Roadway & Structure Foundation Exploration Report (Final)
TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas
Ashtabula County, Ohio
S&ME Project No. 24170232A

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June 11, 2026

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Attention: Mr. Brian Hughes, PE

Reference: **Roadway & Structure Foundation Exploration Report (Final)**
TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas (PID 122876)
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S&ME Project No. 24170232A

Mr. Hughes:

In accordance with our revised proposal dated November 24, 2025, which was authorized on December 29, 2025, by an ms consultants, inc. (ms) Task Order Agreement, S&ME has completed a Geotechnical Exploration for a proposed truck parking facility at the former rest areas along IR 90 approximately 4.8 miles east of SR 11 in Ashtabula County, Ohio. The ATB-90 Vacant Rest Areas is known as Site 2 within the TP 26 NE Ohio project. The approximate location of this project is illustrated on the Vicinity Map included as Plate 1 in Appendix I of this report.

In accordance with Section 701 of the ODOT *Specifications for Geotechnical Explorations* (*SGE*), S&ME is herewith submitting a "final" version of our April 28, 2026, "draft" report. This final report also addresses comments received on May 22, 2026, from the ODOT Office of Geotechnical Engineering (OGE) on the Stage 3 plans. Additionally, S&ME has prepared Geotechnical Profile sheets and will submit these drawings under separate cover.

We appreciate having been given the opportunity to be of service. Please do not hesitate to contact us if you have any further questions regarding this report.

Respectfully,

S&ME, Inc.

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1.0 Executive Summary

An overview of this project and the findings of this geotechnical exploration are presented below. This summary should not be used in place of the more detailed recommendations presented in the remainder of this report.

Category *(Section Reference)*	**Project Overview/Geotechnical Findings**
Introduction *(Section 2.0)*	Construct new truck parking areas at two vacant rest areas along IR 90, 4.8 miles east of SR 11. The project includes parking areas in each direction of IR 90.
Exploration Program *(Section 4.0)*	Twenty-six (26) borings were drilled for the proposed EB/WB truck parking areas, ramps and proposed light towers. See Table 4-1 for a summary of the borings.
Subsurface Conditions *(Section 5.0)*	*Surface Materials*: Four (4) borings were advanced through the existing IR 90 shoulder pavement, 20 borings through existing grass areas, and two (2) borings and six (6) test pits through the existing fill mounds. Table 5-1 summarizes the pavement materials and thicknesses encountered. Three (3) to six (6) inches of rootmat were encountered in areas outside of existing pavement. *Existing Fill*: 1.8 feet of sandy (A-3a) fill in one (1) subgrade boring in the EB direction and up to 18.5 feet of fill within the existing fill mounds at each site. Fill mounds consisted of very loose to very dense gravel and sand (A-1-b, A-2-4, A-2-6, A-3a) or very soft to hard cohesive (A-4a, A-6a) soil. Fill mounds included non-soil materials (i.e., concrete, asphalt, brick, etc.) and zones of slightly organic soil. *Natural Soil*: Primarily very stiff to hard cohesive soil (A-4a, A-4b, A-6a, A-6b) with discontinuous layers of loose to medium dense sand/gravel (A-1-b, A-2-4, A-2-6, A-3a) or silt (A-4b). Borings B-005-0-25 and B-022-0-25 encountered a layer of medium stiff silty clay (A-6b). *Groundwater*: No groundwater was noted in 23 of the 26 borings performed at Site 2. Variable amounts of free water were noted during drilling in Borings B-005-0-25, B-018-0-25 and B-019-0-25 between depths of 2.5 and 24.0 feet.
Subgrade Support Parameters *(Section 6.2.1)*	Average California Bearing Ratio (CBR) of 7%. Resilient Modulus (M_R) of 8,400 psi at both parking areas.
Subgrade Remediation *(Sections 6.2.2, 6.2.3 and 6.2.4)*	Two (2) of 13 borings (15%) in the EB area and three (3) of 13 borings (23%) in the WB area encountered unstable soil that the Subgrade Analysis spreadsheets indicate may require subgrade remediation. Since less than 30 percent of the subgrade area requires remediation, S&ME recommends "excavate and replace" be used to remediate the pavement subgrade. Due to the existing fill mound and uncontrolled fill present at each site, 3 feet of excavate and replace beneath the existing fill mounds is recommended (Section 6.2.3).
Groundwater Considerations *(Sections 6.4 and 7.4)*	Significant groundwater issues are not anticipated in connection with the proposed roadway or light tower foundation construction. Construction surfaces should be graded to prevent pooling/ponding of water.
Light Tower Foundations *(Section 7.0)*	Light tower foundations are recommended to be 36 inches in diameter and extend 8 feet below proposed grade with reinforcement as detailed in SCD HL-20.21.

2.0 Introduction

This project includes the construction of two new truck parking areas (Site 2) in the existing vacant rest areas along the eastbound (EB) and westbound (WB) directions of IR 90 approximately 4.8 miles east of SR 11 in Ashtabula County, Ohio. Site improvements will include removal of the existing fill mounds and construction of new truck parking facilities where full depth asphalt pavement construction will be performed. New high mast light towers will surround each parking area and standard highway light poles will be installed along the ramps. The parking areas are proposed to accommodate approximately 39 and 40 new full-size or cab only truck parking spots in the EB and WB directions, respectively.

This geotechnical exploration was performed in general accordance with the January 2026 ODOT *Specifications for Geotechnical Explorations* (*SGE*) and the ODOT *Geotechnical Design Manual* (*GDM*).

3.0 Geology and Observations of the Project

3.1 Geology

This project lies within a previously glaciated portion of Ohio Glaciated Allegheny Plateaus section of Ohio which is located within the Killbuck-Glaciated Pittsburgh Plateau Physiographic Region. Overburden soil within this region is typically composed of Wisconsinan-age clayey glacial till.

Bedrock topography mapping indicates the uppermost bedrock may be present within 30 to 80 feet of the ground surface (near approximate El. 795 at the EB parking area and approximate El. 785 at the WB parking area) and to consist of Devonian-age Ohio Shale. Bedrock was not encountered any of the borings.

The primary groundwater aquifer consists of the Devonian-age shale bedrock, developing yields from 0 to 3 gallons per minute (gpm).

A review of the ODNR resources indicates the site is not in an area known to contain karst bedrock features or be subject to severe slope failure. The ODNR online "Mines of Ohio" tool indicates there are no active or abandoned mines reported within or near the project limits.

Please refer to S&ME Desktop Study Report dated June 18, 2025, for a more detailed discussion of the site geology.

3.2 Reconnaissance

S&ME, accompanied by representatives from ms, visited Site 2 on May 7, 2025. The following items were noted during our site visit. Additional observations and site photos are included in our Desktop Study Report dated June 18, 2025.

- The existing drainage swale adjacent to the EB outside shoulder of IR 90 was roughly 4 to 8 feet deep, and 2 to 4 feet deep next to the WB outside shoulder of IR 90. Isolated areas of standing water were also observed within these ditches and at other scattered locations across the EB and WB areas.

- Fill mounds with approximate 2(H):1(V) slopes and estimated heights of 18 to 20 feet are present at each site. Dimensions on the top of the mound are approximately 70 by 120 feet on the EB area and 60 by 190 feet on the WB area. These mounds were located generally over the former parking and drive areas of the vacant rest areas.
- Underdrain outlets (from IR 90) were observed in the western portion of the roadside swale at the WB site.
- An existing culvert crossed under IR 90 EB was located on the east end of the EB rest area.
- An existing culvert crossing beneath IR 90 WB and the north side slope of the WB outside shoulder swale was noted on the west end of the WB site.
- At the EB parking area, remnants of old asphalt were observed on the eastern side of the EB site and a possible concrete foundation was observed on the western end of the site near the Exit 235 Camping/Lodging sign.
- Both the EB and WB parking areas between the IR 90 shoulder and tree lines, including prior ramps and existing mounds, have a well-established cover of grass.

3.3 Available Information

S&ME searched the online ODOT Transportation Information Mapping System (TIMS) for historic soil boring information in the project vicinity. Within TIMS, soil profile sheets for subgrade borings performed within the limits of both parking areas in 2005 were located. These borings generally encountered layers of cohesive soils (A-4a, A-6a, A-6b, A-7-6 classifications) with occasional, discontinuous layers of sandy/gravelly soils (A-1-a, A-1-b, A-3a). This historic information did not meet current ODOT specifications and, therefore, was not incorporated into this geotechnical exploration for the proposed parking areas.

4.0 Exploration

4.1 Field Investigation

Between January 22 and February 10, 2026, a total of 26 borings (termed B-001-0-25 through B-026-0-25) were performed at Site 2. Four (4) borings were advanced through the existing IR 90 shoulder pavement, 20 borings through existing grass areas, and two (2) borings through the existing fill mounds.

In addition to the borings, test pits were previously performed on June 16, 2025, in conjunction with the feasibility study for this site and included three (3) test pits into each existing fill mound at the vacant EB and WB areas (total of 6 test pits). These test pits were performed to investigate the materials within the mounds which ODOT indicated were constructed between 2010 and 2012 and might consist of predominantly concrete and/or asphalt rubble from a prior construction project. The test pits were performed with a Komatsu PC138 backhoe. Logs of these test pit excavations were previously submitted in a Data Report dated July 29, 2025. Following the completion of the soil borings at the site, the test pit exploration identification numbers were revised to fit within numbering used for the borings performed during this exploration. The new test pit exploration IDs are T-005-1-25, T-006-1-25 and T-007-1-25 for test pits performed on the EB mound and T-018-1-25, T-019-1-25 and T-021-1-25 for test pits performed on the WB mound.

Table 4-1 provides a summary of the explorations performed at Site 2, including their purpose and termination depth. For the remainder of this report, the borings will generally be referred to without the offset designation and the two-year designation (i.e., B-001) and test pits will generally be referred to without the two-year designation (i.e., T-005-1). Logs of the borings have been included as Plates 4 through 30 and logs of the test pits have been included as Plates 31 through 36 in Appendix I. The approximate locations of the borings and test pits performed at the EB and WB parking areas are shown on the Plan of Explorations included as Plates 2A through 2F in Appendix I.

Table 4-1 – Summary of Project Explorations

Eastbound Truck Parking Area			Westbound Truck Parking Area		
Boring/ Test Pit ID	Termination Depth (ft)	Purpose	Boring/ Test Pit ID	Termination Depth (ft)	Purpose
B-001-0-25	8.0	Subgrade	B-014-0-25	8.0	Subgrade
B-002-0-25	7.0	Subgrade	B-015-0-25	7.0	Subgrade
B-003-0-25	7.0	Subgrade	B-016-0-25	7.0	Subgrade
B-004-0-25	10.0	Embankment	B-017-0-25	7.0	Subgrade
B-005-0-25	25.0	Subgrade/Light Tower	B-018-0-25	25.0	Subgrade/Light Tower
T-005-1-25	15.0	Fill Mound	T-018-1-25	16.0	Fill Mound
B-006-0-25	7.0	Subgrade	B-019-0-25	45.0	Fill Mound/ Subgrade/Light Tower
T-006-1-25	14.0	Fill Mound	T-019-1-25	12.0	Fill Mound
B-007-0-25	20.0	Fill Mound/Subgrade	B-020-0-25	7.0	Subgrade
T-007-1-25	14.0	Fill Mound	B-021-0-25	7.0	Subgrade
B-008-0-25	25.0	Subgrade/Light Tower	T-021-1-25	18.0	Fill Mound
B-009-0-25	25.0	Subgrade/Light Tower	B-022-0-25	11.0	Subgrade
B-010-0-25	7.0	Subgrade	B-023-0-25	25.0	Subgrade/Light Tower
B-011-0-25	7.0	Subgrade	B-024-0-25	7.0	Subgrade
B-012-0-25	7.0	Subgrade	B-025-0-25	7.0	Subgrade
B-013-0-25	8.0	Subgrade	B-026-0-25	8.0	Subgrade

The borings were performed by an ATV-mounted drilling rig using a 3¼-inch I.D. hollow-stem auger to advance the borings between sampling attempts. Disturbed but representative soil samples were obtained by lowering a 2-inch O.D. split-barrel sampler to the bottom of the boring and then driving the sampler into the soil with blows from a 140-pound hammer freely falling 30 inches (AASHTO T206 - Standard Penetration Test). In all borings except B-004 sampling was performed at continuous intervals beginning at the proposed subgrade level as provided by ms at the time of the exploration. In borings performed for light tower or through the existing fill mounds, samples were performed at 2.5-foot intervals outside of the continuous sampling intervals and for the entire depth of Boring B-004. SPT samples were examined immediately after recovery and representative portions

were preserved in airtight jars. In accordance with the ODOT *SGE*, the hammer system on the drill rig used for this exploration was calibrated in accordance with ASTM D4633 on December 30, 2024, and has a drill rod energy of 91.0%. In accordance with the ODOT *SGE*, the energy ratio has been limited to 90%.

Groundwater observations were made as the borings were being advanced, and again after the completion of drilling. At the completion of drilling, all borings were backfilled with soil cuttings mixed with bentonite and, where advanced through existing pavement, the surface of the road was repaired with cold-patch asphalt.

In the field, experienced S&ME personnel performed the following: 1) examined all samples recovered from the borings; 2) preserved representative portions of all soil samples in airtight jars; 3) prepared a log of each boring; 4) made seepage and groundwater observations; 5) made hand-penetrometer measurements in soil specimens exhibiting cohesion; and, 6) provided liaison between the field work and the Project Engineer so the exploration program could be modified in the event unusual or unexpected subsurface conditions were encountered. All recovered samples were transported to the laboratory of S&ME for further examination and testing.

4.2 Laboratory Testing

In the laboratory, moisture-content testing was performed on all recovered SPT soil samples. Classification testing (liquid/plastic limit determinations and/or grain-size analyses) was performed on a minimum of two (2) soil samples recovered from each boring. Sulfate testing was performed on a representative specimen obtained within 3 feet of the approximate pavement subgrade level anticipated at each boring, except in Borings B-004, B-009 and B-010, where more than 3 feet of new fill is anticipated to attain the proposed subgrade level. The results of these laboratory tests are recorded numerically on the individual boring logs.

Based upon the results of the laboratory testing program, the field logs were modified, if necessary, and copies of the laboratory-corrected boring logs are submitted as Plates 4 through 30 of Appendix I. Shown on these logs are: descriptions of the soil stratigraphy encountered; depths from which samples were preserved; sampling efforts (blow-counts) required to obtain the specimens in the borings; calculated N_{60} values; laboratory testing results; seepage and groundwater observations made at the time of drilling; and, values of hand-penetrometer measurements made in soil samples exhibiting cohesion. For your reference, hand-penetrometer values are roughly equivalent to the unconfined compressive strength of the cohesive fraction of the soil sample.

Soils have been classified in general accordance with Section 603 of the ODOT *SGE* and described in general in accordance with Section 602. An explanation of the symbols and terms used on the boring logs, definitions of the special adjectives used to denote the minor soil components and information pertaining to sampling and identification are presented on Plate 3 of Appendix I. Group Indices determined from the results of the laboratory testing program are also provided on the boring logs.

5.0 Findings

5.1 Existing Pavement Materials

Borings B-001, B-013, B-014 and B-026 were drilled through the existing shoulder pavement of IR 90. The type and thickness of the existing pavement materials encountered in these borings are presented in Table 5-1.

Table 5-1 – Existing Pavement Material Thicknesses

	Boring No.	Asphalt (in.)	Granular Base (in.)	Chemically Stabilized Subbase (in.)
EB	B-001-0-25	14	6	10
	B-013-0-25	13	9	20
WB	B-014-0-25	14	7	21
	B-026-0-25	14	7	21

5.2 Subsurface Stratigraphy

5.2.1 Eastbound Parking Area

5.2.1.1 Existing Fill

Beneath 3 to 4 inches of existing rootmat, Boring B-007 was drilled through the existing mound and encountered 18.5 feet of existing fill, whereas Test Pits T-005-1, T-006-1 and T-007-1 were excavated into the sides or top of the mound and encountered fill materials for the entire depth of the test pits (14.0 to 15.0 feet). These fill mound explorations encountered highly variable materials including loose to very dense brown and/or gray GRAVEL WITH SAND (A-1-b), GRAVEL WITH SAND AND SILT (A-2-4), GRAVEL WITH SAND, SILT AND CLAY (A-2-6), and COARSE AND FINE SAND (A-3a) or very soft to hard SANDY SILT (A-4a) and SILT AND CLAY (A-6a). Non-soil materials such as concrete, roots, asphalt, drainage pipes, and wood fragments were encountered throughout the mound in varying quantities and sizes. Additionally, pockets of slightly organic materials were encountered in T-007-1.

Beneath the existing pavement materials indicated in Table 5-1, Boring B-001 encountered 3.5 feet of existing IR-90 embankment fill consisting of dense brown COARSE AND FINE SAND (A-3a).

5.2.1.2 Natural Soil

Beneath existing fill and pavement described above, or 5 to 6 inches of rootmat where existing fill was not noted, the borings on the EB side of IR-90 encountered natural soils predominantly consisting of very stiff to hard brown and/or gray SANDY SILT (A-4a), SILT (A-4b), SILT AND CLAY (A-6a) and SILTY CLAY (A-6b). A layer of medium stiff SILTY CLAY (A-6b) was encountered in Boring B-005. In addition to the predominantly cohesive soils, a layer of loose brown COARSE AND FINE SAND (A-3a) was encountered in Boring B-001 and a layer of loose brown GRAVEL WITH SAND (A-1-b) was encountered in Boring B-006. See Table 4.1 on page for the depths at which these borings were terminated

5.2.2 Westbound Parking Area

5.2.2.1 Existing Fill

Beneath 3 to 6 inches of existing rootmat, Boring B-019 was drilled through the existing mound and encountered 18.0 feet of existing fill, whereas Test Pits T-018-1, T-019-1 and T-021-1 were excavated into the sides or top of the mound and encountered fill materials for the entire depth of the test pits (12.0 to 18.0 feet). The fill mound explorations encountered highly variable materials including loose brown SANDY SILT (A-4a) in Boring B-019 and brown and/or gray GRAVEL WITH SAND AND SILT (A-2-4) in the test pits or medium stiff to hard SANDY SILT (A-4a) and SILT AND CLAY (A-6a). Non-soil materials such as concrete, roots, asphalt, bricks, drain pipe and a tree trunk were encountered throughout the mound in varying quantities and sizes. Additionally, pockets of slightly organic materials were encountered in T-018-1 and T-019-1 with Loss-on-Ignition values ranging from 2.7% to 3.2%.

5.2.2.2 Natural Soil

Below the fill (beneath the mound) or 4 to 6 inches of rootmat, natural soil consisting of predominantly very stiff to hard brown and/or gray SANDY SILT (A-4a), SILT AND CLAY (A-6a) and SILTY CLAY (A-6b) was encountered, with a layer of medium stiff SILTY CLAY (A-6b) in Boring B-022. Boring B-018 encountered 1.3 to 2.0-foot-thick discontinuous layers of loose or medium dense brown GRAVEL WITH SAND (A-1-b), GRAVEL WITH SAND, SILT AND CLAY (A-2-6), COARSE AND FINE SAND (A-3a) and SILT (A-4b) while Boring B-019-0 encountered 2.5 to 8.0-foot thick layers of medium dense brown GRAVEL WITH SAND AND SILT (A-2-4).

5.3 Groundwater Observations

During drilling, no water was encountered in 23 of the 26 borings. Variable amounts of free water were noted in Boring B-005 at 2.5 feet, in Boring B-018 at 14.2 and 15.5 feet, and in Boring B-019-0 at 24.0 feet. Please refer to the individual boring logs for more detailed descriptions of the quantity and depth(s) where groundwater was observed or measured in each exploration. Extended water level readings were not obtained at the boring locations.

5.4 Soil Sulfate Test Results

Sulfate content testing was performed in accordance with ODOT Supplement 1122 on samples of soil obtained from within 3 feet of the proposed subgrade level in each boring. The results of these tests ranged from 40 parts per million (ppm) to 2,067 ppm. These results are below the threshold value of 5,000 ppm that is identified in the ODOT *GDM* as the sulfate concentration above which chemical stabilization should not be performed. The results of these tests are reported on the individual boring logs and on Plates 37 in Appendix I.

6.0 Analysis and Recommendations

6.1 General Discussion

Based on the Stage 3 plans provided by ms on April 27, 2026, the following improvements are being proposed at Site 2, ATB-90 Vacant EB and WB Rest Areas:

- Construction of 16-foot-wide entrance/exit ramps, and a through drive with a 3-foot-wide inside (left) shoulder and an 8-foot-wide outside (right) shoulder.
- Construction of an approximate 241-foot wide and 385-foot-long EB truck parking area with 39 parking stalls (36 full-size and 3 cab only).
- Construction of an approximate 251-foot wide and 402-foot-long WB truck parking area with 40 parking stalls (38 full-size and 2 cab only).
- Regrading to create a ground surface sloping down and away from the pavement at an inclination no steeper than 2(H):1(V).
- A proposed asphalt pavement section consisting of 10 inches of asphalt over 6 inches aggregate base with an alternative pavement section consisting of 10 inches of non-reinforced concrete over 6 inches aggregate base.
- The proposed profile of the ramp and through lane at the EB parking area roughly follows the existing ground surface with less than 2 feet of grade change, except from approximately Sta. 108+00 to Sta. 124+00 where up to 7 feet of new fill is proposed.
- The proposed profile of the ramp and through lane at the WB parking area roughly follows the existing ground surface with less than 2 feet of grade change, except from approximately Sta. 204+25 to Sta. 207+40, and again from Sta. 211+25 to Sta. 214+00, where up to 7 feet of new fill is proposed.
- Cross sections of the EB parking area indicate the majority of the existing fill mound will be removed; however, a wedge of the fill mound is proposed to be left in place.
- Cross sections of the WB parking area indicate the majority of the existing fill mound will be removed; however, it is possible that portions of material at the base of the fill mound may not be removed.
- Six (6), 45-foot-tall high mast light towers are proposed at each parking area for a total of 12 light towers.
- A pit latrine and dumpster pad will be constructed at each parking area. The pit latrine is being designed by others and explorations for this facility were not included in the scope this exploration.

6.2 Subgrade Assessment

6.2.1 Subgrade Support Parameters

Section 600 of the ODOT *GDM* provides a standard approach to performing explorations and assessing roadway subgrades. The associated spreadsheet (Ver. 14.85, updated 4/13/2026) created by the ODOT Office of Geotechnical Engineering (OGE) is used to estimate roadway subgrade support parameters and identify areas of pavement subgrade requiring remediation. The spreadsheet (see Plates 1 through 6 for the EB parking area and Plates 7 through 12 for the WB parking area in Appendix II) summarizes the soil type (by ODOT/HRB classification), group indices, depth, blow-counts, Atterberg Limit, and sulfate content values of the proposed subgrade soils encountered in the borings drilled for this project. Using this data, this spreadsheet computes an average of the estimated values of the California Bearing Ratio (CBR) for the soils encountered at or below the anticipated subgrade level of the proposed roadway profile.

Based on proposed subgrade elevation data provided by ms for the proposed ramp and parking area pavements and using the ODOT Subgrade Analysis spreadsheet, the following average CBR has been computed for use during new pavement design at both the EB and WB parking areas based on the anticipated subgrade soils encountered in the borings performed for this project.

$$CBR = 7\%$$

Based on this average CBR value and Section 203.1 of the current ODOT *Pavement Design Manual* (*PDM*), the following value of Resilient Modulus (M_R) correlates to this average CBR value.

$$M_R = 8{,}400 \text{ psi}$$

These subgrade support parameter values may be used during new pavement thickness design for this project provided that the entire proposed pavement subgrade is prepared in strict accordance with Item 204 of the ODOT *CMS* and the recommendations presented in this report, and that all borrow soil placed within 3 feet of the final subgrade elevation of the new pavement provides average subgrade support parameters which meet or exceed the above values. This subgrade evaluation also assumes that the subgrade for the new pavement areas is composed of the materials encountered in the borings. If, at the time of construction, it is determined that the subgrade consists of materials different than those encountered in the borings, the pavement design subgrade criteria should be reviewed and, if necessary, modified.

6.2.2 Subgrade Remediation Assessment

The ODOT Subgrade Analysis spreadsheet also identifies subgrade soils which are "unsuitable" either by classification (A-4b, A-2-5, A-5, A-7-5, A-8a, A-8b) or if the Liquid Limit value is greater than 65%. The spreadsheet also determines if a subgrade soil may be potentially "unstable" and possibly require subgrade remediation if one or more of the following conditions exist: 1) the lab-measured moisture content exceeds the estimated optimum moisture content of the subgrade soil by more than 3%; 2) normalized blow-count (N_{60}) from the SPT sampling is less than 16 (not applicable to all soil types); and, 3) measured hand penetrometer value is less than 2.0 tsf.

Based on these comparisons and correlations, the Subgrade Analysis spreadsheet provides alternative approaches to remediate and establish a stable soil subgrade using either an "excavate and replace" (ODOT *CMS* Item 204) approach, or chemical stabilization (*CMS* Item 206 and Supplement 1120). However, soils with a sulfate content above 5,000 ppm are generally prohibited from being chemically stabilized.

The subgrade remediation depths identified by the Subgrade Analysis spreadsheet prepared for each parking area (see Appendix II, Plates 1 through 6 for the EB parking area and Plates 7 through 12 for the WB parking area) are based on the conditions encountered in the borings during this subgrade investigation. However, because the required amount of remediation is dependent on the moisture content of the subgrade soil at the time of construction, Section 600 of the ODOT *GDM* states that the ultimate decision on required remediation depths and limits should be based on observations during either proofrolling or test-rolling operations at the time of construction.

Based on the results of the borings and the Subgrade Analysis spreadsheet, one (1) of the 13 borings in the EB parking area and three (3) of the 13 borings in the WB parking area encountered soil identified as potentially being unstable (low N_{60} and high moisture content) and which may require remediation by the procedures recommended in the subgrade analysis. Additionally, one (1) boring at the EB parking area (B-008) encountered soil identified as unsuitable (SILT, A-4b) which will require remediation by the procedures recommended in the subgrade analysis.

Typical options for subgrade remediation include Item 204 "Excavate and Replace", either with or without geogrid, or chemical stabilization. Because the percentage of proposed subgrade area that may require remediation is less than 30% at both parking areas, "excavate and replace" is recommended.

6.2.3 Subgrade Remediation Recommendations

The highly variable materials (uncontrolled fill) encountered within the existing fill mounds and extending below the proposed subgrade indicate the need for remediation of the proposed subgrade within the footprints of the fill mounds. To determine the appropriate remediation approach, a conference call with representatives from ODOT District 4, ODOT OGE, ms and S&ME was held on May 28, 2026. During the call, OGE indicated that the entire area beneath the existing mounds should be undercut to a depth of 36 inches below the proposed subgrade to remove uncontrolled fill. The undercut should then be backfilled with compacted Item 204 Embankment. This excavation will also remove the silt (A-4b) soils encountered in Boring B-008 from within 3 feet of the proposed subgrade. Table 6-1 outlines the estimated limits of areas where the need for "excavate and replace" subgrade remediation may be required based on the results of the subgrade analysis and the May 28, 2026, conference call.

Table 6-1 – Estimated "Excavate and Replace" Subgrade Remediation Areas

Approximate Station Range	Recommended Remediation*	Reason
EB Parking Area: EB Truck Ramp Sta. 114+75 and Sta. 118+35, 25' to 242' RT	Excavate and Replace – **36"**	Unsuitable Soil – Uncontrolled Fill
WB Parking Area: WB Truck Ramp Sta. 206+50 and Sta. 210+50, 70' to 253' LT	Excavate and Replace – **36"**	Unsuitable Soil – Uncontrolled Fill

*Remediation should extend 18 inches beyond the edge of the pavement, including under new curbs or shoulders

A modified version of the G121 plan note from the Location and Design (L&D) Manual, Volume 3 is provided in Section 6.2.4.

Because of the variable nature of on-site soils and the wide spacing of the explorations, it is possible that additional areas of unstable or unsuitable soils may be encountered during earthwork and proofrolling operations. Visual observation of the proofrolling procedures by the Geotechnical Engineer of Record may potentially result in a reduction of overexcavation of unstable or unsuitable soils in these areas.

The estimated subgrade remediation depths and limits are based on conditions encountered in the borings during this subsurface exploration. However, because the required amount of remediation is dependent on the type, condition and moisture content of the subgrade materials at the time of construction, the ultimate decision on required remediation depths and limits should be based on observations during either proof rolling or test-rolling operations.

It is recommended that all overexcavated subgrade areas outside the areas of the existing fill defined in Table 6-1 that are backfilled with granular material be drained to an underdrain, catch basin, or pipe, if possible. All backfill

and geotextile fabric (if granular material is used) should be placed according to the specifications of ODOT Item 204. It should be noted, however, that ODOT *GDM* specifies that Item 204 Granular Material Type B without a geotextile fabric be utilized to backfill undercuts performed in the vicinity of any underdrains. As such, underdrains should be installed before placing geotextile, and granular backfill.

As underground utilities may be present within the project limits, the depths of the known utilities should be taken into consideration prior to commencing subgrade remediation. Utilities near the proposed bottom of subgrade stabilization depth should be removed/relocated prior to commencing subgrade remediation operations.

6.2.4 Subgrade Remediation Plan Notes

To address the required subgrade remediation program for the parking areas discussed above as well as the subgrade preparation for the remainder of the project alignments, ODOT OGE has recommended the following plan note be incorporated into the plans for the project.

ITEM 204 – SUBGRADE COMPACTION AND PROOF ROLLING, AS PER PLAN

CONSTRUCT THE SUBGRADE AS FOLLOWS AND IN THE FOLLOWING SEQUENCE:

1. SHAPE THE SUBGRADE TO WITHIN 0.2 FEET OF THE PLAN SUBGRADE ELEVATION.

2. IN THE AREAS OF THE EXISTING MOUNDS
   EB PARKING AREA: STA. 114+75 TO STA. 118+35, 25' TO 242' RT OF EB TRUCK RAMP BASELINE
   WB PARKING AREA: STA. 206+50 TO STA. 210+50, 70' TO 253' LT OF WB TRUCK RAMP BASELINE

   a. EXCAVATE THE UNSUITABLE SUBGRADE, DESCRIBED AS UNCONTROLLED FILL, BENEATH EXISTING MOUNDS TO A DEPTH OF 36 INCHES BELOW THE PROPOSED SUBGRADE ELEVATION AS SHOWN ON THE CROSS SECTIONS

   b. PROOF ROLL THE BOTTOM OF THE EXCAVATION TO IDENTIFY UNSTABLE SUBGRADE. EXCAVATE UNSTABLE SUBGRADE AND REPLACE WITH ITEM 204 EMBANKMENT.

   c. BACKFILL THE EXCAVATION WITH COMPACTED ITEM 204 EMBANKMENT AND SHAPE THE SUBGRADE TO WITHIN 0.2 FEET OF THE PLAN SUBGRADE ELEVATION.

   ELSEWHERE, EXCAVATE AND REPLACE UNSUITABLE SUBGRADE BEFORE PROOF ROLLING. THE EXCAVATION LIMITS ARE SHOWN AND LABELED ON THE CROSS SECTIONS AS UNSUITABLE SUBGRADE. UNSUITABLE SUBGRADE INCLUDES UNSUITABLE SOIL (A-4b, A-2-5, A-5, A-7-5, AND SOIL WITH A LIQUID LIMIT GREATER THAN 65) AND ANY COAL, SHALE, OR ROCK WHICH NEEDS TO BE REMOVED ACCORDING TO SECTION 204.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS).

   IF THERE IS UNSUITABLE SUBGRADE IN A SHALLOW FILL LOCATION, EXCAVATE AND REPLACE THE UNSUITABLE SUBGRADE BEFORE CONSTRUCTING THE SHALLOW FILL AND SHAPING THE SUBGRADE.

3. COMPACT THE SUBGRADE ACCORDING TO C&MS 204.03.

4. APPROXIMATE LIMITS FOR EXCAVATION OF UNSTABLE SUBGRADE ARE SHOWN AND LABELED ON THE CROSS SECTIONS AS UNSTABLE SUBGRADE. THE ENGINEER WILL IDENTIFY THE ACTUAL LIMITS OF EXCAVATION FOR UNSTABLE SUBGRADE BASED ON THE PROOF ROLLING RESULTS AND VISUAL OBSERVATIONS.

   PROOF ROLL THE COMPACTED SUBGRADE ACCORDING TO C&MS 204.06.

5. EXCAVATE UNSTABLE SUBGRADE AS DIRECTED BY THE ENGINEER AND STABILIZE BY REPLACING WITH THE SPECIFIED MATERIALS ACCORDING TO C&MS 204.07. EXCAVATIONS WILL EXTEND 18 INCHES BEYOND THE EDGE OF THE SURFACE OF THE PAVEMENT, PAVED SHOULDERS, OR PAVED MEDIANS.

6. PROOF ROLL THE STABILIZED AREAS ACCORDING TO C&MS 204.06 TO VERIFY STABILITY.

7. FINE GRADE THE SUBGRADE TO THE SPECIFIED GRADE.

THE QUANTITIES FOR EXCAVATING THE UNSUITABLE SUBGRADE AND UNSTABLE SUBGRADE ARE BOTH PAID UNDER ITEM 204, EXCAVATION OF SUBGRADE.

6.3 General Roadway/Pavement Construction Considerations

Based on the Stage 3 plan and profile information provided to S&ME, we are providing the following recommendations for preparation and construction of the subgrade or embankment areas for this project. See Sections 6.2.3 and 6.2.4 for specific subgrade remediation and construction recommendations for the portions of the parking areas covered by existing fill mounds.

6.3.1 Subgrade/Embankment Foundation Preparation

Prior to the commencement of earthwork operations, it is recommended that all existing pavement, granular base, grass, topsoil, vegetation, and other miscellaneous materials be completely removed from the entire footprint of the proposed pavement subgrades. Following the removal of these materials, it is recommended that the entire exposed subgrade be examined by the Geotechnical Engineer of Record or their designated representative to identify any weak, wet, organic, or otherwise unsuitable soils that were not encountered during the subsurface exploration. Any such materials identified should be removed and replaced with suitable compacted fill (ODOT *CMS*, Item 204, or Item 203 when more than 12 inches below the proposed subgrade). Test rolling (Item 206.04) of these areas prior to commencing fill placement may assist in identifying soft, weak and wet areas.

Existing underground utilities are anticipated beneath the proposed pavement areas, and the type of material used and the relative compactness of backfill within any such utility trenches are unknown. S&ME recommends any planned utility relocation or removal be performed prior to final subgrade proofrolling. Some instability of utility trench backfill may occur during earthwork operations and/or proofrolling, and some recompaction of granular utility trench backfill may become necessary. Additionally, if water has accumulated within the utility backfill, the subgrade soil in the vicinity of any saturated utility trenches may have become sufficiently weak, soft, and/or wet that proofrolling may identify these additional areas as requiring overexcavation and replacement. In any case, care should be taken not to disturb any shallow utilities during proofrolling or overexcavation activities.

6.3.2 *"At-Grade"/"Cut" Soil Subgrade Areas*

Once the desired soil subgrade elevation has been attained in "at-grade" and "cut" subgrade areas for the proposed ramps, the subgrade soil beneath the entire new pavement areas should be scarified and recompacted to a depth of 12 inches below the subgrade level in accordance with ODOT *CMS* Item 204.03. During recompaction, the moisture content of the subgrade soil should be maintained or adjusted in accordance with ODOT *CMS* Item 203.07.A.

Following the completion of the scarification and recompaction of the subgrade in these "cut"/"at-grade" areas, it is strongly recommended that construction traffic be restricted from traveling on the compacted subgrade until final acceptance proofrolling has been performed. Additionally, the surface of the subgrade should be graded to drain, as cohesive subgrade soils which are subjected to repeated moisture fluctuations resulting from exposure to rainfall and/or surface water runoff, may exhibit subgrade instability.

6.3.3 *"Fill" Areas*

Prior to commencing fill placement in pavement areas to attain the proposed subgrade for the proposed ramps, S&ME recommends that consideration be given to performing Item 206.04 Test Rolling on all exposed embankment foundation areas beneath areas where new fill is required. Test rolling, performed in accordance with Item 204.06 of the ODOT *CMS* and Section 204 of the ODOT *Construction Administration Manual of Procedures*, would assist in identifying soft, wet, or weak zones, or areas of unsuitable, organic, or highly plastic soil that may be present. If any such zones of soft, wet, or weak soils are present, the materials contained in these zones should be scarified, dried, and thoroughly recompacted in place in accordance with ODOT *CMS* Item 203.07. If unsuitable or organic soils are encountered, these materials should be completely removed and the overexcavation filled in a controlled manner with compacted, suitable embankment material (*CMS* Item 203.02) which meet the additional requirements previously discussed in Section 6.2.1 and discussed later in Section 6.3.5.

Soft, weak, wet, or unsuitable soils that are not removed where only a thin layer of fill is required may result in difficulties achieving the compaction percentages required for the new fill (ODOT *CMS* Items 203.07 or 204.03) such that final subgrade acceptance proofrolling may require the removal of the new fill. Although the ODOT *CMS* Item 203.05 permits the use of a "bridge lift" to aid in spanning soft or wet foundation areas, S&ME recommends that this practice not be permitted unless more than 3 feet of new embankment fill placement is required.

A review of the Stage 3 plans indicates that the inclination of existing grade ranges from approximately 4H:1V to 10H:1V (or flatter) and proposed new fill embankment side slopes no steeper than 2H:1V where new fill will be placed to attain proposed grades. Based on these shallow existing and proposed slope inclinations and the presence of existing predominantly very stiff to hard cohesive soils below the proposed new fill, S&ME believes that, properly constructed (*CMS* Items 203 and 204), the side slopes of new fill embankments constructed no steeper than 2(H):1(V) will be stable, and as such, stability analyses were not performed.

6.3.4 *Benching*

After all unsuitable materials have been removed and prior to commencing fill placement, it is recommended that horizontal benches be cut into all existing sloping surfaces steeper than 8(H):1(V) to permit placement and compaction of new fill in horizontal lifts. Where new fill is to be placed on an existing ground surface with a slope

between 8(H):1(V) and 4(H):1(V), S&ME recommends that benching of the existing ground be performed in accordance with Item 203.05 of the ODOT *CMS*. At locations where the existing ground surface is steeper than 4(H):1(V), S&ME recommends "Special Benching" procedures as outlined in Section 800 of the ODOT *GDM*. **If "Special Benching" is required, Plan Note G109 from the ODOT *L&D Manual, Vol. 3*, should be included in the General Notes**.

During any required Special Benching procedures, S&ME also recommends the following: 1) only one bench be exposed at any given time and that excavation of the next bench should not be permitted until embankment fill placement and compaction has been completed to the top of the backslope of the previous bench; and, 2) the length of any given bench that is exposed should not exceed the quantity of embankment fill which may be properly placed and compacted in one day. Additionally, S&ME recommends that the final, completed side slopes of embankments be constructed no steeper than 2(H):1(V).

6.3.5 Borrow Requirements and Compaction Criteria

Soil used as fill/backfill should consist of inorganic soil free of all miscellaneous materials, cobbles, and boulders, and should be placed in uniform, thin layers and then compacted in accordance with:

- ODOT *CMS* Item 203 when below 12 inches of the proposed subgrade level.
- ODOT *CMS* Item 204 when within 12 inches of the proposed subgrade level.

Borrow materials should not be placed in a frozen condition or upon a frozen surface, and any sloping surfaces on which new fill is to be placed should first be benched in accordance with either ODOT *CMS* Item 203.05 or Section 800 of the ODOT *GDM*, depending on the slope of the existing ground surface at each location.

Borrow materials to be used as new fill or backfill within 3 feet of the proposed subgrade level should be tested in the laboratory to determine that the borrow materials exhibit subgrade support characteristics that are no less than the CBR value used during the pavement design (see Section 6.2.1).

Compaction requirements (based on the dry unit weight of the type of soil fill being placed as borrow) for the construction of embankment/subgrade materials are based on

- ODOT *CMS* Item 203.07.B when below 12 inches of the proposed subgrade level.
- ODOT *CMS* Item 204.03 when within 12 inches of the proposed subgrade level.

S&ME also recommends that once the source of borrow for this project is determined, sampling and testing of this borrow material be performed prior to construction to verify that the borrow soils are suitable for the planned construction. Based on the findings of the explorations at both the EB and WB parking areas, the majority of soils encountered within the existing fill mounds may be suitable for use as embankment fill provided the materials meet the requirements of ODOT *CMS* Item 203.02.R and the recommendations provided in this report.

6.3.6 Moisture Conditioning and Subgrade Protection

Moisture conditioning and protection of pavement subgrade areas, before and after compaction, should be performed in accordance with *CMS* Item 203, including maintaining drainage as discussed in *CMS* Item 203.04.A.

The predominantly cohesive soils encountered in the borings performed for this project are susceptible to absorbing additional moisture and weakening.

6.3.7 Final Subgrade Preparation

The subgrade should be proof rolled in accordance with *CMS* Item 204.06, with any weak or unstable areas being repaired. S&ME recommends that construction traffic be minimized once the required subgrade level has been attained.

6.4 Groundwater Considerations for Subgrade/Embankment Construction

Groundwater measurements obtained from the borings should be considered as temporary, short-term observations and should not be assumed to be representative of the long-term static groundwater level. Based upon observations made at the time of this investigation, significant groundwater problems are not anticipated in connection with the proposed construction. The new pavement subgrade should be graded to prevent surface runoff from pooling on the cohesive soils during construction as exposure of cohesive soils to moisture will result in a decrease in strength and an increase in compressibility. Soil softened by standing water or disturbed by construction activities should be removed before proceeding with construction.

In addition to proper subgrade preparation, we recommend that the pavement design and construction include surface and subsurface drainage measures. Water which infiltrates the pavement and remains trapped within the pavement components during traffic loading is one of the leading causes of premature pavement failure. Effective design measures include the use of perforated underdrain pipes or finger drains below pavements and/or the use of perimeter swales, perimeter edge drains, curbs, or a combination of these features to collect surface water runoff from areas adjacent to the pavement. Cohesive subgrade soils should be crowned or sloped to promote drainage of infiltrating water towards subsurface drainage collection systems.

7.0 High Mast Light Towers Foundations

We note that borings for this exploration that were extended below subgrade sampling depths were performed to provide soil parameters to assess foundations for proposed high mast light towers. No borings were performed for the proposed standard light poles to be installed along the existing ramps, and as such, no recommendations for these standard light pole foundations are provided in this report.

7.1 Foundation Design Approach

The ODOT *Geotechnical Design Manual* (*GDM*) Section 1202 provides direction for performing analyses to determine the foundation/embedment length for light towers. Additional information is provided on ODOT's Standard Construction Drawing (SCD) HL-20.21 "Light Tower Foundations".

Based on information provided by ms on April 16, 2026, the high mast light towers proposed at each truck parking area are to be 45-foot-tall towers with a 36-inch diameter drilled shaft foundation. ODOT SCD HL-20.21 provides guidance on the type, size, and quantity of longitudinal and transverse reinforcement within each drilled shaft. The length (depth) of the drilled shaft foundation is based on meeting criteria given in the ODOT *GDM*. However, the ODOT *GDM* does not indicate a minimum foundation length for specific high mast light tower heights.

According to Section 1202 of the ODOT *GDM*, drilled shaft foundations for high mast light towers are geotechnically acceptable with respect to the anticipated lateral loading provided the following conditions are true:

- Service Limit State Loading – The maximum resultant deflection at the top of the high mast light tower is less than 10% of the above ground height of the tower. The maximum resultant deflection is defined as the sum of the deflection at the top of the foundation (shaft head) plus the lateral rotation (in radians) at the top of the shaft (in radians) multiplied by the height of the high mast light tower above the top of the shaft. As all high mast light towers being proposed for this project have a height of 45 feet, the maximum Service Limit deflection is equal to 54 inches (45 feet = 540 inches).
- Extreme Limit State – LPILE does not calculate a very large deflection (typically around 100 inches) or an infinite or incalculable deflection (i.e., the program fails to converge on a solution).

7.2 Lateral Load (LPILE) Analysis Parameters

Section 1202 of the ODOT *GDM* indicates a design wind speed of 76 mph should be used for the Service Limit State and a speed of 115 mph at the Extreme Limit State. Based on these wind speeds and the height and weight of the proposed towers, ms provided the following load combinations for use in the lateral load (LPILE) analyses.

- Service Limit State Loading (LPILE Load Case 1):
  - Shear (V) = 1,000 lbs; Moment (M) = 315,600 in-lbs; Weight (W) = 4,200 lbs
- Extreme Limit State Loading (LPILE Load Case 2) (maximum weight):
  - Shear (V) = 2,250 lbs; Moment (M) = 724,800 in-lbs; Weight (W) = 4,600 lbs
- Strength Limit State Loading (LPILE Load Case 3) (minimum weight):
  - Shear (V) = 2,250 lbs; Moment (M) = 724,800 in-lbs; Weight (W) = 3,800 lbs

Lateral load analyses were performed using the software LPILE 2022 using the input parameters above and the soil parameters summarized in Appendix III on Plates 1 through 3 for high mast light towers at the EB parking area and Plates 268 through 270 for high mast light towers at the WB parking area. In accordance with Section 1201 of the ODOT *GDM*, the upper three feet of the soil profile in these analyses has been modeled as a soft clay to account for soils weakened by freeze-thaw or other disturbance.

The top elevation in each soil parameter table corresponds to the elevation at the proposed ground surface at each proposed high-mast light tower as provided by ms in their email dated April 16, 2026. However, per ODOT SCD HL-20.21, the drilled shaft foundation will rise 6 to 12 inches above the surrounding ground surface. As such, a stick-up height of 12 inches has been used in our analyses.

7.3 Lateral Load Analyses

Tables 7-1 and 7-2 provide a summary of the deflection, moment, and shear values calculated from the lateral loading analyses for the proposed 45-foot-tall high mast light towers. The deflection values calculated in the Service Limit State analyses meet the *GDM* criteria given above and the analyses for the Extreme Limit State achieved convergence. However, it should be noted the structural resistance of the drilled shaft foundations should be verified to ensure the foundations can withstand the maximum moment and shear forces computed by

the LPILE program and which are summarized in Tables 7-1 and 7-2. Based on the results of our analyses, S&ME recommends a minimum 8-foot embedment length for all high mast light tower foundations proposed at this project site. LPILE output from each analysis is provided in Appendix III.

Table 7-1 – Summary of Lateral Load Analyses Results – EB Parking Area

Light Tower Location & Boring ID	Limit State*	Embed-ment Depth (ft)	Lateral Deflection at Shaft Head (in)	Slope at Shaft Head (rad)	Lateral Deflection at Top of Pole (in)	Total Deflection (in)	Max. Moment (kip-in)	Max. Shear (kips)
PR-7 (B-004 & B-005-0-25)	SER-I	8	0.0161	0.0002	0.121	0.137	---	---
	EXT-I (+)		---	---	---	---	798.0	24.8
	EXT-I (-)		---	---	---	---	797.8	24.8
PR-8 (B-009-0-25)	SER-I	8	0.0085	0.0001	0.076	0.085	---	---
	EXT-I (+)		---	---	---	---	806.4	24.4
	EXT-I (-)		---	---	---	---	806.3	24.4
PR-9 (B-005-0-25)	SER-I	8	0.0095	0.0002	0.085	0.094	---	---
	EXT-I (+)		---	---	---	---	804.9	23.4
	EXT-I (-)		---	---	---	---	804.8	23.5
PR-10 (B-006 & B-005-0-25)	SER-I	8	0.0082	0.0001	0.074	0.082	---	---
	EXT-I (+)		---	---	---	---	807.0	24.7
	EXT-I (-)		---	---	---	---	806.9	24.7
PR-11 (B-008-0-25)	SER-I	8	0.0100	0.0002	0.086	0.096	---	---
	EXT-I (+)		---	---	---	---	804.3	24.3
	EXT-I (-)		---	---	---	---	804.2	24.3
PR-12 (B-009-0-25)	SER-I	8	0.0085	0.0001	0.076	0.085	---	---
	EXT-I (+)		---	---	---	---	806.4	24.4
	EXT-I (-)		---	---	---	---	806.3	24.4

* (+) indicates Extreme Limit State with maximum weight and (-) indicates Extreme Limit State with minimum weight

Table 7-2 – Summary of Lateral Load Analyses Results – WB Parking Area

Light Tower Location & Boring ID	Limit State*	Embed-ment Depth (ft)	Lateral Deflection at Shaft Head (in)	Slope at Shaft Head (rad)	Lateral Deflection at Top of Pole (in)	Total Deflection (in)	Max. Moment (kip-in)	Max. Shear (kips)
WR-6 (B-023-0-25)	SER-I	8	0.0063	0.0001	0.062	0.068	---	---
	EXT-I (+)		---	---	---	---	811.1	24.8
	EXT-I (-)		---	---	---	---	811.1	24.8
WR-7 (B-022 & B-019-0-25)	SER-I	8	0.0062	0.0001	0.06	0.067	---	---
	EXT-I (+)		---	---	---	---	811.3	24.7
	EXT-I (-)		---	---	---	---	811.2	24.7
WR-8 (B-019-0-25)	SER-I	8	0.385	0.0042	2.279	2.664	---	---
	EXT-I (+)		---	---	---	---	783.8	20.8
	EXT-I (-)		---	---	---	---	783.4	20.8
WR-9 (B-023-0-25)	SER-I	8	0.0062	0.0001	0.06	0.067	---	---
	EXT-I (+)		---	---	---	---	811.3	24.7
	EXT-I (-)		---	---	---	---	811.2	24.7
WR-10 (B-021 & B-018-0-25)	SER-I	8	0.0095	0.0002	0.084	0.093	---	---
	EXT-I (+)		---	---	---	---	804.9	24.5
	EXT-I (-)		---	---	---	---	804.9	24.5
WR-11 (B-018-0-25)	SER-I	8	0.2075	0.0022	1.210	1.418	---	---
	EXT-I (+)		---	---	---	---	786.0	23.1
	EXT-I (-)		---	---	---	---	785.6	23.1

* (+) indicates Extreme Limit State with maximum weight and (-) indicates Extreme Limit State with minimum weight

7.4 Foundation Plan Notes

Based on the results of our analyses and the conditions encountered in the borings, we recommend the following plan note be provided in the plans regarding the high-mast light tower foundations.

Light Tower Foundation, Misc.: 36" x 8' Deep, As Per Plan

For the 45-foot-tall High-Mast Light Towers, at all locations, perform drilled shaft foundation excavation and construction in accordance with C&MS 524. Predominantly cohesive soils were encountered in all the nearby project soil borings (B-004-0-25 through B-006-0-25, B-007-0-25 and B-008-0-25 at the Eastbound Parking Area and B-018-0-25, B-019-0-25 and B-021-0-25 through B-023-0-25 at the Westbound Parking Area). However, significant quantities of granular soil were encountered in Boring B-019-0-25. Based on the encountered soil conditions, foundation excavation by the Dry Construction Method, in accordance with

C&MS 524.04.A, may be anticipated. See the attached soil borings for specific details. At all light tower locations, the drilled shafts shall be 36-inch diameter and penetrate 8 feet deep into the ground below finished grade (exclusive of any above-grade pedestal height for mounting). Steel reinforcement for the drilled shaft foundations shall be in accordance with standard construction drawing HL-20.21.

7.5 Groundwater Considerations for Light Tower Foundations

During this exploration, no significant sources of groundwater were encountered in the borings drilled for the light towers. Accordingly, no significant quantities of water were encountered within the anticipated 8-foot-deep foundation at the light tower locations. Some water seepage may enter the foundation excavations through sand/gravel seams or desiccation cracks; however, the quantity of water is expected to be limited and may likely be controlled by bailing or using portable pumps.

It is recommended that groundwater (if encountered) should not be allowed to accumulate in the light tower foundation excavations, and that surface water runoff be directed away from the foundation excavations both during and after construction, as the cohesive soil in the walls and at the bottom of the light tower excavations will become soft and weaken when exposed to water. Further, we note the presence of sandy/gravelly soils in Borings B-018 and B-019 which may have a higher potential of caving if exposed to water. Additionally, the excavations should not be left open, as the excavation walls may exhibit instability in the presence of construction vibrations.

8.0 Limitations and Final Considerations

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty, either expressed or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information if necessary.

