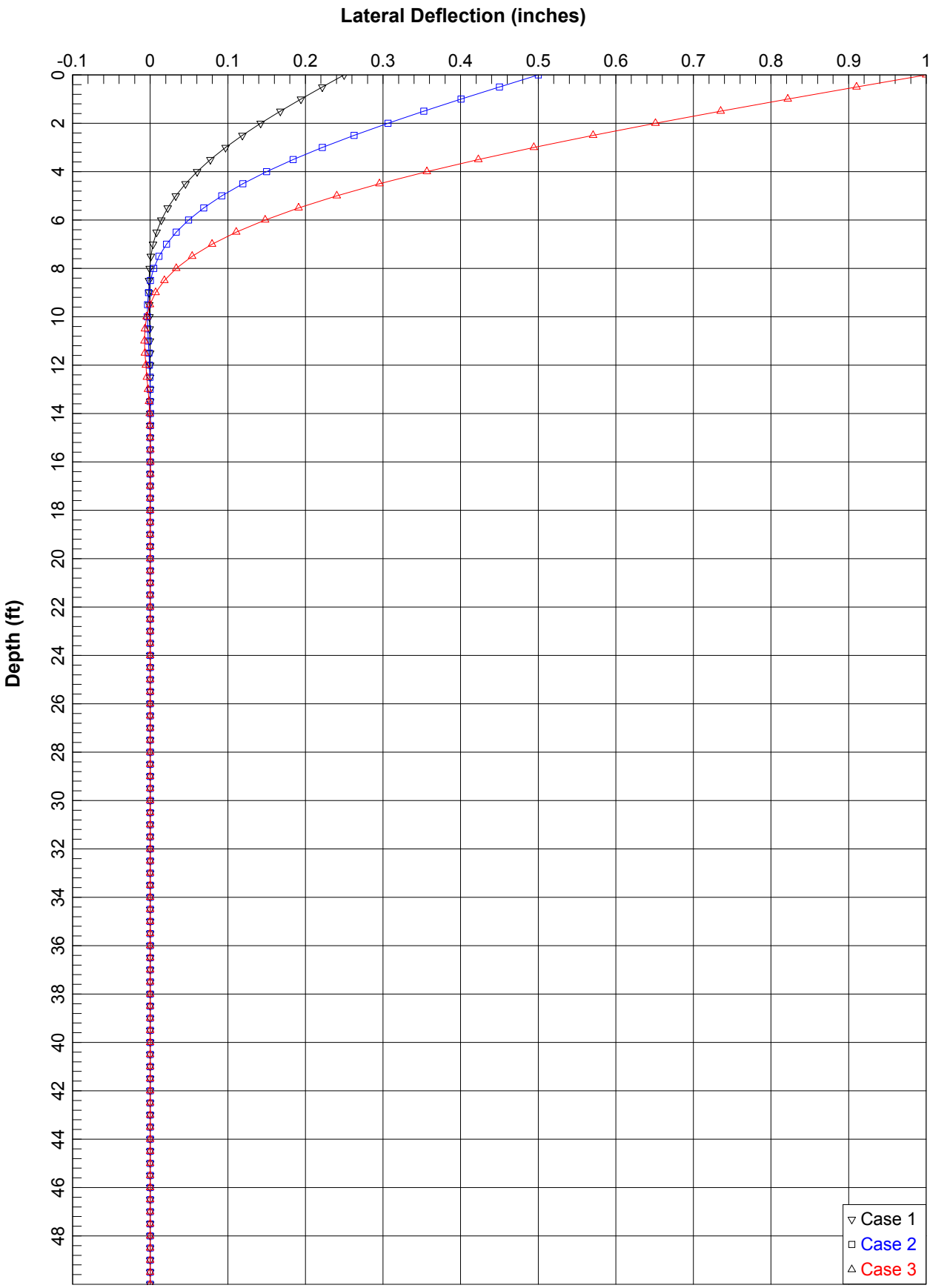
The analysis ended normally.

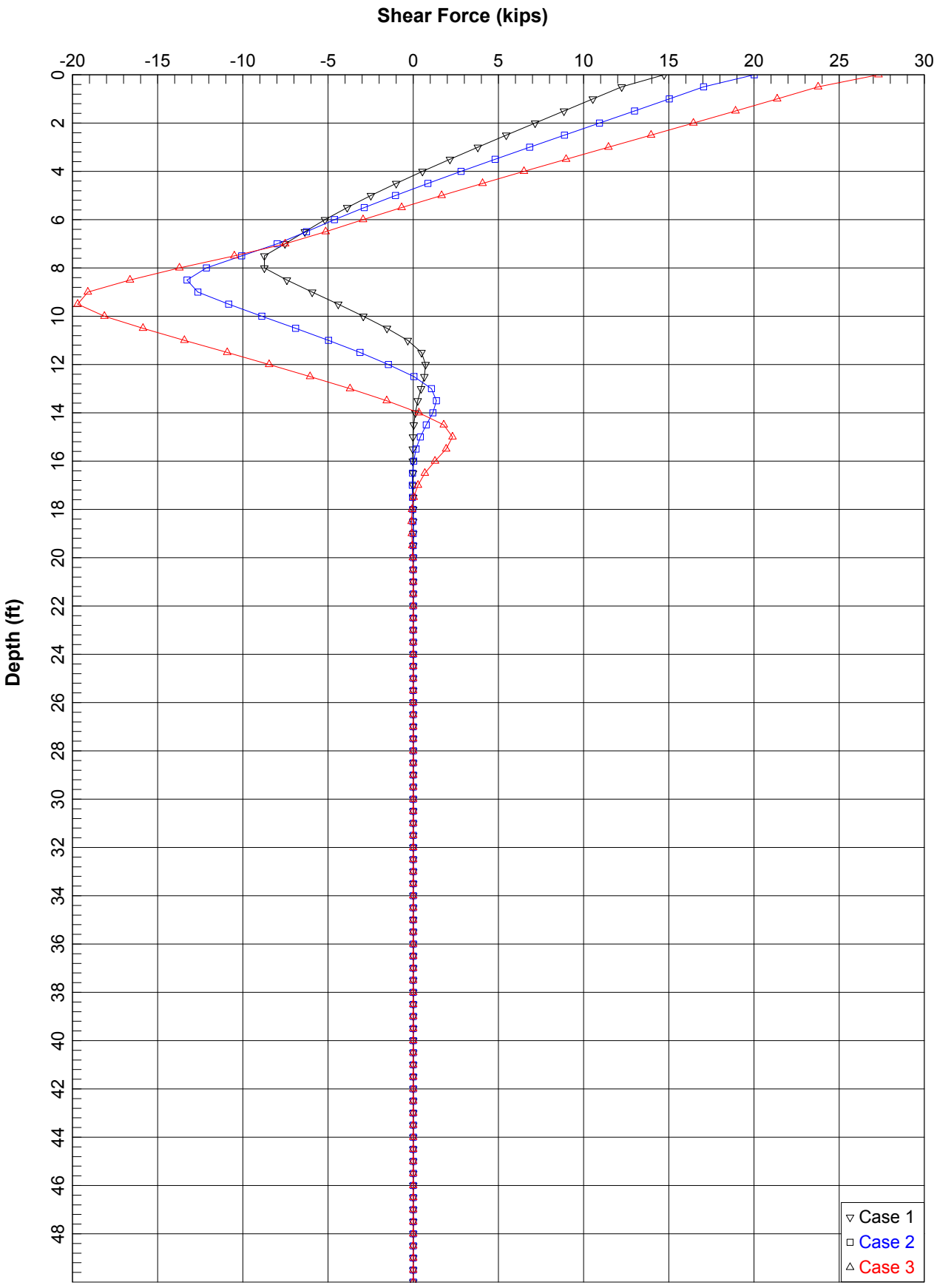
SUPPORT: **ABUTMENT 5R**

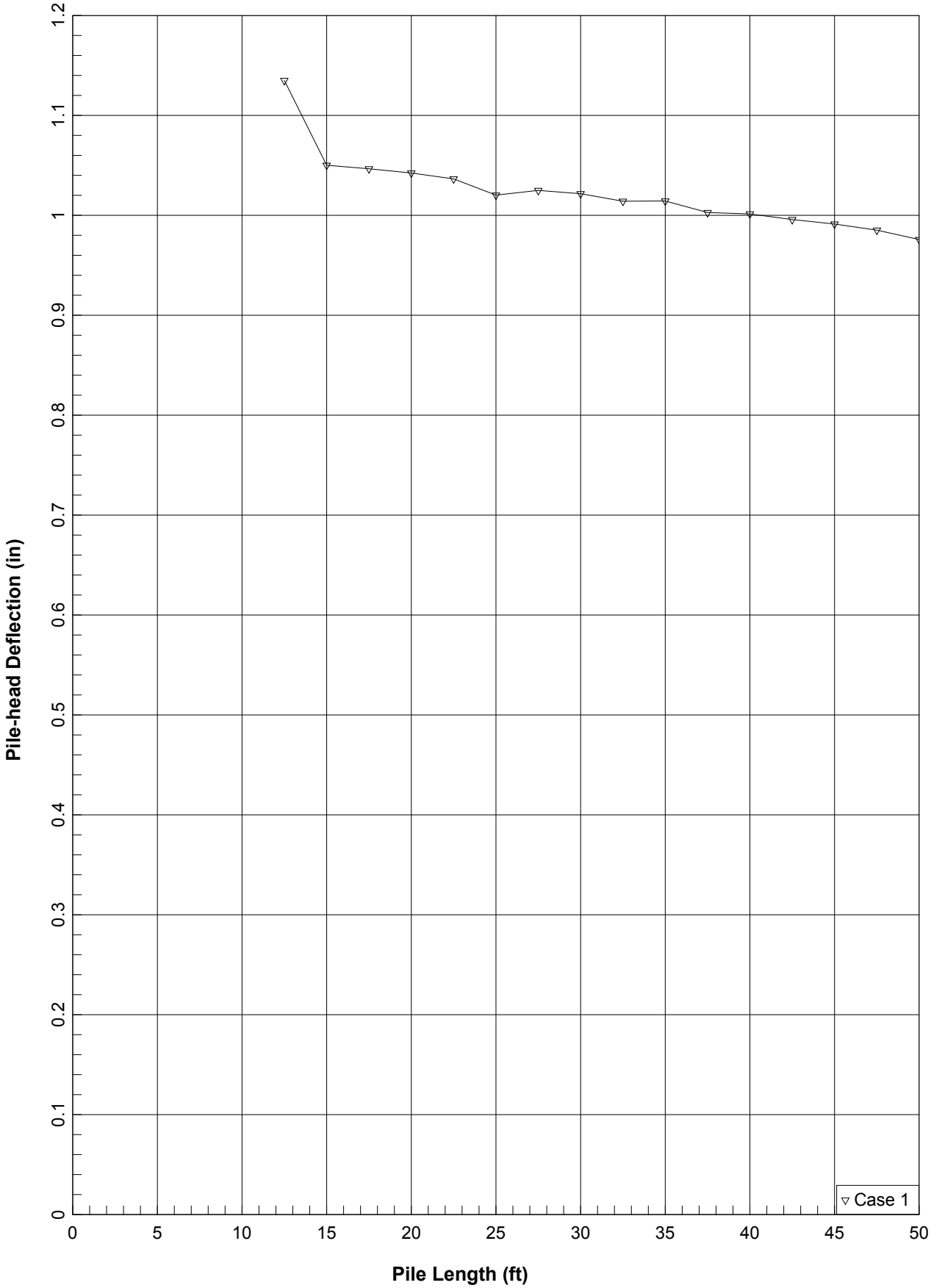
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE




Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5R_transv_Critical Length.lp6d
Name of output report file: Abut 5R_transv_Critical Length.lp6o
Name of plot output file: Abut 5R_transv_Critical Length.lp6p
Name of runtime messeage file: Abut 5R_transv_Critical Length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 9:49:20

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm pcf	Undrained Cohesion psi	Angle of In-situ Friction Test psf	Angle of In-situ Friction Test deg.	Uniaxial qu Subgrade Property psi	RQD % or GSI Mod. pci
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	125.000	4500.000	--	--	--	--
		0.00500	--	--	80.000	125.000	4500.000	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6700	1.0000
2	50.000	0.6700	1.0000

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
1	1	V = 27000. lbs	M = 0.0000 in-lbs	157000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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 = 27000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9757	-1.431E-07	27000.	-0.0146	780.8539	5.799E+09	-775.0439	2383.1187	0.000
6.000	0.8878	161840.	23487.	-0.0146	1585.7797	5.799E+09	-396.0283	2676.3831	0.000
12.000	0.8010	309265.	21091.	-0.0143	2319.0122	5.799E+09	-402.4877	3014.9093	0.000
18.000	0.7161	441899.	18661.	-0.0139	2978.6804	5.799E+09	-407.4316	3413.8478	0.000
24.000	0.6339	559435.	16207.	-0.0134	3563.2560	5.799E+09	-410.7851	3888.1093	0.000
30.000	0.5552	661637.	13737.	-0.0128	4071.5687	5.799E+09	-412.4686	4457.4153	0.000
36.000	0.4806	748346.	11262.	-0.0120	4502.8218	5.799E+09	-412.3967	5148.2825	0.000
42.000	0.4107	819479.	8793.8532	-0.0112	4856.6076	5.799E+09	-410.4759	5997.0380	0.000
48.000	0.3458	875036.	6342.6192	-0.0104	5132.9253	5.799E+09	-406.6021	7054.5223	0.000
54.000	0.2864	915102.	3920.8438	-0.009430	5332.1991	5.799E+09	-400.6564	8393.6733	0.000
60.000	0.2327	939853.	1541.3747	-0.008471	5455.2995	5.799E+09	-392.4999	10122.	0.000
66.000	0.1847	949558.	-782.0195	-0.007493	5503.5668	5.799E+09	-381.9648	12405.	0.000
72.000	0.1427	944586.	-3034.4363	-0.006513	5478.8402	5.799E+09	-368.8408	15504.	0.000
78.000	0.1066	925416.	-5199.5156	-0.005546	5383.4937	5.799E+09	-352.8523	19862.	0.000
84.000	0.0762	892640.	-7550.1976	-0.004605	5220.4831	5.799E+09	-430.7084	33920.	0.000
90.000	0.0513	843490.	-10505.	-0.003707	4976.0270	5.799E+09	-554.3256	64801.	0.000
96.000	0.0317	773561.	-13689.	-0.002870	4628.2302	5.799E+09	-506.8964	95937.	0.000
102.000	0.0169	684630.	-16548.	-0.002116	4185.9239	5.799E+09	-446.2393	158611.	0.000
108.000	0.006310	578967.	-18965.	-0.001462	3660.3998	5.799E+09	-359.3048	341680.	0.000
114.000	-0.000667	459805.	-19412.	-0.000925	3067.7357	5.799E+09	210.2252	1890913.	0.000
120.000	-0.004789	347763.	-17718.	-0.000507	2510.4832	5.799E+09	354.4599	444094.	0.000
126.000	-0.006752	248142.	-15464.	-0.000199	2015.0106	5.799E+09	396.7919	352606.	0.000
132.000	-0.007174	162564.	-13033.	1.372E-05	1589.3804	5.799E+09	413.5365	345853.	0.000
138.000	-0.006587	91715.	-10547.	0.000145	1237.0055	5.799E+09	415.2528	378232.	0.000
144.000	-0.005431	35725.	-8121.4661	0.000211	958.5367	5.799E+09	393.2849	434493.	0.000
150.000	-0.004053	-6140.7906	-5743.9173	0.000227	811.3957	5.799E+09	399.2313	591040.	0.000
156.000	-0.002713	-33629.	-3434.4480	0.000206	948.1084	5.799E+09	370.5918	819639.	0.000
162.000	-0.001582	-47742.	-1326.3386	0.000164	1018.3039	5.799E+09	332.1114	1259887.	0.000
168.000	-0.000747	-49853.	516.4926	0.000113	1028.8036	5.799E+09	282.1657	2266973.	0.000
174.000	-0.000221	-41758.	1848.6569	6.595E-05	988.5401	5.799E+09	161.8891	4385266.	0.000
180.000	4.456E-05	-27794.	2234.2951	2.996E-05	919.0880	5.799E+09	-33.3430	4489483.	0.000
186.000	0.000138	-15003.	1817.1406	7.823E-06	855.4712	5.799E+09	-105.7085	4593702.	0.000
192.000	0.000138	-6002.6530	1180.2567	-3.045E-06	810.7087	5.799E+09	-106.5861	4619597.	0.000
198.000	0.000102	-833.8697	625.9731	-6.582E-06	785.0013	5.799E+09	-78.1751	4619597.	0.000
204.000	5.946E-05	1521.4239	239.7972	-6.226E-06	788.4209	5.799E+09	-50.5502	5101169.	0.000
210.000	2.683E-05	2055.4257	12.3235	-4.375E-06	791.0768	5.799E+09	-25.2743	5653125.	0.000
216.000	6.954E-06	1677.5489	-83.1550	-2.444E-06	789.1974	5.799E+09	-6.5518	5653125.	0.000
222.000	-2.503E-06	1062.1707	-95.7368	-1.027E-06	786.1367	5.799E+09	2.3579	5653125.	0.000
228.000	-5.365E-06	530.6415	-73.4995	-2.025E-07	783.4931	5.799E+09	5.0545	5653125.	0.000
234.000	-4.932E-06	180.5581	-44.3943	1.655E-07	781.7520	5.799E+09	4.6472	5653125.	0.000
240.000	-3.379E-06	-2.4024	-20.9017	2.576E-07	780.8659	5.799E+09	3.1837	5653125.	0.000
246.000	-1.841E-06	-70.7473	-6.1478	2.198E-07	781.2058	5.799E+09	1.7343	5653125.	0.000
252.000	-7.415E-07	-76.5901	1.1509	1.436E-07	781.2349	5.799E+09	0.6986	5653125.	0.000

Abut 5R_transv_Critical Length

258.000	-1.179E-07	-57.2071	3.5799	7.435E-08	781.1385	5.799E+09	0.1110	5653125.	0.000
264.000	1.506E-07	-33.7708	3.4873	2.728E-08	781.0219	5.799E+09	-0.1419	5653125.	0.000
270.000	2.095E-07	-15.4110	2.4694	1.832E-09	780.9306	5.799E+09	-0.1974	5653125.	0.000
276.000	1.726E-07	-4.1411	1.3894	-8.283E-09	780.8745	5.799E+09	-0.1626	5653125.	0.000
282.000	1.101E-07	1.2777	0.5904	-9.765E-09	780.8603	5.799E+09	-0.1037	5653125.	0.000
288.000	5.545E-08	2.9618	0.1225	-7.571E-09	780.8687	5.799E+09	-0.0522	5653125.	0.000
294.000	1.921E-08	2.7623	-0.0885	-4.610E-09	780.8677	5.799E+09	-0.0181	5653125.	0.000
300.000	1.281E-10	1.9085	-0.1432	-2.193E-09	780.8634	5.799E+09	-0.000121	5653125.	0.000
306.000	-7.108E-09	1.0485	-0.1234	-6.635E-10	780.8592	5.799E+09	0.006697	5653125.	0.000
312.000	-7.834E-09	0.4285	-0.0812	1.006E-10	780.8561	5.799E+09	0.007381	5653125.	0.000
318.000	-5.900E-09	0.0739	-0.0424	3.605E-10	780.8543	5.799E+09	0.005559	5653125.	0.000
324.000	-3.507E-09	-0.0808	-0.0158	3.570E-10	780.8543	5.799E+09	0.003305	5653125.	0.000
330.000	-1.616E-09	-0.1163	-0.001310	2.550E-10	780.8545	5.799E+09	0.001523	5653125.	0.000
336.000	-4.473E-10	-0.0970	0.004523	1.447E-10	780.8544	5.799E+09	0.000421	5653125.	0.000
342.000	1.198E-10	-0.0623	0.005449	6.227E-11	780.8542	5.799E+09	-0.000113	5653125.	0.000
348.000	3.000E-10	-0.0317	0.004262	1.363E-11	780.8541	5.799E+09	-0.000283	5653125.	0.000
354.000	2.834E-10	-0.0112	0.002613	-8.559E-12	780.8540	5.799E+09	-0.000267	5653125.	0.000
360.000	1.973E-10	-0.0000316	0.001255	-1.452E-11	780.8539	5.799E+09	-0.000186	5653125.	0.000
366.000	1.092E-10	0.003880	0.000388	-1.267E-11	780.8540	5.799E+09	-0.000103	5653125.	0.000
372.000	4.517E-11	0.004369	-4.779E-05	-8.406E-12	780.8540	5.799E+09	-4.256E-05	5653125.	0.000
378.000	8.291E-12	0.003322	-0.000199	-4.427E-12	780.8540	5.799E+09	-7.812E-06	5653125.	0.000
384.000	-7.957E-12	0.001991	-0.000200	-1.678E-12	780.8539	5.799E+09	7.497E-06	5653125.	0.000
390.000	-1.184E-11	0.000928	-0.000144	0.000	780.8539	5.799E+09	1.116E-05	5653125.	0.000
396.000	-9.972E-12	0.000265	-8.220E-05	0.000	780.8539	5.799E+09	9.395E-06	5653125.	0.000
402.000	-6.455E-12	-5.970E-05	-3.577E-05	0.000	780.8539	5.799E+09	6.082E-06	5653125.	0.000
408.000	-3.309E-12	-0.000165	-8.173E-06	0.000	780.8539	5.799E+09	3.118E-06	5653125.	0.000
414.000	-1.189E-12	-0.000159	4.542E-06	0.000	780.8539	5.799E+09	1.121E-06	5653125.	0.000
420.000	0.000	-0.000111	8.059E-06	0.000	780.8539	5.799E+09	5.147E-08	5653125.	0.000
426.000	0.000	-6.214E-05	7.114E-06	0.000	780.8539	5.799E+09	-3.664E-07	5653125.	0.000
432.000	0.000	-2.606E-05	4.753E-06	0.000	780.8539	5.799E+09	-4.208E-07	5653125.	0.000
438.000	0.000	-5.106E-06	2.522E-06	0.000	780.8539	5.799E+09	-3.227E-07	5653125.	0.000
444.000	0.000	4.239E-06	9.698E-07	0.000	780.8539	5.799E+09	-1.947E-07	5653125.	0.000
450.000	0.000	6.570E-06	1.109E-07	0.000	780.8539	5.799E+09	-9.158E-08	5653125.	0.000
456.000	0.000	5.597E-06	-2.444E-07	0.000	780.8539	5.799E+09	-2.685E-08	5653125.	0.000
462.000	0.000	3.653E-06	-3.096E-07	0.000	780.8539	5.799E+09	5.137E-09	5653125.	0.000
468.000	0.000	1.890E-06	-2.469E-07	0.000	780.8539	5.799E+09	1.576E-08	5653125.	0.000
474.000	0.000	6.920E-07	-1.537E-07	0.000	780.8539	5.799E+09	1.532E-08	5653125.	0.000
480.000	0.000	4.506E-08	-7.518E-08	0.000	780.8539	5.799E+09	1.084E-08	5653125.	0.000
486.000	0.000	-2.117E-07	-2.438E-08	0.000	780.8539	5.799E+09	6.093E-09	5653125.	0.000
492.000	0.000	-2.489E-07	1.654E-09	0.000	780.8539	5.799E+09	2.585E-09	5653125.	0.000
498.000	0.000	-1.928E-07	1.101E-08	0.000	780.8539	5.799E+09	5.332E-10	5653125.	0.000
504.000	0.000	-1.173E-07	1.144E-08	0.000	780.8539	5.799E+09	-3.912E-10	5653125.	0.000
510.000	0.000	-5.573E-08	8.373E-09	0.000	780.8539	5.799E+09	-6.296E-10	5653125.	0.000
516.000	0.000	-1.681E-08	4.858E-09	0.000	780.8539	5.799E+09	-5.421E-10	5653125.	0.000
522.000	0.000	2.613E-09	2.163E-09	0.000	780.8539	5.799E+09	-3.563E-10	5653125.	0.000
528.000	0.000	9.202E-09	5.362E-10	0.000	780.8539	5.799E+09	-1.858E-10	5653125.	0.000
534.000	0.000	9.095E-09	-2.285E-10	0.000	780.8539	5.799E+09	-6.910E-11	5653125.	0.000
540.000	0.000	6.490E-09	-4.526E-10	0.000	780.8539	5.799E+09	-5.596E-12	5653125.	0.000
546.000	0.000	3.678E-09	-4.096E-10	0.000	780.8539	5.799E+09	1.994E-11	5653125.	0.000
552.000	0.000	1.581E-09	-2.779E-10	0.000	780.8539	5.799E+09	2.396E-11	5653125.	0.000
558.000	0.000	3.438E-10	-1.498E-10	0.000	780.8539	5.799E+09	1.874E-11	5653125.	0.000
564.000	0.000	-2.187E-10	-5.905E-11	0.000	780.8539	5.799E+09	1.150E-11	5653125.	0.000
570.000	0.000	-3.670E-10	-7.908E-12	0.000	780.8539	5.799E+09	5.545E-12	5653125.	0.000
576.000	0.000	-3.152E-10	1.394E-11	0.000	780.8539	5.799E+09	1.736E-12	5653125.	0.000
582.000	0.000	-2.007E-10	1.846E-11	0.000	780.8539	5.799E+09	0.000	5653125.	0.000
588.000	0.000	-9.424E-11	1.470E-11	0.000	780.8539	5.799E+09	-1.021E-12	5653125.	0.000
594.000	0.000	-2.443E-11	7.858E-12	0.000	780.8539	5.799E+09	-1.261E-12	5653125.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	-1.358E-12	2826562.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.9756677 inches
Computed slope at pile head      =     -0.0146398 radians
Maximum bending moment           =        949558. inch-lbs
Maximum shear force              =         27000. lbs
Depth of maximum bending moment  =    66.0000000 inches below pile head
Depth of maximum shear force     =     0.0000000 inches below pile head
Number of iterations             =             33
Number of zero deflection points =             12
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          27000. lbs
Moment     =              0. in-lbs
Axial Load =         157000. lbs
```

Pile Length	Pile Head Deflection	Maximum Moment	Maximum Shear

Abut 5R_transv_Critical Length

feet	inches	ln-lbs	lbs
50.000	0.9756677	949558.	27000.
47.500	0.9850924	951245.	27000.
45.000	0.9912324	953694.	27000.
42.500	0.9957888	957848.	27000.
40.000	1.0013538	960731.	27000.
37.500	1.0029193	964810.	27000.
35.000	1.0144167	966471.	27000.
32.500	1.0140862	970659.	27000.
30.000	1.0215556	973083.	27000.
27.500	1.0249842	976575.	27000.
25.000	1.0202715	981986.	27000.
22.500	1.0365307	983137.	27000.
20.000	1.0423497	986145.	27000.
17.500	1.0466346	989608.	27000.
15.000	1.0501925	993343.	27000.
12.500	1.1351107	982517.	27000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 27000.	M = 0.000	157000.	0.97566765	949558.	27000.	-0.01463982

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5R_transv_Ave P.lp6d
Name of output report file: Abut 5R_transv_Ave P.lp6o
Name of plot output file: Abut 5R_transv_Ave P.lp6p
Name of runtime messeage file: Abut 5R_transv_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 9:45:25

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 130.00000 pcf
Effective unit weight at bottom of layer = 130.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm pcf	Undrained Cohesion psi	Angle of In-situ Friction Test psf	Angle of In-situ Test Property deg.	Uniaxial Elastic qu Subgrade Mod. psi	RQD % or GSI
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--	--
					0.10000	120.000	4000.000	--	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--	--
					7.000	120.000	1500.000	--	--	--	--
		0.00700	--	--	7.000	120.000	3500.000	--	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	12.000	120.000	3500.000	--	--	--	--
					12.000	125.000	4000.000	--	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	17.000	130.000	4000.000	--	--	--	--
					80.000	130.000	4000.000	--	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--							
		0.00500	--	--							

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6700	1.0000
2	50.000	0.6700	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		157000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		157000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		157000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

---

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	14728.	-0.004683	780.8539	5.799E+09	-551.4203	6617.0437	0.000
6.000	0.2219	82851.	12233.	-0.004640	1192.9209	5.799E+09	-280.0159	7571.3288	0.000
12.000	0.1943	155541.	10546.	-0.004517	1554.4496	5.799E+09	-282.4711	8721.8793	0.000
18.000	0.1677	217910.	8848.0527	-0.004324	1864.6480	5.799E+09	-283.4332	10141.	0.000
24.000	0.1424	269863.	7149.2768	-0.004071	2123.0415	5.799E+09	-282.8254	11914.	0.000
30.000	0.1188	311371.	5459.1072	-0.003770	2329.4870	5.799E+09	-280.5644	14164.	0.000
36.000	0.0972	342476.	3787.7419	-0.003432	2484.1882	5.799E+09	-276.5574	17073.	0.000
42.000	0.0777	363290.	2145.9764	-0.003067	2587.7118	5.799E+09	-270.6978	20914.	0.000
48.000	0.0604	374006.	545.3050	-0.002686	2641.0059	5.799E+09	-262.8593	26118.	0.000
54.000	0.0454	374894.	-1001.9255	-0.002298	2645.4221	5.799E+09	-252.8842	33396.	0.000
60.000	0.0328	366312.	-2482.2672	-0.001915	2602.7421	5.799E+09	-240.5631	43994.	0.000
66.000	0.0225	348714.	-3880.7395	-0.001545	2515.2137	5.799E+09	-225.5944	60273.	0.000
72.000	0.0143	322654.	-5179.9973	-0.001197	2385.6023	5.799E+09	-207.4915	87235.	0.000
78.000	0.008088	288810.	-6358.4668	-0.000881	2217.2755	5.799E+09	-185.3316	137482.	0.000
84.000	0.003698	248012.	-7521.9380	-0.000603	2014.3650	5.799E+09	-202.4921	328507.	0.000
90.000	0.000848	199683.	-8729.6731	-0.000372	1773.9962	5.799E+09	-200.0862	1415217.	0.000
96.000	-0.000762	143956.	-8735.2483	-0.000194	1496.8341	5.799E+09	198.2278	1560615.	0.000
102.000	-0.001479	95225.	-7414.6062	-7.018E-05	1254.4666	5.799E+09	241.9862	981830.	0.000
108.000	-0.001604	55113.	-5925.3115	7.601E-06	1054.9650	5.799E+09	254.4454	951634.	0.000
114.000	-0.001388	24107.	-4404.5536	4.859E-05	900.7544	5.799E+09	252.4740	1091717.	0.000
120.000	-0.001021	2167.1114	-2926.0436	6.218E-05	791.6323	5.799E+09	240.3627	1412202.	0.000
126.000	-0.000641	-11122.	-1545.7489	5.755E-05	836.1715	5.799E+09	219.7355	2055468.	0.000
132.000	-0.000331	-16490.	-313.4917	4.326E-05	862.8699	5.799E+09	191.0169	3466094.	0.000
138.000	-0.000122	-14966.	483.0734	2.699E-05	855.2870	5.799E+09	74.5048	3655723.	0.000
144.000	-6.815E-06	-10744.	718.9693	1.369E-05	834.2915	5.799E+09	4.1272	3633478.	0.000
150.000	4.195E-05	-6363.8083	648.1187	4.835E-06	812.5049	5.799E+09	-27.7440	3968431.	0.000
156.000	5.120E-05	-2975.9412	460.6260	2.602E-09	795.6551	5.799E+09	-34.7535	4072635.	0.000
162.000	4.198E-05	-836.3008	268.6970	-1.970E-06	785.0134	5.799E+09	-29.2228	4176842.	0.000
168.000	2.756E-05	252.1341	122.0272	-2.272E-06	782.1080	5.799E+09	-19.6672	4281053.	0.000
174.000	1.472E-05	632.3055	30.7610	-1.814E-06	783.9988	5.799E+09	-10.7549	4385266.	0.000
180.000	5.792E-06	624.6848	-14.5043	-1.164E-06	783.9609	5.799E+09	-4.3336	4489483.	0.000
186.000	7.465E-07	460.4466	-29.2197	-6.026E-07	783.1440	5.799E+09	-0.5715	4593702.	0.000
192.000	-1.440E-06	275.1840	-27.6082	-2.220E-07	782.2226	5.799E+09	1.1087	4619597.	0.000
198.000	-1.918E-06	129.5661	-19.8519	-1.264E-08	781.4983	5.799E+09	1.4768	4619597.	0.000
204.000	-1.592E-06	36.9852	-11.6006	7.352E-08	781.0379	5.799E+09	1.2737	4801100.	0.000
210.000	-1.036E-06	-9.7802	-5.1774	8.760E-08	780.9026	5.799E+09	0.8674	5025000.	0.000
216.000	-5.405E-07	-25.3085	-1.2171	6.945E-08	780.9798	5.799E+09	0.4527	5025000.	0.000
222.000	-2.024E-07	-24.5160	0.6494	4.367E-08	780.9759	5.799E+09	0.1695	5025000.	0.000
228.000	-1.648E-08	-17.5975	1.1993	2.188E-08	780.9415	5.799E+09	0.0138	5025000.	0.000
234.000	6.018E-08	-10.1650	1.0896	7.517E-09	780.9045	5.799E+09	-0.0504	5025000.	0.000

240.000	7.373E-08	-4.5370	0.7531	-8.893E-11	780.8765	5.799E+09	-0.0617	5025000.	0.000
246.000	5.911E-08	-1.1275	0.4194	-3.020E-09	780.8595	5.799E+09	-0.0495	5025000.	0.000
252.000	3.749E-08	0.5009	0.1766	-3.344E-09	780.8564	5.799E+09	-0.0314	5025000.	0.000
258.000	1.899E-08	0.9984	0.0347	-2.568E-09	780.8589	5.799E+09	-0.0159	5025000.	0.000
264.000	6.679E-09	0.9224	-0.0298	-1.574E-09	780.8585	5.799E+09	-0.005593	5025000.	0.000
270.000	9.657E-11	0.6442	-0.0468	-7.637E-10	780.8571	5.799E+09	-8.088E-05	5025000.	0.000
276.000	-2.486E-09	0.3624	-0.0408	-2.430E-10	780.8557	5.799E+09	0.002082	5025000.	0.000
282.000	-2.819E-09	0.1552	-0.0275	2.483E-11	780.8547	5.799E+09	0.002361	5025000.	0.000
288.000	-2.188E-09	0.0329	-0.0149	1.222E-10	780.8541	5.799E+09	0.001833	5025000.	0.000
294.000	-1.353E-09	-0.0235	-0.005976	1.270E-10	780.8541	5.799E+09	0.001133	5025000.	0.000
300.000	-6.639E-10	-0.0391	-0.000909	9.466E-11	780.8541	5.799E+09	0.000556	5025000.	0.000
306.000	-2.171E-10	-0.0346	0.001305	5.657E-11	780.8541	5.799E+09	0.000182	5025000.	0.000
312.000	1.494E-11	-0.0235	0.001813	2.652E-11	780.8541	5.799E+09	-1.252E-05	5025000.	0.000
318.000	1.011E-10	-0.0129	0.001521	7.693E-12	780.8540	5.799E+09	-8.464E-05	5025000.	0.000
324.000	1.073E-10	-0.005270	0.000998	-1.693E-12	780.8540	5.799E+09	-8.983E-05	5025000.	0.000
330.000	8.075E-11	-0.000895	0.000525	-4.882E-12	780.8539	5.799E+09	-6.763E-05	5025000.	0.000
336.000	4.868E-11	0.001045	0.000200	-4.805E-12	780.8539	5.799E+09	-4.077E-05	5025000.	0.000
342.000	2.309E-11	0.001517	1.997E-05	-3.479E-12	780.8539	5.799E+09	-1.934E-05	5025000.	0.000
348.000	6.928E-12	0.001291	-5.546E-05	-2.026E-12	780.8539	5.799E+09	-5.802E-06	5025000.	0.000
354.000	-1.219E-12	0.000855	-6.980E-05	0.000	780.8539	5.799E+09	1.021E-06	5025000.	0.000
360.000	-4.055E-12	0.000455	-5.655E-05	0.000	780.8539	5.799E+09	3.396E-06	5025000.	0.000
366.000	-4.063E-12	0.000177	-3.616E-05	0.000	780.8539	5.799E+09	3.403E-06	5025000.	0.000
372.000	-2.971E-12	2.142E-05	-1.848E-05	0.000	780.8539	5.799E+09	2.488E-06	5025000.	0.000
378.000	-1.745E-12	-4.490E-05	-6.636E-06	0.000	780.8539	5.799E+09	1.462E-06	5025000.	0.000
384.000	0.000	-5.855E-05	-2.439E-07	0.000	780.8539	5.799E+09	6.689E-07	5025000.	0.000
390.000	0.000	-4.807E-05	2.305E-06	0.000	780.8539	5.799E+09	1.806E-07	5025000.	0.000
396.000	0.000	-3.103E-05	2.673E-06	0.000	780.8539	5.799E+09	-5.777E-08	5025000.	0.000
402.000	0.000	-1.605E-05	2.096E-06	0.000	780.8539	5.799E+09	-1.348E-07	5025000.	0.000
408.000	0.000	-5.901E-06	1.306E-06	0.000	780.8539	5.799E+09	-1.284E-07	5025000.	0.000
414.000	0.000	-3.676E-07	6.473E-07	0.000	780.8539	5.799E+09	-9.125E-08	5025000.	0.000
420.000	0.000	1.881E-06	2.168E-07	0.000	780.8539	5.799E+09	-5.223E-08	5025000.	0.000
426.000	0.000	2.247E-06	-8.851E-09	0.000	780.8539	5.799E+09	-2.299E-08	5025000.	0.000
432.000	0.000	1.783E-06	-9.412E-08	0.000	780.8539	5.799E+09	-5.433E-09	5025000.	0.000
438.000	0.000	1.122E-06	-1.019E-07	0.000	780.8539	5.799E+09	2.852E-09	5025000.	0.000
444.000	0.000	5.630E-07	-7.741E-08	0.000	780.8539	5.799E+09	5.301E-09	5025000.	0.000
450.000	0.000	1.939E-07	-4.703E-08	0.000	780.8539	5.799E+09	4.823E-09	5025000.	0.000
456.000	0.000	-1.761E-09	-2.255E-08	0.000	780.8539	5.799E+09	3.337E-09	5025000.	0.000
462.000	0.000	-7.729E-08	-6.962E-09	0.000	780.8539	5.799E+09	1.860E-09	5025000.	0.000
468.000	0.000	-8.578E-08	9.711E-10	0.000	780.8539	5.799E+09	7.846E-10	5025000.	0.000
474.000	0.000	-6.595E-08	3.791E-09	0.000	780.8539	5.799E+09	1.553E-10	5025000.	0.000
480.000	0.000	-4.047E-08	3.864E-09	0.000	780.8539	5.799E+09	-1.310E-10	5025000.	0.000
486.000	0.000	-1.965E-08	2.858E-09	0.000	780.8539	5.799E+09	-2.069E-10	5025000.	0.000
492.000	0.000	-6.271E-09	1.688E-09	0.000	780.8539	5.799E+09	-1.806E-10	5025000.	0.000
498.000	0.000	6.189E-10	7.815E-10	0.000	780.8539	5.799E+09	-1.217E-10	5025000.	0.000
504.000	0.000	3.128E-09	2.186E-10	0.000	780.8539	5.799E+09	-6.597E-11	5025000.	0.000
510.000	0.000	3.259E-09	-5.903E-11	0.000	780.8539	5.799E+09	-2.655E-11	5025000.	0.000
516.000	0.000	2.431E-09	-1.509E-10	0.000	780.8539	5.799E+09	-4.082E-12	5025000.	0.000
522.000	0.000	1.454E-09	-1.459E-10	0.000	780.8539	5.799E+09	5.748E-12	5025000.	0.000
528.000	0.000	6.825E-10	-1.046E-10	0.000	780.8539	5.799E+09	8.017E-12	5025000.	0.000
534.000	0.000	1.987E-10	-6.038E-11	0.000	780.8539	5.799E+09	6.736E-12	5025000.	0.000
540.000	0.000	-4.274E-11	-2.691E-11	0.000	780.8539	5.799E+09	4.422E-12	5025000.	0.000
546.000	0.000	-1.250E-10	-6.647E-12	0.000	780.8539	5.799E+09	2.331E-12	5025000.	0.000
552.000	0.000	-1.232E-10	3.013E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
558.000	0.000	-8.924E-11	5.945E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
564.000	0.000	-5.205E-11	5.462E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
570.000	0.000	-2.377E-11	3.766E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
576.000	0.000	-6.850E-12	2.042E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
582.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
588.000	0.000	2.389E-12	0.000	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
594.000	0.000	1.220E-12	0.000	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	2512500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0046829 radians
Maximum bending moment            =         374894. inch-lbs
Maximum shear force               =          14728. lbs
Depth of maximum bending moment   =     54.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             17
Number of zero deflection points  =             13
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	20013.	-0.008354	780.8539	5.799E+09	-655.7530	3934.5177	0.000
6.000	0.4499	116145.	17044.	-0.008294	1358.5122	5.799E+09	-334.1294	4456.2862	0.000
12.000	0.4005	220148.	15026.	-0.008120	1875.7818	5.799E+09	-338.4440	5070.6626	0.000
18.000	0.3524	311753.	12987.	-0.007845	2331.3860	5.799E+09	-341.2587	5809.6996	0.000
24.000	0.3063	390768.	10935.	-0.007481	2724.3768	5.799E+09	-342.4977	6708.2717	0.000
30.000	0.2627	457073.	8881.7201	-0.007043	3054.1492	5.799E+09	-342.0794	7814.1505	0.000
36.000	0.2218	510617.	6835.7376	-0.006542	3320.4567	5.799E+09	-339.9147	9194.1528	0.000
42.000	0.1842	551427.	4808.2812	-0.005993	3523.4273	5.799E+09	-335.9040	10944.	0.000
48.000	0.1499	579607.	2810.7709	-0.005407	3663.5813	5.799E+09	-329.9327	13205.	0.000
54.000	0.1193	595344.	855.3785	-0.004799	3741.8512	5.799E+09	-321.8647	16192.	0.000
60.000	0.0923	598914.	-1044.8100	-0.004182	3759.6054	5.799E+09	-311.5314	20247.	0.000
66.000	0.0691	590684.	-2875.5439	-0.003566	3718.6766	5.799E+09	-298.7132	25941.	0.000
72.000	0.0495	571126.	-4620.9965	-0.002965	3621.3990	5.799E+09	-283.1043	34298.	0.000
78.000	0.0335	540819.	-6263.0345	-0.002390	3470.6648	5.799E+09	-264.2416	47315.	0.000
84.000	0.0208	500472.	-7990.4698	-0.001851	3269.9957	5.799E+09	-311.5701	89667.	0.000
90.000	0.0113	448420.	-10065.	-0.001360	3011.1139	5.799E+09	-379.7836	201736.	0.000
96.000	0.004526	382260.	-12139.	-0.000930	2682.0583	5.799E+09	-311.8160	413324.	0.000
102.000	0.000131	304501.	-13278.	-0.000575	2295.3191	5.799E+09	-67.5989	3104259.	0.000
108.000	-0.002375	224012.	-12638.	-0.000302	1895.0003	5.799E+09	280.9484	709857.	0.000
114.000	-0.003489	153419.	-10840.	-0.000106	1543.8930	5.799E+09	318.3489	547416.	0.000
120.000	-0.003651	94137.	-8891.6059	2.168E-05	1249.0542	5.799E+09	330.9938	543890.	0.000
126.000	-0.003229	46679.	-6909.6051	9.454E-05	1013.0172	5.799E+09	329.6732	612571.	0.000
132.000	-0.002517	11044.	-4966.8722	0.000124	835.7817	5.799E+09	317.9045	757832.	0.000
138.000	-0.001736	-13158.	-3121.8447	0.000123	846.2947	5.799E+09	297.1047	1026705.	0.000
144.000	-0.001037	-26651.	-1452.0563	0.000103	913.4030	5.799E+09	259.4914	1501024.	0.000
150.000	-0.000504	-30770.	35.6039	7.300E-05	933.9204	5.799E+09	236.3953	2815846.	0.000
156.000	-0.000161	-26361.	1073.1085	4.344E-05	911.9621	5.799E+09	109.4396	4072635.	0.000
162.000	1.759E-05	-17980.	1364.6932	2.050E-05	870.2810	5.799E+09	-12.2447	4176842.	0.000
168.000	8.478E-05	-10023.	1146.4816	6.013E-06	830.7051	5.799E+09	-60.4925	4281053.	0.000
174.000	8.975E-05	-4233.9249	768.2229	-1.363E-06	801.9118	5.799E+09	-65.5937	4385266.	0.000
180.000	6.843E-05	-801.8269	417.8441	-3.968E-06	784.8424	5.799E+09	-51.1992	4489483.	0.000
186.000	4.213E-05	787.6813	167.4896	-3.976E-06	784.7715	5.799E+09	-32.2523	4593702.	0.000
192.000	2.072E-05	1215.4388	22.8818	-2.939E-06	786.8990	5.799E+09	-15.9503	4619597.	0.000
198.000	6.853E-06	1067.8010	-40.7980	-1.758E-06	786.1647	5.799E+09	-5.2763	4619597.	0.000
204.000	-3.813E-07	729.1752	-55.7116	-8.285E-07	784.4806	5.799E+09	0.3051	4801100.	0.000
210.000	-3.089E-06	400.8221	-47.0364	-2.438E-07	782.8475	5.799E+09	2.5866	5025000.	0.000
216.000	-3.307E-06	165.1973	-30.9669	4.900E-08	781.6756	5.799E+09	2.7699	5025000.	0.000
222.000	-2.500E-06	29.1268	-16.3748	1.495E-07	780.9988	5.799E+09	2.0942	5025000.	0.000
228.000	-1.513E-06	-31.5821	-6.2913	1.483E-07	781.0110	5.799E+09	1.2670	5025000.	0.000
234.000	-7.213E-07	-46.6478	-0.6780	1.078E-07	781.0859	5.799E+09	0.6041	5025000.	0.000
240.000	-2.193E-07	-39.9215	1.6852	6.301E-08	781.0525	5.799E+09	0.1837	5025000.	0.000
246.000	3.481E-08	-26.5441	2.1488	2.862E-08	780.9860	5.799E+09	-0.0292	5025000.	0.000
252.000	1.241E-07	-14.1903	1.7494	7.546E-09	780.9245	5.799E+09	-0.1040	5025000.	0.000
258.000	1.254E-07	-5.5653	1.1226	-2.675E-09	780.8816	5.799E+09	-0.1050	5025000.	0.000
264.000	9.203E-08	-0.7143	0.5764	-5.924E-09	780.8575	5.799E+09	-0.0771	5025000.	0.000
270.000	5.427E-08	1.3626	0.2088	-5.589E-09	780.8607	5.799E+09	-0.0455	5025000.	0.000
276.000	2.497E-08	1.8019	0.009722	-3.951E-09	780.8629	5.799E+09	-0.0209	5025000.	0.000
282.000	6.854E-09	1.4867	-0.0702	-2.250E-09	780.8613	5.799E+09	-0.005740	5025000.	0.000
288.000	-2.030E-09	0.9634	-0.0824	-9.823E-10	780.8587	5.799E+09	0.001700	5025000.	0.000
294.000	-4.934E-09	0.5003	-0.0649	-2.251E-10	780.8564	5.799E+09	0.004132	5025000.	0.000
300.000	-4.731E-09	0.1855	-0.0406	1.298E-10	780.8549	5.799E+09	0.003963	5025000.	0.000
306.000	-3.377E-09	0.0132	-0.0202	2.326E-10	780.8540	5.799E+09	0.002828	5025000.	0.000
312.000	-1.940E-09	-0.0573	-0.006838	2.098E-10	780.8542	5.799E+09	0.001625	5025000.	0.000
318.000	-8.590E-10	-0.0692	0.000196	1.444E-10	780.8543	5.799E+09	0.000719	5025000.	0.000
324.000	-2.074E-10	-0.0552	0.002875	8.005E-11	780.8542	5.799E+09	0.000174	5025000.	0.000
330.000	1.017E-10	-0.0349	0.003140	3.347E-11	780.8541	5.799E+09	-8.515E-05	5025000.	0.000
336.000	1.943E-10	-0.0176	0.002397	6.351E-12	780.8540	5.799E+09	-0.000163	5025000.	0.000
342.000	1.779E-10	-0.006109	0.001462	-5.896E-12	780.8540	5.799E+09	-0.000149	5025000.	0.000
348.000	1.235E-10	-1.294E-05	0.000704	-9.063E-12	780.8539	5.799E+09	-0.000103	5025000.	0.000
354.000	6.912E-11	0.002359	0.000220	-7.850E-12	780.8540	5.799E+09	-5.789E-05	5025000.	0.000
360.000	2.934E-11	0.002644	-2.723E-05	-5.262E-12	780.8540	5.799E+09	-2.458E-05	5025000.	0.000
366.000	5.981E-12	0.002042	-0.000116	-2.838E-12	780.8539	5.799E+09	-5.000E-06	5025000.	0.000
372.000	-4.707E-12	0.001257	-0.000119	-1.131E-12	780.8539	5.799E+09	3.942E-06	5025000.	0.000
378.000	-7.590E-12	0.000614	-8.829E-05	0.000	780.8539	5.799E+09	6.356E-06	5025000.	0.000
384.000	-6.663E-12	0.000198	-5.248E-05	0.000	780.8539	5.799E+09	5.580E-06	5025000.	0.000
390.000	-4.506E-12	-1.673E-05	-2.442E-05	0.000	780.8539	5.799E+09	3.774E-06	5025000.	0.000
396.000	-2.453E-12	-9.565E-05	-6.937E-06	0.000	780.8539	5.799E+09	2.055E-06	5025000.	0.000
402.000	0.000	-0.000101	1.726E-06	0.000	780.8539	5.799E+09	8.328E-07	5025000.	0.000
408.000	0.000	-7.530E-05	4.625E-06	0.000	780.8539	5.799E+09	1.337E-07	5025000.	0.000
414.000	0.000	-4.520E-05	4.504E-06	0.000	780.8539	5.799E+09	-1.740E-07	5025000.	0.000
420.000	0.000	-2.132E-05	3.243E-06	0.000	780.8539	5.799E+09	-2.465E-07	5025000.	0.000
426.000	0.000	-6.297E-06	1.878E-06	0.000	780.8539	5.799E+09	-2.083E-07	5025000.	0.000
432.000	0.000	1.237E-06	8.419E-07	0.000	780.8539	5.799E+09	-1.372E-07	5025000.	0.000
438.000	0.000	3.831E-06	2.123E-07	0.000	780.8539	5.799E+09	-7.264E-08	5025000.	0.000
444.000	0.000	3.805E-06	-8.955E-08	0.000	780.8539	5.799E+09	-2.796E-08	5025000.	0.000
450.000	0.000	2.769E-06	-1.826E-07	0.000	780.8539	5.799E+09	-3.067E-09	5025000.	0.000
456.000	0.000	1.620E-06	-1.695E-07	0.000	780.8539	5.799E+09	7.430E-09	5025000.	0.000
462.000	0.000	7.368E-07	-1.187E-07	0.000	780.8539	5.799E+09	9.504E-09	5025000.	0.000
468.000	0.000	1.951E-07	-6.699E-08	0.000	780.8539	5.799E+09	7.747E-09	5025000.	0.000
474.000	0.000	-6.795E-08	-2.883E-08	0.000	780.8539	5.799E+09	4.975E-09	5025000.	0.000
480.000	0.000	-1.518E-07	-6.227E-09	0.000	780.8539	5.799E+09	2.557E-09	5025000.	0.000
486.000	0.000	-1.434E-07	4.230E-09	0.000	780.8539	5.799E+09	9.284E-10	5025000.	0.000
492.000	0.000	-1.015E-07	7.151E-09	0.000	780.8539	5.799E+09	4.538E-11	5025000.	0.000
498.000	0.000	-5.785E-08	6.358E-09	0.000	780.8539	5.799E+09	-3.099E-10	5025000.	0.000
504.000	0.000	-2.530E-08	4.335E-09	0.000	780.8539	5.799E+09	-3.643E-10	5025000.	0.000
510.000	0.000	-5.828E-09	2.381E-09	0.000	780.8539	5.799E+09	-2.872E-10	5025000.	0.000
516.000	0.000	3.305E-09	9.794E-10	0.000	780.8539	5.799E+09	-1.798E-10	5025000.	0.000

522.000	0.000	5.962E-09	1.711E-10	0.000	780.8539	5.799E+09	-8.962E-11	5025000.	0.000
528.000	0.000	5.386E-09	-1.891E-10	0.000	780.8539	5.799E+09	-3.042E-11	5025000.	0.000
534.000	0.000	3.710E-09	-2.780E-10	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
540.000	0.000	2.059E-09	-2.375E-10	0.000	780.8539	5.799E+09	1.269E-11	5025000.	0.000
546.000	0.000	8.621E-10	-1.578E-10	0.000	780.8539	5.799E+09	1.390E-11	5025000.	0.000
552.000	0.000	1.649E-10	-8.424E-11	0.000	780.8539	5.799E+09	1.062E-11	5025000.	0.000
558.000	0.000	-1.502E-10	-3.294E-11	0.000	780.8539	5.799E+09	6.483E-12	5025000.	0.000
564.000	0.000	-2.318E-10	-4.110E-12	0.000	780.8539	5.799E+09	3.129E-12	5025000.	0.000
570.000	0.000	-2.006E-10	8.216E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
576.000	0.000	-1.339E-10	1.078E-11	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
582.000	0.000	-7.151E-11	8.797E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
588.000	0.000	-2.838E-11	5.471E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
594.000	0.000	-5.848E-12	2.361E-12	0.000	780.8539	5.799E+09	0.000	5025000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	2512500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0083540 radians
Maximum bending moment = 598914. inch-lbs
Maximum shear force = 20013. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 12
Number of zero deflection points = 12

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	27301.	-0.0149	780.8539	5.799E+09	-779.8261	2339.4782	0.000
6.000	0.9103	163850.	23766.	-0.0149	1595.7792	5.799E+09	-398.5101	2626.6182	0.000
12.000	0.8217	313195.	21356.	-0.0146	2338.5571	5.799E+09	-405.0557	2957.8508	0.000
18.000	0.7349	447652.	18910.	-0.0142	3007.2918	5.799E+09	-410.0851	3347.9238	0.000
24.000	0.6510	566910.	16439.	-0.0137	3600.4309	5.799E+09	-413.5233	3811.2964	0.000
30.000	0.5706	670728.	13953.	-0.0131	4116.7806	5.799E+09	-415.2908	4367.0704	0.000
36.000	0.4943	758942.	11461.	-0.0123	4555.5213	5.799E+09	-415.3022	5040.8967	0.000
42.000	0.4228	831465.	8974.7600	-0.0115	4916.2231	5.799E+09	-413.4644	5867.8650	0.000
48.000	0.3564	888294.	6505.3468	-0.0106	5198.8637	5.799E+09	-409.6733	6897.0032	0.000
54.000	0.2955	929508.	4064.8945	-0.009664	5403.8462	5.799E+09	-403.8108	8198.5144	0.000
60.000	0.2404	955279.	1666.2467	-0.008689	5532.0205	5.799E+09	-395.7385	9875.8531	0.000
66.000	0.1913	965872.	-676.8386	-0.007695	5584.7072	5.799E+09	-385.2900	12087.	0.000
72.000	0.1481	961653.	-2949.4799	-0.006697	5563.7255	5.799E+09	-372.2571	15082.	0.000
78.000	0.1109	943096.	-5135.3563	-0.005712	5471.4296	5.799E+09	-356.3683	19282.	0.000
84.000	0.0795	910790.	-7510.6530	-0.004753	5310.7542	5.799E+09	-435.3972	32840.	0.000
90.000	0.0539	861923.	-10500.	-0.003836	5067.7058	5.799E+09	-561.0708	62505.	0.000
96.000	0.0335	792016.	-13725.	-0.002980	4720.0197	5.799E+09	-514.0598	92016.	0.000
102.000	0.0181	702832.	-16630.	-0.002207	4276.4519	5.799E+09	-454.1597	150564.	0.000
108.000	0.007040	596612.	-19101.	-0.001534	3748.1600	5.799E+09	-369.4532	314863.	0.000
114.000	-0.000314	476511.	-19694.	-0.000979	3150.8254	5.799E+09	171.8247	3284951.	0.000
120.000	-0.004710	362131.	-18120.	-0.000545	2581.9459	5.799E+09	352.7374	449386.	0.000
126.000	-0.006857	260097.	-15867.	-0.000223	2074.4682	5.799E+09	398.1542	348387.	0.000
132.000	-0.007390	172142.	-13424.	2.715E-07	1637.0189	5.799E+09	416.4561	338132.	0.000
138.000	-0.006854	99012.	-10917.	0.000141	1273.3012	5.799E+09	419.2457	367017.	0.000
144.000	-0.005703	40879.	-8464.8499	0.000213	984.1692	5.799E+09	397.9824	418698.	0.000
150.000	-0.004299	-2966.9714	-6055.9029	0.000233	795.6104	5.799E+09	404.9999	565293.	0.000
156.000	-0.002913	-32230.	-3709.6783	0.000214	941.1528	5.799E+09	377.0749	776783.	0.000
162.000	-0.001727	-47887.	-1560.5280	0.000173	1019.0239	5.799E+09	339.3085	1179097.	0.000
168.000	-0.000838	-51282.	328.0858	0.000122	1035.9100	5.799E+09	290.2294	2078144.	0.000
174.000	-0.000268	-44179.	1785.6421	7.219E-05	1000.5820	5.799E+09	195.6227	4385266.	0.000
180.000	2.836E-05	-29990.	2308.8498	3.382E-05	930.0138	5.799E+09	-21.2202	4489483.	0.000
186.000	0.000138	-16536.	1927.8035	9.748E-06	863.0996	5.799E+09	-105.7952	4593702.	0.000
192.000	0.000145	-6875.0853	1274.7079	-2.364E-06	815.0478	5.799E+09	-111.9033	4619597.	0.000
198.000	0.000110	-1235.5200	685.3422	-6.560E-06	786.9989	5.799E+09	-84.5519	4619597.	0.000
204.000	6.662E-05	1361.3806	271.7563	-6.495E-06	787.6249	5.799E+09	-53.3101	4801100.	0.000
210.000	3.188E-05	2037.7913	31.7292	-4.736E-06	790.9891	5.799E+09	-26.6089	5025000.	0.000
216.000	9.788E-06	1751.0536	-72.9593	-2.776E-06	789.5630	5.799E+09	-8.1972	5025000.	0.000
222.000	-1.433E-06	1167.5098	-93.9511	-1.266E-06	786.6607	5.799E+09	1.1999	5025000.	0.000
228.000	-5.405E-06	626.0251	-76.7717	-3.381E-07	783.9675	5.799E+09	4.5266	5025000.	0.000
234.000	-5.490E-06	246.8868	-49.3974	1.135E-07	782.0819	5.799E+09	4.5982	5025000.	0.000
240.000	-4.043E-06	33.0430	-25.4443	2.583E-07	781.0183	5.799E+09	3.3861	5025000.	0.000
246.000	-2.391E-06	-58.9320	-9.2791	2.449E-07	781.1470	5.799E+09	2.0023	5025000.	0.000
252.000	-1.104E-06	-78.7679	-0.4979	1.737E-07	781.2457	5.799E+09	0.9248	5025000.	0.000

258.000	-3.068E-07	-65.2335	3.0474	9.917E-08	781.1784	5.799E+09	0.2569	5025000.	0.000
264.000	8.572E-08	-42.3863	3.6028	4.349E-08	781.0648	5.799E+09	-0.0718	5025000.	0.000
270.000	2.151E-07	-22.0823	2.8470	1.013E-08	780.9638	5.799E+09	-0.1801	5025000.	0.000
276.000	2.073E-07	-8.2410	1.7858	-5.555E-09	780.8949	5.799E+09	-0.1736	5025000.	0.000
282.000	1.484E-07	-0.6424	0.8920	-1.015E-08	780.8571	5.799E+09	-0.1243	5025000.	0.000
288.000	8.550E-08	2.4824	0.3043	-9.199E-09	780.8663	5.799E+09	-0.0716	5025000.	0.000
294.000	3.802E-08	3.0268	-0.006019	-6.349E-09	780.8690	5.799E+09	-0.0318	5025000.	0.000
300.000	9.318E-09	2.4221	-0.1249	-3.530E-09	780.8660	5.799E+09	-0.007804	5025000.	0.000
306.000	-4.341E-09	1.5341	-0.1375	-1.483E-09	780.8616	5.799E+09	0.003636	5025000.	0.000
312.000	-8.477E-09	0.7755	-0.1052	-2.880E-10	780.8578	5.799E+09	0.007099	5025000.	0.000
318.000	-7.797E-09	0.2717	-0.0644	2.538E-10	780.8553	5.799E+09	0.006530	5025000.	0.000
324.000	-5.431E-09	0.002772	-0.0311	3.958E-10	780.8540	5.799E+09	0.004548	5025000.	0.000
330.000	-3.047E-09	-0.1025	-0.009818	3.443E-10	780.8544	5.799E+09	0.002552	5025000.	0.000
336.000	-1.300E-09	-0.1157	0.001103	2.314E-10	780.8545	5.799E+09	0.001089	5025000.	0.000
342.000	-2.704E-10	-0.0896	0.005048	1.252E-10	780.8544	5.799E+09	0.000226	5025000.	0.000
348.000	2.023E-10	-0.0554	0.005219	5.015E-11	780.8542	5.799E+09	-0.000169	5025000.	0.000
354.000	3.314E-10	-0.0271	0.003879	7.488E-12	780.8541	5.799E+09	-0.000278	5025000.	0.000
360.000	2.922E-10	-0.008826	0.002312	-1.110E-11	780.8540	5.799E+09	-0.000245	5025000.	0.000
366.000	1.982E-10	0.000655	0.001080	-1.533E-11	780.8539	5.799E+09	-0.000166	5025000.	0.000
372.000	1.082E-10	0.004161	0.000310	-1.284E-11	780.8540	5.799E+09	-9.062E-05	5025000.	0.000
378.000	4.409E-11	0.004401	-7.246E-05	-8.409E-12	780.8540	5.799E+09	-3.692E-05	5025000.	0.000
384.000	7.293E-12	0.003308	-0.000202	-4.421E-12	780.8540	5.799E+09	-6.108E-06	5025000.	0.000
390.000	-8.965E-12	0.001991	-0.000197	-1.680E-12	780.8539	5.799E+09	7.509E-06	5025000.	0.000
396.000	-1.286E-11	0.000943	-0.000147	0.000	780.8539	5.799E+09	1.077E-05	5025000.	0.000
402.000	-1.091E-11	0.000281	-8.277E-05	0.000	780.8539	5.799E+09	9.136E-06	5025000.	0.000
408.000	-7.208E-12	-5.148E-05	-3.725E-05	0.000	780.8539	5.799E+09	6.037E-06	5025000.	0.000
414.000	-3.827E-12	-0.000167	-9.525E-06	0.000	780.8539	5.799E+09	3.205E-06	5025000.	0.000
420.000	-1.482E-12	-0.000167	3.813E-06	0.000	780.8539	5.799E+09	1.241E-06	5025000.	0.000
426.000	0.000	-0.000122	7.966E-06	0.000	780.8539	5.799E+09	1.433E-07	5025000.	0.000
432.000	0.000	-7.137E-05	7.431E-06	0.000	780.8539	5.799E+09	-3.216E-07	5025000.	0.000
438.000	0.000	-3.259E-05	5.220E-06	0.000	780.8539	5.799E+09	-4.155E-07	5025000.	0.000
444.000	0.000	-8.741E-06	2.953E-06	0.000	780.8539	5.799E+09	-3.400E-07	5025000.	0.000
450.000	0.000	2.881E-06	1.276E-06	0.000	780.8539	5.799E+09	-2.189E-07	5025000.	0.000
456.000	0.000	6.619E-06	2.809E-07	0.000	780.8539	5.799E+09	-1.129E-07	5025000.	0.000
462.000	0.000	6.286E-06	-1.815E-07	0.000	780.8539	5.799E+09	-4.126E-08	5025000.	0.000
468.000	0.000	4.461E-06	-3.122E-07	0.000	780.8539	5.799E+09	-2.307E-09	5025000.	0.000
474.000	0.000	2.550E-06	-2.788E-07	0.000	780.8539	5.799E+09	1.344E-08	5025000.	0.000
480.000	0.000	1.120E-06	-1.906E-07	0.000	780.8539	5.799E+09	1.594E-08	5025000.	0.000
486.000	0.000	2.623E-07	-1.050E-07	0.000	780.8539	5.799E+09	1.261E-08	5025000.	0.000
492.000	0.000	-1.415E-07	-4.341E-08	0.000	780.8539	5.799E+09	7.916E-09	5025000.	0.000
498.000	0.000	-2.602E-07	-7.785E-09	0.000	780.8539	5.799E+09	3.958E-09	5025000.	0.000
504.000	0.000	-2.361E-07	8.151E-09	0.000	780.8539	5.799E+09	1.354E-09	5025000.	0.000
510.000	0.000	-1.631E-07	1.214E-08	0.000	780.8539	5.799E+09	-2.297E-11	5025000.	0.000
516.000	0.000	-9.077E-08	1.042E-08	0.000	780.8539	5.799E+09	-5.516E-10	5025000.	0.000
522.000	0.000	-3.820E-08	6.940E-09	0.000	780.8539	5.799E+09	-6.082E-10	5025000.	0.000
528.000	0.000	-7.473E-09	3.717E-09	0.000	780.8539	5.799E+09	-4.662E-10	5025000.	0.000
534.000	0.000	6.475E-09	1.463E-09	0.000	780.8539	5.799E+09	-2.853E-10	5025000.	0.000
540.000	0.000	1.015E-08	1.928E-10	0.000	780.8539	5.799E+09	-1.381E-10	5025000.	0.000
546.000	0.000	8.834E-09	-3.526E-10	0.000	780.8539	5.799E+09	-4.369E-11	5025000.	0.000
552.000	0.000	5.941E-09	-4.693E-10	0.000	780.8539	5.799E+09	4.805E-12	5025000.	0.000
558.000	0.000	3.215E-09	-3.877E-10	0.000	780.8539	5.799E+09	2.241E-11	5025000.	0.000
564.000	0.000	1.292E-09	-2.505E-10	0.000	780.8539	5.799E+09	2.331E-11	5025000.	0.000
570.000	0.000	2.079E-10	-1.281E-10	0.000	780.8539	5.799E+09	1.748E-11	5025000.	0.000
576.000	0.000	-2.473E-10	-4.392E-11	0.000	780.8539	5.799E+09	1.058E-11	5025000.	0.000
582.000	0.000	-3.215E-10	2.680E-12	0.000	780.8539	5.799E+09	4.957E-12	5025000.	0.000
588.000	0.000	-2.169E-10	2.057E-11	0.000	780.8539	5.799E+09	1.008E-12	5025000.	0.000
594.000	0.000	-7.586E-11	1.816E-11	0.000	780.8539	5.799E+09	-1.813E-12	5025000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	-4.240E-12	2512500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0149468 radians
Maximum bending moment = 965872. inch-lbs
Maximum shear force = 27301. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 21
Number of zero deflection points = 12

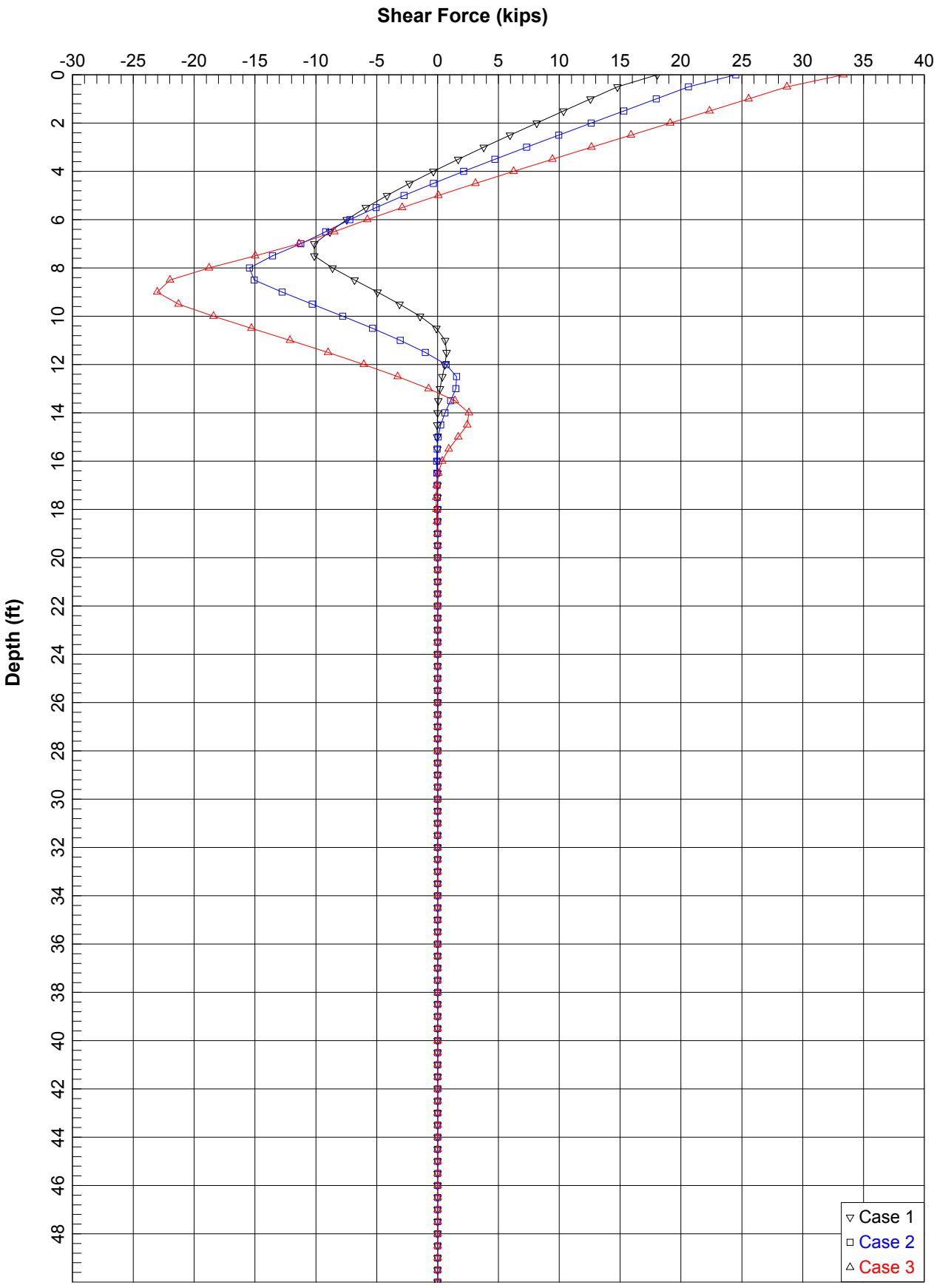
Summary of Pile Response(s)

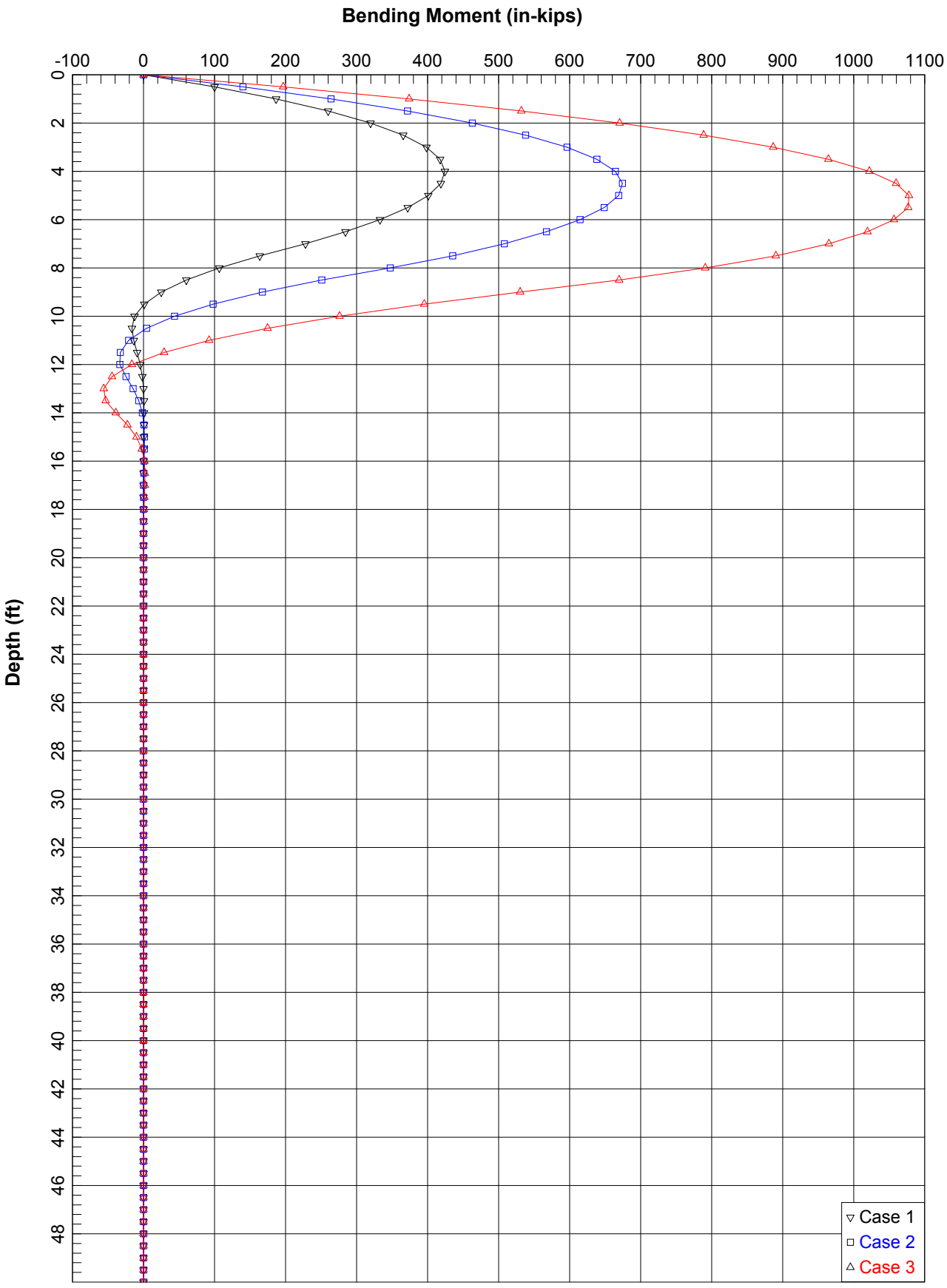
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	157000.	0.25000000	374894.	14728.	-0.00468295
2	4	y = 0.5000	M = 0.000	157000.	0.50000000	598914.	20013.	-0.00835400
3	4	y = 1.0000	M = 0.000	157000.	1.00000000	965872.	27301.	-0.01494681

The analysis ended normally.


Shear Force (kips)
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
1100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5R_transv_Max P.lp6d
Name of output report file: Abut 5R_transv_Max P.lp6o
Name of plot output file: Abut 5R_transv_Max P.lp6p
Name of runtime messeage file: Abut 5R_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:03:34

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm psi	Undrained In-situ Cohesion Test pcf	Angle of In-situ Friction Test psf	Uniaxial Elastic qu Test deg.	RQD % or GSI Subgrade Property Mod. pci
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	125.000	4500.000	--	--	--
		0.00500	--	--	80.000	125.000	4500.000	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.8800	1.0000
2	50.000	0.8800	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		157000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		157000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		157000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	18057.	-0.004976	780.8539	5.799E+09	-724.2535	8691.0425	0.000
6.000	0.2201	99991.	14783.	-0.004925	1278.1693	5.799E+09	-367.0507	10004.	0.000
12.000	0.1909	186671.	12574.	-0.004776	1709.2798	5.799E+09	-369.3668	11609.	0.000
18.000	0.1628	259872.	10357.	-0.004545	2073.3504	5.799E+09	-369.5360	13617.	0.000
24.000	0.1364	319516.	8145.8597	-0.004245	2369.9961	5.799E+09	-367.4478	16168.	0.000
30.000	0.1119	365621.	5954.5718	-0.003891	2599.3015	5.799E+09	-362.9815	19466.	0.000
36.000	0.0897	398301.	3797.6232	-0.003496	2761.8429	5.799E+09	-356.0014	23820.	0.000
42.000	0.0699	417778.	1690.5679	-0.003074	2858.7116	5.799E+09	-346.3504	29716.	0.000
48.000	0.0528	424379.	-350.0003	-0.002638	2891.5411	5.799E+09	-333.8390	37944.	0.000
54.000	0.0383	418548.	-2306.1922	-0.002202	2862.5397	5.799E+09	-318.2250	49880.	0.000
60.000	0.0264	400853.	-4158.3920	-0.001778	2774.5313	5.799E+09	-299.1749	68077.	0.000
66.000	0.0169	371996.	-5884.4516	-0.001378	2631.0126	5.799E+09	-276.1783	97790.	0.000
72.000	0.009832	332835.	-7457.9642	-0.001013	2436.2410	5.799E+09	-248.3259	151541.	0.000
78.000	0.004785	284410.	-8843.6694	-0.000694	2195.3932	5.799E+09	-213.5758	267789.	0.000
84.000	0.001504	228019.	-10123.	-0.000429	1914.9261	5.799E+09	-212.8051	848787.	0.000
90.000	-0.000361	163744.	-10137.	-0.000226	1595.2510	5.799E+09	208.0605	3457183.	0.000
96.000	-0.001210	106800.	-8633.1981	-8.621E-05	1312.0351	5.799E+09	293.2221	1454114.	0.000
102.000	-0.001396	60308.	-6813.1505	2.426E-07	1080.8027	5.799E+09	313.4604	1347586.	0.000
108.000	-0.001207	25042.	-4938.8287	4.440E-05	905.4029	5.799E+09	311.3135	1547554.	0.000
114.000	-0.000863	958.6919	-3121.4050	5.785E-05	785.6221	5.799E+09	294.4944	2047812.	0.000
120.000	-0.000513	-12524.	-1440.6158	5.187E-05	843.1422	5.799E+09	265.7687	3100798.	0.000
126.000	-0.000240	-16426.	-95.1002	3.689E-05	862.5522	5.799E+09	182.7365	4560110.	0.000
132.000	-7.008E-05	-13735.	617.1374	2.129E-05	849.1638	5.799E+09	54.6760	4680829.	0.000
138.000	1.500E-05	-9060.8727	745.1580	9.493E-06	825.9190	5.799E+09	-12.0024	4801547.	0.000
144.000	4.383E-05	-4810.4947	604.5696	2.316E-06	804.7794	5.799E+09	-34.8604	4772330.	0.000
150.000	4.279E-05	-1810.4017	388.4647	-1.109E-06	789.8581	5.799E+09	-37.1746	5212268.	0.000
156.000	3.052E-05	-146.8283	195.3193	-2.122E-06	781.5842	5.799E+09	-27.2073	5349132.	0.000
162.000	1.733E-05	537.4269	66.1580	-1.920E-06	783.5269	5.799E+09	-15.8465	5486001.	0.000
168.000	7.481E-06	650.6848	-2.4142	-1.305E-06	784.0902	5.799E+09	-7.0109	5622875.	0.000
174.000	1.671E-06	510.9147	-28.2588	-7.041E-07	783.3950	5.799E+09	-1.6039	5759753.	0.000
180.000	-9.676E-07	312.9055	-30.2179	-2.778E-07	782.4102	5.799E+09	0.9509	5896634.	0.000
186.000	-1.663E-06	148.8238	-22.3473	-3.896E-08	781.5941	5.799E+09	1.6726	6033519.	0.000
192.000	-1.435E-06	44.8115	-12.9755	6.122E-08	781.0768	5.799E+09	1.4513	6067530.	0.000
198.000	-9.287E-07	-6.9979	-5.8041	8.078E-08	780.8887	5.799E+09	0.9392	6067530.	0.000
204.000	-4.658E-07	-24.9896	-1.4261	6.423E-08	780.9782	5.799E+09	0.5201	6700043.	0.000
210.000	-1.580E-07	-24.2320	0.7208	3.876E-08	780.9745	5.799E+09	0.1955	7425000.	0.000
216.000	-6.136E-10	-16.4128	1.3096	1.774E-08	780.9356	5.799E+09	0.000759	7425000.	0.000
222.000	5.486E-08	-8.5503	1.1082	4.821E-09	780.8965	5.799E+09	-0.0679	7425000.	0.000
228.000	5.724E-08	-3.1233	0.6921	-1.218E-09	780.8695	5.799E+09	-0.0708	7425000.	0.000
234.000	4.024E-08	-0.2434	0.3302	-2.960E-09	780.8552	5.799E+09	-0.0498	7425000.	0.000

240.000	2.172E-08	0.8441	0.1001	-2.649E-09	780.8581	5.799E+09	-0.0269	7425000.	0.000
246.000	8.448E-09	0.9630	-0.0119	-1.714E-09	780.8587	5.799E+09	-0.0105	7425000.	0.000
252.000	1.152E-09	0.7046	-0.0475	-8.515E-10	780.8574	5.799E+09	-0.001425	7425000.	0.000
258.000	-1.770E-09	0.3942	-0.0452	-2.831E-10	780.8559	5.799E+09	0.002191	7425000.	0.000
264.000	-2.245E-09	0.1623	-0.0303	4.867E-12	780.8547	5.799E+09	0.002778	7425000.	0.000
270.000	-1.712E-09	0.0303	-0.0156	1.045E-10	780.8541	5.799E+09	0.002118	7425000.	0.000
276.000	-9.911E-10	-0.0256	-0.005604	1.069E-10	780.8541	5.799E+09	0.001226	7425000.	0.000
282.000	-4.289E-10	-0.0372	-0.000333	7.444E-11	780.8541	5.799E+09	0.000531	7425000.	0.000
288.000	-9.779E-11	-0.0297	0.001623	3.983E-11	780.8541	5.799E+09	0.000121	7425000.	0.000
294.000	4.902E-11	-0.0178	0.001804	1.526E-11	780.8540	5.799E+09	-6.066E-05	7425000.	0.000
300.000	8.531E-11	-0.008075	0.001305	1.870E-12	780.8540	5.799E+09	-0.000106	7425000.	0.000
306.000	7.147E-11	-0.002142	0.000723	-3.415E-12	780.8540	5.799E+09	-8.844E-05	7425000.	0.000
312.000	4.433E-11	0.000610	0.000293	-4.207E-12	780.8539	5.799E+09	-5.486E-05	7425000.	0.000
318.000	2.098E-11	0.001387	5.091E-05	-3.174E-12	780.8539	5.799E+09	-2.596E-05	7425000.	0.000
324.000	6.237E-12	0.001227	-5.012E-05	-1.822E-12	780.8539	5.799E+09	-7.718E-06	7425000.	0.000
330.000	0.000	0.000789	-6.999E-05	0.000	780.8539	5.799E+09	1.096E-06	7425000.	0.000
336.000	-3.111E-12	0.000389	-5.515E-05	0.000	780.8539	5.799E+09	3.850E-06	7425000.	0.000
342.000	-2.923E-12	0.000127	-3.275E-05	0.000	780.8539	5.799E+09	3.618E-06	7425000.	0.000
348.000	-1.946E-12	-4.401E-06	-1.467E-05	0.000	780.8539	5.799E+09	2.408E-06	7425000.	0.000
354.000	0.000	-4.924E-05	-3.749E-06	0.000	780.8539	5.799E+09	1.233E-06	7425000.	0.000
360.000	0.000	-4.964E-05	1.257E-06	0.000	780.8539	5.799E+09	4.357E-07	7425000.	0.000
366.000	0.000	-3.431E-05	2.623E-06	0.000	780.8539	5.799E+09	1.985E-08	7425000.	0.000
372.000	0.000	-1.823E-05	2.286E-06	0.000	780.8539	5.799E+09	-1.324E-07	7425000.	0.000
378.000	0.000	-6.899E-06	1.455E-06	0.000	780.8539	5.799E+09	-1.446E-07	7425000.	0.000
384.000	0.000	-7.685E-07	7.093E-07	0.000	780.8539	5.799E+09	-1.038E-07	7425000.	0.000
390.000	0.000	1.624E-06	2.264E-07	0.000	780.8539	5.799E+09	-5.714E-08	7425000.	0.000
396.000	0.000	1.959E-06	-1.380E-08	0.000	780.8539	5.799E+09	-2.293E-08	7425000.	0.000
402.000	0.000	1.466E-06	-9.388E-08	0.000	780.8539	5.799E+09	-3.764E-09	7425000.	0.000
408.000	0.000	8.355E-07	-9.275E-08	0.000	780.8539	5.799E+09	4.141E-09	7425000.	0.000
414.000	0.000	3.538E-07	-6.344E-08	0.000	780.8539	5.799E+09	5.627E-09	7425000.	0.000
420.000	0.000	7.429E-08	-3.337E-08	0.000	780.8539	5.799E+09	4.395E-09	7425000.	0.000
426.000	0.000	-4.705E-08	-1.241E-08	0.000	780.8539	5.799E+09	2.593E-09	7425000.	0.000
432.000	0.000	-7.500E-08	-1.176E-09	0.000	780.8539	5.799E+09	1.151E-09	7425000.	0.000
438.000	0.000	-6.145E-08	3.136E-09	0.000	780.8539	5.799E+09	2.860E-10	7425000.	0.000
444.000	0.000	-3.753E-08	3.673E-09	0.000	780.8539	5.799E+09	-1.070E-10	7425000.	0.000
450.000	0.000	-1.743E-08	2.717E-09	0.000	780.8539	5.799E+09	-2.117E-10	7425000.	0.000
456.000	0.000	-4.938E-09	1.534E-09	0.000	780.8539	5.799E+09	-1.825E-10	7425000.	0.000
462.000	0.000	9.898E-10	6.405E-10	0.000	780.8539	5.799E+09	-1.154E-10	7425000.	0.000
468.000	0.000	2.764E-09	1.269E-10	0.000	780.8539	5.799E+09	-5.582E-11	7425000.	0.000
474.000	0.000	2.525E-09	-9.304E-11	0.000	780.8539	5.799E+09	-1.750E-11	7425000.	0.000
480.000	0.000	1.654E-09	-1.413E-10	0.000	780.8539	5.799E+09	1.413E-12	7425000.	0.000
486.000	0.000	8.328E-10	-1.142E-10	0.000	780.8539	5.799E+09	7.617E-12	7425000.	0.000
492.000	0.000	2.846E-10	-6.910E-11	0.000	780.8539	5.799E+09	7.422E-12	7425000.	0.000
498.000	0.000	3.356E-12	-3.171E-11	0.000	780.8539	5.799E+09	5.040E-12	7425000.	0.000
504.000	0.000	-9.650E-11	-8.695E-12	0.000	780.8539	5.799E+09	2.632E-12	7425000.	0.000
510.000	0.000	-1.015E-10	2.101E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
516.000	0.000	-7.162E-11	5.238E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
522.000	0.000	-3.880E-11	4.707E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
528.000	0.000	-1.518E-11	3.054E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
534.000	0.000	-2.148E-12	1.521E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
540.000	0.000	3.097E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
546.000	0.000	3.974E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
552.000	0.000	3.043E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
558.000	0.000	1.766E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
564.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
570.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
576.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
582.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
588.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
594.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3712500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0049763 radians
Maximum bending moment            =       424379. inch-lbs
Maximum shear force               =        18057. lbs
Depth of maximum bending moment   =     48.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             18
Number of zero deflection points  =             14
```

```
-------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 2
-------------------------------------------------------------------------------

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head                          =       0.500000 inches
Moment at pile head                                =          0.000 in-lbs
Axial load at pile head                            =     157000.000 lbs
```


Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	24507.	-0.008872	780.8539	5.799E+09	-861.2875	5167.7248	0.000
6.000	0.4468	139897.	20609.	-0.008800	1476.6427	5.799E+09	-438.0965	5883.5450	0.000
12.000	0.3944	263885.	17966.	-0.008591	2093.3123	5.799E+09	-442.8297	6736.6860	0.000
18.000	0.3437	371675.	15301.	-0.008262	2629.4144	5.799E+09	-445.4096	7776.0279	0.000
24.000	0.2953	463068.	12628.	-0.007830	3083.9643	5.799E+09	-445.7258	9057.5878	0.000
30.000	0.2497	537963.	9959.8523	-0.007312	3456.4625	5.799E+09	-443.6585	10660.	0.000
36.000	0.2075	596362.	7311.6506	-0.006725	3746.9150	5.799E+09	-439.0754	12695.	0.000
42.000	0.1690	638373.	4698.9466	-0.006086	3955.8622	5.799E+09	-431.8260	15330.	0.000
48.000	0.1345	664216.	2138.2671	-0.005413	4084.3956	5.799E+09	-421.7339	18817.	0.000
54.000	0.1041	674230.	-352.6836	-0.004720	4134.1978	5.799E+09	-408.5830	23558.	0.000
60.000	0.0778	668877.	-2754.7184	-0.004025	4107.5750	5.799E+09	-392.0952	30225.	0.000
66.000	0.0558	648757.	-5046.6643	-0.003344	4007.5052	5.799E+09	-371.8867	40016.	0.000
72.000	0.0377	614616.	-7204.4637	-0.002690	3837.7042	5.799E+09	-347.3797	55266.	0.000
78.000	0.0235	567371.	-9199.3788	-0.002078	3602.7256	5.799E+09	-317.5920	81150.	0.000
84.000	0.0128	508139.	-11239.	-0.001522	3308.1319	5.799E+09	-362.1656	170127.	0.000
90.000	0.005218	435375.	-13560.	-0.001034	2946.2293	5.799E+09	-411.6236	473286.	0.000
96.000	0.000367	347367.	-15461.	-0.000629	2508.5151	5.799E+09	-222.1824	3634651.	0.000
102.000	-0.002328	251022.	-15059.	-0.000319	2029.3354	5.799E+09	356.2297	918057.	0.000
108.000	-0.003465	167257.	-12774.	-0.000103	1612.7214	5.799E+09	405.5023	702240.	0.000
114.000	-0.003563	97927.	-10297.	3.431E-05	1267.9015	5.799E+09	420.1813	707625.	0.000
120.000	-0.003053	43628.	-7789.7684	0.000108	997.8401	5.799E+09	415.5787	816761.	0.000
126.000	-0.002272	4246.8860	-5353.6438	0.000132	801.9762	5.799E+09	396.4628	1046926.	0.000
132.000	-0.001465	-20865.	-3070.4238	0.000124	884.6297	5.799E+09	364.6105	1493219.	0.000
138.000	-0.000788	-32831.	-1016.1210	9.594E-05	944.1434	5.799E+09	320.1571	2439242.	0.000
144.000	-0.000314	-33240.	693.1183	6.176E-05	946.1739	5.799E+09	249.5893	4772330.	0.000
150.000	-4.644E-05	-24630.	1562.9104	3.182E-05	903.3546	5.799E+09	40.3415	5212268.	0.000
156.000	6.801E-05	-14545.	1502.0495	1.155E-05	853.1927	5.799E+09	-60.6284	5349132.	0.000
162.000	9.215E-05	-6627.3823	1067.3933	5.955E-07	813.8158	5.799E+09	-84.2570	5486001.	0.000
168.000	7.515E-05	-1736.9792	603.3379	-3.732E-06	789.4930	5.799E+09	-70.4282	5622875.	0.000
174.000	4.737E-05	619.7032	255.6381	-4.310E-06	783.9361	5.799E+09	-45.4718	5759753.	0.000
180.000	2.343E-05	1338.7979	50.1364	-3.297E-06	787.5126	5.799E+09	-23.0288	5896634.	0.000
186.000	7.808E-06	1227.5504	-42.5058	-1.969E-06	786.9593	5.799E+09	-7.8519	6033519.	0.000
192.000	-1.948E-07	832.4375	-65.4705	-9.032E-07	784.9941	5.799E+09	0.1970	6067530.	0.000
198.000	-3.030E-06	443.6061	-55.6875	-2.430E-07	783.0603	5.799E+09	3.0640	6067530.	0.000
204.000	-3.111E-06	164.6454	-36.0742	7.169E-08	781.6728	5.799E+09	3.4738	6700043.	0.000
210.000	-2.170E-06	10.5812	-17.5979	1.623E-07	780.9066	5.799E+09	2.6849	7425000.	0.000
216.000	-1.163E-06	-46.8355	-5.2264	1.436E-07	781.0869	5.799E+09	1.4389	7425000.	0.000
222.000	-4.466E-07	-52.4058	9.7485	9.224E-08	781.1146	5.799E+09	0.5527	7425000.	0.000
228.000	-5.586E-08	-38.0277	2.6140	4.545E-08	781.0431	5.799E+09	0.0691	7425000.	0.000
234.000	9.882E-08	-21.1239	2.4545	1.485E-08	780.9590	5.799E+09	-0.1223	7425000.	0.000
240.000	1.223E-07	-8.6018	1.6334	-5.280E-10	780.8967	5.799E+09	-0.1514	7425000.	0.000
246.000	9.248E-08	-1.5219	0.8359	-5.766E-09	780.8615	5.799E+09	-0.1144	7425000.	0.000
252.000	5.316E-08	1.4394	0.2952	-5.808E-09	780.8611	5.799E+09	-0.0658	7425000.	0.000
258.000	2.278E-08	2.0310	0.0312	-4.013E-09	780.8640	5.799E+09	-0.0282	7425000.	0.000
264.000	5.007E-09	1.6057	-0.0899	-2.131E-09	780.8619	5.799E+09	-0.006196	7425000.	0.000
270.000	-2.797E-09	0.9558	-0.0981	-8.061E-10	780.8587	5.799E+09	0.003461	7425000.	0.000
276.000	-4.666E-09	0.4296	-0.0704	-8.932E-11	780.8561	5.799E+09	0.005774	7425000.	0.000
282.000	-3.868E-09	0.1109	-0.0387	1.903E-10	780.8545	5.799E+09	0.004787	7425000.	0.000
288.000	-2.382E-09	-0.0357	-0.0155	2.292E-10	780.8541	5.799E+09	0.002948	7425000.	0.000
294.000	-1.118E-09	-0.0760	-0.002543	1.714E-10	780.8543	5.799E+09	0.001383	7425000.	0.000
300.000	-3.252E-10	-0.0665	0.002815	9.770E-11	780.8543	5.799E+09	0.000402	7425000.	0.000
306.000	5.460E-11	-0.0424	0.003819	4.135E-11	780.8542	5.799E+09	-6.757E-05	7425000.	0.000
312.000	1.710E-10	-0.0207	0.002982	8.665E-12	780.8540	5.799E+09	-0.000212	7425000.	0.000
318.000	1.586E-10	-0.006665	0.001758	-5.517E-12	780.8540	5.799E+09	-0.000196	7425000.	0.000
324.000	1.048E-10	0.000360	0.000780	-8.779E-12	780.8539	5.799E+09	-0.000130	7425000.	0.000
330.000	5.323E-11	0.002715	0.000173	-7.189E-12	780.8540	5.799E+09	-6.588E-05	7425000.	0.000
336.000	1.853E-11	0.002696	-7.284E-05	-4.389E-12	780.8540	5.799E+09	-2.293E-05	7425000.	0.000
342.000	0.000	0.001849	-0.000144	-2.038E-12	780.8539	5.799E+09	-6.971E-07	7425000.	0.000
348.000	-5.923E-12	0.000975	-0.000124	0.000	780.8539	5.799E+09	7.330E-06	7425000.	0.000
354.000	-6.356E-12	0.000364	-7.824E-05	0.000	780.8539	5.799E+09	7.865E-06	7425000.	0.000
360.000	-4.526E-12	3.612E-05	-3.784E-05	0.000	780.8539	5.799E+09	5.601E-06	7425000.	0.000
366.000	-2.473E-12	-9.041E-05	-1.185E-05	0.000	780.8539	5.799E+09	3.060E-06	7425000.	0.000
372.000	0.000	-0.000107	9.696E-07	0.000	780.8539	5.799E+09	1.214E-06	7425000.	0.000
378.000	0.000	-7.914E-05	5.172E-06	0.000	780.8539	5.799E+09	1.868E-07	7425000.	0.000
384.000	0.000	-4.480E-05	5.036E-06	0.000	780.8539	5.799E+09	-2.322E-07	7425000.	0.000
390.000	0.000	-1.877E-05	3.418E-06	0.000	780.8539	5.799E+09	-3.070E-07	7425000.	0.000
396.000	0.000	-3.778E-06	1.785E-06	0.000	780.8539	5.799E+09	-2.376E-07	7425000.	0.000
402.000	0.000	2.666E-06	6.546E-07	0.000	780.8539	5.799E+09	-1.391E-07	7425000.	0.000
408.000	0.000	4.099E-06	5.355E-08	0.000	780.8539	5.799E+09	-6.120E-08	7425000.	0.000
414.000	0.000	3.324E-06	-1.743E-07	0.000	780.8539	5.799E+09	-1.474E-08	7425000.	0.000
420.000	0.000	2.016E-06	-2.000E-07	0.000	780.8539	5.799E+09	6.172E-09	7425000.	0.000
426.000	0.000	9.282E-07	-1.467E-07	0.000	780.8539	5.799E+09	1.159E-08	7425000.	0.000
432.000	0.000	2.567E-07	-8.223E-08	0.000	780.8539	5.799E+09	9.885E-09	7425000.	0.000
438.000	0.000	-5.918E-08	-3.306E-08	0.000	780.8539	5.799E+09	6.204E-09	7425000.	0.000
444.000	0.000	-1.517E-07	-6.422E-09	0.000	780.8539	5.799E+09	2.977E-09	7425000.	0.000
450.000	0.000	-1.369E-07	5.254E-09	0.000	780.8539	5.799E+09	9.153E-10	7425000.	0.000
456.000	0.000	-8.905E-08	7.718E-09	0.000	780.8539	5.799E+09	-9.406E-11	7425000.	0.000
462.000	0.000	-4.448E-08	6.178E-09	0.000	780.8539	5.799E+09	-4.193E-10	7425000.	0.000
468.000	0.000	-1.496E-08	3.711E-09	0.000	780.8539	5.799E+09	-4.029E-10	7425000.	0.000
474.000	0.000	7.540E-11	1.608E-09	0.000	780.8539	5.799E+09	-2.715E-10	7425000.	0.000
480.000	0.000	5.332E-09	4.511E-10	0.000	780.8539	5.799E+09	-1.407E-10	7425000.	0.000
486.000	0.000	5.517E-09	-1.240E-10	0.000	780.8539	5.799E+09	-5.094E-11	7425000.	0.000
492.000	0.000	3.862E-09	-2.873E-10	0.000	780.8539	5.799E+09	-3.515E-12	7425000.	0.000
498.000	0.000	2.077E-09	-2.552E-10	0.000	780.8539	5.799E+09	1.424E-11	7425000.	0.000
504.000	0.000	8.025E-10	-1.643E-10	0.000	780.8539	5.799E+09	1.604E-11	7425000.	0.000
510.000	0.000	1.047E-10	-8.119E-11	0.000	780.8539	5.799E+09	1.167E-11	7425000.	0.000
516.000	0.000	-1.730E-10	-2.669E-11	0.000	780.8539	5.799E+09	6.499E-12	7425000.	0.000

522.000	0.000	-2.167E-10	0.000	0.000	780.8539	5.799E+09	2.656E-12	7425000.	0.000
528.000	0.000	-1.645E-10	1.018E-11	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
534.000	0.000	-9.486E-11	1.031E-11	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
540.000	0.000	-4.084E-11	7.144E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
546.000	0.000	-9.141E-12	3.804E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
552.000	0.000	4.841E-12	1.445E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
558.000	0.000	8.239E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
564.000	0.000	6.863E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
570.000	0.000	4.246E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
576.000	0.000	2.026E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
582.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
588.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
594.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3712500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0088720 radians
Maximum bending moment = 674230. inch-lbs
Maximum shear force = 24507. lbs
Depth of maximum bending moment = 54.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 14

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 157000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	33344.	-0.0158	780.8539	5.799E+09	-1024.2492	3072.7475	0.000
6.000	0.9050	196543.	28703.	-0.0157	1758.3793	5.799E+09	-522.6498	3465.0816	0.000
12.000	0.8112	374079.	25545.	-0.0154	2641.3718	5.799E+09	-530.3158	3922.3562	0.000
18.000	0.7198	532159.	22346.	-0.0150	3427.5981	5.799E+09	-535.8168	4466.6102	0.000
24.000	0.6316	670432.	19122.	-0.0143	4115.3070	5.799E+09	-539.0445	5120.6747	0.000
30.000	0.5476	788645.	15885.	-0.0136	4703.2502	5.799E+09	-539.8837	5915.2554	0.000
36.000	0.4685	886653.	12650.	-0.0127	5190.7043	5.799E+09	-538.2097	6892.4171	0.000
42.000	0.3949	964422.	9434.1809	-0.0118	5577.4941	5.799E+09	-533.8848	8111.0172	0.000
48.000	0.3273	1022031.	6252.2668	-0.0107	5864.0168	5.799E+09	-526.7533	9655.4482	0.000
54.000	0.2661	1059680.	3122.1027	-0.009661	6051.2700	5.799E+09	-516.6348	11650.	0.000
60.000	0.2114	1077698.	62.2598	-0.008556	6140.8830	5.799E+09	-503.3129	14286.	0.000
66.000	0.1634	1076546.	-2907.2319	-0.007441	6135.1537	5.799E+09	-486.5177	17864.	0.000
72.000	0.1221	1056830.	-5764.4724	-0.006337	6037.0948	5.799E+09	-465.8958	22894.	0.000
78.000	0.0874	1019312.	-8485.0249	-0.005263	5850.4943	5.799E+09	-440.9550	30286.	0.000
84.000	0.0589	964925.	-11400.	-0.004237	5579.9996	5.799E+09	-530.5497	54007.	0.000
90.000	0.0365	890499.	-14997.	-0.003277	5209.8326	5.799E+09	-668.6756	109864.	0.000
96.000	0.0196	791132.	-18775.	-0.002407	4715.6227	5.799E+09	-590.5437	180571.	0.000
102.000	0.007638	669735.	-21989.	-0.001651	4111.8411	5.799E+09	-480.7667	277652.	0.000
108.000	-0.000188	530377.	-23036.	-0.001030	3418.7318	5.799E+09	131.5499	4197954.	0.000
114.000	-0.004722	395238.	-21288.	-0.000551	2746.6053	5.799E+09	451.1483	573309.	0.000
120.000	-0.006801	275955.	-18411.	-0.000204	2153.3404	5.799E+09	508.1067	448247.	0.000
126.000	-0.007168	174695.	-15300.	2.930E-05	1649.7140	5.799E+09	528.7865	442639.	0.000
132.000	-0.006450	92301.	-12128.	0.000167	1239.9195	5.799E+09	528.5823	491730.	0.000
138.000	-0.005159	28846.	-9004.0613	0.000230	924.3198	5.799E+09	512.6668	596292.	0.000
144.000	-0.003688	-16182.	-6060.8024	0.000237	861.3349	5.799E+09	468.4195	761998.	0.000
150.000	-0.002319	-44330.	-3289.5316	0.000205	1001.3331	5.799E+09	455.3374	1178297.	0.000
156.000	-0.001224	-56043.	-729.4877	0.000153	1059.5886	5.799E+09	398.0106	1950867.	0.000
162.000	-0.000478	-53373.	1430.6286	9.682E-05	1046.3088	5.799E+09	322.0282	4046247.	0.000
168.000	-6.230E-05	-39058.	2571.8592	4.900E-05	975.1114	5.799E+09	58.3820	5622875.	0.000
174.000	0.000110	-22603.	2428.9486	1.710E-05	893.2714	5.799E+09	-106.0188	5759753.	0.000
180.000	0.000143	-9942.6065	1689.7169	2.580E-07	830.3044	5.799E+09	-140.3917	5896634.	0.000
186.000	0.000114	-2326.7535	926.0276	-6.090E-06	792.4263	5.799E+09	-114.1714	6033519.	0.000
192.000	6.978E-05	1181.1976	371.8291	-6.682E-06	786.7287	5.799E+09	-70.5615	6067530.	0.000
198.000	3.335E-05	2147.7849	58.9733	-4.960E-06	791.5361	5.799E+09	-33.7238	6067530.	0.000
204.000	1.026E-05	1898.2219	-76.5527	-2.867E-06	790.2949	5.799E+09	-11.4515	6700043.	0.000
210.000	-1.054E-06	1234.5535	-106.9961	-1.246E-06	786.9941	5.799E+09	1.3037	7425000.	0.000
216.000	-4.698E-06	616.6165	-85.6452	-2.883E-07	783.9207	5.799E+09	5.8132	7425000.	0.000
222.000	-4.513E-06	207.3537	-51.4498	1.380E-07	781.8852	5.799E+09	5.5853	7425000.	0.000
228.000	-3.042E-06	-1.0409	-23.4010	2.447E-07	780.8591	5.799E+09	3.7643	7425000.	0.000
234.000	-1.577E-06	-73.9198	-6.2542	2.059E-07	781.2216	5.799E+09	1.9513	7425000.	0.000
240.000	-5.707E-07	-76.4795	1.7184	1.281E-07	781.2343	5.799E+09	0.7062	7425000.	0.000
246.000	-3.939E-08	-53.5401	3.9834	6.085E-08	781.1202	5.799E+09	0.0487	7425000.	0.000
252.000	1.595E-07	-28.7937	3.5374	1.826E-08	780.9971	5.799E+09	-0.1974	7425000.	0.000

258.000	1.797E-07	-11.1261	2.2781	-2.398E-09	780.9093	5.799E+09	-0.2223	7425000.	0.000
264.000	1.307E-07	-1.4519	1.1257	-8.905E-09	780.8612	5.799E+09	-0.1618	7425000.	0.000
270.000	7.281E-08	2.3989	0.3700	-8.415E-09	780.8659	5.799E+09	-0.0901	7425000.	0.000
276.000	2.976E-08	3.0039	-0.0108	-5.620E-09	780.8689	5.799E+09	-0.0368	7425000.	0.000
282.000	5.363E-09	2.2801	-0.1412	-2.887E-09	780.8653	5.799E+09	-0.006637	7425000.	0.000
288.000	-4.879E-09	1.3151	-0.1430	-1.027E-09	780.8605	5.799E+09	0.006037	7425000.	0.000
294.000	-6.956E-09	0.5662	-0.0990	-5.321E-11	780.8568	5.799E+09	0.008608	7425000.	0.000
300.000	-5.517E-09	0.1267	-0.0527	3.053E-10	780.8546	5.799E+09	0.006827	7425000.	0.000
306.000	-3.292E-09	-0.0672	-0.0200	3.361E-10	780.8543	5.799E+09	0.004074	7425000.	0.000
312.000	-1.484E-09	-0.1144	-0.002302	2.421E-10	780.8545	5.799E+09	0.001837	7425000.	0.000
318.000	-3.867E-10	-0.0953	0.004645	1.337E-10	780.8544	5.799E+09	0.000479	7425000.	0.000
324.000	1.194E-10	-0.0589	0.005637	5.389E-11	780.8542	5.799E+09	-0.000148	7425000.	0.000
330.000	2.600E-10	-0.0277	0.004229	9.076E-12	780.8541	5.799E+09	-0.000322	7425000.	0.000
336.000	2.283E-10	-0.008155	0.002416	-9.495E-12	780.8540	5.799E+09	-0.000283	7425000.	0.000
342.000	1.460E-10	0.001267	0.001026	-1.306E-11	780.8539	5.799E+09	-0.000181	7425000.	0.000
348.000	7.161E-11	0.004182	0.000218	-1.024E-11	780.8540	5.799E+09	-8.862E-05	7425000.	0.000
354.000	2.315E-11	0.003902	-0.000134	-6.059E-12	780.8540	5.799E+09	-2.864E-05	7425000.	0.000
360.000	-1.092E-12	0.002588	-0.000216	-2.701E-12	780.8540	5.799E+09	1.352E-06	7425000.	0.000
366.000	-9.266E-12	0.001319	-0.000177	0.000	780.8539	5.799E+09	1.147E-05	7425000.	0.000
372.000	-9.249E-12	0.000463	-0.000108	0.000	780.8539	5.799E+09	1.145E-05	7425000.	0.000
378.000	-6.360E-12	1.745E-05	-5.050E-05	0.000	780.8539	5.799E+09	7.871E-06	7425000.	0.000
384.000	-3.363E-12	-0.000144	-1.440E-05	0.000	780.8539	5.799E+09	4.162E-06	7425000.	0.000
390.000	-1.262E-12	-0.000156	2.766E-06	0.000	780.8539	5.799E+09	1.562E-06	7425000.	0.000
396.000	0.000	-0.000112	7.935E-06	0.000	780.8539	5.799E+09	1.615E-07	7425000.	0.000
402.000	0.000	-6.122E-05	7.278E-06	0.000	780.8539	5.799E+09	-3.807E-07	7425000.	0.000
408.000	0.000	-2.442E-05	4.778E-06	0.000	780.8539	5.799E+09	-4.525E-07	7425000.	0.000
414.000	0.000	-3.879E-06	2.411E-06	0.000	780.8539	5.799E+09	-3.366E-07	7425000.	0.000
420.000	0.000	4.545E-06	8.278E-07	0.000	780.8539	5.799E+09	-1.910E-07	7425000.	0.000
426.000	0.000	6.088E-06	1.371E-08	0.000	780.8539	5.799E+09	-8.034E-08	7425000.	0.000
432.000	0.000	4.732E-06	-2.765E-07	0.000	780.8539	5.799E+09	-1.641E-08	7425000.	0.000
438.000	0.000	2.781E-06	-2.923E-07	0.000	780.8539	5.799E+09	1.116E-08	7425000.	0.000
444.000	0.000	1.229E-06	-2.067E-07	0.000	780.8539	5.799E+09	1.737E-08	7425000.	0.000
450.000	0.000	3.004E-07	-1.122E-07	0.000	780.8539	5.799E+09	1.413E-08	7425000.	0.000
456.000	0.000	-1.193E-07	-4.405E-08	0.000	780.8539	5.799E+09	8.592E-09	7425000.	0.000
462.000	0.000	-2.295E-07	-6.375E-09	0.000	780.8539	5.799E+09	3.968E-09	7425000.	0.000
468.000	0.000	-1.967E-07	8.848E-09	0.000	780.8539	5.799E+09	1.107E-09	7425000.	0.000
474.000	0.000	-1.239E-07	1.144E-08	0.000	780.8539	5.799E+09	-2.434E-10	7425000.	0.000
480.000	0.000	-5.967E-08	8.782E-09	0.000	780.8539	5.799E+09	-6.417E-10	7425000.	0.000
486.000	0.000	-1.852E-08	5.112E-09	0.000	780.8539	5.799E+09	-5.816E-10	7425000.	0.000
492.000	0.000	1.706E-09	2.229E-09	0.000	780.8539	5.799E+09	-3.792E-10	7425000.	0.000
498.000	0.000	8.279E-09	5.219E-10	0.000	780.8539	5.799E+09	-1.899E-10	7425000.	0.000
504.000	0.000	8.008E-09	-2.406E-10	0.000	780.8539	5.799E+09	-6.423E-11	7425000.	0.000
510.000	0.000	5.417E-09	-4.334E-10	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
516.000	0.000	2.818E-09	-3.661E-10	0.000	780.8539	5.799E+09	2.251E-11	7425000.	0.000
522.000	0.000	1.027E-09	-2.283E-10	0.000	780.8539	5.799E+09	2.342E-11	7425000.	0.000
528.000	0.000	7.752E-11	-1.087E-10	0.000	780.8539	5.799E+09	1.644E-11	7425000.	0.000
534.000	0.000	-2.801E-10	-3.285E-11	0.000	780.8539	5.799E+09	8.861E-12	7425000.	0.000
540.000	0.000	-3.184E-10	4.047E-12	0.000	780.8539	5.799E+09	3.439E-12	7425000.	0.000
546.000	0.000	-2.326E-10	1.575E-11	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
552.000	0.000	-1.299E-10	1.495E-11	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
558.000	0.000	-5.336E-11	1.001E-11	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
564.000	0.000	-9.853E-12	5.142E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
570.000	0.000	8.407E-12	1.814E-12	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
576.000	0.000	1.198E-11	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
582.000	0.000	9.125E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
588.000	0.000	4.781E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
594.000	0.000	1.373E-12	0.000	0.000	780.8539	5.799E+09	0.000	7425000.	0.000
600.000	0.000	0.000	0.000	0.000	780.8539	5.799E+09	0.000	3712500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0158333 radians
Maximum bending moment = 1077698. inch-lbs
Maximum shear force = 33344. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 13

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

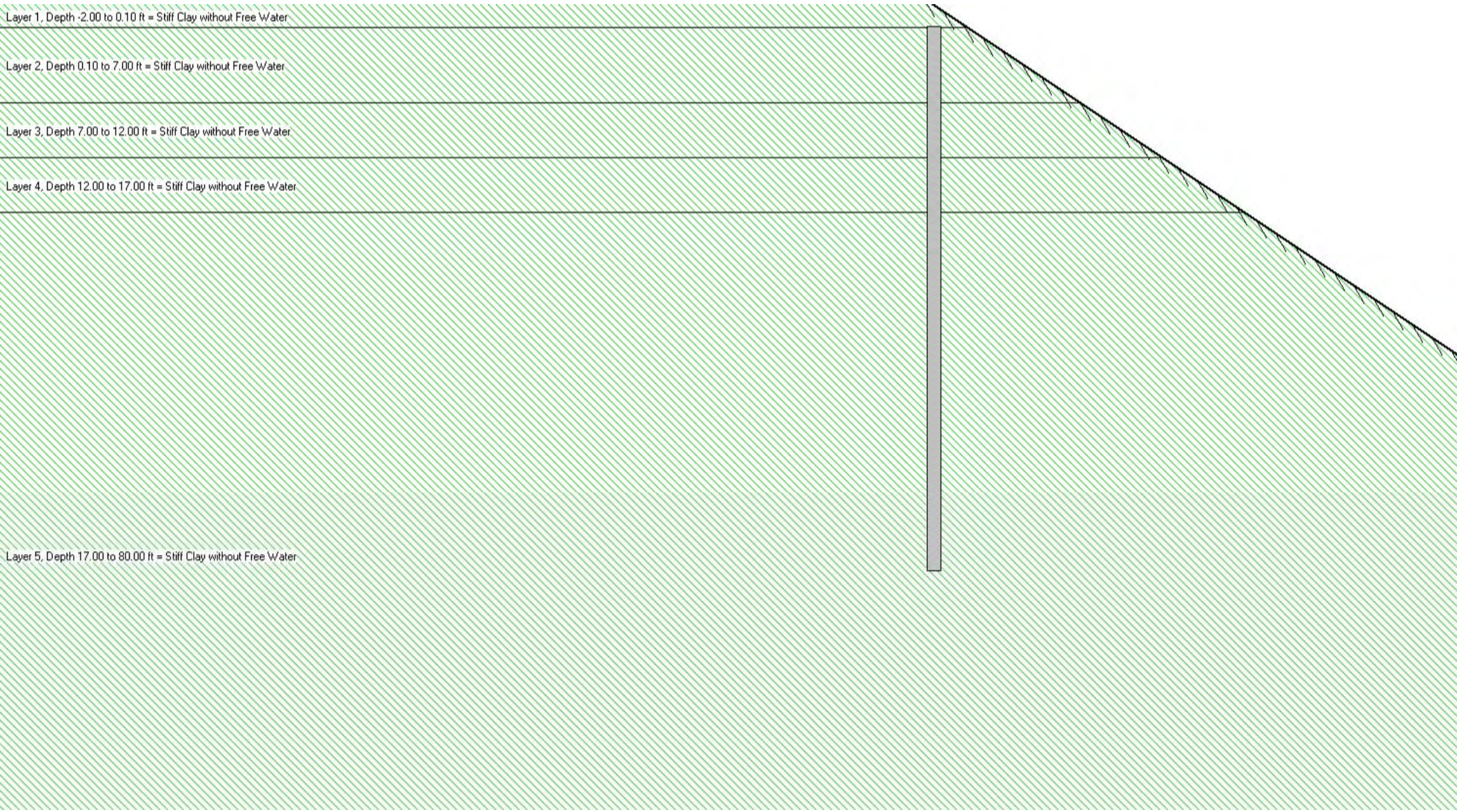
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	157000.	0.25000000	424379.	18057.	-0.00497627
2	4	y = 0.5000	M = 0.000	157000.	0.50000000	674230.	24507.	-0.00887202
3	4	y = 1.0000	M = 0.000	157000.	1.00000000	1077698.	33344.	-0.01583332

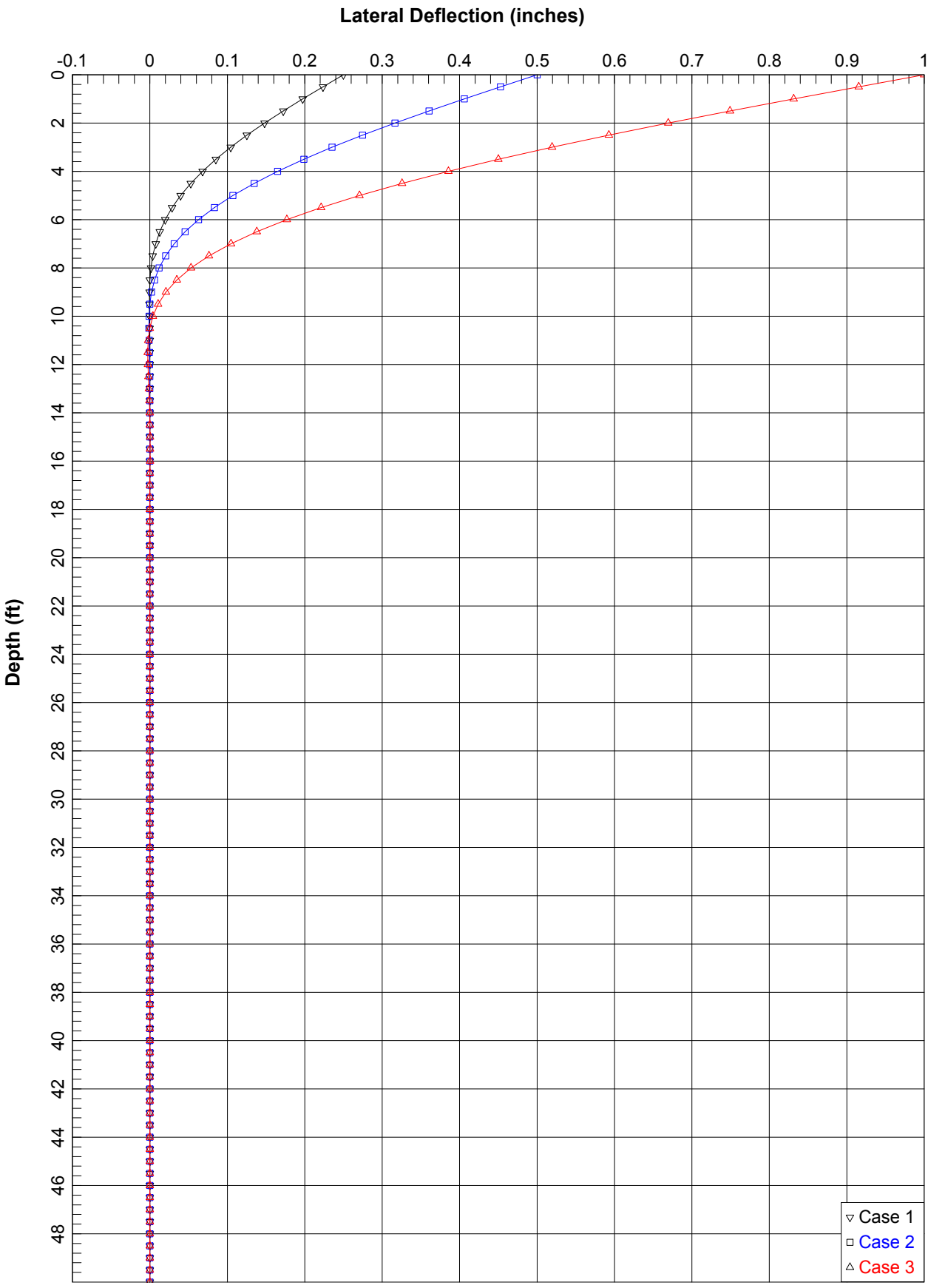
The analysis ended normally.

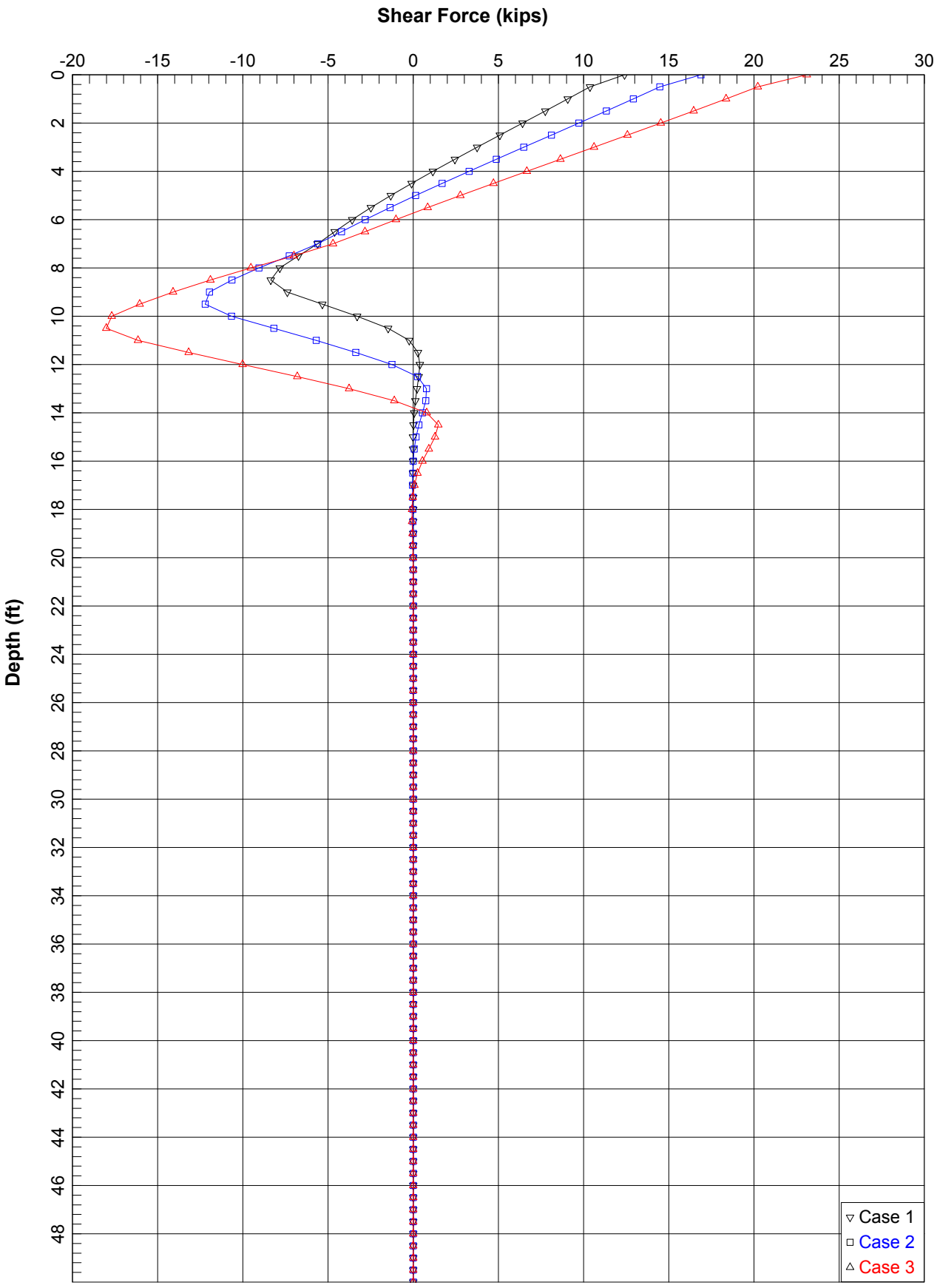
SUPPORT: **ABUTMENT 5L**

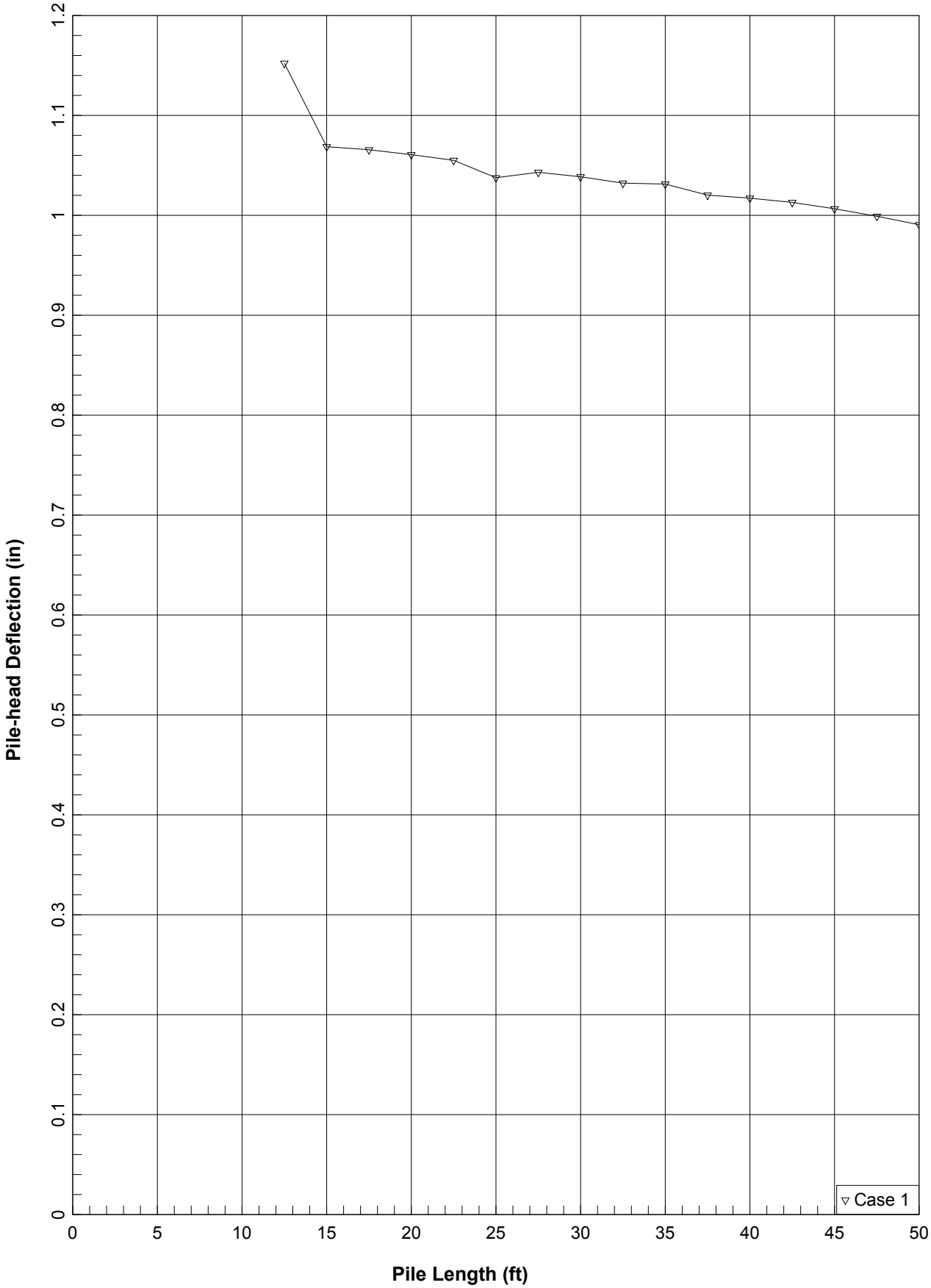
LOAD DIRECTION: **LONGITUDE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -2.00 to 0.10 ft = Stiff Clay without Free Water
Layer 2, Depth 0.10 to 7.00 ft = Stiff Clay without Free Water
Layer 3, Depth 7.00 to 12.00 ft = Stiff Clay without Free Water
Layer 4, Depth 12.00 to 17.00 ft = Stiff Clay without Free Water
Layer 5, Depth 17.00 to 80.00 ft = Stiff Clay without Free Water


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5L_long_Critical Length.lp6d
Name of output report file: Abut 5L_long_Critical Length.lp6o
Name of plot output file: Abut 5L_long_Critical Length.lp6p
Name of runtime messeage file: Abut 5L_long_Critical Length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:12:45

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	33.700 degrees
	=	0.588 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 130.00000 pcf
Effective unit weight at bottom of layer = 130.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Rock Mass Depth ft	Effective Unit Wt. pcf	Undrained In-situ Cohesion psi	Angle of In-situ Friction Type	Angle of In-situ Friction deg.	Uniaxial Elastic qu psi	RQD % or Subgrade Property	GSI Mod. pci
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	130.000	4000.000	--	--	--	--	--
		0.00500	--	--	80.000	130.000	4000.000	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.9300	1.0000
2	50.000	0.9300	1.0000

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
1	1	V = 23000. lbs	M = 0.0000 in-lbs	131000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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 = 23000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9907	-7.153E-08	23000.	-0.0140	651.5405	5.799E+09	-647.8517	1961.8868	0.000
6.000	0.9066	137345.	20136.	-0.0139	1334.6404	5.799E+09	-306.9753	2031.5239	0.000
12.000	0.8235	263528.	18274.	-0.0137	1962.2210	5.799E+09	-313.5308	2284.4680	0.000
18.000	0.7419	378209.	16377.	-0.0134	2532.5981	5.799E+09	-318.9592	2579.4093	0.000
24.000	0.6628	481100.	14450.	-0.0129	3044.3360	5.799E+09	-323.2051	2926.0290	0.000
30.000	0.5866	571964.	12502.	-0.0124	3496.2581	5.799E+09	-326.2108	3336.8837	0.000
36.000	0.5139	650620.	10539.	-0.0118	3887.4588	5.799E+09	-327.9156	3828.4887	0.000
42.000	0.4453	716941.	8570.8988	-0.0111	4217.3147	5.799E+09	-328.2548	4422.9057	0.000
48.000	0.3811	770863.	6604.6589	-0.0103	4485.4967	5.799E+09	-327.1585	5150.1238	0.000
54.000	0.3218	812379.	4649.5333	-0.009475	4691.9832	5.799E+09	-324.5500	6051.7178	0.000
60.000	0.2675	841551.	2714.8504	-0.008619	4837.0730	5.799E+09	-320.3443	7186.6321	0.000
66.000	0.2183	858506.	810.4842	-0.007739	4921.4014	5.799E+09	-314.4445	8640.6240	0.000
72.000	0.1746	863443.	-1053.0665	-0.006849	4945.9561	5.799E+09	-306.7391	10542.	0.000
78.000	0.1362	856636.	-2864.5733	-0.005959	4912.0966	5.799E+09	-297.0965	13091.	0.000
84.000	0.1031	838436.	-4733.7470	-0.005082	4821.5772	5.799E+09	-325.9614	18975.	0.000
90.000	0.0752	807819.	-7006.5541	-0.004230	4669.3032	5.799E+09	-431.6410	34446.	0.000
96.000	0.0523	761007.	-9527.9358	-0.003418	4436.4765	5.799E+09	-408.8196	46889.	0.000
102.000	0.0342	698858.	-1896.	-0.002663	4127.3726	5.799E+09	-380.6376	66847.	0.000
108.000	0.0204	622437.	-14076.	-0.001979	3747.2890	5.799E+09	-345.9475	101969.	0.000
114.000	0.0104	533056.	-16021.	-0.001382	3302.7459	5.799E+09	-302.3106	174218.	0.000
120.000	0.003776	432359.	-17654.	-0.000882	2801.9182	5.799E+09	-242.1753	384791.	0.000
126.000	-0.000175	322592.	-17891.	-0.000492	2255.9802	5.799E+09	163.4320	5610741.	0.000
132.000	-0.002123	218446.	-15959.	-0.000212	1737.9997	5.799E+09	480.2624	1357325.	0.000
138.000	-0.002715	131411.	-12986.	-3.068E-05	1305.1263	5.799E+09	519.7302	1128685.	0.000
144.000	-0.002491	62656.	-9847.5517	6.972E-05	963.1672	5.799E+09	535.5737	1289933.	0.000
150.000	-0.001878	13131.	-6643.7754	0.000109	716.8487	5.799E+09	532.3517	1700489.	0.000
156.000	-0.001184	-17240.	-3623.6547	0.000107	737.2867	5.799E+09	474.3552	2403820.	0.000
162.000	-0.000597	-30521.	-1001.5262	8.209E-05	803.3384	5.799E+09	399.6876	4019026.	0.000
168.000	-0.000199	-29388.	835.1320	5.110E-05	797.7028	5.799E+09	212.5318	6412276.	0.000
174.000	1.651E-05	-20580.	1446.1007	2.525E-05	753.8946	5.799E+09	-8.8489	3215874.	0.000
180.000	0.000104	-12073.	1247.6973	8.356E-06	711.5876	5.799E+09	-57.3123	3302622.	0.000
186.000	0.000117	-5620.2799	877.8577	-7.982E-07	679.4935	5.799E+09	-65.9676	3389375.	0.000
192.000	9.454E-05	-1537.6370	515.6340	-4.501E-06	659.1881	5.799E+09	-54.7737	3476132.	0.000
198.000	6.276E-05	574.4048	239.5089	-5.000E-06	654.3974	5.799E+09	-37.2681	3562892.	0.000
204.000	3.454E-05	1344.3297	64.7505	-4.007E-06	658.2267	5.799E+09	-20.9847	3644833.	0.000
210.000	1.467E-05	1357.7104	-26.8878	-2.609E-06	658.2932	5.799E+09	-9.5614	3909380.	0.000
216.000	3.234E-06	1025.7776	-62.0459	-1.376E-06	656.6423	5.799E+09	-2.1580	4003958.	0.000
222.000	-1.839E-06	615.3227	-62.1081	-5.270E-07	654.6009	5.799E+09	2.1373	6975000.	0.000
228.000	-3.091E-06	281.3089	-44.9176	-6.315E-08	652.9397	5.799E+09	3.5929	6975000.	0.000
234.000	-2.596E-06	76.4105	-25.0842	1.219E-07	651.9206	5.799E+09	3.0183	6975000.	0.000
240.000	-1.628E-06	-19.8928	-10.3530	1.512E-07	651.6395	5.799E+09	1.8921	6975000.	0.000
246.000	-7.825E-07	-48.0628	-1.9477	1.160E-07	651.7796	5.799E+09	0.9096	6975000.	0.000
252.000	-2.356E-07	-43.4480	1.6029	6.866E-08	651.7566	5.799E+09	0.2739	6975000.	0.000

258.000	4.142E-08	-28.9359	2.3281	3.121E-08	651.6845	5.799E+09	-0.0322	4666185.	0.000
264.000	1.388E-07	-15.5598	1.9010	8.186E-09	651.6179	5.799E+09	-0.1102	4760810.	0.000
270.000	1.397E-07	-6.1368	1.2315	-3.039E-09	651.5711	5.799E+09	-0.1130	4855439.	0.000
276.000	1.024E-07	-0.7773	0.6391	-6.616E-09	651.5444	5.799E+09	-0.0845	4950072.	0.000
282.000	6.026E-08	1.5423	0.2337	-6.220E-09	651.5482	5.799E+09	-0.0507	5044709.	0.000
288.000	2.773E-08	2.0366	0.0104	-4.368E-09	651.5507	5.799E+09	-0.0238	5139350.	0.000
294.000	7.845E-09	1.6741	-0.0814	-2.448E-09	651.5489	5.799E+09	-0.006843	5233993.	0.000
300.000	-1.649E-09	1.0639	-0.0962	-1.032E-09	651.5458	5.799E+09	0.001917	6975000.	0.000
306.000	-4.539E-09	0.5218	-0.0746	-2.116E-10	651.5431	5.799E+09	0.005276	6975000.	0.000
312.000	-4.188E-09	0.1693	-0.0441	1.460E-10	651.5414	5.799E+09	0.004869	6975000.	0.000
318.000	-2.787E-09	-0.008153	-0.0198	2.294E-10	651.5406	5.799E+09	0.003239	6975000.	0.000
324.000	-1.436E-09	-0.0690	-0.005096	1.895E-10	651.5409	5.799E+09	0.001669	6975000.	0.000
330.000	-5.131E-10	-0.0696	0.001700	1.178E-10	651.5409	5.799E+09	0.000596	6975000.	0.000
336.000	-2.246E-11	-0.0487	0.003568	5.655E-11	651.5408	5.799E+09	2.611E-05	6975000.	0.000
342.000	1.656E-10	-0.0269	0.003150	1.744E-11	651.5407	5.799E+09	-0.000165	5991245.	0.000
348.000	1.868E-10	-0.0110	0.002086	-2.134E-12	651.5406	5.799E+09	-0.000189	6085912.	0.000
354.000	1.400E-10	-0.001843	0.001085	-8.755E-12	651.5406	5.799E+09	-0.000144	6180581.	0.000
360.000	8.174E-11	0.002078	0.000396	-8.633E-12	651.5406	5.799E+09	-8.549E-05	6275252.	0.000
366.000	3.639E-11	0.002920	2.344E-05	-6.048E-12	651.5406	5.799E+09	-3.863E-05	6369925.	0.000
372.000	9.164E-12	0.002369	-0.000122	-3.312E-12	651.5406	5.799E+09	-9.874E-06	6464599.	0.000
378.000	-3.352E-12	0.001460	-0.000140	-1.330E-12	651.5406	5.799E+09	3.897E-06	6975000.	0.000
384.000	-6.801E-12	0.000691	-0.000105	0.000	651.5406	5.799E+09	7.907E-06	6975000.	0.000
390.000	-5.962E-12	0.000206	-6.008E-05	0.000	651.5405	5.799E+09	6.930E-06	6975000.	0.000
396.000	-3.845E-12	-3.040E-05	-2.588E-05	0.000	651.5405	5.799E+09	4.470E-06	6975000.	0.000
402.000	-1.918E-12	-0.000105	-5.775E-06	0.000	651.5405	5.799E+09	2.230E-06	6975000.	0.000
408.000	0.000	-0.000100	3.164E-06	0.000	651.5405	5.799E+09	7.501E-07	6975000.	0.000
414.000	0.000	-6.772E-05	5.394E-06	0.000	651.5405	5.799E+09	-6.994E-09	6975000.	0.000
420.000	0.000	-3.552E-05	4.547E-06	0.000	651.5405	5.799E+09	-2.753E-07	6975000.	0.000
426.000	0.000	-1.319E-05	2.859E-06	0.000	651.5405	5.799E+09	-2.873E-07	6975000.	0.000
432.000	0.000	-1.199E-06	1.385E-06	0.000	651.5405	5.799E+09	-2.040E-07	6975000.	0.000
438.000	0.000	3.451E-06	4.367E-07	0.000	651.5405	5.799E+09	-1.121E-07	6975000.	0.000
444.000	0.000	4.060E-06	-3.512E-08	0.000	651.5405	5.799E+09	-4.515E-08	6975000.	0.000
450.000	0.000	3.041E-06	-1.930E-07	0.000	651.5405	5.799E+09	-7.468E-09	6975000.	0.000
456.000	0.000	1.750E-06	-1.906E-07	0.000	651.5405	5.799E+09	8.268E-09	6975000.	0.000
462.000	0.000	7.562E-07	-1.317E-07	0.000	651.5405	5.799E+09	1.137E-08	6975000.	0.000
468.000	0.000	1.707E-07	-7.950E-08	0.000	651.5405	5.799E+09	9.014E-09	6975000.	0.000
474.000	0.000	-9.047E-08	-2.718E-08	0.000	651.5405	5.799E+09	5.427E-09	6975000.	0.000
480.000	0.000	-1.562E-07	-3.424E-09	0.000	651.5405	5.799E+09	2.492E-09	6975000.	0.000
486.000	0.000	-1.321E-07	6.105E-09	0.000	651.5405	5.799E+09	6.844E-10	6975000.	0.000
492.000	0.000	-8.324E-08	7.649E-09	0.000	651.5405	5.799E+09	-1.697E-10	6975000.	0.000
498.000	0.000	-4.043E-08	5.870E-09	0.000	651.5405	5.799E+09	-4.231E-10	6975000.	0.000
504.000	0.000	-1.282E-08	3.446E-09	0.000	651.5405	5.799E+09	-3.847E-10	6975000.	0.000
510.000	0.000	9.468E-10	1.531E-09	0.000	651.5405	5.799E+09	-2.538E-10	6975000.	0.000
516.000	0.000	5.576E-09	3.801E-10	0.000	651.5405	5.799E+09	-1.297E-10	6975000.	0.000
522.000	0.000	5.531E-09	-1.467E-10	0.000	651.5405	5.799E+09	-4.588E-11	6975000.	0.000
528.000	0.000	3.830E-09	-2.902E-10	0.000	651.5405	5.799E+09	-1.949E-12	6975000.	0.000
534.000	0.000	2.056E-09	-2.530E-10	0.000	651.5405	5.799E+09	1.434E-11	6975000.	0.000
540.000	0.000	7.955E-10	-1.627E-10	0.000	651.5405	5.799E+09	1.579E-11	6975000.	0.000
546.000	0.000	1.031E-10	-8.083E-11	0.000	651.5405	5.799E+09	1.150E-11	6975000.	0.000
552.000	0.000	-1.755E-10	-2.697E-11	0.000	651.5405	5.799E+09	6.460E-12	6975000.	0.000
558.000	0.000	-2.215E-10	0.000	0.000	651.5405	5.799E+09	2.691E-12	6975000.	0.000
564.000	0.000	-1.704E-10	1.012E-11	0.000	651.5405	5.799E+09	0.000	6975000.	0.000
570.000	0.000	-1.004E-10	1.042E-11	0.000	651.5405	5.799E+09	0.000	6975000.	0.000
576.000	0.000	-4.551E-11	7.249E-12	0.000	651.5405	5.799E+09	0.000	6975000.	0.000
582.000	0.000	-1.346E-11	3.771E-12	0.000	651.5405	5.799E+09	0.000	6975000.	0.000
588.000	0.000	0.000	1.261E-12	0.000	651.5405	5.799E+09	0.000	6975000.	0.000
594.000	0.000	1.724E-12	0.000	0.000	651.5405	5.799E+09	0.000	6975000.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3487500.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.9906561 inches
Computed slope at pile head      =     -0.0140034 radians
Maximum bending moment           =        863443. inch-lbs
Maximum shear force              =         23000. lbs
Depth of maximum bending moment  =    72.0000000 inches below pile head
Depth of maximum shear force     =     0.0000000 inches below pile head
Number of iterations             =             30
Number of zero deflection points =             13
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          23000. lbs
Moment     =              0. in-lbs
Axial Load =         131000. lbs
```

Pile Length	Pile Head Deflection	Maximum Moment	Maximum Shear

feet	inches	ln-lbs	lbs
50.000	0.9906561	863443.	23000.
47.500	0.9989905	864583.	23000.
45.000	1.0068277	867808.	23000.
42.500	1.0128473	870832.	23000.
40.000	1.0171452	873997.	23000.
37.500	1.0201248	877542.	23000.
35.000	1.0313767	879328.	23000.
32.500	1.0322958	882758.	23000.
30.000	1.0386211	886080.	23000.
27.500	1.0431617	889208.	23000.
25.000	1.0375694	894718.	23000.
22.500	1.0551199	895149.	23000.
20.000	1.0607051	898353.	23000.
17.500	1.0657033	901454.	23000.
15.000	1.0686449	905182.	23000.
12.500	1.1523432	894572.	23000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 23000.	M = 0.000	131000.	0.99065606	863443.	23000.	-0.01400344

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5L_long_Ave P.lp6d
Name of output report file: Abut 5L_long_Ave P.lp6o
Name of plot output file: Abut 5L_long_Ave P.lp6p
Name of runtime messeage file: Abut 5L_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:07:39

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	33.700 degrees
	=	0.588 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm pcf	Undrained In-situ Cohesion Test psf	Angle of In-situ Friction Test deg.	Uniaxial Elastic qu Subgrade Property	RQD % or GSI Mod. pci
					psi		Type		psi	
1	Stiff Clay w/o Free Water				-2.000	120.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					0.10000	120.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
2	Stiff Clay w/o Free Water				0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					7.000	120.000	1500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
3	Stiff Clay w/o Free Water				7.000	120.000	3500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					12.000	120.000	3500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
4	Stiff Clay w/o Free Water				12.000	125.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					17.000	125.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
5	Stiff Clay w/o Free Water				17.000	125.000	4500.000	--	--	--
		0.00500	--	--	--	--	--	--	--	
					80.000	125.000	4500.000	--	--	--
		0.00500	--	--	--	--	--	--	--	

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.9300	1.0000
2	50.000	0.9300	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		131000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		131000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		131000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	12400.	-0.004419	651.5405	5.799E+09	-459.1736	5510.0831	0.000
6.000	0.2235	69606.	10373.	-0.004383	997.7335	5.799E+09	-216.2991	5807.1060	0.000
12.000	0.1974	131369.	9066.1548	-0.004279	1304.9166	5.799E+09	-219.3838	6668.2028	0.000
18.000	0.1721	185127.	7743.9075	-0.004116	1572.2878	5.799E+09	-221.3653	7716.1407	0.000
24.000	0.1480	230766.	6413.2521	-0.003900	1799.2749	5.799E+09	-222.1865	9006.7978	0.000
30.000	0.1253	268218.	5081.3305	-0.003642	1985.5462	5.799E+09	-221.7873	10618.	0.000
36.000	0.1043	297467.	3755.6608	-0.003350	2131.0217	5.799E+09	-220.1026	12661.	0.000
42.000	0.0851	318551.	2444.1709	-0.003031	2235.8847	5.799E+09	-217.0607	15298.	0.000
48.000	0.0679	331562.	1155.2453	-0.002695	2300.5946	5.799E+09	-212.5812	18775.	0.000
54.000	0.0528	336650.	-102.2094	-0.002349	2325.9008	5.799E+09	-206.5704	23476.	0.000
60.000	0.0397	334028.	-1318.6685	-0.002002	2312.8590	5.799E+09	-198.9160	30027.	0.000
66.000	0.0288	323973.	-2483.8446	-0.001661	2262.8503	5.799E+09	-189.4761	39511.	0.000
72.000	0.0198	306834.	-3586.4554	-0.001335	2177.6055	5.799E+09	-178.0609	53930.	0.000
78.000	0.0128	283034.	-4613.8218	-0.001030	2059.2380	5.799E+09	-164.3946	77350.	0.000
84.000	0.007451	253087.	-5614.2733	-0.000753	1910.2908	5.799E+09	-169.0893	136150.	0.000
90.000	0.003721	216846.	-6732.7906	-0.000509	1730.0445	5.799E+09	-203.7498	328508.	0.000
96.000	0.001338	173094.	-7835.4289	-0.000308	1512.4399	5.799E+09	-163.7963	734548.	0.000
102.000	2.913E-05	123305.	-8359.1587	-0.000154	1264.8075	5.799E+09	-10.7803	2220215.	0.000
108.000	-0.000514	73027.	-7384.3337	-5.277E-05	1014.7461	5.799E+09	335.7220	3917806.	0.000
114.000	-0.000604	34776.	-5327.3676	3.008E-06	824.5001	5.799E+09	349.9334	3475861.	0.000
120.000	-0.000478	9093.6644	-3287.0764	2.570E-05	696.7687	5.799E+09	330.1637	4143826.	0.000
126.000	-0.000296	-4709.7492	-1467.3071	2.797E-05	674.9649	5.799E+09	276.4261	5610741.	0.000
132.000	-0.000142	-8557.9926	-238.5685	2.111E-05	694.1045	5.799E+09	133.1534	5610741.	0.000
138.000	-4.231E-05	-7605.7530	279.5865	1.275E-05	689.3685	5.799E+09	39.5649	5610741.	0.000
144.000	1.055E-05	-5222.9902	383.5555	6.108E-06	677.5176	5.799E+09	-4.9086	2791028.	0.000
150.000	3.099E-05	-3012.6896	321.4874	1.847E-06	666.5244	5.799E+09	-15.7808	3055509.	0.000
156.000	3.272E-05	-1368.0457	222.7376	-4.191E-07	658.3446	5.799E+09	-17.1358	3142256.	0.000
162.000	2.596E-05	-339.1789	129.4197	-1.302E-06	653.2275	5.799E+09	-13.9702	3229007.	0.000
168.000	1.709E-05	187.0377	59.1732	-1.381E-06	652.4708	5.799E+09	-9.4453	3315763.	0.000
174.000	9.386E-06	373.0711	14.8697	-1.091E-06	653.3961	5.799E+09	-5.3225	3402523.	0.000
180.000	3.996E-06	367.1897	-8.0695	-7.083E-07	653.3668	5.799E+09	-2.3239	3489286.	0.000
186.000	8.859E-07	277.3503	-16.6252	-3.749E-07	652.9200	5.799E+09	-0.5280	3576052.	0.000
192.000	-5.023E-07	168.2768	-16.5989	-1.443E-07	652.3775	5.799E+09	0.5368	6412276.	0.000
198.000	-8.457E-07	78.3907	-12.2769	-1.669E-08	651.9304	5.799E+09	0.9039	6412276.	0.000
204.000	-7.025E-07	20.9800	-7.0781	3.472E-08	651.6449	5.799E+09	0.8291	7080727.	0.000
210.000	-4.291E-07	-6.6008	-2.9073	4.216E-08	651.5734	5.799E+09	0.5612	7846875.	0.000
216.000	-1.966E-07	-13.9743	-0.4525	3.152E-08	651.6101	5.799E+09	0.2571	7846875.	0.000
222.000	-5.089E-08	-12.0799	0.5186	1.804E-08	651.6006	5.799E+09	0.0666	7846875.	0.000
228.000	1.983E-08	-7.7798	0.6723	7.762E-09	651.5792	5.799E+09	-0.0153	4635121.	0.000
234.000	4.226E-08	-4.0249	0.5261	1.655E-09	651.5606	5.799E+09	-0.0334	4740399.	0.000

240.000	3.969E-08	-1.4687	0.3298	-1.187E-09	651.5479	5.799E+09	-0.0321	4845679.	0.000
246.000	2.801E-08	-0.0652	0.1643	-1.981E-09	651.5409	5.799E+09	-0.0231	4950962.	0.000
252.000	1.592E-08	0.5062	0.0547	-1.753E-09	651.5431	5.799E+09	-0.0134	5056247.	0.000
258.000	6.977E-09	0.5942	-0.003538	-1.183E-09	651.5435	5.799E+09	-0.006002	5161535.	0.000
264.000	1.721E-09	0.4656	-0.0261	-6.352E-10	651.5425	5.799E+09	-0.001510	5266824.	0.000
270.000	-6.453E-10	0.2823	-0.0281	-2.483E-10	651.5420	5.799E+09	0.000844	7846875.	0.000
276.000	-1.259E-09	0.1291	-0.0206	-3.545E-11	651.5412	5.799E+09	0.001646	7846875.	0.000
282.000	-1.071E-09	0.0351	-0.0115	4.949E-11	651.5407	5.799E+09	0.001400	7846875.	0.000
288.000	-6.648E-10	-0.0085555	-0.004655	6.322E-11	651.5406	5.799E+09	0.000869	7846875.	0.000
294.000	-3.121E-10	-0.0209	-0.000823	4.799E-11	651.5407	5.799E+09	0.000408	7846875.	0.000
300.000	-8.897E-11	-0.0185	0.000751	2.761E-11	651.5406	5.799E+09	0.000116	7846875.	0.000
306.000	1.925E-11	-0.0119	0.001042	1.187E-11	651.5406	5.799E+09	-1.926E-05	6003897.	0.000
312.000	5.348E-11	-0.006017	0.000821	2.592E-12	651.5406	5.799E+09	-5.445E-05	6109199.	0.000
318.000	5.036E-11	-0.002071	0.000501	-1.592E-12	651.5406	5.799E+09	-5.216E-05	6214502.	0.000
324.000	3.438E-11	-1.481E-06	0.000236	-2.664E-12	651.5405	5.799E+09	-3.621E-05	6319806.	0.000
330.000	1.839E-11	0.000764	6.822E-05	-2.269E-12	651.5406	5.799E+09	-1.969E-05	6425112.	0.000
336.000	7.148E-12	0.000821	-1.420E-05	-1.449E-12	651.5406	5.799E+09	-7.780E-06	6530418.	0.000
342.000	1.001E-12	0.000596	-4.086E-05	0.000	651.5406	5.799E+09	-1.107E-06	6635725.	0.000
348.000	-1.444E-12	0.000332	-3.851E-05	0.000	651.5405	5.799E+09	1.889E-06	7846875.	0.000
354.000	-1.831E-12	0.000135	-2.566E-05	0.000	651.5405	5.799E+09	2.395E-06	7846875.	0.000
360.000	-1.382E-12	2.359E-05	-1.306E-05	0.000	651.5405	5.799E+09	1.808E-06	7846875.	0.000
366.000	0.000	-2.228E-05	-4.542E-06	0.000	651.5405	5.799E+09	1.030E-06	7846875.	0.000
372.000	0.000	-3.106E-05	-1.544E-07	0.000	651.5405	5.799E+09	4.327E-07	7846875.	0.000
378.000	0.000	-2.423E-05	1.407E-06	0.000	651.5405	5.799E+09	8.769E-08	7846875.	0.000
384.000	0.000	-1.422E-05	1.499E-06	0.000	651.5405	5.799E+09	-5.695E-08	7372899.	0.000
390.000	0.000	-6.258E-06	1.061E-06	0.000	651.5405	5.799E+09	-8.903E-08	7478212.	0.000
396.000	0.000	-1.491E-06	5.754E-07	0.000	651.5405	5.799E+09	-7.289E-08	7583526.	0.000
402.000	0.000	6.517E-07	2.235E-07	0.000	651.5405	5.799E+09	-4.441E-08	7688841.	0.000
408.000	0.000	1.196E-06	2.914E-08	0.000	651.5405	5.799E+09	-2.037E-08	7794156.	0.000
414.000	0.000	1.005E-06	-4.817E-08	0.000	651.5405	5.799E+09	-5.400E-09	7846875.	0.000
420.000	0.000	6.198E-07	-5.974E-08	0.000	651.5405	5.799E+09	1.543E-09	7846875.	0.000
426.000	0.000	2.893E-07	-4.475E-08	0.000	651.5405	5.799E+09	3.455E-09	7846875.	0.000
432.000	0.000	8.296E-08	-2.533E-08	0.000	651.5405	5.799E+09	3.018E-09	7846875.	0.000
438.000	0.000	-1.481E-08	-1.056E-08	0.000	651.5405	5.799E+09	1.907E-09	7846875.	0.000
444.000	0.000	-4.392E-08	-2.088E-09	0.000	651.5405	5.799E+09	9.160E-10	7846875.	0.000
450.000	0.000	-4.003E-08	1.506E-09	0.000	651.5405	5.799E+09	2.819E-10	7846875.	0.000
456.000	0.000	-2.595E-08	2.270E-09	0.000	651.5405	5.799E+09	-2.708E-11	7846875.	0.000
462.000	0.000	-1.283E-08	1.813E-09	0.000	651.5405	5.799E+09	-1.254E-10	7846875.	0.000
468.000	0.000	-4.209E-09	1.078E-09	0.000	651.5405	5.799E+09	-1.195E-10	7846875.	0.000
474.000	0.000	1.119E-10	4.810E-10	0.000	651.5405	5.799E+09	-7.948E-11	7846875.	0.000
480.000	0.000	1.571E-09	1.215E-10	0.000	651.5405	5.799E+09	-4.036E-11	7846875.	0.000
486.000	0.000	1.576E-09	-4.152E-11	0.000	651.5405	5.799E+09	-1.399E-11	7846875.	0.000
492.000	0.000	1.077E-09	-8.472E-11	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
498.000	0.000	5.616E-10	-7.272E-11	0.000	651.5405	5.799E+09	4.413E-12	7846875.	0.000
504.000	0.000	2.048E-10	-4.545E-11	0.000	651.5405	5.799E+09	4.680E-12	7846875.	0.000
510.000	0.000	1.617E-11	-2.156E-11	0.000	651.5405	5.799E+09	3.284E-12	7846875.	0.000
516.000	0.000	-5.422E-11	-6.437E-12	0.000	651.5405	5.799E+09	1.757E-12	7846875.	0.000
522.000	0.000	-6.133E-11	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
528.000	0.000	-4.429E-11	3.092E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
534.000	0.000	-2.431E-11	2.887E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
540.000	0.000	-9.665E-12	1.898E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
546.000	0.000	-1.526E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
552.000	0.000	1.774E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
558.000	0.000	2.350E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
564.000	0.000	1.802E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
570.000	0.000	1.041E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
576.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
582.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
588.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
594.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0044193 radians
Maximum bending moment            =         336650. inch-lbs
Maximum shear force               =          12400. lbs
Depth of maximum bending moment   =     54.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             15
Number of zero deflection points  =             14
```