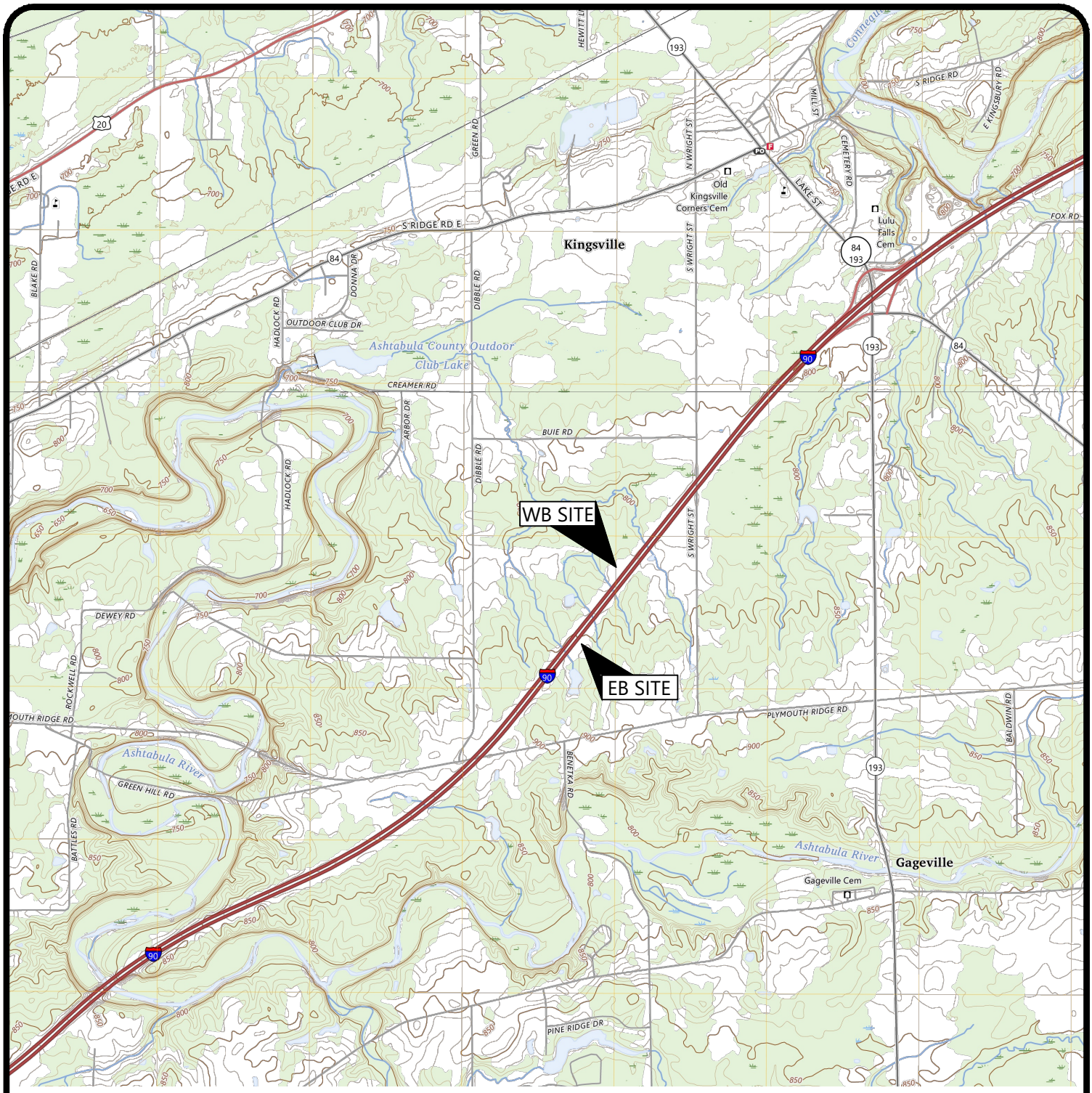
Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

S&ME should be retained to review the final plans and specifications to confirm that earthwork, foundation, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME's review of final plans and specifications followed by our observation and monitoring of earthwork and foundation construction activities.

Appendices

Appendix I – General Information



N



USGS Mapping:
Gageville & North
Kingsville USGS Quads

0 3000 6000
GRAPHIC SCALE (IN FEET)

Vicinity Map

Roadway & Structure Foundation Exploration
TP 26 NE Ohio Site 2 - ATB-90 Vacant Rest Areas
Ashtabula County, Ohio

SCALE:	FIGURE NO.
GRAPHIC	1
DATE:	
04-24-2026	
PROJECT NUMBER	
24170232A	

Drawing Path: T:\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\CAD\DWG\Site 2 ATB-90 VMAP.dwg

LEGEND

B-001-0-25
Soil Boring Location

T-001-1-25
Test Pit Location

STA. 254+98, 88.0' RT
SIZE 18 (24"L X 36"W X 36"D) PB-1

PROPOSED SERVICE POLE
W/ METER, SOURCE SIDE NON-FUSED SAFETY SWITCH &
SERVICE ENTRY FUSED DISCONNECT W/2 GROUND RODS
(NEMA 4XSS, 200A FRAME & 100A TO 200A FUSING TO
COORDINATE WITH UTILITY SERVICE AMPERAGE PROVIDED)
STA. 254+98, 105.0' RT

STA. 258+99, 88.0' RT
SIZE 18 (24"L X 36"W X 36"D) PB-2

℄ EX. R/W I.R. 90

STA. 263+00, 88.0' RT
SIZE 18 (24"L X 36"W X 36"D) PB-3

I.R. 90 EB

MATCH LINE STA. 266+50, SEE BELOW

Ex R/W

(2)-4" CONDUITS, 725.052 (SCH 80)
(1)-W/ (2)-3/0, (1)-3/0 NEUTRAL & (1)-#6 GROUND
(1)-EMPTY
ENCASED IN TRENCH = 16'

PROPOSED AERIAL SERVICE DROP

EXISTING POWER POLE
W/ PROPOSED TRANSFORMER (BY OTHERS)
STA. 255+10±, RT.

(2)-4" CONDUITS, 725.052 (SCH 80)
(1)-W/ (2)-3/0, (1)-3/0 NEUTRAL & (1)-#6 GROUND
(1)-EMPTY
ENCASED IN TRENCH = 400'

(2)-4" CONDUITS, 725.052 (SCH 80)
(1)-W/ (2)-3/0, (1)-3/0 NEUTRAL & (1)-#6 GROUND
(1)-EMPTY
ENCASED IN TRENCH = 400'

(2)-4" CONDUITS, 725.052 (SCH 80)
(1)-W/ (2)-3/0, (1)-3/0 NEUTRAL & (1)-#6 GROUND
(1)-EMPTY
ENCASED IN TRENCH = 350'

(2)-4" CONDUITS, 725.052 (SCH 80)
(1)-W/ (2)-3/0, (1)-3/0 NEUTRAL & (1)-#6 GROUND
(1)-EMPTY
ENCASED IN TRENCH = 50'

℄ EX. R/W I.R. 90

MATCH LINE STA. 281+50

MATCH LINE STA. 266+50, SEE ABOVE

STA. 267+00, 88.0' RT
SIZE 18 (24"L X 36"W X 36"D) PB-4

B-001-0-25

I.R. 90 EB

B-002-0-25

B-003-0-25

℄ CONST. EB TRUCK RAMP

MATCH LINE STA. 110+50

(2)-4" CONDUITS, 725.052 (SCH 80)
(1)-W/ (2)-3/0, (1)-3/0 NEUTRAL & (1)-#6 GROUND
(1)-EMPTY
ENCASED IN TRENCH = 322'

PR-1 STA. 100+00, 16.5' RT
AT18B40

STA. 100+00, 27.0' RT
24" (INCIDENTAL TO
POWER SERVICE)
(3 SPLICES) PB-5

PB-6 STA. 103+73, 16.5' RT
18" (3 SPLICES)

PROPOSED GROUND MOUNTED
LIGHTING CONTROL CENTER 'PR'
480V, 3-WIRE &
FUSED DISCONNECT W/ GROUND ROD
(NEMA 4XSS, 200A FRAME & 60A FUSE)
STA. 100+00, 42.0' RT

PR-2 STA. 107+48, 16.5' RT
AT18B40

PR-3 STA. 108+81, 16.5' RT
AT18B40

PR-4 STA. 110+14, 16.5' RT
AT18B40

PLAN LEGEND

- XX-X — LIGHT POLE W/ LED LUMINAIRE
- F — FUTURE LIGHT POLE LOCATION
- XX-X — HIGH MAST LIGHT TOWER W/ 2-LED ASYMMETRIC LUMINAIRES
- XX-X — HIGH MAST LIGHT TOWER W/ 2-LED SYMMETRIC LUMINAIRES
- PULL BOX (LIGHTING), 725.08 (BY SIZE)
- PROPOSED LIGHTING CONTROL CENTER
- 3" CONDUIT, 725.04 W/ 3-WIRE NO. 4 AWG DISTRIBUTION CABLE
- 1-1/2" DUCT CABLE W/ 3-WIRE NO. 4 AWG
- STUB & CAP CONDUIT ELL
- PULL BOX, SIZE 18, 725.06
- PROPOSED SERVICE POLE

NOTES:

1. OFFSETS TO LIGHT POLES/TOWERS ARE FROM NEAREST EOP.
2. OFFSETS TO PULL BOXES ARE FROM ℄/℄.

PLATE 2A

HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN OF EXPLORATIONS
I.R. 90 - STA. 269+00 TO STA. 281+50

ATB-IR 90 VACANT REST AREAS TP

DESIGN AGENCY
ms consultants, inc.

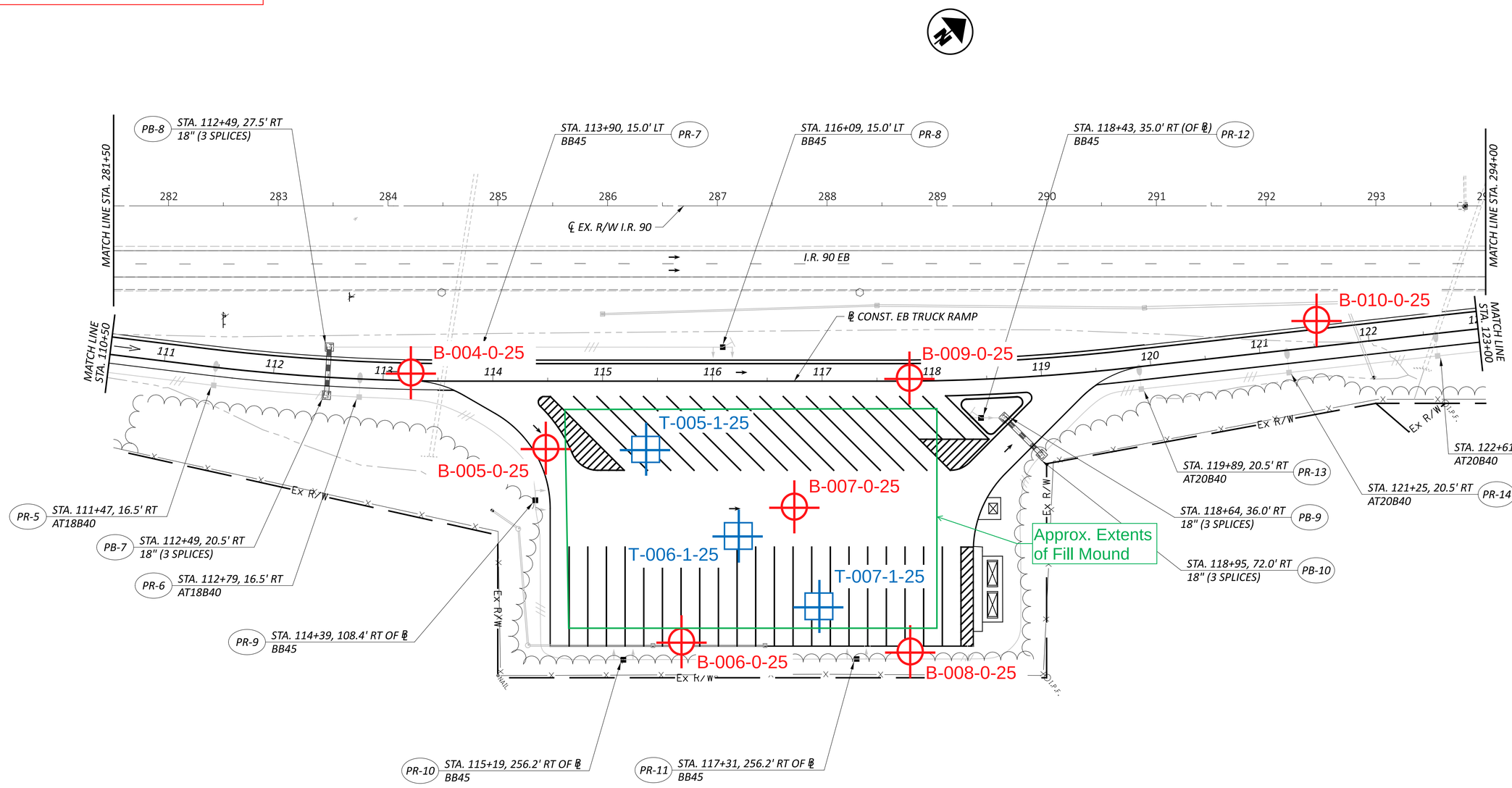
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REVIEWER KWR 04/24/26
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LEGEND

B-001-0-25
Soil Boring Location

T-001-1-25
Test Pit Location



NOTES:

1. SEE SHEET P.135 FOR LIGHTING LEGEND.

2. OFFSETS TO LIGHT POLES/TOWERS ARE FROM NEAREST EOP.

3. OFFSETS TO PULL BOXES ARE FROM ℄/℄.

PLATE 2B

HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN OF EXPLORATIONS
I.R. 90 - STA. 281+50 TO STA. 294+00

ATB-IR 90 VACANT REST AREAS TP

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DESIGN AGENCY
ms consultants. inc.

DESIGNER CLM
REVIEWER KWR 04/24/26
PROJECT ID 122876
SHEET P.137 TOTAL 144

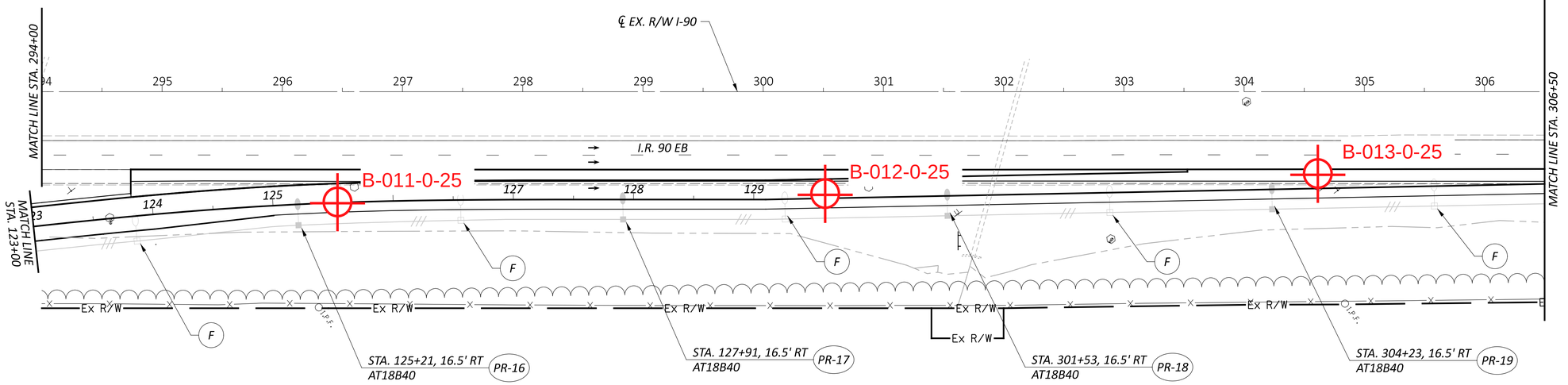
LEGEND

B-001-0-25

Soil Boring Location

T-001-1-25

Test Pit Location



NOTES:

1. SEE SHEET P.135 FOR LIGHTING LEGEND.

2. OFFSETS TO LIGHT POLES/TOWERS ARE FROM NEAREST EOP.

3. OFFSETS TO PULL BOXES ARE FROM ℄/℄.

PLATE 2C

HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN OF EXPLORATIONS
I.R. 90 - STA. 294+00 TO STA. 306+50

ATB-IR 90 VACANT REST AREAS TP

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DESIGN AGENCY
ms consultants. inc.

DESIGNER CLM

REVIEWER KWR 04/24/26

PROJECT ID 122876

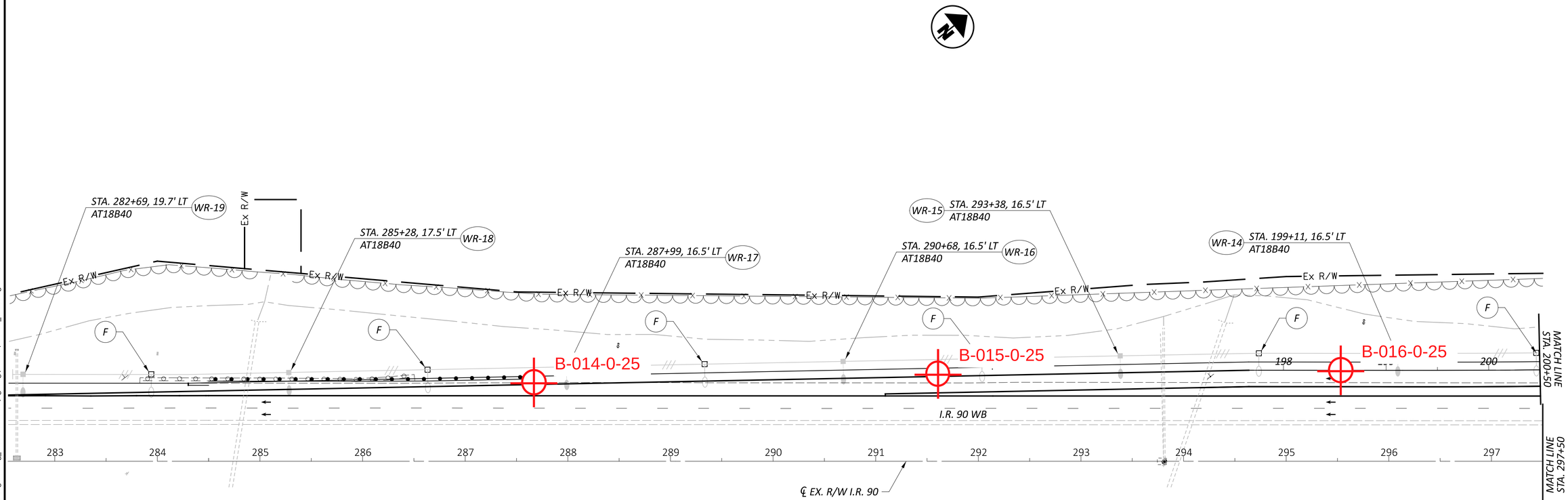
SHEET P.138 | TOTAL 144

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LEGEND

B-001-0-25
Soil Boring Location

T-001-1-25
Test Pit Location



HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN OF EXPLORATIONS
I.R. 90 - STA. 284+50 TO STA. 297+50

NOTES:

1. SEE SHEET P.135 FOR LIGHTING LEGEND.

2. OFFSETS TO LIGHT POLES/TOWERS ARE FROM NEAREST EOP.

3. OFFSETS TO PULL BOXES ARE FROM ℄/℄.

PLATE 2D

DESIGN AGENCY
ms consultants, inc.

DESIGNER	CLM
REVIEWER	KWR 04/24/26
PROJECT ID	122876
SHEET	P.140
TOTAL	144

PLAN OF EXPLORATIONS
I.R. 90 - STA. 297+50 TO STA. 310+50

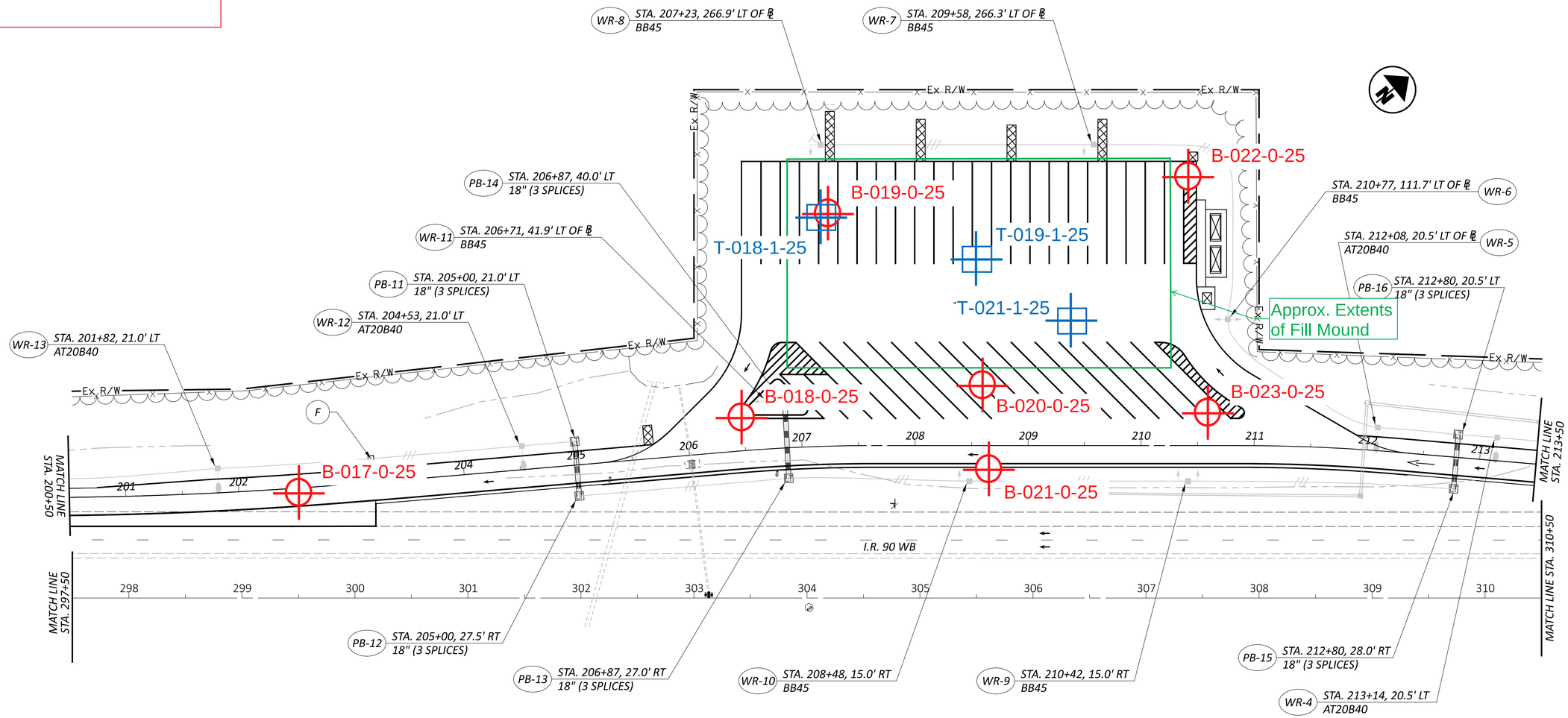
ATB-IR 90 VACANT REST AREAS TP

LEGEND

B-001-0-25 — Soil Boring Location

T-001-1-25 — Test Pit Location

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100



NOTES:

1. *SEE SHEET P.135 FOR LIGHTING LEGEND.*
2. *OFFSETS TO LIGHT POLES/TOWERS ARE FROM NEAREST EOP.*
3. *OFFSETS TO PULL BOXES ARE FROM ℄.*

PLATE 2E

DESIGN AGENCY: ms consultants, inc.

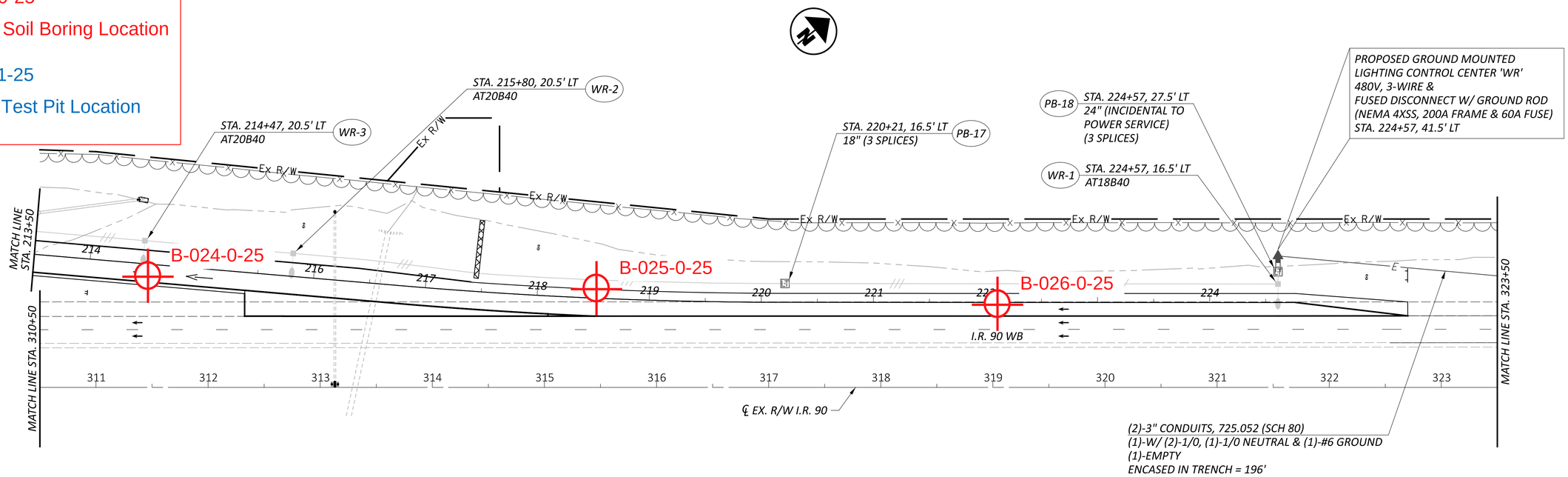
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REVIEWER	KWR 04/24/26
PROJECT ID	122876
SHEET	P.141
TOTAL	144

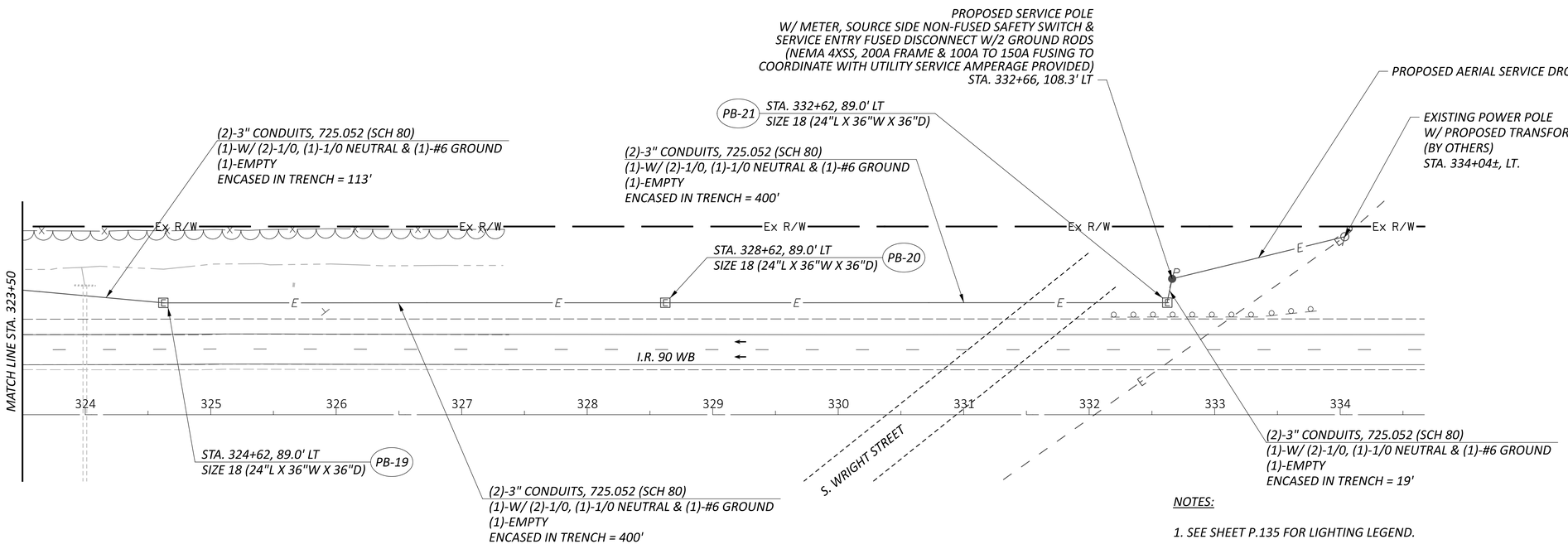
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LEGEND

B-001-0-25
Soil Boring Location

T-001-1-25
Test Pit Location





NOTES:

1. SEE SHEET P.135 FOR LIGHTING LEGEND.
2. OFFSETS TO LIGHT POLES/TOWERS ARE FROM NEAREST EOP.
3. OFFSETS TO PULL BOXES ARE FROM ℄/℄.

PLATE 2F

HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN OF EXPLORATIONS
I.R. 90 - STA. 310+50 TO STA. 323+50

ATB-IR 90 VACANT REST AREAS TP

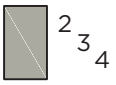
DESIGN AGENCY
ms consultants, inc.

DESIGNER	CLM
REVIEWER	KWR 04/24/26
PROJECT ID	122876
SHEET	P.142
TOTAL	144

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ODOT SOIL LOG LEGEND

The STANDARD PENETRATION TEST (SPT) as defined by AASHTO T206 (or ASTM D1586) is a method to obtain a disturbed soil sample for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D./2-inch O.D. split-barrel sampler is driven three 6-inch increments (see graphic at right) with a 140 lb. hammer freely falling 30 inches. The hammer can either be of a trip, free-fall design, or actuated by a rope and cathead. The SPT N Value is determined by adding the number of blows from the 2nd and 3rd 6-inch increments.



SPT BLOWCOUNT CORRECTION FOR HAMMER EFFICIENCY (N_{60}) is determined by the following equation: $N_{60} = N * [$ Drill Rod Energy Ratio (%) / 60], and where the drill rod energy ratio is determined in accordance with ASTM D4633. If the drill rod energy ratio exceeds 90%, it is limited to 90% to determine the N_{60} value and is shown on the log as 90*.

SHELBY TUBE (ST) samples are obtained by hydraulically pushing a thin-walled tube (typically 3-inches in diameter) to obtain a relatively undisturbed sample for testing of fine-grained soils to determine engineering properties such as strength, compressibility, permeability, and density. Shelby tubes are sampled in general accordance with ASTM D1587 (AASHTO T207).



DESCRIPTIVE ORDER OF SOIL STRATA: Consistency/Density, color, ODOT soil classification description, minor soil constituents with percentage modifiers, organic content, miscellaneous constituents or descriptions, relative moisture condition.

ODOT SOIL CLASSIFICATION DESCRIPTION AND SYMBOL

- **GRAVEL** (A-1-a)
- **GRAVEL WITH SAND** (A-1-B)
- **FINE SAND** (A-3)
- **COARSE AND FINE SAND** (A-3a)
- **GRAVEL WITH SAND AND SILT** (A-2-4 OR A-2-5)
- **GRAVEL WITH SAND, SILT AND CLAY** (A-2-6 OR A-2-7)
- **SANDY SILT** (A-4a)
- **SILT** (A-4b)
- **ELASTIC SILT AND CLAY** (A-5)
- **SILT AND CLAY** (A-6a)
- **SILTY CLAY** (A-6b)
- **ELASTIC CLAY** (A-7-5)
- **CLAY** (A-7-6)
- **ORGANIC SILT** (A-8a)
- **ORGANIC CLAY** (A-8b)
- **PEAT**
- **UNCONTROLLED FILL**
- **BOULDERY ZONE**
- **SOD/ROOTMAT/ TOPSOIL**
- **PAVEMENT OR BASE**
- **CONCRETE**

SOIL LOG SYMBOLS

SS - Split-Spoon Sample

ST - Shelby Tube Sample

TR - Top of Rock

REC - Sample Recovery, %

HP - Hand Penetrometer Value, tsf

LOI - Loss on Ignition Test, %

Qu - Unconfined Compressive Strength

γd - Dry Unit Weight, pcf

γm - Moist Unit Weight, pcf

GR - Gravel Content, %

CS - Coarse Sand Content, %

FS - Fine Sand Content, %

SI - Silt Content, %

CL - Clay Content, %

LL - Liquid Limit

PL - Plastic Limit

PI - Plasticity Index

WC - Natural Water Content, %

NOTE: Particle size contents are expressed % by weight.

PARTICLE SIZE

Particle	Size	US Sieve Size
Boulder	>300 mm (12 in.)	12 in.
Cobble	75 - 300 mm (3 - 12 in.)	3 - 12 in.
Coarse gravel	19 - 75 mm (3/4 - 3 in.)	3/4 - 3 in.
Fine gravel	2 - 19 mm (0.08 - 3/4 in.)	#10 - 3/4 in.
Coarse sand	0.42 - 2.0 mm	#40 - #10
Fine sand	0.074 - 0.42 mm	#200 - #40
Silt	0.005 - 0.074 mm	NA
Clay	< 0.005 mm	NA

FINE-GRAINED SOIL
(Relative Consistency)

	N_{60}	HP
Very soft	< 2 bpf	< 0.25 tsf
Soft	2 - 4 bpf	> 0.25 - 0.5 tsf
Medium stiff	5 - 8 bpf	> 0.5 - 1.0 tsf
Stiff	9 - 15 bpf	> 1.0 - 2.0 tsf
Very stiff	16 - 30 bpf	> 2.0 - 4.0 tsf
Hard	> 30 bpf	> 4.0 tsf

COARSE-GRAINED SOIL
(Relative Density)

	N_{60}
Very loose	< 5 bpf
Loose	5 - 10 bpf
Medium dense	11 - 30 bpf
Dense	31 - 50 bpf
Very dense	> 50 bpf

MINOR CONSTITUENTS
(% By Weight)

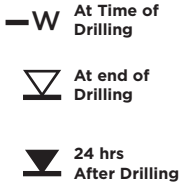
	Percentage
Trace	0% - 10%
Little	>10% - 20%
Some	>20% - 35%
"And"	≥ 35%

ORGANIC CONTENT OF SOIL
(Determined by ASTM D2974 or AASHTO T267)

Classification	Percentage
Slightly organic	2% - 4%
Moderately organic	>4% - 10%
Highly organic	> 10%

RELATIVE MOISTURE CONDITION

Dry	Cohesive - Powdery, WC well below PL Granular - No moisture present
Damp	Cohesive - Leaves very little moisture when pressed, WC < PL Granular - Internal moisture, little to no surface moisture
Moist	Cohesive - Leaves moisture when pressed, PL < WC < LL - 3 Granular - Free water on surface, shiny appearance
Wet	Cohesive - Mushy, WC near or above LL Granular - Voids filled with free water



Free water (seepage or groundwater) observation made anytime during the drilling process. Depending on time of reading and drilling methodologies, this value may be influenced by the drilling process.

Free water measurement soon after the drilling processes are complete, and the borehole is at final depth. Drilling fluids, if introduced during drilling, may influence this measurement.

Free water measurements made in a borehole hours to days after drilling is complete including the time elapsed (i.e., "24 hrs" as shown at left). Depending on subsurface conditions, elapsed time, drilling process, etc. this observation may reflect a stabilized level.

REFERENCES:

Ohio Department of Transportation (ODOT), Specifications for Geotechnical Explorations (SGE)

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS | DRILLING FIRM / OPERATOR: OTB / D. HEPNER | DRILL RIG: OTB ATV B-57 | STATION / OFFSET: 101+22, 9' LT | EXPLORATION ID: B-001-0-25

TYPE: ROADWAY | SAMPLING FIRM / LOGGER: S&ME / K. HARPER | HAMMER: AUTOMATIC HAMMER | ALIGNMENT: EB TRUCK RAMP | PAGE 1 OF 1

PID: 122876 BR ID: N/A | DRILLING METHOD: 3-1/4" HSA | CALIBRATION DATE: 12/30/24 | ELEVATION: 878.6 (MSL) EOB: 8.0 ft.

START: 1/22/26 END: 1/22/26 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 90* | COORD: 41.856822 N, 80.693435 W

MATERIAL DESCRIPTION AND NOTES	ELEV. 878.6	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 14 INCHES	877.4																		
GRANULAR BASE - 6 INCHES	876.9																		
FILL: Dense brown **COARSE AND FINE SAND**, little silt, little fine gravel, trace clay, chemically stabilized to depth of approx. 2.5', moist.	875.1	1 2 3	33 18 14	48	100	SS-1	-	13	44	16	20	7	28	26	2	11	A-3a (0)	1827	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	873.6	4 5	4 5 6	17	100	SS-2	4.5	3	7	10	45	35	31	18	13	16	A-6a (9)	-	
Loose brown **COARSE AND FINE SAND**, little silt, trace clay, trace fine gravel, damp.	872.1	6	3 2 3	8	72	SS-3	-	-	-	-	-	-	-	-	-	9	A-3a (V)	-	
Very stiff brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	870.6	7 EOB 8	3 8 10	27	100	SS-4	3.0	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES:
- No water noted

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINT\WPROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 4

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 1/22/26 END: 1/22/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 105+23, 5' LT
ALIGNMENT: EB TRUCK RAMP
ELEVATION: 872.1 (MSL) EOB: 7.0 ft.
COORD: 41.857669 N, 80.692498 W

EXPLORATION ID
B-002-0-25

MATERIAL DESCRIPTION AND NOTES	ELEV. 872.1	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	871.7																		
Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace to little fine gravel, few roots above 2.5', damp.		1	3 5 7	18	100	SS-1	3.0	16	15	13	33	23	33	20	13	16	A-6a (5)	380	
		2																	
		3	3 4 6	15	100	SS-2	4.5+	3	6	10	42	39	33	19	14	16	A-6a (10)	-	
		4																	
	866.6	5	3 5 6	17	100	SS-3	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
Hard brown **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp.		6																	
	865.1	EOB 7	3 5 4	14	100	SS-4	4.5+	-	-	-	-	-	-	-	-	19	A-6b (V)	-	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 5

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 1/22/26 END: 1/22/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 109+22, 14' LT
ALIGNMENT: EB TRUCK RAMP
ELEVATION: 862.9 (MSL) EOB: 7.0 ft.
COORD: 41.858480 N, 80.691508 W

EXPLORATION ID
B-003-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 862.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 6 INCHES	862.4																		
Very stiff (est.) brown **SANDY SILT**, little clay, little fine gravel, damp.	860.4	1	3 5 6	17	100	SS-1	-	12	13	18	39	18	23	16	7	14	A-4a (4)	113	
Very stiff to hard brown mottled with gray becoming gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.		2	3 4 5	14	100	SS-2	3.0-4.5	3	6	11	45	35	28	17	11	16	A-6a (8)	-	
		3	3 3 5	12	100	SS-3	2.5	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
	855.9	4	2 3 4	11	100	SS-4	2.5	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		EOB 5 6 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

PLATE 9

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 113+25, 8' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: EB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 859.1 (MSL) EOB: 10.0 ft.
START: 2/10/26 END: 2/10/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.859261 N, 80.690467 W

EXPLORATION ID **B-004-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 859.1	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	858.7																		
Very stiff (est.) brown and dark gray **SILT AND CLAY**, some fine to coarse gravel, some fine to coarse sand, damp.	856.1	1 2 3	5 6 7	20	100	SS-1	-	35	15	11	23	16	30	18	12	11	A-6a (1)	-	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine to coarse gravel, damp.		4 5 6	4 5 6	17	100	SS-2	4.5+	10	5	11	41	33	32	17	15	16	A-6a (10)	-	
		7 8	3 4 6	15	100	SS-3	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	849.1	EOB 9 10	3 3 5	12	100	SS-4	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

PLATE 7

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 114+47, 63' RT
TYPE: ROADWAY/LIGHT TOWER	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: EB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 861.2 (MSL) EOB: 25.0 ft.
START: 2/10/26 END: 2/10/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.859402 N, 80.689983 W

EXPLORATION ID **B-005-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 861.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 6 INCHES	860.7																		
Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, moist.	858.7	W 858.7	2 2 6	12	100	SS-1	3.5-4.5	5	7	11	45	32	33	19	14	21	A-6a (10)	160	
Hard brown **SANDY SILT**, some clay, trace fine gravel, damp to moist.	857.2		3 3 2	8	100	SS-2	4.5+	6	9	11	40	34	28	18	10	18	A-4a (8)	-	
Very stiff brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp to moist.	853.2		1 1 2	5	44	SS-3	3.0	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
			1 2 3	8	100	SS-4	3.5	6	7	12	39	36	32	17	15	18	A-6a (10)	-	
Medium stiff gray **SILTY CLAY**, little fine to coarse sand, trace fine gravel, moist.	850.7		1 1 2	5	94	SS-5	0.5-1.0	-	-	-	-	-	-	-	-	26	A-6b (V)	-	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine to coarse gravel, damp.	845.7		4 6 9	23	100	SS-6	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
			3 6 8	21	100	SS-7	4.5+	7	8	10	39	36	35	20	15	17	A-6a (10)	-	
Hard brown **SANDY SILT**, some clay, trace fine gravel, damp.			5 9 13	33	100	SS-8	4.5+	-	-	-	-	-	-	-	-	15	A-4a (V)	-	
			5 9 12	32	100	SS-9	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
- Gray below 20.5'.			3 6 7	20	100	SS-10	4.5+	5	8	11	42	34	25	16	9	13	A-4a (8)	-	
	836.2	EOB	3 5 6	17	100	SS-11	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	-	

NOTES:
- Seepage encountered at 2.5'.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 8

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/9/26 END: 2/9/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 115+72, 238' RT
ALIGNMENT: EB TRUCK RAMP
ELEVATION: 865.5 (MSL) EOB: 7.0 ft.
COORD: 41.859373 N, 80.689195 W

EXPLORATION ID
B-006-0-25

MATERIAL DESCRIPTION AND NOTES	ELEV. 865.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	865.1																		
Loose brown **GRAVEL WITH SAND**, trace silt, trace clay, damp.	863.0	1	2 3 2	8	78	SS-1	-	49	38	6	5	2	-	-	-	8	A-1-b (V)	40	
Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.		2	2 4 5	14	67	SS-2	3.5	9	5	9	39	38	32	18	14	16	A-6a (10)	-	
		3	3 6 8	21	100	SS-3	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
	858.5	4 5 6	3 7 9	24	100	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
		EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 9

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS | DRILLING FIRM / OPERATOR: OTB / D. HEPNER | DRILL RIG: OTB ATV B-57 | STATION / OFFSET: 116+74, 115' RT | EXPLORATION ID: B-007-0-25

TYPE: ROADWAY | SAMPLING FIRM / LOGGER: S&ME / K. HARPER | HAMMER: AUTOMATIC HAMMER | ALIGNMENT: EB TRUCK RAMP | PAGE 1 OF 1

PID: 122876 BR ID: N/A | DRILLING METHOD: 3-1/4" HSA | CALIBRATION DATE: 12/30/24 | ELEVATION: 877.0 (MSL) EOB: 20.0 ft.

START: 2/9/26 END: 2/9/26 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 90* | COORD: 41.859802 N, 80.689320 W

MATERIAL DESCRIPTION AND NOTES	ELEV. 877.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 4 INCHES	876.7																		
FILL: Loose brown **COARSE AND FINE SAND**, little silt, trace clay, trace fine gravel, moist.	874.0	1	2 4 3	11	100	SS-1	-	-	-	-	-	-	-	-	-	18	A-3a (V)	-	
FILL: Stiff brown **SILT AND CLAY**, some fine to coarse sand, little fine to coarse gravel, few concrete fragments, few cobbles, damp.	871.5	4	3 1 2	5	61	SS-2	2.0	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
FILL: Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace to little fine to coarse gravel, damp.	864.5	7	2 5 3	12	100	SS-3	4.5+	12	6	10	39	33	29	17	12	14	A-6a (8)	-	
		9	2 3 2	8	61	SS-4	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		12	2 2 3	8	100	SS-5	3.5	8	9	11	39	33	30	18	12	17	A-6a (8)	760	
FILL: Hard brown **SILT AND CLAY**, little to some fine to coarse sand, some fine to coarse gravel, few cobbles, many concrete and asphalt fragments, damp.	861.5	14	2 8 10	27	100	SS-6	4.5+	32	17	12	24	15	27	16	11	11	A-6a (1)	-	
			7 50/2"	-	100	SS-7	4.5+	27	16	10	29	18	32	18	14	12	A-6a (4)	-	
FILL: Very dense brown and gray **GRAVEL WITH SAND**, little silt, trace clay, few asphalt fragments, damp.	860.0	17	22 27 23	75	100	SS-8	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	-	
FILL: Medium dense brown and gray **GRAVEL WITH SAND**, little silt, trace clay, few asphalt fragments, damp.	858.5	18	14 9 5	21	100	SS-9	-	-	-	-	-	-	-	-	-	14	A-1-b (V)	-	
Hard brown **SILTY CLAY**, trace to little fine to coarse sand, trace fine gravel, damp.	857.0	19	5 7 9	24	100	SS-10	4.5+	-	-	-	-	-	-	-	-	21	A-6b (V)	-	
		EOB 20																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:44 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 10

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 117+76, 247' RT
TYPE: ROADWAY/LIGHT TOWER	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: EB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 861.6 (MSL) EOB: 25.0 ft.
START: 2/9/26 END: 2/9/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.859800 N, 80.688705 W

EXPLORATION ID **B-008-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 861.6	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	861.2																		
Very stiff to hard brown **SILT**, some clay, little fine to coarse sand, trace fine gravel, damp.	859.1	1	2 3 3	9	100	SS-1	3.5-4.5	2	5	15	54	24	28	18	10	19	A-4b (8)	160	
Very stiff to hard brown **SILT AND CLAY**, some fine to coarse sand, trace fine gravel, damp.		2	2 4 4	12	100	SS-2	3.5-4.5	6	8	19	38	29	32	18	14	18	A-6a (8)	-	
		3	2 4 7	17	100	SS-3	3.5-4.5	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
		4	3 5 7	18	100	SS-4	4.5+	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
		5																	
		6																	
		7																	
		8																	
		9	5 11 12	35	100	SS-5	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
	851.1	10																	
Hard gray **SANDY SILT**, some clay, trace fine gravel, damp.	848.6	11																	
		12	3 6 7	20	100	SS-6	4.5+	5	7	11	43	34	25	15	10	14	A-4a (8)	-	
Hard brown **SILT AND CLAY**, little fine to coarse sand, little fine to coarse gravel, damp.		13																	
		14	4 7 10	26	100	SS-7	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
	843.6	15																	
Hard gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.		16																	
		17	6 9 13	33	100	SS-8	4.5+	14	6	10	41	29	34	20	14	14	A-6a (9)	-	
		18																	
		19	3 5 7	18	100	SS-9	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
		20																	
		21																	
		22	4 6 10	24	100	SS-10	4.5+	3	5	9	45	38	27	16	11	14	A-6a (8)	-	
		23																	
	836.6	24	5 8 10	27	100	SS-11	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	EOB	25																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 11

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 117+77, 5' LT
TYPE: ROADWAY/LIGHT TOWER	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: EB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 855.8 (MSL) EOB: 25.0 ft.
START: 2/10/26 END: 2/10/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.860228 N, 80.689430 W

EXPLORATION ID **B-009-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 855.8	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	855.4																		
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine to coarse gravel, few very stiff zones above 3', damp.		1	2 4 6	15	100	SS-1	3.5-4.5	9	8	11	37	35	31	19	12	14	A-6a (8)	-	
		2																	
		3																	
		4	4 6 7	20	100	SS-2	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		5																	
		6																	
		7	3 5 8	20	100	SS-3	4.5+	4	7	12	32	45	28	17	11	17	A-6a (8)	-	
	847.8	8																	
Hard brown mottled with gray **SANDY SILT**, "and" clay, trace fine gravel, damp.		9	6 9 11	30	100	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	-	
		10																	
		11																	
		12	3 5 7	18	100	SS-5	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	-	
		13																	
		14	5 7 8	23	100	SS-6	4.5+	3	7	11	43	36	25	16	9	13	A-4a (8)	-	
		15																	
		16																	
		17	3 7 8	23	100	SS-7	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	-	
		18																	
		19	3 7 9	24	100	SS-8	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	-	
		20																	
		21																	
		22	4 6 8	21	100	SS-9	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	-	
	832.8	23																	
Hard brown mottled with gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, moist.		24	5 7 9	24	100	SS-10	4.5+	4	5	10	44	37	27	15	12	15	A-6a (9)	-	
	830.8	EOB 25																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 12

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 1/22/26 END: 1/22/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 121+57, 26' LT
ALIGNMENT: EB TRUCK RAMP
ELEVATION: 843.7 (MSL) EOB: 7.0 ft.
COORD: 41.861127 N, 80.688727 W

EXPLORATION ID
B-010-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 843.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 6 INCHES	843.2																		
Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.		1	3 5 7	18	100	SS-1	3.0	4	7	11	43	35	29	18	11	16	A-6a (8)	-	
		2	4 5 5	15	100	SS-2	4.5+	4	8	11	42	35	30	18	12	16	A-6a (9)	-	
		3	5 9 11	30	100	SS-3	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		4	5 9 12	32	100	SS-4	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	836.7	EOB 7																	

NOTES:
- No water noted

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 13

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 125+55, 0' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: EB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 838.5 (MSL) EOB: 7.0 ft.
START: 1/22/26 END: 1/22/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.862004 N, 80.687847 W

EXPLORATION ID **B-011-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 838.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	838.1																		
Very stiff to hard brown mottled with gray becoming gray **SANDY SILT**, some clay, trace fine gravel, damp.		1	4 5 7	18	100	SS-1	3.0	3	7	11	44	35	26	16	10	15	A-4a (8)	913	
		2																	
		3	4 4 5	14	100	SS-2	3.5-4.0	5	6	10	46	33	24	16	8	14	A-4a (8)	-	
		4																	
		5	4 4 5	14	100	SS-3	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
		6	3 5 6	17	100	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
	831.5	EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 14

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 1/22/26 END: 1/22/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 300+52, 86' RT
ALIGNMENT: IR 90
ELEVATION: 832.6 (MSL) EOB: 7.0 ft.
COORD: 41.862885 N, 80.686942 W

EXPLORATION ID
B-012-0-25

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	832.2																		
Hard brown mottled with gray **SILT AND CLAY**, little fine to coarse sand, trace fine to coarse gravel, damp.		1	3 7 8	23	100	SS-1	4.5+	7	5	10	41	37	31	17	14	14	A-6a (10)	40	
		2																	
		3	3 4 6	15	100	SS-2	4.5+	3	5	10	41	41	34	19	15	17	A-6a (10)	-	
		4																	
		5	3 6 9	23	100	SS-3	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		6	5 8 12	30	100	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
	825.6	EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 15

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 1/22/26 END: 1/22/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 304+60, 70' RT
ALIGNMENT: IR 90
ELEVATION: 827.5 (MSL) EOB: 8.0 ft.
COORD: 41.863791 N, 80.686059 W

EXPLORATION ID
B-013-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 827.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 13 INCHES	826.4																		
GRANULAR BASE - 9 INCHES	825.7																		
CHEMICALLY STABILIZED SUBBASE	824.0		50 35 30	98	100	SS-1	-	-	-	-	-	-	-	-	-	14	Visual (V)	2067	
Hard brown **SANDY SILT**, some clay, trace fine gravel, damp.	822.5		3 5 8	20	100	SS-2	4.5+	5	7	11	44	33	26	17	9	16	A-4a (8)	-	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	819.5	EOB	3 5 10	23	100	SS-3	4.5+	5	7	10	43	35	30	18	12	16	A-6a (9)	-	
			5 11 14	38	100	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	-	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 16

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/2/26 END: 2/2/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 287+67, 75' LT
ALIGNMENT: IR 90
ELEVATION: 853.9 (MSL) EOB: 8.0 ft.
COORD: 41.860390 N, 80.690331 W

EXPLORATION ID
B-014-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 853.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 14 INCHES	852.7																		
GRANULAR BASE - 7 INCHES	852.2																		
CHEMICALLY STABILIZED SUBBASE	850.4	1	27 49 41	135	100	SS-1	-	-	-	-	-	-	-	-	-	18	Visual (V)	-	
Hard brown mottled with gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	848.9	2 3 4	5 6 6	18	100	SS-2	4.5+	4	5	11	37	43	31	17	14	16	A-6a (10)	40	
Very stiff to hard brown **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp.	845.9	5 6	3 6 9	23	100	SS-3	4.5+	2	4	10	40	44	36	20	16	19	A-6b (10)	-	
		7 EOB 8	3 6 9	23	100	SS-4	3.0	-	-	-	-	-	-	-	-	16	A-6b (V)	-	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

PLATE 17

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 291+58, 84' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: IR 90
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 847.4 (MSL) EOB: 7.0 ft.
START: 2/2/26 END: 2/2/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.861250 N, 80.689468 W

EXPLORATION ID **B-015-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 847.4	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 4 INCHES	847.1																		
Very stiff to hard brown **SILT AND CLAY**, little to some fine to coarse sand, trace fine gravel, damp.		1	2 4 10	21	100	SS-1	3.0	7	10	13	42	28	33	21	12	19	A-6a (8)	233	
		2	3 6 8	21	100	SS-2	4.5+	4	7	11	41	37	32	18	14	17	A-6a (10)	-	
		3	3 5 8	20	100	SS-3	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
		4	4 8 11	29	100	SS-4	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
	840.4	EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 18

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 198+54, 0' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 840.7 (MSL) EOB: 7.0 ft.
START: 2/2/26 END: 2/2/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.862105 N, 80.688586 W

EXPLORATION ID **B-016-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 840.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	840.3																		
Very stiff to hard brown **SILT AND CLAY**, little to some fine to coarse sand, trace fine gravel, damp.		1	1 4 5	14	100	SS-1	3.0	9	10	13	36	32	33	18	15	15	A-6a (9)	193	
		2	3 5 4	14	100	SS-2	4.5+	5	6	12	41	36	33	20	13	16	A-6a (9)	-	
		3	2 3 3	9	100	SS-3	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
		4	3 3 5	12	100	SS-4		-	-	-	-	-	-	-	-	19	A-6a (V)	-	
	833.7	EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 19

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/2/26 END: 2/2/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 202+51, 4' RT
ALIGNMENT: WB TRUCK RAMP
ELEVATION: 834.1 (MSL) EOB: 7.0 ft.
COORD: 41.862966 N, 80.687696 W

EXPLORATION ID
B-017-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 834.1	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 6 INCHES	833.6																		
Very stiff brown **SILT AND CLAY**, some fine to coarse gravel, some fine to coarse sand, damp.	831.6	1	2 9 8	26	100	SS-1	3.0	28	12	11	27	22	30	18	12	11	A-6a (3)	253	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.		2	7 10 10	30	100	SS-2	4.5+	5	8	12	41	34	31	18	13	15	A-6a (9)	-	
		3	5 7 9	24	100	SS-3	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		4	4 8 12	30	100	SS-4	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
	827.1	EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 20

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 206+50, 30' LT
TYPE: ROADWAY/LIGHT TOWER	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 826.4 (MSL) EOB: 25.0 ft.
START: 2/4/26 END: 2/4/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.863930 N, 80.686990 W

EXPLORATION ID **B-018-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 826.4	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 6 INCHES	825.9																		
Medium dense brown **GRAVEL WITH SAND, SILT AND CLAY**, few roots, damp.	823.9		3 5 4	14	100	SS-1	-	33	21	11	23	12	33	21	12	11	A-2-6 (0)	40	
Medium dense brown **GRAVEL WITH SAND**, little silt, trace clay, damp.	822.4		4 11 4	23	100	SS-2	-	29	32	17	15	7	20	15	5	7	A-1-b (0)	-	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	820.9		3 5 6	17	100	SS-3	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
Very stiff to hard brown mottled with gray **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp.	815.9		2 4 4	12	100	SS-4	4.5+	-	-	-	-	-	-	-	-	22	A-6b (V)	-	
			2 4 7	17	100	SS-5	3.0-4.5+	3	4	9	42	42	35	19	16	20	A-6b (10)	-	
Hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	812.2	W 812.2	3 6 12	27	100	SS-6	4.5+	3	4	9	43	41	34	19	15	17	A-6a (10)	-	
Loose brown **COARSE AND FINE SAND**, little fine to coarse gravel, little silt, trace clay, moist.	810.9	W 810.9	2 3 2	8	100	SS-7A	4.5+	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
						SS-7B	-	-	-	-	-	-	-	-	-	20	A-3a (V)	-	
Loose brown **SILT**, some fine to coarse sand, little clay, trace fine gravel, wet.	809.6		1 1 4	8	100	SS-8A	-	1	1	24	61	13	21	18	3	30	A-4b (8)	-	
Very stiff to hard gray **SANDY SILT**, some clay, trace fine gravel, damp.	801.4	EOB				SS-8B	3.0	-	-	-	-	-	-	-	-	12	A-4a (V)	-	
			3 3 4	11	100	SS-9	3.5	5	13	16	42	24	25	18	7	15	A-4a (6)	-	
			3 5 5	15	100	SS-10	3.5	6	12	14	42	26	25	16	9	15	A-4a (7)	-	
			5 7 7	21	100	SS-11	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	-	

NOTES:
- Seepage encountered at 14.2'.
- Water encountered at 15.5'.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 21

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY/LIGHT TOWER
PID: 122876 BR ID: N/A
START: 2/5/26 END: 2/5/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 207+26, 205' LT
ALIGNMENT: WB TRUCK RAMP
ELEVATION: 844.7 (MSL) EOB: 45.0 ft.
COORD: 41.864395 N, 80.687339 W

EXPLORATION ID
B-019-0-25

MATERIAL DESCRIPTION AND NOTES	ELEV. 844.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 4 INCHES	844.4																		
FILL: Loose brown **SANDY SILT**, little clay, trace fine gravel, moist.	841.7		2 2 2	6	100	SS-1	-	-	-	-	-	-	-	-	-	18	A-4a (V)	-	
FILL: Very stiff brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	839.2		2 3 2	8	100	SS-2	3.0	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
FILL: Loose brown **SANDY SILT**, little clay, trace fine to coarse gravel, cobbles at 8.5', damp.	836.2		3 3 2	8	61	SS-3	-	-	-	-	-	-	-	-	-	11	A-4a (V)	-	
Possible Fill: Very stiff brown mottled with gray **SILT AND CLAY**, some fine to coarse sand, trace fine gravel, damp.	826.7		5 5 4	14	28	SS-4	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
			4 3 4	11	100	SS-5	3.0	8	13	14	35	30	29	18	11	16	A-6a (6)	-	
			1 2 2	6	61	SS-6	3.0	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
			4 4 4	12	78	SS-7	3.0	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
Medium dense brown **GRAVEL WITH SAND AND SILT**, trace to little clay, damp to moist.	818.7		7 9 9	27	89	SS-8	-	33	23	15	20	9	23	16	7	9	A-2-4 (0)	340	
			4 3 2	8	100	SS-9	-	29	23	13	23	12	24	16	8	10	A-2-4 (0)	-	
			4 3 4	11	100	SS-10	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)	-	
		W 820.7	5 11 9	30	100	SS-11	-	44	21	10	16	9	25	16	9	9	A-2-4 (0)	-	
			4 3 2	8	78	SS-12	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	-	
Hard brown and brown mottled with gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.			4 8 11	29	100	SS-13	4.5+	6	5	10	43	36	34	20	14	18	A-6a (10)	-	
			3 5 10	23	100	SS-14	4.5	-	-	-	-	-	-	-	-	21	A-6a (V)	-	

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 22

S&ME JOB: 24170232A

PID: 122876	BR ID: N/A	PROJECT: ATB-90 VACANT REST AREAS	STATION / OFFSET: 207+26, 205' LT	START: 2/5/26	END: 2/5/26	PG 2 OF 2	**B-019-0-25**

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
Hard brown and brown mottled with gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp. *(continued)*	814.7	31	3 4 4	12	100	SS-15	2.5	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		32																	
		33																	
		34	3 4 7	17	100	SS-16	3.0-4.0	3	4	10	43	40	32	18	14	19	A-6a (10)	-	
		35																	
		36	4 9 12	32	100	SS-17	3.5-4.5	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	806.7	37																	
Medium dense brown **GRAVEL WITH SAND AND SILT**, little clay, damp.	804.2	38																	
		39	5 9 10	29	100	SS-18	-	25	23	17	21	14	21	14	7	10	A-2-4 (0)	-	
		40																	
Hard gray **SANDY SILT**, some clay, trace to little fine gravel, damp.		41	4 5 6	17	100	SS-19	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	-	
		42																	
		43																	
	799.7	44	4 6 7	20	100	SS-20	4.5+	11	10	14	39	26	25	17	8	14	A-4a (6)	-	
	EOB	45																	

NOTES:
- Seepage encountered at 24.0.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 23

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/5/26 END: 2/5/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 208+61, 54' LT
ALIGNMENT: WB TRUCK RAMP
ELEVATION: 827.4 (MSL) EOB: 7.0 ft.
COORD: 41.864440 N, 80.686587 W

EXPLORATION ID
B-020-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 827.4	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	827.0																		
Very stiff brown **SILT AND CLAY**, some fine to coarse sand, some fine to coarse gravel, damp.		1	2 4 10	21	100	SS-1	3.5	29	14	16	23	18	28	17	11	12	A-6a (1)	647	
	823.4	2	7 12 20	48	100	SS-2	4.0	25	19	12	26	18	28	17	11	12	A-6a (2)	-	
Hard brown **SANDY SILT**, some clay, trace fine gravel, damp.		3	4 6 9	23	100	SS-3	4.5+	4	8	12	42	34	26	17	9	15	A-4a (8)	-	
	820.4	4	6 9 14	35	100	SS-4	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
		EOB 5																	
		6																	
		7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 24

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 208+65, 21' RT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 826.2 (MSL) EOB: 7.0 ft.
START: 2/4/26 END: 2/4/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.864320 N, 80.686361 W

EXPLORATION ID **B-021-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 826.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	825.8																		
Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine to coarse gravel, damp.		1	2 3 4	11	100	SS-1	3.0	4	8	12	42	34	31	18	13	16	A-6a (9)	40	
		2	4 8 8	24	100	SS-2	4.5+	9	7	11	42	31	29	18	11	15	A-6a (8)	-	
		3	4 9 10	29	100	SS-3	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		4	4 7 11	27	100	SS-4	4.5+	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	819.2	EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 25

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 210+41, 240' LT
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 825.7 (MSL) EOB: 11.0 ft.
START: 2/4/26 END: 2/4/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.865142 N, 80.686713 W

EXPLORATION ID **B-022-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 825.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 6 INCHES	825.2																		
Medium stiff (est.) brown **SILTY CLAY**, little fine to coarse sand, little fine gravel, few roots, moist.	822.7	1	1 2 2	6	100	SS-1	-	16	7	10	39	28	40	22	18	29	A-6b (10)	40	
Very stiff to hard brown and brown mottled with gray **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, moist.		2	2 2 2	6	100	SS-2	2.5-3.5	3	3	10	49	35	38	23	15	27	A-6a (10)	-	
		3	2 3 2	8	100	SS-3	4.5+	-	-	-	-	-	-	-	-	21	A-6a (V)	-	
		4	3 5 7	18	100	SS-4	4.5+	1	4	11	45	39	33	18	15	19	A-6a (10)	-	
		5	3 5 8	20	100	SS-5	4.5+	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
	814.7	6 EOB	3 5 6	17	100	SS-6	4.5+	-	-	-	-	-	-	-	-	20	A-6a (V)	-	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 26

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: OTB ATV B-57	STATION / OFFSET: 210+57, 29' LT
TYPE: ROADWAY/LIGHT TOWER	SAMPLING FIRM / LOGGER: S&ME / K. HARPER	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: 3-1/4" HSA	CALIBRATION DATE: 12/30/24	ELEVATION: 824.6 (MSL) EOB: 25.0 ft.
START: 2/4/26 END: 2/4/26	SAMPLING METHOD: SPT	ENERGY RATIO (%): 90*	COORD: 41.864819 N, 80.686069 W

EXPLORATION ID **B-023-0-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 824.6	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	824.2																		
Very stiff brown **SILT AND CLAY**, some fine to coarse sand, trace fine gravel, damp.	822.1	1	3 3 3	9	100	SS-1	3.0	9	9	12	40	30	32	19	13	14	A-6a (8)	40	
Hard brown **SANDY SILT**, some clay, trace fine gravel, damp.		2	2 3 4	11	100	SS-2	4.5+	6	7	11	41	35	27	18	9	15	A-4a (8)	-	
		3	3 4 5	14	100	SS-3	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
		4	3 5 7	18	100	SS-4	4.5+	-	-	-	-	-	-	-	-	16	A-4a (V)	-	
		5																	
		6																	
		7																	
		8																	
		9	4 8 10	27	100	SS-5	4.5+	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
		10																	
		11																	
		12	5 6 8	21	100	SS-6	4.5+	4	5	11	48	32	24	15	9	13	A-4a (8)	-	
		13																	
		14	3 5 6	17	100	SS-7	4.5+	-	-	-	-	-	-	-	-	15	A-4a (V)	-	
	809.1	15																	
Very stiff to hard gray **SANDY SILT**, some clay, trace fine gravel, damp.		16																	
		17	4 4 5	14	100	SS-8	3.0-4.5	5	6	10	46	33	25	16	9	14	A-4a (8)	-	
		18																	
		19	2 4 4	12	100	SS-9	4.5+	-	-	-	-	-	-	-	-	15	A-4a (V)	-	
		20																	
		21																	
		22	2 2 3	8	100	SS-10	2.0	4	7	11	46	32	24	15	9	17	A-4a (8)	-	
		23																	
	799.6	24	3 5 7	18	100	SS-11	2.0-4.0	-	-	-	-	-	-	-	-	16	A-4a (V)	-	
	EOB	25																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 27

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/2/26 END: 2/2/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 214+53, 11' RT
ALIGNMENT: WB TRUCK RAMP
ELEVATION: 821.5 (MSL) EOB: 7.0 ft.
COORD: 41.865556 N, 80.684984 W

EXPLORATION ID
B-024-0-25

MATERIAL DESCRIPTION AND NOTES	ELEV. 821.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	821.1																		
Hard brown **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp.	819.0	1	3 5 5	15	100	SS-1	4.5+	5	7	11	41	36	37	20	17	18	A-6b (11)	500	
Hard brown **SANDY SILT**, some clay, little fine to coarse gravel, damp.	817.5	2	4 5 5	15	100	SS-2	4.5+	11	8	15	39	27	27	17	10	14	A-4a (6)	-	
Very stiff to hard brown **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp to moist.	814.5	3 4 5 6 7 EOB	3 6 6	18	100	SS-3	4.5+	-	-	-	-	-	-	-	-	20	A-6a (V)	-	
			4 7 9	24	100	SS-4	3.0	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 28

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/2/26 END: 2/2/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 218+52, 9' LT
ALIGNMENT: WB TRUCK RAMP
ELEVATION: 819.8 (MSL) EOB: 7.0 ft.
COORD: 41.866398 N, 80.684045 W

EXPLORATION ID
B-025-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 819.8	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ROOTMAT - 5 INCHES	819.4																		
Very stiff brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	817.3	1	3 6 8	21	100	SS-1	3.0	4	7	12	43	34	29	17	12	13	A-6a (9)	780	
Hard brown mottled with gray **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp.		2	2 4 7	17	100	SS-2	4.5+	7	6	10	40	37	36	20	16	16	A-6b (10)	-	
		3	5 6 7	20	100	SS-3	4.5+	-	-	-	-	-	-	-	-	13	A-6b (V)	-	
	812.8	4	4 7 8	23	100	SS-4	4.5+	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
		EOB 7																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 29

S&ME JOB: 24170232A

PROJECT: ATB-90 VACANT REST AREAS
TYPE: ROADWAY
PID: 122876 BR ID: N/A
START: 2/2/26 END: 2/2/26

DRILLING FIRM / OPERATOR: OTB / D. HEPNER
SAMPLING FIRM / LOGGER: S&ME / K. HARPER
DRILLING METHOD: 3-1/4" HSA
SAMPLING METHOD: SPT

DRILL RIG: OTB ATV B-57
HAMMER: AUTOMATIC HAMMER
CALIBRATION DATE: 12/30/24
ENERGY RATIO (%): 90*

STATION / OFFSET: 222+08, 1' RT
ALIGNMENT: WB TRUCK RAMP
ELEVATION: 819.8 (MSL) EOB: 8.0 ft.
COORD: 41.867140 N, 80.683197 W

EXPLORATION ID
B-026-0-25

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 819.8	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 14 INCHES	818.6																		
GRANULAR BASE - 7 INCHES	818.1																		
CHEMICALLY STABILIZED SUBBASE	816.3	1	41 41 45	129	100	SS-1	-	-	-	-	-	-	-	-	-	18	Visual (V)	-	
Hard brown **SILTY CLAY**, little fine to coarse sand, trace fine gravel, damp.	814.8	2 3 4	4 6 7	20	100	SS-2	4.5+	2	4	10	40	44	37	16	21	19	A-6b (12)	120	
Very stiff to hard brown **SILT AND CLAY**, little fine to coarse sand, trace fine gravel, damp.	811.8	5 6	4 8 9	26	100	SS-3	4.5+	4	6	11	43	36	32	19	13	15	A-6a (9)	-	
		7	6 6 8	21	100	SS-4	3.0	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		EOB 8																	

NOTES:
- No water noted.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; PLASTIC HOLE PLUG DEVICE; SOIL CUTTINGS MIXED WITH BENTONITE

S&ME ODOT SULFATE (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/23/26 11:45 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232A_ATB-90 TP.GPJ

PLATE 30

S&ME JOB: 24170232

PROJECT: ATB-90 REST AREAS	DRILLING FIRM / OPERATOR: SIMAK / R. WHET	DRILL RIG: KOMATSU PC138 BACKHOE	STATION / OFFSET: 115+40, 62' RT	EXPLORATION ID: T-005-1-25	
TYPE: STOCKPILE	SAMPLING FIRM / LOGGER: S&ME / S. SMITH	HAMMER: BULK SAMPLE	ALIGNMENT: EB TRUCK RAMP		PAGE 1 OF 1
PID: 122876 BR ID: N/A	DRILLING METHOD: TEST PIT	CALIBRATION DATE: N/A	ELEVATION: 872.5 (MSL) EOB: 15.0 ft.		
START: 6/16/25 END: 6/16/25	SAMPLING METHOD: BULK	ENERGY RATIO (%): 0	LAT / LONG: 41.859603 N, 80.689777 W		

MATERIAL DESCRIPTION AND NOTES	ELEV. 872.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT - 4 INCHES	872.2																	
FILL: Dark gray **GRAVEL WITH SAND, SILT AND CLAY**, few asphalt pieces, zones of limestone gravel, drain pipe pieces, moist.		1			100	BS-1	-	-	-	-	-	-	-	-	-	-	A-2-6 (V)	
		2																
		3			100	BS-2	-	-	-	-	-	-	-	-	-	-	A-2-6 (V)	
	868.5	4																
FILL: Stiff to very stiff brown and gray **SILT AND CLAY**, little to some fine to coarse sand, little fine to coarse gravel, few very soft to medium stiff zones, few cobbles, few boulder-sized pieces of very hard and possibly cement stabilized soil, few asphalt pieces, moist.		5			100	BS-3	1.0-1.2	14	9	11	36	30	35	21	14	22	A-6a (8)	
		6																
		7			100	BS-4	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		8																
		9			100	BS-5	0.0-3.5	-	-	-	-	-	-	-	-	-	A-6a (V)	
W 862.5		10																
		11																
		12			100	BS-6	2.0-2.5	-	-	-	-	-	-	-	-	-	A-6a (V)	
	858.5	13																
FILL: Dark gray **GRAVEL WITH SAND AND SILT**, little clay, few asphalt pieces, wet.	857.5	14			100	BS-7	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
W 857.5 EOB		15																

NOTES:
- Seepage observed at 10'.
- Heavy seepage observed at 15.'
- Samples from 10' to 15' excavated approx. 25' west of the original test pit due to reach of excavator in original location.
- Test pit caved from surface along the east side of the pit.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

S&ME ODOT LOG (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/24/26 07:34 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232_ATB-90_TEST PITS.GPJ

PLATE 31

S&ME JOB: 24170232

PROJECT: ATB-90 REST AREAS	DRILLING FIRM / OPERATOR: SIMAK / R. WHET	DRILL RIG: KOMATSU PC138 BACKHOE	STATION / OFFSET: 116+25, 144' RT	EXPLORATION ID: T-006-1-25	
TYPE: STOCKPILE	SAMPLING FIRM / LOGGER: S&ME / S. SMITH	HAMMER: BULK SAMPLE	ALIGNMENT: EB TRUCK RAMP		PAGE 1 OF 1
PID: 122876 BR ID: N/A	DRILLING METHOD: TEST PIT	CALIBRATION DATE: N/A	ELEVATION: 878.9 (MSL) EOB: 14.0 ft.		
START: 6/16/25 END: 6/16/25	SAMPLING METHOD: BULK	ENERGY RATIO (%): 0	LAT / LONG: 41.859647 N, 80.689347 W		

MATERIAL DESCRIPTION AND NOTES	ELEV. 878.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT - 3 INCHES	878.6																	
FILL: Very stiff brown, dark brown and gray **SILT AND CLAY**, little fine to coarse sand, little fine to coarse gravel, few wood fragments, drain pipe with gravel backfill near 3' to 4', damp to moist.	873.9	1			100	BS-1	3.0	-	-	-	-	-	-	-	-	-	A-6a (V)	
		2																
		3																
		4			100	BS-2	3.0	-	-	-	-	-	-	-	-	-	A-6a (V)	
FILL: Very stiff to hard **SILT AND CLAY**, some fine to coarse sand, little fine to coarse gravel, few stiff zones, damp.		5																
		6			100	BS-3	4.5+	-	-	-	-	-	-	-	-	-	A-6a (V)	
		7																
		8			100	BS-4	1.0-4.5+	15	11	12	31	31	30	16	14	13	A-6a (7)	
	868.4	9																
FILL: Brown and gray **GRAVEL WITH SAND AND SILT**, little clay, moist.	866.9	10			100	BS-5	2.5-4.5+	-	-	-	-	-	-	-	-	-	A-6a (V)	
		11			100	BS-6	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
FILL: Very stiff to hard brown and dark brown **SILT AND CLAY**, some fine to coarse sand, little to some fine to coarse gravel, damp to moist.	864.9	12																
		13			100	BS-7	2.5-4.5+	-	-	-	-	-	-	-	-	-	A-6a (V)	
	EOB	14																

NOTES:
- Seepage was not observed during excavation.
- Test pit terminated at approxately 14' on mostly intact asphalt pavement.
- No caving of test pit walls at completion.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

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PLATE 32

S&ME JOB: 24170232

PROJECT: ATB-90 REST AREAS	DRILLING FIRM / OPERATOR: SIMAK / R. WHET	DRILL RIG: KOMATSU PC138 BACKHOE	STATION / OFFSET: 116+97, 207' RT
TYPE: STOCKPILE	SAMPLING FIRM / LOGGER: S&ME / S. SMITH	HAMMER: BULK SAMPLE	ALIGNMENT: EB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: TEST PIT	CALIBRATION DATE: N/A	ELEVATION: 877.3 (MSL) EOB: 14.0 ft.
START: 6/16/25 END: 6/16/25	SAMPLING METHOD: BULK	ENERGY RATIO (%): 0	LAT / LONG: 41.859696 N, 80.689000 W

EXPLORATION ID **T-007-1-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 877.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT - 3 INCHES	877.0																	
FILL: Brown **GRAVEL WITH SAND AND SILT**, little clay, many cobble to boulder-sized concrete pieces, few roots, damp.	875.3	1			100	BS-1	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
FILL: Brown **SANDY SILT**, some fine to coarse gravel, little clay, damp.	872.3	2 3 4			100	BS-2	-	24	13	26	24	13	22	17	5	13	A-4a (0)	
FILL: Stiff to hard (est.) brown and gray **SILT AND CLAY**, little to some fine to coarse sand, little to some fine to coarse gravel, few gravelly zones, few areas with black organic streaks and odor, many cobble to boulder-sized asphalt pieces below 9', damp to moist.		5 6 7 8			100	BS-3	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		W 868.3 9			100	BS-4	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		10 11 12			100	BS-5	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
- Possible transition to natural soil at 14'.	863.3	EOB 13 14			100	BS-6	-	-	-	-	-	-	-	-	-	-	A-6a (V)	

NOTES:
- Seepage observed at 9'.
- The test pit caved below and up to approximately 4' after excavation was complete.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

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PLATE 33

S&ME JOB: 24170232

PROJECT: ATB-90 REST AREAS	DRILLING FIRM / OPERATOR: SIMAK / R. WHET	DRILL RIG: KOMATSU PC138 BACKHOE	STATION / OFFSET: 207+18, 204' LT
TYPE: STOCKPILE	SAMPLING FIRM / LOGGER: S&ME / S. SMITH	HAMMER: BULK SAMPLE	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: TEST PIT	CALIBRATION DATE: N/A	ELEVATION: 843.5 (MSL) EOB: 16.0 ft.
START: 6/16/25 END: 6/16/25	SAMPLING METHOD: BULK	ENERGY RATIO (%): 0	LAT / LONG: 41.864372 N, 80.687355 W

EXPLORATION ID **T-018-1-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 843.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT - 6 INCHES	843.0																	
FILL: Stiff to very stiff (est.) brown, dark brown and gray **SILT AND CLAY**, some fine to coarse sand, little to some fine to coarse gravel, few boulder-sized concrete pieces, few zones of sand, moist to wet.		1			100	BS-1	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		2																
		3			100	BS-2	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
W 839.5		4																
	837.5	5																
		6																
FILL: Medium stiff to stiff (est.) gray **SANDY SILT**, some fine to coarse sand, some fine to coarse gravel, few stone cobbles, few pockets of black organic staining (slightly organic), moist to wet. @ BS-3 from 6' to 8', LOI = 2.7%.		7			100	BS-3	-	22	17	12	26	23	26	18	8	16	A-4a (3)	
	833.5	8																
		9			100	BS-4	-	-	-	-	-	-	-	-	-	-	A-4a (V)	
FILL: Stiff (est.) brown and dark brown **SILT AND CLAY**, some fine to coarse sand, little fine to coarse gravel, few stone cobbles, moist.	831.5	10																
		11			100	BS-5	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
FILL: Brown and dark brown **GRAVEL WITH SAND AND SILT**, few roots, boulder-sized asphalt pieces encountered at 16'.		12																
		13			100	BS-6	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
		14																
	827.5	15			100	BS-7	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
EOB		16																

NOTES:
- Seepage observed at 4'.
- Samples from 10' to 16' excavated approx. 20' east of original test pit due to reach of excavator in original location.
- The test pit caved at 6' after excavation complete.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

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PLATE 34

S&ME JOB: 24170232

PROJECT: ATB-90 REST AREAS	DRILLING FIRM / OPERATOR: SIMAK / R. WHET	DRILL RIG: KOMATSU PC138 BACKHOE	STATION / OFFSET: 208+52, 167' LT	EXPLORATION ID: T-019-1-25	
TYPE: STOCKPILE	SAMPLING FIRM / LOGGER: S&ME / S. SMITH	HAMMER: BULK SAMPLE	ALIGNMENT: WB TRUCK RAMP		PAGE 1 OF 1
PID: 122876 BR ID: N/A	DRILLING METHOD: TEST PIT	CALIBRATION DATE: N/A	ELEVATION: 848.1 (MSL) EOB: 12.0 ft.		
START: 6/16/25 END: 6/16/25	SAMPLING METHOD: BULK	ENERGY RATIO (%): 0	LAT / LONG: 41.864612 N, 80.686933 W		

MATERIAL DESCRIPTION AND NOTES	ELEV. 848.1	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT - 6 INCHES	847.6																	
FILL: Hard brown **SILT AND CLAY**, little to some fine to coarse sand, little to some fine to coarse gravel, few brick pieces, damp.		1			100	BS-1	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		2																
		3			100	BS-2	4.5+	-	-	-	-	-	-	-	-	-	A-6a (V)	
		4																
	842.1	5																
FILL: Hard dark brown and gray **SILT AND CLAY**, some fine to coarse sand, trace fine to coarse gravel, few siltstone fragments, zones of black organic staining and odor (slightly organic), damp. - Sample BS-3: LOI = 3.2%.		6			100	BS-3	4.5+	9	9	12	37	33	33	22	11	17	A-6a (7)	
		7																
		8			100	BS-4	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
	838.1	9																
FILL: Brown and reddish brown **GRAVEL WITH SAND AND SILT**, little clay, many asphalt pieces, few clayey pockets, encountered unknown obstruction at 12', damp.	836.1	10			100	BS-5	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
		11																
	EOB	12																

NOTES:
- Seepage was not observed while excavating.
- Test pit remained open after excavation complete.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

S&ME ODOT LOG (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/24/26 07:34 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINT\PROJECTS\24170232_ATB-90_TEST PITS.GPJ

S&ME JOB: 24170232

PROJECT: ATB-90 REST AREAS	DRILLING FIRM / OPERATOR: SIMAK / R. WHET	DRILL RIG: KOMATSU PC138 BACKHOE	STATION / OFFSET: 209+39, 110' LT
TYPE: STOCKPILE	SAMPLING FIRM / LOGGER: S&ME / S. SMITH	HAMMER: BULK SAMPLE	ALIGNMENT: WB TRUCK RAMP
PID: 122876 BR ID: N/A	DRILLING METHOD: TEST PIT	CALIBRATION DATE: N/A	ELEVATION: 841.7 (MSL) EOB: 18.0 ft.
START: 6/16/25 END: 6/16/25	SAMPLING METHOD: BULK	ENERGY RATIO (%): 0	LAT / LONG: 41.864701 N, 80.686570 W

EXPLORATION ID **T-021-1-25**

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 841.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ROOTMAT - 3 INCHES	841.4																	
FILL: Medium stiff (est.) brown and gray **SILT AND CLAY**, little to some fine to coarse sand, trace fine to coarse gravel, few roots, moist.	838.7	1			100	BS-1	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
FILL: Brown and gray **GRAVEL WITH SAND AND SILT**, little clay, damp to moist.	837.7	2																
FILL: Stiff to hard brown and gray **SANDY SILT**, some clay, little fine to coarse gravel, few cobble-sized asphalt pieces, few zones of black organic staining, encountered approximate 3-inch diameter tree trunk at 8', damp to moist.	829.7	3			100	BS-2	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
		4																
		5			100	BS-3	2.5	-	-	-	-	-	-	-	-	-	A-4a (V)	
		6																
		7			100	BS-4	1.5-3.5	15	11	11	31	32	27	18	9	16	A-4a (6)	
		8																
		9			100	BS-5	0.5-1.5	-	-	-	-	-	-	-	-	-	A-4a (V)	
		10																
		11			100	BS-6	1.5-4.5+	-	-	-	-	-	-	-	-	-	A-4a (V)	
FILL: Brown **GRAVEL WITH SAND AND SILT**, little clay, few roots, moist.	825.7	12																
		13			100	BS-7	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
		14																
		15			100	SS-8	-	-	-	-	-	-	-	-	-	-	A-2-4 (V)	
		16																
FILL: Stiff to very stiff gray and dark brown **SILT AND CLAY**, some fine to coarse sand, some fine to coarse gravel, few asphalt pieces, few pockets of aggregate similar to Item 304, moist.	823.7	17			100	SS-9	1.5-2.5	-	-	-	-	-	-	-	-	-	A-6a (V)	
	EOB	18																

NOTES:
- Seepage was not observed while excavating.
- Samples from 12' to 15' excavated approx. 25' west of original test pit due to reach of excavator in original location.
- The test pit remained open after excavation was complete.

NOTES: SEE ABOVE.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

S&ME ODOT LOG (8.5X11) - SGE 01/2019 - OH DOT.GDT - 4/24/26 07:34 - R:\SERVICE LINES\CS-2557\COLUMBUS\GINTW\PROJECTS\24170232_ATB-90_TEST PITS.GPJ

PLATE 36

OHIO DEPARTMENT OF TRANSPORTATION

DETERMINING SULFATE CONTENT IN SOILS
SUPPLEMENT 1122

Project C-R-S:	TP 26 Site 2 ATB-90 Vacant Rest Areas
PID No:	122876
Report Date:	4/24/2026
Consultant:	S&ME, Inc.
Technician:	M. Bolton

Sample or Boring ID	Station	Offset	Latitude & Longitude or State Plane Coordinates		Elevation	Soaking Time (hr)	Replicate Sample Readings						Sulfate Content (ppm)
							1		2		3		
							Dilution	Reading	Dilution	Reading	Dilution	Reading	
B-001-0-25	101+22	9.1 Lt	41.856822	-80.693435	876.6	72	40	47	40	45	40	45	1827
B-002-0-25	105+23	5.3 Lt	41.857669	-80.692498	871.1	72	20	18	20	18	20	21	380
B-003-0-25	109+22	14.5 Lt	41.85848	-80.691508	861.9	72	20	7	20	7	20	3	113
B-005-0-25	114+47	63.3 Rt	41.859402	-80.689983	860.2	72	20	5	20	11	20	8	160
B-006-0-25	115+72	238.3 Rt	41.859373	-80.689195	864.5	24	20	<2	20	3	20	2	40
B-007-0-25	116+74	114.6 Rt	41.859802	-80.68932	866	120	20	38	20	38	20	38	760
B-008-0-25	117+76	246.6 Rt	41.8598	-80.688705	860.6	120	20	10	20	7	20	7	160
B-011-0-25	125+55	0.5 Lt	41.862004	-80.687847	837.5	120	20	46	20	45	20	46	913
B-012-0-25	300+52	86.1 Rt	41.862885	-80.686942	831.6	144	20	<2	20	<2	20	<2	<40
B-013-0-25	304+60	70.1 Rt	41.863791	-80.686059	825.5	168	40	51	40	52	40	52	2067
B-014-0-25	287+67	74.5 Lt	41.86039	-80.690331	850.4	168	20	<2	20	<2	20	<2	<40
B-015-0-25	291+58	84.4 Lt	41.86125	-80.689468	846.4	72	20	14	20	11	20	10	233
B-016-0-25	198+54	0.4 Lt	41.862105	-80.688586	839.7	72	20	9	20	9	20	11	193
B-017-0-25	202+51	3.9 Rt	41.862966	-80.687696	833.1	72	20	12	20	13	20	13	253
B-018-0-25	206+50	29.8 Lt	41.86393	-80.68699	825.4	72	20	2	20	<2	20	3	40
B-019-0-25	207+26	205.5 Lt	41.864395	-80.687339	826.7	72	20	18	20	18	20	15	340
B-020-0-25	208+61	54.4 Lt	41.86444	-80.686587	826.4	72	20	32	20	34	20	31	647

OHIO DEPARTMENT OF TRANSPORTATION

DETERMINING SULFATE CONTENT IN SOILS
SUPPLEMENT 1122

Project C-R-S:	TP 26 Site 2 ATB-90 Vacant Rest Areas
PID No:	122876
Report Date:	4/24/2026
Consultant:	S&ME, Inc.
Technician:	M. Bolton

Sample or Boring ID	Station	Offset	Latitude & Longitude or State Plane Coordinates		Elevation	Soaking Time (hr)	Replicate Sample Readings						Sulfate Content (ppm)
							1		2		3		
							Dilution	Reading	Dilution	Reading	Dilution	Reading	
B-021-0-25	208+65	21 Rt	41.86432	-80.686361	825.2	72	20	<2	20	<2	20	<2	<40
B-022-0-25	210+41	239.9 Lt	41.865142	-80.686713	824.7	72	20	<2	20	<2	20	<2	<40
B-023-0-25	210+57	29.3 Lt	41.864819	-80.686069	823.6	120	20	<2	20	<2	20	<2	<40
B-024-0-25	214+53	10.9 Rt	41.865556	-80.684984	820.5	120	20	25	20	26	20	24	500
B-025-0-25	218+52	9.1 Lt	41.866398	-80.684045	818.8	120	20	38	20	38	20	41	780
B-026-0-25	222+08	0.7 Rt	41.86714	-80.683197	816.3	120	20	6	20	6	20	6	120

Important Information About Your
Geotechnical Engineering Report

Variations in subsurface conditions can be a principal cause of construction delays, cost overruns and claims. The following information is provided to assist you in understanding and managing the risk of these variations.

Geotechnical Findings Are Professional Opinions

Geotechnical engineers cannot specify material properties as other design engineers do. Geotechnical material properties have a far broader range on a given site than any manufactured construction material, and some geotechnical material properties may change over time because of exposure to air and water, or human activity.

Site exploration identifies subsurface conditions at the time of exploration and only at the points where subsurface tests are performed or samples obtained. Geotechnical engineers review field and laboratory data and then apply their judgment to render professional opinions about site subsurface conditions. Their recommendations rely upon these professional opinions. Variations in the vertical and lateral extent of subsurface materials may be encountered during construction that significantly impact construction schedules, methods and material volumes. While higher levels of subsurface exploration can mitigate the risk of encountering unanticipated subsurface conditions, no level of subsurface exploration can eliminate this risk.

Scope of Geotechnical Services

Professional geotechnical engineering judgment is required to develop a geotechnical exploration scope to obtain information necessary to support design and construction. A number of unique project factors are considered in developing the scope of geotechnical services, such as the exploration objective; the location, type, size and weight of the proposed structure; proposed site grades and improvements; the construction schedule and sequence; and the site geology.

Geotechnical engineers apply their experience with construction methods, subsurface conditions and exploration methods to develop the exploration scope. The scope of each exploration is unique based on available project and site information. Incomplete project information or constraints on the scope of exploration increases the risk of variations in subsurface conditions not being identified and addressed in the geotechnical report.

Services Are Performed for Specific Projects

Because the scope of each geotechnical exploration is unique, each geotechnical report is unique. Subsurface conditions are explored and recommendations are made for a specific project.

Subsurface information and recommendations may not be adequate for other uses. Changes in a proposed structure location, foundation loads, grades, schedule, etc. may require additional geotechnical exploration, analyses, and consultation. The geotechnical engineer should be consulted to determine if additional services are required in response to changes in proposed construction, location, loads, grades, schedule, etc.

Geo-Environmental Issues

The equipment, techniques, and personnel used to perform a geo-environmental study differ significantly from those used for a geotechnical exploration. Indications of environmental contamination may be encountered incidental to performance of a geotechnical exploration but go unrecognized. Determination of the presence, type or extent of environmental contamination is beyond the scope of a geotechnical exploration.

Geotechnical Recommendations Are Not Final

Recommendations are developed based on the geotechnical engineer's understanding of the proposed construction and professional opinion of site subsurface conditions. Observations and tests must be performed during construction to confirm subsurface conditions exposed by construction excavations are consistent with those assumed in development of recommendations. It is advisable to retain the geotechnical engineer that performed the exploration and developed the geotechnical recommendations to conduct tests and observations during construction. This may reduce the risk that variations in subsurface conditions will not be addressed as recommended in the geotechnical report.

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Appendix II – Subgrade Analyses

SUBGRADE ANALYSIS
EASTBOUND PARKING AREA

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

PLAN SUBGRADES
Geotechnical Design Manual Section 600

TP 26 ATB-90 Vacant Rest Areas
122876
Truck parking area along Eastbound IR 90 in Ashtabula County approximately 4.8 miles east of SR 11

S&ME, Inc.

Prepared By: Brian K. Sears, PE
Date prepared: Monday, April 20, 2026

Brian K. Sears, PE
6190 Enterprise Court
Dublin, OH 43016

614-793-2226
bsears@smeinc.com

NO. OF BORINGS: 13

NO. OF DCPS: 0

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

Add DCP Test Data Worksheets

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-001-0-25	EB Truck Ramp	101+22	9	LT	OTB ATV B-57	90	878.6	877.5	1.2 C
2	B-002-0-25	EB Truck Ramp	105+23	5	LT	OTB ATV B-57	90	872.1	870.9	1.1 C
3	B-003-0-25	EB Truck Ramp	109+22	14	LT	OTB ATV B-57	90	862.9	864.7	1.8 F
4	B-004-0-25	EB Truck Ramp	113+25	8	LT	OTB ATV B-57	90	859.1	862.8	3.7 F
5	B-005-0-25	EB Truck Ramp	114+47	63	RT	OTB ATV B-57	90	861.2	864.5	3.2 F
6	B-006-0-25	EB Truck Ramp	115+72	238	RT	OTB ATV B-57	90	865.5	865.7	0.2 F
7	B-007-0-25	EB Truck Ramp	116+74	115	RT	OTB ATV B-57	90	877.0	865.2	11.9 C
8	B-008-0-25	EB Truck Ramp	117+76	247	RT	OTB ATV B-57	90	861.6	863.6	2.0 F
9	B-009-0-25	EB Truck Ramp	117+77	5	LT	OTB ATV B-57	90	855.8	860.7	4.8 F
10	B-010-0-25	EB Truck Ramp	121+57	26	LT	OTB ATV B-57	90	843.7	846.3	2.6 F
11	B-011-0-25	EB Truck Ramp	125+55	0	LT	OTB ATV B-57	90	838.5	838.3	0.2 C
12	B-012-0-25	IR 90	300+52	86	RT	OTB ATV B-57	90	832.6	832.5	0.2 C
13	B-013-0-25	IR 90	304+60	70	RT	OTB ATV B-57	90	827.5	826.3	1.2 C

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

#	Boring ID	Sample #	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
1	B	1	2.0	3.5	0.8	2.3	48			28	26	2	20	7	27	11	8	A-3a	0	1827					
	001-0	2	3.5	5.0	2.3	3.8	17		4.5	31	18	13	45	35	80	16	14	A-6a	9						
	25	3	5.0	6.5	3.8	5.3	8									9	8	A-3a	0						
		4	6.5	8.0	5.3	6.8	27	8	3.0							16	8	A-3a							
2	B	1	1.0	2.5	-0.1	1.4	18		3.0	33	20	13	33	23	56	16	15	A-6a	5	380					
	002-0	2	2.5	4.0	1.4	2.9	15		4.5	33	19	14	42	39	81	16	14	A-6a	10						
	25	3	4.0	5.5	2.9	4.4	17		4.5							15	14	A-6a	10						
		4	5.5	7.0	4.4	5.9	14	14	4.5							19	16	A-6b	16						
3	B	1	1.0	2.5	2.8	4.3	17			23	16	7	39	18	57	14	11	A-4a	4	113					
	003-0	2	2.5	4.0	4.3	5.8	14		3.0	28	17	11	45	35	80	16	14	A-6a	8						
	25	3	4.0	5.5	5.8	7.3	12		2.5							16	14	A-6a							
		4	5.5	7.0	7.3	8.8	11	12	2.5							16	14	A-6a							
4	B	1	1.0	2.5	4.7	6.2	20			30	18	12	23	16	39	11	14	A-6a	1						
	004-0	2	3.5	5.0	7.2	8.7	17		4.5	32	17	15	41	33	74	16	14	A-6a							
	25	3	6.0	7.5	9.7	11.2	15		4.5							15	14	A-6a							
		4	8.5	10.0	12.2	13.7	12	20	4.5							16	14	A-6a							
5	B	1	1.0	2.5	4.2	5.7	12		3.5	33	19	14	45	32	77	21	14	A-6a	10	160					
	005-0	2	2.5	4.0	5.7	7.2	8		4.5	28	18	10	40	34	74	18	13	A-4a							
	25	3	4.0	5.5	7.2	8.7	5		3.0							18	14	A-6a							
		4	5.5	7.0	8.7	10.2	8	8	3.5	32	17	15	39	36	75	18	14	A-6a							
6	B	1	1.0	2.5	1.2	2.7	8						5	2	7	8	6	A-1-b	0	40					
	006-0	2	2.5	4.0	2.7	4.2	14		3.5	32	18	14	39	38	77	16	14	A-6a	10						
	25	3	4.0	5.5	4.2	5.7	21		4.5							17	14	A-6a	10						
		4	5.5	7.0	5.7	7.2	24	8	4.5							14	14	A-6a							
7	B	5	11.0	12.5	-0.9	0.6	8		3.5	30	18	12	39	33	72	17	14	A-6a	8	760		N_{60} & Mc		12"	Exc. & Rep. 12"
	007-0	6	12.5	14.0	0.6	2.1	27		4.5	27	16	11	24	15	39	11	14	A-6a	1						
	25	7	14.0	14.7	2.1	2.8	50		4.5	32	18	14	29	18	47	12	14	A-6a	4						
		8	15.5	17.0	3.6	5.1	75	8								6	6	A-1-b	0						
8	B	1	1.0	2.5	3.0	4.5	9		3.5	28	18	10	54	24	78	19	13	A-4b	8	160	A-4b		36"		Exc. & Rep. 36"
	008-0	2	2.5	4.0	4.5	6.0	12		3.5	32	18	14	38	29	67	18	14	A-6a	8						
	25	3	4.0	5.5	6.0	7.5	17		3.5							17	14	A-6a							
		4	5.5	7.0	7.5	9.0	18	9	4.5							18	14	A-6a							
9	B	1	1.0	2.5	5.8	7.3	15		3.5	31	19	12	37	35	72	14	14	A-6a							
	009-0	2	3.5	5.0	8.3	9.8	20		4.5							15	14	A-6a							
	25	3	6.0	7.5	10.8	12.3	20		4.5	28	17	11	32	45	77	17	14	A-6a							
		4	8.5	10.0	13.3	14.8	30	15	4.5							12	10	A-4a							

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

#	Boring ID	Sample #	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
10	B	1	1.0	2.5	3.6	5.1	18		3.0	29	18	11	43	35	78	16	14	A-6a	8						
	010-0	2	2.5	4.0	5.1	6.6	15		4.5	30	18	12	42	35	77	16	14	A-6a							
	25	3	4.0	5.5	6.6	8.1	30		4.5							15	14	A-6a							
		4	5.5	7.0	8.1	9.6	32	15	4.5							15	14	A-6a							
11	B	1	1.0	2.5	0.8	2.3	18		3.0	26	16	10	44	35	79	15	11	A-4a	8	913		Mc			
	011-0	2	2.5	4.0	2.3	3.8	14		3.5	24	16	8	46	33	79	14	11	A-4a	8						
	25	3	4.0	5.5	3.8	5.3	14		4.5							14	10	A-4a	8						
		4	5.5	7.0	5.3	6.8	17	14	4.5							14	10	A-4a							
12	B	1	1.0	2.5	0.8	2.3	23		4.5	31	17	14	41	37	78	14	14	A-6a	10	40					
	012-0	2	2.5	4.0	2.3	3.8	15		4.5	34	19	15	41	41	82	17	14	A-6a	10						
	25	3	4.0	5.5	3.8	5.3	23		4.5							16	14	A-6a	10						
		4	5.5	7.0	5.3	6.8	30	15	4.5							14	14	A-6a							
13	B	1	2.0	3.5	0.8	2.3	98									14	6	A-1-b	0	2067					
	013-0	2	3.5	5.0	2.3	3.8	20		4.5	26	17	9	44	33	77	16	12	A-4a	8						
	25	3	5.0	6.5	3.8	5.3	23		4.5	30	18	12	43	35	78	16	14	A-6a	9						
		4	6.5	8.0	5.3	6.8	38	20	4.5							14	14	A-6a							

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

PID: ### ###

County-Route-Section: TP 26 ATB-90 Vacant Rest Areas

No. of Borings: ###

Geotechnical Consultant: S&ME, Inc.

Prepared By: Brian K. Sears, PE

Date prepared: ###

Chemical Stabilization Options		
320	Rubblize & Roll	Option
206	Cement Stabilization	Option
	Lime Stabilization	No
206	Depth	12''

Excavate and Replace Stabilization Options	
Global Geotextile Average(N60L):	12''
Average(HP):	0''
Global Geogrid Average(N60L):	0''
Average(HP):	0''

Design CBR	7

% Samples within 3 feet of subgrade			
$N_{60} \leq 5$	0%	HP ≤ 0.5	0%
$N_{60} < 12$	8%	0.5 < HP ≤ 1	0%
$12 \leq N_{60} < 15$	5%	1 < HP ≤ 2	0%
$N_{60} \geq 20$	15%	HP > 2	35%
M+	5%		
Rock	0%		
Unsuitable Soil	0%		

Excavate and Replace at Surface	
Average	0''
Maximum	0''
Minimum	0''

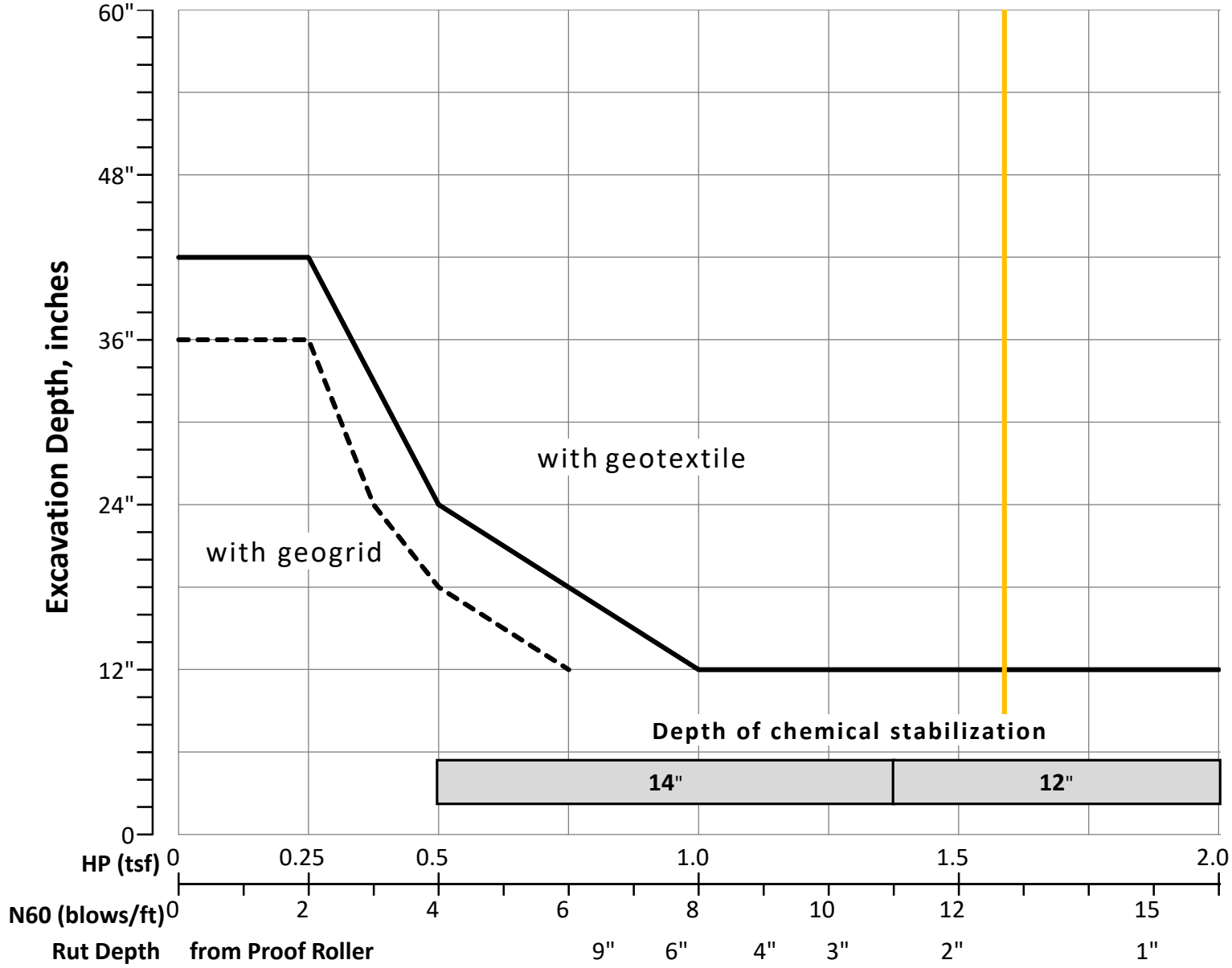
% Proposed Subgrade Surface	
Unstable & Unsuitable	19%
Unstable	13%
Unsuitable (Soil & Rock)	6%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	21	13	4.01	30	18	12	38	30	67	15	13	7
Maximum	98	20	4.50	34	26	15	54	45	82	21	16	16
Minimum	5	8	2.50	23	16	2	5	2	7	6	6	0

Classification Counts by Sample

ODOT Class	UCF	Rock	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-3	A-3a	A-4a	A-4b	A-5	A-6a	A-6b	A-7-5	A-7-6	A-8a	A-8b	Totals
Count	0	0	0	3	0	0	0	0	0	3	8	1	0	36	1	0	0	0	0	52
Percent	0%	0%	0%	6%	0%	0%	0%	0%	0%	6%	15%	2%	0%	69%	2%	0%	0%	0%	0%	100%
% Rock|Granular|Cohesive	0%	0%	27%									73%								100%
Surface Class Count	0	0	0	2	0	0	0	0	0	1	4	0	0	9	0	0	0	0	0	16
Surface Class Percent	0%	0%	0%	13%	0%	0%	0%	0%	0%	6%	25%	0%	0%	56%	0%	0%	0%	0%	0%	100%

Fig. 600-1 – Subgrade Stabilization



OVERRIDE TABLE

Calculated Average	New Values	Check to Override
4.01		☐ HP
12.77		☐ N60L

Average HP
Average N_{60L}

PLATE 6

SUBGRADE ANALYSIS
WESTBOUND PARKING AREA

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

PLAN SUBGRADES
Geotechnical Design Manual Section 600

TP 26 ATB-90 Vacant Rest Areas
122876
Truck parking area along Westbound IR 90 in Ashtabula County approximately 4.8 miles east of SR 11

S&ME, Inc.