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                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 2
--------------------------------------------------------------------------------

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head                          =       0.500000 inches
Moment at pile head                                =           0.000 in-lbs
Axial load at pile head                            =      131000.000 lbs
```


Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	16889.	-0.007884	651.5405	5.799E+09	-546.0525	3276.3150	0.000
6.000	0.4527	97700.	14476.	-0.007834	1137.4582	5.799E+09	-258.0446	3420.1086	0.000
12.000	0.4060	186030.	12914.	-0.007687	1576.7780	5.799E+09	-262.7233	3882.6359	0.000
18.000	0.3605	264751.	11327.	-0.007454	1968.3048	5.799E+09	-266.2911	4432.5931	0.000
24.000	0.3166	333671.	9722.0096	-0.007144	2311.0815	5.799E+09	-268.6921	5092.8089	0.000
30.000	0.2747	392646.	8106.3303	-0.006768	2604.3994	5.799E+09	-269.8676	5893.8754	0.000
36.000	0.2353	441586.	6487.4619	-0.006337	2847.8094	5.799E+09	-269.7552	6877.5147	0.000
42.000	0.1987	480456.	4873.3342	-0.005860	3041.1337	5.799E+09	-268.2874	8101.7709	0.000
48.000	0.1650	509277.	3272.3021	-0.005347	3184.4779	5.799E+09	-265.3900	9649.2527	0.000
54.000	0.1345	528130.	1693.1927	-0.004811	3278.2441	5.799E+09	-260.9798	11641.	0.000
60.000	0.1073	537158.	145.3701	-0.004260	3323.1458	5.799E+09	-254.9611	14258.	0.000
66.000	0.0834	536571.	-1361.1743	-0.003704	3320.2241	5.799E+09	-247.2204	17785.	0.000
72.000	0.0628	526647.	-2815.6929	-0.003154	3270.8674	5.799E+09	-237.6102	22687.	0.000
78.000	0.0456	507741.	-4206.4926	-0.002619	3176.8348	5.799E+09	-225.9807	29764.	0.000
84.000	0.0314	480286.	-5611.1646	-0.002108	3040.2867	5.799E+09	-242.2433	46264.	0.000
90.000	0.0203	443720.	-7271.1360	-0.001630	2858.4223	5.799E+09	-311.0805	92122.	0.000
96.000	0.0119	395594.	-9051.0326	-0.001195	2619.0643	5.799E+09	-282.2183	142770.	0.000
102.000	0.005916	336987.	-10635.	-0.000816	2327.5752	5.799E+09	-245.7187	249222.	0.000
108.000	0.002063	269259.	-11959.	-0.000503	1990.7272	5.799E+09	-195.5618	568746.	0.000
114.000	-0.000118	194273.	-12215.	-0.000263	1617.7748	5.799E+09	110.1812	5610741.	0.000
120.000	-0.001093	123095.	-10668.	-9.878E-05	1263.7645	5.799E+09	405.3649	2226019.	0.000
126.000	-0.001303	66410.	-8180.6650	-7.377E-07	981.8365	5.799E+09	423.8096	1951252.	0.000
132.000	-0.001101	24928.	-5690.6744	4.652E-05	775.5228	5.799E+09	406.1872	2212609.	0.000
138.000	-0.000745	-1951.2699	-3368.0568	5.840E-05	661.2454	5.799E+09	368.0186	2963967.	0.000
144.000	-0.000401	-15580.	-1252.5745	4.933E-05	729.0310	5.799E+09	337.1421	5049380.	0.000
150.000	-0.000153	-17060.	249.2997	3.245E-05	736.3886	5.799E+09	163.4826	6412276.	0.000
156.000	-1.124E-05	-12640.	775.7913	1.708E-05	714.4058	5.799E+09	12.0146	6412276.	0.000
162.000	5.201E-05	-7777.0758	729.4777	6.519E-06	690.2205	5.799E+09	-27.4524	3166681.	0.000
168.000	6.699E-05	-3896.3143	538.1487	4.799E-07	670.9192	5.799E+09	-36.3239	3253431.	0.000
174.000	5.777E-05	-1320.0461	332.6903	-2.219E-06	658.1059	5.799E+09	-32.1622	3340185.	0.000
180.000	4.036E-05	99.4578	167.0446	-2.850E-06	652.0352	5.799E+09	-23.0531	3426944.	0.000
186.000	2.357E-05	688.9697	56.4790	-2.442E-06	654.9672	5.799E+09	-13.8021	3513705.	0.000
192.000	1.105E-05	781.0453	-4.8240	-1.682E-06	655.4251	5.799E+09	-6.6322	3600470.	0.000
198.000	3.385E-06	633.7259	-30.9613	-9.500E-07	654.6924	5.799E+09	-2.0802	3687238.	0.000
204.000	-3.478E-07	411.0025	-35.9709	-4.095E-07	653.5847	5.799E+09	0.4104	7080727.	0.000
210.000	-1.529E-06	202.7194	-28.7410	-9.198E-08	652.5488	5.799E+09	1.9995	7846875.	0.000
216.000	-1.452E-06	66.2547	-17.0475	4.718E-08	651.8701	5.799E+09	1.8983	7846875.	0.000
222.000	-9.628E-07	-1.9253	-7.5753	8.046E-08	651.5501	5.799E+09	1.2591	7846875.	0.000
228.000	-4.860E-07	-24.7755	-1.8913	6.665E-08	651.6638	5.799E+09	0.6356	7846875.	0.000
234.000	-1.630E-07	-24.7251	0.6550	4.104E-08	651.6635	5.799E+09	0.2132	7846875.	0.000
240.000	6.466E-09	-16.9802	1.2790	1.946E-08	651.6250	5.799E+09	-0.005180	4806144.	0.000
246.000	7.052E-08	-9.4080	1.0903	5.808E-09	651.5873	5.799E+09	-0.0577	4911425.	0.000
252.000	7.616E-08	-3.9061	0.7261	-1.080E-09	651.5600	5.799E+09	-0.0637	5016709.	0.000
258.000	5.755E-08	-0.6935	0.3915	-3.460E-09	651.5440	5.799E+09	-0.0491	5121995.	0.000
264.000	3.464E-08	0.7510	0.1497	-3.430E-09	651.5443	5.799E+09	-0.0302	5227283.	0.000
270.000	1.639E-08	1.1085	0.0155	-2.468E-09	651.5461	5.799E+09	-0.0146	5332573.	0.000
276.000	5.016E-09	0.9408	-0.0418	-1.408E-09	651.5452	5.799E+09	-0.004546	5437865.	0.000
282.000	-5.128E-10	0.6087	-0.0535	-6.066E-10	651.5436	5.799E+09	0.000671	7846875.	0.000
288.000	-2.263E-09	0.3002	-0.0426	-1.363E-10	651.5420	5.799E+09	0.002959	7846875.	0.000
294.000	-2.149E-09	0.0981	-0.0253	6.975E-11	651.5410	5.799E+09	0.002810	7846875.	0.000
300.000	-1.426E-09	-0.002982	-0.0112	1.190E-10	651.5406	5.799E+09	0.001865	7846875.	0.000
306.000	-7.213E-10	-0.0369	-0.002811	9.831E-11	651.5407	5.799E+09	0.000943	7846875.	0.000
312.000	-2.461E-10	-0.0369	0.000985	6.014E-11	651.5407	5.799E+09	0.000322	7846875.	0.000
318.000	0.000	-0.0252	0.001949	2.803E-11	651.5407	5.799E+09	-4.204E-07	7846875.	0.000
324.000	9.030E-11	-0.0135	0.001664	8.001E-12	651.5406	5.799E+09	-9.451E-05	6280254.	0.000
330.000	9.633E-11	-0.005237	0.001073	-1.704E-12	651.5406	5.799E+09	-0.000103	6385559.	0.000
336.000	6.985E-11	-0.000640	0.000539	-4.744E-12	651.5406	5.799E+09	-7.556E-05	6490864.	0.000
342.000	3.940E-11	0.001237	0.000182	-4.435E-12	651.5406	5.799E+09	-4.331E-05	6596170.	0.000
348.000	1.662E-11	0.001555	-3.329E-06	-2.991E-12	651.5406	5.799E+09	-1.857E-05	6701478.	0.000
354.000	3.507E-12	0.001202	-7.097E-05	-1.564E-12	651.5406	5.799E+09	-3.979E-06	6806786.	0.000
360.000	-2.147E-12	0.000706	-7.448E-05	0.000	651.5406	5.799E+09	2.807E-06	7846875.	0.000
366.000	-3.420E-12	0.000309	-5.264E-05	0.000	651.5405	5.799E+09	4.473E-06	7846875.	0.000
372.000	-2.773E-12	7.390E-05	-2.835E-05	0.000	651.5405	5.799E+09	3.627E-06	7846875.	0.000
378.000	-1.667E-12	-3.105E-05	-1.093E-05	0.000	651.5405	5.799E+09	2.180E-06	7846875.	0.000
384.000	0.000	-5.748E-05	-1.426E-06	0.000	651.5405	5.799E+09	9.862E-07	7846875.	0.000
390.000	0.000	-4.835E-05	2.309E-06	0.000	651.5405	5.799E+09	2.588E-07	7846875.	0.000
396.000	0.000	-2.987E-05	2.866E-06	0.000	651.5405	5.799E+09	-7.311E-08	7543965.	0.000
402.000	0.000	-1.400E-05	2.155E-06	0.000	651.5405	5.799E+09	-1.641E-07	7649279.	0.000
408.000	0.000	-4.027E-06	1.227E-06	0.000	651.5405	5.799E+09	-1.452E-07	7754594.	0.000
414.000	0.000	7.265E-07	5.131E-07	0.000	651.5405	5.799E+09	-9.276E-08	7846875.	0.000
420.000	0.000	2.140E-06	1.012E-07	0.000	651.5405	5.799E+09	-4.454E-08	7846875.	0.000
426.000	0.000	1.949E-06	-7.350E-08	0.000	651.5405	5.799E+09	-1.369E-08	7846875.	0.000
432.000	0.000	1.263E-06	-1.106E-07	0.000	651.5405	5.799E+09	1.336E-09	7846875.	0.000
438.000	0.000	6.238E-07	-1.823E-08	0.000	651.5405	5.799E+09	6.110E-09	7846875.	0.000
444.000	0.000	2.044E-07	-5.244E-08	0.000	651.5405	5.799E+09	5.819E-09	7846875.	0.000
450.000	0.000	-5.694E-09	-2.338E-08	0.000	651.5405	5.799E+09	3.867E-09	7846875.	0.000
456.000	0.000	-7.658E-08	-5.895E-09	0.000	651.5405	5.799E+09	1.963E-09	7846875.	0.000
462.000	0.000	-7.675E-08	2.031E-09	0.000	651.5405	5.799E+09	6.794E-10	7846875.	0.000
468.000	0.000	-5.240E-08	4.127E-09	0.000	651.5405	5.799E+09	1.939E-11	7846875.	0.000
474.000	0.000	-2.731E-08	3.540E-09	0.000	651.5405	5.799E+09	-2.151E-10	7846875.	0.000
480.000	0.000	-9.949E-09	2.211E-09	0.000	651.5405	5.799E+09	-2.278E-10	7846875.	0.000
486.000	0.000	-7.766E-10	1.048E-09	0.000	651.5405	5.799E+09	-1.598E-10	7846875.	0.000
492.000	0.000	2.644E-09	3.125E-10	0.000	651.5405	5.799E+09	-8.543E-11	7846875.	0.000
498.000	0.000	2.986E-09	-4.139E-11	0.000	651.5405	5.799E+09	-3.254E-11	7846875.	0.000
504.000	0.000	2.155E-09	-1.507E-10	0.000	651.5405	5.799E+09	-3.890E-12	7846875.	0.000
510.000	0.000	1.182E-09	-1.406E-10	0.000	651.5405	5.799E+09	7.258E-12	7846875.	0.000
516.000	0.000	4.697E-10	-9.237E-11	0.000	651.5405	5.799E+09	8.807E-12	7846875.	0.000

522.000	0.000	7.380E-11	-4.632E-11	0.000	651.5405	5.799E+09	6.542E-12	7846875.	0.000
528.000	0.000	-8.664E-11	-1.566E-11	0.000	651.5405	5.799E+09	3.678E-12	7846875.	0.000
534.000	0.000	-1.146E-10	0.000	0.000	651.5405	5.799E+09	1.518E-12	7846875.	0.000
540.000	0.000	-8.782E-11	5.345E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
546.000	0.000	-5.063E-11	5.519E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
552.000	0.000	-2.166E-11	3.824E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
558.000	0.000	-4.751E-12	2.021E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
564.000	0.000	2.606E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
570.000	0.000	4.310E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
576.000	0.000	3.507E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
582.000	0.000	2.082E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
588.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
594.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0078841 radians
Maximum bending moment = 537158. inch-lbs
Maximum shear force = 16889. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	23099.	-0.0141	651.5405	5.799E+09	-649.3695	1948.1086	0.000
6.000	0.9153	138002.	20228.	-0.0140	1337.9049	5.799E+09	-307.7048	2017.0610	0.000
12.000	0.8315	264814.	18362.	-0.0138	1968.6168	5.799E+09	-314.2882	2267.9478	0.000
18.000	0.7493	380096.	16460.	-0.0135	2541.9844	5.799E+09	-319.7441	2560.4228	0.000
24.000	0.6694	483559.	14529.	-0.0131	3056.5645	5.799E+09	-324.0171	2904.0585	0.000
30.000	0.5926	574963.	12575.	-0.0125	3511.1736	5.799E+09	-327.0496	3311.2666	0.000
36.000	0.5194	654127.	10608.	-0.0119	3904.8990	5.799E+09	-328.7807	3798.3652	0.000
42.000	0.4502	720922.	8634.2012	-0.0112	4237.1105	5.799E+09	-329.1459	4387.1440	0.000
48.000	0.3854	775281.	6662.5384	-0.0104	4507.4725	5.799E+09	-328.0751	5107.2082	0.000
54.000	0.3255	817199.	4701.8381	-0.009562	4715.9569	5.799E+09	-325.4917	5999.5798	0.000
60.000	0.2707	846735.	2761.4312	-0.008702	4862.8566	5.799E+09	-321.3106	7122.3864	0.000
66.000	0.2211	864015.	851.1947	-0.007817	4948.8008	5.799E+09	-315.4349	8560.1439	0.000
72.000	0.1769	869237.	-1018.3698	-0.006920	4974.7717	5.799E+09	-307.7532	10439.	0.000
78.000	0.1381	862673.	-2836.0308	-0.006024	4942.1236	5.799E+09	-298.1338	12957.	0.000
84.000	0.1046	844674.	-4711.9487	-0.005140	4852.6052	5.799E+09	-327.1721	18768.	0.000
90.000	0.0764	814210.	-6993.5524	-0.004282	4701.0902	5.799E+09	-433.3624	34046.	0.000
96.000	0.0532	767483.	-9525.4117	-0.003464	4468.6885	5.799E+09	-410.5907	46301.	0.000
102.000	0.0348	705351.	-11905.	-0.002702	4159.6664	5.799E+09	-382.4576	65929.	0.000
108.000	0.0208	628876.	-14095.	-0.002012	3779.3123	5.799E+09	-347.8193	100406.	0.000
114.000	0.0107	539368.	-16052.	-0.001407	3334.1376	5.799E+09	-304.2539	171132.	0.000
120.000	0.003898	438469.	-17697.	-0.000901	2832.3047	5.799E+09	-244.3319	376044.	0.000
126.000	-0.000148	328417.	-18015.	-0.000505	2284.9507	5.799E+09	138.6162	5610741.	0.000
132.000	-0.002156	223088.	-16155.	-0.000219	1761.0875	5.799E+09	481.1168	1338918.	0.000
138.000	-0.002779	134897.	-13174.	-3.400E-05	1322.4655	5.799E+09	512.7367	1107125.	0.000
144.000	-0.002564	65056.	-10021.	6.945E-05	975.1029	5.799E+09	538.2701	1259600.	0.000
150.000	-0.001945	14540.	-6799.2696	0.000111	723.8541	5.799E+09	535.5504	1651768.	0.000
156.000	-0.001236	-16709.	-3759.3829	0.000110	734.6446	5.799E+09	477.7452	2318266.	0.000
162.000	-0.000631	-30745.	-1116.4760	8.495E-05	804.4548	5.799E+09	403.2238	3832268.	0.000
168.000	-0.000217	-30240.	788.9981	5.340E-05	801.9436	5.799E+09	231.9343	6412276.	0.000
174.000	9.521E-06	-21361.	1469.4917	2.671E-05	757.7824	5.799E+09	-5.1031	3215874.	0.000
180.000	0.000103	-12648.	1283.3609	9.110E-06	714.4486	5.799E+09	-56.9405	3302622.	0.000
186.000	0.000119	-5975.1885	911.1342	-5.248E-07	681.2587	5.799E+09	-67.1351	3389375.	0.000
192.000	9.715E-05	-1713.9719	540.8797	-4.503E-06	660.0651	5.799E+09	-56.2831	3476132.	0.000
198.000	6.481E-05	522.4462	256.5753	-5.119E-06	654.1390	5.799E+09	-38.4850	3562892.	0.000
204.000	3.572E-05	1372.9791	73.8770	-4.139E-06	658.3692	5.799E+09	-22.4144	3765530.	0.000
210.000	1.514E-05	1415.4766	-25.6846	-2.696E-06	658.5806	5.799E+09	-10.7728	4267998.	0.000
216.000	3.362E-06	1069.0022	-65.3538	-1.411E-06	656.8573	5.799E+09	-2.4503	4373264.	0.000
222.000	-1.784E-06	633.4490	-65.7037	-5.300E-07	654.6911	5.799E+09	2.3336	7846875.	0.000
228.000	-2.998E-06	281.3913	-46.9413	-5.665E-08	652.9401	5.799E+09	3.9205	7846875.	0.000
234.000	-2.464E-06	70.2431	-25.5117	1.253E-07	651.8899	5.799E+09	3.2227	7846875.	0.000
240.000	-1.494E-06	-24.9463	-9.9802	1.487E-07	651.6646	5.799E+09	1.9545	7846875.	0.000
246.000	-6.797E-07	-49.7536	-1.4502	1.101E-07	651.7880	5.799E+09	0.8889	7846875.	0.000
252.000	-1.737E-07	-42.5212	1.8981	6.232E-08	651.7520	5.799E+09	0.2272	7846875.	0.000

258.000	6.820E-08	-27.0745	2.4055	2.632E-08	651.6752	5.799E+09	-0.0581	5110210.	0.000
264.000	1.421E-07	-13.6970	1.8608	5.222E-09	651.6087	5.799E+09	-0.1235	5215498.	0.000
270.000	1.309E-07	-4.7536	1.1422	-4.324E-09	651.5642	5.799E+09	-0.1161	5320788.	0.000
276.000	9.017E-08	0.0159	0.5494	-6.775E-09	651.5406	5.799E+09	-0.0815	5426079.	0.000
282.000	4.957E-08	1.8497	0.1677	-5.810E-09	651.5497	5.799E+09	-0.0457	5531372.	0.000
288.000	2.045E-08	2.0370	-0.0271	-3.799E-09	651.5507	5.799E+09	-0.0192	5636667.	0.000
294.000	3.983E-09	1.5309	-0.0961	-1.953E-09	651.5482	5.799E+09	-0.003811	5741964.	0.000
300.000	-2.982E-09	0.8864	-0.0959	-7.022E-10	651.5450	5.799E+09	0.003900	7846875.	0.000
306.000	-4.444E-09	0.3816	-0.0667	-4.616E-11	651.5424	5.799E+09	0.005812	7846875.	0.000
312.000	-3.536E-09	0.0857	-0.0354	1.956E-10	651.5410	5.799E+09	0.004625	7846875.	0.000
318.000	-2.097E-09	-0.0438	-0.0133	2.172E-10	651.5408	5.799E+09	0.002742	7846875.	0.000
324.000	-9.291E-10	-0.0746	-0.001456	1.560E-10	651.5409	5.799E+09	0.001215	7846875.	0.000
330.000	-2.248E-10	-0.0615	0.003071	8.556E-11	651.5409	5.799E+09	0.000294	7846875.	0.000
336.000	9.754E-11	-0.0379	0.003637	3.413E-11	651.5407	5.799E+09	-0.000105	6479075.	0.000
342.000	1.848E-10	-0.0180	0.002713	5.249E-12	651.5406	5.799E+09	-0.000203	6584381.	0.000
348.000	1.605E-10	-0.005319	0.001568	-6.790E-12	651.5406	5.799E+09	-0.000179	6689688.	0.000
354.000	1.033E-10	0.000874	0.000680	-9.090E-12	651.5406	5.799E+09	-0.000117	6794996.	0.000
360.000	5.144E-11	0.002855	0.000152	-7.161E-12	651.5406	5.799E+09	-5.916E-05	6900305.	0.000
366.000	1.734E-11	0.002704	-8.662E-05	-4.285E-12	651.5406	5.799E+09	-2.025E-05	7005615.	0.000
372.000	0.000	0.001822	-0.000147	-1.943E-12	651.5406	5.799E+09	-3.399E-08	7110925.	0.000
378.000	-5.970E-12	0.000938	-0.000124	0.000	651.5406	5.799E+09	7.808E-06	7846875.	0.000
384.000	-6.147E-12	0.000334	-7.660E-05	0.000	651.5405	5.799E+09	8.040E-06	7846875.	0.000
390.000	-4.254E-12	1.839E-05	-3.579E-05	0.000	651.5405	5.799E+09	5.563E-06	7846875.	0.000
396.000	-2.246E-12	-9.648E-05	-1.029E-05	0.000	651.5405	5.799E+09	2.937E-06	7846875.	0.000
402.000	0.000	-0.000106	1.804E-06	0.000	651.5405	5.799E+09	1.095E-06	7846875.	0.000
408.000	0.000	-7.512E-05	5.415E-06	0.000	651.5405	5.799E+09	1.090E-07	7846875.	0.000
414.000	0.000	-4.070E-05	4.942E-06	0.000	651.5405	5.799E+09	-2.666E-07	7846875.	0.000
420.000	0.000	-1.585E-05	3.207E-06	0.000	651.5405	5.799E+09	-3.118E-07	7846875.	0.000
426.000	0.000	-2.213E-06	1.587E-06	0.000	651.5405	5.799E+09	-2.283E-07	7846875.	0.000
432.000	0.000	3.209E-06	5.217E-07	0.000	651.5405	5.799E+09	-1.268E-07	7846875.	0.000
438.000	0.000	4.065E-06	-1.276E-08	0.000	651.5405	5.799E+09	-5.135E-08	7846875.	0.000
444.000	0.000	3.068E-06	-1.936E-07	0.000	651.5405	5.799E+09	-8.925E-09	7846875.	0.000
450.000	0.000	1.748E-06	-1.946E-07	0.000	651.5405	5.799E+09	8.592E-09	7846875.	0.000
456.000	0.000	7.350E-07	-1.331E-07	0.000	651.5405	5.799E+09	1.192E-08	7846875.	0.000
462.000	0.000	1.509E-07	-6.946E-08	0.000	651.5405	5.799E+09	9.281E-09	7846875.	0.000
468.000	0.000	-9.915E-08	-2.536E-08	0.000	651.5405	5.799E+09	5.417E-09	7846875.	0.000
474.000	0.000	-1.541E-07	-2.042E-09	0.000	651.5405	5.799E+09	2.357E-09	7846875.	0.000
480.000	0.000	-1.241E-07	6.676E-09	0.000	651.5405	5.799E+09	5.489E-10	7846875.	0.000
486.000	0.000	-7.429E-08	7.569E-09	0.000	651.5405	5.799E+09	-2.512E-10	7846875.	0.000
492.000	0.000	-3.342E-08	5.471E-09	0.000	651.5405	5.799E+09	-4.481E-10	7846875.	0.000
498.000	0.000	-8.648E-09	3.005E-09	0.000	651.5405	5.799E+09	-3.738E-10	7846875.	0.000
504.000	0.000	2.671E-09	1.197E-09	0.000	651.5405	5.799E+09	-2.292E-10	7846875.	0.000
510.000	0.000	5.738E-09	1.903E-10	0.000	651.5405	5.799E+09	-1.063E-10	7846875.	0.000
516.000	0.000	4.974E-09	-2.184E-10	0.000	651.5405	5.799E+09	-2.995E-11	7846875.	0.000
522.000	0.000	3.128E-09	-2.903E-10	0.000	651.5405	5.799E+09	5.975E-12	7846875.	0.000
528.000	0.000	1.495E-09	-2.229E-10	0.000	651.5405	5.799E+09	1.651E-11	7846875.	0.000
534.000	0.000	4.542E-10	-1.287E-10	0.000	651.5405	5.799E+09	1.490E-11	7846875.	0.000
540.000	0.000	-5.915E-11	-5.516E-11	0.000	651.5405	5.799E+09	9.606E-12	7846875.	0.000
546.000	0.000	-2.087E-10	-1.218E-11	0.000	651.5405	5.799E+09	4.720E-12	7846875.	0.000
552.000	0.000	-1.971E-10	6.564E-12	0.000	651.5405	5.799E+09	1.528E-12	7846875.	0.000
558.000	0.000	-1.304E-10	1.096E-11	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
564.000	0.000	-6.584E-11	8.977E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
570.000	0.000	-2.271E-11	5.404E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
576.000	0.000	0.000	2.393E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
582.000	0.000	6.042E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
588.000	0.000	5.325E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
594.000	0.000	2.090E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0141156 radians
Maximum bending moment = 869237. inch-lbs
Maximum shear force = 23099. lbs
Depth of maximum bending moment = 72.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 13

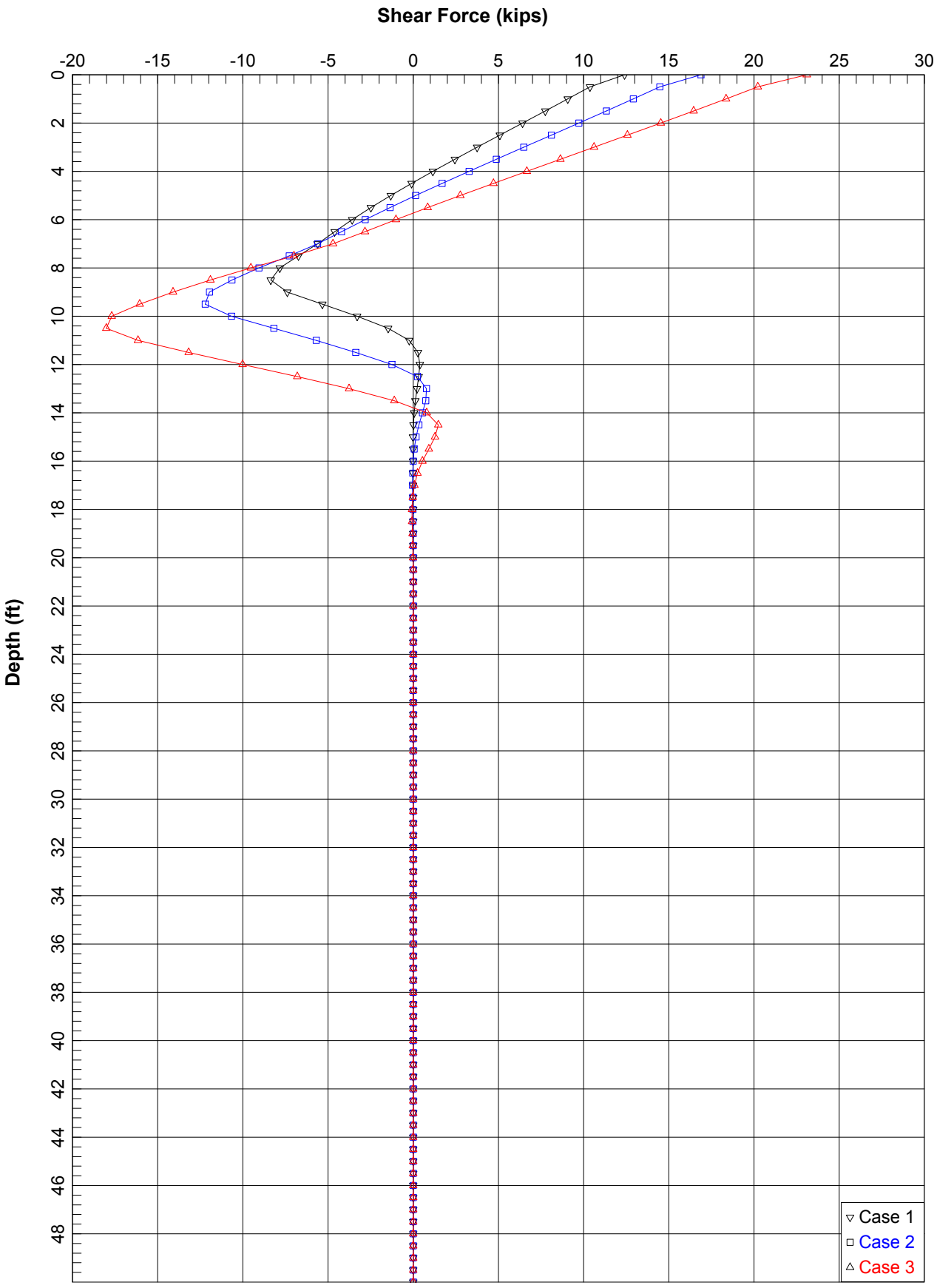
Summary of Pile Response(s)

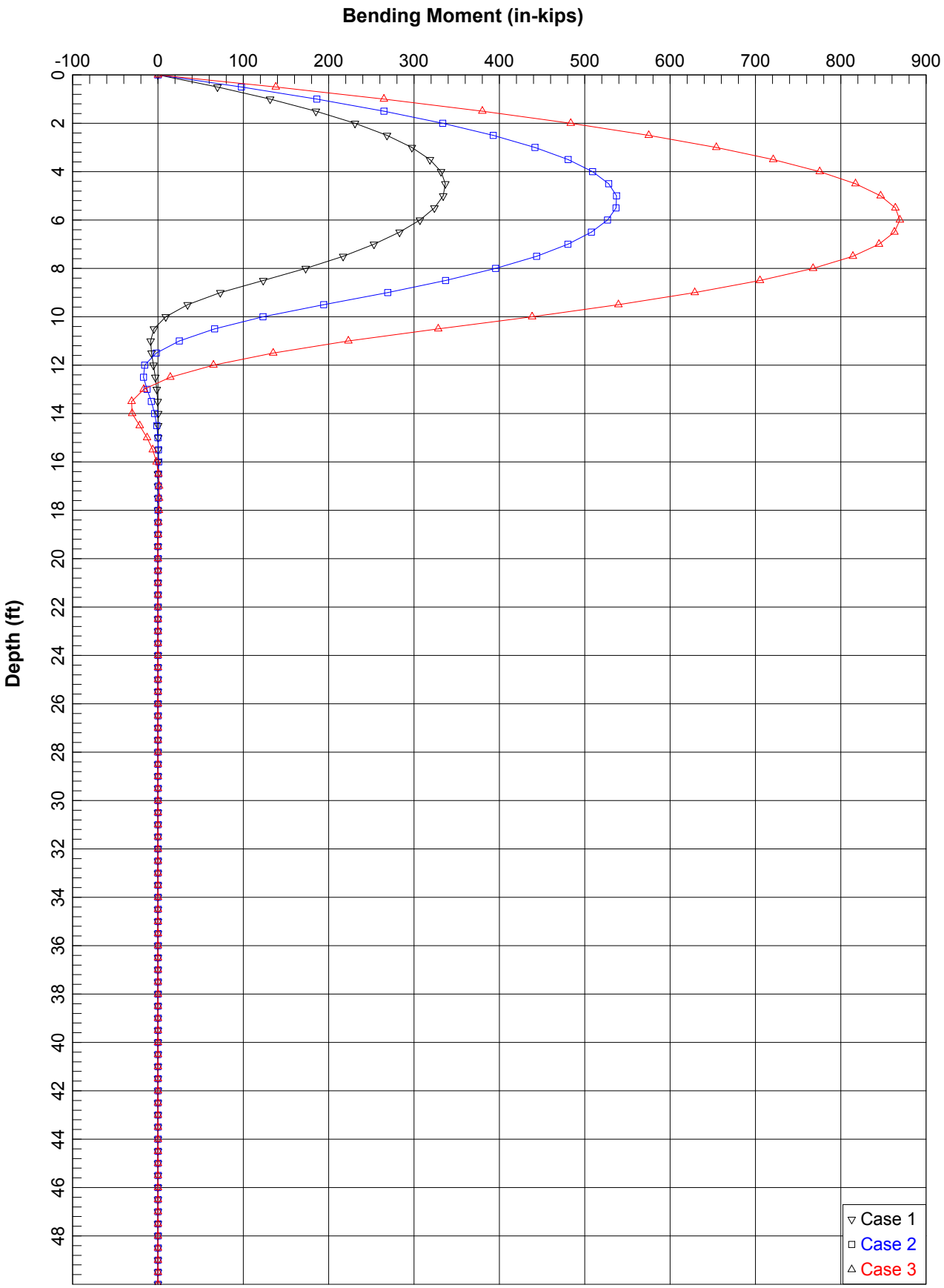
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	131000.	0.25000000	336650.	12400.	-0.00441935
2	4	y = 0.5000	M = 0.000	131000.	0.50000000	537158.	16889.	-0.00788410
3	4	y = 1.0000	M = 0.000	131000.	1.00000000	869237.	23099.	-0.01411562

The analysis ended normally.


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5L_long_Ave P.lp6d
Name of output report file: Abut 5L_long_Ave P.lp6o
Name of plot output file: Abut 5L_long_Ave P.lp6p
Name of runtime messeage file: Abut 5L_long_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:07:39

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	33.700 degrees
	=	0.588 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm pcf	Undrained In-situ Cohesion Test psf	Angle of In-situ Friction Test deg.	Uniaxial Elastic qu Subgrade Property	RQD % or GSI Mod. pci
					psi		Type		psi	
1	Stiff Clay w/o Free Water				-2.000	120.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					0.10000	120.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
2	Stiff Clay w/o Free Water				0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					7.000	120.000	1500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
3	Stiff Clay w/o Free Water				7.000	120.000	3500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					12.000	120.000	3500.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
4	Stiff Clay w/o Free Water				12.000	125.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
					17.000	125.000	4000.000	--	--	--
		0.00700	--	--	--	--	--	--	--	
5	Stiff Clay w/o Free Water				17.000	125.000	4500.000	--	--	--
		0.00500	--	--	--	--	--	--	--	
					80.000	125.000	4500.000	--	--	--
		0.00500	--	--	--	--	--	--	--	

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.9300	1.0000
2	50.000	0.9300	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		131000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		131000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		131000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	12400.	-0.004419	651.5405	5.799E+09	-459.1736	5510.0831	0.000
6.000	0.2235	69606.	10373.	-0.004383	997.7335	5.799E+09	-216.2991	5807.1060	0.000
12.000	0.1974	131369.	9066.1548	-0.004279	1304.9166	5.799E+09	-219.3838	6668.2028	0.000
18.000	0.1721	185127.	7743.9075	-0.004116	1572.2878	5.799E+09	-221.3653	7716.1407	0.000
24.000	0.1480	230766.	6413.2521	-0.003900	1799.2749	5.799E+09	-222.1865	9006.7978	0.000
30.000	0.1253	268218.	5081.3305	-0.003642	1985.5462	5.799E+09	-221.7873	10618.	0.000
36.000	0.1043	297467.	3755.6608	-0.003350	2131.0217	5.799E+09	-220.1026	12661.	0.000
42.000	0.0851	318551.	2444.1709	-0.003031	2235.8847	5.799E+09	-217.0607	15298.	0.000
48.000	0.0679	331562.	1155.2453	-0.002695	2300.5946	5.799E+09	-212.5812	18775.	0.000
54.000	0.0528	336650.	-102.2094	-0.002349	2325.9008	5.799E+09	-206.5704	23476.	0.000
60.000	0.0397	334028.	-1318.6685	-0.002002	2312.8590	5.799E+09	-198.9160	30027.	0.000
66.000	0.0288	323973.	-2483.8446	-0.001661	2262.8503	5.799E+09	-189.4761	39511.	0.000
72.000	0.0198	306834.	-3586.4554	-0.001335	2177.6055	5.799E+09	-178.0609	53930.	0.000
78.000	0.0128	283034.	-4613.8218	-0.001030	2059.2380	5.799E+09	-164.3946	77350.	0.000
84.000	0.007451	253087.	-5614.2733	-0.000753	1910.2908	5.799E+09	-169.0893	136150.	0.000
90.000	0.003721	216846.	-6732.7906	-0.000509	1730.0445	5.799E+09	-203.7498	328508.	0.000
96.000	0.001338	173094.	-7835.4289	-0.000308	1512.4399	5.799E+09	-163.7963	734548.	0.000
102.000	2.913E-05	123305.	-8359.1587	-0.000154	1264.8075	5.799E+09	-10.7803	2220215.	0.000
108.000	-0.000514	73027.	-7384.3337	-5.277E-05	1014.7461	5.799E+09	335.7220	3917806.	0.000
114.000	-0.000604	34776.	-5327.3676	3.008E-06	824.5001	5.799E+09	349.9334	3475861.	0.000
120.000	-0.000478	9093.6644	-3287.0764	2.570E-05	696.7687	5.799E+09	330.1637	4143826.	0.000
126.000	-0.000296	-4709.7492	-1467.3071	2.797E-05	674.9649	5.799E+09	276.4261	5610741.	0.000
132.000	-0.000142	-8557.9926	-238.5685	2.111E-05	694.1045	5.799E+09	133.1534	5610741.	0.000
138.000	-4.231E-05	-7605.7530	279.5865	1.275E-05	689.3685	5.799E+09	39.5649	5610741.	0.000
144.000	1.055E-05	-5222.9902	383.5555	6.108E-06	677.5176	5.799E+09	-4.9086	2791028.	0.000
150.000	3.099E-05	-3012.6896	321.4874	1.847E-06	666.5244	5.799E+09	-15.7808	3055509.	0.000
156.000	3.272E-05	-1368.0457	222.7376	-4.191E-07	658.3446	5.799E+09	-17.1358	3142256.	0.000
162.000	2.596E-05	-339.1789	129.4197	-1.302E-06	653.2275	5.799E+09	-13.9702	3229007.	0.000
168.000	1.709E-05	187.0377	59.1732	-1.381E-06	652.4708	5.799E+09	-9.4453	3315763.	0.000
174.000	9.386E-06	373.0711	14.8697	-1.091E-06	653.3961	5.799E+09	-5.3225	3402523.	0.000
180.000	3.996E-06	367.1897	-8.0695	-7.083E-07	653.3668	5.799E+09	-2.3239	3489286.	0.000
186.000	8.859E-07	277.3503	-16.6252	-3.749E-07	652.9200	5.799E+09	-0.5280	3576052.	0.000
192.000	-5.023E-07	168.2768	-16.5989	-1.443E-07	652.3775	5.799E+09	0.5368	6412276.	0.000
198.000	-8.457E-07	78.3907	-12.2769	-1.669E-08	651.9304	5.799E+09	0.9039	6412276.	0.000
204.000	-7.025E-07	20.9800	-7.0781	3.472E-08	651.6449	5.799E+09	0.8291	7080727.	0.000
210.000	-4.291E-07	-6.6008	-2.9073	4.216E-08	651.5734	5.799E+09	0.5612	7846875.	0.000
216.000	-1.966E-07	-13.9743	-0.4525	3.152E-08	651.6101	5.799E+09	0.2571	7846875.	0.000
222.000	-5.089E-08	-12.0799	0.5186	1.804E-08	651.6006	5.799E+09	0.0666	7846875.	0.000
228.000	1.983E-08	-7.7798	0.6723	7.762E-09	651.5792	5.799E+09	-0.0153	4635121.	0.000
234.000	4.226E-08	-4.0249	0.5261	1.655E-09	651.5606	5.799E+09	-0.0334	4740399.	0.000

240.000	3.969E-08	-1.4687	0.3298	-1.187E-09	651.5479	5.799E+09	-0.0321	4845679.	0.000
246.000	2.801E-08	-0.0652	0.1643	-1.981E-09	651.5409	5.799E+09	-0.0231	4950962.	0.000
252.000	1.592E-08	0.5062	0.0547	-1.753E-09	651.5431	5.799E+09	-0.0134	5056247.	0.000
258.000	6.977E-09	0.5942	-0.003538	-1.183E-09	651.5435	5.799E+09	-0.006002	5161535.	0.000
264.000	1.721E-09	0.4656	-0.0261	-6.352E-10	651.5425	5.799E+09	-0.001510	5266824.	0.000
270.000	-6.453E-10	0.2823	-0.0281	-2.483E-10	651.5420	5.799E+09	0.000844	7846875.	0.000
276.000	-1.259E-09	0.1291	-0.0206	-3.545E-11	651.5412	5.799E+09	0.001646	7846875.	0.000
282.000	-1.071E-09	0.0351	-0.0115	4.949E-11	651.5407	5.799E+09	0.001400	7846875.	0.000
288.000	-6.648E-10	-0.0085555	-0.004655	6.322E-11	651.5406	5.799E+09	0.000869	7846875.	0.000
294.000	-3.121E-10	-0.0209	-0.000823	4.799E-11	651.5407	5.799E+09	0.000408	7846875.	0.000
300.000	-8.897E-11	-0.0185	0.000751	2.761E-11	651.5406	5.799E+09	0.000116	7846875.	0.000
306.000	1.925E-11	-0.0119	0.001042	1.187E-11	651.5406	5.799E+09	-1.926E-05	6003897.	0.000
312.000	5.348E-11	-0.006017	0.000821	2.592E-12	651.5406	5.799E+09	-5.445E-05	6109199.	0.000
318.000	5.036E-11	-0.002071	0.000501	-1.592E-12	651.5406	5.799E+09	-5.216E-05	6214502.	0.000
324.000	3.438E-11	-1.481E-06	0.000236	-2.664E-12	651.5405	5.799E+09	-3.621E-05	6319806.	0.000
330.000	1.839E-11	0.000764	6.822E-05	-2.269E-12	651.5406	5.799E+09	-1.969E-05	6425112.	0.000
336.000	7.148E-12	0.000821	-1.420E-05	-1.449E-12	651.5406	5.799E+09	-7.780E-06	6530418.	0.000
342.000	1.001E-12	0.000596	-4.086E-05	0.000	651.5406	5.799E+09	-1.107E-06	6635725.	0.000
348.000	-1.444E-12	0.000332	-3.851E-05	0.000	651.5405	5.799E+09	1.889E-06	7846875.	0.000
354.000	-1.831E-12	0.000135	-2.566E-05	0.000	651.5405	5.799E+09	2.395E-06	7846875.	0.000
360.000	-1.382E-12	2.359E-05	-1.306E-05	0.000	651.5405	5.799E+09	1.808E-06	7846875.	0.000
366.000	0.000	-2.228E-05	-4.542E-06	0.000	651.5405	5.799E+09	1.030E-06	7846875.	0.000
372.000	0.000	-3.106E-05	-1.544E-07	0.000	651.5405	5.799E+09	4.327E-07	7846875.	0.000
378.000	0.000	-2.423E-05	1.407E-06	0.000	651.5405	5.799E+09	8.769E-08	7846875.	0.000
384.000	0.000	-1.422E-05	1.499E-06	0.000	651.5405	5.799E+09	-5.695E-08	7372899.	0.000
390.000	0.000	-6.258E-06	1.061E-06	0.000	651.5405	5.799E+09	-8.903E-08	7478212.	0.000
396.000	0.000	-1.491E-06	5.754E-07	0.000	651.5405	5.799E+09	-7.289E-08	7583526.	0.000
402.000	0.000	6.517E-07	2.235E-07	0.000	651.5405	5.799E+09	-4.441E-08	7688841.	0.000
408.000	0.000	1.196E-06	2.914E-08	0.000	651.5405	5.799E+09	-2.037E-08	7794156.	0.000
414.000	0.000	1.005E-06	-4.817E-08	0.000	651.5405	5.799E+09	-5.400E-09	7846875.	0.000
420.000	0.000	6.198E-07	-5.974E-08	0.000	651.5405	5.799E+09	1.543E-09	7846875.	0.000
426.000	0.000	2.893E-07	-4.475E-08	0.000	651.5405	5.799E+09	3.455E-09	7846875.	0.000
432.000	0.000	8.296E-08	-2.533E-08	0.000	651.5405	5.799E+09	3.018E-09	7846875.	0.000
438.000	0.000	-1.481E-08	-1.056E-08	0.000	651.5405	5.799E+09	1.907E-09	7846875.	0.000
444.000	0.000	-4.392E-08	-2.088E-09	0.000	651.5405	5.799E+09	9.160E-10	7846875.	0.000
450.000	0.000	-4.003E-08	1.506E-09	0.000	651.5405	5.799E+09	2.819E-10	7846875.	0.000
456.000	0.000	-2.595E-08	2.270E-09	0.000	651.5405	5.799E+09	-2.708E-11	7846875.	0.000
462.000	0.000	-1.283E-08	1.813E-09	0.000	651.5405	5.799E+09	-1.254E-10	7846875.	0.000
468.000	0.000	-4.209E-09	1.078E-09	0.000	651.5405	5.799E+09	-1.195E-10	7846875.	0.000
474.000	0.000	1.119E-10	4.810E-10	0.000	651.5405	5.799E+09	-7.948E-11	7846875.	0.000
480.000	0.000	1.571E-09	1.215E-10	0.000	651.5405	5.799E+09	-4.036E-11	7846875.	0.000
486.000	0.000	1.576E-09	-4.152E-11	0.000	651.5405	5.799E+09	-1.399E-11	7846875.	0.000
492.000	0.000	1.077E-09	-8.472E-11	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
498.000	0.000	5.616E-10	-7.272E-11	0.000	651.5405	5.799E+09	4.413E-12	7846875.	0.000
504.000	0.000	2.048E-10	-4.545E-11	0.000	651.5405	5.799E+09	4.680E-12	7846875.	0.000
510.000	0.000	1.617E-11	-2.156E-11	0.000	651.5405	5.799E+09	3.284E-12	7846875.	0.000
516.000	0.000	-5.422E-11	-6.437E-12	0.000	651.5405	5.799E+09	1.757E-12	7846875.	0.000
522.000	0.000	-6.133E-11	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
528.000	0.000	-4.429E-11	3.092E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
534.000	0.000	-2.431E-11	2.887E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
540.000	0.000	-9.665E-12	1.898E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
546.000	0.000	-1.526E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
552.000	0.000	1.774E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
558.000	0.000	2.350E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
564.000	0.000	1.802E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
570.000	0.000	1.041E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
576.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
582.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
588.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
594.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0044193 radians
Maximum bending moment            =         336650. inch-lbs
Maximum shear force               =          12400. lbs
Depth of maximum bending moment   =     54.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             15
Number of zero deflection points  =             14
```

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                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 2
--------------------------------------------------------------------------------