Prepared By: Brian K. Sears, PE
Date prepared: Monday, April 20, 2026

Brian K. Sears, PE
6190 Enterprise Court
Dublin, OH 43016

614-793-2226
bsears@smeinc.com

NO. OF BORINGS: 13

NO. OF DCPS: 0

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

Add DCP Test Data Worksheets

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-014-0-25	IR 90	287+67	75	LT	OTB ATV B-57	90	853.9	853.0	0.9 C
2	B-015-0-25	IR 90	291+58	84	LT	OTB ATV B-57	90	847.4	846.7	0.7 C
3	B-016-0-25	WB Truck Ramp	198+54	0	LT	OTB ATV B-57	90	840.7	840.3	0.4 C
4	B-017-0-25	WB Truck Ramp	202+51	4	RT	OTB ATV B-57	90	834.1	833.6	0.5 C
5	B-018-0-25	WB Truck Ramp	206+50	30	LT	OTB ATV B-57	90	826.4	827.6	1.2 F
6	B-019-0-25	WB Truck Ramp	207+26	205	LT	OTB ATV B-57	90	844.7	826.2	18.5 C
7	B-020-0-25	WB Truck Ramp	208+61	54	LT	OTB ATV B-57	90	827.4	826.9	0.5 C
8	B-021-0-25	WB Truck Ramp	208+65	21	RT	OTB ATV B-57	90	826.2	826.5	0.3 F
9	B-022-0-25	WB Truck Ramp	210+41	240	LT	OTB ATV B-57	90	825.7	824.6	1.1 C
10	B-023-0-25	WB Truck Ramp	210+57	29	LT	OTB ATV B-57	90	824.6	826.0	1.4 F
11	B-024-0-25	WB Truck Ramp	214+53	11	RT	OTB ATV B-57	90	821.5	821.7	0.2 F
12	B-025-0-25	WB Truck Ramp	218+52	9	LT	OTB ATV B-57	90	819.8	818.9	0.9 C
13	B-026-0-25	WB Truck Ramp	222+08	1	RT	OTB ATV B-57	90	819.8	818.7	1.1 C

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

#	Boring ID	Sample #	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
1	B	1	2.0	3.5	1.1	2.6	135									18	6	A-1-b	0						
	014-0	2	3.5	5.0	2.6	4.1	18		4.5	31	17	14	37	43	80	16	14	A-6a	10	40					
	25	3	5.0	6.5	4.1	5.6	23		4.5	36	20	16	40	44	84	19	16	A-6b	10						
		4	6.5	8.0	5.6	7.1	23	18	3.0							16	16	A-6b							
2	B	1	1.0	2.5	0.3	1.8	21		3.0	33	21	12	42	28	70	19	16	A-6a	8	233		Mc			
	015-0	2	2.5	4.0	1.8	3.3	21		4.5	32	18	14	41	37	78	17	14	A-6a	10			Mc			
	25	3	4.0	5.5	3.3	4.8	20		4.5							17	14	A-6a	10						
		4	5.5	7.0	4.8	6.3	29	20	4.5							16	14	A-6a	10						
3	B	1	1.0	2.5	0.6	2.1	14		3.0	33	18	15	36	32	68	15	14	A-6a	9	193					
	016-0	2	2.5	4.0	2.1	3.6	14		4.5	33	20	13	41	36	77	16	15	A-6a	9						
	25	3	4.0	5.5	3.6	5.1	9		4.5							17	14	A-6a	10						
		4	5.5	7.0	5.1	6.6	12	9								19	14	A-6a							
4	B	1	1.0	2.5	0.5	2.0	26		3.0	30	18	12	27	22	49	11	14	A-6a	3	253					
	017-0	2	2.5	4.0	2.0	3.5	30		4.5	31	18	13	41	34	75	15	14	A-6a	9						
	25	3	4.0	5.5	3.5	5.0	24		4.5							16	14	A-6a	10						
		4	5.5	7.0	5.0	6.5	30	24	4.5							17	14	A-6a							
5	B	1	1.0	2.5	2.2	3.7	14			33	21	12	23	12	35	11	10	A-2-6	0	40					
	018-0	2	2.5	4.0	3.7	5.2	23			20	15	5	15	7	22	7	6	A-1-b	0						
	25	3	4.0	5.5	5.2	6.7	17		4.5							15	14	A-6a							
		4	5.5	7.0	6.7	8.2	12	14	4.5							22	16	A-6b							
6	B	8	18.0	19.5	-0.5	1.0	27			23	16	7	20	9	29	9	10	A-2-4	0	340					Exc. & Rep. 12"
	019-0	9	19.5	21.0	1.0	2.5	8			24	16	8	23	12	35	10	10	A-2-4	0			N_{60}		12"	
	25	10	21.0	22.5	2.5	4.0	11									13	10	A-2-4	0						
		11	22.5	24.0	4.0	5.5	30	8		25	16	9	16	9	25	9	10	A-2-4	0						
7	B	1	1.0	2.5	0.5	2.0	21		3.5	28	17	11	23	18	41	12	14	A-6a	1	647					
	020-0	2	2.5	4.0	2.0	3.5	48		4.0	28	17	11	26	18	44	12	14	A-6a	2						
	25	3	4.0	5.5	3.5	5.0	23		4.5	26	17	9	42	34	76	15	12	A-4a	8						
		4	5.5	7.0	5.0	6.5	35	21	4.5							14	10	A-4a	8						
8	B	1	1.0	2.5	1.3	2.8	11		3.0	31	18	13	42	34	76	16	14	A-6a	9	40		N_{60}			
	021-0	2	2.5	4.0	2.8	4.3	24		4.5	29	18	11	42	31	73	15	14	A-6a	8						
	25	3	4.0	5.5	4.3	5.8	29		4.5							15	14	A-6a	10						
		4	5.5	7.0	5.8	7.3	27	11	4.5							15	14	A-6a							
9	B	1	1.0	2.5	-0.1	1.4	6			40	22	18	39	28	67	29	17	A-6b	10	40		N_{60} & Mc		18"	Exc. & Rep. 12"
	022-0	2	3.5	5.0	2.4	3.9	6		2.5	38	23	15	49	35	84	27	18	A-6a	10						
	25	3	5.0	6.5	3.9	5.4	8		4.5							21	14	A-6a	10						
		4	6.5	8.0	5.4	6.9	18	6	4.5	33	18	15	45	39	84	19	14	A-6a							

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

#	Boring ID	Sample #	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
10	B	1	1.0	2.5	2.4	3.9	9		3.0	32	19	13	40	30	70	14	14	A-6a	8	40					
	023-0	2	2.5	4.0	3.9	5.4	11		4.5	27	18	9	41	35	76	15	13	A-4a	8						
	25	3	4.0	5.5	5.4	6.9	14		4.5							14	10	A-4a							
		4	5.5	7.0	6.9	8.4	18	9	4.5							16	10	A-4a							
11	B	1	1.0	2.5	1.2	2.7	15		4.5	37	20	17	41	36	77	18	16	A-6b	11	500					
	024-0	2	2.5	4.0	2.7	4.2	15		4.5	27	17	10	39	27	66	14	12	A-4a	6						
	25	3	4.0	5.5	4.2	5.7	18		4.5							20	14	A-6a	10						
		4	5.5	7.0	5.7	7.2	24	15	3.0							16	14	A-6a							
12	B	1	1.0	2.5	0.1	1.6	21		3.0	29	17	12	43	34	77	13	14	A-6a	9	780					
	025-0	2	2.5	4.0	1.6	3.1	17		4.5	36	20	16	40	37	77	16	16	A-6b	10						
	25	3	4.0	5.5	3.1	4.6	20		4.5							13	16	A-6b	16						
		4	5.5	7.0	4.6	6.1	23	17	4.5							16	16	A-6b	16						
13	B	1	2.0	3.5	0.9	2.4	129									18	6	A-1-b	0						
	026-0	2	3.5	5.0	2.4	3.9	20		4.5	37	16	21	40	44	84	19	16	A-6b	12	120					
	25	3	5.0	6.5	3.9	5.4	26		4.5	32	19	13	43	36	79	15	14	A-6a	9						
		4	6.5	8.0	5.4	6.9	21	20	3.0							16	14	A-6a							

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.85 4/13/2026

PID: ### ###

County-Route-Section: TP 26 ATB-90 Vacant Rest Areas

No. of Borings: ###

Geotechnical Consultant: S&ME, Inc.

Prepared By: Brian K. Sears, PE

Date prepared: ###

Chemical Stabilization Options		
320	Rubblize & Roll	Option
206	Cement Stabilization	Option
	Lime Stabilization	No
206	Depth	12''

Excavate and Replace Stabilization Options	
Global Geotextile Average(N60L):	12''
Average(HP):	0''
Global Geogrid Average(N60L):	0''
Average(HP):	0''

Design CBR	7

% Samples within 3 feet of subgrade			
$N_{60} \leq 5$	0%	HP ≤ 0.5	0%
$N_{60} < 12$	12%	0.5 < HP ≤ 1	0%
$12 \leq N_{60} < 15$	6%	1 < HP ≤ 2	0%
$N_{60} \geq 20$	24%	HP > 2	36%
M+	6%		
Rock	0%		
Unsuitable Soil	0%		

Excavate and Replace at Surface	
Average	0''
Maximum	0''
Minimum	0''

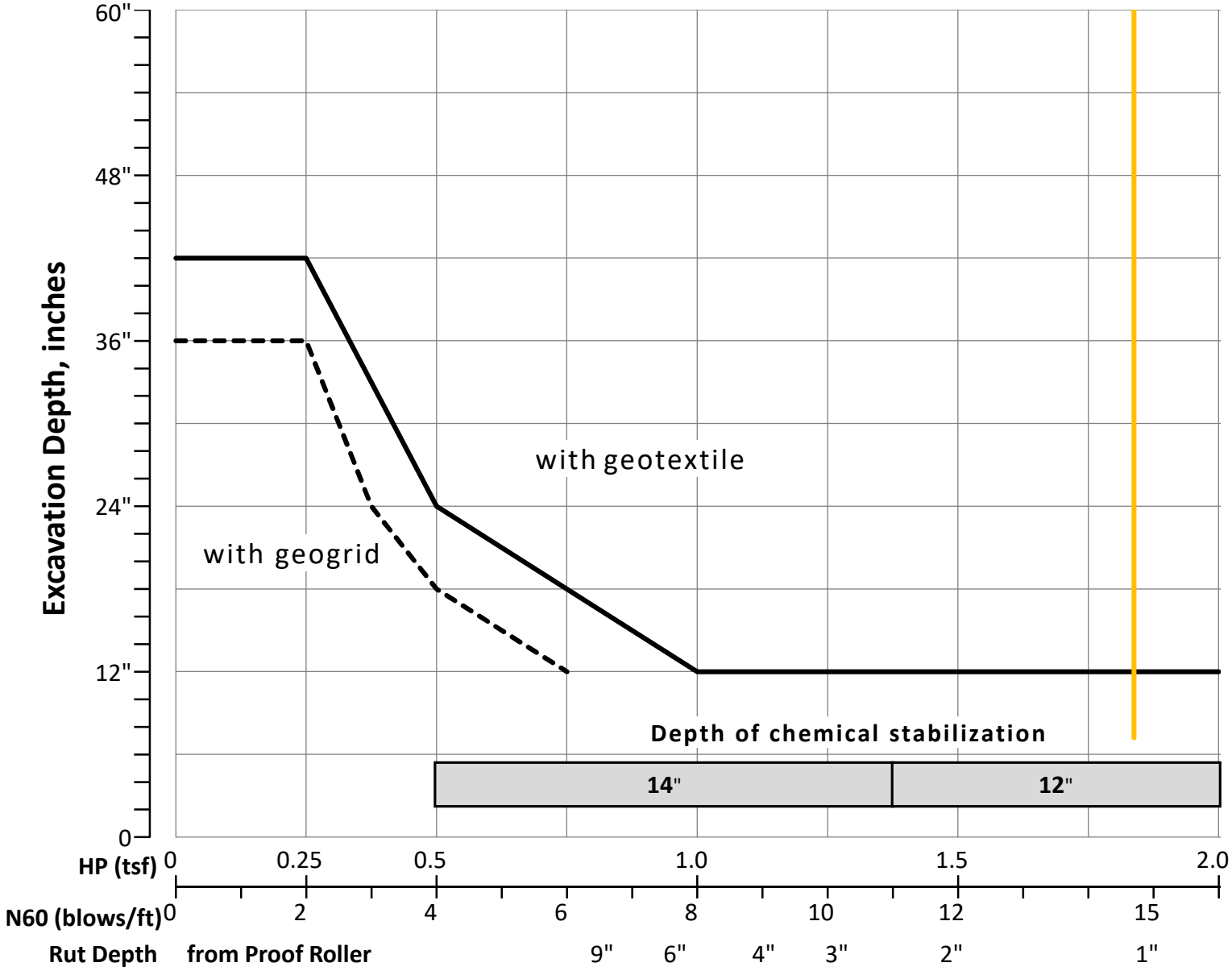
% Proposed Subgrade Surface	
Unstable & Unsuitable	20%
Unstable	20%
Unsuitable (Soil & Rock)	0%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	24	15	4.10	31	18	13	36	29	65	16	13	7
Maximum	135	24	4.50	40	23	21	49	44	84	29	18	16
Minimum	6	6	2.50	20	15	5	15	7	22	7	6	0

Classification Counts by Sample

ODOT Class	UCF	Rock	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-3	A-3a	A-4a	A-4b	A-5	A-6a	A-6b	A-7-5	A-7-6	A-8a	A-8b	Totals
Count	0	0	0	3	4	0	1	0	0	0	6	0	0	29	9	0	0	0	0	52
Percent	0%	0%	0%	6%	8%	0%	2%	0%	0%	0%	12%	0%	0%	56%	17%	0%	0%	0%	0%	100%
% Rock|Granular|Cohesive	0%	0%	27%									73%								100%
Surface Class Count	0	0	0	2	3	0	1	0	0	0	1	0	0	14	4	0	0	0	0	25
Surface Class Percent	0%	0%	0%	8%	12%	0%	4%	0%	0%	0%	4%	0%	0%	56%	16%	0%	0%	0%	0%	100%

Fig. 600-1 – Subgrade Stabilization



OVERRIDE TABLE

Calculated Average	New Values	Check to Override
4.10		☐ HP
14.77		☐ N60L

Average HP
Average N_{60L}

Appendix III – Light Tower Foundation Analyses

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LPILE SOIL PARAMETERS

LPILE Parameters for Lateral Analyses – ATB-90 Eastbound Parking Area

The following tables include parameters used by S&ME to perform a lateral load (LPILE) analysis on the foundations of each light tower at the eastbound parking area. These tables include p-y models, soil unit weights, friction angle and subgrade modulus value for granular, and cohesion and strain values for cohesive soils. These parameters are based on the soil encountered and lab data shown on the boring logs, and recommended values given in the LPile 2022 user's manual and guidance provided by ODOT Office of Geotechnical Engineering (OGE).

Table 1 – LPile Input Parameters at Light Tower PR-7 (Boring B-004-0-25 & B-005-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	861.9 – 858.9	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 5.8	858.9 – 856.1	Stiff Clay w/o Free Water	63 pcf	---	2,500	0.005
Silt and Clay (A-6a)	5.8 – 12.8	856.1 – 849.1	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004
Silt and Clay (A-6a)	12.8 – 16.2	849.1 – 845.7	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Sandy Silt (A-4a)	16.2 – 25.7	845.7 – 836.2	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 861.87.

Table 2 – LPile Input Parameters at Light Tower PR-8 (Boring B-009-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	861.1 – 858.1	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 13.3	858.1 – 847.8	Stiff Clay w/o Free Water	60 pcf	---	4,000	0.005
Sandy Silt (A-4a)	13.3 – 28.3	847.8 – 832.8	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Silt and Clay (A-6a)	28.3 – 30.3	832.8 – 830.8	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 861.07.

Table 3 – LPile Input Parameters at Light Tower PR-9 (Boring B-005-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	861.7 – 858.7	Soft Clay (Matlock)	98 pcf	---	250	0.02
Sandy Silt (A-4a)	3.0 – 4.4	858.7 – 857.2	Stiff Clay w/o Free Water	56 pcf	---	4,500	0.004
Silt and Clay (A-6a)	4.4 – 8.4	857.2 – 853.2	Stiff Clay w/o Free Water	53 pcf	---	3,000	0.005
Silty Clay (A-6b)	8.4 – 10.9	853.2 – 850.7	Soft Clay (Matlock)	53 pcf	---	600	0.01
Silt and Clay (A-6a)	10.9 – 15.9	850.7 – 845.7	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Sandy Silt (A-4a)	15.9 – 25.4	845.7 – 836.2	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 861.56.

Table 4 – LPile Input Parameters at Light Tower PR-10 (Boring B-006-0-25 & B-005-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	864.9 – 861.9	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 6.4	861.9 – 858.5	Stiff Clay w/o Free Water	60 pcf	---	4,000	0.005
Sandy Silt (A-4a)	6.4 – 7.7	858.5 – 857.2	Stiff Clay w/o Free Water	56 pcf	---	4,500	0.004
Silt and Clay (A-6a)	7.7 – 11.7	857.2 – 853.2	Stiff Clay w/o Free Water	53 pcf	---	3,000	0.005
Silty Clay (A-6b)	11.7 – 14.2	853.2 – 850.7	Soft Clay (Matlock)	53 pcf	---	600	0.01
Silt and Clay (A-6a)	14.2 – 19.2	850.7 – 845.7	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Sandy Silt (A-4a)	19.2 – 28.7	845.7 – 836.2	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 864.87.

Table 5 – LPile Input Parameters at Light Tower PR-11 (Boring B-008-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	864.7 – 861.7	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt (A-4b)	3.0 – 5.6	861.7 – 859.1	Stiff Clay w/o Free Water	56 pcf	---	3,750	0.005
Silt and Clay (A-6a)	5.6 – 13.6	859.1 – 851.1	Stiff Clay w/o Free Water	60 pcf	---	3,750	0.005
Sandy Silt (A-4a)	13.6 – 16.1	851.1 – 848.6	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Silt and Clay (A-6a)	16.1 – 21.1	848.6 – 843.6	Stiff Clay w/o Free Water	66 pcf	---	4,500	0.004
Silt and Clay (A-6a)	21.1 – 28.1	843.6 – 836.6	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 864.69.

Table 6 – LPile Input Parameters at Light Tower PR-12 (Boring B-009-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	861.6 – 858.6	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 13.8	858.6 – 847.8	Stiff Clay w/o Free Water	60 pcf	---	4,000	0.005
Sandy Silt (A-4a)	13.8 – 28.8	847.8 – 832.8	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Silt and Clay (A-6a)	28.8 – 30.8	832.8 – 830.8	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 861.56.

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LIGHT TOWER PR-7
(B-004-0-25 & B-005-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-7 (Boring B-004-0-25 & B-005-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

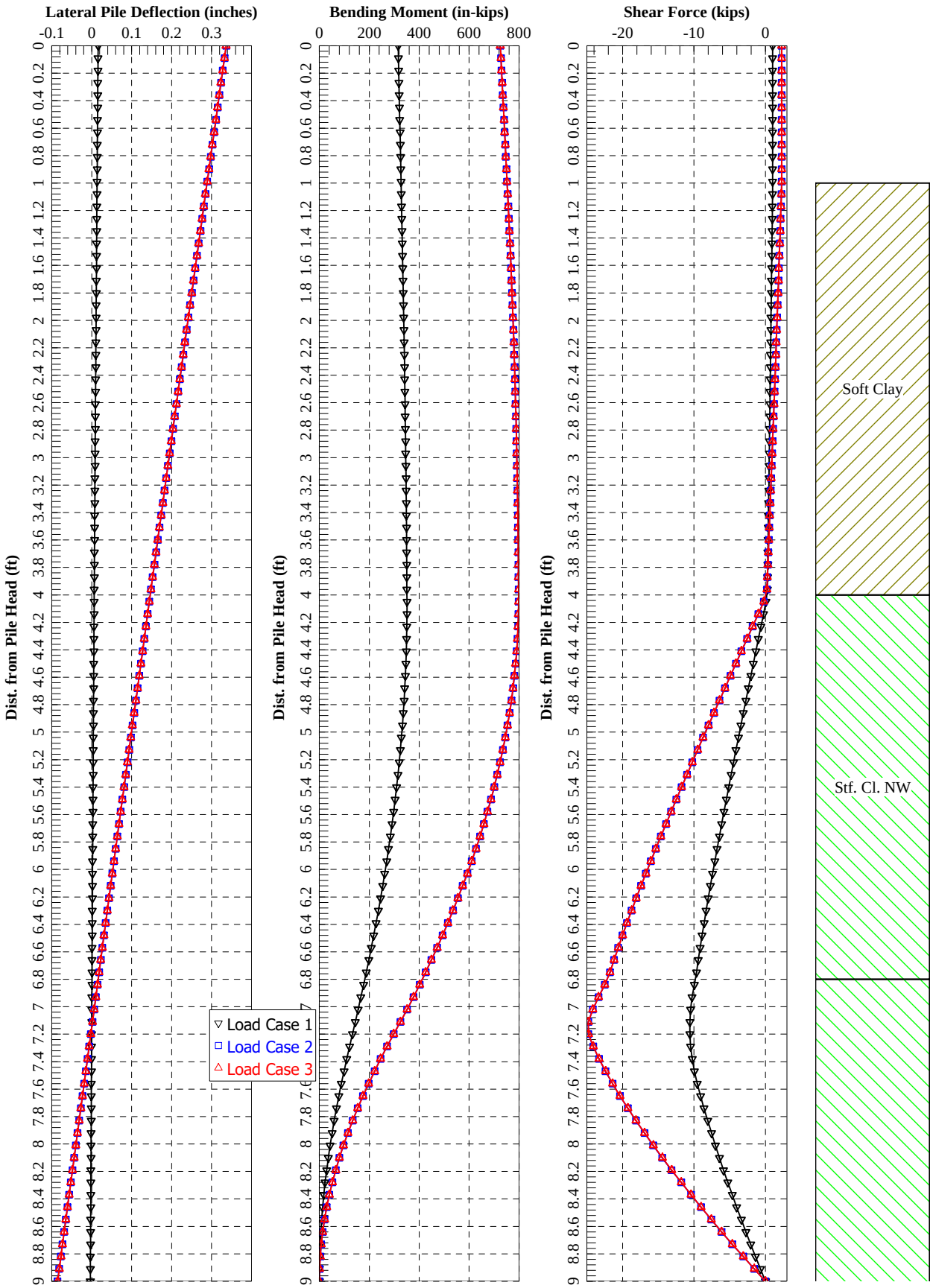


PLATE 4

```
================================================================================

                          LPile for Version 2022-12.012

                           License ID : 228332755
                      License Type : (Single User License)

                 Analysis of Individual Piles and Drilled Shafts
                Subjected to Lateral Loading Using the p-y Method
                          © 1985-2024 by Ensoft, Inc.
                              All Rights Reserved

                This software is licensed for exclusive use by:
                                S&ME, Inc.
                              Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                          Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site 2_ATB-90
(ms)\Calcs\Light Towers\LPILE Files\EB\

Name of input data file:
Tower PR-7 (B-004-0-25 & B-005-0-25).lp12d

Name of output report file:
Tower PR-7 (B-004-0-25 & B-005-0-25).lp12o

Name of plot output file:
Tower PR-7 (B-004-0-25 & B-005-0-25).lp12p

Name of runtime message file:
Tower PR-7 (B-004-0-25 & B-005-0-25).lp12r
```

Date and Time of Analysis

Date: April 27, 2026 Time: 7:28:19

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower PR-7 (B-004-0-25 & B-005-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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

Pile Structural Properties and Geometry

Number of pile sections defined	=	1
Total length of pile	=	9.000 ft
Depth of ground surface below top of pile	=	1.0000 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	36.0000
2	9.000	36.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

```
   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                  =     9.000000 ft
   Shaft Diameter                                     =    36.000000 in


--------------------------------------------------------------------------------
                        Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 5 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

   Distance from top of pile to top of layer          =     1.000000 ft
   Distance from top of pile to bottom of layer       =     4.000000 ft
   Effective unit weight at top of layer              =    98.000000 pcf
   Effective unit weight at bottom of layer           =    98.000000 pcf
   Undrained cohesion at top of layer                 =   250.000000 psf
   Undrained cohesion at bottom of layer              =   250.000000 psf
   Epsilon-50 at top of layer                         =     0.020000
   Epsilon-50 at bottom of layer                      =     0.020000


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer          =     4.000000 ft
   Distance from top of pile to bottom of layer       =     6.800000 ft
   Effective unit weight at top of layer              =    63.000000 pcf
   Effective unit weight at bottom of layer           =    63.000000 pcf
   Undrained cohesion at top of layer                 =        2500. psf
   Undrained cohesion at bottom of layer              =        2500. psf
   Epsilon-50 at top of layer                         =     0.005000
   Epsilon-50 at bottom of layer                      =     0.005000


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer          =     6.800000 ft
   Distance from top of pile to bottom of layer       =    13.800000 ft
   Effective unit weight at top of layer              =    60.000000 pcf
   Effective unit weight at bottom of layer           =    60.000000 pcf
   Undrained cohesion at top of layer                 =        4500. psf
   Undrained cohesion at bottom of layer              =        4500. psf
   Epsilon-50 at top of layer                         =     0.004000
   Epsilon-50 at bottom of layer                      =     0.004000
```

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	13.800000 ft
Distance from top of pile to bottom of layer	=	17.200000 ft
Effective unit weight at top of layer	=	63.000000 pcf
Effective unit weight at bottom of layer	=	63.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.004000
Epsilon-50 at bottom of layer	=	0.004000

Layer 5 is stiff clay without free water

Distance from top of pile to top of layer	=	17.200000 ft
Distance from top of pile to bottom of layer	=	26.700000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.004000
Epsilon-50 at bottom of layer	=	0.004000

(Depth of the lowest soil layer extends 17.700 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000 4.0000	98.0000 98.0000	250.0000 250.0000	0.02000 0.02000
2	Stiff Clay w/o Free Water	4.0000 6.8000	63.0000 63.0000	2500. 2500.	0.00500 0.00500
3	Stiff Clay w/o Free Water	6.8000 13.8000	60.0000 60.0000	4500. 4500.	0.00400 0.00400
4	Stiff Clay w/o Free Water	13.8000 17.2000	63.0000 63.0000	4500. 4500.	0.00400 0.00400
5	Stiff Clay	17.2000	60.0000	4500.	0.00400

```
          w/o Free Water         26.7000      60.0000        4500.      0.00400


---------------------------------------------------------------------------
                              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    Load         Condition               Condition            Axial Thrust
Compute Top y     Run Analysis
 No.    Type             1                       2                Force, lbs      vs.
Pile Length
-----   ----   --------------------   ----------------------   ----------------
---------------    ------------
   1     1     V =  1000.000000 lbs   M =      315600. in-lbs             4200.
Yes               Yes
   2     1     V =        2250. lbs   M =      724800. in-lbs             4600.
Yes               Yes
   3     1     V =        2250. lbs   M =      724800. in-lbs             3800.
Yes               Yes

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



---------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
---------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	9.000000	ft
Shaft Diameter	=	36.000000	in
Concrete Cover Thickness (to edge of trans. reinf.)	=	3.500000	in
Number of Reinforcing Bars	=	16	bars
Yield Stress of Reinforcing Bars	=	60000.	psi
Modulus of Elasticity of Reinforcing Bars	=	29000000.	psi
Gross Area of Shaft	=	1018.	sq. in.
Total Area of Reinforcing Steel	=	16.000000	sq. in.
Area Ratio of Steel Reinforcement	=	1.57	percent
Edge-to-Edge Bar Spacing	=	4.114467	in
Maximum Concrete Aggregate Size	=	0.750000	in
Ratio of Bar Spacing to Aggregate Size	=	5.49	
Offset of Center of Rebar Cage from Center of Pile	=	0.0000	in
Transverse Reinforcement			
Type: Spiral			
Number of Transverse Reinf. (per spacing)	=	1	
Spacing of Transverse Reinf.	=	4.500000	in
Yield Stress of Transverse Reinf.	=	60000.	psi
Diameter of Transverse Reinf.	=	0.500000	in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	4366.378	kips
Tensile Load for Cracking of Concrete	=	-470.222	kips
Nominal Axial Tensile Capacity	=	-960.000	kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245

7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in

reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Conc Stress ksi	Max Steel Stress ksi	Run Msg
6.25000E-07	240.5062135	384809942.	19.2929823	0.00001206	-0.00001044	0.0505030	0.2746478	
0.00000125	480.1472468	384117797.	18.6479768	0.00002331	-0.00002169	0.0973082	0.5259142	
0.00000188	718.9174733	383422652.	18.4329804	0.00003456	-0.00003294	0.1438345	0.7771808	
0.00000250	956.8168886	382726755.	18.3254857	0.00004581	-0.00004419	0.1900818	1.0284477	
0.00000313	1194.	382030558.	18.2609917	0.00005707	-0.00005543	0.2360502	1.2797149	
0.00000375	1430.	381334209.	18.2179981	0.00006832	-0.00006668	0.2817396	1.5309823	
0.00000438	1665.	380637775.	18.1872904	0.00007957	-0.00007793	0.3271500	1.7822500	
0.00000500	1900.	379941287.	18.1642614	0.00009082	-0.00008918	0.3722815	2.0335179	
0.00000563	2133.	379244764.	18.1463515	0.0001021	-0.000100	0.4171340	2.2847861	
0.00000625	2366.	378548215.	18.1320251	0.0001133	-0.000112	0.4617075	2.5360546	
0.00000688	2366.	344134741.	10.2494785	0.00007047	-0.000177	0.2882187	-4.308598	C
0.00000750	2366.	315456846.	10.2198771	0.00007665	-0.000193	0.3129821	-4.706727	C
0.00000813	2366.	291190934.	10.1952302	0.00008284	-0.000210	0.3376758	-5.104761	C

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   0.00000875         2366.    270391582.    10.1744772    0.00008903     -0.000226
0.3622998     -5.502701 C
   0.00000938         2366.    252365477.    10.1568402    0.00009522     -0.000242
0.3868539     -5.900547 C
   0.00001000         2366.    236592634.    10.1417358     0.0001014     -0.000259
0.4113380     -6.298297 C
   0.00001063         2366.    222675420.    10.1287027     0.0001076     -0.000275
0.4357521     -6.695951 C
   0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
   0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
   0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
   0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
   0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
   0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
   0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
   0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
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0.6523089    -10.270507 C
   0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
   0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
   0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
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0.7467127    -11.856661 C
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0.7701352    -12.252952 C
   0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
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0.8167652    -13.045236 C
   0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
   0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
   0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
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0.9320817    -15.024191 C
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0.9549284    -15.419678 C
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1.0004043    -16.210348 C
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   0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
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1.1793922    -19.368912 C
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1.2234058    -20.157511 C
   0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
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1.3105466    -21.733443 C
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1.3536720    -22.520771 C
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1.3964994    -23.307669 C
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1.4390279    -24.094136 C
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1.4812567    -24.880169 C
   0.00004063         3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
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1.5648108    -26.450921 C
   0.00004313         4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
   0.00004438         4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
   0.00004563         4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
   0.00004688         4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
   0.00004813         4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
   0.00004938         4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
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1.8476620    -31.934476 C
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1.9257039    -33.497091 C
   0.00005438         5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
   0.00005563         5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
   0.00005688         5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
   0.00005813         5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
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   0.00006063         5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
   0.00006188         5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
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2.2253083    -39.728581 C
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2.2613274    -40.505332 C
   0.00006563         6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
   0.00006688         6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
   0.00006813         6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
   0.00006938         6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
   0.00007063         6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
   0.00007188         6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
   0.00007313         6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
   0.00007438         6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
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2.6681070    -49.786612 C
   0.00008438         7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
   0.00008938         8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
   0.00009438         8570.     90813004.    10.3043877     0.0009725     -0.002425
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    0.0001094         9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
    0.0001144         9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
    0.0001194        10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
    0.0001244        10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
    0.0001294        10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
    0.0001344        10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
    0.0001394        10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
    0.0001444        10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
    0.0001494        10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
    0.0001544        10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
    0.0001594        11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
    0.0001644        11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
    0.0001694        11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
    0.0001744        11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
    0.0001794        11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
    0.0001844        11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
    0.0001894        11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
    0.0001944        11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
    0.0001994        11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
    0.0002044        11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
    0.0002094        11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
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3.9998812    -60.000000 CY
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3.9955528    -60.000000 CY
    0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
3.9989818    -60.000000 CY
    0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
3.9994466    -60.000000 CY
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3.9965160    -60.000000 CY
    0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
3.9991770    -60.000000 CY
    0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
3.9995775    -60.000000 CY
    0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
3.9954763    -60.000000 CY
    0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
3.9984997    -60.000000 CY
    0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
3.9998981    -60.000000 CY
    0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
3.9944635    -60.000000 CY
    0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
3.9984635    -60.000000 CY
    0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
3.9998209    -60.000000 CY
    0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
3.9999551    -60.000000 CYT
    0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
3.9996166    -60.000000 CYT
    0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
3.9972132    -60.000000 CYT
    0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending        Bending        Bending      Depth to      Max Comp      Max Tens
Max Conc      Max Steel  Run
   Curvature       Moment       Stiffness      N Axis        Strain        Strain
Stress        Stress    Msg
    rad/in.        in-kip        kip-in2         in           in/in         in/in
 ksi           ksi
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  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
0.1904363     1.0309315
   0.00000313          1194.    382030150.    18.2884629    0.00005715   -0.00005535
0.2364034     1.2822044
   0.00000375          1430.    381333869.    18.2409436    0.00006840   -0.00006660
0.2820914     1.5334776
   0.00000438          1665.    380637482.    18.2070035    0.00007966   -0.00007784
0.3275005     1.7847511
   0.00000500          1900.    379941029.    18.1815504    0.00009091   -0.00008909
0.3726306     2.0360248
   0.00000563          2133.    379244533.    18.1617553     0.0001022     -0.000100
0.4174818     2.2872988
   0.00000625          2366.    378548006.    18.1459208     0.0001134     -0.000112
0.4620539     2.5385732
   0.00000688          2366.    344134551.    10.2895004    0.00007074     -0.000177
0.2893429     -4.300617 C
   0.00000750          2366.    315456672.    10.2575513    0.00007693     -0.000193
0.3141325     -4.698533 C
   0.00000813          2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235     -5.096560 C
   0.00000875          2366.    270391433.    10.2068278    0.00008931     -0.000226
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   0.00000938          2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959     -5.892330 C
   0.00001000          2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772     -6.290073 C
   0.00001063          2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884     -6.687720 C
   0.00001125          2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294     -7.085271 C
   0.00001188          2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002     -7.482727 C
   0.00001250          2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005     -7.880086 C
   0.00001313          2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
   0.00001375          2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
   0.00001438          2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
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   0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
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0.6296433     -9.865431 C
   0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
   0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
   0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
   0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
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   0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
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   0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
   0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
   0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
   0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
   0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
   0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
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0.9102407    -14.620215 C
   0.00002375         2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
   0.00002438         2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
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   0.00002688         2548.     94810571.    10.0576469     0.0002703     -0.000697
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   0.00003688         3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
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   0.00003938         3697.     93883511.    10.0786392     0.0003968     -0.001021
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   0.00004063         3811.     93803541.    10.0820299     0.0004096     -0.001053
1.5241766    -25.657144 C
   0.00004188         3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
   0.00004313         4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
   0.00004438         4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
   0.00004563         4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
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1.7292383    -29.578385 C
   0.00004813         4492.     93349066.    10.1053601     0.0004863     -0.001246
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   0.00004938         4606.     93276544.    10.1096634     0.0004992     -0.001278
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   0.00005438         5056.     92992807.    10.1278294     0.0005507     -0.001407
1.9651778    -34.268875 C
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   0.00005813         5393.     92785130.    10.1423320     0.0005895     -0.001503
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2.4374011    -44.372486 C
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3.2283182    -60.000000 CY
    0.0001094         9549.     87304848.    10.2749831     0.0011238     -0.002814
3.3122821    -60.000000 CY
    0.0001144         9785.     85553556.    10.2389100     0.0011711     -0.002946
3.3913727    -60.000000 CY
    0.0001194        10007.     83830919.    10.2019402     0.0012179     -0.003080
3.4649106    -60.000000 CY
    0.0001244        10158.     81671814.    10.1406407     0.0012612     -0.003216
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    0.0001294        10291.     79542859.    10.0787027     0.0013039     -0.003354
3.5876602    -60.000000 CY
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3.6428308    -60.000000 CY
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3.6942550    -60.000000 CY
    0.0001444        10683.     73997378.     9.9261646     0.0014331     -0.003764
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3.8578061    -60.000000 CY
    0.0001644        11075.     67376662.     9.7232508     0.0015983     -0.004319
3.8866026    -60.000000 CY
    0.0001694        11135.     65743511.     9.6663364     0.0016372     -0.004460
3.9121613    -60.000000 CY
    0.0001744        11195.     64200103.     9.6121495     0.0016761     -0.004601
3.9345463    -60.000000 CY
    0.0001794        11254.     62738857.     9.5628376     0.0017153     -0.004742
3.9537182    -60.000000 CY
    0.0001844        11312.     61351278.     9.5162917     0.0017546     -0.004883
3.9695496    -60.000000 CY
    0.0001894        11368.     60031354.     9.4717005     0.0017937     -0.005024
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3.9913005    -60.000000 CY
    0.0001994        11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
    0.0002044        11535.     56438298.     9.3556780     0.0019121     -0.005445
3.9998723    -60.000000 CY
    0.0002094        11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
    0.0002144        11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
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3.9970558    -60.000000 CY
    0.0002244        11744.     52339157.     9.2380944     0.0020728     -0.006005
3.9997330    -60.000000 CY
    0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
    0.0002344        11827.     50463153.     9.1821360     0.0021521     -0.006285
3.9990203    -60.000000 CY
    0.0002394        11859.     49542728.     9.1500193     0.0021903     -0.006427
3.9992468    -60.000000 CY
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3.9965958    -60.000000 CY
    0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
    0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
    0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
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3.9942523    -60.000000 CY
    0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
3.9985257    -60.000000 CY
    0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
3.9998424    -60.000000 CY
    0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
3.9999658    -60.000000 CYT
    0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
3.9996505    -60.000000 CYT
    0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
3.9973093    -60.000000 CYT
    0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
 ksi           ksi
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------------ ------------ ---
  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
0.1907908     1.0334154
   0.00000313        1194.     382029703.    18.3159341    0.00005724   -0.00005526
0.2367565     1.2846940
   0.00000375        1430.     381333494.    18.2638891    0.00006849   -0.00006651
0.2824433     1.5359729
   0.00000438        1665.     380637159.    18.2267166    0.00007974   -0.00007776
0.3278510     1.7872522
   0.00000500        1900.     379940746.    18.1988394    0.00009099   -0.00008901
0.3729798     2.0385317
   0.00000563        2133.     379244280.    18.1771590     0.0001022     -0.000100
0.4178295     2.2898116
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0.3152465     -4.690597 C
   0.00000813         2366.    291190598.    10.2646762    0.00008340     -0.000209
0.3399656     -5.088396 C
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0.3645893     -5.486283 C
   0.00000938         2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378     -5.884113 C
   0.00001000         2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162     -6.281848 C
   0.00001063         2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246     -6.679488 C
   0.00001125         2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628     -7.077032 C
   0.00001188         2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307     -7.474480 C
   0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
   0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
   0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
   0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
   0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
   0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
   0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
   0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
   0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
   0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
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   0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
   0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
   0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
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0.8189449    -13.028526 C
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2.4038477    -43.589211 C
   0.00007063         6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
   0.00007188         6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
   0.00007313         6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
   0.00007438         6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
   0.00007938         7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
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   0.00008438         7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
   0.00008938         8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
   0.00009438         8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
   0.00009938         8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
    0.0001044         9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
    0.0001094         9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
    0.0001144         9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
    0.0001194        10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
    0.0001244        10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
    0.0001294        10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
    0.0001344        10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
    0.0001394        10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
    0.0001444        10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
    0.0001494        10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
    0.0001544        10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
    0.0001594        11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
    0.0001644        11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
    0.0001694        11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
    0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
    0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
    0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
    0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
    0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
    0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
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3.9973136    -60.000000 CY
    0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
    0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
    0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
    0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
    0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
    0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
    0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
    0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
    0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
    0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
    0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
    0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
    0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
    0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
    0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
    0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
    0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
    0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
    0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
3.9878351    -60.000000 CYT


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   Summary of Results for Nominal Moment Capacity for Section 1
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Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain	Max. Tens. Strain
1	3.800	12169.214	0.00300000	-0.00952396
2	4.200	12173.120	0.00300000	-0.00952020
3	4.600	12177.027	0.00300000	-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318,
or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.

1	0.90	3.800000	12169.	3.420000	10952.	70221645.
2	0.90	4.200000	12173.	3.780000	10956.	70254444.
3	0.90	4.600000	12177.	4.140000	10959.	70287179.

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	1.0000	0.00	N.A.	No	0.00	8754.
2	4.0000	0.3840	No	No	8754.	70529.
3	6.8000	1.8520	Yes	No	79283.	105150.
4	13.8000	12.8000	No	No	184433.	0.00
5	17.2000	16.2000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

Depth	Deflect.	Bending	Shear	Slope	Total	Bending	Soil Res.

Soil Spr. Es*H lb/inch	Distrib. Lat. Load lb/inch	Moment in-lbs	Force lbs	S radians	Stress psi*	Stiffness lb-in^2	p lb/inch
0.00	0.01609	315600.	1000.0000	-2.24E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.09000	0.01585	316681.	1000.0000	-2.23E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.1800	0.01561	317762.	1000.	-2.23E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.2700	0.01537	318843.	1000.	-2.22E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.3600	0.01513	319924.	1000.0000	-2.21E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.4500	0.01489	321005.	1000.0000	-2.20E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.5400	0.01466	322086.	1000.0000	-2.19E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.6300	0.01442	323167.	1000.	-2.18E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.7200	0.01419	324248.	1000.0000	-2.17E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.8100	0.01395	325329.	1000.	-2.16E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.9000	0.01372	326410.	1000.	-2.15E-04	0.00	3.84E+11	0.00
0.00	0.00						
0.9900	0.01349	327491.	1000.	-2.14E-04	0.00	3.84E+11	0.00
0.00	0.00						
1.0800	0.01326	328572.	989.9998	-2.13E-04	0.00	3.84E+11	-18.519
1509.	0.00						
1.1700	0.01303	329631.	969.8933	-2.13E-04	0.00	3.84E+11	-18.715
1552.	0.00						
1.2600	0.01280	330669.	949.5771	-2.12E-04	0.00	3.84E+11	-18.907
1596.	0.00						
1.3500	0.01257	331684.	929.0561	-2.11E-04	0.00	3.84E+11	-19.095
1641.	0.00						
1.4400	0.01234	332677.	908.3351	-2.10E-04	0.00	3.84E+11	-19.278
1687.	0.00						
1.5300	0.01212	333648.	887.4190	-2.09E-04	0.00	3.84E+11	-19.456
1734.	0.00						
1.6200	0.01189	334596.	866.3127	-2.08E-04	0.00	3.84E+11	-19.630
1783.	0.00						
1.7100	0.01167	335521.	845.0213	-2.07E-04	0.00	3.84E+11	-19.799
1833.	0.00						

1.8000	0.01144	336423.	823.5500	-2.06E-04	0.00	3.84E+11	-19.963
1884.	0.00						
1.8900	0.01122	337302.	801.9039	-2.05E-04	0.00	3.84E+11	-20.122
1937.	0.00						
1.9800	0.01100	338157.	780.0883	-2.04E-04	0.00	3.84E+11	-20.277
1991.	0.00						
2.0700	0.01078	338989.	758.1086	-2.03E-04	0.00	3.84E+11	-20.426
2046.	0.00						
2.1600	0.01056	339797.	735.9702	-2.02E-04	0.00	3.84E+11	-20.571
2104.	0.00						
2.2500	0.01034	340580.	713.6788	-2.01E-04	0.00	3.84E+11	-20.710
2162.	0.00						
2.3400	0.01013	341340.	691.2400	-2.00E-04	0.00	3.84E+11	-20.844
2223.	0.00						
2.4300	0.00991	342075.	668.6595	-1.99E-04	0.00	3.84E+11	-20.972
2285.	0.00						
2.5200	0.00970	342786.	645.9433	-1.98E-04	0.00	3.84E+11	-21.095
2350.	0.00						
2.6100	0.00948	343472.	623.0972	-1.97E-04	0.00	3.84E+11	-21.212
2416.	0.00						
2.7000	0.00927	344134.	600.1275	-1.96E-04	0.00	3.84E+11	-21.324
2485.	0.00						
2.7900	0.00906	344770.	577.0403	-1.95E-04	0.00	3.84E+11	-21.430
2555.	0.00						
2.8800	0.00885	345382.	553.8420	-1.95E-04	0.00	3.84E+11	-21.530
2628.	0.00						
2.9700	0.00864	345968.	530.5390	-1.94E-04	0.00	3.84E+11	-21.624
2704.	0.00						
3.0600	0.00843	346530.	507.1381	-1.93E-04	0.00	3.84E+11	-21.711
2782.	0.00						
3.1500	0.00822	347066.	483.6460	-1.92E-04	0.00	3.84E+11	-21.793
2863.	0.00						
3.2400	0.00802	347576.	460.0696	-1.91E-04	0.00	3.84E+11	-21.867
2946.	0.00						
3.3300	0.00781	348061.	436.4162	-1.90E-04	0.00	3.84E+11	-21.935
3033.	0.00						
3.4200	0.00761	348521.	412.6929	-1.89E-04	0.00	3.84E+11	-21.997
3123.	0.00						
3.5100	0.00740	348954.	388.9073	-1.88E-04	0.00	3.84E+11	-22.051
3217.	0.00						
3.6000	0.00720	349362.	365.0671	-1.87E-04	0.00	3.84E+11	-22.098
3315.	0.00						
3.6900	0.00700	349744.	341.1802	-1.86E-04	0.00	3.84E+11	-22.137
3416.	0.00						
3.7800	0.00680	350101.	317.2547	-1.85E-04	0.00	3.84E+11	-22.169
3521.	0.00						
3.8700	0.00660	350431.	293.2990	-1.84E-04	0.00	3.84E+11	-22.193

3632.	0.00						
3.9600	0.00640	350736.	269.3217	-1.83E-04	0.00	3.84E+11	-22.209
3746.	0.00						
4.0500	0.00621	351015.	78.5934	-1.82E-04	0.00	3.84E+11	-330.992
57606.	0.00						
4.1400	0.00601	350908.	-278.501	-1.81E-04	0.00	3.84E+11	-330.295
59358.	0.00						
4.2300	0.00581	350415.	-634.796	-1.80E-04	0.00	3.84E+11	-329.510
61200.	0.00						
4.3200	0.00562	349538.	-990.193	-1.79E-04	0.00	3.84E+11	-328.633
63140.	0.00						
4.4100	0.00543	348278.	-1345.	-1.78E-04	0.00	3.84E+11	-327.661
65187.	0.00						
4.5000	0.00524	346635.	-1698.	-1.77E-04	0.00	3.84E+11	-326.591
67350.	0.00						
4.5900	0.00505	344612.	-2050.	-1.76E-04	0.00	3.84E+11	-325.417
69641.	0.00						
4.6800	0.00486	342209.	-2401.	-1.75E-04	0.00	3.84E+11	-324.135
72072.	0.00						
4.7700	0.00467	339428.	-2750.	-1.74E-04	0.00	3.84E+11	-322.740
74658.	0.00						
4.8600	0.00448	336270.	-3098.	-1.73E-04	0.00	3.84E+11	-321.225
77414.	0.00						
4.9500	0.00430	332738.	-3444.	-1.72E-04	0.00	3.84E+11	-319.583
80361.	0.00						
5.0400	0.00411	328833.	-3788.	-1.71E-04	0.00	3.84E+11	-317.807
83518.	0.00						
5.1300	0.00393	324558.	-4130.	-1.70E-04	0.00	3.84E+11	-315.889
86913.	0.00						
5.2200	0.00374	319914.	-4470.	-1.69E-04	0.00	3.84E+11	-313.818
90574.	0.00						
5.3100	0.00356	314903.	-4808.	-1.68E-04	0.00	3.84E+11	-311.583
94537.	0.00						
5.4000	0.00338	309530.	-5143.	-1.68E-04	0.00	3.84E+11	-309.172
98844.	0.00						
5.4900	0.00320	303796.	-5476.	-1.67E-04	0.00	3.85E+11	-306.570
103545.	0.00						
5.5800	0.00302	297704.	-5805.	-1.66E-04	0.00	3.85E+11	-303.760
108701.	0.00						
5.6700	0.00284	291258.	-6132.	-1.65E-04	0.00	3.85E+11	-300.723
114386.	0.00						
5.7600	0.00266	284461.	-6455.	-1.64E-04	0.00	3.85E+11	-297.437
120694.	0.00						
5.8500	0.00248	277317.	-6774.	-1.63E-04	0.00	3.85E+11	-293.874
127740.	0.00						
5.9400	0.00231	269831.	-7089.	-1.63E-04	0.00	3.85E+11	-290.003
135672.	0.00						

6.0300	0.00213	262006.	-7400.	-1.62E-04	0.00	3.85E+11	-285.784	144683.	0.00
6.1200	0.00196	253848.	-7706.	-1.61E-04	0.00	3.85E+11	-281.170	155027.	0.00
6.2100	0.00179	245362.	-8007.	-1.60E-04	0.00	3.85E+11	-276.102	167047.	0.00
6.3000	0.00161	236553.	-8302.	-1.60E-04	0.00	3.85E+11	-270.504	181219.	0.00
6.3900	0.00144	227430.	-8591.	-1.59E-04	0.00	3.85E+11	-264.280	198229.	0.00
6.4800	0.00127	217998.	-8873.	-1.59E-04	0.00	3.85E+11	-257.298	219097.	0.00
6.5700	0.00110	208266.	-9146.	-1.58E-04	0.00	3.85E+11	-249.377	245422.	0.00
6.6600	9.27E-04	198243.	-9411.	-1.57E-04	0.00	3.85E+11	-240.255	279867.	0.00
6.7500	7.57E-04	187940.	-9665.	-1.57E-04	0.00	3.85E+11	-229.530	327262.	0.00
6.8400	5.88E-04	177369.	-9964.	-1.56E-04	0.00	3.85E+11	-325.587	597634.	0.00
6.9300	4.20E-04	166418.	-10266.	-1.56E-04	0.00	3.85E+11	-233.456	600574.	0.00
7.0200	2.52E-04	155195.	-10468.	-1.55E-04	0.00	3.85E+11	-140.689	603513.	0.00
7.1100	8.42E-05	143808.	-10570.	-1.55E-04	0.00	3.85E+11	-47.271	606450.	0.00
7.2000	-8.30E-05	132366.	-10570.	-1.55E-04	0.00	3.85E+11	46.8119	609386.	0.00
7.2900	-2.50E-04	120978.	-10468.	-1.54E-04	0.00	3.85E+11	141.5762	612321.	0.00
7.3800	-4.16E-04	109756.	-10264.	-1.54E-04	0.00	3.85E+11	237.0374	615255.	0.00
7.4700	-5.82E-04	98810.	-9956.	-1.54E-04	0.00	3.85E+11	333.2114	618187.	0.00
7.5600	-7.48E-04	88252.	-9550.	-1.53E-04	0.00	3.85E+11	418.2681	604012.	0.00
7.6500	-9.13E-04	78183.	-9086.	-1.53E-04	0.00	3.85E+11	441.7747	522375.	0.00
7.7400	-0.00108	68629.	-8597.	-1.53E-04	0.00	3.85E+11	462.6890	463288.	0.00
7.8300	-0.00124	59614.	-8087.	-1.53E-04	0.00	3.85E+11	481.6933	418312.	0.00
7.9200	-0.00141	51162.	-7558.	-1.53E-04	0.00	3.85E+11	499.2282	382797.	0.00
8.0100	-0.00157	43291.	-7010.	-1.52E-04	0.00	3.85E+11	515.5958	353958.	0.00
8.1000	-0.00174	36022.	-6444.	-1.52E-04	0.00	3.85E+11	531.0129		

```
  330020.       0.00
    8.1900   -0.00190     29373.     -5863.  -1.52E-04       0.00   3.85E+11   545.6407
  309792.       0.00
    8.2800   -0.00207     23360.     -5266.  -1.52E-04       0.00   3.85E+11   559.6024
  292449.       0.00
    8.3700   -0.00223     17999.     -4655.  -1.52E-04       0.00   3.85E+11   572.9945
  277394.       0.00
    8.4600   -0.00240     13307.     -4029.  -1.52E-04       0.00   3.85E+11   585.8939
  264189.       0.00
    8.5500   -0.00256      9298.     -3389.  -1.52E-04       0.00   3.85E+11   598.3631
  252500.       0.00
    8.6400   -0.00272      5987.     -2737.  -1.52E-04       0.00   3.85E+11   610.4533
  242074.       0.00
    8.7300   -0.00289      3389.     -2071.  -1.52E-04       0.00   3.85E+11   622.2073
  232709.       0.00
    8.8200   -0.00305      1516.     -1393.  -1.52E-04       0.00   3.85E+11   633.6610
  224245.       0.00
    8.9100   -0.00322   381.7645   -702.340  -1.52E-04       0.00   3.85E+11   644.8449
  216556.       0.00
    9.0000   -0.00338       0.00       0.00  -1.52E-04       0.00   3.85E+11   655.7851
  104768.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.01609309 inches
Computed slope at pile head      =     -0.0002243 radians
Maximum bending moment           =        351015. inch-lbs
Maximum shear force              =        -10570. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     7.20000000 feet below pile head
Number of iterations             =             22
Number of zero deflection points =              1
Pile deflection at ground        =     0.01346080 inches


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

Boundary Condition Type 1, Shear and Moment

```
Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.01609309	351015.	-10570.
8.55000	0.02932287	347530.	-11355.
8.10000	0.06517288	343576.	-12386.
7.65000	0.16063359	340156.	-13119.
7.20000	0.47352133	336582.	-13934.
6.75000	2.19407426	335843.	-15767.
6.30000	7.57401789	341535.	-18052.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

```
Shear force at pile head                          =       2250.0 lbs
Applied moment at pile head                       =     724800.0 in-lbs
Axial thrust load on pile head                    =       4600.0 lbs
```

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Soil Spr. Distrib. p lb/inch	Es*H Lat. Load lb/inch
0.00	0.3367	724800.	2250.	-0.00401	0.00	3.83E+11	0.00	0.00
0.09000	0.3324	727250.	2250.	-0.00401	0.00	3.83E+11	0.00	0.00
0.1800	0.3281	729700.	2250.	-0.00401	0.00	3.83E+11	0.00	0.00
0.2700	0.3238	732150.	2250.	-0.00400	0.00	3.83E+11	0.00	

0.00	0.00						
0.3600	0.3194	734600.	2250.	-0.00400	0.00	3.83E+11	0.00
0.00	0.00						
0.4500	0.3151	737049.	2250.	-0.00400	0.00	3.83E+11	0.00
0.00	0.00						
0.5400	0.3108	739499.	2250.	-0.00400	0.00	3.83E+11	0.00
0.00	0.00						
0.6300	0.3065	741949.	2250.	-0.00400	0.00	3.83E+11	0.00
0.00	0.00						
0.7200	0.3022	744399.	2250.	-0.00399	0.00	3.83E+11	0.00
0.00	0.00						
0.8100	0.2979	746849.	2250.	-0.00399	0.00	3.83E+11	0.00
0.00	0.00						
0.9000	0.2936	749299.	2250.	-0.00399	0.00	3.83E+11	0.00
0.00	0.00						
0.9900	0.2892	751749.	2250.	-0.00399	0.00	3.83E+11	0.00
0.00	0.00						
1.0800	0.2849	754198.	2222.	-0.00398	0.00	3.83E+11	-51.471
195.0880	0.00						
1.1700	0.2806	756588.	2166.	-0.00398	0.00	3.83E+11	-52.056
200.3314	0.00						
1.2600	0.2763	758917.	2110.	-0.00398	0.00	3.83E+11	-52.630
205.6925	0.00						
1.3500	0.2720	761185.	2053.	-0.00398	0.00	3.83E+11	-53.193
211.1760	0.00						
1.4400	0.2677	763390.	1995.	-0.00398	0.00	3.83E+11	-53.744
216.7869	0.00						
1.5300	0.2635	765533.	1937.	-0.00397	0.00	3.83E+11	-54.283
222.5303	0.00						
1.6200	0.2592	767613.	1878.	-0.00397	0.00	3.83E+11	-54.811
228.4118	0.00						
1.7100	0.2549	769628.	1818.	-0.00397	0.00	3.83E+11	-55.326
234.4372	0.00						
1.8000	0.2506	771579.	1758.	-0.00397	0.00	3.83E+11	-55.828
240.6127	0.00						
1.8900	0.2463	773465.	1698.	-0.00397	0.00	3.83E+11	-56.318
246.9450	0.00						
1.9800	0.2420	775286.	1636.	-0.00396	0.00	3.83E+11	-56.795
253.4410	0.00						
2.0700	0.2377	777040.	1575.	-0.00396	0.00	3.83E+11	-57.258
260.1082	0.00						
2.1600	0.2335	778727.	1513.	-0.00396	0.00	3.83E+11	-57.708
266.9545	0.00						
2.2500	0.2292	780347.	1450.	-0.00396	0.00	3.83E+11	-58.144
273.9884	0.00						
2.3400	0.2249	781899.	1387.	-0.00395	0.00	3.83E+11	-58.566
281.2188	0.00						

2.4300	0.2206	783382.	1324.	-0.00395	0.00	3.83E+11	-58.974
288.6555	0.00						
2.5200	0.2164	784797.	1260.	-0.00395	0.00	3.83E+11	-59.367
296.3088	0.00						
2.6100	0.2121	786143.	1196.	-0.00395	0.00	3.83E+11	-59.744
304.1896	0.00						
2.7000	0.2079	787419.	1131.	-0.00395	0.00	3.83E+11	-60.107
312.3100	0.00						
2.7900	0.2036	788625.	1066.	-0.00394	0.00	3.83E+11	-60.453
320.6825	0.00						
2.8800	0.1993	789760.	1000.	-0.00394	0.00	3.83E+11	-60.783
329.3209	0.00						
2.9700	0.1951	790824.	934.4435	-0.00394	0.00	3.83E+11	-61.097
338.2401	0.00						
3.0600	0.1908	791818.	868.2991	-0.00394	0.00	3.83E+11	-61.393
347.4558	0.00						
3.1500	0.1866	792739.	801.8440	-0.00393	0.00	3.83E+11	-61.672
356.9854	0.00						
3.2400	0.1823	793589.	735.0975	-0.00393	0.00	3.83E+11	-61.933
366.8476	0.00						
3.3300	0.1781	794366.	668.0793	-0.00393	0.00	3.83E+11	-62.175
377.0625	0.00						
3.4200	0.1738	795071.	600.8099	-0.00393	0.00	3.83E+11	-62.398
387.6523	0.00						
3.5100	0.1696	795703.	533.3101	-0.00393	0.00	3.83E+11	-62.602
398.6408	0.00						
3.6000	0.1654	796262.	465.6016	-0.00392	0.00	3.83E+11	-62.785
410.0542	0.00						
3.6900	0.1611	796747.	397.7066	-0.00392	0.00	3.83E+11	-62.947
421.9212	0.00						
3.7800	0.1569	797160.	329.6483	-0.00392	0.00	3.83E+11	-63.087
434.2732	0.00						
3.8700	0.1527	797498.	261.4503	-0.00392	0.00	3.83E+11	-63.205
447.1446	0.00						
3.9600	0.1484	797763.	193.1374	-0.00391	0.00	3.83E+11	-63.300
460.5735	0.00						
4.0500	0.1442	797954.	-233.281	-0.00391	0.00	3.83E+11	-726.364
5440.	0.00						
4.1400	0.1400	797298.	-1017.	-0.00391	0.00	3.83E+11	-725.257
5596.	0.00						
4.2300	0.1358	795796.	-1800.	-0.00391	0.00	3.83E+11	-723.951
5759.	0.00						
4.3200	0.1315	793450.	-2581.	-0.00391	0.00	3.83E+11	-722.440
5931.	0.00						
4.4100	0.1273	790261.	-3360.	-0.00390	0.00	3.83E+11	-720.714
6113.	0.00						
4.5000	0.1231	786231.	-4137.	-0.00390	0.00	3.83E+11	-718.766

6305.	0.00						
4.5900	0.1189	781362.	-4912.	-0.00390	0.00	3.83E+11	-716.583
6509.	0.00						
4.6800	0.1147	775658.	-5685.	-0.00390	0.00	3.83E+11	-714.155
6725.	0.00						
4.7700	0.1105	769121.	-6455.	-0.00389	0.00	3.83E+11	-711.469
6955.	0.00						
4.8600	0.1063	761754.	-7222.	-0.00389	0.00	3.83E+11	-708.511
7200.	0.00						
4.9500	0.1021	753561.	-7985.	-0.00389	0.00	3.83E+11	-705.265
7462.	0.00						
5.0400	0.09788	744545.	-8745.	-0.00389	0.00	3.83E+11	-701.713
7743.	0.00						
5.1300	0.09368	734711.	-9501.	-0.00389	0.00	3.83E+11	-697.835
8045.	0.00						
5.2200	0.08948	724062.	-10252.	-0.00388	0.00	3.83E+11	-693.609
8371.	0.00						
5.3100	0.08529	712605.	-10999.	-0.00388	0.00	3.83E+11	-689.009
8725.	0.00						
5.4000	0.08110	700344.	-11740.	-0.00388	0.00	3.83E+11	-684.006
9109.	0.00						
5.4900	0.07691	687285.	-12476.	-0.00388	0.00	3.83E+11	-678.566
9529.	0.00						
5.5800	0.07272	673434.	-13206.	-0.00388	0.00	3.84E+11	-672.653
9990.	0.00						
5.6700	0.06854	658799.	-13929.	-0.00387	0.00	3.84E+11	-666.221
10498.	0.00						
5.7600	0.06435	643387.	-14644.	-0.00387	0.00	3.84E+11	-659.218
11063.	0.00						
5.8500	0.06017	627206.	-15352.	-0.00387	0.00	3.84E+11	-651.584
11695.	0.00						
5.9400	0.05599	610265.	-16051.	-0.00387	0.00	3.84E+11	-643.246
12407.	0.00						
6.0300	0.05182	592574.	-16741.	-0.00387	0.00	3.84E+11	-634.114
13217.	0.00						
6.1200	0.04764	574143.	-17421.	-0.00387	0.00	3.84E+11	-624.081
14147.	0.00						
6.2100	0.04347	554984.	-18089.	-0.00386	0.00	3.84E+11	-613.012
15231.	0.00						
6.3000	0.03930	535110.	-18744.	-0.00386	0.00	3.84E+11	-600.736
16511.	0.00						
6.3900	0.03513	514535.	-19385.	-0.00386	0.00	3.84E+11	-587.030
18049.	0.00						
6.4800	0.03096	493276.	-20011.	-0.00386	0.00	3.84E+11	-571.596
19942.	0.00						
6.5700	0.02679	471350.	-20619.	-0.00386	0.00	3.84E+11	-554.020
22335.	0.00						

6.6600	0.02262	448777.	-21206.	-0.00386	0.00	3.84E+11	-533.699
25478.	0.00						
6.7500	0.01846	425583.	-21770.	-0.00386	0.00	3.84E+11	-509.706
29822.	0.00						
6.8400	0.01430	401793.	-22499.	-0.00385	0.00	3.84E+11	-841.048
63538.	0.00						
6.9300	0.01013	377023.	-23372.	-0.00385	0.00	3.84E+11	-775.520
82650.	0.00						
7.0200	0.00597	351348.	-24160.	-0.00385	0.00	3.84E+11	-682.835
123465.	0.00						
7.1100	0.00181	324877.	-24803.	-0.00385	0.00	3.84E+11	-509.307
303352.	0.00						
7.2000	-0.00235	297811.	-24784.	-0.00385	0.00	3.85E+11	545.8214
251321.	0.00						
7.2900	-0.00650	271382.	-24107.	-0.00385	0.00	3.85E+11	707.7085
117526.	0.00						
7.3800	-0.01066	245779.	-23290.	-0.00385	0.00	3.85E+11	804.6132
81514.	0.00						
7.4700	-0.01482	221114.	-22382.	-0.00385	0.00	3.85E+11	877.8004
63983.	0.00						
7.5600	-0.01897	197473.	-21401.	-0.00385	0.00	3.85E+11	938.1926
53406.	0.00						
7.6500	-0.02313	174927.	-20359.	-0.00385	0.00	3.85E+11	990.4602
46252.	0.00						
7.7400	-0.02728	153535.	-19265.	-0.00385	0.00	3.85E+11	1037.
41054.	0.00						
7.8300	-0.03144	133353.	-18122.	-0.00385	0.00	3.85E+11	1079.
37086.	0.00						
7.9200	-0.03559	114431.	-16935.	-0.00385	0.00	3.85E+11	1119.
33947.	0.00						
8.0100	-0.03974	96813.	-15707.	-0.00385	0.00	3.85E+11	1155.
31395.	0.00						
8.1000	-0.04390	80543.	-14440.	-0.00385	0.00	3.85E+11	1190.
29274.	0.00						
8.1900	-0.04805	65660.	-13138.	-0.00385	0.00	3.85E+11	1223.
27480.	0.00						
8.2800	-0.05220	52204.	-11800.	-0.00384	0.00	3.85E+11	1254.
25941.	0.00						
8.3700	-0.05635	40210.	-10430.	-0.00384	0.00	3.85E+11	1284.
24605.	0.00						
8.4600	-0.06051	29713.	-9028.	-0.00384	0.00	3.85E+11	1313.
23433.	0.00						
8.5500	-0.06466	20748.	-7595.	-0.00384	0.00	3.85E+11	1341.
22395.	0.00						
8.6400	-0.06881	13347.	-6132.	-0.00384	0.00	3.85E+11	1368.
21469.	0.00						
8.7300	-0.07296	7541.	-4641.	-0.00384	0.00	3.85E+11	1394.

```
   20638.       0.00
    8.8200   -0.07711      3361.     -3121.   -0.00384       0.00   3.85E+11      1420.
   19886.       0.00
    8.9100   -0.08127   837.9356     -1574.   -0.00384       0.00   3.85E+11      1445.
   19204.       0.00
    9.0000   -0.08542       0.00       0.00   -0.00384       0.00   3.85E+11      1470.
    9290.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.33674856 inches
Computed slope at pile head      =     -0.0040098 radians
Maximum bending moment           =        797954. inch-lbs
Maximum shear force              =        -24803. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     7.11000000 feet below pile head
Number of iterations             =             37
Number of zero deflection points =              1
Pile deflection at ground        =     0.28876835 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.33674856       797954.       -24803.
    8.55000    0.65856459       789338.       -25891.
```

```
    8.10000    1.51247966       783521.       -27807.
    7.65000    3.85396273       781271.       -29678.
    7.20000   13.28386010       789038.       -33031.


--------------------------------------------------------------------------------
                 Computed Values of Pile Loading and Deflection
                   for Lateral Loading for Load Case Number 3
--------------------------------------------------------------------------------

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

Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       3800.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil Res.
Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
  Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2    lb/inch
 lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
      0.00     0.3363    724800.      2250.   -0.00400       0.00   3.83E+11       0.00
      0.00       0.00
   0.09000     0.3320    727246.      2250.   -0.00400       0.00   3.83E+11       0.00
      0.00       0.00
    0.1800     0.3276    729693.      2250.   -0.00400       0.00   3.83E+11       0.00
      0.00       0.00
    0.2700     0.3233    732139.      2250.   -0.00400       0.00   3.83E+11       0.00
      0.00       0.00
    0.3600     0.3190    734586.      2250.   -0.00400       0.00   3.83E+11       0.00
      0.00       0.00
    0.4500     0.3147    737032.      2250.   -0.00399       0.00   3.83E+11       0.00
      0.00       0.00
    0.5400     0.3104    739478.      2250.   -0.00399       0.00   3.83E+11       0.00
      0.00       0.00
    0.6300     0.3061    741925.      2250.   -0.00399       0.00   3.83E+11       0.00
      0.00       0.00
    0.7200     0.3018    744371.      2250.   -0.00399       0.00   3.83E+11       0.00
      0.00       0.00
    0.8100     0.2974    746818.      2250.   -0.00399       0.00   3.83E+11       0.00
      0.00       0.00
    0.9000     0.2931    749264.      2250.   -0.00398       0.00   3.83E+11       0.00
      0.00       0.00
    0.9900     0.2888    751710.      2250.   -0.00398       0.00   3.83E+11       0.00
```

0.00	0.00						
1.0800	0.2845	754157.	2222.	-0.00398	0.00	3.83E+11	-51.447
195.2699	0.00						
1.1700	0.2802	756543.	2166.	-0.00398	0.00	3.83E+11	-52.032
200.5182	0.00						
1.2600	0.2760	758869.	2110.	-0.00398	0.00	3.83E+11	-52.606
205.8844	0.00						
1.3500	0.2717	761133.	2053.	-0.00397	0.00	3.83E+11	-53.168
211.3730	0.00						
1.4400	0.2674	763335.	1995.	-0.00397	0.00	3.83E+11	-53.719
216.9891	0.00						
1.5300	0.2631	765475.	1937.	-0.00397	0.00	3.83E+11	-54.258
222.7379	0.00						
1.6200	0.2588	767551.	1878.	-0.00397	0.00	3.83E+11	-54.785
228.6249	0.00						
1.7100	0.2545	769563.	1818.	-0.00396	0.00	3.83E+11	-55.300
234.6560	0.00						
1.8000	0.2502	771511.	1758.	-0.00396	0.00	3.83E+11	-55.802
240.8373	0.00						
1.8900	0.2460	773394.	1698.	-0.00396	0.00	3.83E+11	-56.292
247.1756	0.00						
1.9800	0.2417	775211.	1637.	-0.00396	0.00	3.83E+11	-56.768
253.6777	0.00						
2.0700	0.2374	776962.	1575.	-0.00396	0.00	3.83E+11	-57.231
260.3511	0.00						
2.1600	0.2331	778646.	1513.	-0.00395	0.00	3.83E+11	-57.681
267.2039	0.00						
2.2500	0.2289	780263.	1451.	-0.00395	0.00	3.83E+11	-58.117
274.2443	0.00						
2.3400	0.2246	781812.	1388.	-0.00395	0.00	3.83E+11	-58.539
281.4816	0.00						
2.4300	0.2203	783292.	1324.	-0.00395	0.00	3.83E+11	-58.946
288.9253	0.00						
2.5200	0.2161	784704.	1260.	-0.00394	0.00	3.83E+11	-59.339
296.5857	0.00						
2.6100	0.2118	786047.	1196.	-0.00394	0.00	3.83E+11	-59.716
304.4739	0.00						
2.7000	0.2076	787320.	1131.	-0.00394	0.00	3.83E+11	-60.078
312.6019	0.00						
2.7900	0.2033	788523.	1066.	-0.00394	0.00	3.83E+11	-60.425
320.9823	0.00						
2.8800	0.1991	789656.	1001.	-0.00394	0.00	3.83E+11	-60.755
329.6288	0.00						
2.9700	0.1948	790717.	935.0578	-0.00393	0.00	3.83E+11	-61.068
338.5563	0.00						
3.0600	0.1906	791708.	868.9443	-0.00393	0.00	3.83E+11	-61.364
347.7807	0.00						

3.1500	0.1863	792626.	802.5202	-0.00393	0.00	3.83E+11	-61.643
357.3192	0.00						
3.2400	0.1821	793473.	735.8049	-0.00393	0.00	3.83E+11	-61.904
367.1906	0.00						
3.3300	0.1778	794248.	668.8181	-0.00392	0.00	3.83E+11	-62.146
377.4151	0.00						
3.4200	0.1736	794950.	601.5801	-0.00392	0.00	3.83E+11	-62.369
388.0148	0.00						
3.5100	0.1694	795580.	534.1119	-0.00392	0.00	3.83E+11	-62.572
399.0136	0.00						
3.6000	0.1651	796136.	466.4351	-0.00392	0.00	3.83E+11	-62.755
410.4377	0.00						
3.6900	0.1609	796619.	398.5719	-0.00392	0.00	3.83E+11	-62.917
422.3158	0.00						
3.7800	0.1567	797029.	330.5453	-0.00391	0.00	3.83E+11	-63.058
434.6793	0.00						
3.8700	0.1524	797365.	262.3793	-0.00391	0.00	3.83E+11	-63.176
447.5628	0.00						
3.9600	0.1482	797628.	194.0983	-0.00391	0.00	3.83E+11	-63.271
461.0042	0.00						
4.0500	0.1440	797817.	-232.167	-0.00391	0.00	3.83E+11	-726.109
5446.	0.00						
4.1400	0.1398	797158.	-1016.	-0.00390	0.00	3.83E+11	-725.003
5601.	0.00						
4.2300	0.1356	795655.	-1798.	-0.00390	0.00	3.83E+11	-723.698
5765.	0.00						
4.3200	0.1314	793307.	-2579.	-0.00390	0.00	3.83E+11	-722.187
5938.	0.00						
4.4100	0.1271	790116.	-3358.	-0.00390	0.00	3.83E+11	-720.462
6120.	0.00						
4.5000	0.1229	786086.	-4135.	-0.00390	0.00	3.83E+11	-718.514
6312.	0.00						
4.5900	0.1187	781217.	-4910.	-0.00389	0.00	3.83E+11	-716.332
6516.	0.00						
4.6800	0.1145	775513.	-5682.	-0.00389	0.00	3.83E+11	-713.905
6732.	0.00						
4.7700	0.1103	768976.	-6452.	-0.00389	0.00	3.83E+11	-711.220
6962.	0.00						
4.8600	0.1061	761609.	-7218.	-0.00389	0.00	3.83E+11	-708.263
7207.	0.00						
4.9500	0.1019	753416.	-7981.	-0.00388	0.00	3.83E+11	-705.018
7470.	0.00						
5.0400	0.09774	744401.	-8741.	-0.00388	0.00	3.83E+11	-701.468
7751.	0.00						
5.1300	0.09355	734568.	-9496.	-0.00388	0.00	3.83E+11	-697.591
8054.	0.00						
5.2200	0.08936	723921.	-10247.	-0.00388	0.00	3.83E+11	-693.367

8380.	0.00						
5.3100	0.08517	712465.	-10994.	-0.00388	0.00	3.83E+11	-688.768
8734.	0.00						
5.4000	0.08099	700206.	-11735.	-0.00387	0.00	3.83E+11	-683.767
9119.	0.00						
5.4900	0.07680	687150.	-12470.	-0.00387	0.00	3.83E+11	-678.330
9539.	0.00						
5.5800	0.07262	673302.	-13200.	-0.00387	0.00	3.84E+11	-672.419
10000.	0.00						
5.6700	0.06844	658670.	-13923.	-0.00387	0.00	3.84E+11	-665.989
10509.	0.00						
5.7600	0.06426	643261.	-14638.	-0.00387	0.00	3.84E+11	-658.989
11075.	0.00						
5.8500	0.06009	627083.	-15346.	-0.00386	0.00	3.84E+11	-651.358
11707.	0.00						
5.9400	0.05592	610146.	-16045.	-0.00386	0.00	3.84E+11	-643.023
12420.	0.00						
6.0300	0.05175	592458.	-16734.	-0.00386	0.00	3.84E+11	-633.894
13230.	0.00						
6.1200	0.04758	574031.	-17413.	-0.00386	0.00	3.84E+11	-623.866
14162.	0.00						
6.2100	0.04341	554877.	-18081.	-0.00386	0.00	3.84E+11	-612.801
15247.	0.00						
6.3000	0.03924	535008.	-18736.	-0.00386	0.00	3.84E+11	-600.530
16527.	0.00						
6.3900	0.03508	514438.	-19378.	-0.00386	0.00	3.84E+11	-586.830
18068.	0.00						
6.4800	0.03091	493184.	-20003.	-0.00385	0.00	3.84E+11	-571.402
19962.	0.00						
6.5700	0.02675	471263.	-20611.	-0.00385	0.00	3.84E+11	-553.833
22358.	0.00						
6.6600	0.02259	448696.	-21198.	-0.00385	0.00	3.84E+11	-533.522
25503.	0.00						
6.7500	0.01843	425507.	-21761.	-0.00385	0.00	3.84E+11	-509.538
29851.	0.00						
6.8400	0.01428	401724.	-22490.	-0.00385	0.00	3.84E+11	-840.779
63599.	0.00						
6.9300	0.01012	376960.	-23363.	-0.00385	0.00	3.84E+11	-775.283
82725.	0.00						
7.0200	0.00597	351292.	-24150.	-0.00385	0.00	3.84E+11	-682.651
123565.	0.00						
7.1100	0.00181	324827.	-24794.	-0.00385	0.00	3.84E+11	-509.271
303416.	0.00						
7.2000	-0.00234	297769.	-24774.	-0.00384	0.00	3.85E+11	545.5058
251757.	0.00						
7.2900	-0.00649	271346.	-24098.	-0.00384	0.00	3.85E+11	707.3996
117680.	0.00						

7.3800	-0.01064	245749.	-23281.	-0.00384	0.00	3.85E+11	804.2871
81613.	0.00						
7.4700	-0.01479	221090.	-22373.	-0.00384	0.00	3.85E+11	877.4566
64058.	0.00						
7.5600	-0.01894	197454.	-21393.	-0.00384	0.00	3.85E+11	937.8323
53468.	0.00						
7.6500	-0.02309	174913.	-20352.	-0.00384	0.00	3.85E+11	990.0847
46305.	0.00						
7.7400	-0.02724	153526.	-19257.	-0.00384	0.00	3.85E+11	1037.
41100.	0.00						
7.8300	-0.03139	133348.	-18115.	-0.00384	0.00	3.85E+11	1079.
37128.	0.00						
7.9200	-0.03554	114429.	-16928.	-0.00384	0.00	3.85E+11	1118.
33985.	0.00						
8.0100	-0.03968	96814.	-15701.	-0.00384	0.00	3.85E+11	1155.
31429.	0.00						
8.1000	-0.04383	80547.	-14435.	-0.00384	0.00	3.85E+11	1189.
29306.	0.00						
8.1900	-0.04798	65666.	-13133.	-0.00384	0.00	3.85E+11	1222.
27510.	0.00						
8.2800	-0.05212	52211.	-11796.	-0.00384	0.00	3.85E+11	1253.
25970.	0.00						
8.3700	-0.05627	40218.	-10426.	-0.00384	0.00	3.85E+11	1283.
24632.	0.00						
8.4600	-0.06042	29722.	-9024.	-0.00384	0.00	3.85E+11	1312.
23459.	0.00						
8.5500	-0.06456	20757.	-7592.	-0.00384	0.00	3.85E+11	1340.
22420.	0.00						
8.6400	-0.06871	13355.	-6130.	-0.00384	0.00	3.85E+11	1367.
21493.	0.00						
8.7300	-0.07286	7548.	-4639.	-0.00384	0.00	3.85E+11	1394.
20660.	0.00						
8.8200	-0.07700	3367.	-3120.	-0.00384	0.00	3.85E+11	1419.
19908.	0.00						
8.9100	-0.08115	840.9687	-1573.	-0.00384	0.00	3.85E+11	1444.
19224.	0.00						
9.0000	-0.08529	0.00	0.00	-0.00384	0.00	3.85E+11	1469.
9300.	0.00						

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

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.33627909 inches
Computed slope at pile head	=	-0.0040043 radians
Maximum bending moment	=	797817. inch-lbs
Maximum shear force	=	-24794. lbs
Depth of maximum bending moment	=	4.05000000 feet below pile head
Depth of maximum shear force	=	7.11000000 feet below pile head
Number of iterations	=	37
Number of zero deflection points	=	1
Pile deflection at ground	=	0.28836494 inches

Pile-head Deflection vs. Pile Length for Load Case 3

Boundary Condition Type 1, Shear and Moment

Shear	=	2250. lbs
Moment	=	724800. in-lbs
Axial Load	=	3800. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.33627909	797817.	-24794.
8.55000	0.65676106	789088.	-25872.
8.10000	1.50289834	782992.	-27760.
7.65000	3.78946972	779953.	-29543.
7.20000	12.41217484	783791.	-32431.

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	1000.0000	M, in-lb	315600.	4200.	0.01609	-2.24E-04	-10570.	351015.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.3367	-0.00401	-24803.	797954.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.3363	-0.00400	-24794.	797817.

Maximum pile-head deflection = 0.3367485589 inches
Maximum pile-head rotation = -0.0040098451 radians = -0.229747 deg.

The analysis ended normally.

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LIGHT TOWER PR-8 (B-009-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-8 (Boring B-009-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

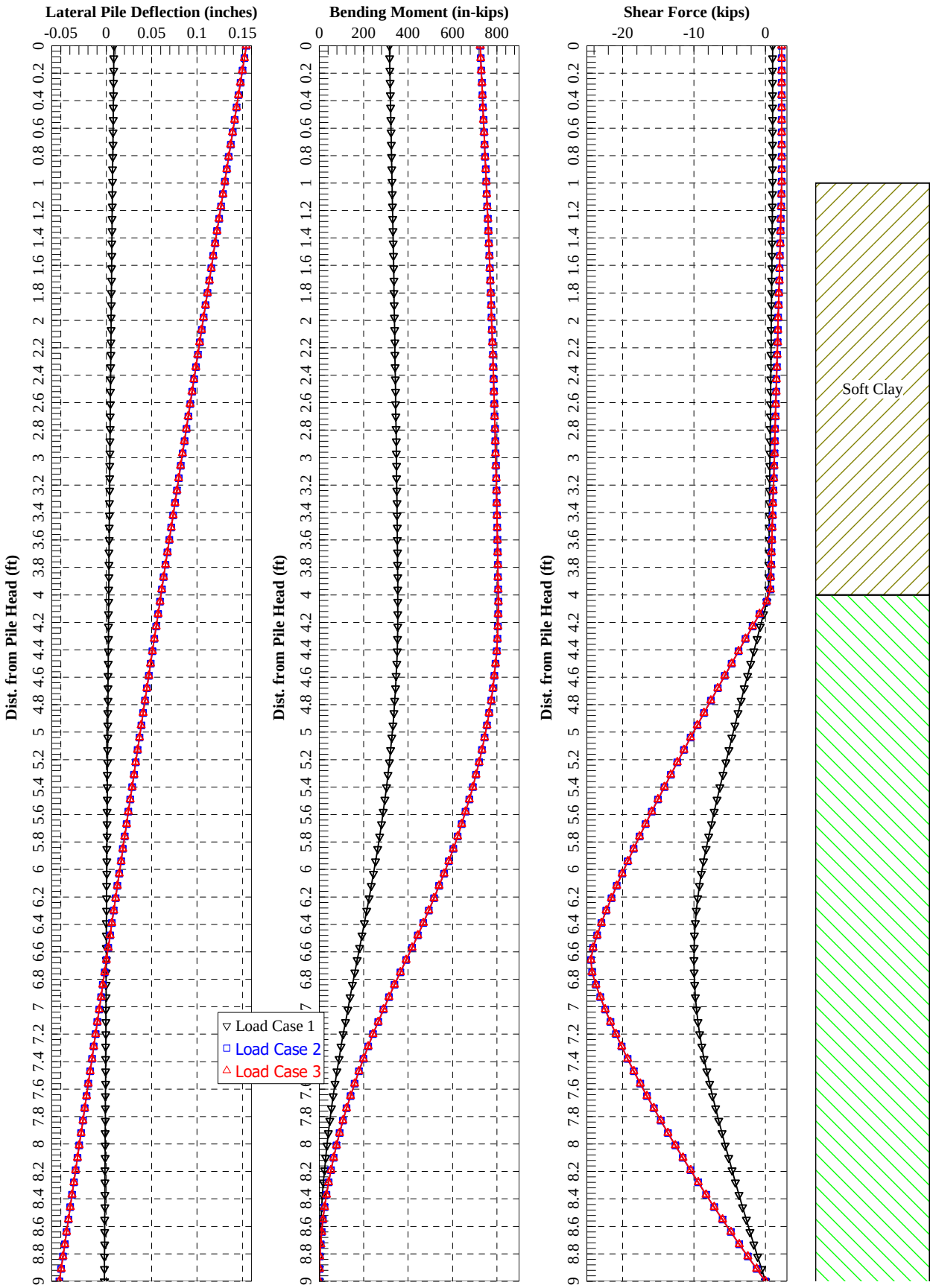


PLATE 50

```
================================================================================

                          LPile for Version 2022-12.012

                            License ID : 228332755
                       License Type : (Single User License)

                  Analysis of Individual Piles and Drilled Shafts
                 Subjected to Lateral Loading Using the p-y Method
                            © 1985-2024 by Ensoft, Inc.
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                                  S&ME, Inc.
                                Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                           Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\EB\

Name of input data file:
Tower PR-8 (B-009-0-25).lp12d

Name of output report file:
Tower PR-8 (B-009-0-25).lp12o

Name of plot output file:
Tower PR-8 (B-009-0-25).lp12p

Name of runtime message file:
Tower PR-8 (B-009-0-25).lp12r



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:33:08

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower PR-8 (B-009-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

```
--------------------------------------------------------------------------------
                        Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 4 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

   Distance from top of pile to top of layer           =     1.000000 ft
   Distance from top of pile to bottom of layer        =     4.000000 ft
   Effective unit weight at top of layer               =    98.000000 pcf
   Effective unit weight at bottom of layer            =    98.000000 pcf
   Undrained cohesion at top of layer                  =   250.000000 psf
   Undrained cohesion at bottom of layer               =   250.000000 psf
   Epsilon-50 at top of layer                          =     0.020000
   Epsilon-50 at bottom of layer                       =     0.020000


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer           =     4.000000 ft
   Distance from top of pile to bottom of layer        =    14.300000 ft
   Effective unit weight at top of layer               =    60.000000 pcf
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4000. psf
   Undrained cohesion at bottom of layer               =        4000. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer           =    14.300000 ft
   Distance from top of pile to bottom of layer        =    29.300000 ft
   Effective unit weight at top of layer               =    63.000000 pcf
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 4 is stiff clay without free water

   Distance from top of pile to top of layer           =    29.300000 ft
   Distance from top of pile to bottom of layer        =    31.300000 ft
   Effective unit weight at top of layer               =    63.000000 pcf
```

```
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 22.300 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000	98.0000	250.0000	0.02000
		4.0000	98.0000	250.0000	0.02000
2	Stiff Clay w/o Free Water	4.0000	60.0000	4000.	0.00500
		14.3000	60.0000	4000.	0.00500
3	Stiff Clay w/o Free Water	14.3000	63.0000	4500.	0.00400
		29.3000	63.0000	4500.	0.00400
4	Stiff Clay w/o Free Water	29.3000	63.0000	4500.	0.00400
		31.3000	63.0000	4500.	0.00400

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 Compute Top y vs. Pile Length Type	Condition Run Analysis 1	Condition 2	Axial Thrust Force, lbs
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.

```
    Yes                Yes
   2     1     V =         2250. lbs    M =      724800. in-lbs             4600.
    Yes                Yes
   3     1     V =         2250. lbs    M =      724800. in-lbs             3800.
    Yes                Yes

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



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
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Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
-------------------------------------------------------

Length of Section                                  =     9.000000 ft
Shaft Diameter                                     =    36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)=     3.500000 in
Number of Reinforcing Bars                         =           16 bars
Yield Stress of Reinforcing Bars                   =      60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =        1018. sq. in.
Total Area of Reinforcing Steel                    =    16.000000 sq. in.
Area Ratio of Steel Reinforcement                  =         1.57 percent
Edge-to-Edge Bar Spacing                           =     4.114467 in
Maximum Concrete Aggregate Size                    =     0.750000 in
Ratio of Bar Spacing to Aggregate Size             =         5.49
Offset of Center of Rebar Cage from Center of Pile =       0.0000 in
Transverse Reinforcement
Type: Spiral
Number of Transverse Reinf. (per spacing)          =            1
Spacing of Transverse Reinf.                       =     4.500000 in
Yield Stress of Transverse Reinf.                  =      60000. psi
Diameter of Transverse Reinf.                      =     0.500000 in
```

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As = 4366.378 kips
Tensile Load for Cracking of Concrete = -470.222 kips
Nominal Axial Tensile Capacity = -960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete = 4000. psi
Modulus of Elasticity of Concrete = 3604997. psi
Modulus of Rupture of Concrete = -474.34165 psi
Compression Strain at Peak Stress = 0.001886
Tensile Strain at Fracture of Concrete = -0.0001154
Maximum Coarse Aggregate Size = 0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Stress	Bending Curvature rad/in.	Bending Max Steel Stress	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
	6.25000E-07	240.5062135	384809942.	19.2929823	0.00001206	-0.00001044		
0.0505030		0.2746478						
	0.00000125	480.1472468	384117797.	18.6479768	0.00002331	-0.00002169		
0.0973082		0.5259142						
	0.00000188	718.9174733	383422652.	18.4329804	0.00003456	-0.00003294		
0.1438345		0.7771808						
	0.00000250	956.8168886	382726755.	18.3254857	0.00004581	-0.00004419		
0.1900818		1.0284477						
	0.00000313	1194.	382030558.	18.2609917	0.00005707	-0.00005543		
0.2360502		1.2797149						
	0.00000375	1430.	381334209.	18.2179981	0.00006832	-0.00006668		
0.2817396		1.5309823						

```
0.00000438         1665.    380637775.    18.1872904    0.00007957   -0.00007793
0.3271500     1.7822500
0.00000500         1900.    379941287.    18.1642614    0.00009082   -0.00008918
0.3722815     2.0335179
0.00000563         2133.    379244764.    18.1463515     0.0001021     -0.000100
0.4171340     2.2847861
0.00000625         2366.    378548215.    18.1320251     0.0001133     -0.000112
0.4617075     2.5360546
0.00000688         2366.    344134741.    10.2494785    0.00007047     -0.000177
0.2882187     -4.308598 C
0.00000750         2366.    315456846.    10.2198771    0.00007665     -0.000193
0.3129821     -4.706727 C
0.00000813         2366.    291190934.    10.1952302    0.00008284     -0.000210
0.3376758     -5.104761 C
0.00000875         2366.    270391582.    10.1744772    0.00008903     -0.000226
0.3622998     -5.502701 C
0.00000938         2366.    252365477.    10.1568402    0.00009522     -0.000242
0.3868539     -5.900547 C
0.00001000         2366.    236592634.    10.1417358     0.0001014     -0.000259
0.4113380     -6.298297 C
0.00001063         2366.    222675420.    10.1287027     0.0001076     -0.000275
0.4357521     -6.695951 C
0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
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0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063         3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188         3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313         4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438         4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563         4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
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0.00004688         4376.     93356279.     10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813         4489.     93284807.     10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938         4602.     93214014.     10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063         4715.     93143835.     10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188         4828.     93074209.     10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313         4941.     93005082.     10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438         5053.     92936405.     10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563         5166.     92868132.     10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688         5278.     92800222.     10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813         5390.     92732637.     10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938         5502.     92665342.     10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
0.00006063         5614.     92598305.     10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188         5725.     92531497.     10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313         5837.     92464888.     10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438         5948.     92398455.     10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563         6059.     92332173.     10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688         6170.     92266020.     10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813         6281.     92199976.     10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938         6392.     92134020.     10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063         6502.     92068136.     10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188         6613.     92002305.     10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313         6723.     91936511.     10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438         6833.     91870742.     10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938         7271.     91607617.     10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438         7707.     91343844.     10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
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0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
 0.0001444       10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494       10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544       10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594       11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644       11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694       11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744       11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794       11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844       11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894       11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944       11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994       11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044       11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094       11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
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   0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
  3.9998812    -60.000000 CY
   0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
  3.9969940    -60.000000 CY
   0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
  3.9997138    -60.000000 CY
   0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
  3.9955528    -60.000000 CY
   0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
  3.9989818    -60.000000 CY
   0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
  3.9994466    -60.000000 CY
   0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
  3.9965160    -60.000000 CY
   0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
  3.9991770    -60.000000 CY
   0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
  3.9995775    -60.000000 CY
   0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
  3.9954763    -60.000000 CY
   0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
  3.9984997    -60.000000 CY
   0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
  3.9998981    -60.000000 CY
   0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
  3.9944635    -60.000000 CY
   0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
  3.9984635    -60.000000 CY
   0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
  3.9998209    -60.000000 CY
   0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
  3.9999551    -60.000000 CYT
   0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
  3.9996166    -60.000000 CYT
   0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
  3.9972132    -60.000000 CYT
   0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
  3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
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6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
 0.0508615     0.2771147
 0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
 0.0976654     0.5283867
 0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
 0.1441903     0.7796589
 0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
 0.1904363     1.0309315
 0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
 0.2364034     1.2822044
 0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
 0.2820914     1.5334776
 0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
 0.3275005     1.7847511
 0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
 0.3726306     2.0360248
 0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
 0.4174818     2.2872988
 0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
 0.4620539     2.5385732
 0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
 0.2893429    -4.300617 C
 0.00000750        2366.     315456672.    10.2575513    0.00007693     -0.000193
 0.3141325    -4.698533 C
 0.00000813        2366.     291190774.    10.2300378    0.00008312     -0.000209
 0.3388235    -5.096560 C
 0.00000875        2366.     270391433.    10.2068278    0.00008931     -0.000226
 0.3634446    -5.494492 C
 0.00000938        2366.     252365338.    10.1870615    0.00009550     -0.000242
 0.3879959    -5.892330 C
 0.00001000        2366.     236592504.    10.1700940     0.0001017     -0.000258
 0.4124772    -6.290073 C
 0.00001063        2366.     222675298.    10.1554324     0.0001079     -0.000275
 0.4368884    -6.687720 C
 0.00001125        2366.     210304448.    10.1426931     0.0001141     -0.000291
 0.4612294    -7.085271 C
 0.00001188        2366.     199235793.    10.1315564     0.0001203     -0.000307
 0.4855002    -7.482727 C
 0.00001250        2366.     189274003.    10.1218127     0.0001265     -0.000323
 0.5097005    -7.880086 C
 0.00001313        2366.     180260955.    10.1132503     0.0001327     -0.000340
 0.5338304    -8.277349 C
 0.00001375        2366.     172067276.    10.1057088     0.0001390     -0.000356
 0.5578898    -8.674515 C
 0.00001438        2366.     164586090.    10.0990556     0.0001452     -0.000372
 0.5818784    -9.071585 C
 0.00001500        2366.     157728336.    10.0931803     0.0001514     -0.000389
 0.6057963    -9.468556 C
 0.00001563        2366.     151419203.    10.0879903     0.0001576     -0.000405
 0.6296433    -9.865431 C
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0.00001625        2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688        2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750        2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813        2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875        2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938        2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000        2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063        2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125        2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188        2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250        2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
0.00002313        2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375        2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438        2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563        2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688        2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813        2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
0.00002938        2779.     94598964.    10.0593353     0.0002955     -0.000762
1.1361324    -18.571425 C
0.00003063        2894.     94499555.    10.0607664     0.0003081     -0.000794
1.1804341    -19.360427 C
0.00003188        3009.     94403710.    10.0625387     0.0003207     -0.000827
1.2244416    -20.149010 C
0.00003313        3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688        3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
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1.4400326    -24.085550 C
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0.00004063        3811.     93803541.    10.0820299     0.0004096     -0.001053
1.5241766    -25.657144 C
0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
1.7292383    -29.578385 C
0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
1.7693344    -30.361284 C
0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
0.00005188        4831.     93133529.    10.1185657     0.0005249     -0.001343
1.8877721    -32.707231 C
0.00005313        4944.     93062909.    10.1231546     0.0005378     -0.001375
1.9266309    -33.488287 C
0.00005438        5056.     92992807.    10.1278294     0.0005507     -0.001407
1.9651778    -34.268875 C
0.00005563        5169.     92923173.    10.1325862     0.0005636     -0.001439
2.0034117    -35.048992 C
0.00005688        5281.     92853961.    10.1374215     0.0005766     -0.001471
2.0413316    -35.828634 C
0.00005813        5393.     92785130.    10.1423320     0.0005895     -0.001503
2.0789362    -36.607799 C
0.00005938        5505.     92716640.    10.1473148     0.0006025     -0.001535
2.1162246    -37.386484 C
0.00006063        5617.     92648458.    10.1523672     0.0006155     -0.001567
2.1531956    -38.164685 C
0.00006188        5728.     92580549.    10.1574868     0.0006285     -0.001599
2.1898481    -38.942399 C
0.00006313        5840.     92512883.    10.1626714     0.0006415     -0.001631
2.2261809    -39.719622 C
0.00006438        5951.     92445433.    10.1679189     0.0006546     -0.001663
2.2621930    -40.496353 C
0.00006563        6062.     92378172.    10.1732276     0.0006676     -0.001695
2.2978832    -41.272587 C
0.00006688        6173.     92311077.    10.1785957     0.0006807     -0.001727
2.3332503    -42.048320 C
0.00006813        6284.     92244124.    10.1840217     0.0006938     -0.001759
2.3682931    -42.823550 C
0.00006938        6395.     92177292.    10.1895041     0.0007069     -0.001791
2.4030104    -43.598274 C
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2.4374011    -44.372486 C
0.00007188        6616.     92043913.    10.2006608     0.0007332     -0.001854
2.4714639    -45.146185 C
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2.5051976    -45.919366 C
0.00007438        6836.     91910797.    10.2120017     0.0007595     -0.001918
2.5386010    -46.692026 C
0.00007938        7274.     91644853.    10.2352897     0.0008124     -0.002045
2.6688860    -49.777380 C
0.00008438        7710.     91378587.    10.2593338     0.0008656     -0.002172
2.7937834    -52.854093 C
0.00008938        8143.     91111830.    10.2831857     0.0009191     -0.002298
2.9130226    -55.924331 C
0.00009438        8573.     90843621.    10.3077273     0.0009728     -0.002425
3.0266854    -58.985869 C
0.00009938        8982.     90387473.    10.3258078     0.0010261     -0.002551
3.1332951    -60.000000 CY
 0.0001044        9308.     89176212.    10.3143071     0.0010766     -0.002681
3.2283182    -60.000000 CY
 0.0001094        9549.     87304848.    10.2749831     0.0011238     -0.002814
3.3122821    -60.000000 CY
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3.3913727    -60.000000 CY
 0.0001194       10007.     83830919.    10.2019402     0.0012179     -0.003080
3.4649106    -60.000000 CY
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3.5287895    -60.000000 CY
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3.5876602    -60.000000 CY
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3.6428308    -60.000000 CY
 0.0001394       10554.     75720878.     9.9720357     0.0013899     -0.003628
3.6942550    -60.000000 CY
 0.0001444       10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494       10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
 0.0001544       10929.     70796718.     9.8396771     0.0015190     -0.004038
3.8245440    -60.000000 CY
 0.0001594       11012.     69097838.     9.7838573     0.0015593     -0.004178
3.8578061    -60.000000 CY
 0.0001644       11075.     67376662.     9.7232508     0.0015983     -0.004319
3.8866026    -60.000000 CY
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3.9121613    -60.000000 CY
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3.9537182    -60.000000 CY
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3.9820503    -60.000000 CY
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3.9913005    -60.000000 CY
 0.0001994        11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
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3.9998723    -60.000000 CY
 0.0002094        11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
 0.0002144        11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
 0.0002194        11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
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3.9997330    -60.000000 CY
 0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
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3.9990203    -60.000000 CY
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3.9992468    -60.000000 CY
 0.0002444        11880.     48615611.     9.1135780     0.0022271     -0.006570
3.9965958    -60.000000 CY
 0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
 0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
 0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
3.9955701    -60.000000 CY
 0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
3.9985538    -60.000000 CY
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3.9999119    -60.000000 CY
 0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
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 0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
3.9985257    -60.000000 CY
 0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
3.9998424    -60.000000 CY
 0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
3.9999658    -60.000000 CYT
 0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
3.9996505    -60.000000 CYT
 0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
3.9973093    -60.000000 CYT
 0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
3.9875919    -60.000000 CYT
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Axial Thrust Force = 4.600 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
6.25000E-07	240.5035986	384805758.	19.5651901	0.00001223	-0.00001027	
0.0512199	0.2795816					
0.00000125	480.1446137	384115691.	18.7843907	0.00002348	-0.00002152	
0.0980225	0.5308592					
0.00000188	718.9148267	383421241.	18.5241312	0.00003473	-0.00003277	
0.1445462	0.7821371					
0.00000250	956.8142298	382725692.	18.3940059	0.00004599	-0.00004401	
0.1907908	1.0334154					
0.00000313	1194.	382029703.	18.3159341	0.00005724	-0.00005526	
0.2367565	1.2846940					
0.00000375	1430.	381333494.	18.2638891	0.00006849	-0.00006651	
0.2824433	1.5359729					
0.00000438	1665.	380637159.	18.2267166	0.00007974	-0.00007776	
0.3278510	1.7872522					
0.00000500	1900.	379940746.	18.1988394	0.00009099	-0.00008901	
0.3729798	2.0385317					
0.00000563	2133.	379244280.	18.1771590	0.0001022	-0.000100	
0.4178295	2.2898116					
0.00000625	2366.	378547777.	18.1598165	0.0001135	-0.000112	
0.4624003	2.5410917					
0.00000688	2366.	344134343.	10.3291778	0.00007101	-0.000176	
0.2904571	-4.292706	C				
0.00000750	2366.	315456481.	10.2940289	0.00007721	-0.000193	
0.3152465	-4.690597	C				
0.00000813	2366.	291190598.	10.2646762	0.00008340	-0.000209	
0.3399656	-5.088396	C				
0.00000875	2366.	270391269.	10.2391817	0.00008959	-0.000225	
0.3645893	-5.486283	C				
0.00000938	2366.	252365185.	10.2172859	0.00009579	-0.000242	
0.3891378	-5.884113	C				
0.00001000	2366.	236592361.	10.1984552	0.0001020	-0.000258	
0.4136162	-6.281848	C				
0.00001063	2366.	222675163.	10.1821496	0.0001082	-0.000274	
0.4380246	-6.679488	C				
0.00001125	2366.	210304321.	10.1679490	0.0001144	-0.000291	
0.4623628	-7.077032	C				
0.00001188	2366.	199235672.	10.1555219	0.0001206	-0.000307	
0.4866307	-7.474480	C				