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head                          =       0.500000 inches
Moment at pile head                                =           0.000 in-lbs
Axial load at pile head                            =      131000.000 lbs
```


Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	16889.	-0.007884	651.5405	5.799E+09	-546.0525	3276.3150	0.000
6.000	0.4527	97700.	14476.	-0.007834	1137.4582	5.799E+09	-258.0446	3420.1086	0.000
12.000	0.4060	186030.	12914.	-0.007687	1576.7780	5.799E+09	-262.7233	3882.6359	0.000
18.000	0.3605	264751.	11327.	-0.007454	1968.3048	5.799E+09	-266.2911	4432.5931	0.000
24.000	0.3166	333671.	9722.0096	-0.007144	2311.0815	5.799E+09	-268.6921	5092.8089	0.000
30.000	0.2747	392646.	8106.3303	-0.006768	2604.3994	5.799E+09	-269.8676	5893.8754	0.000
36.000	0.2353	441586.	6487.4619	-0.006337	2847.8094	5.799E+09	-269.7552	6877.5147	0.000
42.000	0.1987	480456.	4873.3342	-0.005860	3041.1337	5.799E+09	-268.2874	8101.7709	0.000
48.000	0.1650	509277.	3272.3021	-0.005347	3184.4779	5.799E+09	-265.3900	9649.2527	0.000
54.000	0.1345	528130.	1693.1927	-0.004811	3278.2441	5.799E+09	-260.9798	11641.	0.000
60.000	0.1073	537158.	145.3701	-0.004260	3323.1458	5.799E+09	-254.9611	14258.	0.000
66.000	0.0834	536571.	-1361.1743	-0.003704	3320.2241	5.799E+09	-247.2204	17785.	0.000
72.000	0.0628	526647.	-2815.6929	-0.003154	3270.8674	5.799E+09	-237.6102	22687.	0.000
78.000	0.0456	507741.	-4206.4926	-0.002619	3176.8348	5.799E+09	-225.9807	29764.	0.000
84.000	0.0314	480286.	-5611.1646	-0.002108	3040.2867	5.799E+09	-242.2433	46264.	0.000
90.000	0.0203	443720.	-7271.1360	-0.001630	2858.4223	5.799E+09	-311.0805	92122.	0.000
96.000	0.0119	395594.	-9051.0326	-0.001195	2619.0643	5.799E+09	-282.2183	142770.	0.000
102.000	0.005916	336987.	-10635.	-0.000816	2327.5752	5.799E+09	-245.7187	249222.	0.000
108.000	0.002063	269259.	-11959.	-0.000503	1990.7272	5.799E+09	-195.5618	568746.	0.000
114.000	-0.000118	194273.	-12215.	-0.000263	1617.7748	5.799E+09	110.1812	5610741.	0.000
120.000	-0.001093	123095.	-10668.	-9.878E-05	1263.7645	5.799E+09	405.3649	2226019.	0.000
126.000	-0.001303	66410.	-8180.6650	-7.377E-07	981.8365	5.799E+09	423.8096	1951252.	0.000
132.000	-0.001101	24928.	-5690.6744	4.652E-05	775.5228	5.799E+09	406.1872	2212609.	0.000
138.000	-0.000745	-1951.2699	-3368.0568	5.840E-05	661.2454	5.799E+09	368.0186	2963967.	0.000
144.000	-0.000401	-15580.	-1252.5745	4.933E-05	729.0310	5.799E+09	337.1421	5049380.	0.000
150.000	-0.000153	-17060.	249.2997	3.245E-05	736.3886	5.799E+09	163.4826	6412276.	0.000
156.000	-1.124E-05	-12640.	775.7913	1.708E-05	714.4058	5.799E+09	12.0146	6412276.	0.000
162.000	5.201E-05	-7777.0758	729.4777	6.519E-06	690.2205	5.799E+09	-27.4524	3166681.	0.000
168.000	6.699E-05	-3896.3143	538.1487	4.799E-07	670.9192	5.799E+09	-36.3239	3253431.	0.000
174.000	5.777E-05	-1320.0461	332.6903	-2.219E-06	658.1059	5.799E+09	-32.1622	3340185.	0.000
180.000	4.036E-05	99.4578	167.0446	-2.850E-06	652.0352	5.799E+09	-23.0531	3426944.	0.000
186.000	2.357E-05	688.9697	56.4790	-2.442E-06	654.9672	5.799E+09	-13.8021	3513705.	0.000
192.000	1.105E-05	781.0453	-4.8240	-1.682E-06	655.4251	5.799E+09	-6.6322	3600470.	0.000
198.000	3.385E-06	633.7259	-30.9613	-9.500E-07	654.6924	5.799E+09	-2.0802	3687238.	0.000
204.000	-3.478E-07	411.0025	-35.9709	-4.095E-07	653.5847	5.799E+09	0.4104	7080727.	0.000
210.000	-1.529E-06	202.7194	-28.7410	-9.198E-08	652.5488	5.799E+09	1.9995	7846875.	0.000
216.000	-1.452E-06	66.2547	-17.0475	4.718E-08	651.8701	5.799E+09	1.8983	7846875.	0.000
222.000	-9.628E-07	-1.9253	-7.5753	8.046E-08	651.5501	5.799E+09	1.2591	7846875.	0.000
228.000	-4.860E-07	-24.7755	-1.8913	6.665E-08	651.6638	5.799E+09	0.6356	7846875.	0.000
234.000	-1.630E-07	-24.7251	0.6550	4.104E-08	651.6635	5.799E+09	0.2132	7846875.	0.000
240.000	6.466E-09	-16.9802	1.2790	1.946E-08	651.6250	5.799E+09	-0.005180	4806144.	0.000
246.000	7.052E-08	-9.4080	1.0903	5.808E-09	651.5873	5.799E+09	-0.0577	4911425.	0.000
252.000	7.616E-08	-3.9061	0.7261	-1.080E-09	651.5600	5.799E+09	-0.0637	5016709.	0.000
258.000	5.755E-08	-0.6935	0.3915	-3.460E-09	651.5440	5.799E+09	-0.0491	5121995.	0.000
264.000	3.464E-08	0.7510	0.1497	-3.430E-09	651.5443	5.799E+09	-0.0302	5227283.	0.000
270.000	1.639E-08	1.1085	0.0155	-2.468E-09	651.5461	5.799E+09	-0.0146	5332573.	0.000
276.000	5.016E-09	0.9408	-0.0418	-1.408E-09	651.5452	5.799E+09	-0.004546	5437865.	0.000
282.000	-5.128E-10	0.6087	-0.0535	-6.066E-10	651.5436	5.799E+09	0.000671	7846875.	0.000
288.000	-2.263E-09	0.3002	-0.0426	-1.363E-10	651.5420	5.799E+09	0.002959	7846875.	0.000
294.000	-2.149E-09	0.0981	-0.0253	6.975E-11	651.5410	5.799E+09	0.002810	7846875.	0.000
300.000	-1.426E-09	-0.002982	-0.0112	1.190E-10	651.5406	5.799E+09	0.001865	7846875.	0.000
306.000	-7.213E-10	-0.0369	-0.002811	9.831E-11	651.5407	5.799E+09	0.000943	7846875.	0.000
312.000	-2.461E-10	-0.0369	0.000985	6.014E-11	651.5407	5.799E+09	0.000322	7846875.	0.000
318.000	0.000	-0.0252	0.001949	2.803E-11	651.5407	5.799E+09	-4.204E-07	7846875.	0.000
324.000	9.030E-11	-0.0135	0.001664	8.001E-12	651.5406	5.799E+09	-9.451E-05	6280254.	0.000
330.000	9.633E-11	-0.005237	0.001073	-1.704E-12	651.5406	5.799E+09	-0.000103	6385559.	0.000
336.000	6.985E-11	-0.000640	0.000539	-4.744E-12	651.5406	5.799E+09	-7.556E-05	6490864.	0.000
342.000	3.940E-11	0.001237	0.000182	-4.435E-12	651.5406	5.799E+09	-4.331E-05	6596170.	0.000
348.000	1.662E-11	0.001555	-3.329E-06	-2.991E-12	651.5406	5.799E+09	-1.857E-05	6701478.	0.000
354.000	3.507E-12	0.001202	-7.097E-05	-1.564E-12	651.5406	5.799E+09	-3.979E-06	6806786.	0.000
360.000	-2.147E-12	0.000706	-7.448E-05	0.000	651.5406	5.799E+09	2.807E-06	7846875.	0.000
366.000	-3.420E-12	0.000309	-5.264E-05	0.000	651.5405	5.799E+09	4.473E-06	7846875.	0.000
372.000	-2.773E-12	7.390E-05	-2.835E-05	0.000	651.5405	5.799E+09	3.627E-06	7846875.	0.000
378.000	-1.667E-12	-3.105E-05	-1.093E-05	0.000	651.5405	5.799E+09	2.180E-06	7846875.	0.000
384.000	0.000	-5.748E-05	-1.426E-06	0.000	651.5405	5.799E+09	9.862E-07	7846875.	0.000
390.000	0.000	-4.835E-05	2.309E-06	0.000	651.5405	5.799E+09	2.588E-07	7846875.	0.000
396.000	0.000	-2.987E-05	2.866E-06	0.000	651.5405	5.799E+09	-7.311E-08	7543965.	0.000
402.000	0.000	-1.400E-05	2.155E-06	0.000	651.5405	5.799E+09	-1.641E-07	7649279.	0.000
408.000	0.000	-4.027E-06	1.227E-06	0.000	651.5405	5.799E+09	-1.452E-07	7754594.	0.000
414.000	0.000	7.265E-07	5.131E-07	0.000	651.5405	5.799E+09	-9.276E-08	7846875.	0.000
420.000	0.000	2.140E-06	1.012E-07	0.000	651.5405	5.799E+09	-4.454E-08	7846875.	0.000
426.000	0.000	1.949E-06	-7.350E-08	0.000	651.5405	5.799E+09	-1.369E-08	7846875.	0.000
432.000	0.000	1.263E-06	-1.106E-07	0.000	651.5405	5.799E+09	1.336E-09	7846875.	0.000
438.000	0.000	6.238E-07	-1.823E-08	0.000	651.5405	5.799E+09	6.110E-09	7846875.	0.000
444.000	0.000	2.044E-07	-5.244E-08	0.000	651.5405	5.799E+09	5.819E-09	7846875.	0.000
450.000	0.000	-5.694E-09	-2.338E-08	0.000	651.5405	5.799E+09	3.867E-09	7846875.	0.000
456.000	0.000	-7.658E-08	-5.895E-09	0.000	651.5405	5.799E+09	1.963E-09	7846875.	0.000
462.000	0.000	-7.675E-08	2.031E-09	0.000	651.5405	5.799E+09	6.794E-10	7846875.	0.000
468.000	0.000	-5.240E-08	4.127E-09	0.000	651.5405	5.799E+09	1.939E-11	7846875.	0.000
474.000	0.000	-2.731E-08	3.540E-09	0.000	651.5405	5.799E+09	-2.151E-10	7846875.	0.000
480.000	0.000	-9.949E-09	2.211E-09	0.000	651.5405	5.799E+09	-2.278E-10	7846875.	0.000
486.000	0.000	-7.766E-10	1.048E-09	0.000	651.5405	5.799E+09	-1.598E-10	7846875.	0.000
492.000	0.000	2.644E-09	3.125E-10	0.000	651.5405	5.799E+09	-8.543E-11	7846875.	0.000
498.000	0.000	2.986E-09	-4.139E-11	0.000	651.5405	5.799E+09	-3.254E-11	7846875.	0.000
504.000	0.000	2.155E-09	-1.507E-10	0.000	651.5405	5.799E+09	-3.890E-12	7846875.	0.000
510.000	0.000	1.182E-09	-1.406E-10	0.000	651.5405	5.799E+09	7.258E-12	7846875.	0.000
516.000	0.000	4.697E-10	-9.237E-11	0.000	651.5405	5.799E+09	8.807E-12	7846875.	0.000

522.000	0.000	7.380E-11	-4.632E-11	0.000	651.5405	5.799E+09	6.542E-12	7846875.	0.000
528.000	0.000	-8.664E-11	-1.566E-11	0.000	651.5405	5.799E+09	3.678E-12	7846875.	0.000
534.000	0.000	-1.146E-10	0.000	0.000	651.5405	5.799E+09	1.518E-12	7846875.	0.000
540.000	0.000	-8.782E-11	5.345E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
546.000	0.000	-5.063E-11	5.519E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
552.000	0.000	-2.166E-11	3.824E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
558.000	0.000	-4.751E-12	2.021E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
564.000	0.000	2.606E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
570.000	0.000	4.310E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
576.000	0.000	3.507E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
582.000	0.000	2.082E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
588.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
594.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0078841 radians
Maximum bending moment = 537158. inch-lbs
Maximum shear force = 16889. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 14
Number of zero deflection points = 13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	23099.	-0.0141	651.5405	5.799E+09	-649.3695	1948.1086	0.000
6.000	0.9153	138002.	20228.	-0.0140	1337.9049	5.799E+09	-307.7048	2017.0610	0.000
12.000	0.8315	264814.	18362.	-0.0138	1968.6168	5.799E+09	-314.2882	2267.9478	0.000
18.000	0.7493	380096.	16460.	-0.0135	2541.9844	5.799E+09	-319.7441	2560.4228	0.000
24.000	0.6694	483559.	14529.	-0.0131	3056.5645	5.799E+09	-324.0171	2904.0585	0.000
30.000	0.5926	574963.	12575.	-0.0125	3511.1736	5.799E+09	-327.0496	3311.2666	0.000
36.000	0.5194	654127.	10608.	-0.0119	3904.8990	5.799E+09	-328.7807	3798.3652	0.000
42.000	0.4502	720922.	8634.2012	-0.0112	4237.1105	5.799E+09	-329.1459	4387.1440	0.000
48.000	0.3854	775281.	6662.5384	-0.0104	4507.4725	5.799E+09	-328.0751	5107.2082	0.000
54.000	0.3255	817199.	4701.8381	-0.009562	4715.9569	5.799E+09	-325.4917	5999.5798	0.000
60.000	0.2707	846735.	2761.4312	-0.008702	4862.8566	5.799E+09	-321.3106	7122.3864	0.000
66.000	0.2211	864015.	851.1947	-0.007817	4948.8008	5.799E+09	-315.4349	8560.1439	0.000
72.000	0.1769	869237.	-1018.3698	-0.006920	4974.7717	5.799E+09	-307.7532	10439.	0.000
78.000	0.1381	862673.	-2836.0308	-0.006024	4942.1236	5.799E+09	-298.1338	12957.	0.000
84.000	0.1046	844674.	-4711.9487	-0.005140	4852.6052	5.799E+09	-327.1721	18768.	0.000
90.000	0.0764	814210.	-6993.5524	-0.004282	4701.0902	5.799E+09	-433.3624	34046.	0.000
96.000	0.0532	767483.	-9525.4117	-0.003464	4468.6885	5.799E+09	-410.5907	46301.	0.000
102.000	0.0348	705351.	-11905.	-0.002702	4159.6664	5.799E+09	-382.4576	65929.	0.000
108.000	0.0208	628876.	-14095.	-0.002012	3779.3123	5.799E+09	-347.8193	100406.	0.000
114.000	0.0107	539368.	-16052.	-0.001407	3334.1376	5.799E+09	-304.2539	171132.	0.000
120.000	0.003898	438469.	-17697.	-0.000901	2832.3047	5.799E+09	-244.3319	376044.	0.000
126.000	-0.000148	328417.	-18015.	-0.000505	2284.9507	5.799E+09	138.6162	5610741.	0.000
132.000	-0.002156	223088.	-16155.	-0.000219	1761.0875	5.799E+09	481.1168	1338918.	0.000
138.000	-0.002779	134897.	-13174.	-3.400E-05	1322.4655	5.799E+09	512.7367	1107125.	0.000
144.000	-0.002564	65056.	-10021.	6.945E-05	975.1029	5.799E+09	538.2701	1259600.	0.000
150.000	-0.001945	14540.	-6799.2696	0.000111	723.8541	5.799E+09	535.5504	1651768.	0.000
156.000	-0.001236	-16709.	-3759.3829	0.000110	734.6446	5.799E+09	477.7452	2318266.	0.000
162.000	-0.000631	-30745.	-1116.4760	8.495E-05	804.4548	5.799E+09	403.2238	3832268.	0.000
168.000	-0.000217	-30240.	788.9981	5.340E-05	801.9436	5.799E+09	231.9343	6412276.	0.000
174.000	9.521E-06	-21361.	1469.4917	2.671E-05	757.7824	5.799E+09	-5.1031	3215874.	0.000
180.000	0.000103	-12648.	1283.3609	9.110E-06	714.4486	5.799E+09	-56.9405	3302622.	0.000
186.000	0.000119	-5975.1885	911.1342	-5.248E-07	681.2587	5.799E+09	-67.1351	3389375.	0.000
192.000	9.715E-05	-1713.9719	540.8797	-4.503E-06	660.0651	5.799E+09	-56.2831	3476132.	0.000
198.000	6.481E-05	522.4462	256.5753	-5.119E-06	654.1390	5.799E+09	-38.4850	3562892.	0.000
204.000	3.572E-05	1372.9791	73.8770	-4.139E-06	658.3692	5.799E+09	-22.4144	3765530.	0.000
210.000	1.514E-05	1415.4766	-25.6846	-2.696E-06	658.5806	5.799E+09	-10.7728	4267998.	0.000
216.000	3.362E-06	1069.0022	-65.3538	-1.411E-06	656.8573	5.799E+09	-2.4503	4373264.	0.000
222.000	-1.784E-06	633.4490	-65.7037	-5.300E-07	654.6911	5.799E+09	2.3336	7846875.	0.000
228.000	-2.998E-06	281.3913	-46.9413	-5.665E-08	652.9401	5.799E+09	3.9205	7846875.	0.000
234.000	-2.464E-06	70.2431	-25.5117	1.253E-07	651.8899	5.799E+09	3.2227	7846875.	0.000
240.000	-1.494E-06	-24.9463	-9.9802	1.487E-07	651.6646	5.799E+09	1.9545	7846875.	0.000
246.000	-6.797E-07	-49.7536	-1.4502	1.101E-07	651.7880	5.799E+09	0.8889	7846875.	0.000
252.000	-1.737E-07	-42.5212	1.8981	6.232E-08	651.7520	5.799E+09	0.2272	7846875.	0.000

258.000	6.820E-08	-27.0745	2.4055	2.632E-08	651.6752	5.799E+09	-0.0581	5110210.	0.000
264.000	1.421E-07	-13.6970	1.8608	5.222E-09	651.6087	5.799E+09	-0.1235	5215498.	0.000
270.000	1.309E-07	-4.7536	1.1422	-4.324E-09	651.5642	5.799E+09	-0.1161	5320788.	0.000
276.000	9.017E-08	0.0159	0.5494	-6.775E-09	651.5406	5.799E+09	-0.0815	5426079.	0.000
282.000	4.957E-08	1.8497	0.1677	-5.810E-09	651.5497	5.799E+09	-0.0457	5531372.	0.000
288.000	2.045E-08	2.0370	-0.0271	-3.799E-09	651.5507	5.799E+09	-0.0192	5636667.	0.000
294.000	3.983E-09	1.5309	-0.0961	-1.953E-09	651.5482	5.799E+09	-0.003811	5741964.	0.000
300.000	-2.982E-09	0.8864	-0.0959	-7.022E-10	651.5450	5.799E+09	0.003900	7846875.	0.000
306.000	-4.444E-09	0.3816	-0.0667	-4.616E-11	651.5424	5.799E+09	0.005812	7846875.	0.000
312.000	-3.536E-09	0.0857	-0.0354	1.956E-10	651.5410	5.799E+09	0.004625	7846875.	0.000
318.000	-2.097E-09	-0.0438	-0.0133	2.172E-10	651.5408	5.799E+09	0.002742	7846875.	0.000
324.000	-9.291E-10	-0.0746	-0.001456	1.560E-10	651.5409	5.799E+09	0.001215	7846875.	0.000
330.000	-2.248E-10	-0.0615	0.003071	8.556E-11	651.5409	5.799E+09	0.000294	7846875.	0.000
336.000	9.754E-11	-0.0379	0.003637	3.413E-11	651.5407	5.799E+09	-0.000105	6479075.	0.000
342.000	1.848E-10	-0.0180	0.002713	5.249E-12	651.5406	5.799E+09	-0.000203	6584381.	0.000
348.000	1.605E-10	-0.005319	0.001568	-6.790E-12	651.5406	5.799E+09	-0.000179	6689688.	0.000
354.000	1.033E-10	0.000874	0.000680	-9.090E-12	651.5406	5.799E+09	-0.000117	6794996.	0.000
360.000	5.144E-11	0.002855	0.000152	-7.161E-12	651.5406	5.799E+09	-5.916E-05	6900305.	0.000
366.000	1.734E-11	0.002704	-8.662E-05	-4.285E-12	651.5406	5.799E+09	-2.025E-05	7005615.	0.000
372.000	0.000	0.001822	-0.000147	-1.943E-12	651.5406	5.799E+09	-3.399E-08	7110925.	0.000
378.000	-5.970E-12	0.000938	-0.000124	0.000	651.5406	5.799E+09	7.808E-06	7846875.	0.000
384.000	-6.147E-12	0.000334	-7.660E-05	0.000	651.5405	5.799E+09	8.040E-06	7846875.	0.000
390.000	-4.254E-12	1.839E-05	-3.579E-05	0.000	651.5405	5.799E+09	5.563E-06	7846875.	0.000
396.000	-2.246E-12	-9.648E-05	-1.029E-05	0.000	651.5405	5.799E+09	2.937E-06	7846875.	0.000
402.000	0.000	-0.000106	1.804E-06	0.000	651.5405	5.799E+09	1.095E-06	7846875.	0.000
408.000	0.000	-7.512E-05	5.415E-06	0.000	651.5405	5.799E+09	1.090E-07	7846875.	0.000
414.000	0.000	-4.070E-05	4.942E-06	0.000	651.5405	5.799E+09	-2.666E-07	7846875.	0.000
420.000	0.000	-1.585E-05	3.207E-06	0.000	651.5405	5.799E+09	-3.118E-07	7846875.	0.000
426.000	0.000	-2.213E-06	1.587E-06	0.000	651.5405	5.799E+09	-2.283E-07	7846875.	0.000
432.000	0.000	3.209E-06	5.217E-07	0.000	651.5405	5.799E+09	-1.268E-07	7846875.	0.000
438.000	0.000	4.065E-06	-1.276E-08	0.000	651.5405	5.799E+09	-5.135E-08	7846875.	0.000
444.000	0.000	3.068E-06	-1.936E-07	0.000	651.5405	5.799E+09	-8.925E-09	7846875.	0.000
450.000	0.000	1.748E-06	-1.946E-07	0.000	651.5405	5.799E+09	8.592E-09	7846875.	0.000
456.000	0.000	7.350E-07	-1.331E-07	0.000	651.5405	5.799E+09	1.192E-08	7846875.	0.000
462.000	0.000	1.509E-07	-6.946E-08	0.000	651.5405	5.799E+09	9.281E-09	7846875.	0.000
468.000	0.000	-9.915E-08	-2.536E-08	0.000	651.5405	5.799E+09	5.417E-09	7846875.	0.000
474.000	0.000	-1.541E-07	-2.042E-09	0.000	651.5405	5.799E+09	2.357E-09	7846875.	0.000
480.000	0.000	-1.241E-07	6.676E-09	0.000	651.5405	5.799E+09	5.489E-10	7846875.	0.000
486.000	0.000	-7.429E-08	7.569E-09	0.000	651.5405	5.799E+09	-2.512E-10	7846875.	0.000
492.000	0.000	-3.342E-08	5.471E-09	0.000	651.5405	5.799E+09	-4.481E-10	7846875.	0.000
498.000	0.000	-8.648E-09	3.005E-09	0.000	651.5405	5.799E+09	-3.738E-10	7846875.	0.000
504.000	0.000	2.671E-09	1.197E-09	0.000	651.5405	5.799E+09	-2.292E-10	7846875.	0.000
510.000	0.000	5.738E-09	1.903E-10	0.000	651.5405	5.799E+09	-1.063E-10	7846875.	0.000
516.000	0.000	4.974E-09	-2.184E-10	0.000	651.5405	5.799E+09	-2.995E-11	7846875.	0.000
522.000	0.000	3.128E-09	-2.903E-10	0.000	651.5405	5.799E+09	5.975E-12	7846875.	0.000
528.000	0.000	1.495E-09	-2.229E-10	0.000	651.5405	5.799E+09	1.651E-11	7846875.	0.000
534.000	0.000	4.542E-10	-1.287E-10	0.000	651.5405	5.799E+09	1.490E-11	7846875.	0.000
540.000	0.000	-5.915E-11	-5.516E-11	0.000	651.5405	5.799E+09	9.606E-12	7846875.	0.000
546.000	0.000	-2.087E-10	-1.218E-11	0.000	651.5405	5.799E+09	4.720E-12	7846875.	0.000
552.000	0.000	-1.971E-10	6.564E-12	0.000	651.5405	5.799E+09	1.528E-12	7846875.	0.000
558.000	0.000	-1.304E-10	1.096E-11	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
564.000	0.000	-6.584E-11	8.977E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
570.000	0.000	-2.271E-11	5.404E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
576.000	0.000	0.000	2.393E-12	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
582.000	0.000	6.042E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
588.000	0.000	5.325E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
594.000	0.000	2.090E-12	0.000	0.000	651.5405	5.799E+09	0.000	7846875.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3923438.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0141156 radians
Maximum bending moment = 869237. inch-lbs
Maximum shear force = 23099. lbs
Depth of maximum bending moment = 72.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 15
Number of zero deflection points = 13

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

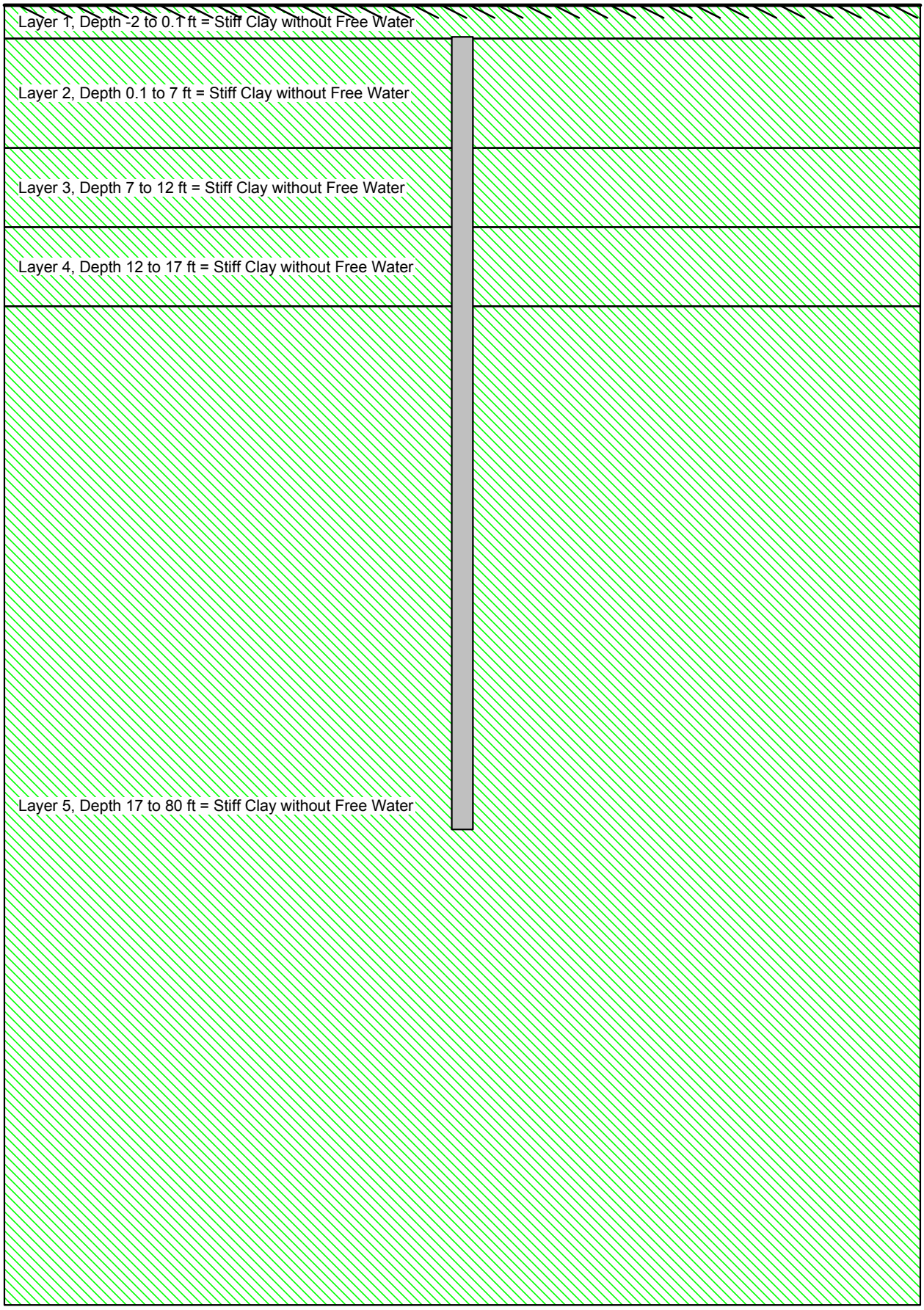
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	131000.	0.25000000	336650.	12400.	-0.00441935
2	4	y = 0.5000	M = 0.000	131000.	0.50000000	537158.	16889.	-0.00788410
3	4	y = 1.0000	M = 0.000	131000.	1.00000000	869237.	23099.	-0.01411562

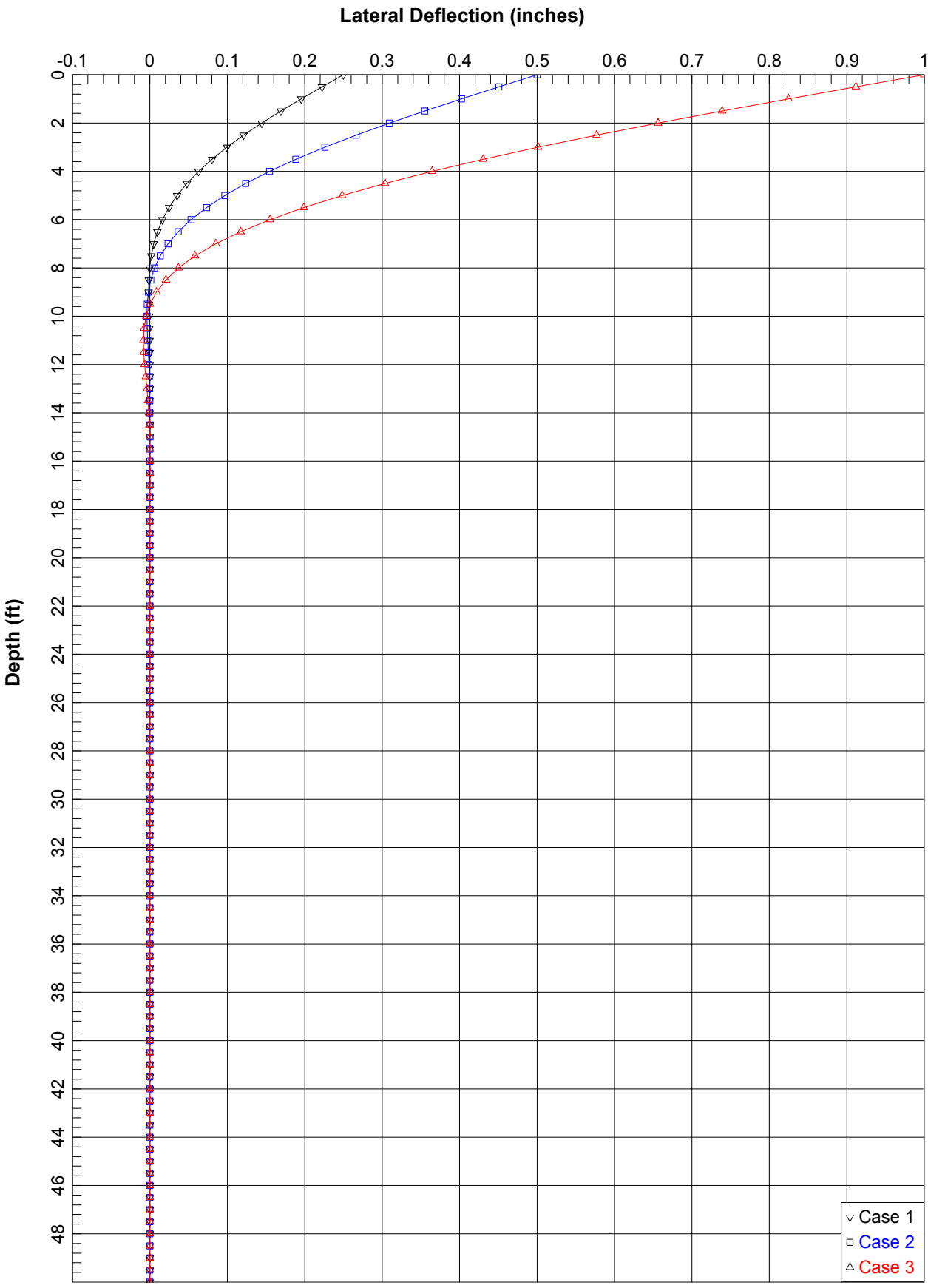
The analysis ended normally.

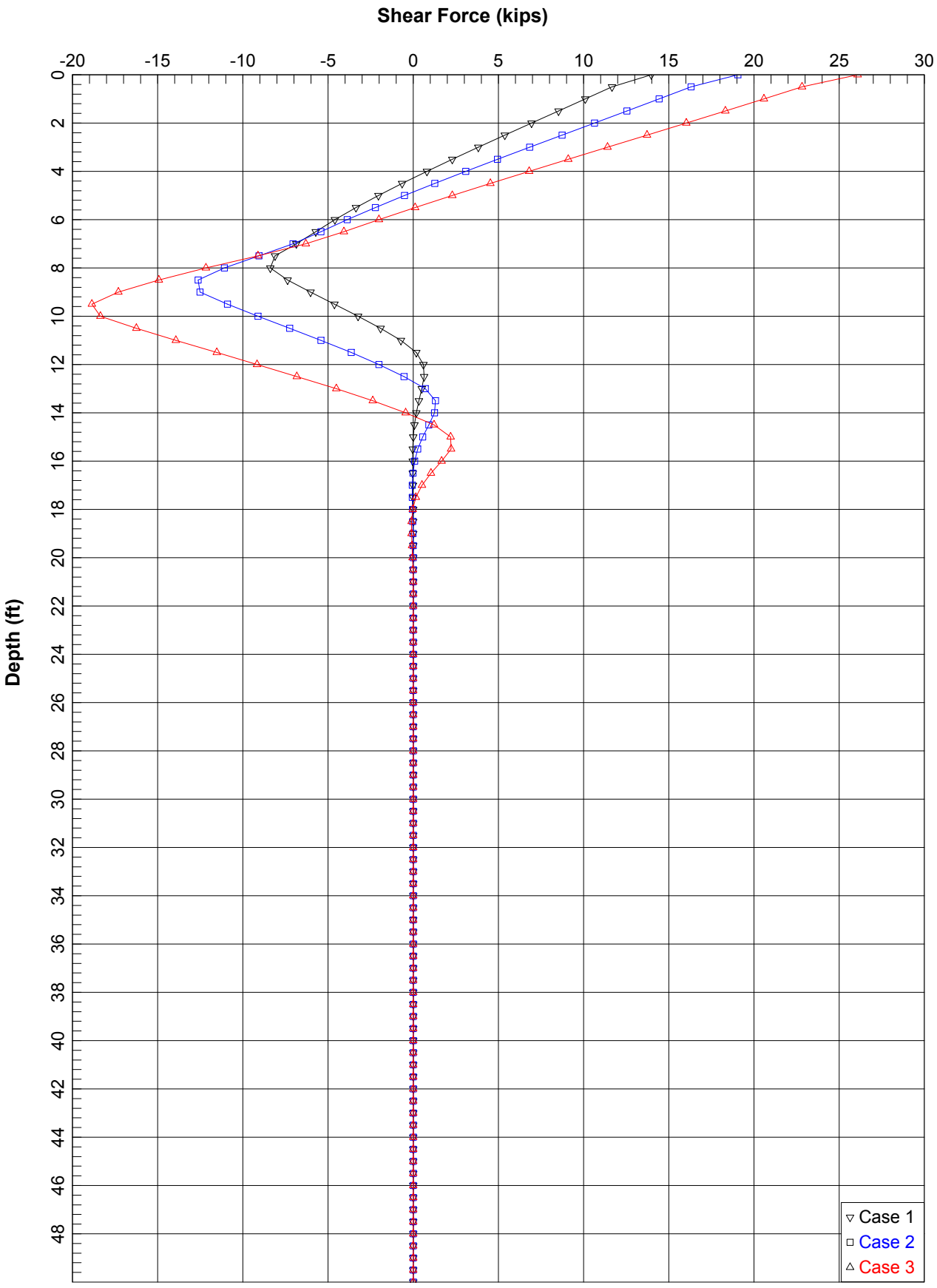
SUPPORT: **ABUTMENT 5L**

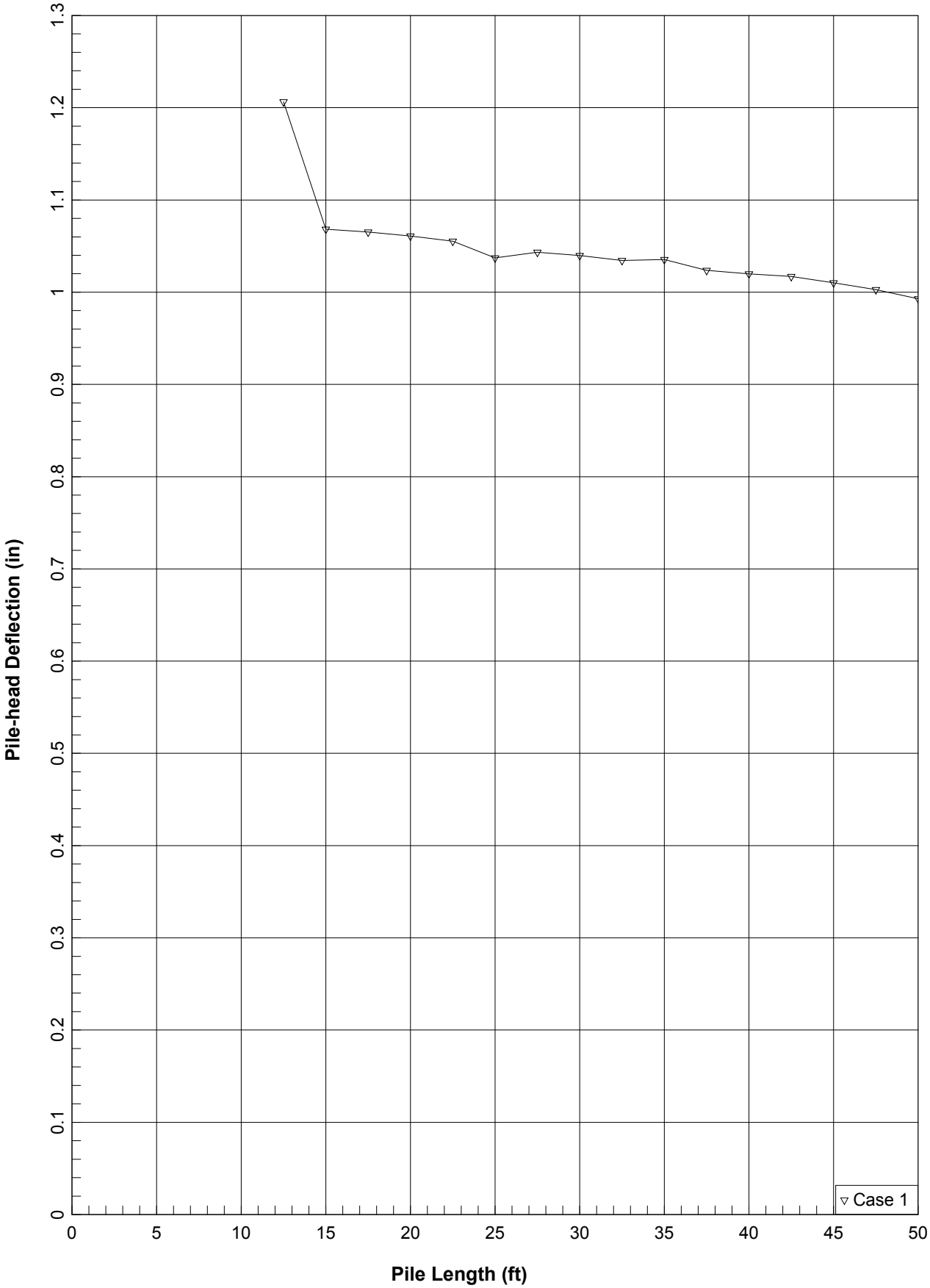
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITECAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE




Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5L_long_Critical Length.lp6d
Name of output report file: Abut 5L_long_Critical Length.lp6o
Name of plot output file: Abut 5L_long_Critical Length.lp6p
Name of runtime messeage file: Abut 5L_long_Critical Length.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:26:15

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 130.00000 pcf
Effective unit weight at bottom of layer = 130.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J	kpy Factor pci	Layer Rock Mass Depth Rock Emass ft psi	Effective Unit Wt. krm pcf	Undrained In-situ Cohesion Test psf Type	Angle of In-situ Friction Test deg. Property	Uniaxial Elastic qu psi Mod. pci	RQD % or GSI
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	130.000	4000.000	--	--	--
		0.00500	--	--	80.000	130.000	4000.000	--	--	--

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6200	1.0000
2	50.000	0.6200	1.0000

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
1	1	V = 26000. lbs	M = 0.0000 in-lbs	131000.	True

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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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 = 26000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.9928	1.073E-07	26000.	-0.0146	651.5405	5.799E+09	-720.3306	2176.6923	0.000
6.000	0.9051	154520.	22734.	-0.0145	1420.0586	5.799E+09	-368.2444	2441.1028	0.000
12.000	0.8184	295657.	20506.	-0.0143	2122.0178	5.799E+09	-374.4574	2745.3144	0.000
18.000	0.7335	423073.	18245.	-0.0139	2755.7347	5.799E+09	-379.2998	3102.6129	0.000
24.000	0.6513	536491.	15959.	-0.0134	3319.8269	5.799E+09	-382.7033	3525.8390	0.000
30.000	0.5723	635695.	13657.	-0.0128	3813.2262	5.799E+09	-384.5955	4031.8928	0.000
36.000	0.4974	720536.	11349.	-0.0121	4235.1925	5.799E+09	-384.8987	4643.3765	0.000
42.000	0.4268	790935.	9043.2319	-0.0113	4585.3285	5.799E+09	-383.5273	5391.0732	0.000
48.000	0.3613	846884.	6751.4913	-0.0105	4863.5948	5.799E+09	-380.3862	6317.7866	0.000
54.000	0.3009	888450.	4484.2319	-0.009596	5070.3276	5.799E+09	-375.3669	7484.4829	0.000
60.000	0.2461	915780.	2253.1051	-0.008663	5206.2574	5.799E+09	-368.3421	8980.4745	0.000
66.000	0.1970	929105.	70.6034	-0.007709	5272.5315	5.799E+09	-359.1585	10941.	0.000
72.000	0.1536	928745.	-2049.7457	-0.006747	5270.7403	5.799E+09	-347.6245	13580.	0.000
78.000	0.1160	915115.	-4093.0886	-0.005793	5202.9504	5.799E+09	-333.4898	17251.	0.000
84.000	0.0841	888735.	-6319.0380	-0.004860	5071.7477	5.799E+09	-408.4933	29153.	0.000
90.000	0.0577	846927.	-9128.8388	-0.003962	4863.8096	5.799E+09	-528.1069	54944.	0.000
96.000	0.0365	785418.	-12171.	-0.003118	4557.8885	5.799E+09	-485.9517	79826.	0.000
102.000	0.0203	705776.	-14925.	-0.002346	4161.7811	5.799E+09	-432.1619	127997.	0.000
108.000	0.008372	610002.	-17292.	-0.001665	3685.4405	5.799E+09	-356.7607	255686.	0.000
114.000	0.000273	500888.	-18777.	-0.001091	3142.7547	5.799E+09	-138.3288	3042701.	0.000
120.000	-0.004717	386388.	-18212.	-0.000632	2573.2752	5.799E+09	326.8606	415800.	0.000
126.000	-0.007307	283340.	-16107.	-0.000285	2060.7568	5.799E+09	374.5828	307575.	0.000
132.000	-0.008139	193546.	-13799.	-3.844E-05	1614.1612	5.799E+09	395.0021	291206.	0.000
138.000	-0.007768	117816.	-11412.	0.000123	1237.5075	5.799E+09	400.5052	309331.	0.000
144.000	-0.006667	56407.	-9061.2485	0.000213	932.0874	5.799E+09	383.1418	344815.	0.000
150.000	-0.005215	8746.1722	-6731.1791	0.000246	695.0404	5.799E+09	393.5481	452777.	0.000
156.000	-0.003709	-24754.	-4437.8181	0.000238	774.6585	5.799E+09	370.9056	600001.	0.000
162.000	-0.002357	-44882.	-2306.2052	0.000202	874.7658	5.799E+09	339.6321	864696.	0.000
168.000	-0.001283	-52747.	-390.2293	0.000152	913.8807	5.799E+09	299.0266	1398508.	0.000
174.000	-0.000537	-49803.	1245.9386	9.861E-05	899.2417	5.799E+09	246.3627	2754544.	0.000
180.000	-9.955E-05	-37950.	2191.8164	5.321E-05	840.2902	5.799E+09	68.9299	4154447.	0.000
186.000	0.000102	-23585.	2181.9806	2.138E-05	768.8434	5.799E+09	-72.2085	4250889.	0.000
192.000	0.000157	-11800.	1629.8518	3.069E-06	710.2300	5.799E+09	-111.8344	4274851.	0.000
198.000	0.000139	-4031.7361	997.7768	-5.122E-06	671.5928	5.799E+09	-98.8573	4274851.	0.000
204.000	9.551E-05	181.1583	489.0445	-7.114E-06	652.4416	5.799E+09	-70.7201	4442809.	0.000
210.000	5.339E-05	1847.9809	152.7585	-6.064E-06	660.7317	5.799E+09	-41.3752	4650000.	0.000
216.000	2.274E-05	2023.7926	-24.2386	-4.061E-06	661.6061	5.799E+09	-17.6238	4650000.	0.000
222.000	4.658E-06	1563.5011	-87.9396	-2.205E-06	659.3168	5.799E+09	-3.6099	4650000.	0.000
228.000	-3.718E-06	971.9833	-90.1251	-8.931E-07	656.3748	5.799E+09	2.8813	4650000.	0.000
234.000	-6.059E-06	483.4036	-67.3935	-1.401E-07	653.9448	5.799E+09	4.6959	4650000.	0.000
240.000	-5.399E-06	163.4819	-40.7524	1.946E-07	652.3536	5.799E+09	4.1845	4650000.	0.000
246.000	-3.725E-06	-5.9310	-19.5393	2.761E-07	651.5700	5.799E+09	2.8865	4650000.	0.000
252.000	-2.087E-06	-71.4238	-6.0284	2.360E-07	651.8958	5.799E+09	1.6171	4650000.	0.000

258.000	-8.920E-07	-78.6426	0.8970	1.584E-07	651.9317	5.799E+09	0.6913	4650000.	0.000
264.000	-1.857E-07	-60.9092	3.4028	8.620E-08	651.8435	5.799E+09	0.1440	4650000.	0.000
270.000	1.424E-07	-37.9439	3.5036	3.506E-08	651.7293	5.799E+09	-0.1104	4650000.	0.000
276.000	2.350E-07	-18.9209	2.6262	5.642E-09	651.6347	5.799E+09	-0.1821	4650000.	0.000
282.000	2.101E-07	-6.4386	1.5914	-7.478E-09	651.5726	5.799E+09	-0.1628	4650000.	0.000
288.000	1.452E-07	0.1871	0.7652	-1.071E-08	651.5415	5.799E+09	-0.1126	4650000.	0.000
294.000	8.155E-08	2.7602	0.2379	-9.188E-09	651.5543	5.799E+09	-0.0632	4650000.	0.000
300.000	3.499E-08	3.0559	-0.0331	-6.179E-09	651.5557	5.799E+09	-0.0271	4650000.	0.000
306.000	7.404E-09	2.3728	-0.1317	-3.370E-09	651.5523	5.799E+09	-0.005738	4650000.	0.000
312.000	-5.453E-09	1.4812	-0.1362	-1.376E-09	651.5479	5.799E+09	0.004226	4650000.	0.000
318.000	-9.113E-09	0.7406	-0.1023	-2.269E-10	651.5442	5.799E+09	0.007062	4650000.	0.000
324.000	-8.175E-09	0.2535	-0.0621	2.874E-10	651.5418	5.799E+09	0.006336	4650000.	0.000
330.000	-5.664E-09	-0.005572	-0.0300	4.157E-10	651.5406	5.799E+09	0.004390	4650000.	0.000
336.000	-3.187E-09	-0.1067	-0.009384	3.576E-10	651.5411	5.799E+09	0.002470	4650000.	0.000
342.000	-1.372E-09	-0.1187	0.001217	2.410E-10	651.5411	5.799E+09	0.001064	4650000.	0.000
348.000	-2.949E-10	-0.0924	0.005094	1.318E-10	651.5410	5.799E+09	0.000229	4650000.	0.000
354.000	2.087E-10	-0.0578	0.005294	5.403E-11	651.5408	5.799E+09	-0.000162	4650000.	0.000
360.000	3.534E-10	-0.0290	0.003988	9.118E-12	651.5407	5.799E+09	-0.000274	4650000.	0.000
366.000	3.181E-10	-0.009983	0.002426	-1.104E-11	651.5406	5.799E+09	-0.000247	4650000.	0.000
372.000	2.209E-10	0.000150	0.001173	-1.613E-11	651.5405	5.799E+09	-0.000171	4650000.	0.000
378.000	1.246E-10	0.004121	0.000370	-1.392E-11	651.5406	5.799E+09	-9.653E-05	4650000.	0.000
384.000	5.383E-11	0.004614	-4.460E-05	-9.401E-12	651.5406	5.799E+09	-4.172E-05	4650000.	0.000
390.000	1.174E-11	0.003601	-0.000197	-5.151E-12	651.5406	5.799E+09	-9.102E-06	4650000.	0.000
396.000	-7.985E-12	0.002257	-0.000206	-2.121E-12	651.5406	5.799E+09	6.189E-06	4650000.	0.000
402.000	-1.370E-11	0.001134	-0.000155	0.000	651.5406	5.799E+09	1.062E-05	4650000.	0.000
408.000	-1.238E-11	0.000393	-9.474E-05	0.000	651.5406	5.799E+09	9.593E-06	4650000.	0.000
414.000	-8.613E-12	-3.233E-06	-4.594E-05	0.000	651.5405	5.799E+09	6.675E-06	4650000.	0.000
420.000	-4.868E-12	-0.000159	-1.460E-05	0.000	651.5405	5.799E+09	3.772E-06	4650000.	0.000
426.000	-2.111E-12	-0.000179	1.628E-06	0.000	651.5405	5.799E+09	1.636E-06	4650000.	0.000
432.000	0.000	-0.000140	7.623E-06	0.000	651.5405	5.799E+09	3.623E-07	4650000.	0.000
438.000	0.000	-8.810E-05	8.000E-06	0.000	651.5405	5.799E+09	-2.367E-07	4650000.	0.000
444.000	0.000	-4.439E-05	6.054E-06	0.000	651.5405	5.799E+09	-4.118E-07	4650000.	0.000
450.000	0.000	-1.547E-05	3.699E-06	0.000	651.5405	5.799E+09	-3.732E-07	4650000.	0.000
456.000	0.000	2.390E-08	1.799E-06	0.000	651.5405	5.799E+09	-2.603E-07	4650000.	0.000
462.000	0.000	6.150E-06	5.756E-07	0.000	651.5405	5.799E+09	-1.474E-07	4650000.	0.000
468.000	0.000	6.965E-06	-5.912E-08	0.000	651.5405	5.799E+09	-6.416E-08	4650000.	0.000
474.000	0.000	5.463E-06	-2.948E-07	0.000	651.5405	5.799E+09	-1.441E-08	4650000.	0.000
480.000	0.000	3.439E-06	-3.109E-07	0.000	651.5405	5.799E+09	9.049E-09	4650000.	0.000
486.000	0.000	1.737E-06	-2.359E-07	0.000	651.5405	5.799E+09	1.597E-08	4650000.	0.000
492.000	0.000	6.090E-07	-1.444E-07	0.000	651.5405	5.799E+09	1.452E-08	4650000.	0.000
498.000	0.000	3.052E-09	-7.043E-08	0.000	651.5405	5.799E+09	1.015E-08	4650000.	0.000
504.000	0.000	-2.376E-07	-2.270E-08	0.000	651.5405	5.799E+09	5.761E-09	4650000.	0.000
510.000	0.000	-2.706E-07	2.136E-09	0.000	651.5405	5.799E+09	2.516E-09	4650000.	0.000
516.000	0.000	-2.128E-07	1.140E-08	0.000	651.5405	5.799E+09	5.732E-10	4650000.	0.000
522.000	0.000	-1.342E-07	1.209E-08	0.000	651.5405	5.799E+09	-3.458E-10	4650000.	0.000
528.000	0.000	-6.799E-08	9.191E-09	0.000	651.5405	5.799E+09	-6.190E-10	4650000.	0.000
534.000	0.000	-2.397E-08	5.639E-09	0.000	651.5405	5.799E+09	-5.650E-10	4650000.	0.000
540.000	0.000	-2.798E-10	2.757E-09	0.000	651.5405	5.799E+09	-3.957E-10	4650000.	0.000
546.000	0.000	9.166E-09	8.941E-10	0.000	651.5405	5.799E+09	-2.251E-10	4650000.	0.000
552.000	0.000	1.050E-08	-7.694E-11	0.000	651.5405	5.799E+09	-9.857E-11	4650000.	0.000
558.000	0.000	8.277E-09	-4.403E-10	0.000	651.5405	5.799E+09	-2.256E-11	4650000.	0.000
564.000	0.000	5.235E-09	-4.671E-10	0.000	651.5405	5.799E+09	1.364E-11	4650000.	0.000
570.000	0.000	2.680E-09	-3.523E-10	0.000	651.5405	5.799E+09	2.464E-11	4650000.	0.000
576.000	0.000	1.009E-09	-2.101E-10	0.000	651.5405	5.799E+09	2.275E-11	4650000.	0.000
582.000	0.000	1.573E-10	-9.377E-11	0.000	651.5405	5.799E+09	1.601E-11	4650000.	0.000
588.000	0.000	-1.184E-10	-2.021E-11	0.000	651.5405	5.799E+09	8.510E-12	4650000.	0.000
594.000	0.000	-8.765E-11	1.005E-11	0.000	651.5405	5.799E+09	1.579E-12	4650000.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	-4.930E-12	2325000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.9927870 inches
Computed slope at pile head      =     -0.0146128 radians
Maximum bending moment           =        929105. inch-lbs
Maximum shear force              =         26000. lbs
Depth of maximum bending moment  =   66.0000000 inches below pile head
Depth of maximum shear force     =     0.000000 inches below pile head
Number of iterations             =            28
Number of zero deflection points =            12
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          26000. lbs
Moment     =              0. in-lbs
Axial Load =         131000. lbs
```

Pile Length	Pile Head Deflection	Maximum Moment	Maximum Shear

feet	inches	ln-lbs	lbs
50.000	0.9927870	929105.	26000.
47.500	1.0027062	932194.	26000.
45.000	1.0102379	933970.	26000.
42.500	1.0170522	935551.	26000.
40.000	1.0197608	939746.	26000.
37.500	1.0236452	942866.	26000.
35.000	1.0353754	944130.	26000.
32.500	1.0343944	948677.	26000.
30.000	1.0398503	951834.	26000.
27.500	1.0433492	955242.	26000.
25.000	1.0372713	960709.	26000.
22.500	1.0551881	960647.	26000.
20.000	1.0609626	963589.	26000.
17.500	1.0652806	966813.	26000.
15.000	1.0682321	970443.	26000.
12.500	1.2063601	950626.	26000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	1	V = 26000.	M = 0.000	131000.	0.99278701	929105.	26000.	-0.01461283

The analysis ended normally.

Pile Plus for Windows, Version 2012-06.031

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

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gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5L_transv_Ave P.lp6d
Name of output report file: Abut 5L_transv_Ave P.lp6o
Name of plot output file: Abut 5L_transv_Ave P.lp6p
Name of runtime messeage file: Abut 5L_transv_Ave P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:22:47

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multiplers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm pcf	Undrained In-situ Cohesion psi	Angle of In-situ Friction Test Type	Angle of In-situ Test Property deg.	Uniaxial Elastic qu psi	RQD % or GSI Mod. pci
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--	--
					0.10000	120.000	4000.000	--	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--	--
					7.000	120.000	1500.000	--	--	--	--
		0.00700	--	--	7.000	120.000	3500.000	--	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	12.000	120.000	3500.000	--	--	--	--
					12.000	125.000	4000.000	--	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	17.000	125.000	4500.000	--	--	--	--
					80.000	125.000	4500.000	--	--	--	--
		0.00500	--	--							
5	Stiff Clay w/o Free Water	0.00500	--	--							

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6200	1.0000
2	50.000	0.6200	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		131000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		131000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		131000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13972.	-0.004592	651.5405	5.799E+09	-510.2695	6123.2345	0.000
6.000	0.2224	78257.	11663.	-0.004552	1040.7569	5.799E+09	-259.2775	6993.4449	0.000
12.000	0.1954	147116.	10100.	-0.004435	1383.2333	5.799E+09	-261.7459	8038.1327	0.000
18.000	0.1692	206432.	8526.4134	-0.004252	1678.2492	5.799E+09	-262.8732	9320.4554	0.000
24.000	0.1444	256117.	6950.0188	-0.004013	1925.3628	5.799E+09	-262.5917	10915.	0.000
30.000	0.1211	296141.	5379.7605	-0.003727	2124.4235	5.799E+09	-260.8277	12926.	0.000
36.000	0.0996	326534.	3824.7764	-0.003405	2275.5853	5.799E+09	-257.5003	15509.	0.000
42.000	0.0802	347391.	2294.7237	-0.003056	2379.3211	5.799E+09	-252.5173	18890.	0.000
48.000	0.0629	358875.	799.8601	-0.002691	2436.4386	5.799E+09	-245.7706	23427.	0.000
54.000	0.0479	361220.	-648.8348	-0.002319	2448.0994	5.799E+09	-237.1278	29695.	0.000
60.000	0.0351	354734.	-2039.4698	-0.001948	2415.8415	5.799E+09	-226.4172	38679.	0.000
66.000	0.0245	339808.	-3358.9203	-0.001589	2341.6088	5.799E+09	-213.3996	52186.	0.000
72.000	0.0161	316924.	-4592.2366	-0.001249	2227.7926	5.799E+09	-197.7059	73875.	0.000
78.000	0.009547	286665.	-5721.4001	-0.000937	2077.2953	5.799E+09	-178.6820	112295.	0.000
84.000	0.004816	249740.	-6857.3593	-0.000659	1893.6456	5.799E+09	-199.9711	249108.	0.000
90.000	0.001636	205413.	-8108.6207	-0.000424	1673.1810	5.799E+09	-217.1161	796083.	0.000
96.000	-0.000268	153103.	-8385.8027	-0.000238	1413.0110	5.799E+09	124.7221	2787546.	0.000
102.000	-0.001223	105158.	-7370.4246	-0.000105	1174.5531	5.799E+09	213.7373	1048781.	0.000
108.000	-0.001524	64822.	-6031.3220	-1.671E-05	973.9394	5.799E+09	232.6302	915725.	0.000
114.000	-0.001423	32808.	-4627.7030	3.380E-05	814.7157	5.799E+09	235.2428	991708.	0.000
120.000	-0.001119	9236.5526	-3239.0891	5.556E-05	697.4794	5.799E+09	227.6285	1220971.	0.000
126.000	-0.000757	-6148.0919	-1920.3475	5.715E-05	682.1186	5.799E+09	211.9520	1680856.	0.000
132.000	-0.000433	-13897.	-717.2517	4.678E-05	720.6609	5.799E+09	189.0799	2621576.	0.000
138.000	-0.000195	-14829.	180.1415	3.192E-05	725.2922	5.799E+09	110.0511	3382908.	0.000
144.000	-4.969E-05	-11786.	593.8363	1.815E-05	710.1590	5.799E+09	27.8472	3362323.	0.000
150.000	2.263E-05	-7731.1539	635.8219	8.054E-06	689.9922	5.799E+09	-13.8520	3672280.	0.000
156.000	4.696E-05	-4168.7449	505.7781	1.898E-06	672.2742	5.799E+09	-29.4960	3768707.	0.000
162.000	4.541E-05	-1664.8002	329.5414	-1.120E-06	659.8206	5.799E+09	-29.2496	3865137.	0.000
168.000	3.352E-05	-212.4870	175.4055	-2.092E-06	652.5974	5.799E+09	-22.1290	3961571.	0.000
174.000	2.031E-05	443.3537	67.8162	-1.972E-06	653.7456	5.799E+09	-13.7341	4058008.	0.000
180.000	9.850E-06	604.4070	6.1528	-1.430E-06	654.5466	5.799E+09	-6.8204	4154447.	0.000
186.000	3.146E-06	519.4355	-20.9953	-8.486E-07	654.1240	5.799E+09	-2.2290	4250889.	0.000
192.000	-3.330E-07	353.7969	-26.9706	-3.968E-07	653.3002	5.799E+09	0.2373	4274851.	0.000
198.000	-1.616E-06	196.4117	-22.8055	-1.122E-07	652.5174	5.799E+09	1.1511	4274851.	0.000
204.000	-1.679E-06	80.3076	-15.3893	3.100E-08	651.9400	5.799E+09	1.3209	4720485.	0.000
210.000	-1.244E-06	11.6914	-8.1735	7.860E-08	651.5987	5.799E+09	1.0843	5231250.	0.000
216.000	-7.358E-07	-17.8983	-2.9959	7.539E-08	651.6296	5.799E+09	0.6415	5231250.	0.000
222.000	-3.390E-07	-24.3784	-0.1845	5.351E-08	651.6618	5.799E+09	0.2956	5231250.	0.000
228.000	-9.364E-08	-20.1968	0.9472	3.045E-08	651.6410	5.799E+09	0.0816	5231250.	0.000
234.000	2.637E-08	-13.0596	1.1232	1.325E-08	651.6055	5.799E+09	-0.0230	5231250.	0.000

240.000	6.531E-08	-6.7395	0.8834	3.003E-09	651.5741	5.799E+09	-0.0569	5231250.	0.000
246.000	6.241E-08	-2.4639	0.5493	-1.759E-09	651.5528	5.799E+09	-0.0544	5231250.	0.000
252.000	4.420E-08	-0.1450	0.2705	-3.109E-09	651.5413	5.799E+09	-0.0385	5231250.	0.000
258.000	2.510E-08	0.7865	0.0892	-2.777E-09	651.5445	5.799E+09	-0.0219	5231250.	0.000
264.000	1.089E-08	0.9294	-0.004958	-1.889E-09	651.5452	5.799E+09	-0.009490	5231250.	0.000
270.000	2.437E-09	0.7300	-0.0398	-1.030E-09	651.5442	5.799E+09	-0.002125	5231250.	0.000
276.000	-1.479E-09	0.4534	-0.0423	-4.181E-10	651.5428	5.799E+09	0.001290	5231250.	0.000
282.000	-2.580E-09	0.2229	-0.0317	-6.819E-11	651.5417	5.799E+09	0.002250	5231250.	0.000
288.000	-2.298E-09	0.0733	-0.0189	8.506E-11	651.5409	5.799E+09	0.002003	5231250.	0.000
294.000	-1.560E-09	-0.004356	-0.008841	1.207E-10	651.5406	5.799E+09	0.001360	5231250.	0.000
300.000	-8.490E-10	-0.0330	-0.002540	1.014E-10	651.5407	5.799E+09	0.000740	5231250.	0.000
306.000	-3.433E-10	-0.0350	0.000578	6.619E-11	651.5407	5.799E+09	0.000299	5231250.	0.000
312.000	-5.477E-11	-0.0262	0.001619	3.454E-11	651.5407	5.799E+09	4.775E-05	5231250.	0.000
318.000	7.117E-11	-0.0156	0.001576	1.291E-11	651.5406	5.799E+09	-6.205E-05	5231250.	0.000
324.000	1.001E-10	-0.007285	0.001128	1.056E-12	651.5406	5.799E+09	-8.729E-05	5231250.	0.000
330.000	8.385E-11	-0.002084	0.000647	-3.791E-12	651.5406	5.799E+09	-7.310E-05	5231250.	0.000
336.000	5.463E-11	0.000487	0.000285	-4.617E-12	651.5406	5.799E+09	-4.763E-05	5231250.	0.000
342.000	2.844E-11	0.001342	6.760E-05	-3.671E-12	651.5406	5.799E+09	-2.480E-05	5231250.	0.000
348.000	1.058E-11	0.001304	-3.447E-05	-2.302E-12	651.5406	5.799E+09	-9.227E-06	5231250.	0.000
354.000	0.000	0.000932	-6.430E-05	-1.145E-12	651.5406	5.799E+09	-7.128E-07	5231250.	0.000
360.000	-3.162E-12	0.000534	-5.816E-05	0.000	651.5406	5.799E+09	2.757E-06	5231250.	0.000
366.000	-3.827E-12	0.000235	-3.988E-05	0.000	651.5405	5.799E+09	3.337E-06	5231250.	0.000
372.000	-3.035E-12	5.533E-05	-2.193E-05	0.000	651.5405	5.799E+09	2.646E-06	5231250.	0.000
378.000	-1.900E-12	-2.879E-05	-9.026E-06	0.000	651.5405	5.799E+09	1.656E-06	5231250.	0.000
384.000	0.000	-5.326E-05	-1.591E-06	0.000	651.5405	5.799E+09	8.221E-07	5231250.	0.000
390.000	0.000	-4.809E-05	1.704E-06	0.000	651.5405	5.799E+09	2.762E-07	5231250.	0.000
396.000	0.000	-3.294E-05	2.505E-06	0.000	651.5405	5.799E+09	-9.319E-09	5231250.	0.000
402.000	0.000	-1.809E-05	2.127E-06	0.000	651.5405	5.799E+09	-1.166E-07	5231250.	0.000
408.000	0.000	-7.430E-06	1.399E-06	0.000	651.5405	5.799E+09	-1.259E-07	5231250.	0.000
414.000	0.000	-1.296E-06	7.365E-07	0.000	651.5405	5.799E+09	-9.504E-08	5231250.	0.000
420.000	0.000	1.418E-06	2.799E-07	0.000	651.5405	5.799E+09	-5.715E-08	5231250.	0.000
426.000	0.000	2.074E-06	2.771E-08	0.000	651.5405	5.799E+09	-2.693E-08	5231250.	0.000
432.000	0.000	1.758E-06	-7.688E-08	0.000	651.5405	5.799E+09	-7.935E-09	5231250.	0.000
438.000	0.000	1.155E-06	-9.606E-08	0.000	651.5405	5.799E+09	1.542E-09	5231250.	0.000
444.000	0.000	6.074E-07	-7.714E-08	0.000	651.5405	5.799E+09	4.765E-09	5231250.	0.000
450.000	0.000	2.303E-07	-4.874E-08	0.000	651.5405	5.799E+09	4.700E-09	5231250.	0.000
456.000	0.000	2.224E-08	-2.448E-08	0.000	651.5405	5.799E+09	3.388E-09	5231250.	0.000
462.000	0.000	-6.387E-08	-8.447E-09	0.000	651.5405	5.799E+09	1.956E-09	5231250.	0.000
468.000	0.000	-7.950E-08	3.195E-11	0.000	651.5405	5.799E+09	8.700E-10	5231250.	0.000
474.000	0.000	-6.375E-08	3.284E-09	0.000	651.5405	5.799E+09	2.140E-10	5231250.	0.000
480.000	0.000	-4.024E-08	3.636E-09	0.000	651.5405	5.799E+09	-9.681E-11	5231250.	0.000
486.000	0.000	-2.018E-08	2.776E-09	0.000	651.5405	5.799E+09	-1.899E-10	5231250.	0.000
492.000	0.000	-6.943E-09	1.685E-09	0.000	651.5405	5.799E+09	-1.737E-10	5231250.	0.000
498.000	0.000	4.938E-11	8.043E-10	0.000	651.5405	5.799E+09	-1.199E-10	5231250.	0.000
504.000	0.000	2.725E-09	2.454E-10	0.000	651.5405	5.799E+09	-6.640E-11	5231250.	0.000
510.000	0.000	3.008E-09	-3.673E-11	0.000	651.5405	5.799E+09	-2.764E-11	5231250.	0.000
516.000	0.000	2.293E-09	-1.352E-10	0.000	651.5405	5.799E+09	-5.172E-12	5231250.	0.000
522.000	0.000	1.391E-09	-1.360E-10	0.000	651.5405	5.799E+09	4.887E-12	5231250.	0.000
528.000	0.000	6.628E-10	-9.912E-11	0.000	651.5405	5.799E+09	7.417E-12	5231250.	0.000
534.000	0.000	2.015E-10	-5.779E-11	0.000	651.5405	5.799E+09	6.360E-12	5231250.	0.000
540.000	0.000	-3.110E-11	-2.607E-11	0.000	651.5405	5.799E+09	4.212E-12	5231250.	0.000
546.000	0.000	-1.120E-10	-6.733E-12	0.000	651.5405	5.799E+09	2.233E-12	5231250.	0.000
552.000	0.000	-1.124E-10	2.545E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
558.000	0.000	-8.177E-11	5.410E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
564.000	0.000	-4.764E-11	5.014E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
570.000	0.000	-2.165E-11	3.458E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
576.000	0.000	-6.143E-12	1.868E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
582.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
588.000	0.000	2.226E-12	0.000	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
594.000	0.000	1.126E-12	0.000	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	2615625.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection            =      0.2500000 inches
Computed slope at pile head     =     -0.0045923 radians
Maximum bending moment          =         361220. inch-lbs
Maximum shear force             =          13972. lbs
Depth of maximum bending moment =     54.0000000 inches below pile head
Depth of maximum shear force    =      0.000000 inches below pile head
Number of iterations            =             16
Number of zero deflection points =            13
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	19052.	-0.008206	651.5405	5.799E+09	-606.8162	3640.8970	0.000
6.000	0.4508	109840.	16304.	-0.008149	1197.8380	5.799E+09	-309.3466	4117.6436	0.000
12.000	0.4022	208453.	14435.	-0.007985	1688.3029	5.799E+09	-313.5255	4677.0764	0.000
18.000	0.3549	295611.	12545.	-0.007724	2121.7881	5.799E+09	-316.3523	5347.6183	0.000
24.000	0.3095	371139.	10643.	-0.007379	2497.4349	5.799E+09	-317.7586	6159.7144	0.000
30.000	0.2664	434926.	8736.6751	-0.006962	2814.6859	5.799E+09	-317.6712	7154.8230	0.000
36.000	0.2260	486923.	6835.6312	-0.006485	3073.2989	5.799E+09	-316.0101	8390.5477	0.000
42.000	0.1886	527148.	4949.5430	-0.005960	3273.3608	5.799E+09	-312.6860	9948.8060	0.000
48.000	0.1545	555688.	3088.6948	-0.005400	3415.3043	5.799E+09	-307.5968	11949.	0.000
54.000	0.1238	572702.	1264.0394	-0.004816	3499.9250	5.799E+09	-300.6217	14573.	0.000
60.000	0.0967	578428.	-512.6633	-0.004221	3528.4030	5.799E+09	-291.6125	18102.	0.000
66.000	0.0731	573185.	-2228.6360	-0.003625	3502.3282	5.799E+09	-280.3784	23005.	0.000
72.000	0.0532	557382.	-3869.7462	-0.003040	3423.7334	5.799E+09	-266.6583	30180.	0.000
78.000	0.0366	531527.	-5419.9215	-0.002477	3295.1389	5.799E+09	-250.0668	40946.	0.000
84.000	0.0234	496237.	-7060.8176	-0.001945	3119.6202	5.799E+09	-296.8986	76022.	0.000
90.000	0.0133	449855.	-9050.0707	-0.001456	2888.9346	5.799E+09	-366.1858	165161.	0.000
96.000	0.005966	389924.	-11077.	-0.001021	2590.8641	5.799E+09	-309.2912	311057.	0.000
102.000	0.001050	318542.	-12627.	-0.000655	2235.8380	5.799E+09	-207.5079	1185978.	0.000
108.000	-0.001889	239430.	-12514.	-0.000366	1842.3692	5.799E+09	245.0691	778533.	0.000
114.000	-0.003341	168946.	-10905.	-0.000155	1491.8114	5.799E+09	291.2163	523028.	0.000
120.000	-0.003744	108809.	-9107.3505	-1.090E-05	1192.7122	5.799E+09	308.1200	493797.	0.000
126.000	-0.003472	59675.	-7251.1402	7.627E-05	948.3416	5.799E+09	310.6168	536856.	0.000
132.000	-0.002829	21675.	-5410.4891	0.000118	759.3454	5.799E+09	302.9336	642569.	0.000
138.000	-0.002051	-5436.5248	-3641.4525	0.000127	678.5796	5.799E+09	286.7453	838756.	0.000
144.000	-0.001308	-22221.	-2017.3195	0.000112	762.0600	5.799E+09	254.6324	1168450.	0.000
150.000	-0.000702	-29821.	-539.4193	8.553E-05	799.8587	5.799E+09	238.0010	2034722.	0.000
156.000	-0.000281	-28829.	704.5368	5.518E-05	794.9229	5.799E+09	176.6510	3768707.	0.000
162.000	-3.964E-05	-21453.	1311.0923	2.917E-05	758.2412	5.799E+09	25.5342	3865137.	0.000
168.000	6.877E-05	-13141.	1251.4714	1.127E-05	716.9008	5.799E+09	-45.4078	3961571.	0.000
174.000	9.560E-05	-6453.4937	921.2842	1.132E-06	683.6376	5.799E+09	-64.6546	4058008.	0.000
180.000	8.235E-05	-2087.8364	556.2549	-3.287E-06	661.9246	5.799E+09	-57.0218	4154447.	0.000
186.000	5.615E-05	226.7324	265.8492	-4.250E-06	652.6682	5.799E+09	-39.7801	4250889.	0.000
192.000	3.135E-05	1109.0346	79.4978	-3.559E-06	657.0564	5.799E+09	-22.3371	4274851.	0.000
198.000	1.344E-05	1186.3005	-16.2397	-2.372E-06	657.4407	5.799E+09	-9.5754	4274851.	0.000
204.000	2.893E-06	917.8861	-51.7941	-1.283E-06	656.1057	5.799E+09	-2.2760	4720485.	0.000
210.000	-1.955E-06	566.7880	-53.5082	-5.148E-07	654.3595	5.799E+09	1.7047	5231250.	0.000
216.000	-3.284E-06	276.5966	-39.8033	-7.845E-08	652.9162	5.799E+09	2.8636	5231250.	0.000
222.000	-2.897E-06	89.2714	-23.6361	1.108E-07	651.9845	5.799E+09	2.5254	5231250.	0.000
228.000	-1.954E-06	-7.2107	-10.9478	1.533E-07	651.5764	5.799E+09	1.7040	5231250.	0.000
234.000	-1.057E-06	-42.3428	-3.0709	1.277E-07	651.7511	5.799E+09	0.9216	5231250.	0.000
240.000	-4.225E-07	-44.2626	0.7991	8.285E-08	651.7607	5.799E+09	0.3684	5231250.	0.000
246.000	-6.285E-08	-32.8837	2.0687	4.294E-08	651.7041	5.799E+09	0.0548	5231250.	0.000
252.000	9.269E-08	-19.5053	1.9907	1.583E-08	651.6376	5.799E+09	-0.0808	5231250.	0.000
258.000	1.271E-07	-9.0204	1.4157	1.074E-09	651.5854	5.799E+09	-0.1108	5231250.	0.000
264.000	1.056E-07	-2.5186	0.8070	-4.896E-09	651.5531	5.799E+09	-0.0921	5231250.	0.000
270.000	6.838E-08	0.6714	0.3520	-5.852E-09	651.5439	5.799E+09	-0.0596	5231250.	0.000
276.000	3.536E-08	1.7145	0.0806	-4.617E-09	651.5491	5.799E+09	-0.0308	5231250.	0.000
282.000	1.298E-08	1.6463	-0.0458	-2.878E-09	651.5487	5.799E+09	-0.0113	5231250.	0.000
288.000	8.180E-10	1.1694	-0.0819	-1.422E-09	651.5464	5.799E+09	-0.000713	5231250.	0.000
294.000	-4.083E-09	0.6658	-0.0734	-4.723E-10	651.5439	5.799E+09	0.003560	5231250.	0.000
300.000	-4.850E-09	0.2899	-0.0500	2.213E-11	651.5420	5.799E+09	0.004228	5231250.	0.000
306.000	-3.817E-09	0.0660	-0.0273	2.062E-10	651.5409	5.799E+09	0.003328	5231250.	0.000
312.000	-2.375E-09	-0.0382	-0.0111	2.206E-10	651.5407	5.799E+09	0.002071	5231250.	0.000
318.000	-1.170E-09	-0.0678	-0.001847	1.657E-10	651.5409	5.799E+09	0.001020	5231250.	0.000
324.000	-3.865E-10	-0.0606	0.002225	9.925E-11	651.5408	5.799E+09	0.000337	5231250.	0.000
330.000	2.071E-11	-0.0413	0.003182	4.651E-11	651.5408	5.799E+09	-1.806E-05	5231250.	0.000
336.000	1.717E-10	-0.0225	0.002679	1.350E-11	651.5407	5.799E+09	-0.000150	5231250.	0.000
342.000	1.827E-10	-0.009153	0.001752	-2.892E-12	651.5406	5.799E+09	-0.000159	5231250.	0.000
348.000	1.369E-10	-0.001502	0.000916	-8.405E-12	651.5406	5.799E+09	-0.000119	5231250.	0.000
354.000	8.186E-11	0.001852	0.000344	-8.224E-12	651.5406	5.799E+09	-7.137E-05	5231250.	0.000
360.000	3.826E-11	0.002634	2.946E-05	-5.903E-12	651.5406	5.799E+09	-3.336E-05	5231250.	0.000
366.000	1.102E-11	0.002214	-9.943E-05	-3.394E-12	651.5406	5.799E+09	-9.607E-06	5231250.	0.000
372.000	-2.474E-12	0.001447	-0.000122	-1.500E-12	651.5406	5.799E+09	2.157E-06	5231250.	0.000
378.000	-6.986E-12	0.000755	-9.704E-05	0.000	651.5406	5.799E+09	6.091E-06	5231250.	0.000
384.000	-6.809E-12	0.000283	-6.096E-05	0.000	651.5405	5.799E+09	5.936E-06	5231250.	0.000
390.000	-4.877E-12	2.352E-05	-3.039E-05	0.000	651.5405	5.799E+09	4.252E-06	5231250.	0.000
396.000	-2.799E-12	-8.259E-05	-1.032E-05	0.000	651.5405	5.799E+09	2.440E-06	5231250.	0.000
402.000	-1.233E-12	-0.000101	2.269E-07	0.000	651.5405	5.799E+09	1.075E-06	5231250.	0.000
408.000	0.000	-8.019E-05	4.221E-06	0.000	651.5405	5.799E+09	2.560E-07	5231250.	0.000
414.000	0.000	-5.032E-05	4.601E-06	0.000	651.5405	5.799E+09	-1.292E-07	5231250.	0.000
420.000	0.000	-2.506E-05	3.488E-06	0.000	651.5405	5.799E+09	-2.419E-07	5231250.	0.000
426.000	0.000	-8.480E-06	2.105E-06	0.000	651.5405	5.799E+09	-2.191E-07	5231250.	0.000
432.000	0.000	2.162E-07	9.968E-07	0.000	651.5405	5.799E+09	-1.503E-07	5231250.	0.000
438.000	0.000	3.502E-06	2.977E-07	0.000	651.5405	5.799E+09	-8.271E-08	5231250.	0.000
444.000	0.000	3.807E-06	-5.262E-08	0.000	651.5405	5.799E+09	-3.407E-08	5231250.	0.000
450.000	0.000	2.882E-06	-1.730E-07	0.000	651.5405	5.799E+09	-6.040E-09	5231250.	0.000
456.000	0.000	1.737E-06	-1.719E-07	0.000	651.5405	5.799E+09	6.395E-09	5231250.	0.000
462.000	0.000	8.214E-07	-1.244E-07	0.000	651.5405	5.799E+09	9.427E-09	5231250.	0.000
468.000	0.000	2.444E-07	-7.211E-08	0.000	651.5405	5.799E+09	8.012E-09	5231250.	0.000
474.000	0.000	-4.447E-08	-3.225E-08	0.000	651.5405	5.799E+09	5.275E-09	5231250.	0.000
480.000	0.000	-1.434E-07	-8.089E-09	0.000	651.5405	5.799E+09	2.778E-09	5231250.	0.000
486.000	0.000	-1.422E-07	3.416E-09	0.000	651.5405	5.799E+09	1.057E-09	5231250.	0.000
492.000	0.000	-1.028E-07	6.906E-09	0.000	651.5405	5.799E+09	1.060E-10	5231250.	0.000
498.000	0.000	-5.950E-08	6.357E-09	0.000	651.5405	5.799E+09	-2.888E-10	5231250.	0.000
504.000	0.000	-2.656E-08	4.406E-09	0.000	651.5405	5.799E+09	-3.616E-10	5231250.	0.000
510.000	0.000	-6.625E-09	2.449E-09	0.000	651.5405	5.799E+09	-2.906E-10	5231250.	0.000
516.000	0.000	2.857E-09	1.026E-09	0.000	651.5405	5.799E+09	-1.837E-10	5231250.	0.000

522.000	0.000	5.721E-09	1.981E-10	0.000	651.5405	5.799E+09	-9.234E-11	5231250.	0.000
528.000	0.000	5.257E-09	-1.747E-10	0.000	651.5405	5.799E+09	-3.191E-11	5231250.	0.000
534.000	0.000	3.639E-09	-2.702E-10	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
540.000	0.000	2.020E-09	-2.330E-10	0.000	651.5405	5.799E+09	1.235E-11	5231250.	0.000
546.000	0.000	8.450E-10	-1.549E-10	0.000	651.5405	5.799E+09	1.369E-11	5231250.	0.000
552.000	0.000	1.616E-10	-8.243E-11	0.000	651.5405	5.799E+09	1.046E-11	5231250.	0.000
558.000	0.000	-1.453E-10	-3.198E-11	0.000	651.5405	5.799E+09	6.355E-12	5231250.	0.000
564.000	0.000	-2.233E-10	-3.810E-12	0.000	651.5405	5.799E+09	3.037E-12	5231250.	0.000
570.000	0.000	-1.918E-10	8.080E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
576.000	0.000	-1.268E-10	1.042E-11	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
582.000	0.000	-6.694E-11	8.395E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
588.000	0.000	-2.612E-11	5.142E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
594.000	0.000	-5.224E-12	2.174E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	2615625.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.5000000 inches
Computed slope at pile head = -0.0082062 radians
Maximum bending moment = 578428. inch-lbs
Maximum shear force = 19052. lbs
Depth of maximum bending moment = 60.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 18
Number of zero deflection points = 12

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	26088.	-0.0147	651.5405	5.799E+09	-721.6301	2164.8903	0.000
6.000	0.9118	155097.	22817.	-0.0146	1422.9309	5.799E+09	-368.9180	2427.6896	0.000
12.000	0.8245	296787.	20584.	-0.0144	2127.6394	5.799E+09	-375.1533	2729.9961	0.000
18.000	0.7391	424730.	18319.	-0.0140	2763.9765	5.799E+09	-380.0175	3084.9963	0.000
24.000	0.6563	538648.	16028.	-0.0135	3330.5536	5.799E+09	-383.4422	3505.4231	0.000
30.000	0.5769	638323.	13722.	-0.0129	3826.2969	5.799E+09	-385.3552	4008.0309	0.000
36.000	0.5014	723606.	11409.	-0.0122	4250.4606	5.799E+09	-385.6783	4615.2215	0.000
42.000	0.4304	794416.	9098.9396	-0.0114	4602.6418	5.799E+09	-384.3261	5357.4964	0.000
48.000	0.3644	850744.	6802.3518	-0.0106	4882.7963	5.799E+09	-381.2032	6277.2560	0.000
54.000	0.3036	892658.	4530.1392	-0.009666	5091.2554	5.799E+09	-376.2010	7434.8716	0.000
60.000	0.2484	920302.	2293.9601	-0.008728	5228.7451	5.799E+09	-369.1921	8918.7535	0.000
66.000	0.1989	933906.	106.3155	-0.007769	5296.4087	5.799E+09	-360.0228	10863.	0.000
72.000	0.1551	933790.	-2019.2569	-0.006803	5295.8327	5.799E+09	-348.5013	13478.	0.000
78.000	0.1172	920369.	-4067.8911	-0.005844	5229.0807	5.799E+09	-334.3768	17115.	0.000
84.000	0.0850	894162.	-6299.9649	-0.004905	5098.7358	5.799E+09	-409.6478	28910.	0.000
90.000	0.0584	852480.	-9118.0361	-0.004001	4891.4269	5.799E+09	-529.7093	54454.	0.000
96.000	0.0370	791035.	-12170.	-0.003151	4585.8256	5.799E+09	-487.5590	79051.	0.000
102.000	0.0206	711395.	-14934.	-0.002373	4189.7274	5.799E+09	-433.7662	126605.	0.000
108.000	0.008524	615560.	-17310.	-0.001687	3713.0862	5.799E+09	-358.3875	252262.	0.000
114.000	0.000313	506323.	-18862.	-0.001107	3169.7859	5.799E+09	-158.7936	3042701.	0.000
120.000	-0.004754	390958.	-18355.	-0.000642	2596.0057	5.799E+09	327.5882	413407.	0.000
126.000	-0.007395	287068.	-16245.	-0.000292	2079.2986	5.799E+09	375.7948	304911.	0.000
132.000	-0.008253	196473.	-13928.	-4.138E-05	1628.7160	5.799E+09	396.5046	288262.	0.000
138.000	-0.007891	119992.	-11532.	0.000122	1248.3326	5.799E+09	402.2389	305831.	0.000
144.000	-0.006785	57895.	-9170.3690	0.000214	939.4844	5.799E+09	385.0243	340486.	0.000
150.000	-0.005319	9610.7240	-6828.0036	0.000249	699.3404	5.799E+09	395.7642	446448.	0.000
156.000	-0.003793	-24433.	-4520.6763	0.000242	773.0623	5.799E+09	373.3449	590552.	0.000
162.000	-0.002419	-45017.	-2373.6735	0.000206	875.4380	5.799E+09	342.3227	849013.	0.000
168.000	-0.001325	-53241.	-440.5851	0.000155	916.3388	5.799E+09	302.0401	1368023.	0.000
174.000	-0.000561	-50548.	1215.3506	0.000101	902.9443	5.799E+09	249.9385	2674259.	0.000
180.000	-0.000111	-38816.	2194.9770	5.494E-05	844.5940	5.799E+09	76.6036	4154447.	0.000
186.000	9.852E-05	-24294.	2215.3981	2.229E-05	772.3708	5.799E+09	-69.7966	4250889.	0.000
192.000	0.000157	-12266.	1670.7816	3.374E-06	712.5464	5.799E+09	-111.7423	4274851.	0.000
198.000	0.000139	-4250.2892	1038.4392	-5.171E-06	672.6798	5.799E+09	-99.0385	4274851.	0.000
204.000	9.479E-05	203.4457	517.6002	-7.264E-06	652.5524	5.799E+09	-74.5745	4720485.	0.000
210.000	5.183E-05	1972.3323	158.2993	-6.139E-06	661.3501	5.799E+09	-45.1924	5231250.	0.000
216.000	2.112E-05	2112.6878	-32.5298	-4.025E-06	662.0482	5.799E+09	-18.4173	5231250.	0.000
222.000	3.530E-06	1588.3028	-97.0155	-2.111E-06	659.4401	5.799E+09	-3.0780	5231250.	0.000
228.000	-4.202E-06	951.8196	-95.2573	-7.964E-07	656.2745	5.799E+09	3.6640	5231250.	0.000
234.000	-6.026E-06	446.4666	-68.5038	-7.293E-08	653.7611	5.799E+09	5.2539	5231250.	0.000
240.000	-5.078E-06	129.8892	-39.4612	2.253E-07	652.1866	5.799E+09	4.4270	5231250.	0.000
246.000	-3.323E-06	-27.4215	-17.4889	2.783E-07	651.6769	5.799E+09	2.8971	5231250.	0.000
252.000	-1.738E-06	-80.4148	-4.2508	2.225E-07	651.9405	5.799E+09	1.5156	5231250.	0.000