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0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
0.00002563         2436.     95048091.    10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688         2551.     94928657.    10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813         2667.     94815115.    10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938         2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063         2897.     94602733.    10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
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1.2691834    -20.928652 C
0.00003438        3242.     94312597.    10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563        3357.     94221794.    10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
0.00003688        3471.     94133413.    10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813        3586.     94047197.    10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938        3700.     93962921.    10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063        3814.     93880388.    10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188        3928.     93799425.    10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313        4042.     93719877.    10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438        4155.     93641609.    10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
0.00004563        4269.     93564497.    10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688        4382.     93488434.    10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813        4496.     93413321.    10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938        4609.     93339070.    10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063        4722.     93265602.    10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188        4834.     93192845.    10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313        4947.     93120733.    10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
0.00005438        5060.     93049206.    10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563        5172.     92978211.    10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
0.00005688        5284.     92907697.    10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813        5396.     92837619.    10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938        5508.     92767935.    10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063        5620.     92698606.    10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188        5731.     92629597.    10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
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0.00006313        5843.     92560874.    10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438        5954.     92492407.    10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563        6065.     92424168.    10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688        6176.     92356130.    10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
0.00006813        6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938        6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063        6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188        6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313        6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
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 0.0001544        10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594        11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644        11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694        11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
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    0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
   3.9985866    -60.000000 CY
    0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
   3.9998625    -60.000000 CY
    0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
   3.9999751    -60.000000 CYT
    0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
   3.9996828    -60.000000 CYT
    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
   3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
   3.9878351    -60.000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ----------------     ------------------     ------------
------------
   1                 3.800            12169.214          0.00300000
-0.00952396
   2                 4.200            12173.120          0.00300000
-0.00952020
   3                 4.600            12177.027          0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318,
or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal        Nominal     Ult. (Fac)    Ult. (Fac)   Bend.
Stiff.
```

Load No.	Factor	Ax. Thrust kips	Moment Cap in-kips	Ax. Thrust kips	Moment Cap in-kips	at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.
2	0.90	4.200000	12173.	3.780000	10956.	70254444.
3	0.90	4.600000	12177.	4.140000	10959.	70287179.

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	1.0000	0.00	N.A.	No	0.00	8832.
2	4.0000	0.2434	No	No	8832.	210404.
3	14.3000	13.3000	No	No	219236.	0.00
4	29.3000	28.3000	No	No	0.00	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.

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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                              =       1000.0 lbs
Applied moment at pile head                           =     315600.0 in-lbs
Axial thrust load on pile head                        =       4200.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00    0.00854    315600.  1000.0000  -1.41E-04       0.00   3.84E+11
0.00       0.00       0.00
   0.09000    0.00839    316681.  1000.0000  -1.41E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.1800    0.00823    317761.      1000.  -1.40E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.2700    0.00808    318842.  1000.0000  -1.39E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.3600    0.00793    319923.      1000.  -1.38E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.4500    0.00779    321003.      1000.  -1.37E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.5400    0.00764    322084.      1000.  -1.36E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.6300    0.00749    323164.      1000.  -1.35E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.7200    0.00735    324245.      1000.  -1.34E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.8100    0.00720    325326.      1000.  -1.33E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9000    0.00706    326406.      1000.  -1.32E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9900    0.00692    327487.      1000.  -1.32E-04       0.00   3.84E+11
0.00       0.00       0.00
    1.0800    0.00677    328567.   992.0017  -1.31E-04       0.00   3.84E+11
-14.812      2361.       0.00
    1.1700    0.00663    329631.   975.9296  -1.30E-04       0.00   3.84E+11
-14.951      2434.       0.00
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    1.2600    0.00649    330677.   959.7088  -1.29E-04       0.00   3.84E+11
-15.087      2509.       0.00
    1.3500    0.00636    331705.   943.3437  -1.28E-04       0.00   3.84E+11
-15.219      2586.       0.00
    1.4400    0.00622    332715.   926.8391  -1.27E-04       0.00   3.84E+11
-15.346      2665.       0.00
    1.5300    0.00608    333708.   910.1994  -1.26E-04       0.00   3.84E+11
-15.469      2747.       0.00
    1.6200    0.00595    334683.   893.4293  -1.25E-04       0.00   3.84E+11
-15.587      2831.       0.00
    1.7100    0.00581    335639.   876.5337  -1.24E-04       0.00   3.84E+11
-15.701      2918.       0.00
    1.8000    0.00568    336577.   859.5174  -1.23E-04       0.00   3.84E+11
-15.811      3007.       0.00
    1.8900    0.00555    337497.   842.3853  -1.22E-04       0.00   3.84E+11
-15.916      3100.       0.00
    1.9800    0.00541    338398.   825.1423  -1.21E-04       0.00   3.84E+11
-16.016      3195.       0.00
    2.0700    0.00528    339280.   807.7936  -1.20E-04       0.00   3.84E+11
-16.111      3293.       0.00
    2.1600    0.00515    340144.   790.3443  -1.19E-04       0.00   3.84E+11
-16.202      3395.       0.00
    2.2500    0.00503    340988.   772.7996  -1.18E-04       0.00   3.84E+11
-16.288      3500.       0.00
    2.3400    0.00490    341814.   755.1648  -1.17E-04       0.00   3.84E+11
-16.369      3609.       0.00
    2.4300    0.00477    342620.   737.4454  -1.16E-04       0.00   3.84E+11
-16.445      3722.       0.00
    2.5200    0.00465    343408.   719.6470  -1.16E-04       0.00   3.84E+11
-16.515      3838.       0.00
    2.6100    0.00452    344176.   701.7751  -1.15E-04       0.00   3.84E+11
-16.581      3959.       0.00
    2.7000    0.00440    344925.   683.8354  -1.14E-04       0.00   3.84E+11
-16.641      4085.       0.00
    2.7900    0.00428    345654.   665.8340  -1.13E-04       0.00   3.84E+11
-16.695      4215.       0.00
    2.8800    0.00416    346364.   647.7767  -1.12E-04       0.00   3.84E+11
-16.744      4351.       0.00
    2.9700    0.00404    347054.   629.6697  -1.11E-04       0.00   3.84E+11
-16.787      4492.       0.00
    3.0600    0.00392    347725.   611.5192  -1.10E-04       0.00   3.84E+11
-16.825      4638.       0.00
    3.1500    0.00380    348376.   593.3318  -1.09E-04       0.00   3.84E+11
-16.856      4791.       0.00
    3.2400    0.00368    349008.   575.1138  -1.08E-04       0.00   3.84E+11
-16.881      4951.       0.00
    3.3300    0.00357    349619.   556.8722  -1.07E-04       0.00   3.84E+11
-16.900      5117.       0.00
    3.4200    0.00345    350211.   538.6138  -1.06E-04       0.00   3.84E+11
-16.912      5291.       0.00
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    3.5100    0.00334    350784.   520.3458  -1.05E-04       0.00   3.84E+11
-16.918      5473.       0.00
    3.6000    0.00323    351336.   502.0755  -1.04E-04       0.00   3.84E+11
-16.916      5664.       0.00
    3.6900    0.00311    351869.   483.8104  -1.03E-04       0.00   3.84E+11
-16.908      5864.       0.00
    3.7800    0.00300    352382.   465.5584  -1.02E-04       0.00   3.84E+11
-16.892      6074.       0.00
    3.8700    0.00289    352876.   447.3274  -1.01E-04       0.00   3.84E+11
-16.869      6295.       0.00
    3.9600    0.00279    353349.   429.1258  -9.98E-05       0.00   3.84E+11
-16.838      6527.       0.00
    4.0500    0.00268    353804.   190.5980  -9.88E-05       0.00   3.84E+11
-424.880    171306.       0.00
    4.1400    0.00257    353762.  -267.236   -9.78E-05       0.00   3.84E+11
-422.960    177572.       0.00
    4.2300    0.00247    353227.  -722.917   -9.68E-05       0.00   3.84E+11
-420.895    184234.       0.00
    4.3200    0.00236    352201.    -1176.   -9.59E-05       0.00   3.84E+11
-418.681    191333.       0.00
    4.4100    0.00226    350687.    -1627.   -9.49E-05       0.00   3.84E+11
-416.308    198917.       0.00
    4.5000    0.00216    348688.    -2075.   -9.39E-05       0.00   3.84E+11
-413.768    207039.       0.00
    4.5900    0.00206    346205.    -2521.   -9.29E-05       0.00   3.84E+11
-411.051    215763.       0.00
    4.6800    0.00196    343243.    -2963.   -9.19E-05       0.00   3.84E+11
-408.146    225161.       0.00
    4.7700    0.00186    339806.    -3402.   -9.10E-05       0.00   3.84E+11
-405.040    235320.       0.00
    4.8600    0.00176    335895.    -3838.   -9.00E-05       0.00   3.84E+11
-401.718    246342.       0.00
    4.9500    0.00166    331516.    -4270.   -8.91E-05       0.00   3.84E+11
-398.164    258351.       0.00
    5.0400    0.00157    326673.    -4698.   -8.82E-05       0.00   3.84E+11
-394.358    271493.       0.00
    5.1300    0.00147    321370.    -5122.   -8.73E-05       0.00   3.84E+11
-390.277    285949.       0.00
    5.2200    0.00138    315611.    -5541.   -8.64E-05       0.00   3.84E+11
-385.895    301942.       0.00
    5.3100    0.00129    309403.    -5955.   -8.55E-05       0.00   3.84E+11
-381.181    319749.       0.00
    5.4000    0.00120    302749.    -6364.   -8.46E-05       0.00   3.85E+11
-376.096    339720.       0.00
    5.4900    0.00110    295658.    -6767.   -8.38E-05       0.00   3.85E+11
-370.597    362308.       0.00
    5.5800    0.00101    288133.    -7164.   -8.30E-05       0.00   3.85E+11
-364.628    388104.       0.00
    5.6700   9.26E-04    280184.    -7554.   -8.22E-05       0.00   3.85E+11
-358.122    417902.       0.00
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    5.7600   8.37E-04    271817.     -7937.  -8.14E-05       0.00   3.85E+11
-350.992    452788.       0.00
    5.8500   7.50E-04    263040.     -8312.  -8.06E-05       0.00   3.85E+11
-343.128    494299.       0.00
    5.9400   6.63E-04    253863.     -8667.  -7.99E-05       0.00   3.85E+11
-313.942    511388.       0.00
    6.0300   5.77E-04    244320.     -8985.  -7.92E-05       0.00   3.85E+11
-274.590    513884.       0.00
    6.1200   4.92E-04    234457.     -9260.  -7.85E-05       0.00   3.85E+11
-235.195    516377.       0.00
    6.2100   4.07E-04    224319.     -9493.  -7.79E-05       0.00   3.85E+11
-195.747    518870.       0.00
    6.3000   3.24E-04    213953.     -9683.  -7.73E-05       0.00   3.85E+11
-156.238    521360.       0.00
    6.3900   2.41E-04    203405.     -9830.  -7.67E-05       0.00   3.85E+11
-116.656    523850.       0.00
    6.4800   1.58E-04    192721.     -9935.  -7.61E-05       0.00   3.85E+11
-76.991    526339.       0.00
    6.5700   7.60E-05    181947.     -9996.  -7.56E-05       0.00   3.85E+11
-37.231    528826.       0.00
    6.6600  -5.35E-06    171129.    -10015.  -7.51E-05       0.00   3.85E+11
2.6340    531312.       0.00
    6.7500  -8.62E-05    160315.     -9991.  -7.47E-05       0.00   3.85E+11
42.6176    533797.       0.00
    6.8400  -1.67E-04    149550.     -9923.  -7.42E-05       0.00   3.85E+11
82.7320    536281.       0.00
    6.9300  -2.47E-04    138882.     -9812.  -7.38E-05       0.00   3.85E+11
122.9898    538764.       0.00
    7.0200  -3.26E-04    128357.     -9657.  -7.34E-05       0.00   3.85E+11
163.4039    541246.       0.00
    7.1100  -4.05E-04    118023.     -9459.  -7.31E-05       0.00   3.85E+11
203.9873    543728.       0.00
    7.2000  -4.84E-04    107927.     -9217.  -7.28E-05       0.00   3.85E+11
244.7530    546208.       0.00
    7.2900  -5.62E-04     98116.     -8930.  -7.25E-05       0.00   3.85E+11
285.7138    548688.       0.00
    7.3800  -6.41E-04     88638.     -8599.  -7.22E-05       0.00   3.85E+11
326.8826    551167.       0.00
    7.4700  -7.18E-04     79542.     -8224.  -7.20E-05       0.00   3.85E+11
368.2719    553645.       0.00
    7.5600  -7.96E-04     70876.     -7819.  -7.18E-05       0.00   3.85E+11
380.5976    516375.       0.00
    7.6500  -8.73E-04     62653.     -7403.  -7.16E-05       0.00   3.85E+11
391.2703    483804.       0.00
    7.7400  -9.51E-04     54886.     -6975.  -7.14E-05       0.00   3.85E+11
401.4211    456034.       0.00
    7.8300   -0.00103     47588.     -6536.  -7.13E-05       0.00   3.85E+11
411.1285    432042.       0.00
    7.9200   -0.00110     40770.     -6087.  -7.12E-05       0.00   3.85E+11
420.4550    411078.       0.00
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    8.0100   -0.00118     34441.     -5628.  -7.11E-05       0.00   3.85E+11
429.4507    392582.       0.00
    8.1000   -0.00126     28614.     -5159.  -7.10E-05       0.00   3.85E+11
438.1568    376126.       0.00
    8.1900   -0.00133     23298.     -4682.  -7.09E-05       0.00   3.85E+11
446.6073    361377.       0.00
    8.2800   -0.00141     18503.     -4195.  -7.08E-05       0.00   3.85E+11
454.8307    348074.       0.00
    8.3700   -0.00149     14238.     -3699.  -7.08E-05       0.00   3.85E+11
462.8512    336004.       0.00
    8.4600   -0.00156     10513.     -3195.  -7.08E-05       0.00   3.85E+11
470.6892    324998.       0.00
    8.5500   -0.00164      7337.     -2683.  -7.07E-05       0.00   3.85E+11
478.3625    314914.       0.00
    8.6400   -0.00172      4719.     -2162.  -7.07E-05       0.00   3.85E+11
485.8863    305638.       0.00
    8.7300   -0.00179      2668.     -1633.  -7.07E-05       0.00   3.85E+11
493.2739    297073.       0.00
    8.8200   -0.00187      1192.     -1097.  -7.07E-05       0.00   3.85E+11
500.5368    289136.       0.00
    8.9100   -0.00195   299.8686   -552.103  -7.07E-05       0.00   3.85E+11
507.6851    281759.       0.00
    9.0000   -0.00202       0.00       0.00  -7.07E-05       0.00   3.85E+11
514.7279    137441.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection              =     0.00853826 inches
Computed slope at pile head       =     -0.0001415 radians
Maximum bending moment            =        353804. inch-lbs
Maximum shear force               =        -10015. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             16
Number of zero deflection points  =              1
Pile deflection at ground         =     0.00690037 inches


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            Pile-head Deflection vs. Pile Length for Load Case 1
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Boundary Condition Type 1, Shear and Moment

Shear = 1000. lbs
Moment = 315600. in-lbs
Axial Load = 4200. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.00853826	353804.	-10015.
8.55000	0.01421360	351275.	-11230.
8.10000	0.03112913	347813.	-12629.
7.65000	0.07535811	343355.	-13980.
7.20000	0.19023807	339074.	-15306.
6.75000	0.59709115	336353.	-17048.
6.30000	2.00596798	335879.	-19080.
5.85000	11.17610056	347716.	-23261.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 4600.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.1543	724800.	2250.	-0.00201	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1522	727240.	2250.	-0.00201	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1500	729680.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1478	732120.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1457	734560.	2250.	-0.00200	0.00	3.83E+11			

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0.00       0.00       0.00
    0.4500     0.1435    737000.      2250.   -0.00200       0.00   3.83E+11
0.00       0.00       0.00
    0.5400     0.1414    739440.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.6300     0.1392    741880.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.1370    744319.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.1349    746759.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.1328    749199.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.1306    751639.      2250.   -0.00198       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.1285    754079.      2229.   -0.00198       0.00   3.83E+11
-39.468   331.8097       0.00
    1.1700     0.1263    756473.      2186.   -0.00198       0.00   3.83E+11
-39.896   341.0873       0.00
    1.2600     0.1242    758820.      2143.   -0.00198       0.00   3.83E+11
-40.314   350.5945       0.00
    1.3500     0.1221    761120.      2099.   -0.00198       0.00   3.83E+11
-40.723   360.3411       0.00
    1.4400     0.1199    763373.      2055.   -0.00197       0.00   3.83E+11
-41.121   370.3379       0.00
    1.5300     0.1178    765578.      2010.   -0.00197       0.00   3.83E+11
-41.509   380.5959       0.00
    1.6200     0.1157    767734.      1965.   -0.00197       0.00   3.83E+11
-41.887   391.1271       0.00
    1.7100     0.1135    769841.      1919.   -0.00197       0.00   3.83E+11
-42.254   401.9442       0.00
    1.8000     0.1114    771900.      1874.   -0.00197       0.00   3.83E+11
-42.611   413.0606       0.00
    1.8900     0.1093    773908.      1827.   -0.00196       0.00   3.83E+11
-42.956   424.4909       0.00
    1.9800     0.1072    775866.      1781.   -0.00196       0.00   3.83E+11
-43.291   436.2505       0.00
    2.0700     0.1051    777774.      1734.   -0.00196       0.00   3.83E+11
-43.613   448.3560       0.00
    2.1600     0.1029    779631.      1687.   -0.00196       0.00   3.83E+11
-43.924   460.8249       0.00
    2.2500     0.1008    781437.      1639.   -0.00195       0.00   3.83E+11
-44.223   473.6765       0.00
    2.3400    0.09872    783191.      1591.   -0.00195       0.00   3.83E+11
-44.509   486.9310       0.00
    2.4300    0.09661    784893.      1543.   -0.00195       0.00   3.83E+11
-44.783   500.6105       0.00
    2.5200    0.09451    786543.      1494.   -0.00195       0.00   3.83E+11
-45.044   514.7386       0.00
    2.6100    0.09241    788140.      1446.   -0.00195       0.00   3.83E+11
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-45.291   529.3410       0.00
    2.7000    0.09031    789685.      1397.   -0.00194       0.00   3.83E+11
-45.525   544.4454       0.00
    2.7900    0.08821    791176.      1347.   -0.00194       0.00   3.83E+11
-45.745   560.0818       0.00
    2.8800    0.08612    792614.      1298.   -0.00194       0.00   3.83E+11
-45.951   576.2826       0.00
    2.9700    0.08402    793999.      1248.   -0.00194       0.00   3.83E+11
-46.141   593.0833       0.00
    3.0600    0.08193    795330.      1198.   -0.00193       0.00   3.83E+11
-46.316   610.5226       0.00
    3.1500    0.07984    796606.      1148.   -0.00193       0.00   3.83E+11
-46.476   628.6424       0.00
    3.2400    0.07776    797828.      1098.   -0.00193       0.00   3.83E+11
-46.619   647.4890       0.00
    3.3300    0.07568    798996.      1047.   -0.00193       0.00   3.83E+11
-46.745   667.1129       0.00
    3.4200    0.07360    800110.   996.8060   -0.00193       0.00   3.83E+11
-46.854   687.5698       0.00
    3.5100    0.07152    801169.   946.1542   -0.00192       0.00   3.83E+11
-46.945   708.9210       0.00
    3.6000    0.06944    802173.   895.4142   -0.00192       0.00   3.83E+11
-47.018   731.2344       0.00
    3.6900    0.06737    803122.   844.6065   -0.00192       0.00   3.83E+11
-47.071   754.5851       0.00
    3.7800    0.06530    804016.   793.7524   -0.00192       0.00   3.83E+11
-47.104   779.0567       0.00
    3.8700    0.06323    804855.   742.8740   -0.00191       0.00   3.83E+11
-47.116   804.7427       0.00
    3.9600    0.06117    805640.   691.9945   -0.00191       0.00   3.83E+11
-47.106   831.7475       0.00
    4.0500    0.05910    806369.   169.8012   -0.00191       0.00   3.83E+11
-919.919     16810.        0.00
    4.1400    0.05704    806025.   -822.076   -0.00191       0.00   3.83E+11
-916.891     17360.        0.00
    4.2300    0.05498    804612.     -1811.   -0.00190       0.00   3.83E+11
-913.545     17944.        0.00
    4.3200    0.05293    802134.     -2795.   -0.00190       0.00   3.83E+11
-909.864     18566.        0.00
    4.4100    0.05087    798594.     -3776.   -0.00190       0.00   3.83E+11
-905.829     19230.        0.00
    4.5000    0.04882    793997.     -4752.   -0.00190       0.00   3.83E+11
-901.420     19940.        0.00
    4.5900    0.04677    788349.     -5722.   -0.00190       0.00   3.83E+11
-896.613     20703.        0.00
    4.6800    0.04473    781656.     -6688.   -0.00189       0.00   3.83E+11
-891.383     21523.        0.00
    4.7700    0.04268    773922.     -7648.   -0.00189       0.00   3.83E+11
-885.699     22410.        0.00
    4.8600    0.04064    765155.     -8601.   -0.00189       0.00   3.83E+11
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-879.528	23372.	0.00				
4.9500	0.03860	755363.	-9547.	-0.00189	0.00	3.83E+11
-872.832	24419.	0.00				
5.0400	0.03657	744552.	-10486.	-0.00188	0.00	3.83E+11
-865.567	25565.	0.00				
5.1300	0.03453	732732.	-11416.	-0.00188	0.00	3.83E+11
-857.682	26824.	0.00				
5.2200	0.03250	719912.	-12338.	-0.00188	0.00	3.83E+11
-849.117	28217.	0.00				
5.3100	0.03047	706101.	-13250.	-0.00188	0.00	3.83E+11
-839.804	29767.	0.00				
5.4000	0.02844	691310.	-14152.	-0.00188	0.00	3.83E+11
-829.659	31504.	0.00				
5.4900	0.02642	675552.	-15042.	-0.00187	0.00	3.84E+11
-818.585	33468.	0.00				
5.5800	0.02439	658839.	-15919.	-0.00187	0.00	3.84E+11
-806.462	35708.	0.00				
5.6700	0.02237	641185.	-16783.	-0.00187	0.00	3.84E+11
-793.142	38292.	0.00				
5.7600	0.02035	622606.	-17632.	-0.00187	0.00	3.84E+11
-778.441	41313.	0.00				
5.8500	0.01833	603119.	-18464.	-0.00187	0.00	3.84E+11
-762.122	44899.	0.00				
5.9400	0.01632	582744.	-19277.	-0.00187	0.00	3.84E+11
-743.874	49240.	0.00				
6.0300	0.01430	561500.	-20069.	-0.00186	0.00	3.84E+11
-723.279	54620.	0.00				
6.1200	0.01229	539413.	-20837.	-0.00186	0.00	3.84E+11
-699.745	61497.	0.00				
6.2100	0.01028	516510.	-21578.	-0.00186	0.00	3.84E+11
-672.400	70657.	0.00				
6.3000	0.00827	492822.	-22287.	-0.00186	0.00	3.84E+11
-639.862	83579.	0.00				
6.3900	0.00626	468388.	-22956.	-0.00186	0.00	3.84E+11
-599.721	103463.	0.00				
6.4800	0.00425	443255.	-23576.	-0.00186	0.00	3.84E+11
-547.078	138903.	0.00				
6.5700	0.00225	417483.	-24124.	-0.00186	0.00	3.84E+11
-468.677	225123.	0.00				
6.6600	2.44E-04	391165.	-24442.	-0.00185	0.00	3.84E+11
-120.264	531312.	0.00				
6.7500	-0.00176	364706.	-24267.	-0.00185	0.00	3.84E+11
444.8911	273264.	0.00				
6.8400	-0.00376	338767.	-23735.	-0.00185	0.00	3.84E+11
540.4914	155249.	0.00				
6.9300	-0.00576	313458.	-23117.	-0.00185	0.00	3.84E+11
604.1084	113259.	0.00				
7.0200	-0.00776	288853.	-22437.	-0.00185	0.00	3.85E+11
653.8274	90993.	0.00				
7.1100	-0.00976	265011.	-21709.	-0.00185	0.00	3.85E+11

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695.5561     76974.       0.00
    7.2000   -0.01176    241980.    -20938.   -0.00185       0.00   3.85E+11
732.0342     67244.       0.00
    7.2900   -0.01375    219804.    -20130.   -0.00185       0.00   3.85E+11
764.7748     60051.       0.00
    7.3800   -0.01575    198519.    -19287.   -0.00185       0.00   3.85E+11
794.7084     54491.       0.00
    7.4700   -0.01775    178161.    -18414.   -0.00185       0.00   3.85E+11
822.4515     50051.       0.00
    7.5600   -0.01974    158762.    -17512.   -0.00185       0.00   3.85E+11
848.4347     46413.       0.00
    7.6500   -0.02174    140354.    -16582.   -0.00185       0.00   3.85E+11
872.9715     43373.       0.00
    7.7400   -0.02373    122963.    -15627.   -0.00185       0.00   3.85E+11
896.2980     40789.       0.00
    7.8300   -0.02573    106618.    -14647.   -0.00185       0.00   3.85E+11
918.5961     38563.       0.00
    7.9200   -0.02772     91344.    -13643.   -0.00185       0.00   3.85E+11
940.0096     36624.       0.00
    8.0100   -0.02971     77166.    -12617.   -0.00185       0.00   3.85E+11
960.6542     34917.       0.00
    8.1000   -0.03171     64110.    -11569.   -0.00185       0.00   3.85E+11
980.6241     33402.       0.00
    8.1900   -0.03370     52197.    -10499.   -0.00185       0.00   3.85E+11
999.9975     32047.       0.00
    8.2800   -0.03569     41450.     -9409.   -0.00185       0.00   3.85E+11
1019.     30828.       0.00
    8.3700   -0.03769     31892.     -8299.   -0.00185       0.00   3.85E+11
1037.     29724.       0.00
    8.4600   -0.03968     23543.     -7169.   -0.00185       0.00   3.85E+11
1055.     28720.       0.00
    8.5500   -0.04167     16425.     -6020.   -0.00185       0.00   3.85E+11
1073.     27801.       0.00
    8.6400   -0.04366     10559.     -4852.   -0.00185       0.00   3.85E+11
1090.     26958.       0.00
    8.7300   -0.04566      5963.     -3666.   -0.00185       0.00   3.85E+11
1107.     26180.       0.00
    8.8200   -0.04765      2659.     -2462.   -0.00184       0.00   3.85E+11
1123.     25461.       0.00
    8.9100   -0.04964   664.8454     -1239.   -0.00184       0.00   3.85E+11
1140.     24794.       0.00
    9.0000   -0.05163      0.00       0.00   -0.00184       0.00   3.85E+11
1156.     12087.       0.00

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

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.15431827 inches
Computed slope at pile head	=	-0.0020073 radians
Maximum bending moment	=	806369. inch-lbs
Maximum shear force	=	-24442. lbs
Depth of maximum bending moment	=	4.05000000 feet below pile head
Depth of maximum shear force	=	6.66000000 feet below pile head
Number of iterations	=	34
Number of zero deflection points	=	1
Pile deflection at ground	=	0.13036871 inches

Pile-head Deflection vs. Pile Length for Load Case 2

Boundary Condition Type 1, Shear and Moment

Shear	=	2250. lbs
Moment	=	724800. in-lbs
Axial Load	=	4600. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.15431827	806369.	-24442.
8.55000	0.30429509	798622.	-26233.
8.10000	0.72494793	789869.	-28715.
7.65000	1.81648534	783817.	-31576.
7.20000	4.78350908	780825.	-34946.
6.75000	19.47559759	800742.	-41867.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

Shear force at pile head	=	2250.0 lbs
Applied moment at pile head	=	724800.0 in-lbs
Axial thrust load on pile head	=	3800.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.1542	724800.	2250.	-0.00201	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1520	727238.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1499	729676.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1477	732115.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1456	734553.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1434	736991.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1413	739429.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.1391	741867.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.1370	744306.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.1348	746744.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.1327	749182.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.1305	751620.	2250.	-0.00198	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.1284	754058.	2229.	-0.00198	0.00	3.83E+11	-39.459	331.9623	0.00
1.1700	0.1262	756450.	2186.	-0.00198	0.00	3.83E+11	-39.887	341.2442	0.00
1.2600	0.1241	758796.	2143.	-0.00198	0.00	3.83E+11	-40.305	350.7558	0.00
1.3500	0.1220	761094.	2099.	-0.00197	0.00	3.83E+11	-40.713	360.5070	0.00
1.4400	0.1198	763345.	2055.	-0.00197	0.00	3.83E+11	-41.112	370.5085	0.00
1.5300	0.1177	765549.	2010.	-0.00197	0.00	3.83E+11	-41.500	380.7713	0.00
1.6200	0.1156	767703.	1965.	-0.00197	0.00	3.83E+11	-41.878	391.3074	0.00
1.7100	0.1135	769809.	1920.	-0.00197	0.00	3.83E+11	-42.245	402.1295	0.00
1.8000	0.1113	771866.	1874.	-0.00196	0.00	3.83E+11	-42.601	413.2512	0.00

```
    1.8900     0.1092    773872.      1828.   -0.00196       0.00   3.83E+11
-42.946   424.6868       0.00
    1.9800     0.1071    775829.      1781.   -0.00196       0.00   3.83E+11
-43.281   436.4519       0.00
    2.0700     0.1050    777735.      1734.   -0.00196       0.00   3.83E+11
-43.603   448.5630       0.00
    2.1600     0.1029    779591.      1687.   -0.00196       0.00   3.83E+11
-43.914   461.0379       0.00
    2.2500     0.1008    781395.      1639.   -0.00195       0.00   3.83E+11
-44.213   473.8954       0.00
    2.3400    0.09865    783147.      1591.   -0.00195       0.00   3.83E+11
-44.499   487.1561       0.00
    2.4300    0.09655    784848.      1543.   -0.00195       0.00   3.83E+11
-44.773   500.8420       0.00
    2.5200    0.09444    786497.      1495.   -0.00195       0.00   3.83E+11
-45.034   514.9768       0.00
    2.6100    0.09234    788092.      1446.   -0.00194       0.00   3.83E+11
-45.281   529.5861       0.00
    2.7000    0.09024    789635.      1397.   -0.00194       0.00   3.83E+11
-45.515   544.6976       0.00
    2.7900    0.08815    791125.      1348.   -0.00194       0.00   3.83E+11
-45.735   560.3412       0.00
    2.8800    0.08606    792562.      1298.   -0.00194       0.00   3.83E+11
-45.940   576.5496       0.00
    2.9700    0.08396    793945.      1248.   -0.00194       0.00   3.83E+11
-46.130   593.3583       0.00
    3.0600    0.08188    795274.      1198.   -0.00193       0.00   3.83E+11
-46.306   610.8057       0.00
    3.1500    0.07979    796549.      1148.   -0.00193       0.00   3.83E+11
-46.465   628.9340       0.00
    3.2400    0.07771    797770.      1098.   -0.00193       0.00   3.83E+11
-46.608   647.7894       0.00
    3.3300    0.07562    798937.      1048.   -0.00193       0.00   3.83E+11
-46.734   667.4226       0.00
    3.4200    0.07355    800049.   997.0958   -0.00192       0.00   3.83E+11
-46.843   687.8890       0.00
    3.5100    0.07147    801107.   946.4558   -0.00192       0.00   3.83E+11
-46.934   709.2502       0.00
    3.6000    0.06939    802109.   895.7275   -0.00192       0.00   3.83E+11
-47.007   731.5740       0.00
    3.6900    0.06732    803057.   844.9316   -0.00192       0.00   3.83E+11
-47.060   754.9356       0.00
    3.7800    0.06525    803950.   794.0893   -0.00191       0.00   3.83E+11
-47.093   779.4187       0.00
    3.8700    0.06319    804788.   743.2228   -0.00191       0.00   3.83E+11
-47.105   805.1167       0.00
    3.9600    0.06112    805571.   692.3551   -0.00191       0.00   3.83E+11
-47.095   832.1341       0.00
    4.0500    0.05906    806299.   170.2545   -0.00191       0.00   3.83E+11
-919.758     16819.       0.00
```

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    4.1400    0.05700    805955.   -821.450   -0.00191       0.00   3.83E+11
-916.731     17369.       0.00
    4.2300    0.05494    804541.     -1810.   -0.00190       0.00   3.83E+11
-913.385     17954.       0.00
    4.3200    0.05289    802061.     -2794.   -0.00190       0.00   3.83E+11
-909.705     18576.       0.00
    4.4100    0.05084    798521.     -3774.   -0.00190       0.00   3.83E+11
-905.671     19240.       0.00
    4.5000    0.04879    793924.     -4750.   -0.00190       0.00   3.83E+11
-901.262     19951.       0.00
    4.5900    0.04674    788276.     -5721.   -0.00189       0.00   3.83E+11
-896.456     20713.       0.00
    4.6800    0.04470    781582.     -6686.   -0.00189       0.00   3.83E+11
-891.227     21535.       0.00
    4.7700    0.04265    773849.     -7646.   -0.00189       0.00   3.83E+11
-885.544     22422.       0.00
    4.8600    0.04061    765083.     -8599.   -0.00189       0.00   3.83E+11
-879.375     23384.       0.00
    4.9500    0.03858    755291.     -9545.   -0.00189       0.00   3.83E+11
-872.680     24432.       0.00
    5.0400    0.03654    744481.    -10484.   -0.00188       0.00   3.83E+11
-865.416     25578.       0.00
    5.1300    0.03451    732662.    -11414.   -0.00188       0.00   3.83E+11
-857.532     26838.       0.00
    5.2200    0.03248    719842.    -12335.   -0.00188       0.00   3.83E+11
-848.969     28232.       0.00
    5.3100    0.03045    706033.    -13247.   -0.00188       0.00   3.83E+11
-839.657     29783.       0.00
    5.4000    0.02842    691244.    -14149.   -0.00188       0.00   3.83E+11
-829.515     31521.       0.00
    5.4900    0.02640    675487.    -15039.   -0.00187       0.00   3.84E+11
-818.443     33485.       0.00
    5.5800    0.02437    658776.    -15916.   -0.00187       0.00   3.84E+11
-806.322     35726.       0.00
    5.6700    0.02235    641124.    -16780.   -0.00187       0.00   3.84E+11
-793.005     38312.       0.00
    5.7600    0.02034    622547.    -17628.   -0.00187       0.00   3.84E+11
-778.306     41334.       0.00
    5.8500    0.01832    603063.    -18460.   -0.00187       0.00   3.84E+11
-761.990     44922.       0.00
    5.9400    0.01630    582689.    -19273.   -0.00186       0.00   3.84E+11
-743.747     49265.       0.00
    6.0300    0.01429    561448.    -20065.   -0.00186       0.00   3.84E+11
-723.156     54648.       0.00
    6.1200    0.01228    539364.    -20833.   -0.00186       0.00   3.84E+11
-699.627     61529.       0.00
    6.2100    0.01027    516464.    -21574.   -0.00186       0.00   3.84E+11
-672.287     70693.       0.00
    6.3000    0.00826    492779.    -22283.   -0.00186       0.00   3.84E+11
-639.756     83621.       0.00
```

```
    6.3900    0.00626    468348.    -22952.   -0.00186       0.00   3.84E+11
-599.624    103513.       0.00
    6.4800    0.00425    443218.    -23571.   -0.00186       0.00   3.84E+11
-546.994    138967.       0.00
    6.5700    0.00225    417450.    -24120.   -0.00185       0.00   3.84E+11
-468.615    225212.       0.00
    6.6600   2.45E-04    391135.    -24438.   -0.00185       0.00   3.84E+11
-120.384    531312.       0.00
    6.7500   -0.00176    364680.    -24262.   -0.00185       0.00   3.84E+11
444.7852    273459.       0.00
    6.8400   -0.00376    338743.    -23730.   -0.00185       0.00   3.84E+11
540.3799    155345.       0.00
    6.9300   -0.00576    313437.    -23112.   -0.00185       0.00   3.84E+11
603.9896    113325.       0.00
    7.0200   -0.00775    288836.    -22433.   -0.00185       0.00   3.85E+11
653.7018     91046.       0.00
    7.1100   -0.00975    264996.    -21705.   -0.00185       0.00   3.85E+11
695.4245     77018.       0.00
    7.2000   -0.01175    241968.    -20934.   -0.00185       0.00   3.85E+11
731.8970     67282.       0.00
    7.2900   -0.01374    219794.    -20126.   -0.00185       0.00   3.85E+11
764.6323     60084.       0.00
    7.3800   -0.01574    198512.    -19284.   -0.00185       0.00   3.85E+11
794.5611     54521.       0.00
    7.4700   -0.01773    178156.    -18411.   -0.00185       0.00   3.85E+11
822.2997     50078.       0.00
    7.5600   -0.01973    158759.    -17509.   -0.00185       0.00   3.85E+11
848.2785     46439.       0.00
    7.6500   -0.02172    140352.    -16579.   -0.00185       0.00   3.85E+11
872.8113     43397.       0.00
    7.7400   -0.02371    122963.    -15624.   -0.00185       0.00   3.85E+11
896.1337     40811.       0.00
    7.8300   -0.02571    106619.    -14644.   -0.00184       0.00   3.85E+11
918.4281     38584.       0.00
    7.9200   -0.02770     91346.    -13641.   -0.00184       0.00   3.85E+11
939.8380     36644.       0.00
    8.0100   -0.02969     77170.    -12615.   -0.00184       0.00   3.85E+11
960.4790     34936.       0.00
    8.1000   -0.03168     64114.    -11567.   -0.00184       0.00   3.85E+11
980.4455     33420.       0.00
    8.1900   -0.03368     52201.    -10497.   -0.00184       0.00   3.85E+11
999.8155     32065.       0.00
    8.2800   -0.03567     41455.     -9407.   -0.00184       0.00   3.85E+11
1019.     30845.       0.00
    8.3700   -0.03766     31897.     -8297.   -0.00184       0.00   3.85E+11
1037.     29740.       0.00
    8.4600   -0.03965     23548.     -7167.   -0.00184       0.00   3.85E+11
1055.     28735.       0.00
    8.5500   -0.04164     16430.     -6019.   -0.00184       0.00   3.85E+11
1072.     27816.       0.00
```

```
    8.6400   -0.04363     10563.     -4851.   -0.00184       0.00   3.85E+11
1090.     26972.       0.00
    8.7300   -0.04562      5967.     -3665.   -0.00184       0.00   3.85E+11
1107.     26195.       0.00
    8.8200   -0.04761      2662.     -2461.   -0.00184       0.00   3.85E+11
1123.     25475.       0.00
    8.9100   -0.04961   666.3229     -1239.   -0.00184       0.00   3.85E+11
1139.     24808.       0.00
    9.0000   -0.05160       0.00       0.00   -0.00184       0.00   3.85E+11
1156.     12093.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection              =     0.15421244 inches
Computed slope at pile head       =     -0.0020060 radians
Maximum bending moment            =        806299. inch-lbs
Maximum shear force               =        -24438. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             34
Number of zero deflection points  =              1
Pile deflection at ground         =     0.13027885 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.15421244       806299.       -24438.
    8.55000    0.30387574       798483.       -26223.
```

```
    8.10000    0.72255988       789557.       -28690.
    7.65000    1.80143048       783109.       -31507.
    7.20000    4.67689618       779051.       -34739.
    6.75000   17.33055455       790934.       -40593.

--------------------------------------------------------------------------------
            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 Load                Load                  Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
Pile    in Pile
 No.  1      Load 1       2        Load 2       lbs      inches     radians      lbs
     in-lbs
---- ----- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
  1  V, lb  1000.0000  M, in-lb     315600.      4200.    0.00854  -1.41E-04
-10015.    353804.
  2  V, lb      2250.  M, in-lb     724800.      4600.     0.1543   -0.00201
-24442.    806369.
  3  V, lb      2250.  M, in-lb     724800.      3800.     0.1542   -0.00201
-24438.    806299.


Maximum pile-head deflection = 0.1543182744 inches
Maximum pile-head rotation   = -0.0020072908 radians = -0.115009 deg.

The analysis ended normally.
```

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LIGHT TOWER PR-9 (B-005-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-9 (Boring B-005-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

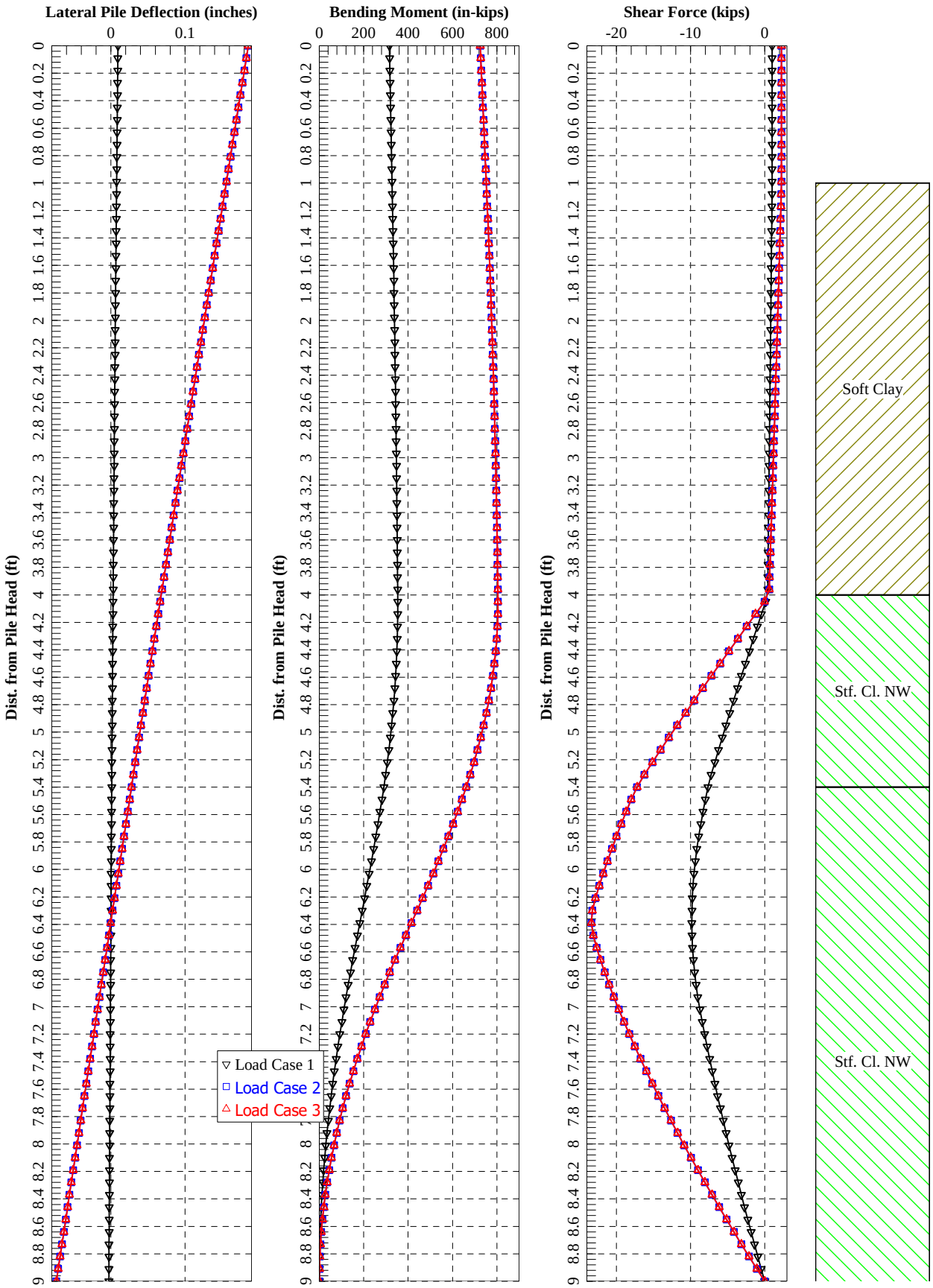


PLATE 93

```
================================================================================

                          LPile for Version 2022-12.012

                            License ID : 228332755
                       License Type : (Single User License)

                  Analysis of Individual Piles and Drilled Shafts
                 Subjected to Lateral Loading Using the p-y Method
                            © 1985-2024 by Ensoft, Inc.
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                 This software is licensed for exclusive use by:
                                  S&ME, Inc.
                                Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                           Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\EB\

Name of input data file:
Tower PR-9 (B-005-0-25).lp12d

Name of output report file:
Tower PR-9 (B-005-0-25).lp12o

Name of plot output file:
Tower PR-9 (B-005-0-25).lp12p

Name of runtime message file:
Tower PR-9 (B-005-0-25).lp12r



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:35:49

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower PR-9 (B-005-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

```
--------------------------------------------------------------------------------
                        Soil and Rock Layering Information
--------------------------------------------------------------------------------

The soil profile is modelled using 6 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

   Distance from top of pile to top of layer           =     1.000000 ft
   Distance from top of pile to bottom of layer        =     4.000000 ft
   Effective unit weight at top of layer               =    98.000000 pcf
   Effective unit weight at bottom of layer            =    98.000000 pcf
   Undrained cohesion at top of layer                  =   250.000000 psf
   Undrained cohesion at bottom of layer               =   250.000000 psf
   Epsilon-50 at top of layer                          =     0.020000
   Epsilon-50 at bottom of layer                       =     0.020000


Layer 2 is stiff clay without free water

   Distance from top of pile to top of layer           =     4.000000 ft
   Distance from top of pile to bottom of layer        =     5.400000 ft
   Effective unit weight at top of layer               =    56.000000 pcf
   Effective unit weight at bottom of layer            =    56.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 3 is stiff clay without free water

   Distance from top of pile to top of layer           =     5.400000 ft
   Distance from top of pile to bottom of layer        =     9.400000 ft
   Effective unit weight at top of layer               =    53.000000 pcf
   Effective unit weight at bottom of layer            =    53.000000 pcf
   Undrained cohesion at top of layer                  =        3000. psf
   Undrained cohesion at bottom of layer               =        3000. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


Layer 4 is soft clay, p-y criteria by Matlock, 1970

   Distance from top of pile to top of layer           =     9.400000 ft
   Distance from top of pile to bottom of layer        =    11.900000 ft
   Effective unit weight at top of layer               =    53.000000 pcf
```

```
   Effective unit weight at bottom of layer            =    53.000000 pcf
   Undrained cohesion at top of layer                  =   600.000000 psf
   Undrained cohesion at bottom of layer               =   600.000000 psf
   Epsilon-50 at top of layer                          =     0.010000
   Epsilon-50 at bottom of layer                       =     0.010000


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =    11.900000 ft
   Distance from top of pile to bottom of layer        =    16.900000 ft
   Effective unit weight at top of layer               =    63.000000 pcf
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =    16.900000 ft
   Distance from top of pile to bottom of layer        =    26.400000 ft
   Effective unit weight at top of layer               =    60.000000 pcf
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 17.400 ft below the pile tip)


-------------------------------------------------------------------------------
                        Summary of Input Soil Properties
-------------------------------------------------------------------------------

Layer         Soil Type          Layer      Effective    Cohesion        E50
 Num.           Name             Depth       Unit Wt.                    or
          (p-y Curve Type)         ft           pcf          psf         krm
-----   -------------------   ----------   ----------   ----------   ----------
  1            Soft               1.0000      98.0000     250.0000      0.02000
               Clay               4.0000      98.0000     250.0000      0.02000
  2          Stiff Clay           4.0000      56.0000        4500.      0.00400
           w/o Free Water         5.4000      56.0000        4500.      0.00400
  3          Stiff Clay           5.4000      53.0000        3000.      0.00500
           w/o Free Water         9.4000      53.0000        3000.      0.00500
  4            Soft               9.4000      53.0000     600.0000      0.01000
```

	Clay	11.9000	53.0000	600.0000	0.01000
5	Stiff Clay	11.9000	63.0000	4500.	0.00400
	w/o Free Water	16.9000	63.0000	4500.	0.00400
6	Stiff Clay	16.9000	60.0000	4500.	0.00400
	w/o Free Water	26.4000	60.0000	4500.	0.00400

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	Run Analysis
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.	Yes	Yes
2	1	V = 2250. lbs	M = 724800. in-lbs	4600.	Yes	Yes
3	1	V = 2250. lbs	M = 724800. in-lbs	3800.	Yes	Yes

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

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	9.000000 ft
Shaft Diameter	=	36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)	=	3.500000 in
Number of Reinforcing Bars	=	16 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	1018. sq. in.
Total Area of Reinforcing Steel	=	16.000000 sq. in.
Area Ratio of Steel Reinforcement	=	1.57 percent
Edge-to-Edge Bar Spacing	=	4.114467 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	5.49
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in
Transverse Reinforcement		
Type: Spiral		
Number of Transverse Reinf. (per spacing)	=	1
Spacing of Transverse Reinf.	=	4.500000 in
Yield Stress of Transverse Reinf.	=	60000. psi
Diameter of Transverse Reinf.	=	0.500000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	4366.378 kips
Tensile Load for Cracking of Concrete	=	-470.222 kips
Nominal Axial Tensile Capacity	=	-960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735

9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Run Msg	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
6.25000E-07	240.5062135		384809942.	19.2929823	0.00001206	-0.00001044
0.0505030	0.2746478					
0.00000125	480.1472468		384117797.	18.6479768	0.00002331	-0.00002169
0.0973082	0.5259142					
0.00000188	718.9174733		383422652.	18.4329804	0.00003456	-0.00003294
0.1438345	0.7771808					
0.00000250	956.8168886		382726755.	18.3254857	0.00004581	-0.00004419
0.1900818	1.0284477					
0.00000313	1194.		382030558.	18.2609917	0.00005707	-0.00005543
0.2360502	1.2797149					
0.00000375	1430.		381334209.	18.2179981	0.00006832	-0.00006668
0.2817396	1.5309823					
0.00000438	1665.		380637775.	18.1872904	0.00007957	-0.00007793
0.3271500	1.7822500					
0.00000500	1900.		379941287.	18.1642614	0.00009082	-0.00008918
0.3722815	2.0335179					
0.00000563	2133.		379244764.	18.1463515	0.0001021	-0.000100
0.4171340	2.2847861					
0.00000625	2366.		378548215.	18.1320251	0.0001133	-0.000112
0.4617075	2.5360546					
0.00000688	2366.		344134741.	10.2494785	0.00007047	-0.000177
0.2882187	-4.308598	C				
0.00000750	2366.		315456846.	10.2198771	0.00007665	-0.000193
0.3129821	-4.706727	C				
0.00000813	2366.		291190934.	10.1952302	0.00008284	-0.000210
0.3376758	-5.104761	C				
0.00000875	2366.		270391582.	10.1744772	0.00008903	-0.000226
0.3622998	-5.502701	C				
0.00000938	2366.		252365477.	10.1568402	0.00009522	-0.000242
0.3868539	-5.900547	C				
0.00001000	2366.		236592634.	10.1417358	0.0001014	-0.000259
0.4113380	-6.298297	C				
0.00001063	2366.		222675420.	10.1287027	0.0001076	-0.000275
0.4357521	-6.695951	C				

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0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
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0.00002938         2776.     94491232.     10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.     10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.     10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.     10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.     10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.     10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.     10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.     10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.     10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063         3808.     93726688.     10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188         3922.     93650546.     10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313         4035.     93575540.     10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438         4149.     93501560.     10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563         4263.     93428502.     10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688         4376.     93356279.     10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813         4489.     93284807.     10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938         4602.     93214014.     10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063         4715.     93143835.     10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188         4828.     93074209.     10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313         4941.     93005082.     10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438         5053.     92936405.     10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563         5166.     92868132.     10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688         5278.     92800222.     10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813         5390.     92732637.     10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938         5502.     92665342.     10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
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0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
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 0.0001444        10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494        10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544        10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594        11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644        11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694        11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744        11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794        11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844        11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894        11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944        11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994        11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044        11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094        11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
 0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
3.9998812    -60.000000 CY
 0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
3.9969940    -60.000000 CY
 0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
3.9997138    -60.000000 CY
 0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
3.9955528    -60.000000 CY
 0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
3.9989818    -60.000000 CY
 0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
3.9994466    -60.000000 CY
 0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
3.9965160    -60.000000 CY
 0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
3.9991770    -60.000000 CY
 0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
3.9995775    -60.000000 CY
 0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
3.9954763    -60.000000 CY
 0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
3.9984997    -60.000000 CY
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   0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
  3.9998981    -60.000000 CY
   0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
  3.9944635    -60.000000 CY
   0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
  3.9984635    -60.000000 CY
   0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
  3.9998209    -60.000000 CY
   0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
  3.9999551    -60.000000 CYT
   0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
  3.9996166    -60.000000 CYT
   0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
  3.9972132    -60.000000 CYT
   0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
  3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
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  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
   0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
   0.2364034     1.2822044
   0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
   0.2820914     1.5334776
   0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
   0.3275005     1.7847511
   0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
   0.3726306     2.0360248
   0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
   0.4174818     2.2872988
   0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
   0.4620539     2.5385732
   0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
   0.2893429     -4.300617 C
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0.00000750         2366.    315456672.    10.2575513    0.00007693     -0.000193
0.3141325     -4.698533 C
0.00000813         2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235     -5.096560 C
0.00000875         2366.    270391433.    10.2068278    0.00008931     -0.000226
0.3634446     -5.494492 C
0.00000938         2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959     -5.892330 C
0.00001000         2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772     -6.290073 C
0.00001063         2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884     -6.687720 C
0.00001125         2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294     -7.085271 C
0.00001188         2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002     -7.482727 C
0.00001250         2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005     -7.880086 C
0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963     -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433     -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
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0.00002313        2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375        2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438        2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563        2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688        2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813        2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
0.00002938        2779.     94598964.    10.0593353     0.0002955     -0.000762
1.1361324    -18.571425 C
0.00003063        2894.     94499555.    10.0607664     0.0003081     -0.000794
1.1804341    -19.360427 C
0.00003188        3009.     94403710.    10.0625387     0.0003207     -0.000827
1.2244416    -20.149010 C
0.00003313        3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688        3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
0.00003813        3582.     93965057.    10.0754214     0.0003841     -0.000988
1.4400326    -24.085550 C
0.00003938        3697.     93883511.    10.0786392     0.0003968     -0.001021
1.4822550    -24.871565 C
0.00004063        3811.     93803541.    10.0820299     0.0004096     -0.001053
1.5241766    -25.657144 C
0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
1.7292383    -29.578385 C
0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
1.7693344    -30.361284 C
0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
0.00005188        4831.     93133529.    10.1185657     0.0005249     -0.001343
1.8877721    -32.707231 C
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0.00005313        4944.     93062909.    10.1231546     0.0005378     -0.001375
1.9266309    -33.488287 C
0.00005438        5056.     92992807.    10.1278294     0.0005507     -0.001407
1.9651778    -34.268875 C
0.00005563        5169.     92923173.    10.1325862     0.0005636     -0.001439
2.0034117    -35.048992 C
0.00005688        5281.     92853961.    10.1374215     0.0005766     -0.001471
2.0413316    -35.828634 C
0.00005813        5393.     92785130.    10.1423320     0.0005895     -0.001503
2.0789362    -36.607799 C
0.00005938        5505.     92716640.    10.1473148     0.0006025     -0.001535
2.1162246    -37.386484 C
0.00006063        5617.     92648458.    10.1523672     0.0006155     -0.001567
2.1531956    -38.164685 C
0.00006188        5728.     92580549.    10.1574868     0.0006285     -0.001599
2.1898481    -38.942399 C
0.00006313        5840.     92512883.    10.1626714     0.0006415     -0.001631
2.2261809    -39.719622 C
0.00006438        5951.     92445433.    10.1679189     0.0006546     -0.001663
2.2621930    -40.496353 C
0.00006563        6062.     92378172.    10.1732276     0.0006676     -0.001695
2.2978832    -41.272587 C
0.00006688        6173.     92311077.    10.1785957     0.0006807     -0.001727
2.3332503    -42.048320 C
0.00006813        6284.     92244124.    10.1840217     0.0006938     -0.001759
2.3682931    -42.823550 C
0.00006938        6395.     92177292.    10.1895041     0.0007069     -0.001791
2.4030104    -43.598274 C
0.00007063        6505.     92110561.    10.1950417     0.0007200     -0.001822
2.4374011    -44.372486 C
0.00007188        6616.     92043913.    10.2006608     0.0007332     -0.001854
2.4714639    -45.146185 C
0.00007313        6726.     91977331.    10.2063053     0.0007463     -0.001886
2.5051976    -45.919366 C
0.00007438        6836.     91910797.    10.2120017     0.0007595     -0.001918
2.5386010    -46.692026 C
0.00007938        7274.     91644853.    10.2352897     0.0008124     -0.002045
2.6688860    -49.777380 C
0.00008438        7710.     91378587.    10.2593338     0.0008656     -0.002172
2.7937834    -52.854093 C
0.00008938        8143.     91111830.    10.2831857     0.0009191     -0.002298
2.9130226    -55.924331 C
0.00009438        8573.     90843621.    10.3077273     0.0009728     -0.002425
3.0266854    -58.985869 C
0.00009938        8982.     90387473.    10.3258078     0.0010261     -0.002551
3.1332951    -60.000000 CY
 0.0001044        9308.     89176212.    10.3143071     0.0010766     -0.002681
3.2283182    -60.000000 CY
 0.0001094        9549.     87304848.    10.2749831     0.0011238     -0.002814
3.3122821    -60.000000 CY
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 0.0001144        9785.     85553556.    10.2389100     0.0011711     -0.002946
3.3913727    -60.000000 CY
 0.0001194       10007.     83830919.    10.2019402     0.0012179     -0.003080
3.4649106    -60.000000 CY
 0.0001244       10158.     81671814.    10.1406407     0.0012612     -0.003216
3.5287895    -60.000000 CY
 0.0001294       10291.     79542859.    10.0787027     0.0013039     -0.003354
3.5876602    -60.000000 CY
 0.0001344       10423.     77564670.    10.0227059     0.0013468     -0.003491
3.6428308    -60.000000 CY
 0.0001394       10554.     75720878.     9.9720357     0.0013899     -0.003628
3.6942550    -60.000000 CY
 0.0001444       10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494       10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
 0.0001544       10929.     70796718.     9.8396771     0.0015190     -0.004038
3.8245440    -60.000000 CY
 0.0001594       11012.     69097838.     9.7838573     0.0015593     -0.004178
3.8578061    -60.000000 CY
 0.0001644       11075.     67376662.     9.7232508     0.0015983     -0.004319
3.8866026    -60.000000 CY
 0.0001694       11135.     65743511.     9.6663364     0.0016372     -0.004460
3.9121613    -60.000000 CY
 0.0001744       11195.     64200103.     9.6121495     0.0016761     -0.004601
3.9345463    -60.000000 CY
 0.0001794       11254.     62738857.     9.5628376     0.0017153     -0.004742
3.9537182    -60.000000 CY
 0.0001844       11312.     61351278.     9.5162917     0.0017546     -0.004883
3.9695496    -60.000000 CY
 0.0001894       11368.     60031354.     9.4717005     0.0017937     -0.005024
3.9820503    -60.000000 CY
 0.0001944       11425.     58775745.     9.4305957     0.0018331     -0.005164
3.9913005    -60.000000 CY
 0.0001994       11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
 0.0002044       11535.     56438298.     9.3556780     0.0019121     -0.005445
3.9998723    -60.000000 CY
 0.0002094       11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
 0.0002144       11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
 0.0002194       11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
 0.0002244       11744.     52339157.     9.2380944     0.0020728     -0.006005
3.9997330    -60.000000 CY
 0.0002294       11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
 0.0002344       11827.     50463153.     9.1821360     0.0021521     -0.006285
3.9990203    -60.000000 CY
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   0.0002394        11859.     49542728.     9.1500193     0.0021903     -0.006427
  3.9992468    -60.000000 CY
   0.0002444        11880.     48615611.     9.1135780     0.0022271     -0.006570
  3.9965958    -60.000000 CY
   0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
  3.9992162    -60.000000 CY
   0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
  3.9993713    -60.000000 CY
   0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
  3.9955701    -60.000000 CY
   0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
  3.9985538    -60.000000 CY
   0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
  3.9999119    -60.000000 CY
   0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
  3.9942523    -60.000000 CY
   0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
  3.9985257    -60.000000 CY
   0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
  3.9998424    -60.000000 CY
   0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
  3.9999658    -60.000000 CYT
   0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
  3.9996505    -60.000000 CYT
   0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
  3.9973093    -60.000000 CYT
   0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
  3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------- ------------- ------------- ------------- ------------- -------------
------------- ------------- ---
  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
   0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
   0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
   0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
   0.1907908     1.0334154
   0.00000313        1194.     382029703.    18.3159341    0.00005724   -0.00005526
   0.2367565     1.2846940
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0.00000375         1430.    381333494.    18.2638891    0.00006849   -0.00006651
0.2824433     1.5359729
0.00000438         1665.    380637159.    18.2267166    0.00007974   -0.00007776
0.3278510     1.7872522
0.00000500         1900.    379940746.    18.1988394    0.00009099   -0.00008901
0.3729798     2.0385317
0.00000563         2133.    379244280.    18.1771590     0.0001022     -0.000100
0.4178295     2.2898116
0.00000625         2366.    378547777.    18.1598165     0.0001135     -0.000112
0.4624003     2.5410917
0.00000688         2366.    344134343.    10.3291778    0.00007101     -0.000176
0.2904571     -4.292706 C
0.00000750         2366.    315456481.    10.2940289    0.00007721     -0.000193
0.3152465     -4.690597 C
0.00000813         2366.    291190598.    10.2646762    0.00008340     -0.000209
0.3399656     -5.088396 C
0.00000875         2366.    270391269.    10.2391817    0.00008959     -0.000225
0.3645893     -5.486283 C
0.00000938         2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378     -5.884113 C
0.00001000         2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162     -6.281848 C
0.00001063         2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246     -6.679488 C
0.00001125         2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628     -7.077032 C
0.00001188         2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307     -7.474480 C
0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
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0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
0.00002563         2436.     95048091.    10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688         2551.     94928657.    10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813         2667.     94815115.    10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938         2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063         2897.     94602733.    10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
0.00003188         3012.     94502697.    10.0717368     0.0003210     -0.000826
1.2254772    -20.140508 C
0.00003313         3127.     94406117.    10.0734845     0.0003337     -0.000859
1.2691834    -20.928652 C
0.00003438         3242.     94312597.    10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563         3357.     94221794.    10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
0.00003688         3471.     94133413.    10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813         3586.     94047197.    10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938         3700.     93962921.    10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063         3814.     93880388.    10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188         3928.     93799425.    10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313         4042.     93719877.    10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438         4155.     93641609.    10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
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0.00004563        4269.     93564497.    10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688        4382.     93488434.    10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813        4496.     93413321.    10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938        4609.     93339070.    10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063        4722.     93265602.    10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188        4834.     93192845.    10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313        4947.     93120733.    10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
0.00005438        5060.     93049206.    10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563        5172.     92978211.    10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
0.00005688        5284.     92907697.    10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813        5396.     92837619.    10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938        5508.     92767935.    10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063        5620.     92698606.    10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188        5731.     92629597.    10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
0.00006313        5843.     92560874.    10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438        5954.     92492407.    10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563        6065.     92424168.    10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688        6176.     92356130.    10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
0.00006813        6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938        6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063        6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188        6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313        6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
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0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
 0.0001544       10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594       11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644       11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694       11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744       11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794       11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844       11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894       11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944       11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994       11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044       11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
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   0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
   0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
   0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
   0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
   0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
   0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
   0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
   0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
   0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
   0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
   0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
   0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
   0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
   0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
   0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
   0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
   0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
   0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
   0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
3.9974037    -60.000000 CYT
   0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
3.9878351    -60.000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
```