258.000	-6.531E-07	-78.7814	2.0041	1.401E-07	651.9324	5.799E+09	0.5694	5231250.	0.000
264.000	-5.689E-08	-56.5862	3.8610	7.008E-08	651.8220	5.799E+09	0.0496	5231250.	0.000
270.000	1.880E-07	-32.5592	3.5182	2.396E-08	651.7025	5.799E+09	-0.1639	5231250.	0.000
276.000	2.307E-07	-14.4053	2.4232	-3.341E-10	651.6122	5.799E+09	-0.2011	5231250.	0.000
282.000	1.840E-07	-3.4800	1.3387	-9.587E-09	651.5579	5.799E+09	-0.1604	5231250.	0.000
288.000	1.156E-07	1.6745	0.5552	-1.052E-08	651.5489	5.799E+09	-0.1008	5231250.	0.000
294.000	5.769E-08	3.1984	0.1018	-8.000E-09	651.5565	5.799E+09	-0.0503	5231250.	0.000
300.000	1.962E-08	2.9089	-0.1004	-4.841E-09	651.5550	5.799E+09	-0.0171	5231250.	0.000
306.000	-3.939E-10	2.0013	-0.1507	-2.300E-09	651.5505	5.799E+09	0.000343	5231250.	0.000
312.000	-7.983E-09	1.1043	-0.1288	-6.935E-10	651.5460	5.799E+09	0.006960	5231250.	0.000
318.000	-8.716E-09	0.4570	-0.0851	1.142E-10	651.5428	5.799E+09	0.007600	5231250.	0.000
324.000	-6.612E-09	0.0830	-0.0450	3.936E-10	651.5410	5.799E+09	0.005765	5231250.	0.000
330.000	-3.993E-09	-0.0836	-0.0173	3.933E-10	651.5410	5.799E+09	0.003481	5231250.	0.000
336.000	-1.892E-09	-0.1248	-0.001868	2.855E-10	651.5412	5.799E+09	0.001650	5231250.	0.000
342.000	-5.665E-10	-0.1064	0.004564	1.659E-10	651.5411	5.799E+09	0.000494	5231250.	0.000
348.000	9.850E-11	-0.0703	0.005788	7.448E-11	651.5409	5.799E+09	-8.588E-05	5231250.	0.000
354.000	3.273E-10	-0.0371	0.004674	1.893E-11	651.5407	5.799E+09	-0.000285	5231250.	0.000
360.000	3.257E-10	-0.0142	0.002966	-7.615E-12	651.5406	5.799E+09	-0.000284	5231250.	0.000
366.000	2.359E-10	-0.001503	0.001497	-1.574E-11	651.5406	5.799E+09	-0.000206	5231250.	0.000
372.000	1.368E-10	0.003792	0.000523	-1.456E-11	651.5406	5.799E+09	-0.000119	5231250.	0.000
378.000	6.123E-11	0.004790	4.587E-06	-1.012E-11	651.5406	5.799E+09	-5.339E-05	5231250.	0.000
384.000	1.541E-11	0.003863	-0.000196	-5.639E-12	651.5406	5.799E+09	-1.343E-05	5231250.	0.000
390.000	-6.434E-12	0.002449	-0.000219	-2.373E-12	651.5406	5.799E+09	5.609E-06	5231250.	0.000
396.000	-1.307E-11	0.001235	-0.000168	0.000	651.5406	5.799E+09	1.140E-05	5231250.	0.000
402.000	-1.205E-11	0.000430	-0.000103	0.000	651.5406	5.799E+09	1.050E-05	5231250.	0.000
408.000	-8.355E-12	2.392E-06	-4.926E-05	0.000	651.5405	5.799E+09	7.284E-06	5231250.	0.000
414.000	-4.648E-12	-0.000163	-1.525E-05	0.000	651.5405	5.799E+09	4.052E-06	5231250.	0.000
420.000	-1.949E-12	-0.000181	2.002E-06	0.000	651.5405	5.799E+09	1.700E-06	5231250.	0.000
426.000	0.000	-0.000139	8.090E-06	0.000	651.5405	5.799E+09	3.297E-07	5231250.	0.000
432.000	0.000	-8.470E-05	8.217E-06	0.000	651.5405	5.799E+09	-2.875E-07	5231250.	0.000
438.000	0.000	-4.060E-05	6.016E-06	0.000	651.5405	5.799E+09	-4.461E-07	5231250.	0.000
444.000	0.000	-1.252E-05	3.523E-06	0.000	651.5405	5.799E+09	-3.850E-07	5231250.	0.000
450.000	0.000	1.703E-06	1.600E-06	0.000	651.5405	5.799E+09	-2.561E-07	5231250.	0.000
456.000	0.000	6.708E-06	4.219E-07	0.000	651.5405	5.799E+09	-1.364E-07	5231250.	0.000
462.000	0.000	6.796E-06	-1.464E-07	0.000	651.5405	5.799E+09	-5.304E-08	5231250.	0.000
468.000	0.000	4.970E-06	-3.250E-07	0.000	651.5405	5.799E+09	-6.458E-09	5231250.	0.000
474.000	0.000	2.907E-06	-3.046E-07	0.000	651.5405	5.799E+09	1.323E-08	5231250.	0.000
480.000	0.000	1.318E-06	-2.134E-07	0.000	651.5405	5.799E+09	1.718E-08	5231250.	0.000
486.000	0.000	3.458E-07	-1.199E-07	0.000	651.5405	5.799E+09	1.399E-08	5231250.	0.000
492.000	0.000	-1.227E-07	-5.114E-08	0.000	651.5405	5.799E+09	8.938E-09	5231250.	0.000
498.000	0.000	-2.692E-07	-1.068E-08	0.000	651.5405	5.799E+09	4.547E-09	5231250.	0.000
504.000	0.000	-2.519E-07	7.803E-09	0.000	651.5405	5.799E+09	1.614E-09	5231250.	0.000
510.000	0.000	-1.763E-07	1.278E-08	0.000	651.5405	5.799E+09	4.368E-11	5231250.	0.000
516.000	0.000	-9.894E-08	1.119E-08	0.000	651.5405	5.799E+09	-5.721E-10	5231250.	0.000
522.000	0.000	-4.211E-08	7.517E-09	0.000	651.5405	5.799E+09	-6.523E-10	5231250.	0.000
528.000	0.000	-8.723E-09	4.047E-09	0.000	651.5405	5.799E+09	-5.046E-10	5231250.	0.000
534.000	0.000	6.503E-09	1.604E-09	0.000	651.5405	5.799E+09	-3.096E-10	5231250.	0.000
540.000	0.000	1.058E-08	2.254E-10	0.000	651.5405	5.799E+09	-1.499E-10	5231250.	0.000
546.000	0.000	9.247E-09	-3.665E-10	0.000	651.5405	5.799E+09	-4.741E-11	5231250.	0.000
552.000	0.000	6.202E-09	-4.937E-10	0.000	651.5405	5.799E+09	5.014E-12	5231250.	0.000
558.000	0.000	3.333E-09	-4.071E-10	0.000	651.5405	5.799E+09	2.387E-11	5231250.	0.000
564.000	0.000	1.320E-09	-2.614E-10	0.000	651.5405	5.799E+09	2.469E-11	5231250.	0.000
570.000	0.000	1.950E-10	-1.323E-10	0.000	651.5405	5.799E+09	1.836E-11	5231250.	0.000
576.000	0.000	-2.694E-10	-4.429E-11	0.000	651.5405	5.799E+09	1.097E-11	5231250.	0.000
582.000	0.000	-3.385E-10	3.772E-12	0.000	651.5405	5.799E+09	5.047E-12	5231250.	0.000
588.000	0.000	-2.256E-10	2.177E-11	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
594.000	0.000	-7.828E-11	1.887E-11	0.000	651.5405	5.799E+09	-1.920E-12	5231250.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	-4.369E-12	2615625.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection = 1.0000000 inches
Computed slope at pile head = -0.0147041 radians
Maximum bending moment = 933906. inch-lbs
Maximum shear force = 26088. lbs
Depth of maximum bending moment = 66.0000000 inches below pile head
Depth of maximum shear force = 0.000000 inches below pile head
Number of iterations = 13
Number of zero deflection points = 12

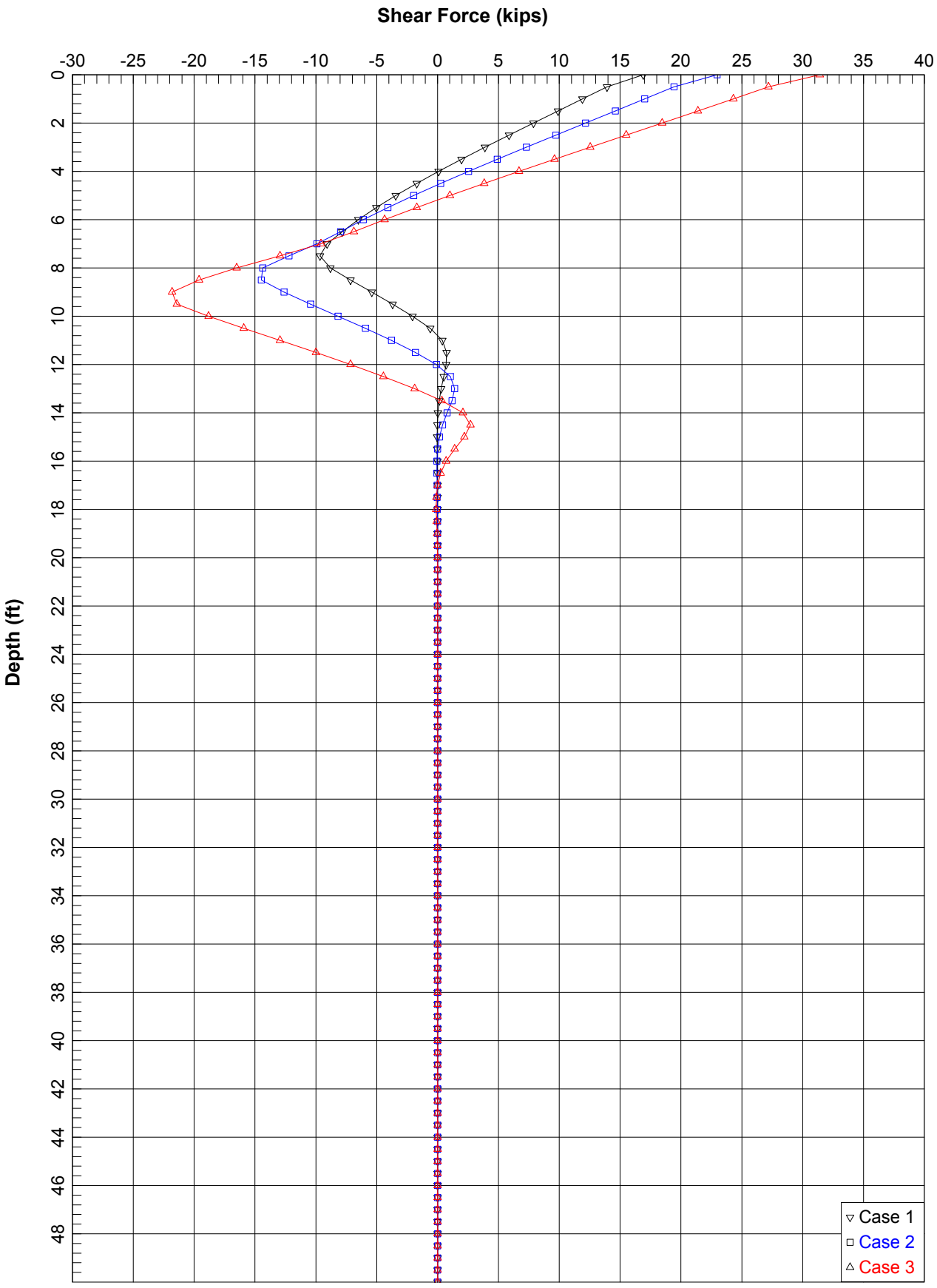
Summary of Pile Response(s)

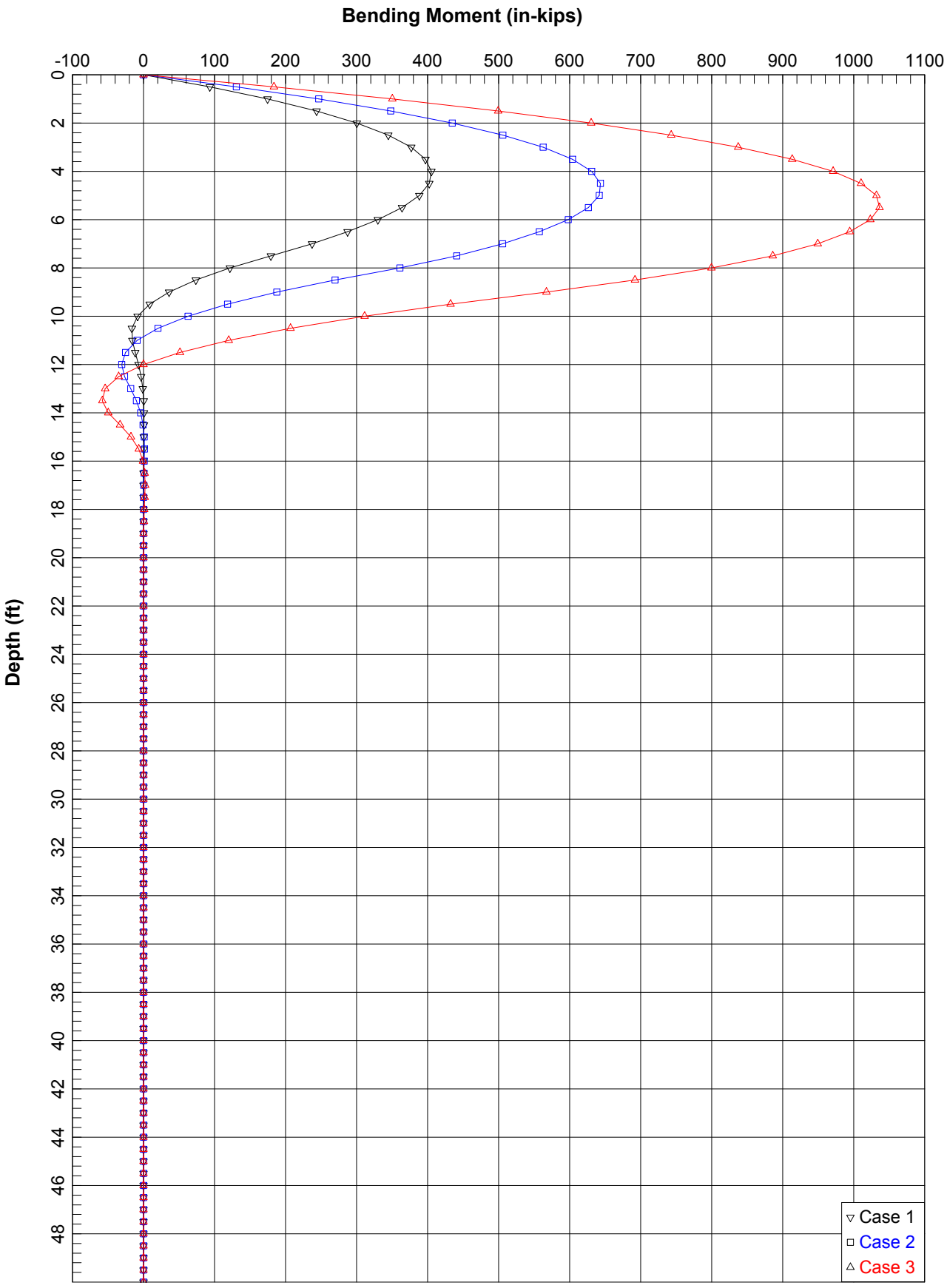
Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	131000.	0.25000000	361220.	13972.	-0.00459231
2	4	y = 0.5000	M = 0.000	131000.	0.50000000	578428.	19052.	-0.00820624
3	4	y = 1.0000	M = 0.000	131000.	1.00000000	933906.	26088.	-0.01470409

The analysis ended normally.


Shear Force (kips)
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
1100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

Pile Plus for Windows, Version 2012-06.031

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

This copy of LPile is licensed to:

gdc
gdc

Serial Number of Security Device: 161633771
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: C:\Users\ethant\Desktop\Updated_ET 9-14-14\Abut 5\
Name of input data file: Abut 5L_transv_Max P.lp6d
Name of output report file: Abut 5L_transv_Max P.lp6o
Name of plot output file: Abut 5L_transv_Max P.lp6p
Name of runtime messeage file: Abut 5L_transv_Max P.lp6r

Date and Time of Analysis

Date: September 13, 2014 Time: 10:28:46

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: Mario DiNicola

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 1 -

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -2.00 ft

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over
the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.00000000 ft
Top Width	=	16.00000000 in
Bottom Width	=	16.00000000 in
Top Area	=	201.06192983 in
Bottom Area	=	201.06192983 in
Moment of Inertia at Top	=	1608.49543864 in
Moment of Inertia at Bottom	=	1608.49543864 in
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer	=	-2.00000 ft
Distance from top of pile to bottom of layer	=	0.10000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	4000.00000 psi
Undrained cohesion at bottom of layer	=	4000.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	0.10000 ft
Distance from top of pile to bottom of layer	=	7.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	1500.00000 psi
Undrained cohesion at bottom of layer	=	1500.00000 psi
Epsilon-50 at top of layer	=	0.00700
Epsilon-50 at bottom of layer	=	0.00700

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.00000 ft
Distance from top of pile to bottom of layer	=	12.00000 ft
Effective unit weight at top of layer	=	120.00000 pcf
Effective unit weight at bottom of layer	=	120.00000 pcf
Undrained cohesion at top of layer	=	3500.00000 psi
Undrained cohesion at bottom of layer	=	3500.00000 psi

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth Rock Mass Rock Emass ft	Effective Unit Wt. krm pcf	Undrained Cohesion psi	Angle of Friction Test Type	Angle of Friction Test deg.	Uniaxial qu Subgrade Property	Uniaxial qu psi Mod. pci	RQD % or GSI
1	Stiff Clay w/o Free Water				-2.000	120.000	4000.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
					0.10000	120.000	4000.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
2	Stiff Clay w/o Free Water				0.10000	120.000	1500.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
					7.000	120.000	1500.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
3	Stiff Clay w/o Free Water				7.000	120.000	3500.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
					12.000	120.000	3500.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
4	Stiff Clay w/o Free Water				12.000	125.000	4000.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
					17.000	125.000	4000.000	--		--		--
		0.00700	--	--	--	--	--	--		--		
5	Stiff Clay w/o Free Water				17.000	125.000	4500.000	--		--		--
		0.00500	--	--	--	--	--	--		--		
					80.000	125.000	4500.000	--		--		--
		0.00500	--	--	--	--	--	--		--		

---

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.8000	1.0000
2	50.000	0.8000	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M =	0.0000 in-lbs	131000.	False
2	4	y = 0.50000 in	M =	0.0000 in-lbs	131000.	False
3	4	y = 1.00000 in	M =	0.0000 in-lbs	131000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	16898.	-0.004866	651.5405	5.799E+09	-658.4123	7900.9477	0.000
6.000	0.2208	93362.	13921.	-0.004818	1115.8862	5.799E+09	-333.9334	9074.1124	0.000
12.000	0.1922	174627.	11910.	-0.004679	1520.0637	5.799E+09	-336.3515	10501.	0.000
18.000	0.1647	243641.	9890.5694	-0.004463	1863.3113	5.799E+09	-336.8825	12276.	0.000
24.000	0.1386	300329.	7873.6337	-0.004181	2145.2547	5.799E+09	-335.4294	14517.	0.000
30.000	0.1145	344697.	5871.6863	-0.003848	2365.9250	5.799E+09	-331.8864	17394.	0.000
36.000	0.0925	376838.	3897.6232	-0.003474	2525.7769	5.799E+09	-326.1347	21163.	0.000
42.000	0.0728	396930.	1965.1073	-0.003074	2625.7103	5.799E+09	-318.0373	26215.	0.000
48.000	0.0556	405251.	80.7069	-0.002659	2667.0938	5.799E+09	-307.4295	33188.	0.000
54.000	0.0409	402175.	-1715.8886	-0.002241	2651.7930	5.799E+09	-294.1023	43162.	0.000
60.000	0.0287	388183.	-3431.5096	-0.001832	2582.2066	5.799E+09	-277.7713	58101.	0.000
66.000	0.0189	363877.	-5038.8533	-0.001443	2461.3152	5.799E+09	-258.0099	81922.	0.000
72.000	0.0114	329986.	-6515.1376	-0.001084	2292.7555	5.799E+09	-234.0849	123556.	0.000
78.000	0.005887	287399.	-7830.7491	-0.000765	2080.9482	5.799E+09	-204.4523	208388.	0.000
84.000	0.002190	237219.	-9081.0994	-0.000493	1831.3713	5.799E+09	-212.3311	581660.	0.000
90.000	-3.341E-05	179202.	-9659.8495	-0.000278	1542.8171	5.799E+09	19.4144	3487090.	0.000
96.000	-0.001145	121738.	-8814.4433	-0.000122	1257.0143	5.799E+09	262.3877	1375533.	0.000
102.000	-0.001500	73621.	-7158.4468	-2.113E-05	1017.6993	5.799E+09	289.6111	1158565.	0.000
108.000	-0.001398	35870.	-5410.8852	3.551E-05	829.9411	5.799E+09	292.9094	1257028.	0.000
114.000	-0.001074	8634.1260	-3686.6743	5.854E-05	694.4832	5.799E+09	281.8276	1574935.	0.000
120.000	-0.000696	-8462.5460	-2062.6451	5.863E-05	693.6298	5.799E+09	259.5155	2238367.	0.000
126.000	-0.000370	-16210.	-602.7898	4.586E-05	732.1614	5.799E+09	227.1029	3681346.	0.000
132.000	-0.000145	-15768.	387.6253	2.932E-05	729.9647	5.799E+09	103.0354	4255299.	0.000
138.000	-1.831E-05	-11604.	736.7035	1.516E-05	709.2559	5.799E+09	13.3239	4365043.	0.000
144.000	3.661E-05	-6951.5062	697.2649	5.557E-06	686.1145	5.799E+09	-26.4701	4338482.	0.000
150.000	4.837E-05	-3245.9208	503.2509	2.814E-07	667.6844	5.799E+09	-38.2012	4738425.	0.000
156.000	3.998E-05	-912.9378	291.4278	-1.870E-06	656.0811	5.799E+09	-32.4065	4862847.	0.000
162.000	2.593E-05	254.1530	129.5497	-2.211E-06	652.8046	5.799E+09	-21.5528	4987274.	0.000
168.000	1.345E-05	645.1349	30.5097	-1.746E-06	654.7492	5.799E+09	-11.4605	5111705.	0.000
174.000	4.980E-06	623.0143	-16.9096	-1.090E-06	654.6392	5.799E+09	-4.3460	5236139.	0.000
180.000	3.757E-07	443.9326	-30.9546	-5.377E-07	653.7485	5.799E+09	-0.3357	5360577.	0.000
186.000	-1.472E-06	252.4046	-27.9237	-1.774E-07	652.7959	5.799E+09	1.3460	5485018.	0.000
192.000	-1.753E-06	109.1271	-19.0498	9.610E-09	652.0833	5.799E+09	1.6120	5515936.	0.000
198.000	-1.357E-06	23.7924	-10.4711	7.838E-08	651.6589	5.799E+09	1.2476	5515936.	0.000
204.000	-8.129E-07	-16.6493	-4.2527	8.207E-08	651.6234	5.799E+09	0.8252	6090948.	0.000
210.000	-3.722E-07	-27.3687	-0.5209	5.930E-08	651.6767	5.799E+09	0.4187	6750000.	0.000
216.000	-1.013E-07	-22.9933	1.0771	3.324E-08	651.6549	5.799E+09	0.1140	6750000.	0.000
222.000	2.677E-08	-14.4956	1.3287	1.385E-08	651.6126	5.799E+09	-0.0301	6750000.	0.000
228.000	6.487E-08	-7.0704	1.0194	2.692E-09	651.5757	5.799E+09	-0.0730	6750000.	0.000
234.000	5.907E-08	-2.2666	0.6011	-2.139E-09	651.5518	5.799E+09	-0.0665	6750000.	0.000

240.000	3.920E-08	0.1466	0.2695	-3.236E-09	651.5413	5.799E+09	-0.0441	6750000.	0.000
246.000	2.024E-08	0.9720	0.0688	-2.657E-09	651.5454	5.799E+09	-0.0228	6750000.	0.000
252.000	7.317E-09	0.9769	-0.0242	-1.649E-09	651.5454	5.799E+09	-0.008232	6750000.	0.000
258.000	4.576E-10	0.6846	-0.0504	-7.891E-10	651.5440	5.799E+09	-0.000515	6750000.	0.000
264.000	-2.152E-09	0.3732	-0.0447	-2.418E-10	651.5424	5.799E+09	0.002421	6750000.	0.000
270.000	-2.445E-09	0.1487	-0.0292	2.815E-11	651.5413	5.799E+09	0.002750	6750000.	0.000
276.000	-1.814E-09	0.0230	-0.0148	1.170E-10	651.5407	5.799E+09	0.002041	6750000.	0.000
282.000	-1.041E-09	-0.0292	-0.005171	1.138E-10	651.5407	5.799E+09	0.001171	6750000.	0.000
288.000	-4.490E-10	-0.0392	-0.000142	7.837E-11	651.5407	5.799E+09	0.000505	6750000.	0.000
294.000	-1.006E-10	-0.0310	0.001713	4.202E-11	651.5407	5.799E+09	0.000113	6750000.	0.000
300.000	5.527E-11	-0.0187	0.001865	1.628E-11	651.5406	5.799E+09	-6.218E-05	6750000.	0.000
306.000	9.478E-11	-0.0008666	0.001359	2.102E-12	651.5406	5.799E+09	-0.000107	6750000.	0.000
312.000	8.049E-11	-0.002430	0.000767	-3.639E-12	651.5406	5.799E+09	-9.055E-05	6750000.	0.000
318.000	5.111E-11	0.000549	0.000323	-4.612E-12	651.5406	5.799E+09	-5.750E-05	6750000.	0.000
324.000	2.514E-11	0.001457	6.593E-05	-3.575E-12	651.5406	5.799E+09	-2.828E-05	6750000.	0.000
330.000	8.216E-12	0.001346	-4.665E-05	-2.125E-12	651.5406	5.799E+09	-9.243E-06	6750000.	0.000
336.000	0.000	0.000900	-7.317E-05	0.000	651.5406	5.799E+09	4.008E-07	6750000.	0.000
342.000	-3.338E-12	0.000469	-6.071E-05	0.000	651.5406	5.799E+09	3.755E-06	6750000.	0.000
348.000	-3.407E-12	0.000172	-3.794E-05	0.000	651.5405	5.799E+09	3.833E-06	6750000.	0.000
354.000	-2.407E-12	1.361E-05	-1.832E-05	0.000	651.5405	5.799E+09	2.708E-06	6750000.	0.000
360.000	-1.322E-12	-4.770E-05	-5.733E-06	0.000	651.5405	5.799E+09	1.487E-06	6750000.	0.000
366.000	0.000	-5.544E-05	5.274E-07	0.000	651.5405	5.799E+09	5.997E-07	6750000.	0.000
372.000	0.000	-4.154E-05	2.624E-06	0.000	651.5405	5.799E+09	9.937E-08	6750000.	0.000
378.000	0.000	-2.403E-05	2.590E-06	0.000	651.5405	5.799E+09	-1.108E-07	6750000.	0.000
384.000	0.000	-1.048E-05	1.798E-06	0.000	651.5405	5.799E+09	-1.532E-07	6750000.	0.000
390.000	0.000	-2.449E-06	9.715E-07	0.000	651.5405	5.799E+09	-1.224E-07	6750000.	0.000
396.000	0.000	1.184E-06	3.812E-07	0.000	651.5405	5.799E+09	-7.441E-08	6750000.	0.000
402.000	0.000	2.136E-06	5.377E-08	0.000	651.5405	5.799E+09	-3.474E-08	6750000.	0.000
408.000	0.000	1.837E-06	-8.041E-08	0.000	651.5405	5.799E+09	-9.987E-09	6750000.	0.000
414.000	0.000	1.176E-06	-1.046E-07	0.000	651.5405	5.799E+09	1.938E-09	6750000.	0.000
420.000	0.000	5.837E-07	-8.178E-08	0.000	651.5405	5.799E+09	5.652E-09	6750000.	0.000
426.000	0.000	1.947E-07	-4.896E-08	0.000	651.5405	5.799E+09	5.289E-09	6750000.	0.000
432.000	0.000	-4.097E-09	-2.240E-08	0.000	651.5405	5.799E+09	3.566E-09	6750000.	0.000
438.000	0.000	-7.449E-08	-6.083E-09	0.000	651.5405	5.799E+09	1.872E-09	6750000.	0.000
444.000	0.000	-7.743E-08	1.626E-09	0.000	651.5405	5.799E+09	6.980E-10	6750000.	0.000
450.000	0.000	-5.519E-08	3.915E-09	0.000	651.5405	5.799E+09	6.488E-11	6750000.	0.000
456.000	0.000	-3.056E-08	3.561E-09	0.000	651.5405	5.799E+09	-1.828E-10	6750000.	0.000
462.000	0.000	-1.249E-08	2.362E-09	0.000	651.5405	5.799E+09	-2.170E-10	6750000.	0.000
468.000	0.000	-2.216E-09	1.219E-09	0.000	651.5405	5.799E+09	-1.640E-10	6750000.	0.000
474.000	0.000	2.152E-09	4.400E-10	0.000	651.5405	5.799E+09	-9.555E-11	6750000.	0.000
480.000	0.000	3.078E-09	2.695E-11	0.000	651.5405	5.799E+09	-4.212E-11	6750000.	0.000
486.000	0.000	2.485E-09	-1.300E-10	0.000	651.5405	5.799E+09	-1.019E-11	6750000.	0.000
492.000	0.000	1.524E-09	-1.474E-10	0.000	651.5405	5.799E+09	4.383E-12	6750000.	0.000
498.000	0.000	7.185E-10	-1.093E-10	0.000	651.5405	5.799E+09	8.315E-12	6750000.	0.000
504.000	0.000	2.121E-10	-6.269E-11	0.000	651.5405	5.799E+09	7.229E-12	6750000.	0.000
510.000	0.000	-3.422E-11	-2.702E-11	0.000	651.5405	5.799E+09	4.662E-12	6750000.	0.000
516.000	0.000	-1.127E-10	-6.030E-12	0.000	651.5405	5.799E+09	2.333E-12	6750000.	0.000
522.000	0.000	-1.070E-10	3.347E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
528.000	0.000	-7.278E-11	5.718E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
534.000	0.000	-3.853E-11	4.852E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
540.000	0.000	-1.459E-11	3.079E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
546.000	0.000	-1.576E-12	1.513E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
552.000	0.000	3.587E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
558.000	0.000	4.365E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
564.000	0.000	3.331E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
570.000	0.000	1.960E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
576.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
582.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
588.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
594.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3375000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0048660 radians
Maximum bending moment            =       405251. inch-lbs
Maximum shear force               =        16898. lbs
Depth of maximum bending moment   =     48.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             12
Number of zero deflection points  =             14
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	22973.	-0.008667	651.5405	5.799E+09	-782.9886	4697.9316	0.000
6.000	0.4480	130558.	19429.	-0.008599	1300.8837	5.799E+09	-398.5438	5337.6418	0.000
12.000	0.3968	246663.	17024.	-0.008404	1878.3397	5.799E+09	-403.1848	6096.3883	0.000
18.000	0.3472	348052.	14596.	-0.008096	2382.6080	5.799E+09	-405.9367	7016.0064	0.000
24.000	0.2997	434544.	12158.	-0.007691	2812.7857	5.799E+09	-406.7038	8143.4552	0.000
30.000	0.2549	506042.	9721.9939	-0.007205	3168.3857	5.799E+09	-405.3835	9543.8672	0.000
36.000	0.2132	562534.	7300.2542	-0.006652	3449.3551	5.799E+09	-401.8630	11310.	0.000
42.000	0.1750	604102.	4906.6180	-0.006048	3656.0957	5.799E+09	-396.0157	13575.	0.000
48.000	0.1406	630921.	2555.4860	-0.005409	3789.4864	5.799E+09	-387.6950	16543.	0.000
54.000	0.1101	643271.	262.2268	-0.004750	3850.9085	5.799E+09	-376.7248	20527.	0.000
60.000	0.0836	641535.	-1956.5999	-0.004085	3842.2763	5.799E+09	-362.8841	26040.	0.000
66.000	0.0611	626214.	-4082.8877	-0.003430	3766.0749	5.799E+09	-345.8785	33969.	0.000
72.000	0.0425	597932.	-6096.3780	-0.002796	3625.4112	5.799E+09	-325.2849	45967.	0.000
78.000	0.0275	557453.	-7973.5247	-0.002199	3424.0867	5.799E+09	-300.4306	65460.	0.000
84.000	0.0161	505706.	-9920.8530	-0.001648	3166.7155	5.799E+09	-348.6788	130131.	0.000
90.000	0.007756	440995.	-12206.	-0.001159	2844.8680	5.799E+09	-412.9604	319481.	0.000
96.000	0.002172	361058.	-14376.	-0.000744	2447.2964	5.799E+09	-310.4493	857433.	0.000
102.000	-0.001169	269652.	-14491.	-0.000417	1992.6786	5.799E+09	272.0986	1396334.	0.000
108.000	-0.002837	187822.	-12623.	-0.000181	1585.6891	5.799E+09	350.6229	741612.	0.000
114.000	-0.003338	118461.	-10443.	-2.229E-05	1240.7187	5.799E+09	375.8467	675548.	0.000
120.000	-0.003104	62535.	-8177.6167	7.135E-05	962.5641	5.799E+09	379.4408	733421.	0.000
126.000	-0.002482	20218.	-5933.6218	0.000114	752.0952	5.799E+09	368.5575	890991.	0.000
132.000	-0.001734	-8847.9361	-3790.3932	0.000120	695.5466	5.799E+09	345.8520	1196632.	0.000
138.000	-0.001041	-25456.	-1816.1015	0.000102	778.1469	5.799E+09	312.2452	1799180.	0.000
144.000	-0.000506	-30802.	-102.0861	7.320E-05	804.7370	5.799E+09	259.0933	3069253.	0.000
150.000	-0.000163	-26796.	1061.2022	4.340E-05	784.8120	5.799E+09	128.6695	4738425.	0.000
156.000	1.428E-05	-18136.	1412.4843	2.015E-05	741.7405	5.799E+09	-11.5755	4862847.	0.000
162.000	7.890E-05	-9877.6869	1181.0149	5.659E-06	700.6681	5.799E+09	-65.5810	4987274.	0.000
168.000	8.219E-05	-3972.4867	774.2079	-1.507E-06	671.2981	5.799E+09	-70.0213	5111705.	0.000
174.000	6.082E-05	-584.8236	404.9178	-3.864E-06	654.4492	5.799E+09	-53.0754	5236139.	0.000
180.000	3.582E-05	892.6019	149.6943	-3.705E-06	655.9800	5.799E+09	-31.9991	5360577.	0.000
186.000	1.636E-05	1217.3327	8.8415	-2.614E-06	657.5951	5.799E+09	-14.9518	5485018.	0.000
192.000	4.453E-06	1002.8088	-48.2945	-1.465E-06	656.5281	5.799E+09	-4.0935	5515936.	0.000
198.000	-1.224E-06	640.1017	-57.1987	-6.150E-07	654.7242	5.799E+09	1.1255	5515936.	0.000
204.000	-2.927E-06	317.3907	-44.9075	-1.196E-07	653.1191	5.799E+09	2.9716	6090948.	0.000
210.000	-2.660E-06	101.4002	-27.0157	9.704E-08	652.0449	5.799E+09	2.9923	6750000.	0.000
216.000	-1.763E-06	-6.9505	-12.0893	1.459E-07	651.5751	5.799E+09	1.9832	6750000.	0.000
222.000	-9.090E-07	-43.9009	-3.9719	1.196E-07	651.7589	5.799E+09	1.0226	6750000.	0.000
228.000	-3.277E-07	-44.0012	1.1020	7.411E-08	651.7594	5.799E+09	0.3687	6750000.	0.000
234.000	-1.962E-08	-30.7929	2.2743	3.542E-08	651.6937	5.799E+09	0.0221	6750000.	0.000
240.000	9.730E-08	-16.7647	2.0122	1.081E-08	651.6239	5.799E+09	-0.1095	6750000.	0.000
246.000	1.101E-07	-6.6637	1.3120	-1.307E-09	651.5737	5.799E+09	-0.1239	6750000.	0.000
252.000	8.162E-08	-1.0181	0.6648	-5.281E-09	651.5456	5.799E+09	-0.0918	6750000.	0.000
258.000	4.677E-08	1.3226	0.2311	-5.124E-09	651.5471	5.799E+09	-0.0526	6750000.	0.000
264.000	2.014E-08	1.7680	0.005676	-3.525E-09	651.5493	5.799E+09	-0.0227	6750000.	0.000
270.000	4.479E-09	1.3963	-0.0774	-1.888E-09	651.5475	5.799E+09	-0.005039	6750000.	0.000
276.000	-2.512E-09	0.8421	-0.0840	-7.295E-10	651.5447	5.799E+09	0.002826	6750000.	0.000
282.000	-4.275E-09	0.3889	-0.0611	-9.262E-11	651.5425	5.799E+09	0.004809	6750000.	0.000
288.000	-3.623E-09	0.1085	-0.0345	1.647E-10	651.5411	5.799E+09	0.004076	6750000.	0.000
294.000	-2.298E-09	-0.0251	-0.0145	2.079E-10	651.5407	5.799E+09	0.002585	6750000.	0.000
300.000	-1.129E-09	-0.0658	-0.002933	1.609E-10	651.5409	5.799E+09	0.001270	6750000.	0.000
306.000	-3.676E-10	-0.0606	0.002117	9.550E-11	651.5408	5.799E+09	0.000414	6750000.	0.000
312.000	1.728E-11	-0.0405	0.003300	4.320E-11	651.5407	5.799E+09	-1.944E-05	6750000.	0.000
318.000	1.508E-10	-0.0211	0.002733	1.135E-11	651.5407	5.799E+09	-0.000170	6750000.	0.000
324.000	1.535E-10	-0.007722	0.001706	-3.542E-12	651.5406	5.799E+09	-0.000173	6750000.	0.000
330.000	1.085E-10	-0.000590	0.000822	-7.842E-12	651.5406	5.799E+09	-0.000122	6750000.	0.000
336.000	5.938E-11	0.002157	0.000256	-7.031E-12	651.5406	5.799E+09	-6.681E-05	6750000.	0.000
342.000	2.390E-11	0.002498	-2.465E-05	-4.622E-12	651.5406	5.799E+09	-2.688E-05	6750000.	0.000
348.000	3.915E-12	0.001869	-0.000119	-2.363E-12	651.5406	5.799E+09	-4.404E-06	6750000.	0.000
354.000	-4.463E-12	0.001080	-0.000117	0.000	651.5406	5.799E+09	5.021E-06	6750000.	0.000
360.000	-6.139E-12	0.000470	-8.088E-05	0.000	651.5406	5.799E+09	6.906E-06	6750000.	0.000
366.000	-4.895E-12	0.000109	-4.364E-05	0.000	651.5405	5.799E+09	5.507E-06	6750000.	0.000
372.000	-2.973E-12	-5.384E-05	-1.709E-05	0.000	651.5405	5.799E+09	3.345E-06	6750000.	0.000
378.000	-1.386E-12	-9.636E-05	-2.375E-06	0.000	651.5405	5.799E+09	1.559E-06	6750000.	0.000
384.000	0.000	-8.268E-05	3.641E-06	0.000	651.5405	5.799E+09	4.463E-07	6750000.	0.000
390.000	0.000	-5.286E-05	4.713E-06	0.000	651.5405	5.799E+09	-8.902E-08	6750000.	0.000
396.000	0.000	-2.620E-05	3.680E-06	0.000	651.5405	5.799E+09	-2.551E-07	6750000.	0.000
402.000	0.000	-8.712E-06	2.201E-06	0.000	651.5405	5.799E+09	-2.382E-07	6750000.	0.000
408.000	0.000	2.131E-07	1.005E-06	0.000	651.5405	5.799E+09	-1.604E-07	6750000.	0.000
414.000	0.000	3.365E-06	2.717E-07	0.000	651.5405	5.799E+09	-8.407E-08	6750000.	0.000
420.000	0.000	3.488E-06	-7.435E-08	0.000	651.5405	5.799E+09	-3.127E-08	6750000.	0.000
426.000	0.000	2.482E-06	-1.767E-07	0.000	651.5405	5.799E+09	-2.831E-09	6750000.	0.000
432.000	0.000	1.373E-06	-1.603E-07	0.000	651.5405	5.799E+09	8.268E-09	6750000.	0.000
438.000	0.000	5.598E-07	-1.062E-07	0.000	651.5405	5.799E+09	9.775E-09	6750000.	0.000
444.000	0.000	9.832E-08	-5.473E-08	0.000	651.5405	5.799E+09	7.380E-09	6750000.	0.000
450.000	0.000	-9.756E-08	-1.970E-08	0.000	651.5405	5.799E+09	4.294E-09	6750000.	0.000
456.000	0.000	-1.388E-07	-1.154E-09	0.000	651.5405	5.799E+09	1.890E-09	6750000.	0.000
462.000	0.000	-1.119E-07	5.878E-09	0.000	651.5405	5.799E+09	4.544E-10	6750000.	0.000
468.000	0.000	-6.849E-08	6.642E-09	0.000	651.5405	5.799E+09	-1.995E-10	6750000.	0.000
474.000	0.000	-3.224E-08	4.918E-09	0.000	651.5405	5.799E+09	-3.751E-10	6750000.	0.000
480.000	0.000	-9.480E-09	2.817E-09	0.000	651.5405	5.799E+09	-3.254E-10	6750000.	0.000
486.000	0.000	1.577E-09	1.212E-09	0.000	651.5405	5.799E+09	-2.096E-10	6750000.	0.000
492.000	0.000	5.086E-09	2.686E-10	0.000	651.5405	5.799E+09	-1.048E-10	6750000.	0.000
498.000	0.000	4.820E-09	-1.521E-10	0.000	651.5405	5.799E+09	-3.546E-11	6750000.	0.000
504.000	0.000	3.273E-09	-2.579E-10	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
510.000	0.000	1.730E-09	-2.184E-10	0.000	651.5405	5.799E+09	1.298E-11	6750000.	0.000
516.000	0.000	6.538E-10	-1.384E-10	0.000	651.5405	5.799E+09	1.368E-11	6750000.	0.000

522.000	0.000	6.901E-11	-6.794E-11	0.000	651.5405	5.799E+09	9.815E-12	6750000.	0.000
528.000	0.000	-1.625E-10	-2.209E-11	0.000	651.5405	5.799E+09	5.468E-12	6750000.	0.000
534.000	0.000	-1.970E-10	1.078E-12	0.000	651.5405	5.799E+09	2.256E-12	6750000.	0.000
540.000	0.000	-1.501E-10	9.103E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
546.000	0.000	-8.804E-11	9.255E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
552.000	0.000	-3.917E-11	6.523E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
558.000	0.000	-9.770E-12	3.574E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
564.000	0.000	3.752E-12	1.433E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
570.000	0.000	7.460E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
576.000	0.000	6.484E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
582.000	0.000	4.079E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
588.000	0.000	1.874E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
594.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3375000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0086667 radians
Maximum bending moment	=	643271. inch-lbs
Maximum shear force	=	22973. lbs
Depth of maximum bending moment	=	54.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	20
Number of zero deflection points	=	13

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	31398.	-0.0155	651.5405	5.799E+09	-931.1356	2793.4069	0.000
6.000	0.9069	183819.	27178.	-0.0154	1565.7809	5.799E+09	-475.3879	3145.0792	0.000
12.000	0.8150	350374.	24304.	-0.0151	2394.1598	5.799E+09	-482.6627	3553.4496	0.000
18.000	0.7252	499269.	21392.	-0.0147	3134.7010	5.799E+09	-488.0258	4037.6647	0.000
24.000	0.6385	630189.	18454.	-0.0141	3785.8419	5.799E+09	-491.3809	4617.2034	0.000
30.000	0.5558	742906.	15502.	-0.0134	4346.4524	5.799E+09	-492.6255	5318.1159	0.000
36.000	0.4776	837285.	12549.	-0.0126	4815.8535	5.799E+09	-491.6485	6175.8715	0.000
42.000	0.4047	913283.	9608.8151	-0.0117	5193.8385	5.799E+09	-488.3271	7239.7636	0.000
48.000	0.3374	970959.	6696.2669	-0.0107	5480.6946	5.799E+09	-482.5223	8579.9404	0.000
54.000	0.2762	1010474.	3826.4801	-0.009685	5677.2279	5.799E+09	-474.0732	10299.	0.000
60.000	0.2212	1032101.	1015.8997	-0.008628	5784.7914	5.799E+09	-462.7869	12552.	0.000
66.000	0.1726	1036228.	-1717.7312	-0.007558	5805.3183	5.799E+09	-448.4234	15584.	0.000
72.000	0.1305	1023370.	-4355.0124	-0.006492	5741.3637	5.799E+09	-430.6703	19798.	0.000
78.000	0.0947	994174.	-6874.3130	-0.005449	5596.1584	5.799E+09	-409.0965	25909.	0.000
84.000	0.0651	949443.	-9585.2261	-0.004443	5373.6832	5.799E+09	-494.5412	45556.	0.000
90.000	0.0414	886136.	-12951.	-0.003493	5058.8203	5.799E+09	-627.3987	90877.	0.000
96.000	0.0232	799522.	-16513.	-0.002621	4628.0376	5.799E+09	-559.9760	144738.	0.000
102.000	0.009967	692099.	-19595.	-0.001850	4093.7576	5.799E+09	-467.2647	281274.	0.000
108.000	0.001018	567291.	-21816.	-0.001198	3473.0145	5.799E+09	-273.2096	1609608.	0.000
114.000	-0.004409	432186.	-21427.	-0.000681	2801.0588	5.799E+09	402.9830	548440.	0.000
120.000	-0.007153	311237.	-18815.	-0.000296	2199.5087	5.799E+09	467.7378	392364.	0.000
126.000	-0.007964	206874.	-15931.	-2.825E-05	1680.4478	5.799E+09	493.6039	371864.	0.000
132.000	-0.007492	120112.	-12953.	0.000141	1248.9296	5.799E+09	499.0017	399651.	0.000
138.000	-0.006273	51217.	-9987.0106	0.000230	906.2713	5.799E+09	489.6582	468336.	0.000
144.000	-0.004737	-92.8130	-7157.0391	0.000256	652.0022	5.799E+09	453.6656	574648.	0.000
150.000	-0.003201	-35070.	-4448.3571	0.000238	825.9657	5.799E+09	449.2284	842039.	0.000
156.000	-0.001883	-53847.	-1889.5006	0.000192	919.3533	5.799E+09	403.7238	1286468.	0.000
162.000	-0.000899	-58046.	354.1524	0.000134	940.2367	5.799E+09	344.1605	2296501.	0.000
168.000	-0.000276	-49808.	2091.4997	7.813E-05	899.2635	5.799E+09	234.9553	5111705.	0.000
174.000	3.838E-05	-33071.	2695.8741	3.525E-05	816.0203	5.799E+09	-33.4971	5236139.	0.000
180.000	0.000147	-17513.	2200.7423	9.082E-06	738.6410	5.799E+09	-131.5468	5360577.	0.000
186.000	0.000147	-6675.9957	1401.9448	-3.432E-06	684.7442	5.799E+09	-134.7190	5485018.	0.000
192.000	0.000106	-683.8569	705.3044	-7.240E-06	654.9418	5.799E+09	-97.4944	5515936.	0.000
198.000	6.049E-05	1799.0390	245.9993	-6.663E-06	660.4882	5.799E+09	-55.6073	5515936.	0.000
204.000	2.609E-05	2278.6094	-0.2890	-4.553E-06	662.8734	5.799E+09	-26.4888	6090948.	0.000
210.000	5.846E-06	1802.7289	-99.4851	-2.442E-06	660.5066	5.799E+09	-6.5765	6750000.	0.000
216.000	-3.210E-06	1088.6270	-108.3820	-9.460E-07	656.9549	5.799E+09	3.6109	6750000.	0.000
222.000	-5.507E-06	503.6317	-78.9647	-1.223E-07	654.0454	5.799E+09	6.1949	6750000.	0.000
228.000	-4.677E-06	141.2430	-44.5960	2.114E-07	652.2430	5.799E+09	5.2613	6750000.	0.000
234.000	-2.970E-06	-31.8529	-18.7883	2.680E-07	651.6990	5.799E+09	3.3413	6750000.	0.000
240.000	-1.461E-06	-84.6377	-3.8335	2.077E-07	651.9615	5.799E+09	1.6437	6750000.	0.000
246.000	-4.775E-07	-78.1818	2.7091	1.235E-07	651.9294	5.799E+09	0.5372	6750000.	0.000
252.000	2.061E-08	-52.3226	4.2512	5.595E-08	651.8008	5.799E+09	-0.0232	6750000.	0.000

258.000	1.939E-07	-27.2554	3.5272	1.478E-08	651.6761	5.799E+09	-0.2181	6750000.	0.000
264.000	1.980E-07	-10.0189	2.2047	-4.503E-09	651.5904	5.799E+09	-0.2227	6750000.	0.000
270.000	1.399E-07	-0.7922	1.0645	-1.010E-08	651.5445	5.799E+09	-0.1573	6750000.	0.000
276.000	7.682E-08	2.7709	0.3332	-9.073E-09	651.5543	5.799E+09	-0.0864	6750000.	0.000
282.000	3.098E-08	3.2208	-0.0306	-5.973E-09	651.5566	5.799E+09	-0.0349	6750000.	0.000
288.000	5.137E-09	2.4134	-0.1525	-3.058E-09	651.5526	5.799E+09	-0.005779	6750000.	0.000
294.000	-5.721E-09	1.3961	-0.1505	-1.087E-09	651.5475	5.799E+09	0.006436	6750000.	0.000
300.000	-7.911E-09	0.6093	-0.1045	-4.987E-11	651.5436	5.799E+09	0.008900	6750000.	0.000
306.000	-6.319E-09	0.1423	-0.0565	3.390E-10	651.5413	5.799E+09	0.007109	6750000.	0.000
312.000	-3.843E-09	-0.0687	-0.0222	3.771E-10	651.5409	5.799E+09	0.004324	6750000.	0.000
318.000	-1.794E-09	-0.1241	-0.003128	2.773E-10	651.5412	5.799E+09	0.002019	6750000.	0.000
324.000	-5.160E-10	-0.1067	0.004670	1.579E-10	651.5411	5.799E+09	0.000581	6750000.	0.000
330.000	9.999E-11	-0.0683	0.006074	6.732E-11	651.5409	5.799E+09	-0.000112	6750000.	0.000
336.000	2.919E-10	-0.0339	0.004752	1.443E-11	651.5407	5.799E+09	-0.000328	6750000.	0.000
342.000	2.731E-10	-0.0113	0.002845	-8.973E-12	651.5406	5.799E+09	-0.000307	6750000.	0.000
348.000	1.842E-10	0.000236	0.001302	-1.470E-11	651.5405	5.799E+09	-0.000207	6750000.	0.000
354.000	9.669E-11	0.004327	0.000354	-1.234E-11	651.5406	5.799E+09	-0.000109	6750000.	0.000
360.000	3.606E-11	0.004499	-9.439E-05	-7.778E-12	651.5406	5.799E+09	-4.057E-05	6750000.	0.000
366.000	3.357E-12	0.003207	-0.000227	-3.791E-12	651.5406	5.799E+09	-3.776E-06	6750000.	0.000
372.000	-9.437E-12	0.001776	-0.000207	-1.214E-12	651.5406	5.799E+09	1.062E-05	6750000.	0.000
378.000	-1.121E-11	0.000726	-0.000137	0.000	651.5406	5.799E+09	1.261E-05	6750000.	0.000
384.000	-8.471E-12	0.000129	-7.082E-05	0.000	651.5405	5.799E+09	9.530E-06	6750000.	0.000
390.000	-4.935E-12	-0.000125	-2.557E-05	0.000	651.5405	5.799E+09	5.552E-06	6750000.	0.000
396.000	-2.176E-12	-0.000179	-1.570E-06	0.000	651.5405	5.799E+09	2.448E-06	6750000.	0.000
402.000	0.000	-0.000144	7.551E-06	0.000	651.5405	5.799E+09	5.924E-07	6750000.	0.000
408.000	0.000	-8.853E-05	8.565E-06	0.000	651.5405	5.799E+09	-2.545E-07	6750000.	0.000
414.000	0.000	-4.175E-05	6.352E-06	0.000	651.5405	5.799E+09	-4.831E-07	6750000.	0.000
420.000	0.000	-1.233E-05	3.643E-06	0.000	651.5405	5.799E+09	-4.200E-07	6750000.	0.000
426.000	0.000	1.985E-06	1.570E-06	0.000	651.5405	5.799E+09	-2.709E-07	6750000.	0.000
432.000	0.000	6.545E-06	3.506E-07	0.000	651.5405	5.799E+09	-1.356E-07	6750000.	0.000
438.000	0.000	6.218E-06	-1.944E-07	0.000	651.5405	5.799E+09	-4.604E-08	6750000.	0.000
444.000	0.000	4.229E-06	-3.322E-07	0.000	651.5405	5.799E+09	9.013E-11	6750000.	0.000
450.000	0.000	2.239E-06	-2.819E-07	0.000	651.5405	5.799E+09	1.669E-08	6750000.	0.000
456.000	0.000	8.480E-07	-1.789E-07	0.000	651.5405	5.799E+09	1.764E-08	6750000.	0.000
462.000	0.000	9.158E-08	-8.795E-08	0.000	651.5405	5.799E+09	1.268E-08	6750000.	0.000
468.000	0.000	-2.086E-07	-2.870E-08	0.000	651.5405	5.799E+09	7.072E-09	6750000.	0.000
474.000	0.000	-2.539E-07	1.289E-09	0.000	651.5405	5.799E+09	2.924E-09	6750000.	0.000
480.000	0.000	-1.939E-07	1.171E-08	0.000	651.5405	5.799E+09	5.488E-10	6750000.	0.000
486.000	0.000	-1.139E-07	1.194E-08	0.000	651.5405	5.799E+09	-4.721E-10	6750000.	0.000
492.000	0.000	-5.075E-08	8.427E-09	0.000	651.5405	5.799E+09	-6.979E-10	6750000.	0.000
498.000	0.000	-1.274E-08	4.625E-09	0.000	651.5405	5.799E+09	-5.692E-10	6750000.	0.000
504.000	0.000	4.791E-09	1.863E-09	0.000	651.5405	5.799E+09	-3.515E-10	6750000.	0.000
510.000	0.000	9.667E-09	3.073E-10	0.000	651.5405	5.799E+09	-1.672E-10	6750000.	0.000
516.000	0.000	8.514E-09	-3.459E-10	0.000	651.5405	5.799E+09	-5.051E-11	6750000.	0.000
522.000	0.000	5.536E-09	-4.772E-10	0.000	651.5405	5.799E+09	6.757E-12	6750000.	0.000
528.000	0.000	2.796E-09	-3.808E-10	0.000	651.5405	5.799E+09	2.536E-11	6750000.	0.000
534.000	0.000	9.676E-10	-2.315E-10	0.000	651.5405	5.799E+09	2.443E-11	6750000.	0.000
540.000	0.000	1.740E-11	-1.080E-10	0.000	651.5405	5.799E+09	1.674E-11	6750000.	0.000
546.000	0.000	-3.301E-10	-3.098E-11	0.000	651.5405	5.799E+09	8.931E-12	6750000.	0.000
552.000	0.000	-3.559E-10	6.099E-12	0.000	651.5405	5.799E+09	3.428E-12	6750000.	0.000
558.000	0.000	-2.579E-10	1.761E-11	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
564.000	0.000	-1.450E-10	1.642E-11	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
570.000	0.000	-6.107E-11	1.097E-11	0.000	651.5405	5.799E+09	-1.010E-12	6750000.	0.000
576.000	0.000	-1.340E-11	5.580E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
582.000	0.000	5.952E-12	1.810E-12	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
588.000	0.000	8.382E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
594.000	0.000	3.797E-12	0.000	0.000	651.5405	5.799E+09	0.000	6750000.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	3375000.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

Pile-head deflection	=	1.0000000 inches
Computed slope at pile head	=	-0.0155138 radians
Maximum bending moment	=	1036228. inch-lbs
Maximum shear force	=	31398. lbs
Depth of maximum bending moment	=	66.00000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	19
Number of zero deflection points	=	13

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

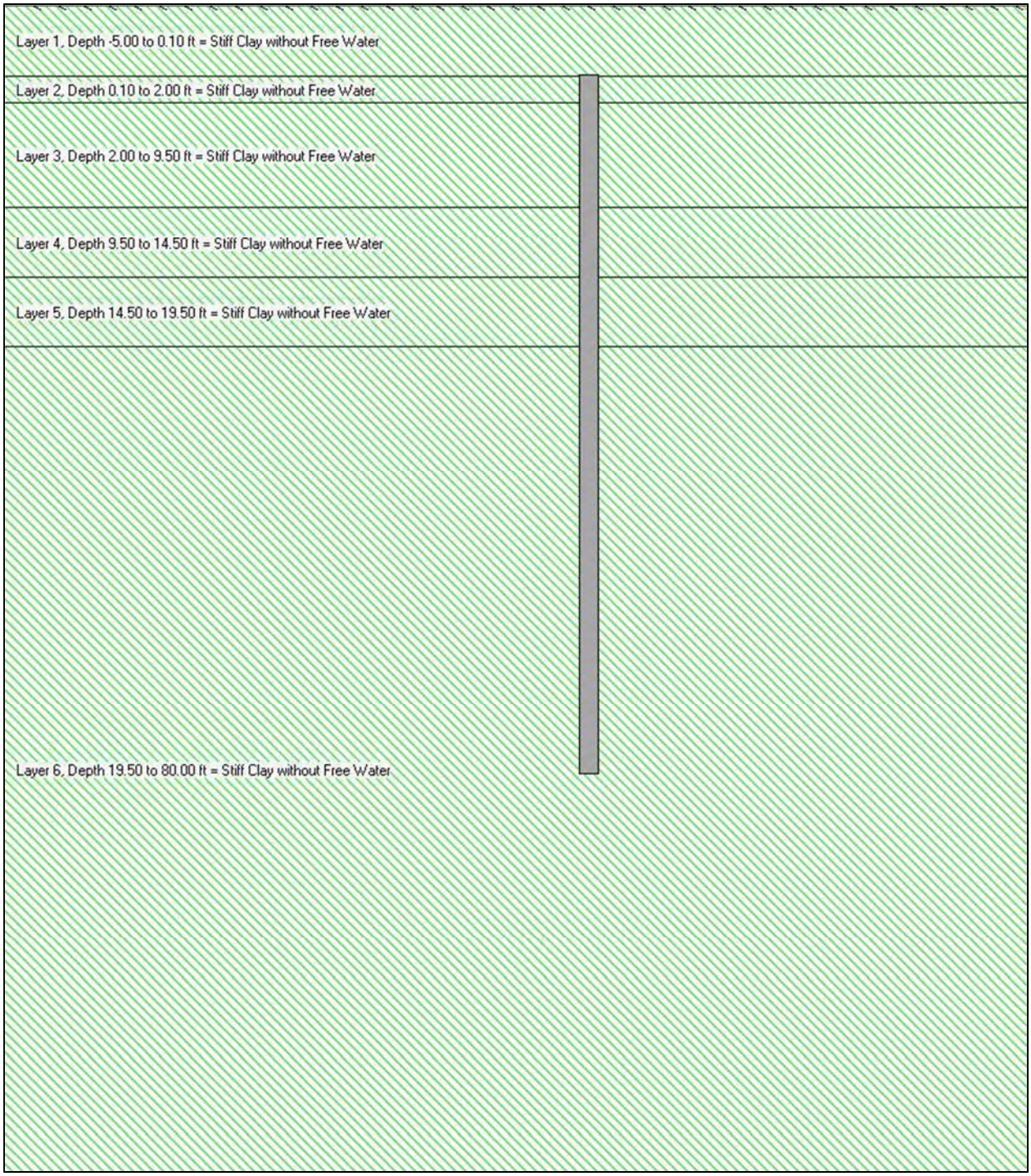
Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	131000.	0.25000000	405251.	16898.	-0.00486600
2	4	y = 0.5000	M = 0.000	131000.	0.50000000	643271.	22973.	-0.00866670
3	4	y = 1.0000	M = 0.000	131000.	1.00000000	1036228.	31398.	-0.01551376

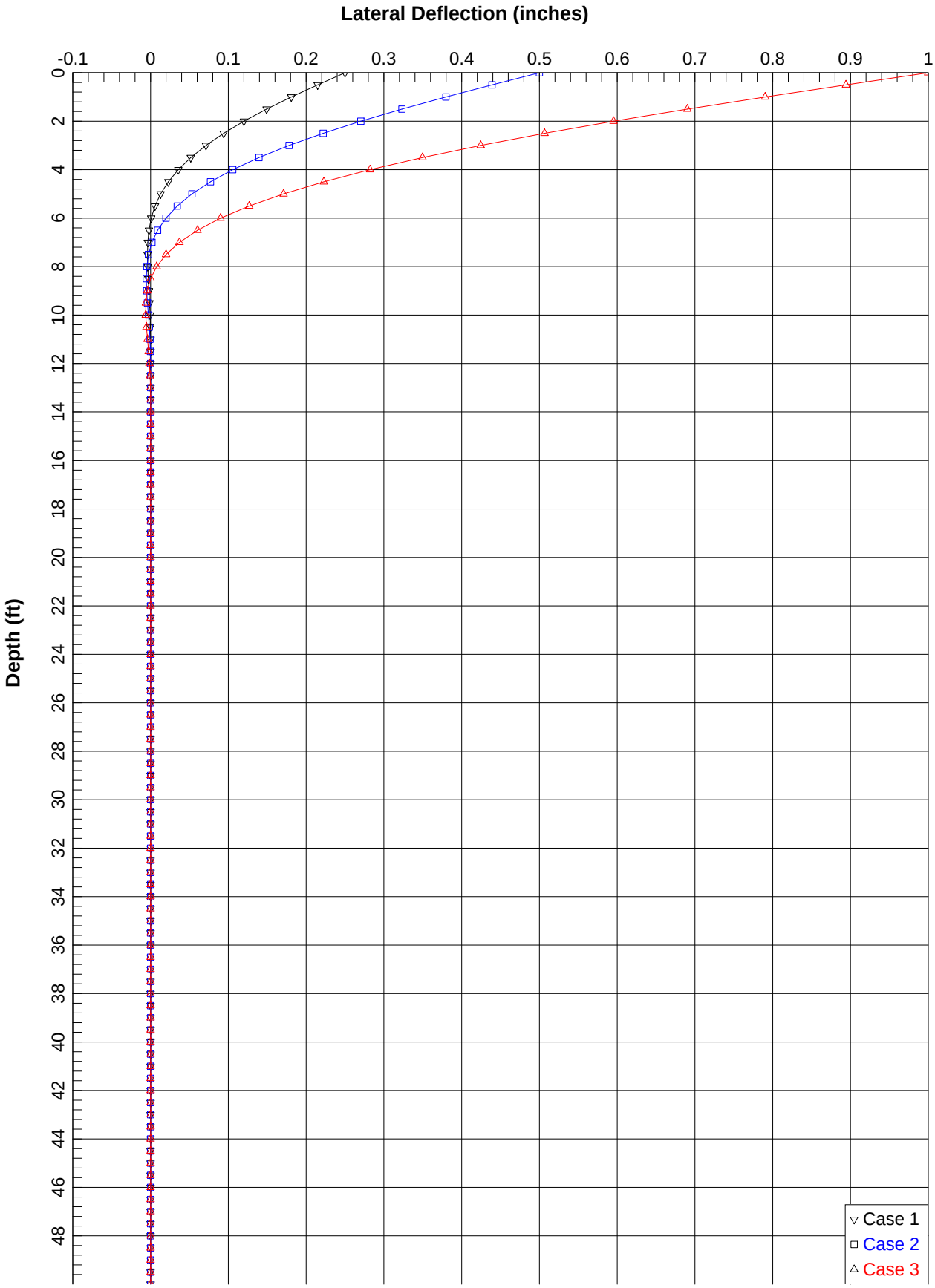
The analysis ended normally.

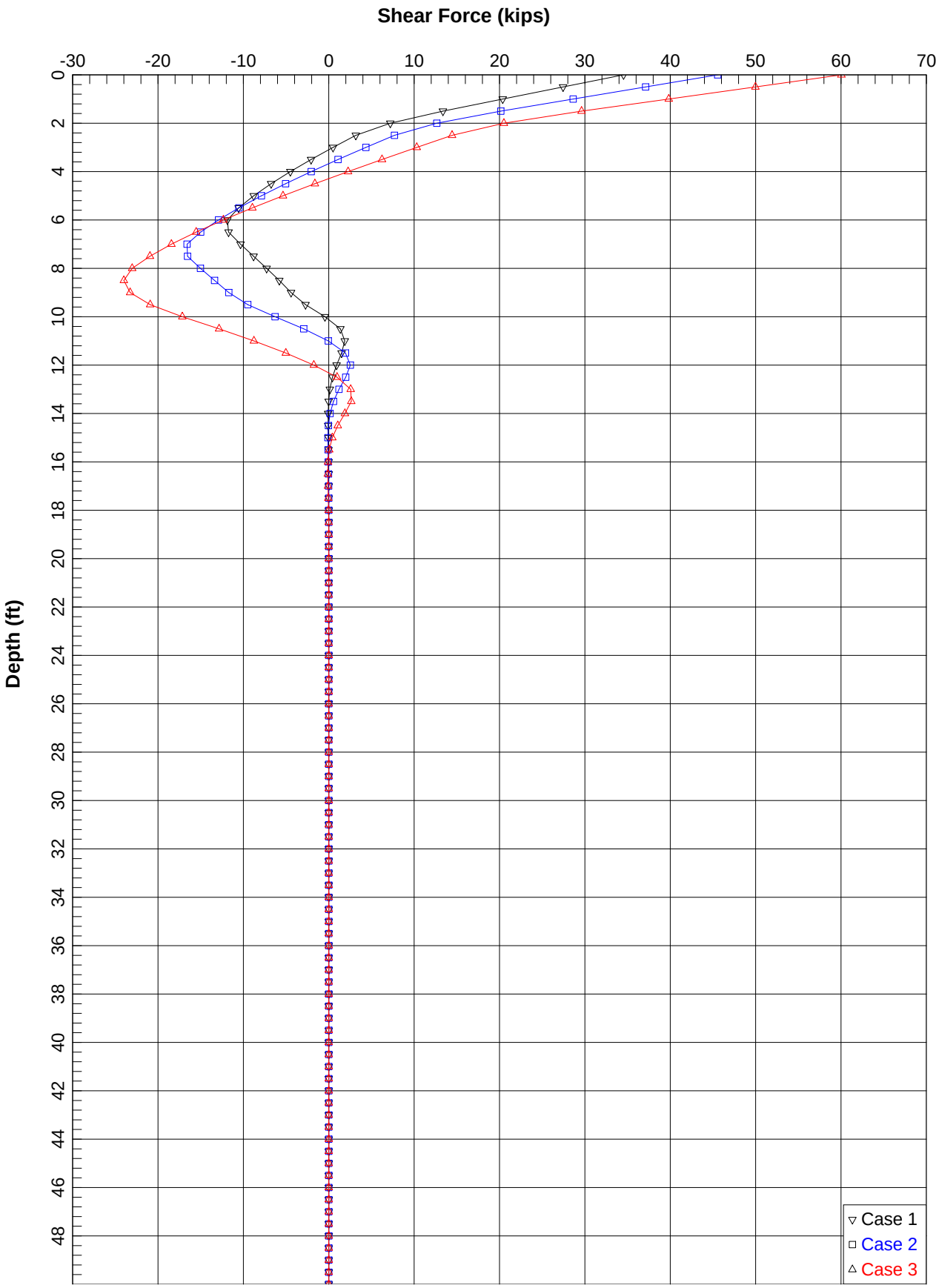
SUPPORT: **ABUTMENT 5 PILASTER**

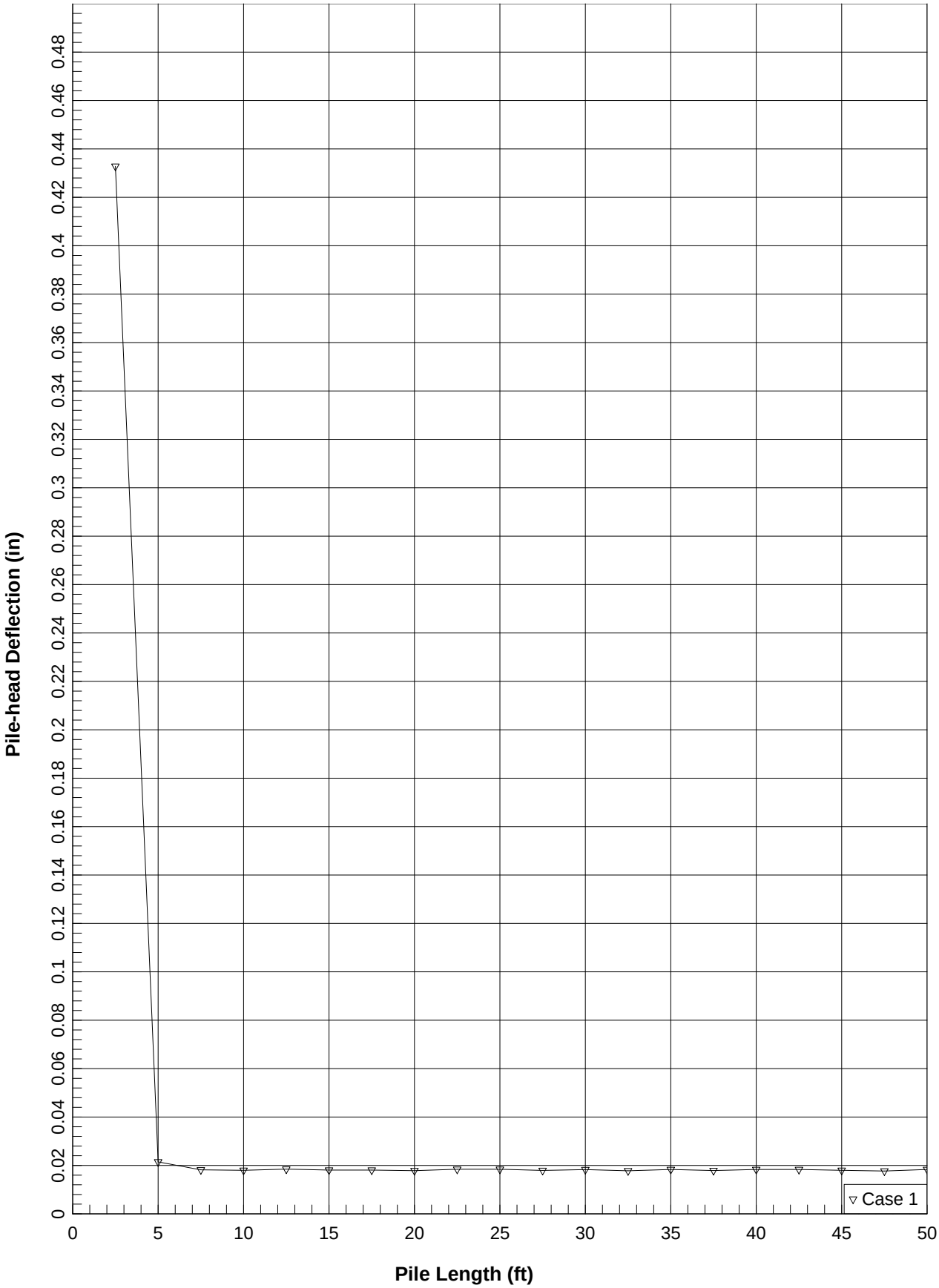
LOAD DIRECTION: **LONGITUDINAL**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. MOMENT VS. DEPTH PLOT (LEADING ROW)
5. CRITICAL LENGTH PLOT (P-AVG CASE)
6. OUTPUT FILE FOR CRITICAL LENGTH ANALYSIS (P-AVG CASE)
7. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)


Layer 1, Depth -5.00 to 0.10 ft = Stiff Clay without Free Water
Layer 2, Depth 0.10 to 2.00 ft = Stiff Clay without Free Water
Layer 3, Depth 2.00 to 9.50 ft = Stiff Clay without Free Water
Layer 4, Depth 9.50 to 14.50 ft = Stiff Clay without Free Water
Layer 5, Depth 14.50 to 19.50 ft = Stiff Clay without Free Water
Layer 6, Depth 19.50 to 80.00 ft = Stiff Clay without Free Water


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-30
-20
-10
0
10
20
30
40
50
60
70
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
0.46
0.48
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

LPile Plus for Windows, Version 6 (6.0.25)

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

This copy of LPile is licensed to:

Group Delta Consultantsm Inc.
Irvine, Ca

Serial Number of Security Device: 156242237
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated_LG_ 6-05-17\Abut 5\
Name of input data file: Abut 5_Pil_long_Critical Length.lp6d
Name of output report file: Abut 5_Pil_long_Critical Length.lp6o
Name of plot output file: Abut 5_Pil_long_Critical Length.lp6p
Name of runtime messeage file: Abut 5_Pil_long_Critical Length.lp6r

Date and Time of Analysis

Date: June 6, 2017 Time: 17:13:40

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transportation

Engineer: LG

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 5 Pilaster

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal moment capacity with pile response computed using nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Elastic Pile
Cross-sectional Shape	= Circular
Section Length	= 50.000 ft
Top Width	= 16.000 in
Bottom Width	= 16.000 in
Top Area	= 201.061930 sq. in
Bottom Area	= 201.061930 sq. in
Moment of Inertia at Top	= 1608.495 in^4
Moment of Inertia at Bottom	= 1608.495 in^4
Elastic Modulus	= 3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.000 ft
Distance from top of pile to bottom of layer = 0.100 ft

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.100 ft
Distance from top of pile to bottom of layer = 2.000 ft

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 2.000 ft
Distance from top of pile to bottom of layer = 9.500 ft

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 9.500 ft
Distance from top of pile to bottom of layer = 14.500 ft

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 14.500 ft
Distance from top of pile to bottom of layer = 19.500 ft

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 19.500 ft
Distance from top of pile to bottom of layer = 80.000 ft

(Depth of lowest layer extends 30.00 ft below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 12 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	-5.00	120.00000
2	0.10	120.00000
3	0.10	120.00000
4	2.00	120.00000
5	2.00	120.00000
6	9.50	120.00000
7	9.50	120.00000
8	14.50	120.00000
9	14.50	125.00000
10	19.50	125.00000
11	19.50	125.00000
12	80.00	125.00000

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	J	kpy pci	Depth ft	Eff. Unit Wt., pcf	Cohesion Rock Emass psi	krm pci	Friction Test Type	Friction Test Prop. Ang., deg.	qu Elas. psi	Subgr. percent
1	Stiff Clay w/o Free Water	--	--	-5.000	120.000	4000.000	--	--	--	--	--
--		0.00	--	0.10000	120.000	4000.000	--	--	--	--	--
2	Stiff Clay w/o Free Water	--	--	0.10000	120.000	4000.000	--	--	--	--	--
--		0.00	--	2.000	120.000	4000.000	--	--	--	--	--
3	Stiff Clay w/o Free Water	--	--	2.000	120.000	1500.000	--	--	--	--	--
--		0.00	--	9.500	120.000	1500.000	--	--	--	--	--
4	Stiff Clay w/o Free Water	--	--	9.500	120.000	3500.000	--	--	--	--	--
--		0.00	--	14.500	120.000	3500.000	--	--	--	--	--
5	Stiff Clay w/o Free Water	--	--	14.500	125.000	4000.000	--	--	--	--	--
--		0.00	--	19.500	125.000	4000.000	--	--	--	--	--
6	Stiff Clay w/o Free Water	--	--	19.500	125.000	4500.000	--	--	--	--	--
--		0.00	--	80.000	125.000	4500.000	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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
1	1	V = 12000. lbs	M = 0.0000 in-lbs	60000.

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-Curvature properties derived from elastic section properties

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)

Horizontal shear force at pile head = 12000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.0183	1.677E-09	12000.	-0.000737	298.4155	5.799E+09	-614.1449	100540.	0.000
6.000	0.0139	61211.	8371.6245	-0.000705	602.8523	5.799E+09	-595.3136	256891.	0.000
12.000	0.009863	100967.	4883.1889	-0.000621	800.5853	5.799E+09	-567.4983	345220.	0.000
18.000	0.006449	120256.	1592.7571	-0.000507	896.5210	5.799E+09	-529.3123	492458.	0.000
24.000	0.003781	120445.	-1121.0391	-0.000382	897.4609	5.799E+09	-375.2864	595472.	0.000
30.000	0.001862	107079.	-2758.3449	-0.000265	830.9829	5.799E+09	-170.4822	549485.	0.000
36.000	0.000606	87536.	-3668.0448	-0.000164	733.7817	5.799E+09	-132.7511	1313324.	0.000
42.000	-0.000105	63180.	-3951.1160	-8.591E-05	612.6495	5.799E+09	38.3941	2191204.	0.000
48.000	-0.000424	40184.	-3448.2400	-3.244E-05	498.2745	5.799E+09	129.2313	1826605.	0.000
54.000	-0.000494	21825.	-2646.3840	-3.565E-07	406.9640	5.799E+09	138.0541	1675466.	0.000
60.000	-0.000429	8427.6898	-1821.4165	1.530E-05	340.3314	5.799E+09	136.9351	1916181.	0.000
66.000	-0.000311	-43.0534	-1029.4181	1.963E-05	298.6296	5.799E+09	127.0644	2452637.	0.000
72.000	-0.000193	-3939.4635	-405.0130	1.757E-05	318.0088	5.799E+09	81.0707	2517995.	0.000
78.000	-9.997E-05	-4915.8615	-32.6689	1.299E-05	322.8650	5.799E+09	43.0440	2583353.	0.000

84.000	-3.729E-05	-4340.8436	144.6654	8.202E-06	320.0051	5.799E+09	16.0674	2585595.	0.000
90.000	-1.548E-06	-3185.7818	194.8683	4.308E-06	314.2603	5.799E+09	0.6669	2585595.	0.000
96.000	1.441E-05	-2005.5255	178.2377	1.622E-06	308.3902	5.799E+09	-6.2104	2585595.	0.000
102.000	1.792E-05	-1048.0980	136.4397	4.244E-08	303.6283	5.799E+09	-7.7222	2585595.	0.000
108.000	1.492E-05	-368.2796	93.9833	-6.903E-07	300.2472	5.799E+09	-6.4299	2585595.	0.000
114.000	9.636E-06	80.1992	52.1922	-8.394E-07	298.8144	5.799E+09	-7.5005	4670451.	0.000
120.000	4.848E-06	258.6307	13.8203	-6.641E-07	299.7018	5.799E+09	-5.2901	6546780.	0.000
126.000	1.667E-06	246.5207	-7.5188	-4.027E-07	299.6416	5.799E+09	-1.8229	6562500.	0.000
132.000	1.545E-08	168.6952	-13.0381	-1.879E-07	299.2545	5.799E+09	-0.0169	6562500.	0.000
138.000	-5.884E-07	90.1984	-11.1581	-5.398E-08	298.8641	5.799E+09	0.6436	6562500.	0.000
144.000	-6.323E-07	34.8370	-7.1526	1.071E-08	298.5888	5.799E+09	0.6916	6562500.	0.000
150.000	-4.599E-07	4.3593	-3.5689	3.099E-08	298.4372	5.799E+09	0.5030	6562500.	0.000
156.000	-2.604E-07	-8.0118	-1.2053	2.910E-08	298.4554	5.799E+09	0.2848	6562500.	0.000
162.000	-1.107E-07	-10.1253	0.0125	1.972E-08	298.4659	5.799E+09	0.1211	6562500.	0.000
168.000	-2.384E-08	-7.8761	0.4540	1.040E-08	298.4547	5.799E+09	0.0261	6562500.	0.000
174.000	1.412E-08	-4.6851	0.4826	3.904E-09	298.4388	5.799E+09	-0.0165	7031250.	0.000
180.000	2.300E-08	-2.0881	0.3467	3.994E-10	298.4259	5.799E+09	-0.0288	7500000.	0.000
186.000	1.892E-08	-0.5255	0.1895	-9.528E-10	298.4181	5.799E+09	-0.0236	7500000.	0.000
192.000	1.157E-08	0.1862	0.0752	-1.128E-09	298.4164	5.799E+09	-0.0145	7500000.	0.000
198.000	5.376E-09	0.3772	0.0116	-8.368E-10	298.4174	5.799E+09	-0.006720	7500000.	0.000
204.000	1.526E-09	0.3262	-0.0143	-4.729E-10	298.4171	5.799E+09	-0.001907	7500000.	0.000
210.000	-2.992E-10	0.2063	-0.0189	-1.975E-10	298.4165	5.799E+09	0.000374	7500000.	0.000
216.000	-8.434E-10	0.0999	-0.0146	-3.902E-11	298.4160	5.799E+09	0.001054	7500000.	0.000
222.000	-7.675E-10	0.0314	-0.008542	2.888E-11	298.4157	5.799E+09	0.000959	7500000.	0.000
228.000	-4.969E-10	-0.002637	-0.003801	4.374E-11	298.4155	5.799E+09	0.000621	7500000.	0.000
234.000	-2.426E-10	-0.0143	-0.000915	3.499E-11	298.4156	5.799E+09	0.000341	8425927.	0.000
240.000	-7.697E-11	-0.0136	0.000450	2.054E-11	298.4156	5.799E+09	0.000114	8921570.	0.000
246.000	3.927E-12	-0.008893	0.000776	8.882E-12	298.4156	5.799E+09	-5.839E-06	8921570.	0.000
252.000	2.961E-11	-0.004345	0.000626	2.033E-12	298.4155	5.799E+09	-4.403E-05	8921570.	0.000
258.000	2.832E-11	-0.001381	0.000368	0.000	298.4155	5.799E+09	-4.211E-05	8921570.	0.000
264.000	1.846E-11	6.829E-05	0.000159	-1.608E-12	298.4155	5.799E+09	-2.745E-05	8921570.	0.000
270.000	9.022E-12	0.000529	3.645E-05	-1.299E-12	298.4155	5.799E+09	-1.342E-05	8921570.	0.000
276.000	2.869E-12	0.000507	-1.660E-05	0.000	298.4155	5.799E+09	-4.265E-06	8921570.	0.000
282.000	0.000	0.000330	-2.877E-05	0.000	298.4155	5.799E+09	2.080E-07	8921570.	0.000
288.000	-1.097E-12	0.000162	-2.325E-05	0.000	298.4155	5.799E+09	1.631E-06	8921570.	0.000
294.000	-1.051E-12	5.145E-05	-1.367E-05	0.000	298.4155	5.799E+09	1.563E-06	8921570.	0.000
300.000	0.000	-2.430E-06	-5.918E-06	0.000	298.4155	5.799E+09	1.020E-06	8921570.	0.000
306.000	0.000	-1.960E-05	-1.362E-06	0.000	298.4155	5.799E+09	4.989E-07	8921570.	0.000
312.000	0.000	-1.880E-05	6.121E-07	0.000	298.4155	5.799E+09	1.590E-07	8921570.	0.000
318.000	0.000	-1.228E-05	1.067E-06	0.000	298.4155	5.799E+09	-7.398E-09	8921570.	0.000
324.000	0.000	-6.010E-06	8.633E-07	0.000	298.4155	5.799E+09	-6.045E-08	8921570.	0.000
330.000	0.000	-1.918E-06	5.079E-07	0.000	298.4155	5.799E+09	-5.802E-08	8921570.	0.000
336.000	0.000	8.629E-08	2.202E-07	0.000	298.4155	5.799E+09	-3.789E-08	8921570.	0.000
342.000	0.000	7.262E-07	5.086E-08	0.000	298.4155	5.799E+09	-1.855E-08	8921570.	0.000
348.000	0.000	6.979E-07	-2.258E-08	0.000	298.4155	5.799E+09	-5.925E-09	8921570.	0.000
354.000	0.000	4.561E-07	-3.956E-08	0.000	298.4155	5.799E+09	2.625E-10	8921570.	0.000
360.000	0.000	2.235E-07	-3.206E-08	0.000	298.4155	5.799E+09	2.240E-09	8921570.	0.000
366.000	0.000	7.147E-08	-1.888E-08	0.000	298.4155	5.799E+09	2.154E-09	8921570.	0.000
372.000	0.000	-3.058E-09	-8.193E-09	0.000	298.4155	5.799E+09	1.408E-09	8921570.	0.000
378.000	0.000	-2.691E-08	-1.900E-09	0.000	298.4155	5.799E+09	6.900E-10	8921570.	0.000
384.000	0.000	-2.590E-08	8.326E-10	0.000	298.4155	5.799E+09	2.208E-10	8921570.	0.000
390.000	0.000	-1.694E-08	1.467E-09	0.000	298.4155	5.799E+09	-9.297E-12	8921570.	0.000
396.000	0.000	-8.312E-09	1.190E-09	0.000	298.4155	5.799E+09	-8.298E-11	8921570.	0.000
402.000	0.000	-2.664E-09	7.015E-10	0.000	298.4155	5.799E+09	-7.993E-11	8921570.	0.000
408.000	0.000	1.081E-10	3.049E-10	0.000	298.4155	5.799E+09	-5.230E-11	8921570.	0.000
414.000	0.000	9.969E-10	7.097E-11	0.000	298.4155	5.799E+09	-2.566E-11	8921570.	0.000
420.000	0.000	9.615E-10	-3.070E-11	0.000	298.4155	5.799E+09	-8.229E-12	8921570.	0.000
426.000	0.000	6.295E-10	-5.441E-11	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
432.000	0.000	3.091E-10	-4.420E-11	0.000	298.4155	5.799E+09	3.074E-12	8921570.	0.000
438.000	0.000	9.926E-11	-2.607E-11	0.000	298.4155	5.799E+09	2.967E-12	8921570.	0.000
444.000	0.000	-3.812E-12	-1.134E-11	0.000	298.4155	5.799E+09	1.943E-12	8921570.	0.000
450.000	0.000	-3.694E-11	-2.651E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
456.000	0.000	-3.569E-11	1.132E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
462.000	0.000	-2.339E-11	2.018E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
468.000	0.000	-1.150E-11	1.641E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
474.000	0.000	-3.699E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
480.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
486.000	0.000	1.368E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
492.000	0.000	1.325E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
498.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
504.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
510.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
516.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
522.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
528.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
534.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
540.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
546.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
552.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
558.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
564.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
570.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
582.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000

588.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial stress and do not equal the
  actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.0183254 inches
Computed slope at pile head      =     -0.0007368 radians
Maximum bending moment           =        120445. inch-lbs
Maximum shear force              =         12000. lbs
Depth of maximum bending moment  =     24.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             10
Number of zero deflection points =             16
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          12000. lbs
Moment     =              0. in-lbs
Axial Load =          60000. lbs
```

Pile Length inches	Pile Head Deflection inches	Maximum Moment lb-lbs	Maximum Shear lbs
600.000	0.0183254	120445.	12000.
570.000	0.0176846	123583.	12000.
540.000	0.0179679	123472.	12000.
510.000	0.0183510	122590.	12000.
480.000	0.0183507	121869.	12000.
450.000	0.0179108	123377.	12000.
420.000	0.0183151	122900.	12000.
390.000	0.0178011	123234.	12000.
360.000	0.0182673	122973.	12000.
330.000	0.0179455	123274.	12000.
300.000	0.0184211	122751.	12000.
270.000	0.0184082	122744.	12000.
240.000	0.0178616	124028.	12000.
210.000	0.0181049	123516.	12000.
180.000	0.0180749	123571.	12000.
150.000	0.0184787	122712.	12000.
120.000	0.0179681	123650.	12000.
90.000	0.0181806	123213.	12000.
60.000	0.0214799	117266.	12000.
30.000	0.4328232	68561.	12000.

Summary of Pile Response(s)

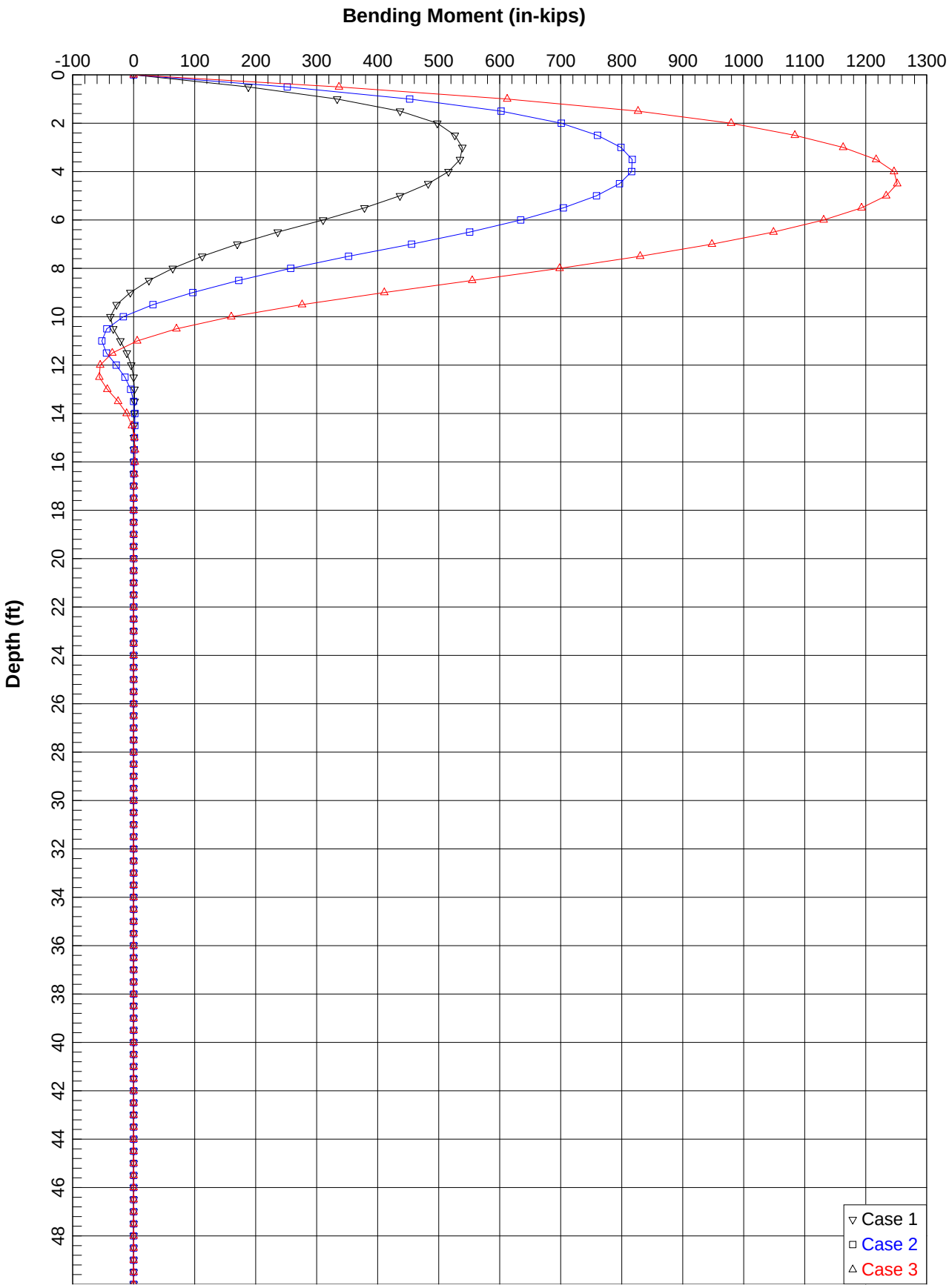
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians

1	1	V =	12000.	M =	0.000	60000.	0.01832536	120445.	12000.	-0.00073685

The analysis ended normally.


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

LPile Plus for Windows, Version 6 (6.0.25)

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

This copy of LPile is licensed to:

Group Delta Consultantsm Inc.
Irvine, Ca

Serial Number of Security Device: 156242237
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated_LG_ 6-05-17\Abut 5\
Name of input data file: Abut 5_Pil_long_Ave P.lp6d
Name of output report file: Abut 5_Pil_long_Ave P.lp6o
Name of plot output file: Abut 5_Pil_long_Ave P.lp6p
Name of runtime messeage file: Abut 5_Pil_long_Ave P.lp6r

Date and Time of Analysis

Date: June 6, 2017 Time: 10:56:05

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: LG

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 5 Pilaster

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal moment capacity with pile response computed using nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Elastic Pile
Cross-sectional Shape	=	Circular
Section Length	=	50.000 ft
Top Width	=	16.000 in
Bottom Width	=	16.000 in
Top Area	=	201.061930 sq. in
Bottom Area	=	201.061930 sq. in
Moment of Inertia at Top	=	1608.000 in^4
Moment of Inertia at Bottom	=	1608.000 in^4
Elastic Modulus	=	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.000 ft
Distance from top of pile to bottom of layer = 0.100 ft

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.100 ft
Distance from top of pile to bottom of layer = 2.000 ft

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 2.000 ft
Distance from top of pile to bottom of layer = 9.500 ft

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 9.500 ft
Distance from top of pile to bottom of layer = 14.500 ft

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 14.500 ft
Distance from top of pile to bottom of layer = 19.500 ft

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 19.500 ft
Distance from top of pile to bottom of layer = 80.000 ft

(Depth of lowest layer extends 30.00 ft below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 12 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	-5.00	120.00000
2	0.10	120.00000
3	0.10	120.00000
4	2.00	120.00000
5	2.00	120.00000
6	9.50	120.00000
7	9.50	120.00000
8	14.50	120.00000
9	14.50	125.00000
10	19.50	125.00000
11	19.50	125.00000
12	80.00	125.00000

Summary of Soil Properties

Layer No.	Soil Type (p-y Curve Criteria)	RQD	Epsilon 50	J	kpy pci	Depth ft	Eff. Unit Wt., pcf	Cohesion Rock Emass psi	krm pci	Friction Test Type	Friction Test Prop. Ang., deg.	qu Elas. psi	Subgr. percent
1	Stiff Clay w/o Free Water	--	0.00	--	--	-5.000	120.000	4000.000	--	--	--	--	--
		--	0.00	--	--	0.10000	120.000	4000.000	--	--	--	--	--
2	Stiff Clay w/o Free Water	--	0.00	--	--	0.10000	120.000	4000.000	--	--	--	--	--
		--	0.00	--	--	2.000	120.000	4000.000	--	--	--	--	--
3	Stiff Clay w/o Free Water	--	0.00	--	--	2.000	120.000	1500.000	--	--	--	--	--
		--	0.00	--	--	9.500	120.000	1500.000	--	--	--	--	--
4	Stiff Clay w/o Free Water	--	0.00	--	--	9.500	120.000	3500.000	--	--	--	--	--
		--	0.00	--	--	14.500	120.000	3500.000	--	--	--	--	--
5	Stiff Clay w/o Free Water	--	0.00	--	--	14.500	125.000	4000.000	--	--	--	--	--
		--	0.00	--	--	19.500	125.000	4000.000	--	--	--	--	--
6	Stiff Clay w/o Free Water	--	0.00	--	--	19.500	125.000	4500.000	--	--	--	--	--
		--	0.00	--	--	80.000	125.000	4500.000	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.25000 in	M = 0.0000 in-lbs	60000.
2	4	y = 0.50000 in	M = 0.0000 in-lbs	60000.
3	4	y = 1.00000 in	M = 0.0000 in-lbs	60000.

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust 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:

Moment-Curvature properties derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	34535.	-0.005847	298.4155	5.797E+09	-1180.7313	14169.	0.000
6.000	0.2149	188059.	27450.	-0.005750	1234.0349	5.797E+09	-1180.8825	32968.	0.000
12.000	0.1810	333537.	20382.	-0.005480	1957.8042	5.797E+09	-1175.1519	38955.	0.000
18.000	0.1492	436585.	13372.	-0.005081	2470.4803	5.797E+09	-1161.4861	46722.	0.000
24.000	0.1200	497657.	7212.8503	-0.004598	2774.3196	5.797E+09	-891.4806	44565.	0.000
30.000	0.0940	526450.	3173.5497	-0.004068	2917.5683	5.797E+09	-454.9529	29045.	0.000
36.000	0.0712	538668.	494.8738	-0.003517	2978.3569	5.797E+09	-437.9390	36900.	0.000
42.000	0.0518	534920.	-2069.5343	-0.002961	2959.7100	5.797E+09	-416.8637	48302.	0.000
48.000	0.0357	515966.	-4493.5689	-0.002417	2865.4094	5.797E+09	-391.1478	65781.	0.000
54.000	0.0228	482738.	-6746.4284	-0.001900	2700.0959	5.797E+09	-359.8054	94785.	0.000
60.000	0.0129	436377.	-8788.3593	-0.001425	2469.4448	5.797E+09	-320.8382	149541.	0.000
66.000	0.005680	378303.	-10557.	-0.001003	2180.5211	5.797E+09	-268.8430	284001.	0.000
72.000	0.000836	310410.	-11881.	-0.000647	1842.7452	5.797E+09	-172.2299	1236110.	0.000

78.000	-0.002080	236201.	-11739.	-0.000364	1473.5466	5.797E+09	219.2749	632509.	0.000
84.000	-0.003529	169798.	-10329.	-0.000154	1143.1833	5.797E+09	250.8562	426479.	0.000
90.000	-0.003924	112363.	-8803.4603	-7.628E-06	857.4348	5.797E+09	257.6881	394030.	0.000
96.000	-0.003621	64162.	-7272.6247	8.373E-05	617.6309	5.797E+09	252.5905	418571.	0.000
102.000	-0.002919	25031.	-5796.8009	0.000130	422.9483	5.797E+09	239.3508	491960.	0.000
108.000	-0.002062	-5492.8289	-4420.5056	0.000140	325.7430	5.797E+09	219.4143	638420.	0.000
114.000	-0.001239	-28116.	-2715.5882	0.000123	438.2950	5.797E+09	348.8915	1689324.	0.000
120.000	-0.000591	-38168.	-450.1672	8.830E-05	488.3069	5.797E+09	406.2488	4125524.	0.000
126.000	-0.000180	-33581.	1357.6823	5.117E-05	465.4870	5.797E+09	196.3677	6562500.	0.000
132.000	2.321E-05	-21913.	1870.6262	2.245E-05	407.4345	5.797E+09	-25.3864	6562500.	0.000
138.000	8.987E-05	-11150.	1499.5739	5.340E-06	353.8882	5.797E+09	-98.2977	6562500.	0.000
144.000	8.729E-05	-3921.7759	918.2628	-2.460E-06	317.9268	5.797E+09	-95.4727	6562500.	0.000
150.000	6.035E-05	-129.0906	433.8180	-4.557E-06	299.0578	5.797E+09	-66.0090	6562500.	0.000
156.000	3.261E-05	1287.3205	128.7859	-3.957E-06	304.8201	5.797E+09	-35.6684	6562500.	0.000
162.000	1.287E-05	1419.1894	-20.4352	-2.556E-06	305.4762	5.797E+09	-14.0720	6562500.	0.000
168.000	1.934E-06	1043.9383	-68.9973	-1.282E-06	303.6092	5.797E+09	-2.1154	6562500.	0.000
174.000	-2.515E-06	592.1446	-66.5033	-4.350E-07	301.3615	5.797E+09	2.9467	7031250.	0.000
180.000	-3.286E-06	246.2123	-45.3416	-1.115E-09	299.6405	5.797E+09	4.1072	7500000.	0.000
186.000	-2.528E-06	48.0468	-23.5403	1.512E-07	298.6546	5.797E+09	3.1599	7500000.	0.000
192.000	-1.472E-06	-36.3805	-8.5418	1.572E-07	298.5965	5.797E+09	1.8396	7500000.	0.000
198.000	-6.414E-07	-54.5681	-0.6177	1.101E-07	298.6870	5.797E+09	0.8018	7500000.	0.000
204.000	-1.500E-07	-43.8720	2.3501	5.920E-08	298.6338	5.797E+09	0.1875	7500000.	0.000
210.000	6.894E-08	-26.4095	2.6541	2.282E-08	298.5469	5.797E+09	-0.0862	7500000.	0.000
216.000	1.239E-07	-12.0396	1.9310	2.925E-09	298.4754	5.797E+09	-0.1548	7500000.	0.000
222.000	1.040E-07	-3.2398	1.0763	-4.982E-09	298.4316	5.797E+09	-0.1301	7500000.	0.000
228.000	6.409E-08	0.8792	0.4458	-6.204E-09	298.4199	5.797E+09	-0.0801	7500000.	0.000
234.000	2.960E-08	2.1137	0.0807	-4.655E-09	298.4260	5.797E+09	-0.0416	8425927.	0.000
240.000	8.233E-09	1.8510	-0.0807	-2.603E-09	298.4247	5.797E+09	-0.0122	8921570.	0.000
246.000	-1.637E-09	1.1469	-0.1101	-1.052E-09	298.4212	5.797E+09	0.002435	8921570.	0.000
252.000	-4.385E-09	0.5300	-0.0833	-1.837E-10	298.4182	5.797E+09	0.006521	8921570.	0.000
258.000	-3.842E-09	0.1477	-0.0466	1.670E-10	298.4163	5.797E+09	0.005712	8921570.	0.000
264.000	-2.381E-09	-0.0291	-0.0188	2.284E-10	298.4157	5.797E+09	0.003540	8921570.	0.000
270.000	-1.101E-09	-0.0784	-0.003293	1.728E-10	298.4159	5.797E+09	0.001636	8921570.	0.000
276.000	-3.069E-10	-0.0687	0.002985	9.673E-11	298.4159	5.797E+09	0.000456	8921570.	0.000
282.000	6.015E-11	-0.0426	0.004086	3.912E-11	298.4157	5.797E+09	-8.943E-05	8921570.	0.000
288.000	1.626E-10	-0.0197	0.003092	6.871E-12	298.4156	5.797E+09	-0.000242	8921570.	0.000
294.000	1.426E-10	-0.005504	0.001731	-6.177E-12	298.4155	5.797E+09	-0.000212	8921570.	0.000
300.000	8.845E-11	0.001068	0.000700	-8.473E-12	298.4155	5.797E+09	-0.000132	8921570.	0.000
306.000	4.092E-11	0.002905	0.000123	-6.417E-12	298.4155	5.797E+09	-6.085E-05	8921570.	0.000
312.000	1.144E-11	0.002550	-0.000110	-3.594E-12	298.4155	5.797E+09	-1.701E-05	8921570.	0.000
318.000	-2.209E-12	0.001583	-0.000152	-1.455E-12	298.4155	5.797E+09	3.285E-06	8921570.	0.000
324.000	-6.026E-12	0.000733	-0.000115	0.000	298.4155	5.797E+09	8.961E-06	8921570.	0.000
330.000	-5.293E-12	0.000205	-6.432E-05	0.000	298.4155	5.797E+09	7.870E-06	8921570.	0.000
336.000	-3.286E-12	-3.921E-05	-2.605E-05	0.000	298.4155	5.797E+09	4.885E-06	8921570.	0.000
342.000	-1.522E-12	-0.000108	-4.607E-06	0.000	298.4155	5.797E+09	2.262E-06	8921570.	0.000
348.000	0.000	-9.466E-05	4.082E-06	0.000	298.4155	5.797E+09	6.338E-07	8921570.	0.000
354.000	0.000	-5.879E-05	5.621E-06	0.000	298.4155	5.797E+09	-1.206E-07	8921570.	0.000
360.000	0.000	-2.725E-05	4.263E-06	0.000	298.4155	5.797E+09	-3.322E-07	8921570.	0.000
366.000	0.000	-7.645E-06	2.390E-06	0.000	298.4155	5.797E+09	-2.921E-07	8921570.	0.000
372.000	0.000	1.440E-06	9.691E-07	0.000	298.4155	5.797E+09	-1.815E-07	8921570.	0.000
378.000	0.000	3.992E-06	1.723E-07	0.000	298.4155	5.797E+09	-8.412E-08	8921570.	0.000
384.000	0.000	3.514E-06	-1.509E-07	0.000	298.4155	5.797E+09	-2.362E-08	8921570.	0.000
390.000	0.000	2.184E-06	-2.085E-07	0.000	298.4155	5.797E+09	4.429E-09	8921570.	0.000
396.000	0.000	1.013E-06	-1.583E-07	0.000	298.4155	5.797E+09	1.231E-08	8921570.	0.000
402.000	0.000	2.850E-07	-8.881E-08	0.000	298.4155	5.797E+09	1.084E-08	8921570.	0.000
408.000	0.000	-5.286E-08	-3.605E-08	0.000	298.4155	5.797E+09	6.742E-09	8921570.	0.000
414.000	0.000	-1.480E-07	-6.444E-09	0.000	298.4155	5.797E+09	3.128E-09	8921570.	0.000
420.000	0.000	-1.304E-07	5.581E-09	0.000	298.4155	5.797E+09	8.804E-10	8921570.	0.000
426.000	0.000	-8.113E-08	7.734E-09	0.000	298.4155	5.797E+09	-1.626E-10	8921570.	0.000
432.000	0.000	-3.767E-08	5.877E-09	0.000	298.4155	5.797E+09	-4.565E-10	8921570.	0.000
438.000	0.000	-1.062E-08	3.300E-09	0.000	298.4155	5.797E+09	-4.025E-10	8921570.	0.000
444.000	0.000	1.940E-09	1.341E-09	0.000	298.4155	5.797E+09	-2.504E-10	8921570.	0.000
450.000	0.000	5.485E-09	2.410E-10	0.000	298.4155	5.797E+09	-1.163E-10	8921570.	0.000
456.000	0.000	4.841E-09	-2.063E-10	0.000	298.4155	5.797E+09	-3.281E-11	8921570.	0.000
462.000	0.000	3.014E-09	-2.869E-10	0.000	298.4155	5.797E+09	5.970E-12	8921570.	0.000
468.000	0.000	1.401E-09	-2.182E-10	0.000	298.4155	5.797E+09	1.692E-11	8921570.	0.000
474.000	0.000	3.958E-10	-1.226E-10	0.000	298.4155	5.797E+09	1.494E-11	8921570.	0.000
480.000	0.000	-7.122E-11	-4.989E-11	0.000	298.4155	5.797E+09	9.303E-12	8921570.	0.000
486.000	0.000	-2.033E-10	-9.011E-12	0.000	298.4155	5.797E+09	4.324E-12	8921570.	0.000
492.000	0.000	-1.797E-10	7.630E-12	0.000	298.4155	5.797E+09	1.223E-12	8921570.	0.000
498.000	0.000	-1.120E-10	1.064E-11	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
504.000	0.000	-5.207E-11	8.102E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
510.000	0.000	-1.475E-11	4.556E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
516.000	0.000	2.614E-12	1.856E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
522.000	0.000	7.537E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
528.000	0.000	6.670E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
534.000	0.000	4.159E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
540.000	0.000	1.936E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
546.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
552.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
558.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
564.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
570.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000

582.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
588.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
The above values of total stress are computed for combined axial stress and do not equal the
actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0058472 radians
Maximum bending moment	=	538668. inch-lbs
Maximum shear force	=	34535. lbs
Depth of maximum bending moment	=	36.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	17
Number of zero deflection points	=	15

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	0.500000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	45555.	-0.0102	298.4155	5.797E+09	-1404.1340	8424.8040	0.000
6.000	0.4391	251714.	37108.	-0.0100	1550.7223	5.797E+09	-1411.7940	19292.	0.000
12.000	0.3797	452509.	28629.	-0.009660	2549.7038	5.797E+09	-1414.2676	22348.	0.000
18.000	0.3231	602222.	20159.	-0.009114	3294.5448	5.797E+09	-1409.1175	26164.	0.000
24.000	0.2703	700982.	12656.	-0.008440	3785.8901	5.797E+09	-1092.0906	24239.	0.000
30.000	0.2219	760166.	7687.6184	-0.007684	4080.3376	5.797E+09	-563.9144	15250.	0.000
36.000	0.1781	798766.	4343.6933	-0.006877	4272.3763	5.797E+09	-550.7273	18551.	0.000
42.000	0.1393	817242.	1089.9096	-0.006041	4364.2965	5.797E+09	-533.8673	22988.	0.000
48.000	0.1056	816194.	-2050.7653	-0.005195	4359.0837	5.797E+09	-513.0243	29139.	0.000
54.000	0.0770	796374.	-5053.1568	-0.004361	4260.4728	5.797E+09	-487.7728	38008.	0.000
60.000	0.0533	758696.	-7888.9013	-0.003556	4073.0234	5.797E+09	-457.4753	51489.	0.000
66.000	0.0343	704267.	-10525.	-0.002799	3802.2315	5.797E+09	-421.0602	73593.	0.000
72.000	0.0197	634417.	-12917.	-0.002106	3454.7203	5.797E+09	-376.4045	114509.	0.000
78.000	0.009056	550781.	-15000.	-0.001493	3038.6173	5.797E+09	-318.0145	210695.	0.000
84.000	0.001810	455490.	-16594.	-0.000972	2564.5354	5.797E+09	-213.4147	707372.	0.000
90.000	-0.002607	352347.	-16537.	-0.000554	2051.3856	5.797E+09	232.4473	534970.	0.000
96.000	-0.004836	257441.	-15025.	-0.000238	1579.2150	5.797E+09	271.5897	336953.	0.000
102.000	-0.005466	172216.	-13370.	-1.592E-05	1155.2101	5.797E+09	280.1056	307449.	0.000
108.000	-0.005027	97010.	-11707.	0.000123	781.0541	5.797E+09	274.3204	327406.	0.000
114.000	-0.003985	31644.	-9481.2211	0.000190	455.8502	5.797E+09	467.5638	703900.	0.000
120.000	-0.002747	-16901.	-6287.0813	0.000198	382.5006	5.797E+09	597.1495	1304161.	0.000
126.000	-0.001614	-43943.	-2923.6938	0.000166	517.0369	5.797E+09	523.9796	1947833.	0.000
132.000	-0.000754	-52105.	-52.6632	0.000116	557.6446	5.797E+09	433.0306	3447266.	0.000
138.000	-0.000217	-44659.	1958.2512	6.635E-05	520.5980	5.797E+09	237.2742	6562500.	0.000
144.000	4.248E-05	-28654.	2530.6920	2.841E-05	440.9717	5.797E+09	-46.4606	6562500.	0.000
150.000	0.000124	-14311.	1984.6163	6.172E-06	369.6137	5.797E+09	-135.5646	6562500.	0.000
156.000	0.000117	-4842.8469	1195.5348	-3.741E-06	322.5093	5.797E+09	-127.4625	6562500.	0.000
162.000	7.905E-05	38.2858	553.7512	-6.227E-06	298.6060	5.797E+09	-86.4654	6562500.	0.000
168.000	4.181E-05	1806.6514	157.1703	-5.273E-06	307.4038	5.797E+09	-45.7283	6562500.	0.000
174.000	1.578E-05	1928.1261	-35.5022	-3.340E-06	308.0082	5.797E+09	-18.4959	7031250.	0.000
180.000	1.732E-06	1383.0298	-97.4843	-1.626E-06	305.2963	5.797E+09	-2.1648	7500000.	0.000
186.000	-3.730E-06	759.4851	-89.9894	-5.173E-07	302.1941	5.797E+09	4.6631	7500000.	0.000
192.000	-4.476E-06	303.5291	-59.2144	3.280E-08	299.9256	5.797E+09	5.5952	7500000.	0.000
198.000	-3.337E-06	48.8885	-29.9153	2.152E-07	298.6587	5.797E+09	4.1711	7500000.	0.000
204.000	-1.894E-06	-55.6098	-10.2995	2.117E-07	298.6922	5.797E+09	2.3675	7500000.	0.000
210.000	-7.964E-07	-74.8576	-0.2103	1.442E-07	298.7879	5.797E+09	0.9956	7500000.	0.000
216.000	-1.638E-07	-58.2374	3.3905	7.530E-08	298.7053	5.797E+09	0.2047	7500000.	0.000
222.000	1.072E-07	-34.2252	3.6027	2.745E-08	298.5858	5.797E+09	-0.1340	7500000.	0.000
228.000	1.657E-07	-15.0247	2.5795	1.965E-09	298.4903	5.797E+09	-0.2071	7500000.	0.000
234.000	1.308E-07	-3.2731	1.4072	-7.504E-09	298.4318	5.797E+09	-0.1837	8425927.	0.000
240.000	7.560E-08	1.8676	0.5190	-8.232E-09	298.4248	5.797E+09	-0.1124	8921570.	0.000
246.000	3.201E-08	2.9608	0.0390	-5.733E-09	298.4302	5.797E+09	-0.0476	8921570.	0.000
252.000	6.804E-09	2.3395	-0.1342	-2.990E-09	298.4272	5.797E+09	-0.0101	8921570.	0.000
258.000	-3.871E-09	1.3530	-0.1472	-1.079E-09	298.4222	5.797E+09	0.005756	8921570.	0.000

264.000	-6.144E-09	0.5733	-0.1026	-8.207E-11	298.4184	5.797E+09	0.009135	8921570.	0.000
270.000	-4.856E-09	0.1222	-0.0535	2.779E-10	298.4161	5.797E+09	0.007220	8921570.	0.000
276.000	-2.809E-09	-0.0690	-0.0193	3.054E-10	298.4159	5.797E+09	0.004177	8921570.	0.000
282.000	-1.191E-09	-0.1098	-0.001476	2.129E-10	298.4161	5.797E+09	0.001770	8921570.	0.000
288.000	-2.541E-10	-0.0869	0.004968	1.111E-10	298.4160	5.797E+09	0.000378	8921570.	0.000
294.000	1.430E-10	-0.0503	0.005463	4.016E-11	298.4158	5.797E+09	-0.000213	8921570.	0.000
300.000	2.278E-10	-0.0213	0.003809	3.108E-12	298.4156	5.797E+09	-0.000339	8921570.	0.000
306.000	1.803E-10	-0.004564	0.001989	-1.029E-11	298.4155	5.797E+09	-0.000268	8921570.	0.000
312.000	1.044E-10	0.002548	0.000719	-1.133E-11	298.4155	5.797E+09	-0.000155	8921570.	0.000
318.000	4.428E-11	0.004072	5.590E-05	-7.907E-12	298.4155	5.797E+09	-6.584E-05	8921570.	0.000
324.000	9.487E-12	0.003225	-0.000184	-4.130E-12	298.4155	5.797E+09	-1.411E-05	8921570.	0.000
330.000	-5.281E-12	0.001868	-0.000203	-1.495E-12	298.4155	5.797E+09	7.853E-06	8921570.	0.000
336.000	-8.450E-12	0.000793	-0.000141	0.000	298.4155	5.797E+09	1.256E-05	8921570.	0.000
342.000	-6.693E-12	0.000170	-7.391E-05	0.000	298.4155	5.797E+09	9.952E-06	8921570.	0.000
348.000	-3.878E-12	-9.412E-05	-2.676E-05	0.000	298.4155	5.797E+09	5.766E-06	8921570.	0.000
354.000	-1.647E-12	-0.000151	-2.116E-06	0.000	298.4155	5.797E+09	2.449E-06	8921570.	0.000
360.000	0.000	-0.000120	6.811E-06	0.000	298.4155	5.797E+09	5.267E-07	8921570.	0.000
366.000	0.000	-6.940E-05	7.521E-06	0.000	298.4155	5.797E+09	-2.900E-07	8921570.	0.000
372.000	0.000	-2.950E-05	5.253E-06	0.000	298.4155	5.797E+09	-4.660E-07	8921570.	0.000
378.000	0.000	-6.362E-06	2.747E-06	0.000	298.4155	5.797E+09	-3.695E-07	8921570.	0.000
384.000	0.000	3.476E-06	9.960E-07	0.000	298.4155	5.797E+09	-2.142E-07	8921570.	0.000
390.000	0.000	5.601E-06	8.006E-08	0.000	298.4155	5.797E+09	-9.109E-08	8921570.	0.000
396.000	0.000	4.445E-06	-2.522E-07	0.000	298.4155	5.797E+09	-1.967E-08	8921570.	0.000
402.000	0.000	2.579E-06	-2.791E-07	0.000	298.4155	5.797E+09	1.071E-08	8921570.	0.000
408.000	0.000	1.097E-06	-1.951E-07	0.000	298.4155	5.797E+09	1.728E-08	8921570.	0.000
414.000	0.000	2.376E-07	-1.021E-07	0.000	298.4155	5.797E+09	1.372E-08	8921570.	0.000
420.000	0.000	-1.284E-07	-3.707E-08	0.000	298.4155	5.797E+09	7.960E-09	8921570.	0.000
426.000	0.000	-2.077E-07	-3.028E-09	0.000	298.4155	5.797E+09	3.388E-09	8921570.	0.000
432.000	0.000	-1.650E-07	9.339E-09	0.000	298.4155	5.797E+09	7.343E-10	8921570.	0.000
438.000	0.000	-9.581E-08	1.035E-08	0.000	298.4155	5.797E+09	-3.956E-10	8921570.	0.000
444.000	0.000	-4.081E-08	7.245E-09	0.000	298.4155	5.797E+09	-6.409E-10	8921570.	0.000
450.000	0.000	-8.869E-09	3.795E-09	0.000	298.4155	5.797E+09	-5.093E-10	8921570.	0.000
456.000	0.000	4.741E-09	1.380E-09	0.000	298.4155	5.797E+09	-2.957E-10	8921570.	0.000
462.000	0.000	7.703E-09	1.145E-10	0.000	298.4155	5.797E+09	-1.260E-10	8921570.	0.000
468.000	0.000	6.126E-09	-3.458E-10	0.000	298.4155	5.797E+09	-2.741E-11	8921570.	0.000
474.000	0.000	3.560E-09	-3.842E-10	0.000	298.4155	5.797E+09	1.461E-11	8921570.	0.000
480.000	0.000	1.518E-09	-2.691E-10	0.000	298.4155	5.797E+09	2.377E-11	8921570.	0.000
486.000	0.000	3.311E-10	-1.410E-10	0.000	298.4155	5.797E+09	1.891E-11	8921570.	0.000
492.000	0.000	-1.751E-10	-5.135E-11	0.000	298.4155	5.797E+09	1.099E-11	8921570.	0.000
498.000	0.000	-2.857E-10	-4.328E-12	0.000	298.4155	5.797E+09	4.687E-12	8921570.	0.000
504.000	0.000	-2.274E-10	1.280E-11	0.000	298.4155	5.797E+09	1.024E-12	8921570.	0.000
510.000	0.000	-1.323E-10	1.425E-11	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
516.000	0.000	-5.645E-11	9.992E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
522.000	0.000	-1.236E-11	5.242E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
528.000	0.000	6.466E-12	1.911E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
534.000	0.000	1.059E-11	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
540.000	0.000	8.444E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
546.000	0.000	4.914E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
552.000	0.000	2.100E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
558.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
564.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
570.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
582.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
588.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
The above values of total stress are computed for combined axial stress and do not equal the
actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0101549 radians
Maximum bending moment	=	817242. inch-lbs
Maximum shear force	=	45555. lbs
Depth of maximum bending moment	=	42.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	20
Number of zero deflection points	=	14

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 1.000000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	60045.	-0.0177	298.4155	5.797E+09	-1669.8061	5009.4184	0.000
6.000	0.8941	336567.	49976.	-0.0175	1972.8760	5.797E+09	-1686.4812	11318.	0.000
12.000	0.7903	612294.	39820.	-0.0170	3344.6562	5.797E+09	-1698.6761	12897.	0.000
18.000	0.6902	826642.	29614.	-0.0162	4411.0609	5.797E+09	-1703.5021	14808.	0.000
24.000	0.5953	979355.	20512.	-0.0153	5170.8283	5.797E+09	-1330.3666	13408.	0.000
30.000	0.5065	1083810.	14442.	-0.0142	5690.5055	5.797E+09	-693.1611	8210.5671	0.000
36.000	0.4245	1162908.	10309.	-0.0131	6084.0252	5.797E+09	-684.2303	9671.9759	0.000
42.000	0.3496	1216939.	6241.1378	-0.0118	6352.8405	5.797E+09	-671.8753	11531.	0.000
48.000	0.2823	1246330.	2257.8032	-0.0106	6499.0639	5.797E+09	-655.9029	13940.	0.000
54.000	0.2228	1251644.	-1618.1543	-0.009278	6525.5017	5.797E+09	-636.0829	17133.	0.000
60.000	0.1710	1233593.	-5362.7901	-0.007992	6435.6938	5.797E+09	-612.1290	21482.	0.000
66.000	0.1268	1193045.	-8950.1699	-0.006736	6233.9641	5.797E+09	-583.6642	27608.	0.000
72.000	0.0901	1131041.	-12352.	-0.005534	5925.4858	5.797E+09	-550.1563	36624.	0.000
78.000	0.0604	1048810.	-15534.	-0.004406	5516.3753	5.797E+09	-510.7781	50705.	0.000
84.000	0.0373	947800.	-18426.	-0.003372	5013.8378	5.797E+09	-453.0090	72938.	0.000
90.000	0.0200	830128.	-20948.	-0.002452	4428.4074	5.797E+09	-387.6320	116436.	0.000
96.000	0.007840	698193.	-23031.	-0.001661	3772.0114	5.797E+09	-306.8658	234851.	0.000
102.000	4.080E-05	554950.	-24005.	-0.001013	3059.3601	5.797E+09	-17.5805	2585595.	0.000
108.000	-0.004312	410867.	-23265.	-0.000513	2342.5313	5.797E+09	263.9947	367352.	0.000
114.000	-0.006113	276135.	-20912.	-0.000157	1672.2234	5.797E+09	520.3894	510777.	0.000
120.000	-0.006199	160035.	-17155.	6.846e-05	1094.6077	5.797E+09	731.9378	708431.	0.000
126.000	-0.005291	70224.	-12844.	0.000188	647.7887	5.797E+09	705.0815	799502.	0.000
132.000	-0.003948	5770.1584	-8763.6427	0.000227	327.1228	5.797E+09	655.0762	995654.	0.000
138.000	-0.002568	-35103.	-5034.3696	0.000212	473.0578	5.797E+09	588.0149	1373874.	0.000
144.000	-0.001406	-54795.	-1754.0862	0.000165	571.0262	5.797E+09	505.4129	2156264.	0.000
150.000	-0.000585	-56271.	977.7394	0.000108	578.3713	5.797E+09	405.1956	4155713.	0.000
156.000	-0.000113	-43139.	2564.5722	5.632e-05	513.0398	5.797E+09	123.7487	6562500.	0.000
162.000	9.083E-05	-25537.	2637.7881	2.078e-05	425.4643	5.797E+09	-99.3434	6562500.	0.000
168.000	0.000136	-11501.	1892.8276	1.611e-06	355.6343	5.797E+09	-148.9768	6562500.	0.000
174.000	0.000110	-2824.0297	1058.6081	-5.802e-06	312.4654	5.797E+09	-129.0964	7031250.	0.000
180.000	6.658e-05	1206.4988	421.6473	-6.639e-06	304.4180	5.797E+09	-83.2239	7500000.	0.000
186.000	3.049e-05	2240.5183	57.6432	-4.856e-06	309.5624	5.797E+09	-38.1108	7500000.	0.000
192.000	8.312e-06	1901.7135	-87.8609	-2.712e-06	307.8768	5.797E+09	-10.3906	7500000.	0.000
198.000	-2.054e-06	1188.1397	-111.3317	-1.113e-06	304.3267	5.797E+09	2.5670	7500000.	0.000
204.000	-5.041e-06	566.5340	-84.7274	-2.047e-07	301.2341	5.797E+09	6.3011	7500000.	0.000
210.000	-4.510e-06	171.5584	-48.9117	1.773e-07	299.2690	5.797E+09	5.6374	7500000.	0.000
216.000	-2.914e-06	-20.5344	-21.0738	2.554e-07	298.5177	5.797E+09	3.6419	7500000.	0.000
222.000	-1.445e-06	-81.5114	-4.7308	2.026e-07	298.8210	5.797E+09	1.8058	7500000.	0.000
228.000	-4.819e-07	-77.4500	2.4938	1.204e-07	298.8008	5.797E+09	0.6024	7500000.	0.000
234.000	-2.439e-10	-51.6724	4.3021	5.354e-08	298.6726	5.797E+09	0.000343	8425927.	0.000
240.000	1.606e-07	-25.8632	3.5869	1.341e-08	298.5442	5.797E+09	-0.2387	8921570.	0.000
246.000	1.607E-07	-8.6387	2.1538	-4.441e-09	298.4585	5.797E+09	-0.2390	8921570.	0.000
252.000	1.073e-07	-0.0148	0.9583	-8.919e-09	298.4156	5.797E+09	-0.1595	8921570.	0.000
258.000	5.370e-08	2.8674	0.2403	-7.443e-09	298.4298	5.797E+09	-0.0798	8921570.	0.000
264.000	1.794e-08	2.8741	-0.0793	-4.472e-09	298.4298	5.797E+09	-0.0267	8921570.	0.000
270.000	3.912e-11	1.9191	-0.1595	-1.991e-09	298.4251	5.797E+09	-5.817e-05	8921570.	0.000
276.000	-5.948e-09	0.9614	-0.1332	-5.003e-10	298.4203	5.797E+09	0.008844	8921570.	0.000
282.000	-5.965e-09	0.3217	-0.0800	1.637e-10	298.4171	5.797E+09	0.008869	8921570.	0.000
288.000	-3.984e-09	0.001088	-0.0356	3.307e-10	298.4155	5.797E+09	0.005924	8921570.	0.000
294.000	-1.996e-09	-0.1062	-0.008962	2.763e-10	298.4160	5.797E+09	0.002968	8921570.	0.000
300.000	-6.682e-10	-0.1067	0.002923	1.661e-10	298.4160	5.797E+09	0.000993	8921570.	0.000
306.000	-2.570e-12	-0.0713	0.005914	7.404e-11	298.4159	5.797E+09	3.821e-06	8921570.	0.000
312.000	2.204e-10	-0.0357	0.004943	1.866e-11	298.4157	5.797E+09	-0.000328	8921570.	0.000
318.000	2.213e-10	-0.0120	0.002973	-6.033e-12	298.4156	5.797E+09	-0.000329	8921570.	0.000
324.000	1.480e-10	-6.040e-05	0.001325	-1.226e-11	298.4155	5.797E+09	-0.000220	8921570.	0.000
330.000	7.420e-11	0.003935	0.000334	-1.026e-11	298.4155	5.797E+09	-0.000110	8921570.	0.000
336.000	2.488e-11	0.003958	-0.000108	-6.172e-12	298.4155	5.797E+09	-3.699e-05	8921570.	0.000
342.000	0.000	0.002647	-0.000219	-2.753e-12	298.4155	5.797E+09	-2.036e-07	8921570.	0.000
348.000	-8.163e-12	0.001328	-0.000183	0.000	298.4155	5.797E+09	1.214e-05	8921570.	0.000
354.000	-8.214e-12	0.000446	-0.000110	0.000	298.4155	5.797E+09	1.221E-05	8921570.	0.000
360.000	-5.495e-12	2.985e-06	-4.928e-05	0.000	298.4155	5.797E+09	8.171e-06	8921570.	0.000
366.000	-2.758E-12	-0.000146	-1.247e-05	0.000	298.4155	5.797E+09	4.101e-06	8921570.	0.000
372.000	0.000	-0.000147	3.970e-06	0.000	298.4155	5.797E+09	1.377e-06	8921570.	0.000
378.000	0.000	-9.832e-05	8.131e-06	0.000	298.4155	5.797E+09	9.851e-09	8921570.	0.000
384.000	0.000	-4.938e-05	6.812e-06	0.000	298.4155	5.797E+09	-4.497e-07	8921570.	0.000
390.000	0.000	-1.660e-05	4.103e-06	0.000	298.4155	5.797E+09	-4.532e-07	8921570.	0.000
396.000	0.000	-1.384e-07	1.833e-06	0.000	298.4155	5.797E+09	-3.035e-07	8921570.	0.000
402.000	0.000	5.401e-06	4.649e-07	0.000	298.4155	5.797E+09	-1.524e-07	8921570.	0.000
408.000	0.000	5.450e-06	-1.463e-07	0.000	298.4155	5.797E+09	-5.128e-08	8921570.	0.000
414.000	0.000	3.652e-06	-3.015e-07	0.000	298.4155	5.797E+09	-4.509e-10	8921570.	0.000
420.000	0.000	1.835e-06	-2.529e-07	0.000	298.4155	5.797E+09	1.666e-08	8921570.	0.000
426.000	0.000	6.182e-07	-1.524e-07	0.000	298.4155	5.797E+09	1.682e-08	8921570.	0.000
432.000	0.000	6.165e-09	-6.815e-08	0.000	298.4155	5.797E+09	1.127e-08	8921570.	0.000
438.000	0.000	-2.001e-07	-1.734e-08	0.000	298.4155	5.797E+09	5.667e-09	8921570.	0.000
444.000	0.000	-2.023e-07	5.390e-09	0.000	298.4155	5.797E+09	1.909e-09	8921570.	0.000

450.000	0.000	-1.356E-07	1.118E-08	0.000	298.4155	5.797E+09	1.991E-11	8921570.	0.000
456.000	0.000	-6.823E-08	9.386E-09	0.000	298.4155	5.797E+09	-6.171E-10	8921570.	0.000
462.000	0.000	-2.302E-08	5.663E-09	0.000	298.4155	5.797E+09	-6.241E-10	8921570.	0.000
468.000	0.000	-2.670E-10	2.534E-09	0.000	298.4155	5.797E+09	-4.186E-10	8921570.	0.000
474.000	0.000	7.412E-09	6.466E-10	0.000	298.4155	5.797E+09	-2.106E-10	8921570.	0.000
480.000	0.000	7.506E-09	-1.986E-10	0.000	298.4155	5.797E+09	-7.109E-11	8921570.	0.000
486.000	0.000	5.037E-09	-4.145E-10	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
492.000	0.000	2.536E-09	-3.484E-10	0.000	298.4155	5.797E+09	2.286E-11	8921570.	0.000
498.000	0.000	8.569E-10	-2.104E-10	0.000	298.4155	5.797E+09	2.316E-11	8921570.	0.000
504.000	0.000	1.133E-11	-9.424E-11	0.000	298.4155	5.797E+09	1.555E-11	8921570.	0.000
510.000	0.000	-2.746E-10	-2.411E-11	0.000	298.4155	5.797E+09	7.829E-12	8921570.	0.000
516.000	0.000	-2.785E-10	7.318E-12	0.000	298.4155	5.797E+09	2.647E-12	8921570.	0.000
522.000	0.000	-1.871E-10	1.537E-11	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
528.000	0.000	-9.427E-11	1.293E-11	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
534.000	0.000	-3.191E-11	7.815E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
540.000	0.000	0.000	3.504E-12	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
546.000	0.000	1.017E-11	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
552.000	0.000	1.033E-11	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
558.000	0.000	6.943E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
564.000	0.000	3.499E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
570.000	0.000	1.190E-12	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
582.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
588.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.797E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial stress and do not equal the
  actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0176526 radians
Maximum bending moment           =      1251644. inch-lbs
Maximum shear force              =        60045. lbs
Depth of maximum bending moment  =     54.0000000 inches below pile head
Depth of maximum shear force     =       0.000000 inches below pile head
Number of iterations             =             15
Number of zero deflection points =             14
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

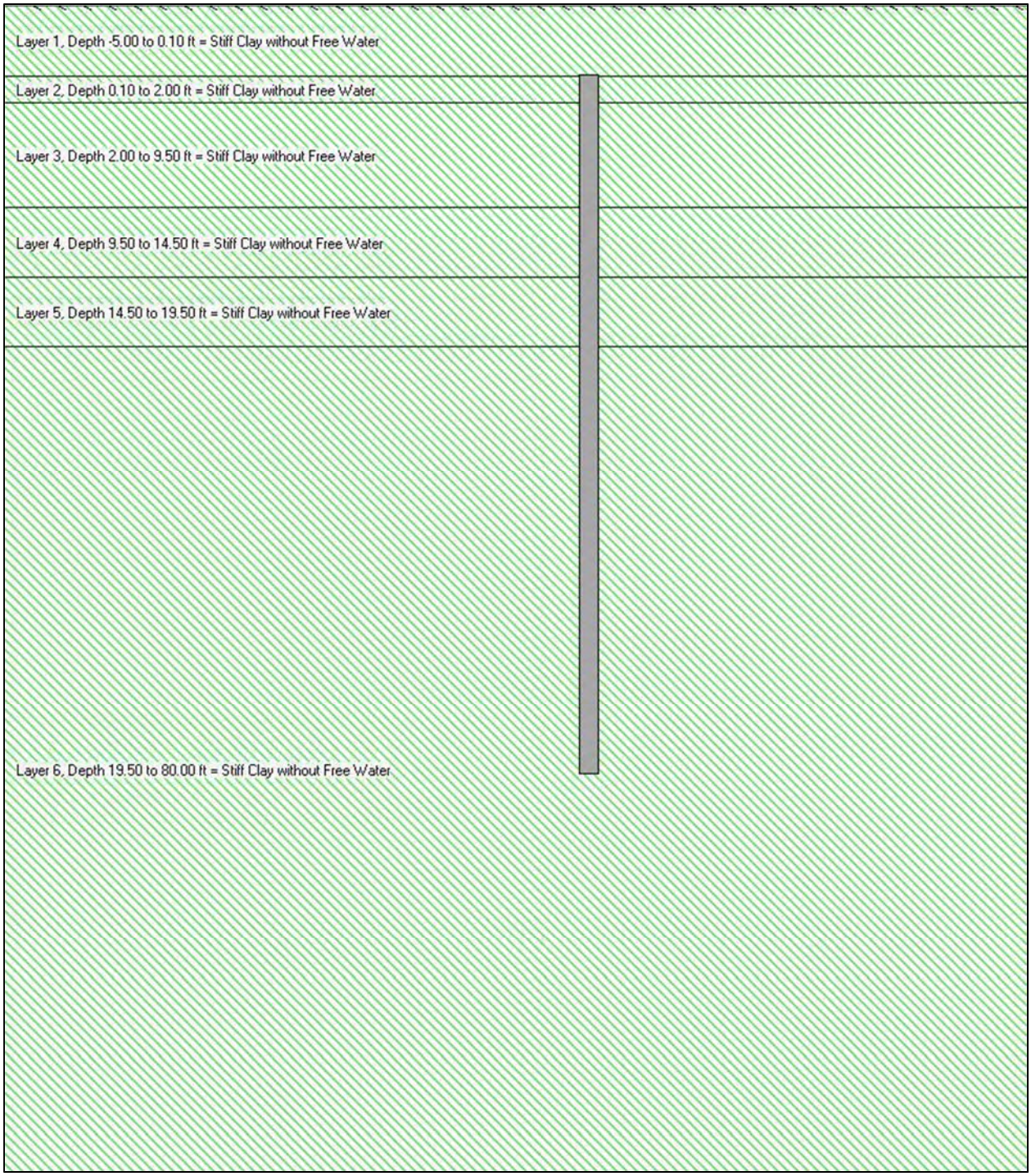
Load Case No.	Load Type	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	60000.	0.25000000	538668.	34535.	-0.00584721
2	4	y = 0.5000	M = 0.000	60000.	0.50000000	817242.	45555.	-0.01015495
3	4	y = 1.0000	M = 0.000	60000.	1.00000000	1251644.	60045.	-0.01765265

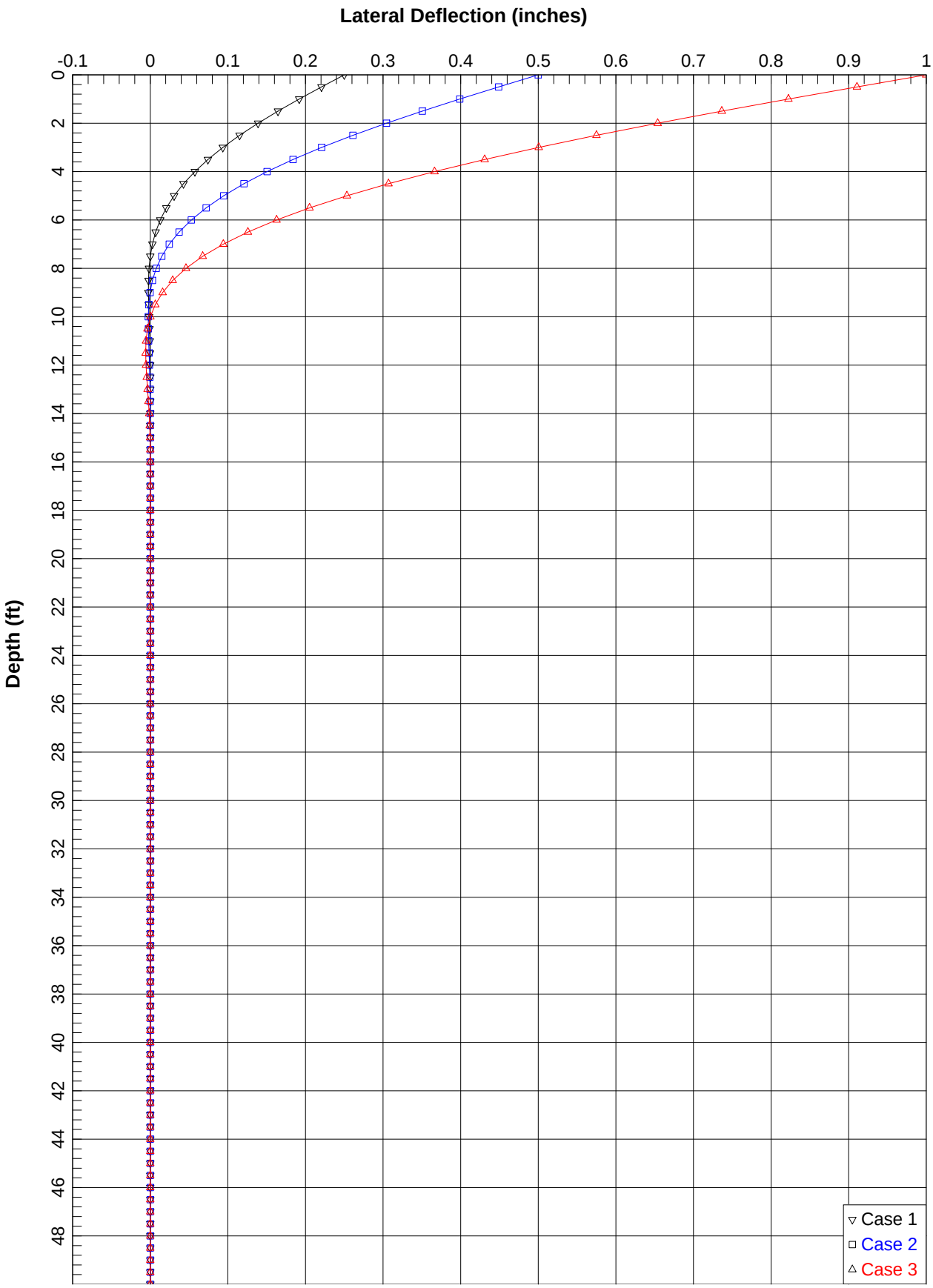
The analysis ended normally.

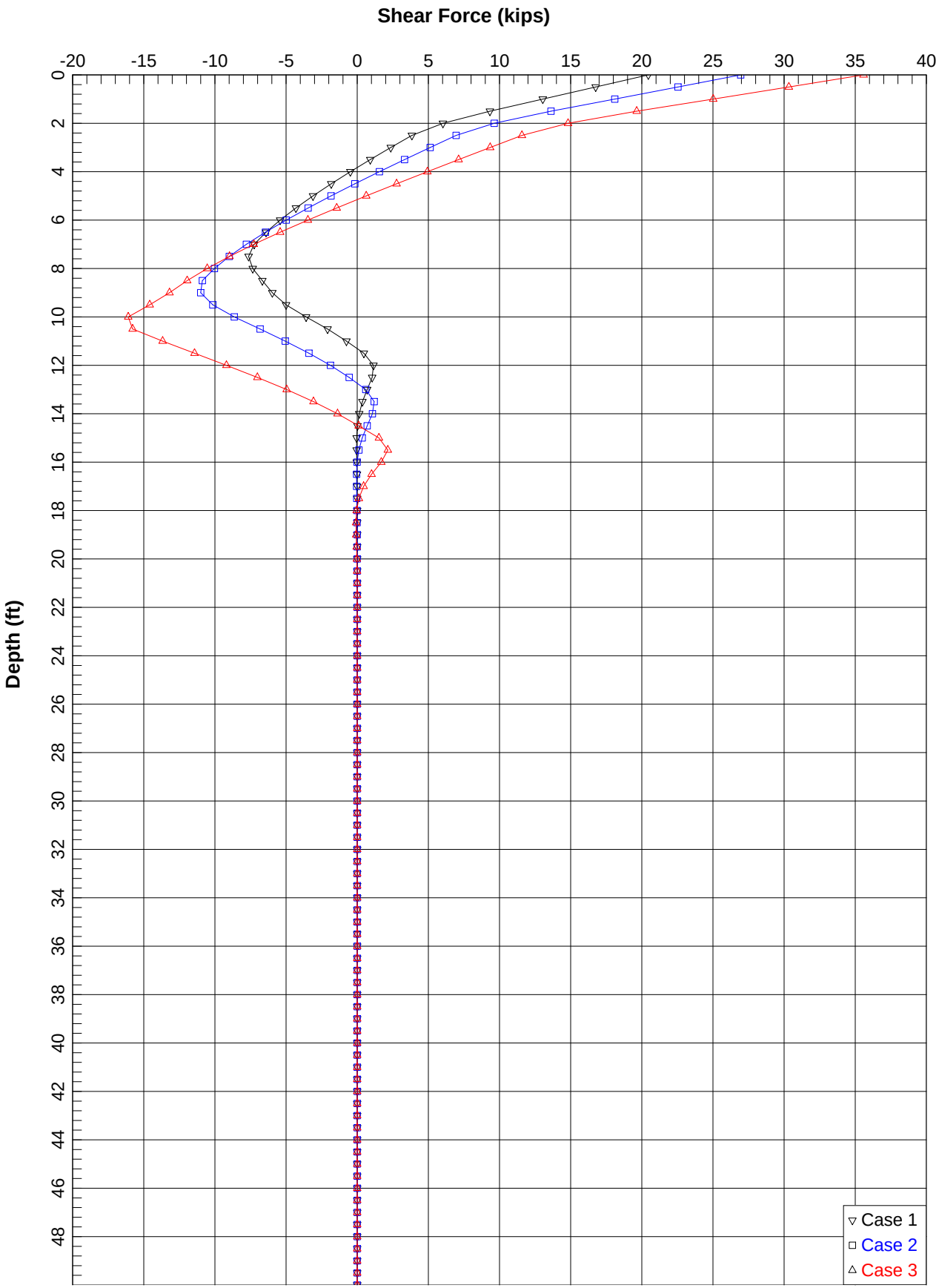
SUPPORT: **ABUTMENT 5 PILASTER**

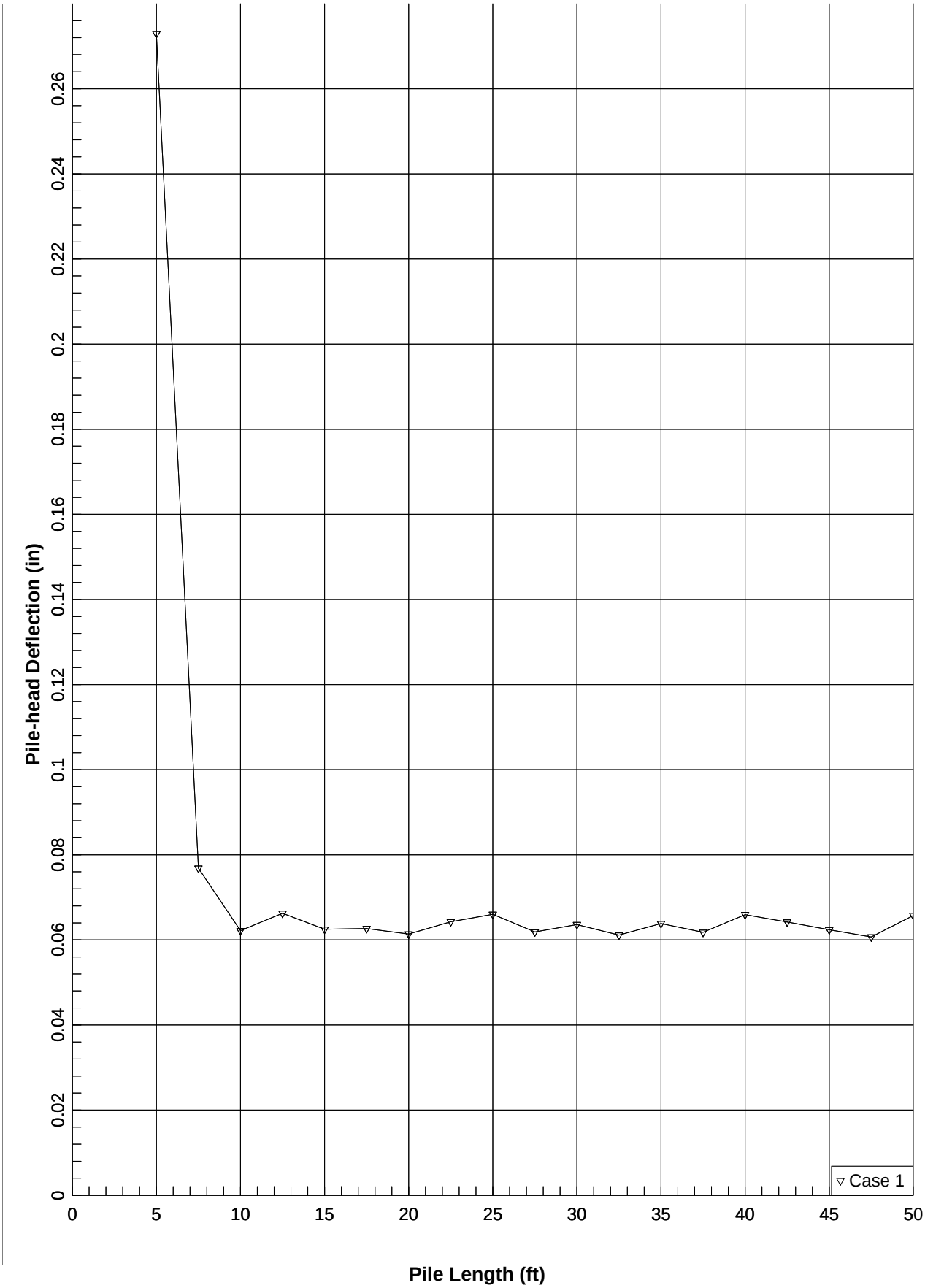
LOAD DIRECTION: **TRANSVERSE**

1. SOIL-PILE PROFILE PLOT
2. DEFLECTION VS DEPTH PLOT (P-AVG CASE)
3. SHEAR VS. DEPTH PLOT (P-AVG CASE)
4. CRITICAL LENGTH PLOT (P-AVG CASE)
5. OUTPUT FILE FOR CRITICAL LENGTH ANALYSIS (P-AVG CASE)
6. OUTPUT FILE FOR DEFLECTION (P-AVG CASE)
7. SHEAR VS DEPTH PLOT (LEADING ROW CASE)
8. MOMENT VS DEPTH PLOT (LEADING ROW CASE)
9. OUTPUT FILE FOR LEADING ROW CASE


Layer 1, Depth -5.00 to 0.10 ft = Stiff Clay without Free Water
Layer 2, Depth 0.10 to 2.00 ft = Stiff Clay without Free Water
Layer 3, Depth 2.00 to 9.50 ft = Stiff Clay without Free Water
Layer 4, Depth 9.50 to 14.50 ft = Stiff Clay without Free Water
Layer 5, Depth 14.50 to 19.50 ft = Stiff Clay without Free Water
Layer 6, Depth 19.50 to 80.00 ft = Stiff Clay without Free Water


Lateral Deflection (inches)
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Pile-head Deflection (in)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0
5
10
15
20
25
30
35
40
45
50
Pile Length (ft)
Case 1

LPile Plus for Windows, Version 6 (6.0.25)

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

This copy of LPile is licensed to:

Group Delta Consultantsm Inc.
Irvine, Ca

Serial Number of Security Device: 156242237
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated_LG_ 6-05-17\Abut 5\
Name of input data file: Abut 5_Pil_transv_Critical Length.lp6d
Name of output report file: Abut 5_Pil_transv_Critical Length.lp6o
Name of plot output file: Abut 5_Pil_transv_Critical Length.lp6p
Name of runtime messeage file: Abut 5_Pil_transv_Critical Length.lp6r

Date and Time of Analysis

Date: June 6, 2017 Time: 17:29:11

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transportation

Engineer: LG

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 5 Pilaster

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal moment capacity with pile response computed using nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	Elastic Pile
Cross-sectional Shape	Circular
Section Length	50.000 ft
Top Width	16.000 in
Bottom Width	16.000 in
Top Area	201.061930 sq. in
Bottom Area	201.061930 sq. in
Moment of Inertia at Top	1608.495 in^4
Moment of Inertia at Bottom	1608.495 in^4
Elastic Modulus	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.000 ft
Distance from top of pile to bottom of layer = 0.100 ft

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.100 ft
Distance from top of pile to bottom of layer = 2.000 ft

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 2.000 ft
Distance from top of pile to bottom of layer = 9.500 ft

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 9.500 ft
Distance from top of pile to bottom of layer = 14.500 ft

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 14.500 ft
Distance from top of pile to bottom of layer = 19.500 ft

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 19.500 ft
Distance from top of pile to bottom of layer = 80.000 ft

(Depth of lowest layer extends 30.00 ft below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 12 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	-5.00	120.00000
2	0.10	120.00000
3	0.10	120.00000
4	2.00	120.00000
5	2.00	120.00000
6	9.50	120.00000
7	9.50	125.00000
8	14.50	125.00000
9	14.50	125.00000
10	19.50	125.00000
11	19.50	125.00000
12	80.00	125.00000

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Epsilon 50	J	kpy pci	Depth ft	Eff. Unit Wt., pcf	Cohesion Rock Emass psi	krm pci	Friction Test Type	Friction Test Prop. Ang., deg.	qu Elas. psi	Subgr. percent
1	Stiff Clay w/o Free Water	--	--	--	-5.000	120.000	4000.000	--	--	--	--	--
--		0.00	--	--	0.10000	120.000	4000.000	--	--	--	--	--
--		0.00	--	--	0.10000	120.000	4000.000	--	--	--	--	--
2	Stiff Clay w/o Free Water	--	--	--	2.000	120.000	4000.000	--	--	--	--	--
--		0.00	--	--	2.000	120.000	4000.000	--	--	--	--	--
3	Stiff Clay w/o Free Water	--	--	--	9.500	120.000	1500.000	--	--	--	--	--
--		0.00	--	--	9.500	120.000	1500.000	--	--	--	--	--
4	Stiff Clay w/o Free Water	--	--	--	14.500	125.000	3500.000	--	--	--	--	--
--		0.00	--	--	14.500	125.000	3500.000	--	--	--	--	--
5	Stiff Clay w/o Free Water	--	--	--	19.500	125.000	4000.000	--	--	--	--	--
--		0.00	--	--	19.500	125.000	4000.000	--	--	--	--	--
6	Stiff Clay w/o Free Water	--	--	--	80.000	125.000	4500.000	--	--	--	--	--
--		0.00	--	--	80.000	125.000	4500.000	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.5200	1.0000
2	50.000	0.5200	1.0000

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
1	1	V = 12000. lbs	M = 0.0000 in-lbs	60000.

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-Curvature properties derived from elastic section properties

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)

Horizontal shear force at pile head = 12000.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.0658	-2.235E-09	12000.	-0.001691	298.4155	5.799E+09	-439.7289	20063.	0.000
6.000	0.0556	64694.	9366.8509	-0.001658	620.1753	5.799E+09	-437.9875	47259.	0.000
12.000	0.0459	113596.	6752.1203	-0.001565	863.3938	5.799E+09	-433.5894	56724.	0.000
18.000	0.0368	146846.	4174.0442	-0.001431	1028.7681	5.799E+09	-425.7693	69374.	0.000
24.000	0.0287	164714.	1924.1896	-0.001269	1117.6365	5.799E+09	-324.1823	67781.	0.000
30.000	0.0216	170850.	460.2456	-0.001096	1148.1552	5.799E+09	-163.7991	45517.	0.000
36.000	0.0155	171026.	-498.1824	-0.000919	1149.0292	5.799E+09	-155.6769	60078.	0.000
42.000	0.0106	165534.	-1402.2926	-0.000745	1121.7126	5.799E+09	-145.6931	82739.	0.000
48.000	0.006611	154735.	-2239.7120	-0.000579	1068.0030	5.799E+09	-133.4467	121120.	0.000
54.000	0.003617	139074.	-2994.3486	-0.000427	990.1132	5.799E+09	-118.0989	195924.	0.000
60.000	0.001486	119110.	-3640.3280	-0.000293	890.8202	5.799E+09	-97.2276	392545.	0.000
66.000	9.503E-05	95601.	-4048.5455	-0.000182	773.8980	5.799E+09	-38.8450	2452637.	0.000
72.000	-0.000703	70659.	-3910.0965	-9.637E-05	649.8436	5.799E+09	84.9947	725908.	0.000
78.000	-0.001061	48750.	-3365.0354	-3.459E-05	540.8764	5.799E+09	96.6924	546593.	0.000

84.000	-0.001118	30303.	-2780.8411	6.308E-06	449.1317	5.799E+09	98.0390	526327.	0.000
90.000	-0.000986	15375.	-2201.6869	2.994E-05	374.8846	5.799E+09	95.0124	578340.	0.000
96.000	-0.000758	3861.4851	-1649.6903	3.989E-05	317.6210	5.799E+09	88.9865	704063.	0.000
102.000	-0.000507	-4449.9800	-1141.3262	3.959E-05	320.5479	5.799E+09	80.4682	952287.	0.000
108.000	-0.000283	-9862.9320	-533.6900	3.218E-05	347.4697	5.799E+09	122.0772	2585595.	0.000
114.000	-0.000121	-10877.	114.6489	2.145E-05	352.5154	5.799E+09	94.0358	4670451.	0.000
120.000	-2.586E-05	-8502.5907	481.3978	1.143E-05	340.7039	5.799E+09	28.2138	6547288.	0.000
126.000	1.631E-05	-5108.8851	512.5314	4.384E-06	323.8250	5.799E+09	-17.8359	6562500.	0.000
132.000	2.675E-05	-2355.3701	371.2440	5.222E-07	310.1302	5.799E+09	-29.2599	6562500.	0.000
138.000	2.257E-05	-654.3330	209.3947	-1.035E-06	301.6699	5.799E+09	-24.6899	6562500.	0.000
144.000	1.433E-05	158.1120	88.2949	-1.292E-06	299.2019	5.799E+09	-15.6767	6562500.	0.000
150.000	7.074E-06	406.1362	18.0532	-9.997E-07	300.4355	5.799E+09	-7.7372	6562500.	0.000
156.000	2.336E-06	375.4699	-12.8249	-5.953E-07	300.2830	5.799E+09	-2.5555	6562500.	0.000
162.000	-7.003E-08	252.6656	-20.2617	-2.704E-07	299.6722	5.799E+09	0.0766	6562500.	0.000
168.000	-9.079E-07	132.5245	-17.0529	-7.108E-08	299.0746	5.799E+09	0.9930	6562500.	0.000
174.000	-9.230E-07	48.0820	-10.8291	2.236E-08	298.6547	5.799E+09	1.0816	7031250.	0.000
180.000	-6.396E-07	2.5596	-5.1859	4.856E-08	298.4282	5.799E+09	0.7994	7500000.	0.000
186.000	-3.402E-07	-14.1839	-1.5117	4.255E-08	298.4861	5.799E+09	0.4253	7500000.	0.000
192.000	-1.290E-07	-15.6112	0.2480	2.713E-08	298.4932	5.799E+09	0.1612	7500000.	0.000
198.000	-1.466E-08	-11.2279	0.7867	1.325E-08	298.4714	5.799E+09	0.0183	7500000.	0.000
204.000	2.996E-08	-6.1808	0.7293	4.240E-09	298.4463	5.799E+09	-0.0375	7500000.	0.000
210.000	3.622E-08	-2.4798	0.4811	-2.410E-10	298.4279	5.799E+09	-0.0453	7500000.	0.000
216.000	2.707E-08	-0.4074	0.2438	-1.735E-09	298.4175	5.799E+09	-0.0338	7500000.	0.000
222.000	1.540E-08	0.4468	0.0845	-1.714E-09	298.4177	5.799E+09	-0.0192	7500000.	0.000
228.000	6.499E-09	0.6079	0.002397	-1.169E-09	298.4185	5.799E+09	-0.008124	7500000.	0.000
234.000	1.374E-09	0.4764	-0.0278	-6.077E-10	298.4179	5.799E+09	-0.001929	8425927.	0.000
240.000	-7.939E-10	0.2752	-0.0300	-2.189E-10	298.4169	5.799E+09	0.001180	8921570.	0.000
246.000	-1.253E-09	0.1164	-0.0209	-1.624E-11	298.4161	5.799E+09	0.001863	8921570.	0.000
252.000	-9.887E-10	0.0247	-0.0109	5.678E-11	298.4156	5.799E+09	0.001478	8921570.	0.000
258.000	-5.714E-10	-0.0141	-0.003920	6.224E-11	298.4156	5.799E+09	0.000850	8921570.	0.000
264.000	-2.418E-10	-0.0224	-0.000293	4.333E-11	298.4156	5.799E+09	0.000360	8921570.	0.000
270.000	-5.136E-11	-0.0177	0.001015	2.260E-11	298.4156	5.799E+09	7.636E-05	8921570.	0.000
276.000	2.931E-11	-0.0102	0.001114	8.152E-12	298.4156	5.799E+09	-4.358E-05	8921570.	0.000
282.000	4.646E-11	-0.004333	0.000776	0.000	298.4155	5.799E+09	-6.909E-05	8921570.	0.000
288.000	3.672E-11	-0.000923	0.000405	-2.102E-12	298.4155	5.799E+09	-5.459E-05	8921570.	0.000
294.000	2.124E-11	0.000522	0.000146	-2.310E-12	298.4155	5.799E+09	-3.158E-05	8921570.	0.000
300.000	9.000E-12	0.000831	1.113E-05	-1.610E-12	298.4155	5.799E+09	-1.338E-05	8921570.	0.000
306.000	1.920E-12	0.000657	-3.758E-05	0.000	298.4155	5.799E+09	-2.855E-06	8921570.	0.000
312.000	-1.082E-12	0.000380	-4.132E-05	0.000	298.4155	5.799E+09	1.609E-06	8921570.	0.000
318.000	-1.723E-12	0.000161	-2.881E-05	0.000	298.4155	5.799E+09	2.562E-06	8921570.	0.000
324.000	-1.363E-12	3.451E-05	-1.504E-05	0.000	298.4155	5.799E+09	2.027E-06	8921570.	0.000
330.000	0.000	-1.928E-05	-5.438E-06	0.000	298.4155	5.799E+09	1.174E-06	8921570.	0.000
336.000	0.000	-3.080E-05	-4.227E-07	0.000	298.4155	5.799E+09	4.980E-07	8921570.	0.000
342.000	0.000	-2.439E-05	1.391E-06	0.000	298.4155	5.799E+09	1.067E-07	8921570.	0.000
348.000	0.000	-1.413E-05	1.533E-06	0.000	298.4155	5.799E+09	-5.938E-08	8921570.	0.000
354.000	0.000	-6.001E-06	1.070E-06	0.000	298.4155	5.799E+09	-9.503E-08	8921570.	0.000
360.000	0.000	-1.290E-06	5.592E-07	0.000	298.4155	5.799E+09	-7.528E-08	8921570.	0.000
366.000	0.000	7.116E-07	2.025E-07	0.000	298.4155	5.799E+09	-4.362E-08	8921570.	0.000
372.000	0.000	1.142E-06	1.605E-08	0.000	298.4155	5.799E+09	-1.853E-08	8921570.	0.000
378.000	0.000	9.058E-07	-5.151E-08	0.000	298.4155	5.799E+09	-3.989E-09	8921570.	0.000
384.000	0.000	5.252E-07	-5.690E-08	0.000	298.4155	5.799E+09	2.192E-09	8921570.	0.000
390.000	0.000	2.233E-07	-3.975E-08	0.000	298.4155	5.799E+09	3.524E-09	8921570.	0.000
396.000	0.000	4.821E-08	-2.079E-08	0.000	298.4155	5.799E+09	2.795E-09	8921570.	0.000
402.000	0.000	-2.627E-08	-7.542E-09	0.000	298.4155	5.799E+09	1.621E-09	8921570.	0.000
408.000	0.000	-4.237E-08	-6.092E-10	0.000	298.4155	5.799E+09	6.896E-10	8921570.	0.000
414.000	0.000	-3.364E-08	1.907E-09	0.000	298.4155	5.799E+09	1.491E-10	8921570.	0.000
420.000	0.000	-1.952E-08	2.111E-09	0.000	298.4155	5.799E+09	-8.091E-11	8921570.	0.000
426.000	0.000	-8.310E-09	1.477E-09	0.000	298.4155	5.799E+09	-1.307E-10	8921570.	0.000
432.000	0.000	-1.802E-09	7.730E-10	0.000	298.4155	5.799E+09	-1.038E-10	8921570.	0.000
438.000	0.000	9.695E-10	2.809E-10	0.000	298.4155	5.799E+09	-6.026E-11	8921570.	0.000
444.000	0.000	1.571E-09	2.311E-11	0.000	298.4155	5.799E+09	-2.566E-11	8921570.	0.000
450.000	0.000	1.249E-09	-7.059E-11	0.000	298.4155	5.799E+09	-5.572E-12	8921570.	0.000
456.000	0.000	7.255E-10	-7.835E-11	0.000	298.4155	5.799E+09	2.986E-12	8921570.	0.000
462.000	0.000	3.092E-10	-5.485E-11	0.000	298.4155	5.799E+09	4.848E-12	8921570.	0.000
468.000	0.000	6.735E-11	-2.874E-11	0.000	298.4155	5.799E+09	3.854E-12	8921570.	0.000
474.000	0.000	-3.578E-11	-1.046E-11	0.000	298.4155	5.799E+09	2.240E-12	8921570.	0.000
480.000	0.000	-5.828E-11	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
486.000	0.000	-4.638E-11	2.613E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
492.000	0.000	-2.696E-11	2.907E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
498.000	0.000	-1.151E-11	2.037E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
504.000	0.000	-2.517E-12	1.069E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
510.000	0.000	1.321E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
516.000	0.000	2.161E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
522.000	0.000	1.722E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
528.000	0.000	1.002E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
534.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
540.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
546.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
552.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
558.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
564.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
570.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
582.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000

588.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial stress and do not equal the
  actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.0657534 inches
Computed slope at pile head      =     -0.0016910 radians
Maximum bending moment           =         171026. inch-lbs
Maximum shear force              =          12000. lbs
Depth of maximum bending moment  =     36.0000000 inches below pile head
Depth of maximum shear force     =      0.000000 inches below pile head
Number of iterations             =             22
Number of zero deflection points =             15

Iteration 96,   Y(top) =  -1.1416E+00, dYmax =   2.3069E+00
Iteration 97,   Y(top) =  -3.5818E+00, dYmax =   4.7861E+00
Iteration 98,   Y(top) =  -7.2807E-01, dYmax =   5.4166E+00
Iteration 99,   Y(top) =   7.8812E+00, dYmax =   1.9832E+01
Iteration 100,  Y(top) =   9.2464E-02, dYmax =   1.9940E+01
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          12000. lbs
Moment     =              0. in-lbs
Axial Load =          60000. lbs
```