Tens. No.	kips	in-kip	Strain	Strain
1	3.800	12169.214	0.00300000	-0.00952396
2	4.200	12173.120	0.00300000	-0.00952020
3	4.600	12177.027	0.00300000	-0.00951645

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.

```
   2       0.90           4.200000        12173.      3.780000        10956.
70254444.
   3       0.90           4.600000        12177.      4.140000        10959.
70287179.
```

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	1.0000	0.00	N.A.	No	0.00	8859.
2	4.0000	0.2172	No	No	8859.	59807.
3	5.4000	2.3620	Yes	No	68665.	123143.
4	9.4000	8.4000	No	No	191808.	0.00
5	11.9000	10.9000	No	No	0.00	0.00
6	16.9000	15.9000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

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

0.00	0.00949	315600.	1000.0000	-1.57E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.09000	0.00932	316681.	1000.	-1.56E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.1800	0.00915	317761.	1000.0000	-1.56E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.2700	0.00899	318842.	1000.0000	-1.55E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.3600	0.00882	319923.	1000.0000	-1.54E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.4500	0.00866	321004.	1000.0000	-1.53E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.5400	0.00849	322084.	1000.	-1.52E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.6300	0.00833	323165.	1000.0000	-1.51E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.7200	0.00816	324246.	1000.0000	-1.50E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.8100	0.00800	325326.	1000.	-1.49E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.9000	0.00784	326407.	1000.	-1.48E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.9900	0.00768	327488.	1000.	-1.47E-04	0.00	3.84E+11
0.00	0.00	0.00				
1.0800	0.00752	328568.	991.7174	-1.46E-04	0.00	3.84E+11
-15.338	2202.	0.00				
1.1700	0.00737	329631.	975.0747	-1.46E-04	0.00	3.84E+11
-15.482	2270.	0.00				
1.2600	0.00721	330676.	958.2792	-1.45E-04	0.00	3.84E+11
-15.621	2340.	0.00				
1.3500	0.00705	331702.	941.3358	-1.44E-04	0.00	3.84E+11
-15.756	2412.	0.00				
1.4400	0.00690	332710.	924.2494	-1.43E-04	0.00	3.84E+11
-15.886	2487.	0.00				
1.5300	0.00675	333700.	907.0249	-1.42E-04	0.00	3.84E+11
-16.011	2563.	0.00				
1.6200	0.00659	334671.	889.6674	-1.41E-04	0.00	3.84E+11
-16.132	2643.	0.00				
1.7100	0.00644	335623.	872.1821	-1.40E-04	0.00	3.84E+11
-16.248	2724.	0.00				
1.8000	0.00629	336556.	854.5742	-1.39E-04	0.00	3.84E+11
-16.359	2808.	0.00				
1.8900	0.00614	337470.	836.8491	-1.38E-04	0.00	3.84E+11
-16.465	2896.	0.00				
1.9800	0.00599	338365.	819.0121	-1.37E-04	0.00	3.84E+11
-16.566	2985.	0.00				
2.0700	0.00585	339240.	801.0688	-1.36E-04	0.00	3.84E+11
-16.662	3079.	0.00				

```
    2.1600    0.00570    340096.   783.0249  -1.35E-04       0.00   3.84E+11
-16.753      3175.       0.00
    2.2500    0.00555    340933.   764.8860  -1.34E-04       0.00   3.84E+11
-16.838      3275.       0.00
    2.3400    0.00541    341750.   746.6580  -1.33E-04       0.00   3.84E+11
-16.918      3378.       0.00
    2.4300    0.00527    342547.   728.3469  -1.32E-04       0.00   3.84E+11
-16.992      3485.       0.00
    2.5200    0.00512    343324.   709.9590  -1.31E-04       0.00   3.84E+11
-17.060      3596.       0.00
    2.6100    0.00498    344082.   691.5003  -1.30E-04       0.00   3.84E+11
-17.123      3712.       0.00
    2.7000    0.00484    344819.   672.9773  -1.29E-04       0.00   3.84E+11
-17.179      3832.       0.00
    2.7900    0.00470    345536.   654.3965  -1.28E-04       0.00   3.84E+11
-17.230      3957.       0.00
    2.8800    0.00456    346234.   635.7648  -1.27E-04       0.00   3.84E+11
-17.274      4087.       0.00
    2.9700    0.00443    346911.   617.0890  -1.26E-04       0.00   3.84E+11
-17.311      4223.       0.00
    3.0600    0.00429    347568.   598.3762  -1.25E-04       0.00   3.84E+11
-17.342      4365.       0.00
    3.1500    0.00416    348204.   579.6336  -1.25E-04       0.00   3.84E+11
-17.366      4513.       0.00
    3.2400    0.00402    348821.   560.8689  -1.24E-04       0.00   3.84E+11
-17.383      4668.       0.00
    3.3300    0.00389    349417.   542.0896  -1.23E-04       0.00   3.84E+11
-17.393      4830.       0.00
    3.4200    0.00376    349993.   523.3039  -1.22E-04       0.00   3.84E+11
-17.395      5000.       0.00
    3.5100    0.00363    350548.   504.5199  -1.21E-04       0.00   3.84E+11
-17.390      5179.       0.00
    3.6000    0.00350    351084.   485.7463  -1.20E-04       0.00   3.84E+11
-17.376      5366.       0.00
    3.6900    0.00337    351599.   466.9917  -1.19E-04       0.00   3.84E+11
-17.354      5564.       0.00
    3.7800    0.00324    352094.   448.2655  -1.18E-04       0.00   3.84E+11
-17.324      5773.       0.00
    3.8700    0.00311    352568.   429.5771  -1.17E-04       0.00   3.84E+11
-17.284      5994.       0.00
    3.9600    0.00299    353022.   410.9365  -1.16E-04       0.00   3.84E+11
-17.235      6228.       0.00
    4.0500    0.00286    353457.   124.6418  -1.15E-04       0.00   3.84E+11
-512.940   193397.        0.00
    4.1400    0.00274    353293.   -427.818  -1.14E-04       0.00   3.84E+11
-510.134   200991.        0.00
    4.2300    0.00262    352534.   -977.134  -1.13E-04       0.00   3.84E+11
-507.117   209126.        0.00
    4.3200    0.00250    351183.     -1523.  -1.12E-04       0.00   3.84E+11
-503.876   217868.        0.00
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    4.4100    0.00238    349245.     -2065.  -1.11E-04       0.00   3.84E+11
-500.397    227291.       0.00
    4.5000    0.00226    346723.     -2604.  -1.10E-04       0.00   3.84E+11
-496.663    237483.       0.00
    4.5900    0.00214    343622.     -3138.  -1.09E-04       0.00   3.84E+11
-492.657    248549.       0.00
    4.6800    0.00202    339946.     -3668.  -1.08E-04       0.00   3.84E+11
-488.357    260615.       0.00
    4.7700    0.00191    335700.     -4193.  -1.07E-04       0.00   3.84E+11
-483.738    273832.       0.00
    4.8600    0.00179    330891.     -4712.  -1.06E-04       0.00   3.84E+11
-478.771    288385.       0.00
    4.9500    0.00168    325522.     -5227.  -1.05E-04       0.00   3.84E+11
-473.423    304503.       0.00
    5.0400    0.00157    319602.     -5735.  -1.04E-04       0.00   3.84E+11
-467.654    322473.       0.00
    5.1300    0.00145    313136.     -6237.  -1.03E-04       0.00   3.84E+11
-461.417    342657.       0.00
    5.2200    0.00134    306132.     -6731.  -1.02E-04       0.00   3.85E+11
-454.653    365524.       0.00
    5.3100    0.00123    298598.     -7218.  -1.01E-04       0.00   3.85E+11
-447.293    391692.       0.00
    5.4000    0.00112    290541.     -7660.  -1.01E-04       0.00   3.85E+11
-371.253    356666.       0.00
    5.4900    0.00102    282052.     -8014.  -9.98E-05       0.00   3.85E+11
-284.536    302483.       0.00
    5.5800   9.09E-04    273231.     -8318.  -9.91E-05       0.00   3.85E+11
-278.053    330534.       0.00
    5.6700   8.02E-04    264086.     -8615.  -9.83E-05       0.00   3.85E+11
-270.826    364724.       0.00
    5.7600   6.96E-04    254625.     -8899.  -9.76E-05       0.00   3.85E+11
-255.869    396932.       0.00
    5.8500   5.91E-04    244865.     -9155.  -9.69E-05       0.00   3.85E+11
-218.324    398840.       0.00
    5.9400   4.87E-04    234851.     -9371.  -9.62E-05       0.00   3.85E+11
-180.683    400746.       0.00
    6.0300   3.83E-04    224626.     -9545.  -9.56E-05       0.00   3.85E+11
-142.939    402651.       0.00
    6.1200   2.81E-04    214234.     -9679.  -9.49E-05       0.00   3.85E+11
-105.085    404554.       0.00
    6.2100   1.78E-04    203719.     -9772.  -9.44E-05       0.00   3.85E+11
-67.112    406457.       0.00
    6.3000   7.67E-05    193127.     -9824.  -9.38E-05       0.00   3.85E+11
-29.012    408358.       0.00
    6.3900  -2.43E-05    182500.     -9835.  -9.33E-05       0.00   3.85E+11
9.2230    410258.       0.00
    6.4800  -1.25E-04    171884.     -9804.  -9.28E-05       0.00   3.85E+11
47.6021    412156.       0.00
    6.5700  -2.25E-04    161324.     -9732.  -9.23E-05       0.00   3.85E+11
86.1344    414054.       0.00
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    6.6600  -3.24E-04    150864.     -9618.  -9.19E-05       0.00   3.85E+11
124.8294    415951.       0.00
    6.7500  -4.23E-04    140550.     -9462.  -9.15E-05       0.00   3.85E+11
163.6963    417847.       0.00
    6.8400  -5.22E-04    130427.     -9264.  -9.11E-05       0.00   3.85E+11
202.7448    419741.       0.00
    6.9300  -6.20E-04    120540.     -9024.  -9.07E-05       0.00   3.85E+11
241.9843    421636.       0.00
    7.0200  -7.18E-04    110935.     -8741.  -9.04E-05       0.00   3.85E+11
281.4242    423529.       0.00
    7.1100  -8.15E-04    101659.     -8431.  -9.01E-05       0.00   3.85E+11
292.8491    388023.       0.00
    7.2000  -9.12E-04     92724.     -8110.  -8.98E-05       0.00   3.85E+11
302.5518    358185.       0.00
    7.2900   -0.00101     84143.     -7778.  -8.96E-05       0.00   3.85E+11
311.6573    333544.       0.00
    7.3800   -0.00111     75924.     -7437.  -8.94E-05       0.00   3.85E+11
320.2692    312810.       0.00
    7.4700   -0.00120     68080.     -7087.  -8.92E-05       0.00   3.85E+11
328.4663    295093.       0.00
    7.5600   -0.00130     60618.     -6728.  -8.90E-05       0.00   3.85E+11
336.3101    279756.       0.00
    7.6500   -0.00139     53549.     -6360.  -8.88E-05       0.00   3.85E+11
343.8493    266334.       0.00
    7.7400   -0.00149     46880.     -5985.  -8.87E-05       0.00   3.85E+11
351.1234    254477.       0.00
    7.8300   -0.00159     40622.     -5602.  -8.86E-05       0.00   3.85E+11
358.1650    243917.       0.00
    7.9200   -0.00168     34781.     -5212.  -8.84E-05       0.00   3.85E+11
365.0007    234443.       0.00
    8.0100   -0.00178     29366.     -4814.  -8.84E-05       0.00   3.85E+11
371.6534    225891.       0.00
    8.1000   -0.00187     24384.     -4409.  -8.83E-05       0.00   3.85E+11
378.1421    218126.       0.00
    8.1900   -0.00197     19843.     -3997.  -8.82E-05       0.00   3.85E+11
384.4833    211041.       0.00
    8.2800   -0.00206     15751.     -3578.  -8.82E-05       0.00   3.85E+11
390.6911    204547.       0.00
    8.3700   -0.00216     12114.     -3153.  -8.81E-05       0.00   3.85E+11
396.7778    198570.       0.00
    8.4600   -0.00225      8941.     -2721.  -8.81E-05       0.00   3.85E+11
402.7541    193048.       0.00
    8.5500   -0.00235      6237.     -2283.  -8.81E-05       0.00   3.85E+11
408.6293    187930.       0.00
    8.6400   -0.00244      4010.     -1839.  -8.81E-05       0.00   3.85E+11
414.4118    183170.       0.00
    8.7300   -0.00254      2266.     -1388.  -8.81E-05       0.00   3.85E+11
420.1087    178732.       0.00
    8.8200   -0.00263      1012.   -931.509  -8.80E-05       0.00   3.85E+11
425.7267    174582.       0.00
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    8.9100   -0.00273   254.3121   -468.731  -8.80E-05       0.00   3.85E+11
431.2714    170693.       0.00
    9.0000   -0.00282       0.00       0.00  -8.80E-05       0.00   3.85E+11
436.7481     83520.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.00949273 inches
Computed slope at pile head      =     -0.0001573 radians
Maximum bending moment           =        353457. inch-lbs
Maximum shear force              =         -9835. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.39000000 feet below pile head
Number of iterations             =             18
Number of zero deflection points =              1
Pile deflection at ground        =     0.00766506 inches



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

Boundary Condition Type 1, Shear and Moment

Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.00949273       353457.        -9835.
    8.55000    0.01606985       350826.       -10973.
    8.10000    0.03578496       347180.       -12299.
    7.65000    0.08650185       342845.       -13729.
    7.20000    0.22026624       338695.       -15250.
    6.75000    0.69913589       336200.       -17309.
    6.30000    2.30016415       336176.       -19875.
    5.85000   11.05718769       347798.       -24649.
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 4600.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. p	Distrib. Lat. Load
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.1857	724800.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1830	727242.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1803	729685.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1776	732127.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1749	734570.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1723	737012.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1696	739454.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.1669	741897.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.1642	744339.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.1615	746781.	2250.	-0.00248	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.1588	749224.	2250.	-0.00248	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.1561	751666.	2250.	-0.00248	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.1535	754108.	2227.	-0.00248	0.00	3.83E+11	-41.879	294.7053	0.00
1.1700	0.1508	756502.	2182.	-0.00247	0.00	3.83E+11	-42.322	303.1032	0.00
1.2600	0.1481	758846.	2136.	-0.00247	0.00	3.83E+11			

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-42.754   311.7204       0.00
    1.3500     0.1455    761140.      2090.   -0.00247       0.00   3.83E+11
-43.175   320.5667       0.00
    1.4400     0.1428    763384.      2043.   -0.00247       0.00   3.83E+11
-43.584   329.6530       0.00
    1.5300     0.1401    765577.      1995.   -0.00247       0.00   3.83E+11
-43.982   338.9905       0.00
    1.6200     0.1375    767719.      1948.   -0.00246       0.00   3.83E+11
-44.369   348.5915       0.00
    1.7100     0.1348    769809.      1900.   -0.00246       0.00   3.83E+11
-44.743   358.4691       0.00
    1.8000     0.1321    771846.      1851.   -0.00246       0.00   3.83E+11
-45.105   368.6371       0.00
    1.8900     0.1295    773831.      1802.   -0.00246       0.00   3.83E+11
-45.454   379.1106       0.00
    1.9800     0.1268    775763.      1753.   -0.00246       0.00   3.83E+11
-45.791   389.9056       0.00
    2.0700     0.1242    777642.      1703.   -0.00245       0.00   3.83E+11
-46.114   401.0392       0.00
    2.1600     0.1215    779467.      1653.   -0.00245       0.00   3.83E+11
-46.423   412.5302       0.00
    2.2500     0.1189    781238.      1603.   -0.00245       0.00   3.83E+11
-46.719   424.3986       0.00
    2.3400     0.1162    782954.      1552.   -0.00245       0.00   3.83E+11
-47.001   436.6660       0.00
    2.4300     0.1136    784615.      1502.   -0.00244       0.00   3.83E+11
-47.268   449.3558       0.00
    2.5200     0.1110    786221.      1450.   -0.00244       0.00   3.83E+11
-47.519   462.4935       0.00
    2.6100     0.1083    787772.      1399.   -0.00244       0.00   3.83E+11
-47.756   476.1065       0.00
    2.7000     0.1057    789267.      1347.   -0.00244       0.00   3.83E+11
-47.976   490.2249       0.00
    2.7900     0.1031    790706.      1295.   -0.00244       0.00   3.83E+11
-48.180   504.8815       0.00
    2.8800     0.1004    792089.      1243.   -0.00243       0.00   3.83E+11
-48.368   520.1119       0.00
    2.9700    0.09781    793416.      1191.   -0.00243       0.00   3.83E+11
-48.537   535.9552       0.00
    3.0600    0.09518    794685.      1138.   -0.00243       0.00   3.83E+11
-48.689   552.4545       0.00
    3.1500    0.09256    795898.      1086.   -0.00243       0.00   3.83E+11
-48.822   569.6571       0.00
    3.2400    0.08994    797054.      1033.   -0.00242       0.00   3.83E+11
-48.936   587.6150       0.00
    3.3300    0.08732    798153.   979.9427   -0.00242       0.00   3.83E+11
-49.030   606.3861       0.00
    3.4200    0.08471    799195.   926.9514   -0.00242       0.00   3.83E+11
-49.102   626.0342       0.00
    3.5100    0.08210    800180.   873.8930   -0.00242       0.00   3.83E+11
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-49.154   646.6308       0.00
    3.6000    0.07949    801107.   820.7913   -0.00242       0.00   3.83E+11
-49.183   668.2555       0.00
    3.6900    0.07688    801977.   767.6710   -0.00241       0.00   3.83E+11
-49.188   690.9974       0.00
    3.7800    0.07427    802789.   714.5581   -0.00241       0.00   3.83E+11
-49.169   714.9569       0.00
    3.8700    0.07167    803544.   661.4794   -0.00241       0.00   3.83E+11
-49.125   740.2473       0.00
    3.9600    0.06907    804242.   608.4635   -0.00241       0.00   3.83E+11
-49.053   766.9973       0.00
    4.0500    0.06647    804882.    -25.411   -0.00240       0.00   3.83E+11
-1125.     18275.       0.00
    4.1400    0.06388    804211.     -1237.   -0.00240       0.00   3.83E+11
-1120.     18933.       0.00
    4.2300    0.06129    802233.     -2444.   -0.00240       0.00   3.83E+11
-1114.     19637.       0.00
    4.3200    0.05870    798956.     -3644.   -0.00240       0.00   3.83E+11
-1108.     20394.       0.00
    4.4100    0.05611    794385.     -4838.   -0.00240       0.00   3.83E+11
-1102.     21209.       0.00
    4.5000    0.05352    788530.     -6024.   -0.00239       0.00   3.83E+11
-1095.     22091.       0.00
    4.5900    0.05094    781398.     -7202.   -0.00239       0.00   3.83E+11
-1087.     23048.       0.00
    4.6800    0.04836    772997.     -8372.   -0.00239       0.00   3.83E+11
-1079.     24091.       0.00
    4.7700    0.04578    763339.     -9532.   -0.00239       0.00   3.83E+11
-1070.     25234.       0.00
    4.8600    0.04320    752433.    -10682.   -0.00238       0.00   3.83E+11
-1060.     26491.       0.00
    4.9500    0.04063    740290.    -11820.   -0.00238       0.00   3.83E+11
-1049.     27884.       0.00
    5.0400    0.03806    726925.    -12947.   -0.00238       0.00   3.83E+11
-1037.     29436.       0.00
    5.1300    0.03549    712349.    -14060.   -0.00238       0.00   3.83E+11
-1025.     31179.       0.00
    5.2200    0.03292    696578.    -15159.   -0.00238       0.00   3.83E+11
-1011.     33153.       0.00
    5.3100    0.03036    679629.    -16242.   -0.00237       0.00   3.84E+11
-995.311     35411.       0.00
    5.4000    0.02779    661518.    -17226.   -0.00237       0.00   3.84E+11
-827.022     32137.       0.00
    5.4900    0.02523    642443.    -18016.   -0.00237       0.00   3.84E+11
-634.569     27161.       0.00
    5.5800    0.02267    622628.    -18694.   -0.00237       0.00   3.84E+11
-620.850     29573.       0.00
    5.6700    0.02012    602089.    -19356.   -0.00237       0.00   3.84E+11
-605.482     32507.       0.00
    5.7600    0.01756    580843.    -20000.   -0.00237       0.00   3.84E+11
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-588.093     36168.       0.00
    5.8500    0.01501    558911.    -20625.   -0.00236       0.00   3.84E+11
-568.156     40887.       0.00
    5.9400    0.01246    536317.    -21226.   -0.00236       0.00   3.84E+11
-544.883     47245.       0.00
    6.0300    0.00991    513087.    -21799.   -0.00236       0.00   3.84E+11
-517.000     56368.       0.00
    6.1200    0.00736    489254.    -22339.   -0.00236       0.00   3.84E+11
-482.217     70790.       0.00
    6.2100    0.00481    464859.    -22834.   -0.00236       0.00   3.84E+11
-435.649     97822.       0.00
    6.3000    0.00226    439955.    -23265.   -0.00236       0.00   3.84E+11
-362.537    172940.       0.00
    6.3900   -2.80E-04   414629.    -23404.   -0.00236       0.00   3.84E+11
106.5025    410258.       0.00
    6.4800   -0.00282    389427.    -23137.   -0.00235       0.00   3.84E+11
386.6806    147907.       0.00
    6.5700   -0.00537    364676.    -22682.   -0.00235       0.00   3.84E+11
456.0912     91806.       0.00
    6.6600   -0.00791    340456.    -22163.   -0.00235       0.00   3.84E+11
504.8103     68957.       0.00
    6.7500   -0.01045    316826.    -21597.   -0.00235       0.00   3.84E+11
543.6863     56210.       0.00
    6.8400   -0.01298    293830.    -20992.   -0.00235       0.00   3.85E+11
576.6800     47964.       0.00
    6.9300   -0.01552    271506.    -20354.   -0.00235       0.00   3.85E+11
605.7220     42143.       0.00
    7.0200   -0.01806    249889.    -19685.   -0.00235       0.00   3.85E+11
631.9103     37789.       0.00
    7.1100   -0.02060    229009.    -18990.   -0.00235       0.00   3.85E+11
655.9335     34395.       0.00
    7.2000   -0.02313    208894.    -18269.   -0.00235       0.00   3.85E+11
678.2542     31667.       0.00
    7.2900   -0.02567    189570.    -17526.   -0.00235       0.00   3.85E+11
699.1988     29420.       0.00
    7.3800   -0.02820    171062.    -16760.   -0.00235       0.00   3.85E+11
719.0073     27535.       0.00
    7.4700   -0.03074    153392.    -15973.   -0.00235       0.00   3.85E+11
737.8610     25927.       0.00
    7.5600   -0.03327    136583.    -15166.   -0.00235       0.00   3.85E+11
755.9009     24538.       0.00
    7.6500   -0.03580    120656.    -14341.   -0.00235       0.00   3.85E+11
773.2389     23325.       0.00
    7.7400   -0.03833    105631.    -13497.   -0.00234       0.00   3.85E+11
789.9652     22255.       0.00
    7.8300   -0.04087     91527.    -12635.   -0.00234       0.00   3.85E+11
806.1535     21304.       0.00
    7.9200   -0.04340     78363.    -11756.   -0.00234       0.00   3.85E+11
821.8654     20452.       0.00
    8.0100   -0.04593     66158.    -10860.   -0.00234       0.00   3.85E+11
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837.1522     19684.       0.00
    8.1000   -0.04846     54929.     -9948.   -0.00234       0.00   3.85E+11
852.0576     18988.       0.00
    8.1900   -0.05099     44694.     -9019.   -0.00234       0.00   3.85E+11
866.6191     18354.       0.00
    8.2800   -0.05353     35471.     -8076.   -0.00234       0.00   3.85E+11
880.8688     17773.       0.00
    8.3700   -0.05606     27274.     -7117.   -0.00234       0.00   3.85E+11
894.8347     17240.       0.00
    8.4600   -0.05859     20121.     -6143.   -0.00234       0.00   3.85E+11
908.5414     16748.       0.00
    8.5500   -0.06112     14028.     -5155.   -0.00234       0.00   3.85E+11
922.0103     16292.       0.00
    8.6400   -0.06365      9011.     -4152.   -0.00234       0.00   3.85E+11
935.2604     15869.       0.00
    8.7300   -0.06618      5084.     -3135.   -0.00234       0.00   3.85E+11
948.3088     15475.       0.00
    8.8200   -0.06871      2263.     -2103.   -0.00234       0.00   3.85E+11
961.1705     15107.       0.00
    8.9100   -0.07124   563.6178     -1059.   -0.00234       0.00   3.85E+11
973.8590     14763.       0.00
    9.0000   -0.07377       0.00       0.00   -0.00234       0.00   3.85E+11
986.3864      7220.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.18573893 inches
Computed slope at pile head      =     -0.0025021 radians
Maximum bending moment           =        804882. inch-lbs
Maximum shear force              =        -23404. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.39000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.15585133 inches


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            Pile-head Deflection vs. Pile Length for Load Case 2
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Boundary Condition Type 1, Shear and Moment

Shear = 2250. lbs
Moment = 724800. in-lbs
Axial Load = 4600. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.18573893	804882.	-23404.
8.55000	0.35602534	797233.	-25350.
8.10000	0.84781379	788786.	-27956.
7.65000	2.12381830	783558.	-31196.
7.20000	5.74910316	782143.	-35083.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 3800.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.1856	724800.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1829	727240.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1802	729681.	2250.	-0.00250	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1775	732121.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1748	734561.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1721	737001.	2250.	-0.00249	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1694	739441.	2250.	-0.00249	0.00	3.83E+11			

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0.00       0.00       0.00
    0.6300     0.1667    741882.      2250.   -0.00249       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.1640    744322.      2250.   -0.00248       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.1614    746762.      2250.   -0.00248       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.1587    749202.      2250.   -0.00248       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.1560    751642.      2250.   -0.00248       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.1533    754083.      2227.   -0.00247       0.00   3.83E+11
-41.866   294.8786       0.00
    1.1700     0.1507    756474.      2182.   -0.00247       0.00   3.83E+11
-42.309   303.2816       0.00
    1.2600     0.1480    758816.      2136.   -0.00247       0.00   3.83E+11
-42.741   311.9038       0.00
    1.3500     0.1453    761108.      2090.   -0.00247       0.00   3.83E+11
-43.162   320.7555       0.00
    1.4400     0.1427    763350.      2043.   -0.00247       0.00   3.83E+11
-43.571   329.8471       0.00
    1.5300     0.1400    765541.      1996.   -0.00246       0.00   3.83E+11
-43.969   339.1902       0.00
    1.6200     0.1373    767680.      1948.   -0.00246       0.00   3.83E+11
-44.356   348.7970       0.00
    1.7100     0.1347    769768.      1900.   -0.00246       0.00   3.83E+11
-44.730   358.6804       0.00
    1.8000     0.1320    771804.      1851.   -0.00246       0.00   3.83E+11
-45.091   368.8545       0.00
    1.8900     0.1294    773787.      1802.   -0.00246       0.00   3.83E+11
-45.441   379.3342       0.00
    1.9800     0.1267    775717.      1753.   -0.00245       0.00   3.83E+11
-45.777   390.1356       0.00
    2.0700     0.1241    777594.      1703.   -0.00245       0.00   3.83E+11
-46.100   401.2759       0.00
    2.1600     0.1214    779416.      1653.   -0.00245       0.00   3.83E+11
-46.410   412.7738       0.00
    2.2500     0.1188    781185.      1603.   -0.00245       0.00   3.83E+11
-46.705   424.6493       0.00
    2.3400     0.1161    782900.      1553.   -0.00244       0.00   3.83E+11
-46.987   436.9240       0.00
    2.4300     0.1135    784559.      1502.   -0.00244       0.00   3.83E+11
-47.254   449.6213       0.00
    2.5200     0.1109    786163.      1451.   -0.00244       0.00   3.83E+11
-47.505   462.7668       0.00
    2.6100     0.1082    787712.      1399.   -0.00244       0.00   3.83E+11
-47.742   476.3880       0.00
    2.7000     0.1056    789205.      1347.   -0.00244       0.00   3.83E+11
-47.962   490.5148       0.00
    2.7900     0.1030    790643.      1296.   -0.00243       0.00   3.83E+11
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-48.166   505.1801       0.00
    2.8800     0.1003    792024.      1243.   -0.00243       0.00   3.83E+11
-48.353   520.4196       0.00
    2.9700    0.09772    793348.      1191.   -0.00243       0.00   3.83E+11
-48.523   536.2724       0.00
    3.0600    0.09510    794616.      1139.   -0.00243       0.00   3.83E+11
-48.675   552.7816       0.00
    3.1500    0.09248    795828.      1086.   -0.00242       0.00   3.83E+11
-48.808   569.9944       0.00
    3.2400    0.08986    796982.      1033.   -0.00242       0.00   3.83E+11
-48.921   587.9630       0.00
    3.3300    0.08725    798079.   980.3179   -0.00242       0.00   3.83E+11
-49.015   606.7452       0.00
    3.4200    0.08463    799119.   927.3424   -0.00242       0.00   3.83E+11
-49.088   626.4051       0.00
    3.5100    0.08202    800102.   874.2997   -0.00242       0.00   3.83E+11
-49.139   647.0140       0.00
    3.6000    0.07942    801028.   821.2137   -0.00241       0.00   3.83E+11
-49.168   668.6515       0.00
    3.6900    0.07681    801896.   768.1092   -0.00241       0.00   3.83E+11
-49.174   691.4069       0.00
    3.7800    0.07421    802707.   715.0120   -0.00241       0.00   3.83E+11
-49.155   715.3806       0.00
    3.8700    0.07161    803460.   661.9491   -0.00241       0.00   3.83E+11
-49.110   740.6861       0.00
    3.9600    0.06901    804156.   608.9488   -0.00240       0.00   3.83E+11
-49.039   767.4519       0.00
    4.0500    0.06641    804795.    -24.783   -0.00240       0.00   3.83E+11
-1125.     18287.       0.00
    4.1400    0.06382    804122.     -1237.   -0.00240       0.00   3.83E+11
-1120.     18945.       0.00
    4.2300    0.06123    802144.     -2443.   -0.00240       0.00   3.83E+11
-1114.     19650.       0.00
    4.3200    0.05864    798866.     -3643.   -0.00240       0.00   3.83E+11
-1108.     20408.       0.00
    4.4100    0.05606    794295.     -4836.   -0.00239       0.00   3.83E+11
-1102.     21224.       0.00
    4.5000    0.05347    788440.     -6022.   -0.00239       0.00   3.83E+11
-1095.     22106.       0.00
    4.5900    0.05089    781307.     -7200.   -0.00239       0.00   3.83E+11
-1087.     23063.       0.00
    4.6800    0.04831    772908.     -8369.   -0.00239       0.00   3.83E+11
-1078.     24107.       0.00
    4.7700    0.04574    763250.     -9529.   -0.00238       0.00   3.83E+11
-1069.     25250.       0.00
    4.8600    0.04316    752345.    -10679.   -0.00238       0.00   3.83E+11
-1059.     26509.       0.00
    4.9500    0.04059    740204.    -11817.   -0.00238       0.00   3.83E+11
-1049.     27902.       0.00
    5.0400    0.03802    726840.    -12943.   -0.00238       0.00   3.83E+11
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-1037.     29456.       0.00
    5.1300    0.03546    712266.    -14056.   -0.00238       0.00   3.83E+11
-1024.     31200.       0.00
    5.2200    0.03289    696497.    -15155.   -0.00237       0.00   3.83E+11
-1010.     33175.       0.00
    5.3100    0.03033    679550.    -16238.   -0.00237       0.00   3.84E+11
-995.091    35434.       0.00
    5.4000    0.02777    661442.    -17222.   -0.00237       0.00   3.84E+11
-826.839    32158.       0.00
    5.4900    0.02521    642370.    -18011.   -0.00237       0.00   3.84E+11
-634.429    27179.       0.00
    5.5800    0.02265    622558.    -18689.   -0.00237       0.00   3.84E+11
-620.714    29592.       0.00
    5.6700    0.02010    602022.    -19351.   -0.00236       0.00   3.84E+11
-605.349    32528.       0.00
    5.7600    0.01755    580779.    -19995.   -0.00236       0.00   3.84E+11
-587.964    36191.       0.00
    5.8500    0.01499    558851.    -20620.   -0.00236       0.00   3.84E+11
-568.033    40913.       0.00
    5.9400    0.01245    536260.    -21220.   -0.00236       0.00   3.84E+11
-544.766    47276.       0.00
    6.0300    0.00990    513034.    -21794.   -0.00236       0.00   3.84E+11
-516.890    56404.       0.00
    6.1200    0.00735    489205.    -22333.   -0.00236       0.00   3.84E+11
-482.117    70834.       0.00
    6.2100    0.00481    464814.    -22829.   -0.00236       0.00   3.84E+11
-435.564    97880.       0.00
    6.3000    0.00226    439915.    -23260.   -0.00235       0.00   3.84E+11
-362.478   173025.       0.00
    6.3900   -2.80E-04   414592.    -23398.   -0.00235       0.00   3.84E+11
106.1918   410258.       0.00
    6.4800   -0.00282    389394.    -23132.   -0.00235       0.00   3.84E+11
386.5736   148029.       0.00
    6.5700   -0.00536    364647.    -22677.   -0.00235       0.00   3.84E+11
455.9758    91875.       0.00
    6.6600   -0.00790    340431.    -22158.   -0.00235       0.00   3.84E+11
504.6869    69008.       0.00
    6.7500   -0.01044    316804.    -21592.   -0.00235       0.00   3.84E+11
543.5557    56251.       0.00
    6.8400   -0.01297    293811.    -20987.   -0.00235       0.00   3.85E+11
576.5430    47998.       0.00
    6.9300   -0.01551    271491.    -20349.   -0.00235       0.00   3.85E+11
605.5791    42173.       0.00
    7.0200   -0.01804    249876.    -19681.   -0.00235       0.00   3.85E+11
631.7620    37815.       0.00
    7.1100   -0.02058    228999.    -18986.   -0.00235       0.00   3.85E+11
655.7802    34419.       0.00
    7.2000   -0.02311    208887.    -18265.   -0.00235       0.00   3.85E+11
678.0962    31689.       0.00
    7.2900   -0.02564    189565.    -17522.   -0.00234       0.00   3.85E+11
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699.0364     29441.       0.00
    7.3800   -0.02818    171059.    -16756.   -0.00234       0.00   3.85E+11
718.8405     27554.       0.00
    7.4700   -0.03071    153392.    -15969.   -0.00234       0.00   3.85E+11
737.6901     25945.       0.00
    7.5600   -0.03324    136585.    -15163.   -0.00234       0.00   3.85E+11
755.7261     24555.       0.00
    7.6500   -0.03577    120659.    -14337.   -0.00234       0.00   3.85E+11
773.0603     23341.       0.00
    7.7400   -0.03830    105635.    -13494.   -0.00234       0.00   3.85E+11
789.7829     22271.       0.00
    7.8300   -0.04083     91532.    -12632.   -0.00234       0.00   3.85E+11
805.9677     21319.       0.00
    7.9200   -0.04336     78369.    -11753.   -0.00234       0.00   3.85E+11
821.6761     20466.       0.00
    8.0100   -0.04589     66165.    -10857.   -0.00234       0.00   3.85E+11
836.9595     19698.       0.00
    8.1000   -0.04842     54937.     -9945.   -0.00234       0.00   3.85E+11
851.8616     19001.       0.00
    8.1900   -0.05095     44703.     -9017.   -0.00234       0.00   3.85E+11
866.4198     18367.       0.00
    8.2800   -0.05348     35479.     -8074.   -0.00234       0.00   3.85E+11
880.6663     17786.       0.00
    8.3700   -0.05601     27282.     -7115.   -0.00234       0.00   3.85E+11
894.6292     17252.       0.00
    8.4600   -0.05853     20129.     -6142.   -0.00234       0.00   3.85E+11
908.3327     16759.       0.00
    8.5500   -0.06106     14035.     -5153.   -0.00234       0.00   3.85E+11
921.7986     16303.       0.00
    8.6400   -0.06359      9017.     -4151.   -0.00234       0.00   3.85E+11
935.0458     15880.       0.00
    8.7300   -0.06612      5089.     -3134.   -0.00234       0.00   3.85E+11
948.0913     15486.       0.00
    8.8200   -0.06865      2267.     -2103.   -0.00234       0.00   3.85E+11
960.9501     15118.       0.00
    8.9100   -0.07118   565.5195     -1058.   -0.00234       0.00   3.85E+11
973.6357     14773.       0.00
    9.0000   -0.07371       0.00       0.00   -0.00234       0.00   3.85E+11
986.1604      7225.       0.00
```

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

Output Summary for Load Case No. 3:

```
Pile-head deflection              =     0.18557582 inches
Computed slope at pile head       =     -0.0025000 radians
Maximum bending moment            =        804795. inch-lbs
Maximum shear force               =        -23398. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.39000000 feet below pile head
Number of iterations              =             35
Number of zero deflection points  =              1
Pile deflection at ground         =     0.15571393 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.18557582       804795.       -23398.
    8.55000    0.35541443       797064.       -25338.
    8.10000    0.84434207       788411.       -27925.
    7.65000    2.10183448       782700.       -31111.
    7.20000    5.58293220       779854.       -34812.
    6.75000   23.91831710       802463.       -42944.

--------------------------------------------------------------------------------
            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 Load                Load                  Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
```

Pile No.	in Pile 1 Load 1		2 Load 2		lbs	inches	radians	lbs in-lbs
1	V, lb	1000.0000	M, in-lb	315600.	4200.	0.00949	-1.57E-04	-9835. 353457.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.1857	-0.00250	-23404. 804882.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.1856	-0.00250	-23398. 804795.

Maximum pile-head deflection = 0.1857389334 inches
Maximum pile-head rotation = -0.0025021269 radians = -0.143361 deg.

The analysis ended normally.

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LIGHT TOWER PR-10
(B-006-0-25 & B-005-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-10 (Boring B-006-0-25 & B-005-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

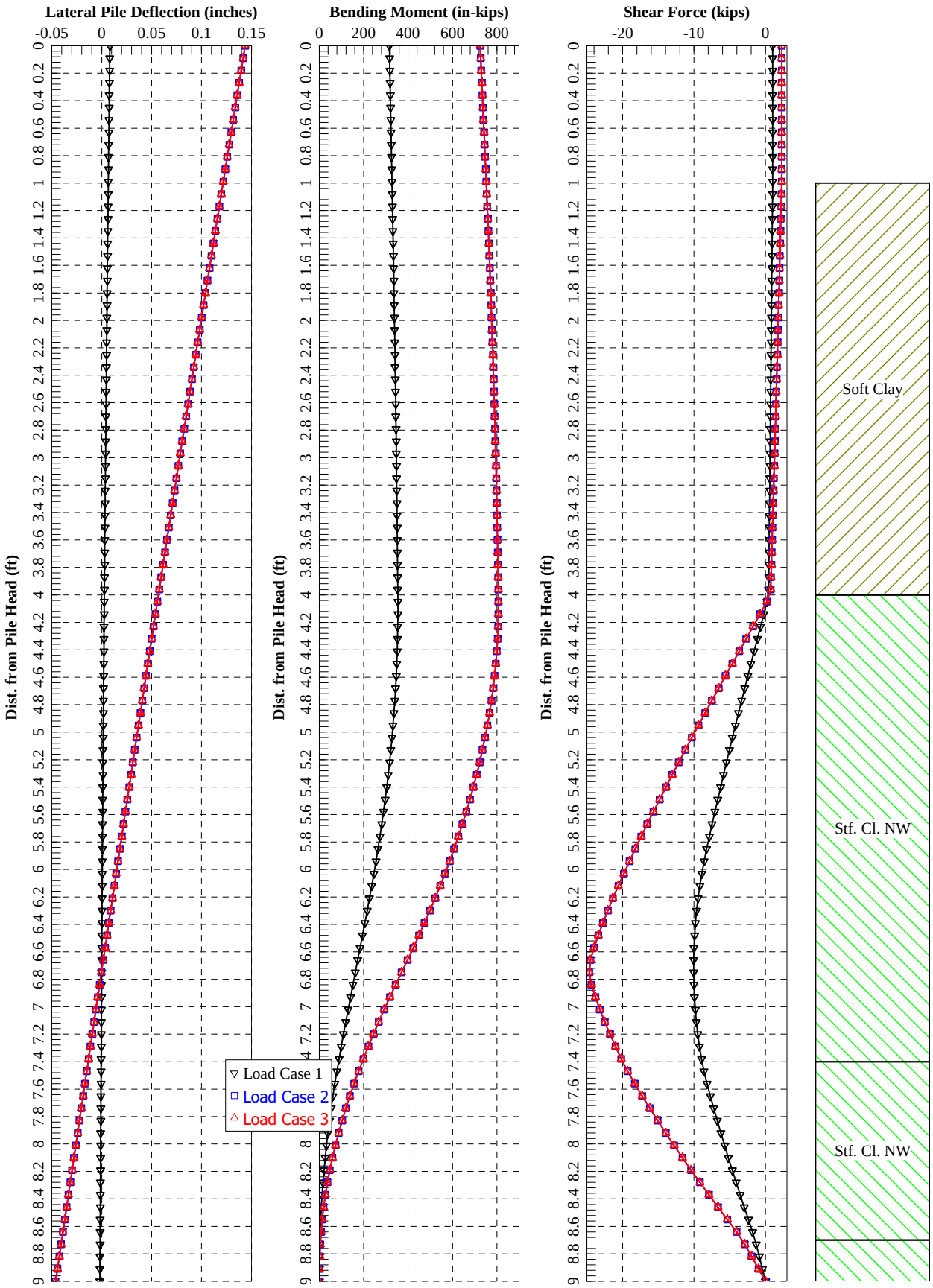


PLATE 137

```
================================================================================

                          LPile for Version 2022-12.012

                            License ID : 228332755
                       License Type : (Single User License)

                  Analysis of Individual Piles and Drilled Shafts
                 Subjected to Lateral Loading Using the p-y Method
                            © 1985-2024 by Ensoft, Inc.
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                                  S&ME, Inc.
                                Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                           Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\EB\

Name of input data file:
Tower PR-10 (B-006-0-25 & B-005-0-25).lp12d

Name of output report file:
Tower PR-10 (B-006-0-25 & B-005-0-25).lp12o

Name of plot output file:
Tower PR-10 (B-006-0-25 & B-005-0-25).lp12p

Name of runtime message file:
Tower PR-10 (B-006-0-25 & B-005-0-25).lp12r



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:40:07

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower PR-10 (B-006-0-25 & B-005-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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




--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet              inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 7 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	7.400000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Undrained cohesion at top of layer	=	4000. psf
Undrained cohesion at bottom of layer	=	4000. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.400000 ft
Distance from top of pile to bottom of layer	=	8.700000 ft
Effective unit weight at top of layer	=	56.000000 pcf
Effective unit weight at bottom of layer	=	56.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.004000
Epsilon-50 at bottom of layer	=	0.004000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	8.700000 ft
Distance from top of pile to bottom of layer	=	12.700000 ft
Effective unit weight at top of layer	=	53.000000 pcf

```
   Effective unit weight at bottom of layer            =    53.000000 pcf
   Undrained cohesion at top of layer                  =        3000. psf
   Undrained cohesion at bottom of layer               =        3000. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


Layer 5 is soft clay, p-y criteria by Matlock, 1970

   Distance from top of pile to top of layer           =    12.700000 ft
   Distance from top of pile to bottom of layer        =    15.200000 ft
   Effective unit weight at top of layer               =    53.000000 pcf
   Effective unit weight at bottom of layer            =    53.000000 pcf
   Undrained cohesion at top of layer                  =   600.000000 psf
   Undrained cohesion at bottom of layer               =   600.000000 psf
   Epsilon-50 at top of layer                          =     0.010000
   Epsilon-50 at bottom of layer                       =     0.010000


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =    15.200000 ft
   Distance from top of pile to bottom of layer        =    20.200000 ft
   Effective unit weight at top of layer               =    63.000000 pcf
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 7 is stiff clay without free water

   Distance from top of pile to top of layer           =    20.200000 ft
   Distance from top of pile to bottom of layer        =    28.700000 ft
   Effective unit weight at top of layer               =    60.000000 pcf
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 19.700 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000 4.0000	98.0000 98.0000	250.0000 250.0000	0.02000 0.02000
2	Stiff Clay w/o Free Water	4.0000 7.4000	60.0000 60.0000	4000. 4000.	0.00500 0.00500
3	Stiff Clay w/o Free Water	7.4000 8.7000	56.0000 56.0000	4500. 4500.	0.00400 0.00400
4	Stiff Clay w/o Free Water	8.7000 12.7000	53.0000 53.0000	3000. 3000.	0.00500 0.00500
5	Soft Clay	12.7000 15.2000	53.0000 53.0000	600.0000 600.0000	0.01000 0.01000
6	Stiff Clay w/o Free Water	15.2000 20.2000	63.0000 63.0000	4500. 4500.	0.00400 0.00400
7	Stiff Clay w/o Free Water	20.2000 28.7000	60.0000 60.0000	4500. 4500.	0.00400 0.00400

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 Compute No.	Load Top y Type	Condition 1 Run Analysis	Condition 2	Axial Thrust Force, lbs vs. Pile Length
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.
Yes		Yes		
2	1	V = 2250. lbs	M = 724800. in-lbs	4600.
Yes		Yes		
3	1	V = 2250. lbs	M = 724800. in-lbs	3800.
Yes		Yes		

V = shear force applied normal to pile axis
M = bending moment applied to pile head

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



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
-------------------------------------------------------

Length of Section                                    =     9.000000 ft
Shaft Diameter                                       =    36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)  =     3.500000 in
Number of Reinforcing Bars                           =           16 bars
Yield Stress of Reinforcing Bars                     =       60000. psi
Modulus of Elasticity of Reinforcing Bars            =    29000000. psi
Gross Area of Shaft                                  =        1018. sq. in.
Total Area of Reinforcing Steel                      =    16.000000 sq. in.
Area Ratio of Steel Reinforcement                    =         1.57 percent
Edge-to-Edge Bar Spacing                             =     4.114467 in
Maximum Concrete Aggregate Size                      =     0.750000 in
Ratio of Bar Spacing to Aggregate Size               =         5.49
Offset of Center of Rebar Cage from Center of Pile   =       0.0000 in
Transverse Reinforcement
Type: Spiral
Number of Transverse Reinf. (per spacing)            =            1
Spacing of Transverse Reinf.                         =     4.500000 in
Yield Stress of Transverse Reinf.                    =       60000. psi
Diameter of Transverse Reinf.                        =     0.500000 in

Axial Structural Capacities:
----------------------------

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As  =     4366.378 kips
Tensile Load for Cracking of Concrete                =     -470.222 kips
Nominal Axial Tensile Capacity                       =     -960.000 kips
```

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200

```
      3                4.600


Definitions of Run Messages and Notes:
--------------------------------------

  C = concrete in section has cracked in tension.
  Y = stress in reinforcing steel has reached yield stress.
  T = ACI 318 criteria for tension-controlled section met, tensile strain in
      reinforcement exceeds 0.005 while simultaneously compressive strain in
      concrete more than 0.003. See ACI 318-14, Section 21.2.3.
  Z = depth of tensile zone in concrete section is less than 10 percent of
      section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.