Pile Length inches	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
600.000	0.0657534	171026.	12000.
570.000	0.0607025	173050.	12000.
540.000	0.0624031	173711.	12000.
510.000	0.0642036	174039.	12000.
480.000	0.0659317	171694.	12000.
450.000	0.0618015	173809.	12000.
420.000	0.0638546	174812.	12000.
390.000	0.0611298	173823.	12000.
360.000	0.0636160	174472.	12000.
330.000	0.0618620	174123.	12000.
300.000	0.0660067	172074.	12000.
270.000	0.0642535	174825.	12000.
240.000	0.0613937	173987.	12000.
210.000	0.0626675	174397.	12000.
180.000	0.0624992	174378.	12000.
150.000	0.0662583	172246.	12000.
120.000	0.0621807	173995.	12000.
90.000	0.0768553	163135.	12000.
60.000	0.2729376	124626.	12000.

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load	Pile-head Condition 1	Pile-head Condition 2	Axial	Pile-head	Maximum	Maximum Pile-head

Case No.	Type No.	V(lbs) or y(inches)	in-lb, rad., or in-lb/rad.	Loading lbs	Deflection inches	Moment in-lbs	Shear lbs	Rotation radians
1	1	V = 12000.	M = 0.000	60000.	0.06575341	171026.	12000.	-0.00169100

The analysis ended normally.

Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 12.00000 ft
Distance from top of pile to bottom of layer = 17.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4000.00000 psi
Undrained cohesion at bottom of layer = 4000.00000 psi
Epsilon-50 at top of layer = 0.00700
Epsilon-50 at bottom of layer = 0.00700

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 17.00000 ft
Distance from top of pile to bottom of layer = 80.00000 ft
Effective unit weight at top of layer = 125.00000 pcf
Effective unit weight at bottom of layer = 125.00000 pcf
Undrained cohesion at top of layer = 4500.00000 psi
Undrained cohesion at bottom of layer = 4500.00000 psi
Epsilon-50 at top of layer = 0.00500
Epsilon-50 at bottom of layer = 0.00500

(Depth of lowest soil layer extends 30.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth ft	Effective Rock Mass Unit Wt. pcf	Undrained In-situ Cohesion psf	Angle of In-situ Friction Test deg.	Uniaxial Elastic qu Test Property	Subgrade Mod. pci	RQD % or GSI
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	4000.000	--	--	--	--
		0.00700	--	--	0.10000	120.000	4000.000	--	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	1500.000	--	--	--	--
		0.00700	--	--	7.000	120.000	1500.000	--	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	7.000	120.000	3500.000	--	--	--	--
		0.00700	--	--	12.000	120.000	3500.000	--	--	--	--
4	Stiff Clay w/o Free Water	0.00700	--	--	12.000	125.000	4000.000	--	--	--	--
		0.00700	--	--	17.000	125.000	4000.000	--	--	--	--
5	Stiff Clay w/o Free Water	0.00500	--	--	17.000	125.000	4500.000	--	--	--	--
		0.00500	--	--	80.000	125.000	4500.000	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6200	1.0000
2	50.000	0.6200	1.0000

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 = 3

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.25000 in	M = 0.0000 in-lbs		131000.	False
2	4	y = 0.50000 in	M = 0.0000 in-lbs		131000.	False
3	4	y = 1.00000 in	M = 0.0000 in-lbs		131000.	False

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	13972.	-0.004592	651.5405	5.799E+09	-510.2695	6123.2345	0.000
6.000	0.2224	78257.	11663.	-0.004552	1040.7569	5.799E+09	-259.2775	6993.4449	0.000
12.000	0.1954	147116.	10100.	-0.004435	1383.2333	5.799E+09	-261.7459	8038.1327	0.000
18.000	0.1692	206432.	8526.4134	-0.004252	1678.2492	5.799E+09	-262.8732	9320.4554	0.000
24.000	0.1444	256117.	6950.0188	-0.004013	1925.3628	5.799E+09	-262.5917	10915.	0.000
30.000	0.1211	296141.	5379.7605	-0.003727	2124.4235	5.799E+09	-260.8277	12926.	0.000
36.000	0.0996	326534.	3824.7764	-0.003405	2275.5853	5.799E+09	-257.5003	15509.	0.000
42.000	0.0802	347391.	2294.7237	-0.003056	2379.3211	5.799E+09	-252.5173	18890.	0.000
48.000	0.0629	358875.	799.8601	-0.002691	2436.4386	5.799E+09	-245.7706	23427.	0.000
54.000	0.0479	361220.	-648.8348	-0.002319	2448.0994	5.799E+09	-237.1278	29695.	0.000
60.000	0.0351	354734.	-2039.4698	-0.001948	2415.8415	5.799E+09	-226.4172	38679.	0.000
66.000	0.0245	339808.	-3358.9203	-0.001589	2341.6088	5.799E+09	-213.3996	52186.	0.000
72.000	0.0161	316924.	-4592.2366	-0.001249	2227.7926	5.799E+09	-197.7059	73875.	0.000
78.000	0.009547	286665.	-5721.4001	-0.000937	2077.2953	5.799E+09	-178.6820	112295.	0.000
84.000	0.004816	249740.	-6857.3593	-0.000659	1893.6456	5.799E+09	-199.9711	249108.	0.000
90.000	0.001636	205413.	-8108.6207	-0.000424	1673.1810	5.799E+09	-217.1161	796083.	0.000
96.000	-0.000268	153103.	-8385.8027	-0.000238	1413.0110	5.799E+09	124.7221	2787546.	0.000
102.000	-0.001223	105158.	-7370.4246	-0.000105	1174.5531	5.799E+09	213.7373	1048781.	0.000
108.000	-0.001524	64822.	-6031.3220	-1.671E-05	973.9394	5.799E+09	232.6302	915725.	0.000
114.000	-0.001423	32808.	-4627.7030	3.380E-05	814.7157	5.799E+09	235.2428	991708.	0.000
120.000	-0.001119	9236.5526	-3239.0891	5.556E-05	697.4794	5.799E+09	227.6285	1220971.	0.000
126.000	-0.000757	-6148.0919	-1920.3475	5.715E-05	682.1186	5.799E+09	211.9520	1680856.	0.000
132.000	-0.000433	-13897.	-717.2517	4.678E-05	720.6609	5.799E+09	189.0799	2621576.	0.000
138.000	-0.000195	-14829.	180.1415	3.192E-05	725.2922	5.799E+09	110.0511	3382908.	0.000
144.000	-4.969E-05	-11786.	593.8363	1.815E-05	710.1590	5.799E+09	27.8472	3362323.	0.000
150.000	2.263E-05	-7731.1539	635.8219	8.054E-06	689.9922	5.799E+09	-13.8520	3672280.	0.000
156.000	4.696E-05	-4168.7449	505.7781	1.898E-06	672.2742	5.799E+09	-29.4960	3768707.	0.000
162.000	4.541E-05	-1664.8002	329.5414	-1.120E-06	659.8206	5.799E+09	-29.2496	3865137.	0.000
168.000	3.352E-05	-212.4870	175.4055	-2.092E-06	652.5974	5.799E+09	-22.1290	3961571.	0.000
174.000	2.031E-05	443.3537	67.8162	-1.972E-06	653.7456	5.799E+09	-13.7341	4058008.	0.000
180.000	9.850E-06	604.4070	6.1528	-1.430E-06	654.5466	5.799E+09	-6.8204	4154447.	0.000
186.000	3.146E-06	519.4355	-20.9953	-8.486E-07	654.1240	5.799E+09	-2.2290	4250889.	0.000
192.000	-3.330E-07	353.7969	-26.9706	-3.968E-07	653.3002	5.799E+09	0.2373	4274851.	0.000
198.000	-1.616E-06	196.4117	-22.8055	-1.122E-07	652.5174	5.799E+09	1.1511	4274851.	0.000
204.000	-1.679E-06	80.3076	-15.3893	3.100E-08	651.9400	5.799E+09	1.3209	4720485.	0.000
210.000	-1.244E-06	11.6914	-8.1735	7.860E-08	651.5987	5.799E+09	1.0843	5231250.	0.000
216.000	-7.358E-07	-17.8983	-2.9959	7.539E-08	651.6296	5.799E+09	0.6415	5231250.	0.000
222.000	-3.390E-07	-24.3784	-0.1845	5.351E-08	651.6618	5.799E+09	0.2956	5231250.	0.000
228.000	-9.364E-08	-20.1968	0.9472	3.045E-08	651.6410	5.799E+09	0.0816	5231250.	0.000
234.000	2.637E-08	-13.0596	1.1232	1.325E-08	651.6055	5.799E+09	-0.0230	5231250.	0.000

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240.000	6.531E-08	-6.7395	0.8834	3.003E-09	651.5741	5.799E+09	-0.0569	5231250.	0.000
246.000	6.241E-08	-2.4639	0.5493	-1.759E-09	651.5528	5.799E+09	-0.0544	5231250.	0.000
252.000	4.420E-08	-0.1450	0.2705	-3.109E-09	651.5413	5.799E+09	-0.0385	5231250.	0.000
258.000	2.510E-08	0.7865	0.0892	-2.777E-09	651.5445	5.799E+09	-0.0219	5231250.	0.000
264.000	1.089E-08	0.9294	-0.004958	-1.889E-09	651.5452	5.799E+09	-0.009490	5231250.	0.000
270.000	2.437E-09	0.7300	-0.0398	-1.030E-09	651.5442	5.799E+09	-0.002125	5231250.	0.000
276.000	-1.479E-09	0.4534	-0.0423	-4.181E-10	651.5428	5.799E+09	0.001290	5231250.	0.000
282.000	-2.580E-09	0.2229	-0.0317	-6.819E-11	651.5417	5.799E+09	0.002250	5231250.	0.000
288.000	-2.298E-09	0.0733	-0.0189	8.506E-11	651.5409	5.799E+09	0.002003	5231250.	0.000
294.000	-1.560E-09	-0.004356	-0.008841	1.207E-10	651.5406	5.799E+09	0.001360	5231250.	0.000
300.000	-8.490E-10	-0.0330	-0.002540	1.014E-10	651.5407	5.799E+09	0.000740	5231250.	0.000
306.000	-3.433E-10	-0.0350	0.000578	6.619E-11	651.5407	5.799E+09	0.000299	5231250.	0.000
312.000	-5.477E-11	-0.0262	0.001619	3.454E-11	651.5407	5.799E+09	4.775E-05	5231250.	0.000
318.000	7.117E-11	-0.0156	0.001576	1.291E-11	651.5406	5.799E+09	-6.205E-05	5231250.	0.000
324.000	1.001E-10	-0.007285	0.001128	1.056E-12	651.5406	5.799E+09	-8.729E-05	5231250.	0.000
330.000	8.385E-11	-0.002084	0.000647	-3.791E-12	651.5406	5.799E+09	-7.310E-05	5231250.	0.000
336.000	5.463E-11	0.000487	0.000285	-4.617E-12	651.5406	5.799E+09	-4.763E-05	5231250.	0.000
342.000	2.844E-11	0.001342	6.760E-05	-3.671E-12	651.5406	5.799E+09	-2.480E-05	5231250.	0.000
348.000	1.058E-11	0.001304	-3.447E-05	-2.302E-12	651.5406	5.799E+09	-9.227E-06	5231250.	0.000
354.000	0.000	0.000932	-6.430E-05	-1.145E-12	651.5406	5.799E+09	-7.128E-07	5231250.	0.000
360.000	-3.162E-12	0.000534	-5.816E-05	0.000	651.5406	5.799E+09	2.757E-06	5231250.	0.000
366.000	-3.827E-12	0.000235	-3.988E-05	0.000	651.5405	5.799E+09	3.337E-06	5231250.	0.000
372.000	-3.035E-12	5.533E-05	-2.193E-05	0.000	651.5405	5.799E+09	2.646E-06	5231250.	0.000
378.000	-1.900E-12	-2.879E-05	-9.026E-06	0.000	651.5405	5.799E+09	1.656E-06	5231250.	0.000
384.000	0.000	-5.326E-05	-1.591E-06	0.000	651.5405	5.799E+09	8.221E-07	5231250.	0.000
390.000	0.000	-4.809E-05	1.704E-06	0.000	651.5405	5.799E+09	2.762E-07	5231250.	0.000
396.000	0.000	-3.294E-05	2.505E-06	0.000	651.5405	5.799E+09	-9.319E-09	5231250.	0.000
402.000	0.000	-1.809E-05	2.127E-06	0.000	651.5405	5.799E+09	-1.166E-07	5231250.	0.000
408.000	0.000	-7.430E-06	1.399E-06	0.000	651.5405	5.799E+09	-1.259E-07	5231250.	0.000
414.000	0.000	-1.296E-06	7.365E-07	0.000	651.5405	5.799E+09	-9.504E-08	5231250.	0.000
420.000	0.000	1.418E-06	2.799E-07	0.000	651.5405	5.799E+09	-5.715E-08	5231250.	0.000
426.000	0.000	2.074E-06	2.771E-08	0.000	651.5405	5.799E+09	-2.693E-08	5231250.	0.000
432.000	0.000	1.758E-06	-7.688E-08	0.000	651.5405	5.799E+09	-7.935E-09	5231250.	0.000
438.000	0.000	1.155E-06	-9.606E-08	0.000	651.5405	5.799E+09	1.542E-09	5231250.	0.000
444.000	0.000	6.074E-07	-7.714E-08	0.000	651.5405	5.799E+09	4.765E-09	5231250.	0.000
450.000	0.000	2.303E-07	-4.874E-08	0.000	651.5405	5.799E+09	4.700E-09	5231250.	0.000
456.000	0.000	2.224E-08	-2.448E-08	0.000	651.5405	5.799E+09	3.388E-09	5231250.	0.000
462.000	0.000	-6.387E-08	-8.447E-09	0.000	651.5405	5.799E+09	1.956E-09	5231250.	0.000
468.000	0.000	-7.950E-08	3.195E-11	0.000	651.5405	5.799E+09	8.700E-10	5231250.	0.000
474.000	0.000	-6.375E-08	3.284E-09	0.000	651.5405	5.799E+09	2.140E-10	5231250.	0.000
480.000	0.000	-4.024E-08	3.636E-09	0.000	651.5405	5.799E+09	-9.681E-11	5231250.	0.000
486.000	0.000	-2.018E-08	2.776E-09	0.000	651.5405	5.799E+09	-1.899E-10	5231250.	0.000
492.000	0.000	-6.943E-09	1.685E-09	0.000	651.5405	5.799E+09	-1.737E-10	5231250.	0.000
498.000	0.000	4.938E-11	8.043E-10	0.000	651.5405	5.799E+09	-1.199E-10	5231250.	0.000
504.000	0.000	2.725E-09	2.454E-10	0.000	651.5405	5.799E+09	-6.640E-11	5231250.	0.000
510.000	0.000	3.008E-09	-3.673E-11	0.000	651.5405	5.799E+09	-2.764E-11	5231250.	0.000
516.000	0.000	2.293E-09	-1.352E-10	0.000	651.5405	5.799E+09	-5.172E-12	5231250.	0.000
522.000	0.000	1.391E-09	-1.360E-10	0.000	651.5405	5.799E+09	4.887E-12	5231250.	0.000
528.000	0.000	6.628E-10	-9.912E-11	0.000	651.5405	5.799E+09	7.417E-12	5231250.	0.000
534.000	0.000	2.015E-10	-5.779E-11	0.000	651.5405	5.799E+09	6.360E-12	5231250.	0.000
540.000	0.000	-3.110E-11	-2.607E-11	0.000	651.5405	5.799E+09	4.212E-12	5231250.	0.000
546.000	0.000	-1.120E-10	-6.733E-12	0.000	651.5405	5.799E+09	2.233E-12	5231250.	0.000
552.000	0.000	-1.124E-10	2.545E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
558.000	0.000	-8.177E-11	5.410E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
564.000	0.000	-4.764E-11	5.014E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
570.000	0.000	-2.165E-11	3.458E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
576.000	0.000	-6.143E-12	1.868E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
582.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
588.000	0.000	2.226E-12	0.000	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
594.000	0.000	1.126E-12	0.000	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	2615625.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =      0.2500000 inches
Computed slope at pile head       =     -0.0045923 radians
Maximum bending moment            =         361220. inch-lbs
Maximum shear force               =          13972. lbs
Depth of maximum bending moment   =     54.0000000 inches below pile head
Depth of maximum shear force      =      0.000000 inches below pile head
Number of iterations              =             16
Number of zero deflection points  =             13
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 131000.000 lbs

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Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	19052.	-0.008206	651.5405	5.799E+09	-606.8162	3640.8970	0.000
6.000	0.4508	109840.	16304.	-0.008149	1197.8380	5.799E+09	-309.3466	4117.6436	0.000
12.000	0.4022	208453.	14435.	-0.007985	1688.3029	5.799E+09	-313.5255	4677.0764	0.000
18.000	0.3549	295611.	12545.	-0.007724	2121.7881	5.799E+09	-316.3523	5347.6183	0.000
24.000	0.3095	371139.	10643.	-0.007379	2497.4349	5.799E+09	-317.7586	6159.7144	0.000
30.000	0.2664	434926.	8736.6751	-0.006962	2814.6859	5.799E+09	-317.6712	7154.8230	0.000
36.000	0.2260	486923.	6835.6317	-0.006485	3073.2989	5.799E+09	-316.0101	8390.5477	0.000
42.000	0.1886	527148.	4949.5430	-0.005960	3273.3608	5.799E+09	-312.6860	9948.8060	0.000
48.000	0.1545	555688.	3088.6948	-0.005400	3415.3043	5.799E+09	-307.5968	11949.	0.000
54.000	0.1238	572702.	1264.0394	-0.004816	3499.9250	5.799E+09	-300.6217	14573.	0.000
60.000	0.0967	578428.	-512.6633	-0.004221	3528.4030	5.799E+09	-291.6125	18102.	0.000
66.000	0.0731	573185.	-2228.6360	-0.003625	3502.3282	5.799E+09	-280.3784	23005.	0.000
72.000	0.0532	557382.	-3869.7462	-0.003040	3423.7334	5.799E+09	-266.6583	30130.	0.000
78.000	0.0366	531527.	-5419.9215	-0.002477	3295.1389	5.799E+09	-250.0668	40946.	0.000
84.000	0.0234	496237.	-7060.8176	-0.001945	3119.6202	5.799E+09	-296.8986	76022.	0.000
90.000	0.0133	449855.	-9050.0707	-0.001456	2888.9346	5.799E+09	-366.1858	165161.	0.000
96.000	0.005966	389924.	-11077.	-0.001021	2590.8641	5.799E+09	-309.2912	311057.	0.000
102.000	0.001050	318542.	-12627.	-0.000655	2235.8380	5.799E+09	-207.5079	1185978.	0.000
108.000	-0.001889	239430.	-12514.	-0.000366	1842.3692	5.799E+09	245.0691	778533.	0.000
114.000	-0.003341	168946.	-10905.	-0.000155	1491.8114	5.799E+09	291.2163	523028.	0.000
120.000	-0.003744	108809.	-9107.3505	-1.090e-05	1192.7122	5.799E+09	308.1200	493797.	0.000
126.000	-0.003472	59675.	-7251.1402	7.627E-05	948.3416	5.799E+09	310.6168	536856.	0.000
132.000	-0.002829	21675.	-5410.4891	0.000118	759.3454	5.799E+09	302.9336	642569.	0.000
138.000	-0.002051	-5436.5248	-3641.4525	0.000127	678.5796	5.799E+09	286.7453	838756.	0.000
144.000	-0.001308	-22221.	-2017.3195	0.000112	762.0600	5.799E+09	254.6324	1168450.	0.000
150.000	-0.000703	-29821.	-539.4193	8.553E-05	799.8587	5.799E+09	238.0010	2034722.	0.000
156.000	-0.000281	-28829.	704.5368	5.518E-05	794.9229	5.799E+09	176.6510	3768707.	0.000
162.000	-3.964E-05	-21453.	1311.0923	2.917E-05	758.2412	5.799E+09	25.5342	3865137.	0.000
168.000	6.877E-05	-13141.	1251.4714	1.127E-05	716.9008	5.799E+09	-45.4078	3961571.	0.000
174.000	9.560E-05	-6453.4937	921.2842	1.132E-06	683.6376	5.799E+09	-64.6546	4058008.	0.000
180.000	8.235E-05	-2087.8364	556.2549	-3.287E-06	661.9246	5.799E+09	-57.0218	4154447.	0.000
186.000	5.615E-05	226.7324	265.8492	-4.250E-06	652.6682	5.799E+09	-39.7801	4250889.	0.000
192.000	3.135E-05	1109.0346	79.4978	-3.559E-06	657.0564	5.799E+09	-22.3371	4274851.	0.000
198.000	1.344E-05	1186.3005	-16.2397	-2.372E-06	657.4407	5.799E+09	-9.5754	4274851.	0.000
204.000	2.893E-06	917.8861	-51.7941	-1.283E-06	656.1057	5.799E+09	-2.2760	4720485.	0.000
210.000	-1.955E-06	566.7880	-53.5082	-5.148E-07	654.3595	5.799E+09	1.7047	5231250.	0.000
216.000	-3.284E-06	276.5966	-39.8033	-7.845E-08	652.9162	5.799E+09	2.8636	5231250.	0.000
222.000	-2.897E-06	89.2714	-23.6361	1.108E-07	651.9845	5.799E+09	2.5254	5231250.	0.000
228.000	-1.954E-06	-7.2107	-10.9478	1.533E-07	651.5764	5.799E+09	1.7040	5231250.	0.000
234.000	-1.057E-06	-42.3428	-3.0709	1.277E-07	651.7511	5.799E+09	0.9216	5231250.	0.000
240.000	-4.225E-07	-44.2626	0.7991	8.285E-08	651.7607	5.799E+09	0.3684	5231250.	0.000
246.000	-6.285E-08	-32.8837	2.0687	4.294E-08	651.7041	5.799E+09	0.0548	5231250.	0.000
252.000	9.269E-08	-19.5053	1.9907	1.583E-08	651.6376	5.799E+09	-0.0808	5231250.	0.000
258.000	1.271E-07	-9.0204	1.4153	1.074E-09	651.5854	5.799E+09	-0.1108	5231250.	0.000
264.000	1.056E-07	-2.5186	0.8070	-4.896E-09	651.5531	5.799E+09	-0.0921	5231250.	0.000
270.000	6.838E-08	0.6714	0.3520	-5.852E-09	651.5439	5.799E+09	-0.0596	5231250.	0.000
276.000	3.536E-08	1.7145	0.0806	-4.617E-09	651.5491	5.799E+09	-0.0308	5231250.	0.000
282.000	1.298E-08	1.6463	-0.0458	-2.878E-09	651.5487	5.799E+09	-0.0113	5231250.	0.000
288.000	8.180E-10	1.1694	-0.0819	-1.422E-09	651.5464	5.799E+09	-0.000713	5231250.	0.000
294.000	-4.083E-09	0.6658	-0.0734	-4.723E-10	651.5439	5.799E+09	0.003560	5231250.	0.000
300.000	-4.850E-09	0.2899	-0.0500	2.213E-11	651.5420	5.799E+09	0.004228	5231250.	0.000
306.000	-3.817E-09	0.0660	-0.0273	2.062E-10	651.5409	5.799E+09	0.003328	5231250.	0.000
312.000	-2.375E-09	-0.0382	-0.0111	2.206E-10	651.5407	5.799E+09	0.002071	5231250.	0.000
318.000	-1.170E-09	-0.0678	-0.001847	1.657E-10	651.5409	5.799E+09	0.001020	5231250.	0.000
324.000	-3.865E-10	-0.0606	0.002225	9.925E-11	651.5408	5.799E+09	0.000337	5231250.	0.000
330.000	2.071E-11	-0.0413	0.003132	4.651E-11	651.5408	5.799E+09	-1.806E-05	5231250.	0.000
336.000	1.717E-10	-0.0225	0.002679	1.350E-11	651.5407	5.799E+09	-0.000150	5231250.	0.000
342.000	1.827E-10	-0.009153	0.001752	-2.892E-12	651.5406	5.799E+09	-0.000159	5231250.	0.000
348.000	1.369E-10	-0.001502	0.000916	-8.405E-12	651.5406	5.799E+09	-0.000119	5231250.	0.000
354.000	8.186E-11	0.001852	0.000344	-8.224E-12	651.5406	5.799E+09	-7.137E-05	5231250.	0.000
360.000	3.826E-11	0.002634	2.946E-05	-5.903E-12	651.5406	5.799E+09	-3.336E-05	5231250.	0.000
366.000	1.102E-11	0.002214	-9.943E-05	-3.394E-12	651.5406	5.799E+09	-9.607E-06	5231250.	0.000
372.000	-2.474E-12	0.001447	-0.000122	-1.500E-12	651.5406	5.799E+09	2.157E-06	5231250.	0.000
378.000	-6.986E-12	0.000755	-9.704E-05	0.000	651.5406	5.799E+09	6.091E-06	5231250.	0.000
384.000	-6.809E-12	0.000283	-6.096E-05	0.000	651.5405	5.799E+09	5.936E-06	5231250.	0.000
390.000	-4.877E-12	2.352E-05	-3.039E-05	0.000	651.5405	5.799E+09	4.252E-06	5231250.	0.000
396.000	-2.799E-12	-8.259E-05	-1.032E-05	0.000	651.5405	5.799E+09	2.440E-06	5231250.	0.000
402.000	-1.233E-12	-0.000101	2.269E-07	0.000	651.5405	5.799E+09	1.075E-06	5231250.	0.000
408.000	0.000	-8.019E-05	4.221E-06	0.000	651.5405	5.799E+09	2.560E-07	5231250.	0.000
414.000	0.000	-5.032E-05	4.601E-06	0.000	651.5405	5.799E+09	-1.292E-07	5231250.	0.000
420.000	0.000	-2.506E-05	3.488E-06	0.000	651.5405	5.799E+09	-2.419E-07	5231250.	0.000
426.000	0.000	-8.480E-06	2.105E-06	0.000	651.5405	5.799E+09	-2.191E-07	5231250.	0.000
432.000	0.000	2.162E-07	9.968E-07	0.000	651.5405	5.799E+09	-1.503E-07	5231250.	0.000
438.000	0.000	3.502E-06	2.977E-07	0.000	651.5405	5.799E+09	-8.271E-08	5231250.	0.000
444.000	0.000	3.807E-06	-5.262E-08	0.000	651.5405	5.799E+09	-3.407E-08	5231250.	0.000
450.000	0.000	2.882E-06	-1.730E-07	0.000	651.5405	5.799E+09	-6.040E-09	5231250.	0.000
456.000	0.000	1.737E-06	-1.719E-07	0.000	651.5405	5.799E+09	6.395E-09	5231250.	0.000
462.000	0.000	8.214E-07	-1.244E-07	0.000	651.5405	5.799E+09	9.427E-09	5231250.	0.000
468.000	0.000	2.444E-07	-7.211E-08	0.000	651.5405	5.799E+09	8.012E-09	5231250.	0.000
474.000	0.000	-4.447E-08	-3.225E-08	0.000	651.5405	5.799E+09	5.275E-09	5231250.	0.000
480.000	0.000	-1.434E-07	-8.089E-09	0.000	651.5405	5.799E+09	2.778E-09	5231250.	0.000
486.000	0.000	-1.422E-07	3.416E-09	0.000	651.5405	5.799E+09	1.057E-09	5231250.	0.000
492.000	0.000	-1.028E-07	6.906E-09	0.000	651.5405	5.799E+09	1.060E-10	5231250.	0.000
498.000	0.000	-5.950E-08	6.357E-09	0.000	651.5405	5.799E+09	-2.888E-10	5231250.	0.000
504.000	0.000	-2.656E-08	4.406E-09	0.000	651.5405	5.799E+09	-3.616E-10	5231250.	0.000
510.000	0.000	-6.625E-09	2.449E-09	0.000	651.5405	5.799E+09	-2.906E-10	5231250.	0.000
516.000	0.000	2.857E-09	1.026E-09	0.000	651.5405	5.799E+09	-1.837E-10	5231250.	0.000

522.000	0.000	5.721E-09	1.981E-10	0.000	651.5405	5.799E+09	-9.234E-11	5231250.	0.000
528.000	0.000	5.257E-09	-1.747E-10	0.000	651.5405	5.799E+09	-3.191E-11	5231250.	0.000
534.000	0.000	3.639E-09	-2.702E-10	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
540.000	0.000	2.020E-09	-2.330E-10	0.000	651.5405	5.799E+09	1.235E-11	5231250.	0.000
546.000	0.000	8.450E-10	-1.549E-10	0.000	651.5405	5.799E+09	1.369E-11	5231250.	0.000
552.000	0.000	1.616E-10	-8.243E-11	0.000	651.5405	5.799E+09	1.046E-11	5231250.	0.000
558.000	0.000	-1.453E-10	-3.198E-11	0.000	651.5405	5.799E+09	6.355E-12	5231250.	0.000
564.000	0.000	-2.233E-10	-3.810E-12	0.000	651.5405	5.799E+09	3.037E-12	5231250.	0.000
570.000	0.000	-1.918E-10	8.080E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
576.000	0.000	-1.268E-10	1.042E-11	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
582.000	0.000	-6.694E-11	8.395E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
588.000	0.000	-2.612E-11	5.142E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
594.000	0.000	-5.224E-12	2.174E-12	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	0.000	2615625.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

```
Pile-head deflection           =      0.5000000 inches
Computed slope at pile head    =     -0.0082062 radians
Maximum bending moment         =         578428. inch-lbs
Maximum shear force            =          19052. lbs
Depth of maximum bending moment  =     60.0000000 inches below pile head
Depth of maximum shear force   =      0.000000 inches below pile head
Number of iterations           =             18
Number of zero deflection points =            12
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

```
Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head                      =       1.000000 inches
Moment at pile head                            =          0.000 in-lbs
Axial load at pile head                        =     131000.000 lbs
```

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	26088.	-0.0147	651.5405	5.799E+09	-721.6301	2164.8903	0.000
6.000	0.9118	155097.	22817.	-0.0146	1422.9309	5.799E+09	-368.9180	2427.6896	0.000
12.000	0.8245	296787.	20584.	-0.0144	2127.6394	5.799E+09	-375.1533	2729.9961	0.000
18.000	0.7391	424730.	18319.	-0.0140	2763.9765	5.799E+09	-380.0175	3084.9963	0.000
24.000	0.6563	538648.	16028.	-0.0135	3330.5536	5.799E+09	-383.4422	3505.4231	0.000
30.000	0.5769	638323.	13722.	-0.0129	3826.2969	5.799E+09	-385.3552	4008.0309	0.000
36.000	0.5014	723606.	11409.	-0.0122	4250.4606	5.799E+09	-385.6783	4615.2215	0.000
42.000	0.4304	794416.	9098.9396	-0.0114	4602.6418	5.799E+09	-384.3261	5357.4964	0.000
48.000	0.3644	850744.	6802.3518	-0.0106	4882.7963	5.799E+09	-381.2032	6277.2560	0.000
54.000	0.3036	892658.	4530.1392	-0.009666	5091.2554	5.799E+09	-376.2010	7434.8716	0.000
60.000	0.2484	920302.	2293.9601	-0.008728	5228.7451	5.799E+09	-369.1921	8918.7535	0.000
66.000	0.1989	933906.	106.3155	-0.007769	5296.4087	5.799E+09	-360.0228	10863.	0.000
72.000	0.1551	933790.	-2019.2569	-0.006803	5295.8327	5.799E+09	-348.5013	13478.	0.000
78.000	0.1172	920369.	-4067.8911	-0.005844	5229.0807	5.799E+09	-334.3768	17115.	0.000
84.000	0.0850	894162.	-6299.9649	-0.004905	5098.7358	5.799E+09	-409.6478	28910.	0.000
90.000	0.0584	852480.	-9118.0361	-0.004001	4891.4269	5.799E+09	-529.7093	54454.	0.000
96.000	0.0370	791035.	-12170.	-0.003151	4585.8256	5.799E+09	-487.5590	79051.	0.000
102.000	0.0206	711395.	-14934.	-0.002373	4189.7274	5.799E+09	-433.7662	126605.	0.000
108.000	0.008524	615560.	-17310.	-0.001687	3713.0862	5.799E+09	-358.3875	252262.	0.000
114.000	0.000313	506323.	-18862.	-0.001107	3169.7859	5.799E+09	-158.7936	3042701.	0.000
120.000	-0.004754	390958.	-18355.	-0.000642	2596.0057	5.799E+09	327.5882	413407.	0.000
126.000	-0.007395	287068.	-16245.	-0.000292	2079.2986	5.799E+09	375.7948	304911.	0.000
132.000	-0.008253	196473.	-13928.	-4.138E-05	1628.7160	5.799E+09	396.5046	288262.	0.000
138.000	-0.007891	119992.	-11532.	0.000122	1248.3326	5.799E+09	402.2389	305831.	0.000
144.000	-0.006785	57895.	-9170.3690	0.000214	939.4844	5.799E+09	385.0243	340486.	0.000
150.000	-0.005319	9610.7240	-6828.0036	0.000249	699.3404	5.799E+09	395.7642	446448.	0.000
156.000	-0.003793	-24433.	-4520.6763	0.000242	773.0623	5.799E+09	373.3449	590552.	0.000
162.000	-0.002419	-45017.	-2373.6735	0.000206	875.4380	5.799E+09	342.3227	849013.	0.000
168.000	-0.001325	-53241.	-440.5851	0.000155	916.3388	5.799E+09	302.0401	1368023.	0.000
174.000	-0.000561	-50548.	1215.3506	0.000101	902.9443	5.799E+09	249.9385	2674259.	0.000
180.000	-0.000111	-38816.	2194.9770	5.494E-05	844.5940	5.799E+09	76.6036	4154447.	0.000
186.000	9.852E-05	-24294.	2215.3981	2.229E-05	772.3708	5.799E+09	-69.7966	4250889.	0.000
192.000	0.000157	-12266.	1670.7816	3.374E-06	712.5464	5.799E+09	-111.7423	4274851.	0.000
198.000	0.000139	-4250.2892	1038.4392	-5.171E-06	672.6798	5.799E+09	-99.0385	4274851.	0.000
204.000	9.479E-05	203.4457	517.6002	-7.264E-06	652.5524	5.799E+09	-74.5745	4720485.	0.000
210.000	5.183E-05	1972.3323	158.2993	-6.139E-06	661.3501	5.799E+09	-45.1924	5231250.	0.000
216.000	2.112E-05	2112.6878	-32.5298	-4.025E-06	662.0482	5.799E+09	-18.4173	5231250.	0.000
222.000	3.530E-06	1588.3028	-97.0155	-2.111E-06	659.4401	5.799E+09	-3.0780	5231250.	0.000
228.000	-4.202E-06	951.8196	-95.2573	-7.964E-07	656.2745	5.799E+09	3.6640	5231250.	0.000
234.000	-6.026E-06	446.4666	-68.5038	-7.293E-08	653.7611	5.799E+09	5.2539	5231250.	0.000
240.000	-5.078E-06	129.8892	-39.4612	2.253E-07	652.1866	5.799E+09	4.4270	5231250.	0.000
246.000	-3.323E-06	-27.4215	-17.4889	2.783E-07	651.6769	5.799E+09	2.8971	5231250.	0.000
252.000	-1.738E-06	-80.4148	-4.2508	2.225E-07	651.9405	5.799E+09	1.5156	5231250.	0.000

258.000	-6.531E-07	-78.7814	2.0041	1.401E-07	651.9324	5.799E+09	0.5694	5231250.	0.000
264.000	-5.689E-08	-56.5862	3.8610	7.008E-08	651.8220	5.799E+09	0.0496	5231250.	0.000
270.000	1.880E-07	-32.5592	3.5182	2.396E-08	651.7025	5.799E+09	-0.1639	5231250.	0.000
276.000	2.307E-07	-14.4053	2.4232	-3.341E-10	651.6122	5.799E+09	-0.2011	5231250.	0.000
282.000	1.840E-07	-3.4800	1.3387	-9.587E-09	651.5579	5.799E+09	-0.1604	5231250.	0.000
288.000	1.156E-07	1.6745	0.5552	-1.052E-08	651.5489	5.799E+09	-0.1008	5231250.	0.000
294.000	5.769E-08	3.1984	0.1018	-8.000E-09	651.5565	5.799E+09	-0.0503	5231250.	0.000
300.000	1.962E-08	2.9089	-0.1004	-4.841E-09	651.5550	5.799E+09	-0.0171	5231250.	0.000
306.000	-3.939E-10	2.0013	-0.1507	-2.300E-09	651.5505	5.799E+09	0.000343	5231250.	0.000
312.000	-7.983E-09	1.1043	-0.1288	-6.935E-10	651.5460	5.799E+09	0.006960	5231250.	0.000
318.000	-8.716E-09	0.4570	-0.0851	1.142E-10	651.5428	5.799E+09	0.007600	5231250.	0.000
324.000	-6.612E-09	0.0830	-0.0450	3.936E-10	651.5410	5.799E+09	0.005765	5231250.	0.000
330.000	-3.993E-09	-0.0836	-0.0173	3.933E-10	651.5410	5.799E+09	0.003481	5231250.	0.000
336.000	-1.892E-09	-0.1248	-0.001868	2.855E-10	651.5412	5.799E+09	0.001650	5231250.	0.000
342.000	-5.665E-10	-0.1064	0.004564	1.659E-10	651.5411	5.799E+09	0.000494	5231250.	0.000
348.000	9.850E-11	-0.0703	0.005788	7.448E-11	651.5409	5.799E+09	-8.588E-05	5231250.	0.000
354.000	3.273E-10	-0.0371	0.004674	1.893E-11	651.5407	5.799E+09	-0.000285	5231250.	0.000
360.000	3.257E-10	-0.0142	0.002966	-7.615E-12	651.5406	5.799E+09	-0.000284	5231250.	0.000
366.000	2.359E-10	-0.001503	0.001497	-1.574E-11	651.5406	5.799E+09	-0.000206	5231250.	0.000
372.000	1.368E-10	0.003792	0.000523	-1.456E-11	651.5406	5.799E+09	-0.000119	5231250.	0.000
378.000	6.123E-11	0.004790	4.587E-06	-1.012E-11	651.5406	5.799E+09	-5.339E-05	5231250.	0.000
384.000	1.541E-11	0.003863	-0.000196	-5.639E-12	651.5406	5.799E+09	-1.343E-05	5231250.	0.000
390.000	-6.434E-12	0.002449	-0.000219	-2.373E-12	651.5406	5.799E+09	5.609E-06	5231250.	0.000
396.000	-1.307E-11	0.001235	-0.000168	0.000	651.5406	5.799E+09	1.140E-05	5231250.	0.000
402.000	-1.205E-11	0.000430	-0.000103	0.000	651.5406	5.799E+09	1.050E-05	5231250.	0.000
408.000	-8.355E-12	2.392E-06	-4.926E-05	0.000	651.5405	5.799E+09	7.284E-06	5231250.	0.000
414.000	-4.648E-12	-0.000163	-1.525E-05	0.000	651.5405	5.799E+09	4.052E-06	5231250.	0.000
420.000	-1.949E-12	-0.000181	2.002E-06	0.000	651.5405	5.799E+09	1.700E-06	5231250.	0.000
426.000	0.000	-0.000139	8.090E-06	0.000	651.5405	5.799E+09	3.297E-07	5231250.	0.000
432.000	0.000	-8.470E-05	8.217E-06	0.000	651.5405	5.799E+09	-2.875E-07	5231250.	0.000
438.000	0.000	-4.060E-05	6.016E-06	0.000	651.5405	5.799E+09	-4.461E-07	5231250.	0.000
444.000	0.000	-1.252E-05	3.523E-06	0.000	651.5405	5.799E+09	-3.850E-07	5231250.	0.000
450.000	0.000	1.703E-06	1.600E-06	0.000	651.5405	5.799E+09	-2.561E-07	5231250.	0.000
456.000	0.000	6.708E-06	4.219E-07	0.000	651.5405	5.799E+09	-1.364E-07	5231250.	0.000
462.000	0.000	6.796E-06	-1.464E-07	0.000	651.5405	5.799E+09	-5.304E-08	5231250.	0.000
468.000	0.000	4.970E-06	-3.250E-07	0.000	651.5405	5.799E+09	-6.458E-09	5231250.	0.000
474.000	0.000	2.907E-06	-3.046E-07	0.000	651.5405	5.799E+09	1.323E-08	5231250.	0.000
480.000	0.000	1.318E-06	-2.134E-07	0.000	651.5405	5.799E+09	1.718E-08	5231250.	0.000
486.000	0.000	3.458E-07	-1.199E-07	0.000	651.5405	5.799E+09	1.399E-08	5231250.	0.000
492.000	0.000	-1.227E-07	-5.114E-08	0.000	651.5405	5.799E+09	8.938E-09	5231250.	0.000
498.000	0.000	-2.692E-07	-1.068E-08	0.000	651.5405	5.799E+09	4.547E-09	5231250.	0.000
504.000	0.000	-2.519E-07	7.803E-09	0.000	651.5405	5.799E+09	1.614E-09	5231250.	0.000
510.000	0.000	-1.763E-07	1.278E-08	0.000	651.5405	5.799E+09	4.368E-11	5231250.	0.000
516.000	0.000	-9.894E-08	1.119E-08	0.000	651.5405	5.799E+09	-5.721E-10	5231250.	0.000
522.000	0.000	-4.211E-08	7.517E-09	0.000	651.5405	5.799E+09	-6.523E-10	5231250.	0.000
528.000	0.000	-8.723E-09	4.047E-09	0.000	651.5405	5.799E+09	-5.046E-10	5231250.	0.000
534.000	0.000	6.503E-09	1.604E-09	0.000	651.5405	5.799E+09	-3.096E-10	5231250.	0.000
540.000	0.000	1.058E-08	2.254E-10	0.000	651.5405	5.799E+09	-1.499E-10	5231250.	0.000
546.000	0.000	9.247E-09	-3.665E-10	0.000	651.5405	5.799E+09	-4.741E-11	5231250.	0.000
552.000	0.000	6.202E-09	-4.937E-10	0.000	651.5405	5.799E+09	5.014E-12	5231250.	0.000
558.000	0.000	3.333E-09	-4.071E-10	0.000	651.5405	5.799E+09	2.387E-11	5231250.	0.000
564.000	0.000	1.320E-09	-2.614E-10	0.000	651.5405	5.799E+09	2.469E-11	5231250.	0.000
570.000	0.000	1.950E-10	-1.323E-10	0.000	651.5405	5.799E+09	1.836E-11	5231250.	0.000
576.000	0.000	-2.694E-10	-4.429E-11	0.000	651.5405	5.799E+09	1.097E-11	5231250.	0.000
582.000	0.000	-3.385E-10	3.772E-12	0.000	651.5405	5.799E+09	5.047E-12	5231250.	0.000
588.000	0.000	-2.256E-10	2.177E-11	0.000	651.5405	5.799E+09	0.000	5231250.	0.000
594.000	0.000	-7.828E-11	1.887E-11	0.000	651.5405	5.799E+09	-1.920E-12	5231250.	0.000
600.000	0.000	0.000	0.000	0.000	651.5405	5.799E+09	-4.369E-12	2615625.	0.000

* The above values of total stress are combined axial and bending stress.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection           =      1.0000000 inches
Computed slope at pile head    =     -0.0147041 radians
Maximum bending moment         =         933906. inch-lbs
Maximum shear force            =          26088. lbs
Depth of maximum bending moment  =     66.0000000 inches below pile head
Depth of maximum shear force   =      0.000000 inches below pile head
Number of iterations           =             13
Number of zero deflection points =            12
```

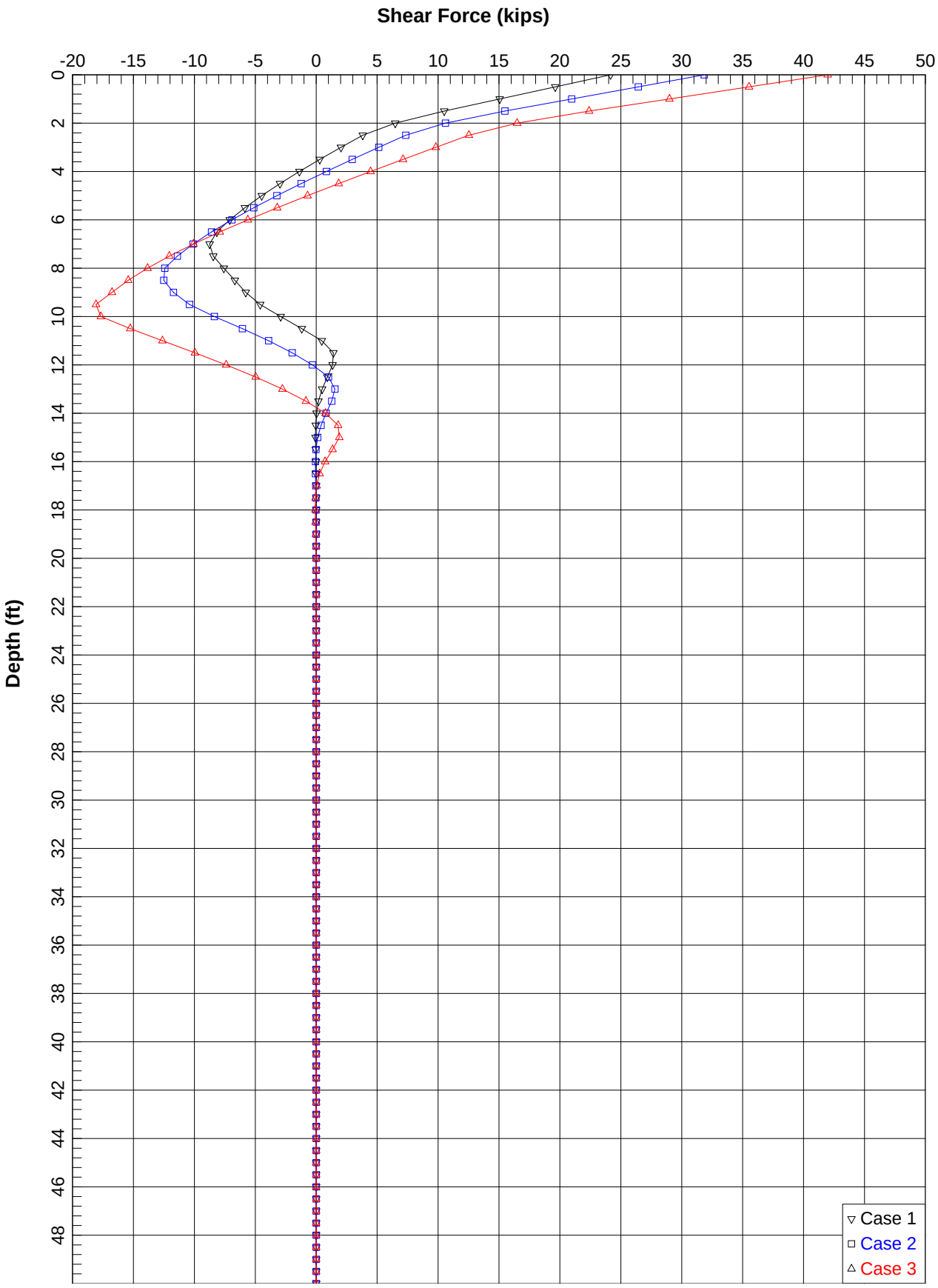
Summary of Pile Response(s)

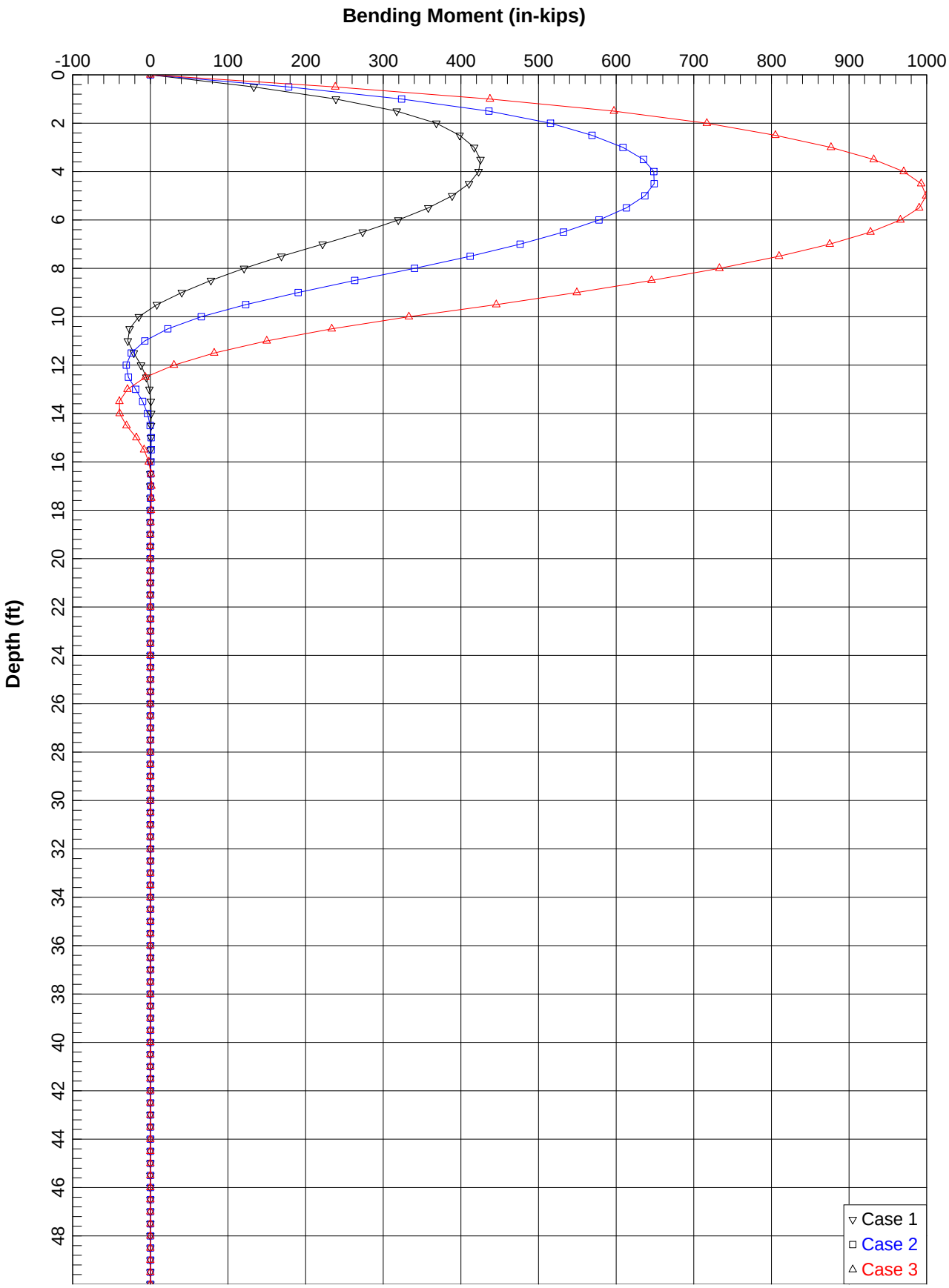
Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	131000.	0.25000000	361220.	13972.	-0.00459231
2	4	y = 0.5000	M = 0.000	131000.	0.50000000	578428.	19052.	-0.00820624
3	4	y = 1.0000	M = 0.000	131000.	1.00000000	933906.	26088.	-0.01470409

The analysis ended normally.


Shear Force (kips)
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
45
50
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3


Bending Moment (in-kips)
-100
0
100
200
300
400
500
600
700
800
900
1000
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
Case 1
Case 2
Case 3

LPile Plus for Windows, Version 6 (6.0.25)

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

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Serial Number of Security Device: 156242237
Company Name Stored in Security Device: Group Delta Consultants

Files Used for Analysis

Path to file locations: N:\Projects_LA\L1100\LA1143 PTG - 101 & Palo Comado Cyn\Irvine Foundation Report\Calculations\Lateral Pile Capacity\Updated_LG_ 6-05-17\Abut 5\
Name of input data file: Abut 5_Pil_transv_ Max P.lp6d
Name of output report file: Abut 5_Pil_transv_ Max P.lp6o
Name of plot output file: Abut 5_Pil_transv_ Max P.lp6p
Name of runtime messeage file: Abut 5_Pil_transv_ Max P.lp6r

Date and Time of Analysis

Date: June 6, 2017 Time: 10:58:14

Problem Title

Project Name: Palo Comado OC Bridge Widen

Job Number: LA-1143

Client: Parson Transporation

Engineer: LG

Description: 16 Inch CIDH Lateral Capacity Analysis - Abutment 5 Pilaster

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes nonlinear bending stiffness and nominal moment capacity with pile response computed using nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis uses p-y multipliers for group action
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No p-y curves to be computed and output for user-specified depths

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

Pile Response Output Options:
- 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

Pile Structural Properties and Geometry

Total Number of Sections = 1

Total Pile Length = 50.00 ft

Depth of ground surface below top of pile = -5.00 ft

Slope angle of ground surface = 0.00 deg.

Pile dimensions used for p-y curve computations defined using 2 points.
p-y curves are computed using values of pile diameter interpolated over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	16.0000000
2	50.000000	16.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	Elastic Pile
Cross-sectional Shape	Circular
Section Length	50.000 ft
Top Width	16.000 in
Bottom Width	16.000 in
Top Area	201.061930 sq. in
Bottom Area	201.061930 sq. in
Moment of Inertia at Top	1608.495 in^4
Moment of Inertia at Bottom	1608.495 in^4
Elastic Modulus	3605000. lbs/in^2

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = -5.000 ft
Distance from top of pile to bottom of layer = 0.100 ft

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer = 0.100 ft
Distance from top of pile to bottom of layer = 2.000 ft

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer = 2.000 ft
Distance from top of pile to bottom of layer = 9.500 ft

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 9.500 ft
Distance from top of pile to bottom of layer = 14.500 ft

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer = 14.500 ft
Distance from top of pile to bottom of layer = 19.500 ft

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 19.500 ft
Distance from top of pile to bottom of layer = 80.000 ft

(Depth of lowest layer extends 30.00 ft below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 12 points

Point No.	Depth X ft	Eff. Unit Weight pcf
1	-5.00	120.00000
2	0.10	120.00000
3	0.10	120.00000
4	2.00	120.00000
5	2.00	120.00000
6	9.50	120.00000
7	9.50	120.00000
8	14.50	120.00000
9	14.50	125.00000
10	19.50	125.00000
11	19.50	125.00000
12	80.00	125.00000

Summary of Soil Properties

Layer No.	Soil Type (p-y Curve Criteria)	RQD	Epsilon 50	J pci	kpy psi	Depth ft	Eff. Unit Wt., pcf	Cohesion Rock Emass psf	Friction krm	Test Type	Test Prop. Ang., deg.	qu Elas. psi	Subgr. percent
1	Stiff Clay w/o Free Water	--	0.00	--	--	-5.000	120.000	4000.000	--	--	--	--	--
						0.10000	120.000	4000.000	--	--	--	--	--
		--	0.00	--	--	--	--	--	--	--	--	--	--
2	Stiff Clay w/o Free Water	--	0.00	--	--	0.10000	120.000	4000.000	--	--	--	--	--
						2.000	120.000	4000.000	--	--	--	--	--
		--	0.00	--	--	--	--	--	--	--	--	--	--
3	Stiff Clay w/o Free Water	--	0.00	--	--	2.000	120.000	1500.000	--	--	--	--	--
						9.500	120.000	1500.000	--	--	--	--	--
		--	0.00	--	--	--	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water	--	0.00	--	--	9.500	120.000	3500.000	--	--	--	--	--
						14.500	120.000	3500.000	--	--	--	--	--
		--	0.00	--	--	--	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water	--	0.00	--	--	14.500	125.000	4000.000	--	--	--	--	--
						19.500	125.000	4000.000	--	--	--	--	--
		--	0.00	--	--	--	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water	--	0.00	--	--	19.500	125.000	4500.000	--	--	--	--	--
						80.000	125.000	4500.000	--	--	--	--	--
		--	0.00	--	--	--	--	--	--	--	--	--	--

p-y Modification Factors for Group Action

Distribution of p-y modifiers with depth defined using 2 points

Point No.	Depth X ft	p-mult	y-mult
1	0.000	0.6400	1.0000
2	50.000	0.6400	1.0000

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 = 3

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	4	y = 0.25000 in	M = 0.0000 in-lbs	60000.
2	4	y = 0.50000 in	M = 0.0000 in-lbs	60000.
3	4	y = 1.00000 in	M = 0.0000 in-lbs	60000.

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-Curvature properties derived from elastic section properties

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

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.250000 inches
Moment at pile head = 0.000 in-lbs
Axial load at pile head = 60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.2500	0.000	24160.	-0.005178	298.4155	5.799E+09	-755.6680	9068.0160	0.000
6.000	0.2189	133221.	19615.	-0.005109	961.0017	5.799E+09	-759.2649	20808.	0.000
12.000	0.1887	239059.	15057.	-0.004917	1487.3952	5.799E+09	-759.9484	24165.	0.000
18.000	0.1599	317449.	10508.	-0.004629	1877.2776	5.799E+09	-756.4066	28377.	0.000
24.000	0.1331	368491.	6482.5232	-0.004274	2131.1377	5.799E+09	-585.5144	26386.	0.000
30.000	0.1086	398316.	3820.2849	-0.003877	2279.4793	5.799E+09	-301.8984	16673.	0.000
36.000	0.0866	417126.	2031.6250	-0.003455	2373.0281	5.799E+09	-294.3216	20387.	0.000
42.000	0.0672	425184.	294.5694	-0.003019	2413.1061	5.799E+09	-284.6969	25426.	0.000
48.000	0.0504	422834.	-1378.0437	-0.002581	2401.4216	5.799E+09	-272.8407	32491.	0.000
54.000	0.0362	410505.	-2972.0501	-0.002150	2340.1018	5.799E+09	-258.4947	42829.	0.000
60.000	0.0246	388718.	-4471.3132	-0.001736	2231.7381	5.799E+09	-241.2596	58868.	0.000
66.000	0.0154	358100.	-5856.3942	-0.001350	2079.4569	5.799E+09	-220.4340	85995.	0.000
72.000	0.008393	319413.	-7101.2889	-0.000999	1887.0437	5.799E+09	-194.5309	139062.	0.000

78.000	0.003390	273604.	-8162.3877	-0.000692	1659.2081	5.799E+09	-159.1687	281753.	0.000
84.000	8.444E-05	221963.	-8749.0521	-0.000436	1402.3665	5.799E+09	-36.3861	2585595.	0.000
90.000	-0.001843	168929.	-8448.9624	-0.000234	1138.5989	5.799E+09	136.4160	444198.	0.000
96.000	-0.002721	120743.	-7588.4423	-8.392E-05	898.9434	5.799E+09	150.4240	331703.	0.000
102.000	-0.002850	77928.	-6680.7468	1.887E-05	685.9976	5.799E+09	152.1411	320339.	0.000
108.000	-0.002495	40561.	-5783.0338	8.017E-05	500.1481	5.799E+09	147.0966	353809.	0.000
114.000	-0.001888	8473.8688	-4598.8180	0.000106	340.5611	5.799E+09	247.6420	787178.	0.000
120.000	-0.001228	-14701.	-2921.5935	0.000102	371.5326	5.799E+09	311.4328	1521631.	0.000
126.000	-0.000660	-26659.	-1186.7220	8.092E-05	431.0061	5.799E+09	266.8577	2426913.	0.000
132.000	-0.000257	-29000.	457.0585	5.212E-05	442.6496	5.799E+09	281.0692	6562500.	0.000
138.000	-3.425E-05	-21212.	1412.6548	2.615E-05	403.9141	5.799E+09	37.4629	6562500.	0.000
144.000	5.678E-05	-12067.	1338.7223	8.930E-06	358.4316	5.799E+09	-62.1071	6562500.	0.000
150.000	7.290E-05	-5153.5113	913.1882	2.032E-08	324.0470	5.799E+09	-79.7376	6562500.	0.000
156.000	5.703E-05	-1108.7063	486.8542	-3.220E-06	303.9298	5.799E+09	-62.3737	6562500.	0.000
162.000	3.427E-05	691.0572	187.2891	-3.436E-06	301.8526	5.799E+09	-37.4813	6562500.	0.000
168.000	1.580E-05	1141.2366	23.0010	-2.488E-06	304.0916	5.799E+09	-17.2814	6562500.	0.000
174.000	4.417E-06	968.8598	-44.3715	-1.396E-06	303.2342	5.799E+09	-5.1761	7031250.	0.000
180.000	-9.513E-07	609.7838	-56.3323	-5.792E-07	301.4483	5.799E+09	1.1891	7500000.	0.000
186.000	-2.534E-06	293.2893	-43.2634	-1.120E-07	299.8742	5.799E+09	3.1672	7500000.	0.000
192.000	-2.295E-06	90.7042	-25.1542	8.666E-08	298.8666	5.799E+09	2.8692	7500000.	0.000
198.000	-1.494E-06	-8.6240	-10.9449	1.291E-07	298.4584	5.799E+09	1.8673	7500000.	0.000
204.000	-7.458E-07	-40.7271	-2.5462	1.036E-07	298.6181	5.799E+09	0.9323	7500000.	0.000
210.000	-2.507E-07	-39.2524	1.1909	6.222E-08	298.6107	5.799E+09	0.3134	7500000.	0.000
216.000	7.452E-10	-26.4816	2.1282	2.821E-08	298.5472	5.799E+09	-0.000931	7500000.	0.000
222.000	8.778E-08	-13.7346	1.7962	7.400E-09	298.4838	5.799E+09	-0.1097	7500000.	0.000
228.000	8.955E-08	-4.9325	1.1312	-2.257E-09	298.4401	5.799E+09	-0.1119	7500000.	0.000
234.000	6.069E-08	-0.1583	0.5397	-4.891E-09	298.4163	5.799E+09	-0.0852	8425927.	0.000
240.000	3.085E-08	1.5477	0.1464	-4.172E-09	298.4232	5.799E+09	-0.0459	8921570.	0.000
246.000	1.062E-08	1.6015	-0.0386	-2.543E-09	298.4235	5.799E+09	-0.0158	8921570.	0.000
252.000	3.347E-10	1.0862	-0.0875	-1.153E-09	298.4209	5.799E+09	-0.000498	8921570.	0.000
258.000	-3.209E-09	0.5525	-0.0747	-3.048E-10	298.4183	5.799E+09	0.004772	8921570.	0.000
264.000	-3.323E-09	0.1905	-0.0455	7.957E-11	298.4165	5.799E+09	0.004942	8921570.	0.000
270.000	-2.255E-09	0.006234	-0.0206	1.813E-10	298.4155	5.799E+09	0.003352	8921570.	0.000
276.000	-1.147E-09	-0.0573	-0.005463	1.549E-10	298.4158	5.799E+09	0.001706	8921570.	0.000
282.000	-3.957E-10	-0.0594	0.001420	9.451E-11	298.4158	5.799E+09	0.000588	8921570.	0.000
288.000	-1.316E-11	-0.0404	0.003243	4.288E-11	298.4157	5.799E+09	1.957E-05	8921570.	0.000
294.000	1.189E-10	-0.0205	0.002772	1.137E-11	298.4156	5.799E+09	-0.000177	8921570.	0.000
300.000	1.233E-10	-0.007095	0.001692	-2.925E-12	298.4156	5.799E+09	-0.000183	8921570.	0.000
306.000	8.376E-11	-0.000245	0.000768	-6.723E-12	298.4155	5.799E+09	-0.000125	8921570.	0.000
312.000	4.266E-11	0.002123	0.000204	-5.751E-12	298.4155	5.799E+09	-6.343E-05	8921570.	0.000
318.000	1.474E-11	0.002206	-5.219E-05	-3.512E-12	298.4155	5.799E+09	-2.192E-05	8921570.	0.000
324.000	0.000	0.001499	-0.000120	-1.595E-12	298.4155	5.799E+09	-7.676E-07	8921570.	0.000
330.000	-4.402E-12	0.000764	-0.000103	0.000	298.4155	5.799E+09	6.545E-06	8921570.	0.000
336.000	-4.577E-12	0.000264	-6.286E-05	0.000	298.4155	5.799E+09	6.806E-06	8921570.	0.000
342.000	-3.111E-12	9.576E-06	-2.856E-05	0.000	298.4155	5.799E+09	4.626E-06	8921570.	0.000
348.000	-1.586E-12	-7.861E-05	-7.607E-06	0.000	298.4155	5.799E+09	2.359E-06	8921570.	0.000
354.000	0.000	-8.186E-05	1.918E-06	0.000	298.4155	5.799E+09	8.165E-07	8921570.	0.000
360.000	0.000	-5.568E-05	4.458E-06	0.000	298.4155	5.799E+09	3.002E-08	8921570.	0.000
366.000	0.000	-2.841E-05	3.821E-06	0.000	298.4155	5.799E+09	-2.424E-07	8921570.	0.000
372.000	0.000	-9.846E-06	2.336E-06	0.000	298.4155	5.799E+09	-2.526E-07	8921570.	0.000
378.000	0.000	-3.738E-07	1.063E-06	0.000	298.4155	5.799E+09	-1.719E-07	8921570.	0.000
384.000	0.000	2.911E-06	2.838E-07	0.000	298.4155	5.799E+09	-8.770E-08	8921570.	0.000
390.000	0.000	3.038E-06	-7.051E-08	0.000	298.4155	5.799E+09	-3.041E-08	8921570.	0.000
396.000	0.000	2.069E-06	-1.653E-07	0.000	298.4155	5.799E+09	-1.171E-09	8921570.	0.000
402.000	0.000	1.056E-06	-1.419E-07	0.000	298.4155	5.799E+09	8.977E-09	8921570.	0.000
408.000	0.000	3.668E-07	-8.680E-08	0.000	298.4155	5.799E+09	9.374E-09	8921570.	0.000
414.000	0.000	1.456E-08	-3.953E-08	0.000	298.4155	5.799E+09	6.385E-09	8921570.	0.000
420.000	0.000	-1.078E-07	-1.059E-08	0.000	298.4155	5.799E+09	3.261E-09	8921570.	0.000
426.000	0.000	-1.127E-07	2.592E-09	0.000	298.4155	5.799E+09	1.133E-09	8921570.	0.000
432.000	0.000	-7.684E-08	6.127E-09	0.000	298.4155	5.799E+09	4.557E-11	8921570.	0.000
438.000	0.000	-3.928E-08	5.267E-09	0.000	298.4155	5.799E+09	-3.324E-10	8921570.	0.000
444.000	0.000	-1.366E-08	3.226E-09	0.000	298.4155	5.799E+09	-3.479E-10	8921570.	0.000
450.000	0.000	-5.658E-10	1.470E-09	0.000	298.4155	5.799E+09	-2.372E-10	8921570.	0.000
456.000	0.000	3.993E-09	3.952E-10	0.000	298.4155	5.799E+09	-1.213E-10	8921570.	0.000
462.000	0.000	4.184E-09	-9.523E-11	0.000	298.4155	5.799E+09	-4.220E-11	8921570.	0.000
468.000	0.000	2.855E-09	-2.271E-10	0.000	298.4155	5.799E+09	-1.770E-12	8921570.	0.000
474.000	0.000	1.460E-09	-1.955E-10	0.000	298.4155	5.799E+09	1.231E-11	8921570.	0.000
480.000	0.000	5.089E-10	-1.199E-10	0.000	298.4155	5.799E+09	1.291E-11	8921570.	0.000
486.000	0.000	2.195E-11	-5.470E-11	0.000	298.4155	5.799E+09	8.811E-12	8921570.	0.000
492.000	0.000	-1.479E-10	-1.474E-11	0.000	298.4155	5.799E+09	4.509E-12	8921570.	0.000
498.000	0.000	-1.553E-10	3.499E-12	0.000	298.4155	5.799E+09	1.572E-12	8921570.	0.000
504.000	0.000	-1.060E-10	8.421E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
510.000	0.000	-5.430E-11	7.259E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
516.000	0.000	-1.896E-11	4.454E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
522.000	0.000	0.000	2.035E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
528.000	0.000	5.475E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
534.000	0.000	5.762E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
540.000	0.000	3.939E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
546.000	0.000	2.019E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
552.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
558.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
564.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
570.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000

582.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
588.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
The above values of total stress are computed for combined axial stress and do not equal the
actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	0.2500000 inches
Computed slope at pile head	=	-0.0051782 radians
Maximum bending moment	=	425184. inch-lbs
Maximum shear force	=	24160. lbs
Depth of maximum bending moment	=	42.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	13
Number of zero deflection points	=	14

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	0.500000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5000	0.000	31849.	-0.008999	298.4155	5.799E+09	-898.6458	5391.8746	0.000
6.000	0.4460	178160.	26432.	-0.008907	1184.5106	5.799E+09	-907.0940	12203.	0.000
12.000	0.3931	323598.	20972.	-0.008648	1907.8611	5.799E+09	-913.0184	13935.	0.000
18.000	0.3422	436047.	15488.	-0.008255	2467.1367	5.799E+09	-914.8642	16039.	0.000
24.000	0.2941	515399.	10602.	-0.007762	2861.7987	5.799E+09	-713.7924	14564.	0.000
30.000	0.2491	568862.	7346.2633	-0.007201	3127.7018	5.799E+09	-371.4960	8948.7503	0.000
36.000	0.2076	608739.	5133.0687	-0.006592	3326.0348	5.799E+09	-366.2355	10583.	0.000
42.000	0.1700	635205.	2957.1383	-0.005949	3457.6658	5.799E+09	-359.0746	12675.	0.000
48.000	0.1363	648508.	830.2090	-0.005284	3523.8280	5.799E+09	-349.9019	15408.	0.000
54.000	0.1066	648972.	-1235.2459	-0.004613	3526.1390	5.799E+09	-338.5831	19064.	0.000
60.000	0.0809	637006.	-3225.8399	-0.003948	3466.6246	5.799E+09	-324.9482	24101.	0.000
66.000	0.0592	613105.	-5126.9907	-0.003301	3347.7482	5.799E+09	-308.7687	31301.	0.000
72.000	0.0413	577859.	-6922.4329	-0.002685	3172.4512	5.799E+09	-289.7120	42106.	0.000
78.000	0.0270	531969.	-8593.2910	-0.002111	2944.2108	5.799E+09	-267.2407	59458.	0.000
84.000	0.0160	476259.	-10099.	-0.001589	2667.1356	5.799E+09	-234.6207	88236.	0.000
90.000	0.007897	411926.	-11393.	-0.001130	2347.1694	5.799E+09	-196.8839	149581.	0.000
96.000	0.002398	340352.	-12423.	-0.000740	1991.1881	5.799E+09	-146.4331	366360.	0.000
102.000	-0.000988	263379.	-12514.	-0.000428	1608.3574	5.799E+09	116.2544	705981.	0.000
108.000	-0.002739	190494.	-11713.	-0.000193	1245.8541	5.799E+09	150.6456	329992.	0.000
114.000	-0.003307	122960.	-10405.	-3.112E-05	909.9708	5.799E+09	285.4120	517758.	0.000
120.000	-0.003112	65656.	-8366.4551	6.647E-05	624.9626	5.799E+09	394.1042	759721.	0.000
126.000	-0.002510	22515.	-6061.0571	0.000112	410.3968	5.799E+09	374.3618	894930.	0.000
132.000	-0.001767	-7157.1964	-3909.2440	0.000120	334.0125	5.799E+09	342.9092	1164049.	0.000
138.000	-0.001070	-24482.	-1973.3616	0.000104	420.1799	5.799E+09	302.3849	1696334.	0.000
144.000	-0.000524	-30912.	-307.6464	7.500E-05	452.1600	5.799E+09	252.8535	2897537.	0.000
150.000	-0.000170	-28228.	1007.2385	4.440E-05	438.8097	5.799E+09	185.4415	6562500.	0.000
156.000	9.248E-06	-18857.	1533.2191	2.004E-05	392.2039	5.799E+09	-10.1146	6562500.	0.000
162.000	7.097E-05	-9843.7294	1270.0090	5.194E-06	347.3742	5.799E+09	-77.6221	6562500.	0.000
168.000	7.158E-05	-3620.9105	802.2821	-1.772E-06	316.4244	5.799E+09	-78.2868	6562500.	0.000
174.000	4.970E-05	-215.0681	392.6801	-3.757E-06	299.4852	5.799E+09	-58.2472	7031250.	0.000
180.000	2.650E-05	1093.9552	118.5754	-3.302E-06	303.8564	5.799E+09	-33.1210	7500000.	0.000
186.000	1.008E-05	1210.2141	-18.5916	-2.110E-06	304.4346	5.799E+09	-12.6013	7500000.	0.000
192.000	1.179E-06	872.3755	-60.8156	-1.032E-06	302.7544	5.799E+09	-1.4734	7500000.	0.000
198.000	-2.308E-06	481.1702	-56.5823	-3.321E-07	300.8087	5.799E+09	2.8845	7500000.	0.000
204.000	-2.807E-06	193.6274	-37.4040	1.701E-08	299.3785	5.799E+09	3.5083	7500000.	0.000
210.000	-2.104E-06	32.3103	-18.9909	1.339E-07	298.5762	5.799E+09	2.6294	7500000.	0.000
216.000	-1.200E-06	-34.3601	-6.6033	1.328E-07	298.5864	5.799E+09	1.4998	7500000.	0.000
222.000	-5.095E-07	-47.0246	-0.1933	9.073E-08	298.6494	5.799E+09	0.6369	7500000.	0.000
228.000	-1.111E-07	-36.7449	2.1338	4.739E-08	298.5983	5.799E+09	0.1388	7500000.	0.000
234.000	5.923E-08	-21.4536	2.3007	1.728E-08	298.5222	5.799E+09	-0.0832	8425927.	0.000
240.000	9.632E-08	-9.1484	1.6215	1.450E-09	298.4610	5.799E+09	-0.1432	8921570.	0.000
246.000	7.663E-08	-1.9961	0.8500	-4.316E-09	298.4254	5.799E+09	-0.1139	8921570.	0.000
252.000	4.454E-08	1.0552	0.3095	-4.802E-09	298.4208	5.799E+09	-0.0662	8921570.	0.000
258.000	1.900E-08	1.7219	0.0261	-3.366E-09	298.4241	5.799E+09	-0.0283	8921570.	0.000

264.000	4.151E-09	1.3710	-0.0772	-1.765E-09	298.4223	5.799E+09	-0.006172	8921570.	0.000
270.000	-2.186E-09	0.7974	-0.0859	-6.436E-10	298.4195	5.799E+09	0.003250	8921570.	0.000
276.000	-3.572E-09	0.3404	-0.0602	-5.497E-11	298.4172	5.799E+09	0.005312	8921570.	0.000
282.000	-2.845E-09	0.0746	-0.0316	1.598E-10	298.4159	5.799E+09	0.004231	8921570.	0.000
288.000	-1.655E-09	-0.0389	-0.0115	1.782E-10	298.4157	5.799E+09	0.002461	8921570.	0.000
294.000	-7.070E-10	-0.0639	-0.000990	1.250E-10	298.4158	5.799E+09	0.001051	8921570.	0.000
300.000	-1.551E-10	-0.0509	0.002856	6.564E-11	298.4158	5.799E+09	0.000231	8921570.	0.000
306.000	8.067E-11	-0.0296	0.003188	2.397E-11	298.4157	5.799E+09	-0.000120	8921570.	0.000
312.000	1.325E-10	-0.0127	0.002237	2.083E-12	298.4156	5.799E+09	-0.000197	8921570.	0.000
318.000	1.057E-10	-0.002788	0.001175	-5.914E-12	298.4155	5.799E+09	-0.000157	8921570.	0.000
324.000	6.152E-11	0.001437	0.000429	-6.613E-12	298.4155	5.799E+09	-9.148E-05	8921570.	0.000
330.000	2.631E-11	0.002368	3.750E-05	-4.644E-12	298.4155	5.799E+09	-3.912E-05	8921570.	0.000
336.000	5.798E-12	0.001890	-0.000106	-2.440E-12	298.4155	5.799E+09	-8.621E-06	8921570.	0.000
342.000	-2.977E-12	0.001101	-0.000118	0.000	298.4155	5.799E+09	4.426E-06	8921570.	0.000
348.000	-4.913E-12	0.000471	-8.311E-05	0.000	298.4155	5.799E+09	7.306E-06	8921570.	0.000
354.000	-3.923E-12	0.000104	-4.369E-05	0.000	298.4155	5.799E+09	5.834E-06	8921570.	0.000
360.000	-2.287E-12	-5.303E-05	-1.599E-05	0.000	298.4155	5.799E+09	3.400E-06	8921570.	0.000
366.000	0.000	-8.783E-05	-1.420E-06	0.000	298.4155	5.799E+09	1.456E-06	8921570.	0.000
372.000	0.000	-7.020E-05	3.913E-06	0.000	298.4155	5.799E+09	3.222E-07	8921570.	0.000
378.000	0.000	-4.094E-05	4.390E-06	0.000	298.4155	5.799E+09	-1.633E-07	8921570.	0.000
384.000	0.000	-1.754E-05	3.087E-06	0.000	298.4155	5.799E+09	-2.709E-07	8921570.	0.000
390.000	0.000	-3.893E-06	1.624E-06	0.000	298.4155	5.799E+09	-2.166E-07	8921570.	0.000
396.000	0.000	1.957E-06	5.953E-07	0.000	298.4155	5.799E+09	-1.264E-07	8921570.	0.000
402.000	0.000	3.257E-06	5.376E-08	0.000	298.4155	5.799E+09	-5.417E-08	8921570.	0.000
408.000	0.000	2.607E-06	-1.449E-07	0.000	298.4155	5.799E+09	-1.204E-08	8921570.	0.000
414.000	0.000	1.521E-06	-1.629E-07	0.000	298.4155	5.799E+09	6.027E-09	8921570.	0.000
420.000	0.000	6.527E-07	-1.147E-07	0.000	298.4155	5.799E+09	1.005E-08	8921570.	0.000
426.000	0.000	1.455E-07	-6.039E-08	0.000	298.4155	5.799E+09	8.044E-09	8921570.	0.000
432.000	0.000	-7.221E-08	-2.217E-08	0.000	298.4155	5.799E+09	4.696E-09	8921570.	0.000
438.000	0.000	-1.208E-07	-2.034E-09	0.000	298.4155	5.799E+09	2.016E-09	8921570.	0.000
444.000	0.000	-9.679E-08	5.362E-09	0.000	298.4155	5.799E+09	4.498E-10	8921570.	0.000
450.000	0.000	-5.654E-08	6.044E-09	0.000	298.4155	5.799E+09	-2.224E-10	8921570.	0.000
456.000	0.000	-2.429E-08	4.259E-09	0.000	298.4155	5.799E+09	-3.726E-10	8921570.	0.000
462.000	0.000	-5.436E-09	2.245E-09	0.000	298.4155	5.799E+09	-2.987E-10	8921570.	0.000
468.000	0.000	2.664E-09	8.256E-10	0.000	298.4155	5.799E+09	-1.745E-10	8921570.	0.000
474.000	0.000	4.480E-09	7.695E-11	0.000	298.4155	5.799E+09	-7.500E-11	8921570.	0.000
480.000	0.000	3.594E-09	-1.985E-10	0.000	298.4155	5.799E+09	-1.681E-11	8921570.	0.000
486.000	0.000	2.102E-09	-2.243E-10	0.000	298.4155	5.799E+09	8.205E-12	8921570.	0.000
492.000	0.000	9.038E-10	-1.582E-10	0.000	298.4155	5.799E+09	1.382E-11	8921570.	0.000
498.000	0.000	2.031E-10	-8.348E-11	0.000	298.4155	5.799E+09	1.109E-11	8921570.	0.000
504.000	0.000	-9.829E-11	-3.074E-11	0.000	298.4155	5.799E+09	6.487E-12	8921570.	0.000
510.000	0.000	-1.661E-10	-2.910E-12	0.000	298.4155	5.799E+09	2.791E-12	8921570.	0.000
516.000	0.000	-1.335E-10	7.346E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
522.000	0.000	-7.811E-11	8.322E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
528.000	0.000	-3.363E-11	5.877E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
534.000	0.000	-7.590E-12	3.104E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
540.000	0.000	3.626E-12	1.145E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
546.000	0.000	6.160E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
552.000	0.000	4.954E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
558.000	0.000	2.901E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
564.000	0.000	1.250E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
570.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
576.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
582.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
588.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
The above values of total stress are computed for combined axial stress and do not equal the
actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.5000000 inches
Computed slope at pile head	=	-0.0089994 radians
Maximum bending moment	=	648972. inch-lbs
Maximum shear force	=	31849. lbs
Depth of maximum bending moment	=	54.0000000 inches below pile head
Depth of maximum shear force	=	0.000000 inches below pile head
Number of iterations	=	19
Number of zero deflection points	=	14

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

Pile-head conditions are Displacement and Moment (Loading Type 4)

Displacement of pile head	=	1.000000 inches
Moment at pile head	=	0.000 in-lbs
Axial load at pile head	=	60000.000 lbs

Depth X inches	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	1.0000	0.000	41978.	-0.0157	298.4155	5.799E+09	-1068.6759	3206.0278	0.000
6.000	0.9058	238282.	35523.	-0.0156	1483.5333	5.799E+09	-1082.8765	7172.7082	0.000
12.000	0.8131	437492.	28990.	-0.0152	2474.3214	5.799E+09	-1094.9401	8079.3407	0.000
18.000	0.7232	597121.	22396.	-0.0147	3268.2506	5.799E+09	-1103.0219	9151.5972	0.000
24.000	0.6369	716819.	16489.	-0.0140	3863.5783	5.799E+09	-865.9216	8157.5261	0.000
30.000	0.5551	805076.	12530.	-0.0132	4302.5353	5.799E+09	-453.8926	4906.2074	0.000
36.000	0.4783	876694.	9814.5497	-0.0123	4658.7315	5.799E+09	-451.1732	5660.1184	0.000
42.000	0.4069	931742.	7121.1420	-0.0114	4932.5213	5.799E+09	-446.6294	6585.9966	0.000
48.000	0.3413	970365.	4460.7219	-0.0104	5124.6162	5.799E+09	-440.1773	7738.2645	0.000
54.000	0.2817	992780.	1845.0221	-0.009414	5236.0999	5.799E+09	-431.7227	9194.2999	0.000
60.000	0.2283	999284.	-713.6173	-0.008383	5268.4447	5.799E+09	-421.1572	11067.	0.000
66.000	0.1811	990253.	-3202.1452	-0.007354	5223.5302	5.799E+09	-408.3521	13527.	0.000
72.000	0.1401	966153.	-5606.6465	-0.006342	5103.6659	5.799E+09	-393.1483	16840.	0.000
78.000	0.1050	927540.	-7912.1059	-0.005362	4911.6187	5.799E+09	-375.3382	21442.	0.000
84.000	0.0757	875068.	-10077.	-0.004430	4650.6491	5.799E+09	-346.1818	27427.	0.000
90.000	0.0519	809809.	-12060.	-0.003558	4326.0746	5.799E+09	-314.9412	36430.	0.000
96.000	0.0330	732910.	-13849.	-0.002760	3943.6098	5.799E+09	-281.3676	51100.	0.000
102.000	0.0188	645608.	-15426.	-0.002047	3509.4085	5.799E+09	-244.2556	78149.	0.000
108.000	0.008477	549273.	-16760.	-0.001428	3030.2773	5.799E+09	-200.3467	141797.	0.000
114.000	0.001612	445521.	-18079.	-0.000914	2514.2565	5.799E+09	-239.5485	891690.	0.000
120.000	-0.002488	332979.	-17681.	-0.000511	1954.5193	5.799E+09	372.4689	898325.	0.000
126.000	-0.004520	233722.	-15262.	-0.000218	1460.8556	5.799E+09	433.8716	575920.	0.000
132.000	-0.005101	149998.	-12618.	-1.929E-05	1044.4432	5.799E+09	447.2850	526067.	0.000
138.000	-0.004752	82319.	-9957.9027	0.000101	707.8390	5.799E+09	439.4376	554897.	0.000
144.000	-0.003891	30430.	-7385.5385	0.000159	449.7633	5.799E+09	418.0171	644661.	0.000
150.000	-0.002841	-6421.6293	-4972.3033	0.000172	330.3541	5.799E+09	386.3946	816131.	0.000
156.000	-0.001831	-29361.	-2774.5996	0.000153	444.4449	5.799E+09	346.1733	1134591.	0.000
162.000	-0.001003	-39827.	-842.7359	0.000117	496.4992	5.799E+09	297.7812	1781514.	0.000
168.000	-0.000422	-39558.	770.0901	7.628E-05	495.1622	5.799E+09	239.8274	3406492.	0.000
174.000	-8.753E-05	-30641.	1797.2779	3.996E-05	450.8110	5.799E+09	102.5685	7031250.	0.000
180.000	5.714E-05	-18020.	1890.7161	1.479E-05	388.0382	5.799E+09	-71.4224	7500000.	0.000
186.000	8.993E-05	-7962.9864	1339.2192	1.345E-06	338.0202	5.799E+09	-112.4099	7500000.	0.000
192.000	7.328E-05	-1950.0512	727.1863	-3.783E-06	308.1143	5.799E+09	-91.6010	7500000.	0.000
198.000	4.453E-05	765.9735	285.4068	-4.396E-06	302.2252	5.799E+09	-55.6588	7500000.	0.000
204.000	2.053E-05	1477.9950	41.4474	-3.235E-06	305.7665	5.799E+09	-25.6609	7500000.	0.000
210.000	5.706E-06	1265.6718	-56.9343	-1.816E-06	304.7105	5.799E+09	-7.1330	7500000.	0.000
216.000	-1.258E-06	796.0900	-73.6149	-7.489E-07	302.3749	5.799E+09	1.5728	7500000.	0.000
222.000	-3.280E-06	382.8323	-56.5949	-1.390E-07	300.3196	5.799E+09	4.1005	7500000.	0.000
228.000	-2.926E-06	117.0515	-33.3213	1.197E-07	298.9977	5.799E+09	3.6573	7500000.	0.000
234.000	-1.845E-06	-17.1089	-14.5780	1.714E-07	298.2606	5.799E+09	2.5904	8425927.	0.000
240.000	-8.696E-07	-58.0078	-2.9278	1.325E-07	298.7040	5.799E+09	1.2930	8921570.	0.000
246.000	-2.546E-07	-52.3380	2.0870	7.541E-08	298.6758	5.799E+09	0.3786	8921570.	0.000
252.000	3.533E-08	-33.0175	3.0654	3.125E-08	298.5797	5.799E+09	-0.0525	8921570.	0.000
258.000	1.203E-07	-15.5759	2.3711	6.107E-09	298.4930	5.799E+09	-0.1789	8921570.	0.000
264.000	1.086E-07	-4.5693	1.3498	-4.315E-09	298.4382	5.799E+09	-0.1615	8921570.	0.000
270.000	6.854E-08	0.6249	0.5596	-6.356E-09	298.4186	5.799E+09	-0.1019	8921570.	0.000
276.000	3.234E-08	2.1500	0.1095	-4.920E-09	298.4262	5.799E+09	-0.0481	8921570.	0.000
282.000	9.496E-09	1.9429	-0.0771	-2.803E-09	298.4252	5.799E+09	-0.0141	8921570.	0.000
288.000	-1.290E-09	1.2268	-0.1137	-1.163E-09	298.4216	5.799E+09	0.001919	8921570.	0.000
294.000	-4.460E-09	0.5794	-0.0881	-2.285E-10	298.4184	5.799E+09	0.006631	8921570.	0.000
300.000	-4.032E-09	0.1704	-0.0502	1.594E-10	298.4164	5.799E+09	0.005995	8921570.	0.000
306.000	-2.547E-09	-0.0228	-0.0208	2.358E-10	298.4156	5.799E+09	0.003787	8921570.	0.000
312.000	-1.203E-09	-0.0797	-0.004098	1.827E-10	298.4159	5.799E+09	0.001789	8921570.	0.000
318.000	-3.541E-10	-0.0721	0.002848	1.042E-10	298.4159	5.799E+09	0.000526	8921570.	0.000
324.000	4.711E-11	-0.0456	0.004217	4.328E-11	298.4157	5.799E+09	-7.005E-05	8921570.	0.000
330.000	1.653E-10	-0.0215	0.003270	8.547E-12	298.4156	5.799E+09	-0.000246	8921570.	0.000
336.000	1.497E-10	-0.006353	0.001865	-5.888E-12	298.4155	5.799E+09	-0.000223	8921570.	0.000
342.000	9.463E-11	0.000833	0.000775	-8.744E-12	298.4155	5.799E+09	-0.000141	8921570.	0.000
348.000	4.475E-11	0.002953	0.000153	-6.785E-12	298.4155	5.799E+09	-6.654E-05	8921570.	0.000
354.000	1.320E-11	0.002677	-0.000105	-3.872E-12	298.4155	5.799E+09	-1.963E-05	8921570.	0.000
360.000	-1.719E-12	0.001694	-0.000156	-1.611E-12	298.4155	5.799E+09	2.557E-06	8921570.	0.000
366.000	-6.126E-12	0.000802	-0.000121	0.000	298.4155	5.799E+09	9.109E-06	8921570.	0.000
372.000	-5.556E-12	0.000237	-6.931E-05	0.000	298.4155	5.799E+09	8.262E-06	8921570.	0.000
378.000	-3.516E-12	-3.039E-05	-2.884E-05	0.000	298.4155	5.799E+09	5.228E-06	8921570.	0.000
384.000	-1.664E-12	-0.000109	-5.735E-06	0.000	298.4155	5.799E+09	2.475E-06	8921570.	0.000
390.000	0.000	-9.939E-05	3.886E-06	0.000	298.4155	5.799E+09	7.320E-07	8921570.	0.000
396.000	0.000	-6.293E-05	5.802E-06	0.000	298.4155	5.799E+09	-9.328E-08	8921570.	0.000
402.000	0.000	-2.981E-05	4.509E-06	0.000	298.4155	5.799E+09	-3.376E-07	8921570.	0.000
408.000	0.000	-8.833E-06	2.576E-06	0.000	298.4155	5.799E+09	-3.067E-07	8921570.	0.000
414.000	0.000	1.109E-06	1.073E-06	0.000	298.4155	5.799E+09	-1.943E-07	8921570.	0.000
420.000	0.000	4.057E-06	2.145E-07	0.000	298.4155	5.799E+09	-9.205E-08	8921570.	0.000
426.000	0.000	3.690E-06	-1.435E-07	0.000	298.4155	5.799E+09	-2.729E-08	8921570.	0.000
432.000	0.000	2.338E-06	-2.152E-07	0.000	298.4155	5.799E+09	3.403E-09	8921570.	0.000
438.000	0.000	1.109E-06	-1.674E-07	0.000	298.4155	5.799E+09	1.251E-08	8921570.	0.000
444.000	0.000	3.293E-07	-9.576E-08	0.000	298.4155	5.799E+09	1.139E-08	8921570.	0.000

450.000	0.000	-4.043E-08	-3.995E-08	0.000	298.4155	5.799E+09	7.218E-09	8921570.	0.000
456.000	0.000	-1.504E-07	-8.024E-09	0.000	298.4155	5.799E+09	3.424E-09	8921570.	0.000
462.000	0.000	-1.370E-07	5.301E-09	0.000	298.4155	5.799E+09	1.018E-09	8921570.	0.000
468.000	0.000	-8.689E-08	7.982E-09	0.000	298.4155	5.799E+09	-1.241E-10	8921570.	0.000
474.000	0.000	-4.124E-08	6.218E-09	0.000	298.4155	5.799E+09	-4.637E-10	8921570.	0.000
480.000	0.000	-1.228E-08	3.559E-09	0.000	298.4155	5.799E+09	-4.226E-10	8921570.	0.000
486.000	0.000	1.474E-09	1.487E-09	0.000	298.4155	5.799E+09	-2.682E-10	8921570.	0.000
492.000	0.000	5.572E-09	3.001E-10	0.000	298.4155	5.799E+09	-1.273E-10	8921570.	0.000
498.000	0.000	5.084E-09	-1.958E-10	0.000	298.4155	5.799E+09	-3.794E-11	8921570.	0.000
504.000	0.000	3.228E-09	-2.960E-10	0.000	298.4155	5.799E+09	4.522E-12	8921570.	0.000
510.000	0.000	1.534E-09	-2.309E-10	0.000	298.4155	5.799E+09	1.719E-11	8921570.	0.000
516.000	0.000	4.579E-10	-1.323E-10	0.000	298.4155	5.799E+09	1.569E-11	8921570.	0.000
522.000	0.000	-5.371E-11	-5.533E-11	0.000	298.4155	5.799E+09	9.965E-12	8921570.	0.000
528.000	0.000	-2.065E-10	-1.122E-11	0.000	298.4155	5.799E+09	4.737E-12	8921570.	0.000
534.000	0.000	-1.887E-10	7.230E-12	0.000	298.4155	5.799E+09	1.415E-12	8921570.	0.000
540.000	0.000	-1.200E-10	1.098E-11	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
546.000	0.000	-5.706E-11	8.575E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
552.000	0.000	-1.707E-11	4.916E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
558.000	0.000	1.950E-12	2.058E-12	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
564.000	0.000	7.643E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
570.000	0.000	6.993E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
576.000	0.000	4.449E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
582.000	0.000	2.138E-12	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
588.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
594.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	8921570.	0.000
600.000	0.000	0.000	0.000	0.000	298.4155	5.799E+09	0.000	4460785.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial stress and do not equal the
  actual stresses in concrete and steel in the range of nonlinear bending.

Output Verification: Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 3:

```
Pile-head deflection             =      1.0000000 inches
Computed slope at pile head      =     -0.0156949 radians
Maximum bending moment           =       999284. inch-lbs
Maximum shear force              =        41978. lbs
Depth of maximum bending moment  =     60.0000000 inches below pile head
Depth of maximum shear force     =       0.000000 inches below pile head
Number of iterations             =             19
Number of zero deflection points =             14
```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```
Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians
```

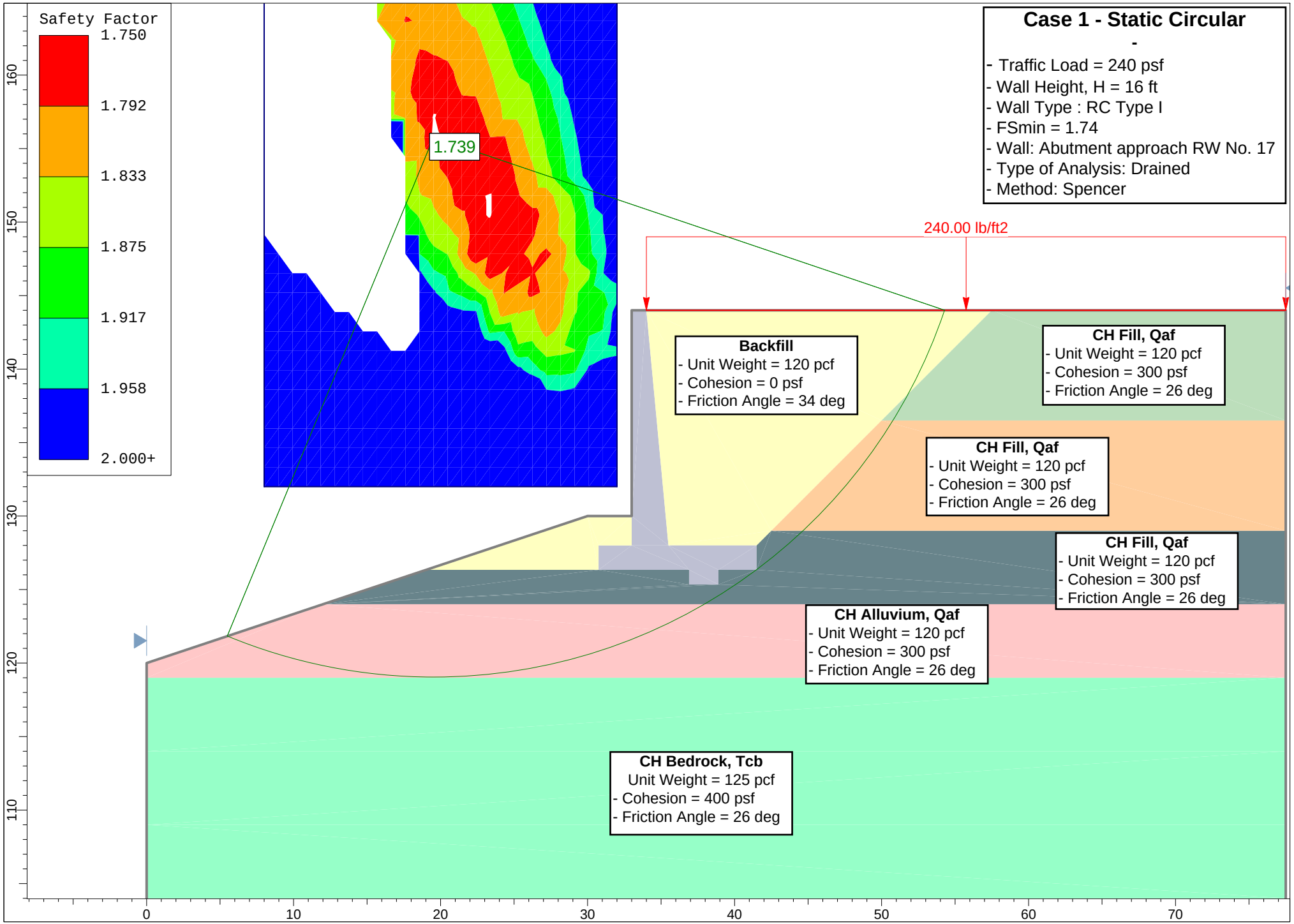
Load Case No.	Load Type	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in-lbs	Maximum Shear lbs	Pile-head Rotation radians
1	4	y = 0.2500	M = 0.000	60000.	0.25000000	425184.	24160.	-0.00517817
2	4	y = 0.5000	M = 0.000	60000.	0.50000000	648972.	31849.	-0.00899944
3	4	y = 1.0000	M = 0.000	60000.	1.00000000	999284.	41978.	-0.01569489

The analysis ended normally.

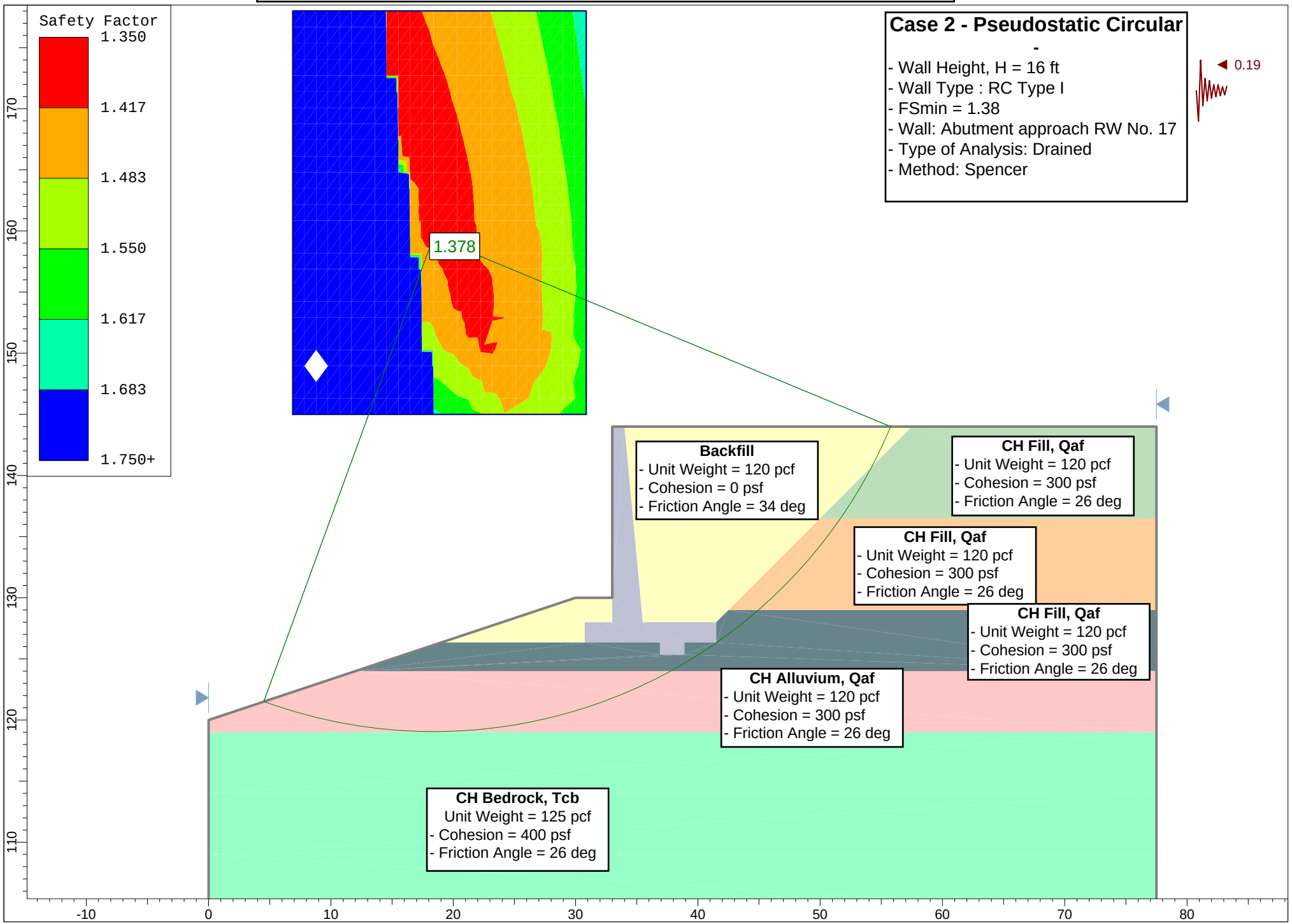
APPENDIX D-4

RETAINING WALL CALCULATIONS

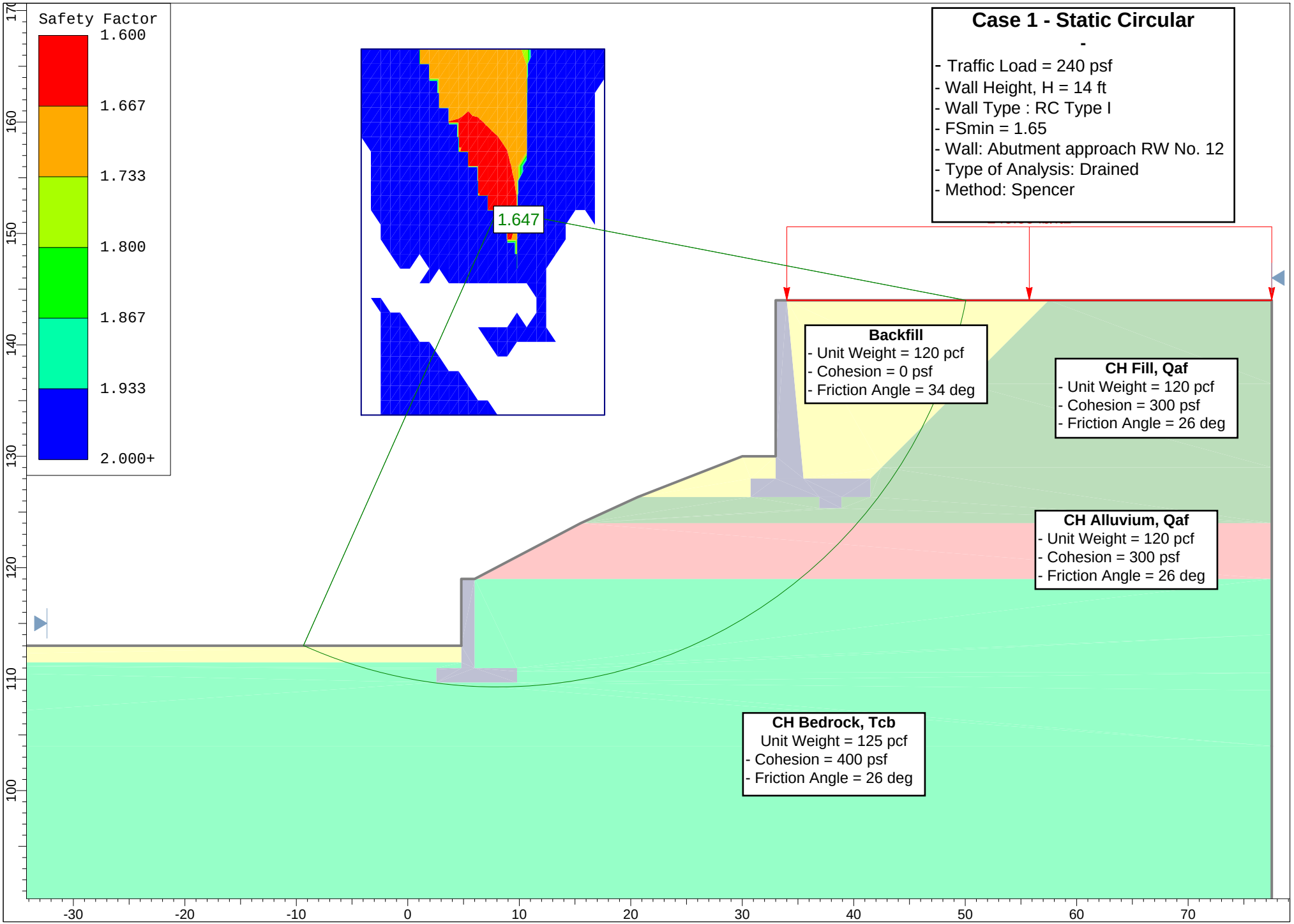
Palo Comado Canyon Rd OC (Widen) - Retaining Wall Type I - No. 17
Global Stability Analysis



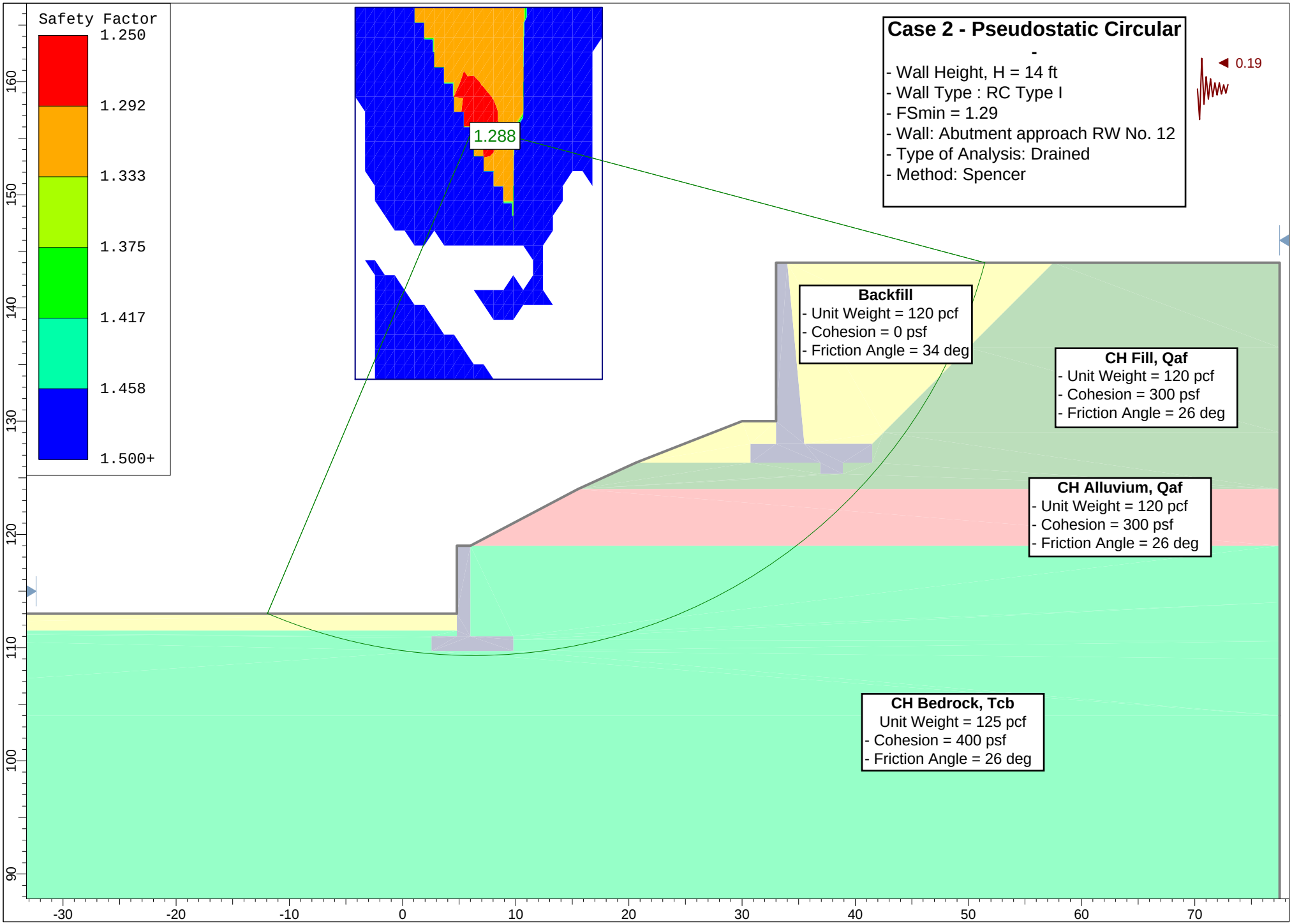
Palo Comado Canyon Rd OC (Widen) - Retaining Wall Type I - No. 17
Global Stability Analysis



Palo Comado Canyon Rd OC (Widen) - Retaining Wall Type I - No. 12
Global Stability Analysis



Palo Comado Canyon Rd OC (Widen) - Retaining Wall Type I - No. 12
Global Stability Analysis



BEARING CAPACITY ANALYSIS
BRINCH-HANSEN METHOD

<<<<<<<<<<<<<<<<<<<<INPUT>>>>>>>>>>>>>>>>>>>>				
Footing Type	C	C=continuous, R=rectangular		
Footing Width	2.62	m	8.60	ft
Footing Length	0.00	m		ft
Footing Depth	1.01	m	3.33	ft
Ground Inclination	26.56	deg	26.56	deg
Soil Cohesion	14.36	kPa	300.00	psf
Soil Friction Angle	26.00	deg	26.00	deg
Soil Unit Weight	18.85	kN/m^3	120.00	pcf
Water Depth	30.48	m	100.00	ft
Safety Factor	1.00		1.000	

<<<<<<<<<<<<<<<<<<<<<<OUTPUT>>>>>>>>>>>>>>>>>>>>>>							
Shape Factors		Depth Factors		Ground Inclination Factors		Bearing Capacity Factors	
Sc=	1.000	k=	0.387	Gc=	0.819	Nq=	11.85
Sca=	0.000	Dc=	1.155	Gca=	0.181	Nc=	22.25
Sq=	1.000	Dca=	0.155	Gq=	0.237	Nγ=	7.94
Sγ=	1.000	Dq=	1.119	Gγ=	0.237		
		Dγ=	1.000				
Effective Unit Weight (kN/m3)			(pcf)	Effective Stress at Depth D			
γ'=	18.9		120.0	19.13	kPa	400	psf
Net Allowable Bearing Capacity (kPa)				Net Allowable Bearing Capacity (ksf)			
q'_{all}=	390			q'_{all}=	8.15		

H	Case	B'	q'o	q'ult	ϕ^*	q' factored	C / D
4	service	6.8	0.7	8.21	1	8.21	11.73
	strength	6.6	1.6	8.22	0.55	4.52	2.83
	ext I	5.2	1.1	8.41	0.8	6.73	6.12
	ext II	2.6	2.2	8.94	0.8	7.15	3.25
6	service	6.5	1.0	8.23	1	8.23	8.23
	strength	5.0	1.8	8.45	0.55	4.65	2.58
	ext I	4.7	1.5	8.52	0.8	6.82	4.54
	ext II	2.7	2.6	8.75	0.8	7.00	2.69
8	service	6.2	1.3	8.26	1	8.26	6.35
	strength	3.6	2.3	8.95	0.55	4.92	2.14
	ext I	3.9	2.2	8.94	0.8	7.15	3.25
	ext II	2.8	3.1	8.72	0.8	6.98	2.25
10	service	6.0	1.6	8.28	1	8.28	5.18
	strength	3.0	3.3	8.66	0.55	4.76	1.44
	ext I	3.1	3.4	8.63	0.8	6.90	2.03
	ext II	2.9	3.6	8.95	0.8	7.16	1.99
12	service	6.3	2.0	8.25	1	8.25	4.13
	strength	3.2	4.0	8.6	0.55	4.73	1.18
	ext I	2.8	4.8	8.72	0.8	6.98	1.45
	ext II	3.7	3.6	8.89	0.8	7.11	1.98
14	service	7.5	2.1	8.17	1	8.17	3.89
	strength	4.3	3.8	8.64	0.55	4.75	1.25
	ext I	3.2	5.3	8.6	0.8	6.88	1.30
	ext II	5.2	3.3	8.41	0.8	6.73	2.04
16	service	8.6	2.2	8.15	1	8.15	3.70
	strength	5.3	3.7	8.39	0.55	4.61	1.25
	ext I	3.6	5.7	8.95	0.8	7.16	1.26
	ext II	6.7	3.1	8.63	0.8	6.90	2.23

ϕ^* Table 11.5.7-1 and Section 11.5.8

BEARING CAPACITY ANALYSIS
BRINCH-HANSEN METHOD

<<<<<<<<<<<<<<<<<<<<INPUT>>>>>>>>>>>>>>>>>>>>				
Footing Type	C	C=continuous, R=rectangular		
Footing Width	2.99	m	9.80	ft
Footing Length	0.00	m		ft
Footing Depth	3.05	m	10.00	ft
Ground Inclination	26.56	deg	26.56	deg
Soil Cohesion	14.36	kPa	300.00	psf
Soil Friction Angle	26.00	deg	26.00	deg
Soil Unit Weight	18.85	kN/m^3	120.00	pcf
Water Depth	30.48	m	100.00	ft
Safety Factor	1.00		1.000	

H	Case	B'	q'o	q'ult	ϕ^*	q' factored	C / D
20	service	11.0	2.4	11.83	1	11.83	4.93
	strength	7.4	3.8	11.50	0.55	6.33	1.66
	ext I	4.6	6.4	11.85	0.8	9.48	1.48
	ext II	9.8	3.0	11.32	0.8	9.06	3.02

ϕ^* Table 11.5.7-1 and Section 11.5.8

<<<<<<<<<<<<<<<<<<<<<<<<OUTPUT>>>>>>>>>>>>>>>>>>>>>>>>							
Shape Factors		Depth Factors		Ground Inclination Factors		Bearing Capacity Factors	
Sc=	1.000	k=	0.795	Gc=	0.819	Nq=	11.85
Sca=	0.000	Dc=	1.318	Gca=	0.181	Nc=	22.25
Sq=	1.000	Dca=	0.318	Gq=	0.237	Nγ=	7.94
Sγ=	1.000	Dq=	1.245	Gγ=	0.237		
		Dγ=	1.000				
Effective Unit Weight (kN/m3)		(pcf)		Effective Stress at Depth D			
γ'=	18.9		120.0	57.46	kPa	1200	psf
Net Allowable Bearing Capacity (kPa)				Net Allowable Bearing Capacity (ksf)			
q'_{all}=	542			q'_{all}=	11.32		

SETTLEMENT CALCULATION

PROJECT NAME: Palo Comado **PROJECT NUMBER:** LA-1143

PROBLEM DESCRIPTION: 16 ft high type 1 wall

Loaded Area					
	Length, L	500	ft	L≥B	(A)
	Width, B	9	ft		(B)
	Load, Q	2,200	psf		(C)
	Depth, D	3.5	ft	must be at a layer boundary	(D)
	Settlement Point Loc.	1	1=center, 2=short edge, 3=long edge, 4=corner		(E)

TOTAL= **0.82** inches

(1) Soil Layer	(2) Depth (feet) top	bottom	center	(3) Layer Height (feet)	(4) γ (pcf)	(5) σ'v (psf)	(6) OCR	(7) σ'p (psf)	(8) Stress Distribution Iσ	Δσ (psf)	(10) Compress. Type E or C	(11) E (ksf)	(12) Cr 1+e0	(13) Cc 1+e0	(14) OCR Case	(15) Strain ε (in/in)	(16) Layer Settle (in)
	0	3.5	1.75	3.5	120	210					E	400					
	3.5	7.5	5.5	4	120	660			0.9663	2,126	E	400			N/A	0.005315	0.26
	7.5	10	8.75	2.5	120	1,050			0.7490	1,648	E	400			N/A	0.004119	0.12
	10	12.5	11.25	2.5	120	1,350			0.5926	1,304	E	400			N/A	0.003259	0.10
	12.5	15	13.75	2.5	120	1,650			0.4800	1,056	E	400			N/A	0.00264	0.08
	15	20	17.5	5	120	2,100			0.3684	810	E	400			N/A	0.002026	0.12
	20	25	22.5	5	120	2,700			0.2787	613	E	400			N/A	0.001533	0.09
	25	30	27.5	5	120	3,300			0.2234	491	E	1500			N/A	0.000328	0.02
	30	35	32.5	5	120	3,900			0.1861	409	E	1500			N/A	0.000273	0.02
	35	40	37.5	5	120	4,500			0.1593	350	E	1500			N/A	0.000234	0.01

TOTAL= **0.82** inches

SETTLEMENT CALCULATION

INSTRUCTIONS:

1 Program calculates settlement under center, short edge, long edge, or corner of shaded rectangular loaded areas, using Boussinesq stress distribution and consolidation theory or elastic modulus compressibility.

2 Input data in shaded fields. Unshaded fields are automatically calculated. Up to 26 soil layers may be used.

3 Explanation of the calculation procedure and guidance for input of data in rows (A) through (E) and columns (1) through (16) is provided below.

ROW AND COLUMN NOTES

(A)	Input length (long side) of rectangular loaded area.
(B)	Input width (short side) of rectangular loaded area.
(C)	Input applied load at the base of the loaded area (pounds per square foot)
(D)	Input depth of applied load below the ground surface (the depth must coincide with a bottom-of-layer boundary specified in Column (2)
(E)	Input 1, 2, 3, or 4 to calculate the settlement under the center, midpoint of short edge, midpoint of long edge, or corner, respectively, of the rectangular loaded area.
(1)	Input Soil Layer number and/or description (optional).
(2)	Starting with the ground surface (depth = 0) input the depth to top and bottom of each soil layer below the ground surface. The depth to center of the layer is automatically calculated.
(3)	The layer height or thickness is automatically computed (H=depth to top of layer minus depth to bottom of layer).
(4)	Input unit weight of soil in the layer (total unit weight above the water table, buoyant unit weight below the water table).
(5)	Vertical effective stress (pounds per square foot) at the center of each layer prior to the new loading is automatically computed.
(6)	Input Overconsolidation Ratio (OCR) defined as the ratio of maximum past preconsolidation pressure (column (7)) to current effective vertical stress (Column (5)). OCR=1 is Normally Consolidated.
(7)	Maximum past preconsolidation pressure is calculated as the product of Column (5) and Column (6), or σ'_p = OCR * σ'_v.
(8)	The stress increase coefficient ($I\sigma$) at the center of each layer is computed using Newmark integration of Boussinesq theory based on vertical depth below bottom of loaded area and position on loaded area input in Row E.
(9)	The increase in stress ($\Delta\sigma$) at the center of each layer due to the loaded area is computed as the product of $I\sigma$ (Column (8)) and load Q (Row (C)).
(10)	Input compressibility type for each layer. "E" means elastic modulus (slope of stress versus strain curve) is used, "C" means consolidation theory is used (slope of log stress versus strain curve) is used.
(11)	Input elastic modulus (E in ksf) value for each layer where "E" is selected in Column 10.
(12)	Input Recompression Ratio, or slope of log stress versus strain curve, in the overconsolidated range (if soil is normally consolidated this value need not be input).
(13)	Input Virgin Compression Ratio, or slope of log stress versus strain curve, in the normally consolidated range.
(14)	Virgin and/or Recomp. Case determined ("C" Comp. Type Only). Case 1 = entire loading is within recompression range, Case 2 - Loading patially recompression partially virgin, Case 3 - entirely virgin (norm cons.)
(15)	Strain ε is calculated as $\Delta\sigma$ / E if "E" is specified in Column (10), or by consolidation theory using the appropriate recompression and/or virgin slopes if "C" is specified in Column (10).
(16)	Layer settlement (inches) is computed as Strain (Column (15)) times Height (Column (3) converted to inches). Total settlement (inches) of all layers is summed up at the bottom of Column (16).

COULOMB AND MONONABE-OKABE EARTH PRESSURE CALCULATIONS

			<INPUT>			
Unit Weight =	γ	=	120	pcf =	18.9	kN/m^3
Friction Angle =	ϕ	=	34	degrees =	0.593412	radians
Wall Friction Angle =	ϕ_w	=	0.0	degrees =	0	radians
Wall Inclination =	α	=	0	degrees =	0	radians
Slope Inclination =	β	=	0.000	degrees =	0	radians
Horiz. EQ Coeff. =	K_h	=	0.190		0.003316	
Vert. EQ Coeff. =	K_v	=	0			

<<OUTPUT>>							
COULOMB STATIC				SEISMIC INCREMENT			
	EFP		i_A		EFP		i_{AE}
K_A	pcf	kN/m3	deg	K_{AE}-K_A	pcf	kN/m3	deg
0.2827	33.93	5.33	62.0	0.120	14.4	2.3	53.18
RANKINE STATIC				max K_h=	0.674508516842427		
0.2827	33.93	5.33	62.0	max β=	23.24203291161000		deg

<< COULOMB CALCULATION>>

STATIC ACTIVE EARTH PRESSURE

STATIC CRITICAL INCLINATION

	A	B	C	D	E	K_A	C1	C2	i_A
degrees	34.0	0.0	34.0	34.0	0.0				62.00
radians	0.593	0.000	0.593	0.593	0.000	0.283	1.206	1.000	1.082104

SEISMIC ACTIVE EARTH PRESSURE

SEISMIC CRITICAL INCLINATION

	θ	A'	B'	C'	D'	E'	K_{AE}	C1E	C2E	i_{AE}
degrees	10.8	23.2	10.8	34.0	23.2	0				53.18
radians	0.188	0.406	0.188	0.593	0.406	0.000	0.4027	1.307	1.524	0.928127

Appendix E Caltrans' Review Comments and Responses

State of California **Business, Transportation and Housing Agency**

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: MR. RICHARD HARTZELL
Liaison Engineer Dist 7
Office of Special Funded Projects

Date: July 12, 2017
File: 7-LA-101-PM33.5/33.9
07-257201
Palo Comado Bridge
No. 53-1678

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South

Subject: Review of Foundation Report for US 101 Palo Comado Canyon Road OC (Widen) Improvement Project

Per your request, the Office of Geotechnical Design – South of the Division of Engineering Services has preformed a review of Foundation Report for the subject project. The information provided and reviewed for this project is listed as follows:

- Foundation Report for US 101 Palo Comado Canyon Road OC (Widen) in the city of Agoura Hills, California, prepared by Group Delta Consultants, Inc. for Parson Transportation on June 26, 2017.
- Structure Special Provisions for US 101 Palo Comado Canyon Road OC (Widen)

Based on the review of the report, our comments are as follows:

1. Section 3.3 Subsurface Soil Condition: verify the range of undrained shear strength of 1.5 to 4.5 ksf. Shear strength from the pocket penetrometer tests may not represent actual undrained shear strength of clay soils if the tests were done on significantly disturbed soil sample. Agree. Pocket penetrometer readings were taken on relatively undisturbed samples and Group Delta judge that the pocket penetrometer readings are representative.
2. Appendix D Analysis and Calculations: Verify undrained shear strength of clay soils used in Lpile analysis (for example, undrained shear strength may be 4500 psf, instead of 4500 psi in Lpile analysis)

Group Delta verified calculations. The input undrained shear strength values are in "psf". The output summary table shows "psf", but the output print from LPILE shows "psi" by mistake (See attached for sample). GDC will add a note to the LPILE output (Appendix D)

If you have any questions or comments, please contact me at 916-227-4533.

SEUNGWOON HAN, PH.D, P.E.

NOTE: LPILE output print shows the undrained shear strength value of individual layers in "psi" - This is an error from LPILE output format.
It should be in "psf" as shown in Summary of Soil Properties (LPILE output)


```
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 4 is stiff clay without free water

   Distance from top of pile to top of layer           =      8.00000 ft
   Distance from top of pile to bottom of layer        =     13.00000 ft
   Effective unit weight at top of layer               =    120.00000 pcf
   Effective unit weight at bottom of layer            =    120.00000 pcf
   Undrained cohesion at top of layer                  =   1500.00000 psi
   Undrained cohesion at bottom of layer               =   1500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =     13.00000 ft
   Distance from top of pile to bottom of layer        =     18.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   4500.00000 psi
   Undrained cohesion at bottom of layer               =   4500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =     18.00000 ft
   Distance from top of pile to bottom of layer        =     23.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   2500.00000 psi
   Undrained cohesion at bottom of layer               =   2500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 7 is stiff clay without free water

   Distance from top of pile to top of layer           =     23.00000 ft
   Distance from top of pile to bottom of layer        =     28.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   3500.00000 psi
   Undrained cohesion at bottom of layer               =   3500.00000 psi
   Epsilon-50 at top of layer                          =      0.00700
   Epsilon-50 at bottom of layer                       =      0.00700


Layer 8 is stiff clay without free water

   Distance from top of pile to top of layer           =     28.00000 ft
   Distance from top of pile to bottom of layer        =     80.00000 ft
   Effective unit weight at top of layer               =    125.00000 pcf
   Effective unit weight at bottom of layer            =    125.00000 pcf
   Undrained cohesion at top of layer                  =   4500.00000 psi
   Undrained cohesion at bottom of layer               =   4500.00000 psi
   Epsilon-50 at top of layer                          =      0.00500
   Epsilon-50 at bottom of layer                       =      0.00500


   (Depth of lowest soil layer extends   30.00 ft below pile tip)


-------------------------------------------------------------------------------
                        Summary of Soil Properties
-------------------------------------------------------------------------------
```

Layer Num.	Soil Type (p-y Curve Criteria)	Strain Factor Epsilon 50	J Factor	kpy pci	Layer Depth ft	Effective Unit Wt. pcf	Rock Mass krm	Undrained In-situ Cohesion Test Type	Angle of In-situ Friction Test Property deg.	Uniaxial Elastic qu psi	Subgrade Mod. pci	RQD % or GSI
1	Stiff Clay w/o Free Water	0.00700	--	--	-2.000	120.000	--	3500.000	--	--	--	--
		0.00700	--	--	0.10000	120.000	--	3500.000	--	--	--	--
2	Stiff Clay w/o Free Water	0.00700	--	--	0.10000	120.000	--	1500.000	--	--	--	--
		0.00700	--	--	3.000	120.000	--	1500.000	--	--	--	--
3	Stiff Clay w/o Free Water	0.00700	--	--	3.000	120.000	--	2500.000	--	--	--	--
					8.000	120.000	--	2500.000	--	--	--	--

	0.00700	--	--	--	--	--	--	--	--	--	--	--
4	Stiff Clay w/o Free Water				8.000	120.000	--	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
					13.000	120.000	--	1500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
5	Stiff Clay w/o Free Water				13.000	125.000	--	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
					18.000	125.000	--	4500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
6	Stiff Clay w/o Free Water				18.000	125.000	--	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
					23.000	125.000	--	2500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
7	Stiff Clay w/o Free Water				23.000	125.000	--	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
					28.000	125.000	--	3500.000	--	--	--	--
	0.00700	--	--	--	--	--	--	--	--	--	--	--
8	Stiff Clay w/o Free Water				28.000	125.000	--	4500.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--	--	--	--	--
					80.000	125.000	--	4500.000	--	--	--	--
	0.00500	--	--	--	--	--	--	--	--	--	--	--

```
-------------------------------------------------------------------------------
                  p-y Modification Factors for Group Action
-------------------------------------------------------------------------------

Distribution of p-y modifiers with depth defined using 2 points
```

Point No.	Depth X ft	p-mult	y-mult
1	0.000	1.0000	1.0000
2	50.000	1.0000	1.0000

```
-------------------------------------------------------------------------------
                                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
1	1	V = 24000. lbs	M = 0.0000 in-lbs	154000.	True

```
V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.


-------------------------------------------------------------------------------
    Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
-------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic section properties




-------------------------------------------------------------------------------
                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                              =       24000.000 lbs
Applied moment at pile head                           =           0.000 in-lbs
Axial thrust load on pile head                        =      154000.000 lbs
```