Axial Thrust Force =      3.800 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5062135    384809942.    19.2929823    0.00001206   -0.00001044
   0.0505030     0.2746478
   0.00000125   480.1472468    384117797.    18.6479768    0.00002331   -0.00002169
   0.0973082     0.5259142
   0.00000188   718.9174733    383422652.    18.4329804    0.00003456   -0.00003294
   0.1438345     0.7771808
   0.00000250   956.8168886    382726755.    18.3254857    0.00004581   -0.00004419
   0.1900818     1.0284477
   0.00000313         1194.    382030558.    18.2609917    0.00005707   -0.00005543
   0.2360502     1.2797149
   0.00000375         1430.    381334209.    18.2179981    0.00006832   -0.00006668
   0.2817396     1.5309823
   0.00000438         1665.    380637775.    18.1872904    0.00007957   -0.00007793
   0.3271500     1.7822500
   0.00000500         1900.    379941287.    18.1642614    0.00009082   -0.00008918
   0.3722815     2.0335179
   0.00000563         2133.    379244764.    18.1463515     0.0001021     -0.000100
   0.4171340     2.2847861
   0.00000625         2366.    378548215.    18.1320251     0.0001133     -0.000112
   0.4617075     2.5360546
```

```
0.00000688         2366.    344134741.    10.2494785    0.00007047     -0.000177
0.2882187     -4.308598 C
0.00000750         2366.    315456846.    10.2198771    0.00007665     -0.000193
0.3129821     -4.706727 C
0.00000813         2366.    291190934.    10.1952302    0.00008284     -0.000210
0.3376758     -5.104761 C
0.00000875         2366.    270391582.    10.1744772    0.00008903     -0.000226
0.3622998     -5.502701 C
0.00000938         2366.    252365477.    10.1568402    0.00009522     -0.000242
0.3868539     -5.900547 C
0.00001000         2366.    236592634.    10.1417358     0.0001014     -0.000259
0.4113380     -6.298297 C
0.00001063         2366.    222675420.    10.1287027     0.0001076     -0.000275
0.4357521     -6.695951 C
0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
```

```
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063         3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188         3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313         4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438         4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563         4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688         4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813         4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938         4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063         4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
```

```
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1.9257039    -33.497091 C
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1.9642575    -34.277698 C
0.00005563         5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
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2.0404247    -35.837495 C
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2.1153313    -37.395383 C
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2.2970245    -41.281586 C
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2.3323987    -42.057340 C
0.00006813         6281.     92199976.    10.1794453     0.0006935     -0.001759
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3.9969940    -60.000000 CY
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3.9955528    -60.000000 CY
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   3.9994466    -60.000000 CY
    0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
   3.9965160    -60.000000 CY
    0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
   3.9991770    -60.000000 CY
    0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
   3.9995775    -60.000000 CY
    0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
   3.9954763    -60.000000 CY
    0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
   3.9984997    -60.000000 CY
    0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
   3.9998981    -60.000000 CY
    0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
   3.9944635    -60.000000 CY
    0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
   3.9984635    -60.000000 CY
    0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
   3.9998209    -60.000000 CY
    0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
   3.9999551    -60.000000 CYT
    0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
   3.9996166    -60.000000 CYT
    0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
   3.9972132    -60.000000 CYT
    0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
   3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------- ------------- ------------- ------------- ------------- -------------
------------- ------------- ---
  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
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0.2820914    1.5334776
0.00000438        1665.    380637482.    18.2070035    0.00007966   -0.00007784
0.3275005    1.7847511
0.00000500        1900.    379941029.    18.1815504    0.00009091   -0.00008909
0.3726306    2.0360248
0.00000563        2133.    379244533.    18.1617553     0.0001022     -0.000100
0.4174818    2.2872988
0.00000625        2366.    378548006.    18.1459208     0.0001134     -0.000112
0.4620539    2.5385732
0.00000688        2366.    344134551.    10.2895004    0.00007074     -0.000177
0.2893429    -4.300617 C
0.00000750        2366.    315456672.    10.2575513    0.00007693     -0.000193
0.3141325    -4.698533 C
0.00000813        2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235    -5.096560 C
0.00000875        2366.    270391433.    10.2068278    0.00008931     -0.000226
0.3634446    -5.494492 C
0.00000938        2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959    -5.892330 C
0.00001000        2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772    -6.290073 C
0.00001063        2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884    -6.687720 C
0.00001125        2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294    -7.085271 C
0.00001188        2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002    -7.482727 C
0.00001250        2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005    -7.880086 C
0.00001313        2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304    -8.277349 C
0.00001375        2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898    -8.674515 C
0.00001438        2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784    -9.071585 C
0.00001500        2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963    -9.468556 C
0.00001563        2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433    -9.865431 C
0.00001625        2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193   -10.262207 C
0.00001688        2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242   -10.658886 C
0.00001750        2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579   -11.055466 C
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 0.0001844       11312.     61351278.     9.5162917     0.0017546     -0.004883
3.9695496    -60.000000 CY
 0.0001894       11368.     60031354.     9.4717005     0.0017937     -0.005024
3.9820503    -60.000000 CY
 0.0001944       11425.     58775745.     9.4305957     0.0018331     -0.005164
3.9913005    -60.000000 CY
 0.0001994       11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
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 0.0002044        11535.     56438298.     9.3556780     0.0019121     -0.005445
3.9998723    -60.000000 CY
 0.0002094        11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
 0.0002144        11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
 0.0002194        11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
 0.0002244        11744.     52339157.     9.2380944     0.0020728     -0.006005
3.9997330    -60.000000 CY
 0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
 0.0002344        11827.     50463153.     9.1821360     0.0021521     -0.006285
3.9990203    -60.000000 CY
 0.0002394        11859.     49542728.     9.1500193     0.0021903     -0.006427
3.9992468    -60.000000 CY
 0.0002444        11880.     48615611.     9.1135780     0.0022271     -0.006570
3.9965958    -60.000000 CY
 0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
 0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
 0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
3.9955701    -60.000000 CY
 0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
3.9985538    -60.000000 CY
 0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
3.9999119    -60.000000 CY
 0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
3.9942523    -60.000000 CY
 0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
3.9985257    -60.000000 CY
 0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
3.9998424    -60.000000 CY
 0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
3.9999658    -60.000000 CYT
 0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
3.9996505    -60.000000 CYT
 0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
3.9973093    -60.000000 CYT
 0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
```

rad/in.	in-kip	kip-in2	in	in/in	in/in
ksi	ksi				
6.25000E-07	240.5035986	384805758.	19.5651901	0.00001223	-0.00001027
0.0512199	0.2795816				
0.00000125	480.1446137	384115691.	18.7843907	0.00002348	-0.00002152
0.0980225	0.5308592				
0.00000188	718.9148267	383421241.	18.5241312	0.00003473	-0.00003277
0.1445462	0.7821371				
0.00000250	956.8142298	382725692.	18.3940059	0.00004599	-0.00004401
0.1907908	1.0334154				
0.00000313	1194.	382029703.	18.3159341	0.00005724	-0.00005526
0.2367565	1.2846940				
0.00000375	1430.	381333494.	18.2638891	0.00006849	-0.00006651
0.2824433	1.5359729				
0.00000438	1665.	380637159.	18.2267166	0.00007974	-0.00007776
0.3278510	1.7872522				
0.00000500	1900.	379940746.	18.1988394	0.00009099	-0.00008901
0.3729798	2.0385317				
0.00000563	2133.	379244280.	18.1771590	0.0001022	-0.000100
0.4178295	2.2898116				
0.00000625	2366.	378547777.	18.1598165	0.0001135	-0.000112
0.4624003	2.5410917				
0.00000688	2366.	344134343.	10.3291778	0.00007101	-0.000176
0.2904571	-4.292706 C				
0.00000750	2366.	315456481.	10.2940289	0.00007721	-0.000193
0.3152465	-4.690597 C				
0.00000813	2366.	291190598.	10.2646762	0.00008340	-0.000209
0.3399656	-5.088396 C				
0.00000875	2366.	270391269.	10.2391817	0.00008959	-0.000225
0.3645893	-5.486283 C				
0.00000938	2366.	252365185.	10.2172859	0.00009579	-0.000242
0.3891378	-5.884113 C				
0.00001000	2366.	236592361.	10.1984552	0.0001020	-0.000258
0.4136162	-6.281848 C				
0.00001063	2366.	222675163.	10.1821496	0.0001082	-0.000274
0.4380246	-6.679488 C				
0.00001125	2366.	210304321.	10.1679490	0.0001144	-0.000291
0.4623628	-7.077032 C				
0.00001188	2366.	199235672.	10.1555219	0.0001206	-0.000307
0.4866307	-7.474480 C				
0.00001250	2366.	189273889.	10.1446030	0.0001268	-0.000323
0.5108282	-7.871831 C				
0.00001313	2366.	180260846.	10.1349589	0.0001330	-0.000339
0.5349552	-8.269087 C				
0.00001375	2366.	172067171.	10.1264498	0.0001392	-0.000356
0.5590117	-8.666245 C				
0.00001438	2366.	164585990.	10.1189132	0.0001455	-0.000372
0.5829974	-9.063307 C				

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0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
0.00002563         2436.     95048091.    10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688         2551.     94928657.    10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813         2667.     94815115.    10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938         2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063         2897.     94602733.    10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
0.00003188         3012.     94502697.    10.0717368     0.0003210     -0.000826
1.2254772    -20.140508 C
0.00003313         3127.     94406117.    10.0734845     0.0003337     -0.000859
1.2691834    -20.928652 C
0.00003438         3242.     94312597.    10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563         3357.     94221794.    10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
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0.00003688         3471.     94133413.     10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813         3586.     94047197.     10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938         3700.     93962921.     10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063         3814.     93880388.     10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188         3928.     93799425.     10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313         4042.     93719877.     10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438         4155.     93641609.     10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
0.00004563         4269.     93564497.     10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688         4382.     93488434.     10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813         4496.     93413321.     10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938         4609.     93339070.     10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063         4722.     93265602.     10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188         4834.     93192845.     10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313         4947.     93120733.     10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
0.00005438         5060.     93049206.     10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563         5172.     92978211.     10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
0.00005688         5284.     92907697.     10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813         5396.     92837619.     10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938         5508.     92767935.     10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063         5620.     92698606.     10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188         5731.     92629597.     10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
0.00006313         5843.     92560874.     10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438         5954.     92492407.     10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563         6065.     92424168.     10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688         6176.     92356130.     10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
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0.00006813        6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938        6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063        6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188        6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313        6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
 0.0001544       10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594       11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644       11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694       11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
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 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
 0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
 0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
 0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
 0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
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    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
   3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
   3.9878351    -60.000000 CYT


---------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
---------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ---------------     ------------------     ------------
------------
   1                3.800             12169.214           0.00300000
-0.00952396
   2                4.200             12173.120           0.00300000
-0.00952020
   3                4.600             12177.027           0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318,
or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal        Nominal     Ult. (Fac)    Ult. (Fac)   Bend.
Stiff.
Load      Factor       Ax. Thrust    Moment Cap    Ax. Thrust    Moment Cap    at
Ult Mom
 No.                      kips         in-kips        kips          in-kips
kip-in^2
-----  ------------   ------------  ------------  ------------  ------------
------------
   1       0.65           3.800000        12169.      2.470000         7910.
91219895.
```

```
   2       0.65           4.200000        12173.      2.730000         7913.
91253873.
   3       0.65           4.600000        12177.      2.990000         7915.
91287886.

   1       0.75           3.800000        12169.      2.850000         9127.
89806706.
   2       0.75           4.200000        12173.      3.150000         9130.
89838295.
   3       0.75           4.600000        12177.      3.450000         9133.
89869877.

   1       0.90           3.800000        12169.      3.420000        10952.
70221645.
   2       0.90           4.200000        12173.      3.780000        10956.
70254444.
   3       0.90           4.600000        12177.      4.140000        10959.
70287179.
```

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	1.0000	0.00	N.A.	No	0.00	8832.
2	4.0000	0.2434	No	No	8832.	137090.
3	7.4000	3.2743	Yes	No	145923.	65240.
4	8.7000	6.4811	Yes	No	211162.	11533.
5	12.7000	11.7000	No	No	222696.	0.00
6	15.2000	14.2000	No	No	0.00	0.00
7	20.2000	19.2000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.00817	315600.	1000.0000	-1.36E-04	0.00	3.84E+11	0.00	0.00	0.00
0.09000	0.00803	316681.	1000.0000	-1.35E-04	0.00	3.84E+11	0.00	0.00	0.00
0.1800	0.00788	317761.	1000.	-1.34E-04	0.00	3.84E+11	0.00	0.00	0.00
0.2700	0.00773	318842.	1000.	-1.34E-04	0.00	3.84E+11	0.00	0.00	0.00
0.3600	0.00759	319922.	1000.	-1.33E-04	0.00	3.84E+11	0.00	0.00	0.00
0.4500	0.00745	321003.	1000.	-1.32E-04	0.00	3.84E+11	0.00	0.00	0.00
0.5400	0.00731	322084.	1000.	-1.31E-04	0.00	3.84E+11	0.00	0.00	0.00
0.6300	0.00717	323164.	1000.	-1.30E-04	0.00	3.84E+11	0.00	0.00	0.00
0.7200	0.00703	324245.	1000.	-1.29E-04	0.00	3.84E+11	0.00	0.00	0.00
0.8100	0.00689	325325.	1000.	-1.28E-04	0.00	3.84E+11	0.00	0.00	0.00
0.9000	0.00675	326406.	1000.	-1.27E-04	0.00	3.84E+11	0.00	0.00	0.00
0.9900	0.00661	327487.	1000.0000	-1.26E-04	0.00	3.84E+11	0.00	0.00	0.00
1.0800	0.00648	328567.	992.1224	-1.25E-04	0.00	3.84E+11	-14.588	2433.	0.00
1.1700	0.00634	329631.	976.2930	-1.24E-04	0.00	3.84E+11	-14.725	2508.	0.00
1.2600	0.00621	330677.	960.3177	-1.24E-04	0.00	3.84E+11	-14.859	2585.	0.00
1.3500	0.00607	331706.	944.2008	-1.23E-04	0.00	3.84E+11	-14.988	2665.	0.00
1.4400	0.00594	332718.	927.9468	-1.22E-04	0.00	3.84E+11			

-15.112	2747.	0.00				
1.5300	0.00581	333712.	911.5603	-1.21E-04	0.00	3.84E+11
-15.233	2831.	0.00				
1.6200	0.00568	334688.	895.0459	-1.20E-04	0.00	3.84E+11
-15.349	2918.	0.00				
1.7100	0.00555	335646.	878.4082	-1.19E-04	0.00	3.84E+11
-15.461	3008.	0.00				
1.8000	0.00542	336586.	861.6521	-1.18E-04	0.00	3.84E+11
-15.569	3100.	0.00				
1.8900	0.00530	337508.	844.7822	-1.17E-04	0.00	3.84E+11
-15.672	3195.	0.00				
1.9800	0.00517	338412.	827.8035	-1.16E-04	0.00	3.84E+11
-15.770	3293.	0.00				
2.0700	0.00505	339297.	810.7210	-1.15E-04	0.00	3.84E+11
-15.864	3395.	0.00				
2.1600	0.00492	340164.	793.5396	-1.14E-04	0.00	3.84E+11
-15.953	3500.	0.00				
2.2500	0.00480	341012.	776.2646	-1.13E-04	0.00	3.84E+11
-16.038	3608.	0.00				
2.3400	0.00468	341842.	758.9010	-1.12E-04	0.00	3.84E+11
-16.117	3721.	0.00				
2.4300	0.00456	342653.	741.4542	-1.11E-04	0.00	3.84E+11
-16.192	3837.	0.00				
2.5200	0.00444	343444.	723.9296	-1.10E-04	0.00	3.84E+11
-16.261	3957.	0.00				
2.6100	0.00432	344217.	706.3327	-1.09E-04	0.00	3.84E+11
-16.326	4082.	0.00				
2.7000	0.00420	344971.	688.6690	-1.08E-04	0.00	3.84E+11
-16.385	4211.	0.00				
2.7900	0.00409	345706.	670.9443	-1.07E-04	0.00	3.84E+11
-16.439	4346.	0.00				
2.8800	0.00397	346421.	653.1644	-1.06E-04	0.00	3.84E+11
-16.487	4485.	0.00				
2.9700	0.00386	347118.	635.3353	-1.05E-04	0.00	3.84E+11
-16.530	4630.	0.00				
3.0600	0.00374	347795.	617.4629	-1.04E-04	0.00	3.84E+11
-16.567	4781.	0.00				
3.1500	0.00363	348452.	599.5536	-1.03E-04	0.00	3.84E+11
-16.598	4938.	0.00				
3.2400	0.00352	349091.	581.6137	-1.03E-04	0.00	3.84E+11
-16.624	5102.	0.00				
3.3300	0.00341	349709.	563.6498	-1.02E-04	0.00	3.84E+11
-16.643	5273.	0.00				
3.4200	0.00330	350309.	545.6684	-1.01E-04	0.00	3.84E+11
-16.656	5452.	0.00				
3.5100	0.00319	350889.	527.6765	-9.96E-05	0.00	3.84E+11
-16.662	5639.	0.00				
3.6000	0.00308	351450.	509.6812	-9.86E-05	0.00	3.84E+11
-16.662	5834.	0.00				
3.6900	0.00298	351991.	491.6896	-9.76E-05	0.00	3.84E+11

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-16.655      6039.       0.00
    3.7800    0.00287    352513.   473.7093  -9.66E-05       0.00   3.84E+11
-16.641      6255.       0.00
    3.8700    0.00277    353015.   455.7480  -9.56E-05       0.00   3.84E+11
-16.620      6481.       0.00
    3.9600    0.00267    353498.   437.8137  -9.46E-05       0.00   3.84E+11
-16.592      6719.       0.00
    4.0500    0.00257    353961.   201.9327  -9.36E-05       0.00   3.84E+11
-420.225    176911.       0.00
    4.1400    0.00246    353935.   -250.910  -9.26E-05       0.00   3.84E+11
-418.373    183319.       0.00
    4.2300    0.00237    353420.   -701.680  -9.16E-05       0.00   3.84E+11
-416.385    190122.       0.00
    4.3200    0.00227    352420.     -1150.  -9.06E-05       0.00   3.84E+11
-414.254    197362.       0.00
    4.4100    0.00217    350937.     -1596.  -8.97E-05       0.00   3.84E+11
-411.973    205083.       0.00
    4.5000    0.00207    348973.     -2040.  -8.87E-05       0.00   3.84E+11
-409.535    213338.       0.00
    4.5900    0.00198    346531.     -2481.  -8.77E-05       0.00   3.84E+11
-406.931    222188.       0.00
    4.6800    0.00188    343615.     -2919.  -8.67E-05       0.00   3.84E+11
-404.149    231701.       0.00
    4.7700    0.00179    340227.     -3354.  -8.58E-05       0.00   3.84E+11
-401.180    241962.       0.00
    4.8600    0.00170    336371.     -3785.  -8.48E-05       0.00   3.84E+11
-398.009    253067.       0.00
    4.9500    0.00161    332052.     -4213.  -8.39E-05       0.00   3.84E+11
-394.622    265131.       0.00
    5.0400    0.00152    327271.     -4638.  -8.29E-05       0.00   3.84E+11
-391.002    278293.       0.00
    5.1300    0.00143    322035.     -5058.  -8.20E-05       0.00   3.84E+11
-387.127    292720.       0.00
    5.2200    0.00134    316347.     -5474.  -8.11E-05       0.00   3.84E+11
-382.975    308619.       0.00
    5.3100    0.00125    310213.     -5885.  -8.03E-05       0.00   3.84E+11
-378.519    326241.       0.00
    5.4000    0.00117    303637.     -6291.  -7.94E-05       0.00   3.85E+11
-373.725    345907.       0.00
    5.4900    0.00108    296625.     -6692.  -7.86E-05       0.00   3.85E+11
-368.554    368020.       0.00
    5.5800   9.97E-04    289183.     -7087.  -7.77E-05       0.00   3.85E+11
-362.961    393106.       0.00
    5.6700   9.14E-04    281318.     -7476.  -7.69E-05       0.00   3.85E+11
-356.886    421855.       0.00
    5.7600   8.31E-04    273037.     -7857.  -7.62E-05       0.00   3.85E+11
-350.258    455201.       0.00
    5.8500   7.49E-04    264347.     -8232.  -7.54E-05       0.00   3.85E+11
-342.985    494435.       0.00
    5.9400   6.68E-04    255257.     -8588.  -7.47E-05       0.00   3.85E+11
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-316.379	511388.	0.00				
6.0300	5.88E-04	245797.	-8910.	-7.40E-05	0.00	3.85E+11
-279.737	513884.	0.00				
6.1200	5.08E-04	236012.	-9192.	-7.33E-05	0.00	3.85E+11
-243.079	516377.	0.00				
6.2100	4.30E-04	225943.	-9435.	-7.26E-05	0.00	3.85E+11
-206.398	518870.	0.00				
6.3000	3.51E-04	215634.	-9638.	-7.20E-05	0.00	3.85E+11
-169.683	521360.	0.00				
6.3900	2.74E-04	205126.	-9801.	-7.14E-05	0.00	3.85E+11
-132.925	523850.	0.00				
6.4800	1.97E-04	194463.	-9925.	-7.09E-05	0.00	3.85E+11
-96.112	526339.	0.00				
6.5700	1.21E-04	183689.	-10009.	-7.03E-05	0.00	3.85E+11
-59.234	528826.	0.00				
6.6600	4.53E-05	172845.	-10053.	-6.98E-05	0.00	3.85E+11
-22.278	531312.	0.00				
6.7500	-2.99E-05	161975.	-10057.	-6.94E-05	0.00	3.85E+11
14.7671	533797.	0.00				
6.8400	-1.05E-04	151123.	-10021.	-6.89E-05	0.00	3.85E+11
51.9142	536281.	0.00				
6.9300	-1.79E-04	140331.	-9945.	-6.85E-05	0.00	3.85E+11
89.1761	538764.	0.00				
7.0200	-2.53E-04	129643.	-9828.	-6.81E-05	0.00	3.85E+11
126.5659	541246.	0.00				
7.1100	-3.26E-04	119102.	-9671.	-6.78E-05	0.00	3.85E+11
164.0968	543728.	0.00				
7.2000	-3.99E-04	108753.	-9474.	-6.75E-05	0.00	3.85E+11
201.7821	546208.	0.00				
7.2900	-4.72E-04	98640.	-9235.	-6.72E-05	0.00	3.85E+11
239.6350	548688.	0.00				
7.3800	-5.44E-04	88805.	-8956.	-6.69E-05	0.00	3.85E+11
277.6688	551167.	0.00				
7.4700	-6.16E-04	79295.	-8607.	-6.67E-05	0.00	3.85E+11
368.0423	645036.	0.00				
7.5600	-6.88E-04	70214.	-8186.	-6.65E-05	0.00	3.85E+11
412.8383	647949.	0.00				
7.6500	-7.60E-04	61615.	-7725.	-6.63E-05	0.00	3.85E+11
440.1840	625689.	0.00				
7.7400	-8.31E-04	53529.	-7243.	-6.61E-05	0.00	3.85E+11
452.2096	587500.	0.00				
7.8300	-9.03E-04	45970.	-6749.	-6.60E-05	0.00	3.85E+11
463.6711	554784.	0.00				
7.9200	-9.74E-04	38953.	-6242.	-6.59E-05	0.00	3.85E+11
474.6517	526403.	0.00				
8.0100	-0.00104	32488.	-5724.	-6.58E-05	0.00	3.85E+11
485.2177	501517.	0.00				
8.1000	-0.00112	26590.	-5194.	-6.57E-05	0.00	3.85E+11
495.4228	479494.	0.00				
8.1900	-0.00119	21270.	-4654.	-6.56E-05	0.00	3.85E+11

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505.3110    459848.       0.00
    8.2800   -0.00126     16539.     -4103.  -6.56E-05       0.00   3.85E+11
514.9190    442199.       0.00
    8.3700   -0.00133     12409.     -3541.  -6.55E-05       0.00   3.85E+11
524.2775    426245.       0.00
    8.4600   -0.00140      8890.     -2970.  -6.55E-05       0.00   3.85E+11
533.4126    411744.       0.00
    8.5500   -0.00147      5994.     -2389.  -6.55E-05       0.00   3.85E+11
542.3465    398499.       0.00
    8.6400   -0.00154      3730.     -1799.  -6.55E-05       0.00   3.85E+11
551.0983    386346.       0.00
    8.7300   -0.00161      2108.     -1291.  -6.54E-05       0.00   3.85E+11
389.8560    261317.       0.00
    8.8200   -0.00168   941.9826   -866.695  -6.54E-05       0.00   3.85E+11
395.6126    254032.       0.00
    8.9100   -0.00175   236.9704   -436.378  -6.54E-05       0.00   3.85E+11
401.2704    247273.       0.00
    9.0000   -0.00182       0.00       0.00  -6.54E-05       0.00   3.85E+11
406.8369    120493.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.00817196 inches
Computed slope at pile head      =     -0.0001363 radians
Maximum bending moment           =        353961. inch-lbs
Maximum shear force              =        -10057. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.75000000 feet below pile head
Number of iterations             =             16
Number of zero deflection points =              1
Pile deflection at ground        =     0.00659654 inches



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            Pile-head Deflection vs. Pile Length for Load Case 1
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Boundary Condition Type 1, Shear and Moment

Shear      =           1000. lbs
Moment     =         315600. in-lbs
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Axial Load = 4200. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.00817196	353961.	-10057.
8.55000	0.01207896	351950.	-11041.
8.10000	0.02684536	348589.	-12463.
7.65000	0.06956026	343728.	-13835.
7.20000	0.19023807	339074.	-15306.
6.75000	0.59709115	336353.	-17048.
6.30000	2.00596798	335879.	-19080.
5.85000	11.17610056	347716.	-23261.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 4600.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.1437	724800.	2250.	-0.00186	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1417	727239.	2250.	-0.00186	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1397	729678.	2250.	-0.00185	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1377	732118.	2250.	-0.00185	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1357	734557.	2250.	-0.00185	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1337	736996.	2250.	-0.00185	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1317	739435.	2250.	-0.00184	0.00	3.83E+11	0.00	0.00	0.00

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    0.6300     0.1297    741874.      2250.   -0.00184       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.1277    744313.      2250.   -0.00184       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.1257    746753.      2250.   -0.00184       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.1237    749192.      2250.   -0.00184       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.1217    751631.      2250.   -0.00183       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.1198    754070.      2229.   -0.00183       0.00   3.83E+11
-38.556   347.6999       0.00
    1.1700     0.1178    756464.      2187.   -0.00183       0.00   3.83E+11
-38.976   357.3874       0.00
    1.2600     0.1158    758813.      2145.   -0.00183       0.00   3.83E+11
-39.386   367.3119       0.00
    1.3500     0.1138    761115.      2102.   -0.00183       0.00   3.83E+11
-39.787   377.4838       0.00
    1.4400     0.1119    763372.      2059.   -0.00182       0.00   3.83E+11
-40.179   387.9136       0.00
    1.5300     0.1099    765581.      2015.   -0.00182       0.00   3.83E+11
-40.560   398.6128       0.00
    1.6200     0.1079    767743.      1971.   -0.00182       0.00   3.83E+11
-40.932   409.5935       0.00
    1.7100     0.1060    769858.      1927.   -0.00182       0.00   3.83E+11
-41.293   420.8687       0.00
    1.8000     0.1040    771924.      1882.   -0.00182       0.00   3.83E+11
-41.645   432.4519       0.00
    1.8900     0.1020    773941.      1837.   -0.00181       0.00   3.83E+11
-41.985   444.3580       0.00
    1.9800     0.1001    775910.      1792.   -0.00181       0.00   3.83E+11
-42.315   456.6026       0.00
    2.0700    0.09813    777829.      1746.   -0.00181       0.00   3.83E+11
-42.633   469.2023       0.00
    2.1600    0.09618    779699.      1700.   -0.00181       0.00   3.83E+11
-42.941   482.1752       0.00
    2.2500    0.09423    781518.      1653.   -0.00180       0.00   3.83E+11
-43.236   495.5403       0.00
    2.3400    0.09228    783287.      1606.   -0.00180       0.00   3.83E+11
-43.520   509.3185       0.00
    2.4300    0.09034    785005.      1559.   -0.00180       0.00   3.83E+11
-43.792   523.5317       0.00
    2.5200    0.08840    786672.      1512.   -0.00180       0.00   3.83E+11
-44.051   538.2039       0.00
    2.6100    0.08646    788288.      1464.   -0.00180       0.00   3.83E+11
-44.298   553.3609       0.00
    2.7000    0.08452    789852.      1416.   -0.00179       0.00   3.83E+11
-44.531   569.0304       0.00
    2.7900    0.08258    791364.      1368.   -0.00179       0.00   3.83E+11
-44.751   585.2425       0.00
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    2.8800    0.08065    792824.      1319.   -0.00179       0.00   3.83E+11
-44.957   602.0299       0.00
    2.9700    0.07872    794231.      1271.   -0.00179       0.00   3.83E+11
-45.149   619.4279       0.00
    3.0600    0.07679    795586.      1222.   -0.00178       0.00   3.83E+11
-45.327   637.4752       0.00
    3.1500    0.07487    796888.      1173.   -0.00178       0.00   3.83E+11
-45.489   656.2136       0.00
    3.2400    0.07294    798137.      1123.   -0.00178       0.00   3.83E+11
-45.636   675.6892       0.00
    3.3300    0.07102    799332.      1074.   -0.00178       0.00   3.83E+11
-45.766   695.9522       0.00
    3.4200    0.06910    800474.      1025.   -0.00178       0.00   3.83E+11
-45.881   717.0577       0.00
    3.5100    0.06719    801563.   974.9956   -0.00177       0.00   3.83E+11
-45.978   739.0666       0.00
    3.6000    0.06527    802598.   925.2966   -0.00177       0.00   3.83E+11
-46.057   762.0459       0.00
    3.6900    0.06336    803579.   875.5218   -0.00177       0.00   3.83E+11
-46.118   786.0696       0.00
    3.7800    0.06145    804507.   825.6913   -0.00177       0.00   3.83E+11
-46.160   811.2201       0.00
    3.8700    0.05955    805380.   775.8262   -0.00176       0.00   3.83E+11
-46.182   837.5888       0.00
    3.9600    0.05764    806200.   725.9483   -0.00176       0.00   3.83E+11
-46.184   865.2782       0.00
    4.0500    0.05574    806966.   211.4662   -0.00176       0.00   3.83E+11
-906.561     17564.        0.00
    4.1400    0.05384    806674.   -766.110   -0.00176       0.00   3.83E+11
-903.765     18127.        0.00
    4.2300    0.05195    805328.     -1741.   -0.00175       0.00   3.83E+11
-900.670     18725.        0.00
    4.3200    0.05005    802932.     -2711.   -0.00175       0.00   3.83E+11
-897.258     19360.        0.00
    4.4100    0.04816    799489.     -3678.   -0.00175       0.00   3.83E+11
-893.514     20036.        0.00
    4.5000    0.04627    795004.     -4641.   -0.00175       0.00   3.83E+11
-889.418     20758.        0.00
    4.5900    0.04439    789482.     -5599.   -0.00175       0.00   3.83E+11
-884.950     21532.        0.00
    4.6800    0.04250    782927.     -6552.   -0.00174       0.00   3.83E+11
-880.086     22363.        0.00
    4.7700    0.04062    775346.     -7500.   -0.00174       0.00   3.83E+11
-874.800     23258.        0.00
    4.8600    0.03874    766744.     -8442.   -0.00174       0.00   3.83E+11
-869.061     24226.        0.00
    4.9500    0.03687    757129.     -9377.   -0.00174       0.00   3.83E+11
-862.836     25278.        0.00
    5.0400    0.03499    746507.    -10305.   -0.00173       0.00   3.83E+11
-856.084     26424.        0.00
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    5.1300    0.03312    734887.    -11226.   -0.00173       0.00   3.83E+11
-848.762     27679.       0.00
    5.2200    0.03125    722276.    -12138.   -0.00173       0.00   3.83E+11
-840.818     29061.       0.00
    5.3100    0.02938    708685.    -13042.   -0.00173       0.00   3.83E+11
-832.190     30592.       0.00
    5.4000    0.02751    694124.    -13935.   -0.00173       0.00   3.83E+11
-822.808     32298.       0.00
    5.4900    0.02565    678602.    -14818.   -0.00172       0.00   3.84E+11
-812.586     34214.       0.00
    5.5800    0.02379    662133.    -15690.   -0.00172       0.00   3.84E+11
-801.425     36385.       0.00
    5.6700    0.02193    644729.    -16549.   -0.00172       0.00   3.84E+11
-789.199     38869.       0.00
    5.7600    0.02007    626404.    -17394.   -0.00172       0.00   3.84E+11
-775.755     41743.       0.00
    5.8500    0.01821    607175.    -18224.   -0.00172       0.00   3.84E+11
-760.900     45116.       0.00
    5.9400    0.01636    587058.    -19037.   -0.00172       0.00   3.84E+11
-744.385     49138.       0.00
    6.0300    0.01451    566073.    -19831.   -0.00171       0.00   3.84E+11
-725.883     54034.       0.00
    6.1200    0.01266    544241.    -20603.   -0.00171       0.00   3.84E+11
-704.944     60147.       0.00
    6.2100    0.01081    521587.    -21352.   -0.00171       0.00   3.84E+11
-680.929     68036.       0.00
    6.3000    0.00896    498138.    -22072.   -0.00171       0.00   3.84E+11
-652.880     78680.       0.00
    6.3900    0.00712    473928.    -22759.   -0.00171       0.00   3.84E+11
-619.246     93983.       0.00
    6.4800    0.00527    448996.    -23405.   -0.00171       0.00   3.84E+11
-577.231    118256.       0.00
    6.5700    0.00343    423391.    -23998.   -0.00171       0.00   3.84E+11
-520.826    164052.       0.00
    6.6600    0.00159    397178.    -24512.   -0.00170       0.00   3.84E+11
-431.614    293712.       0.00
    6.7500   -2.53E-04   370461.    -24678.   -0.00170       0.00   3.84E+11
125.2408    533797.       0.00
    6.8400    -0.00209   343891.    -24358.   -0.00170       0.00   3.84E+11
466.8400    240922.       0.00
    6.9300    -0.00393   317865.    -23809.   -0.00170       0.00   3.84E+11
549.0633    150848.       0.00
    7.0200    -0.00577   292479.    -23185.   -0.00170       0.00   3.85E+11
607.0930    113665.       0.00
    7.1100    -0.00760   267802.    -22504.   -0.00170       0.00   3.85E+11
653.5075     92808.       0.00
    7.2000    -0.00944   243887.    -21777.   -0.00170       0.00   3.85E+11
692.9523     79275.       0.00
    7.2900    -0.01128   220780.    -21010.   -0.00170       0.00   3.85E+11
727.7040     69702.       0.00
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    7.3800   -0.01311    198522.    -20207.   -0.00170       0.00   3.85E+11
759.0618     62533.       0.00
    7.4700   -0.01494    177150.    -19302.   -0.00170       0.00   3.85E+11
917.8930     66339.       0.00
    7.5600   -0.01678    156848.    -18293.   -0.00170       0.00   3.85E+11
949.1000     61100.       0.00
    7.6500   -0.01861    137653.    -17253.   -0.00170       0.00   3.85E+11
978.3981     56783.       0.00
    7.7400   -0.02044    119599.    -16181.   -0.00170       0.00   3.85E+11
1006.     53158.       0.00
    7.8300   -0.02227    102718.    -15080.   -0.00170       0.00   3.85E+11
1033.     50066.       0.00
    7.9200   -0.02410     87043.    -13951.   -0.00170       0.00   3.85E+11
1058.     47394.       0.00
    8.0100   -0.02594     72600.    -12796.   -0.00170       0.00   3.85E+11
1082.     45059.       0.00
    8.1000   -0.02777     59420.    -11615.   -0.00170       0.00   3.85E+11
1106.     43000.       0.00
    8.1900   -0.02960     47530.    -10408.   -0.00170       0.00   3.85E+11
1128.     41168.       0.00
    8.2800   -0.03143     36955.     -9178.   -0.00170       0.00   3.85E+11
1150.     39527.       0.00
    8.3700   -0.03326     27722.     -7924.   -0.00169       0.00   3.85E+11
1172.     38048.       0.00
    8.4600   -0.03509     19856.     -6647.   -0.00169       0.00   3.85E+11
1193.     36707.       0.00
    8.5500   -0.03692     13381.     -5348.   -0.00169       0.00   3.85E+11
1213.     35485.       0.00
    8.6400   -0.03875      8321.     -4027.   -0.00169       0.00   3.85E+11
1233.     34366.       0.00
    8.7300   -0.04058      4699.     -2890.   -0.00169       0.00   3.85E+11
872.5646     23222.       0.00
    8.8200   -0.04241      2094.     -1941.   -0.00169       0.00   3.85E+11
885.7092     22555.       0.00
    8.9100   -0.04424   523.0572   -977.362   -0.00169       0.00   3.85E+11
898.6187     21937.       0.00
    9.0000   -0.04607       0.00       0.00   -0.00169       0.00   3.85E+11
911.3116     10681.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.14366898 inches
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```
Computed slope at pile head      =     -0.0018573 radians
Maximum bending moment           =        806966. inch-lbs
Maximum shear force              =        -24678. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.75000000 feet below pile head
Number of iterations             =             34
Number of zero deflection points =              1
Pile deflection at ground        =     0.12151952 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.14366898       806966.       -24678.
    8.55000    0.24933727       800673.       -26050.
    8.10000    0.61841742       791408.       -28419.
    7.65000    1.66905974       784247.       -31347.
    7.20000    4.78350908       780825.       -34946.
    6.75000   19.47559759       800742.       -41867.


--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 3
--------------------------------------------------------------------------------

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

Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       3800.0 lbs

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

lb/inch	lb/inch	lb/inch				
0.00	0.1436	724800.	2250.	-0.00186	0.00	3.83E+11
0.00	0.00	0.00				
0.09000	0.1416	727238.	2250.	-0.00185	0.00	3.83E+11
0.00	0.00	0.00				
0.1800	0.1396	729675.	2250.	-0.00185	0.00	3.83E+11
0.00	0.00	0.00				
0.2700	0.1376	732113.	2250.	-0.00185	0.00	3.83E+11
0.00	0.00	0.00				
0.3600	0.1356	734550.	2250.	-0.00185	0.00	3.83E+11
0.00	0.00	0.00				
0.4500	0.1336	736988.	2250.	-0.00185	0.00	3.83E+11
0.00	0.00	0.00				
0.5400	0.1316	739426.	2250.	-0.00184	0.00	3.83E+11
0.00	0.00	0.00				
0.6300	0.1296	741863.	2250.	-0.00184	0.00	3.83E+11
0.00	0.00	0.00				
0.7200	0.1276	744301.	2250.	-0.00184	0.00	3.83E+11
0.00	0.00	0.00				
0.8100	0.1256	746738.	2250.	-0.00184	0.00	3.83E+11
0.00	0.00	0.00				
0.9000	0.1236	749176.	2250.	-0.00184	0.00	3.83E+11
0.00	0.00	0.00				
0.9900	0.1217	751613.	2250.	-0.00183	0.00	3.83E+11
0.00	0.00	0.00				
1.0800	0.1197	754051.	2229.	-0.00183	0.00	3.83E+11
-38.548	347.8468	0.00				
1.1700	0.1177	756443.	2187.	-0.00183	0.00	3.83E+11
-38.967	357.5384	0.00				
1.2600	0.1157	758790.	2145.	-0.00183	0.00	3.83E+11
-39.378	367.4672	0.00				
1.3500	0.1138	761092.	2102.	-0.00182	0.00	3.83E+11
-39.779	377.6434	0.00				
1.4400	0.1118	763346.	2059.	-0.00182	0.00	3.83E+11
-40.170	388.0777	0.00				
1.5300	0.1098	765554.	2016.	-0.00182	0.00	3.83E+11
-40.552	398.7816	0.00				
1.6200	0.1079	767715.	1972.	-0.00182	0.00	3.83E+11
-40.923	409.7670	0.00				
1.7100	0.1059	769828.	1927.	-0.00182	0.00	3.83E+11
-41.285	421.0470	0.00				
1.8000	0.1039	771892.	1882.	-0.00181	0.00	3.83E+11
-41.636	432.6353	0.00				
1.8900	0.1020	773908.	1837.	-0.00181	0.00	3.83E+11
-41.976	444.5465	0.00				
1.9800	0.1000	775875.	1792.	-0.00181	0.00	3.83E+11
-42.306	456.7963	0.00				
2.0700	0.09807	777793.	1746.	-0.00181	0.00	3.83E+11

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-42.624   469.4015       0.00
    2.1600    0.09612    779661.      1700.   -0.00181       0.00   3.83E+11
-42.931   482.3800       0.00
    2.2500    0.09417    781479.      1653.   -0.00180       0.00   3.83E+11
-43.227   495.7509       0.00
    2.3400    0.09222    783247.      1606.   -0.00180       0.00   3.83E+11
-43.511   509.5350       0.00
    2.4300    0.09028    784964.      1559.   -0.00180       0.00   3.83E+11
-43.782   523.7544       0.00
    2.5200    0.08834    786629.      1512.   -0.00180       0.00   3.83E+11
-44.042   538.4330       0.00
    2.6100    0.08640    788244.      1464.   -0.00179       0.00   3.83E+11
-44.288   553.5965       0.00
    2.7000    0.08446    789806.      1416.   -0.00179       0.00   3.83E+11
-44.521   569.2727       0.00
    2.7900    0.08253    791317.      1368.   -0.00179       0.00   3.83E+11
-44.741   585.4919       0.00
    2.8800    0.08060    792775.      1319.   -0.00179       0.00   3.83E+11
-44.948   602.2865       0.00
    2.9700    0.07867    794182.      1271.   -0.00179       0.00   3.83E+11
-45.140   619.6921       0.00
    3.0600    0.07674    795535.      1222.   -0.00178       0.00   3.83E+11
-45.317   637.7471       0.00
    3.1500    0.07482    796835.      1173.   -0.00178       0.00   3.83E+11
-45.479   656.4937       0.00
    3.2400    0.07290    798083.      1124.   -0.00178       0.00   3.83E+11
-45.626   675.9777       0.00
    3.3300    0.07098    799277.      1074.   -0.00178       0.00   3.83E+11
-45.757   696.2494       0.00
    3.4200    0.06906    800418.      1025.   -0.00177       0.00   3.83E+11
-45.871   717.3642       0.00
    3.5100    0.06714    801505.   975.2670   -0.00177       0.00   3.83E+11
-45.968   739.3826       0.00
    3.6000    0.06523    802539.   925.5786   -0.00177       0.00   3.83E+11
-46.047   762.3718       0.00
    3.6900    0.06332    803519.   875.8144   -0.00177       0.00   3.83E+11
-46.108   786.4059       0.00
    3.7800    0.06142    804445.   825.9946   -0.00176       0.00   3.83E+11
-46.150   811.5672       0.00
    3.8700    0.05951    805318.   776.1402   -0.00176       0.00   3.83E+11
-46.173   837.9474       0.00
    3.9600    0.05761    806136.   726.2730   -0.00176       0.00   3.83E+11
-46.174   865.6487       0.00
    4.0500    0.05571    806901.   211.8750   -0.00176       0.00   3.83E+11
-906.415     17573.       0.00
    4.1400    0.05381    806609.   -765.544   -0.00176       0.00   3.83E+11
-903.620     18136.       0.00
    4.2300    0.05192    805262.     -1740.   -0.00175       0.00   3.83E+11
-900.525     18734.       0.00
    4.3200    0.05002    802865.     -2711.   -0.00175       0.00   3.83E+11
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-897.113	19369.	0.00				
4.4100	0.04813	799422.	-3677.	-0.00175	0.00	3.83E+11
-893.370	20046.	0.00				
4.5000	0.04624	794936.	-4640.	-0.00175	0.00	3.83E+11
-889.275	20768.	0.00				
4.5900	0.04436	789414.	-5598.	-0.00174	0.00	3.83E+11
-884.808	21542.	0.00				
4.6800	0.04248	782859.	-6551.	-0.00174	0.00	3.83E+11
-879.945	22374.	0.00				
4.7700	0.04060	775278.	-7498.	-0.00174	0.00	3.83E+11
-874.659	23269.	0.00				
4.8600	0.03872	766676.	-8440.	-0.00174	0.00	3.83E+11
-868.921	24238.	0.00				
4.9500	0.03684	757062.	-9375.	-0.00174	0.00	3.83E+11
-862.697	25290.	0.00				
5.0400	0.03497	746441.	-10303.	-0.00173	0.00	3.83E+11
-855.946	26436.	0.00				
5.1300	0.03310	734821.	-11224.	-0.00173	0.00	3.83E+11
-848.626	27692.	0.00				
5.2200	0.03123	722212.	-12136.	-0.00173	0.00	3.83E+11
-840.682	29075.	0.00				
5.3100	0.02936	708622.	-13039.	-0.00173	0.00	3.83E+11
-832.056	30606.	0.00				
5.4000	0.02750	694062.	-13933.	-0.00173	0.00	3.83E+11
-822.675	32313.	0.00				
5.4900	0.02563	678542.	-14816.	-0.00172	0.00	3.84E+11
-812.456	34231.	0.00				
5.5800	0.02377	662074.	-15687.	-0.00172	0.00	3.84E+11
-801.296	36403.	0.00				
5.6700	0.02191	644672.	-16546.	-0.00172	0.00	3.84E+11
-789.072	38888.	0.00				
5.7600	0.02006	626349.	-17391.	-0.00172	0.00	3.84E+11
-775.630	41764.	0.00				
5.8500	0.01820	607122.	-18220.	-0.00172	0.00	3.84E+11
-760.778	45137.	0.00				
5.9400	0.01635	587007.	-19033.	-0.00171	0.00	3.84E+11
-744.267	49162.	0.00				
6.0300	0.01450	566024.	-19827.	-0.00171	0.00	3.84E+11
-725.767	54060.	0.00				
6.1200	0.01265	544195.	-20600.	-0.00171	0.00	3.84E+11
-704.832	60176.	0.00				
6.2100	0.01080	521543.	-21348.	-0.00171	0.00	3.84E+11
-680.822	68068.	0.00				
6.3000	0.00896	498098.	-22068.	-0.00171	0.00	3.84E+11
-652.778	78716.	0.00				
6.3900	0.00711	473891.	-22755.	-0.00171	0.00	3.84E+11
-619.150	94026.	0.00				
6.4800	0.00527	448961.	-23401.	-0.00171	0.00	3.84E+11
-577.143	118309.	0.00				
6.5700	0.00343	423359.	-23994.	-0.00170	0.00	3.84E+11

```
-520.751    164123.       0.00
    6.6600    0.00159    397149.    -24508.   -0.00170       0.00   3.84E+11
-431.561    293820.       0.00
    6.7500  -2.53E-04    370436.    -24673.   -0.00170       0.00   3.84E+11
125.0294    533797.       0.00
    6.8400   -0.00209    343869.    -24354.   -0.00170       0.00   3.84E+11
466.7488    241064.       0.00
    6.9300   -0.00393    317846.    -23805.   -0.00170       0.00   3.84E+11
548.9640    150930.       0.00
    7.0200   -0.00576    292463.    -23181.   -0.00170       0.00   3.85E+11
606.9864    113724.       0.00
    7.1100   -0.00760    267788.    -22501.   -0.00170       0.00   3.85E+11
653.3945     92856.       0.00
    7.2000   -0.00943    243876.    -21774.   -0.00170       0.00   3.85E+11
692.8337     79315.       0.00
    7.2900   -0.01127    220771.    -21007.   -0.00170       0.00   3.85E+11
727.5803     69738.       0.00
    7.3800   -0.01310    198516.    -20204.   -0.00170       0.00   3.85E+11
758.9333     62565.       0.00
    7.4700   -0.01493    177145.    -19298.   -0.00170       0.00   3.85E+11
917.7381     66373.       0.00
    7.5600   -0.01677    156845.    -18290.   -0.00170       0.00   3.85E+11
948.9403     61131.       0.00
    7.6500   -0.01860    137652.    -17250.   -0.00170       0.00   3.85E+11
978.2339     56812.       0.00
    7.7400   -0.02043    119599.    -16178.   -0.00170       0.00   3.85E+11
1006.     53185.       0.00
    7.8300   -0.02226    102720.    -15078.   -0.00169       0.00   3.85E+11
1032.     50091.       0.00
    7.9200   -0.02409     87046.    -13949.   -0.00169       0.00   3.85E+11
1058.     47418.       0.00
    8.0100   -0.02592     72604.    -12794.   -0.00169       0.00   3.85E+11
1082.     45082.       0.00
    8.1000   -0.02775     59425.    -11613.   -0.00169       0.00   3.85E+11
1105.     43021.       0.00
    8.1900   -0.02958     47535.    -10407.   -0.00169       0.00   3.85E+11
1128.     41188.       0.00
    8.2800   -0.03141     36961.     -9176.   -0.00169       0.00   3.85E+11
1150.     39547.       0.00
    8.3700   -0.03324     27728.     -7923.   -0.00169       0.00   3.85E+11
1172.     38067.       0.00
    8.4600   -0.03507     19862.     -6646.   -0.00169       0.00   3.85E+11
1192.     36725.       0.00
    8.5500   -0.03690     13386.     -5347.   -0.00169       0.00   3.85E+11
1213.     35502.       0.00
    8.6400   -0.03872      8325.     -4027.   -0.00169       0.00   3.85E+11
1233.     34383.       0.00
    8.7300   -0.04055      4702.     -2890.   -0.00169       0.00   3.85E+11
872.4196     23234.       0.00
    8.8200   -0.04238      2097.     -1941.   -0.00169       0.00   3.85E+11
```

```
885.5621     22566.       0.00
    8.9100   -0.04421   524.4378   -977.200   -0.00169       0.00   3.85E+11
898.4694     21948.       0.00
    9.0000   -0.04604     0.00       0.00   -0.00169       0.00   3.85E+11
911.1603     10687.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection             =     0.14357853 inches
Computed slope at pile head      =     -0.0018562 radians
Maximum bending moment           =        806901. inch-lbs
Maximum shear force              =        -24673. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.75000000 feet below pile head
Number of iterations             =             34
Number of zero deflection points =              1
Pile deflection at ground        =     0.12144258 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.14357853       806901.       -24673.
    8.55000    0.24906169       800560.       -26042.
    8.10000    0.61670538       791139.       -28398.
    7.65000    1.65643367       783585.       -31284.
    7.20000    4.67689618       779051.       -34739.
    6.75000   17.33055455       790934.       -40593.
```

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

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

Load Case No.	Load Type 1	Load 1	Load Type 2	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	1000.0000	M, in-lb	315600.	4200.	0.00817	-1.36E-04	-10057.	353961.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.1437	-0.00186	-24678.	806966.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.1436	-0.00186	-24673.	806901.

Maximum pile-head deflection = 0.1436689785 inches
Maximum pile-head rotation = -0.0018572820 radians = -0.106414 deg.

The analysis ended normally.

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LIGHT TOWER PR-11 (B-008-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-11 (Boring B-008-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

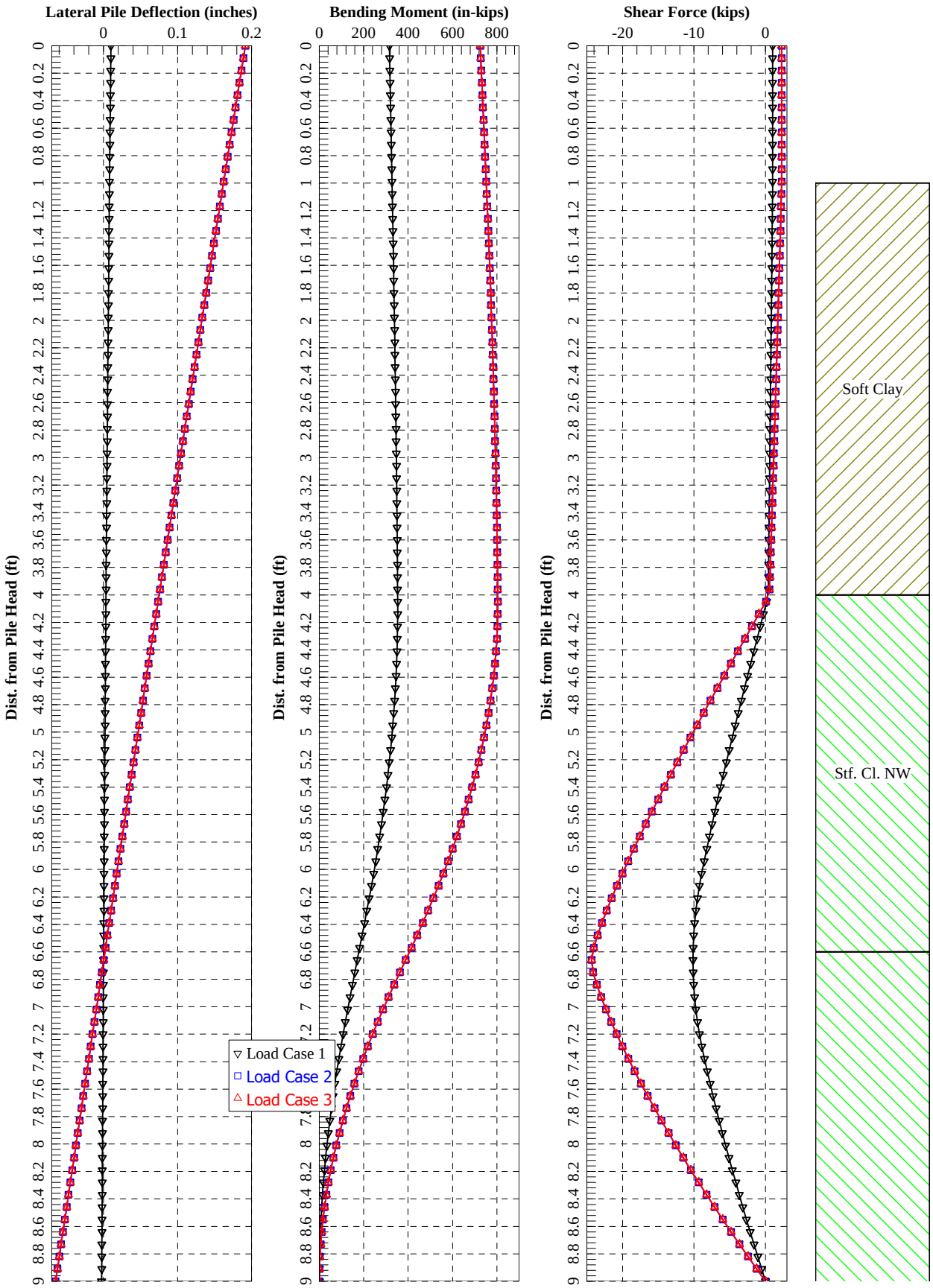


PLATE 181

```
================================================================================

                          LPile for Version 2022-12.012

                              License ID : 228332755
                         License Type : (Single User License)

                   Analysis of Individual Piles and Drilled Shafts
                  Subjected to Lateral Loading Using the p-y Method
                             © 1985-2024 by Ensoft, Inc.
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                                    S&ME, Inc.
                                  Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                           Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\EB\

Name of input data file:
Tower PR-11 (B-008-0-25).lp12d

Name of output report file:
Tower PR-11 (B-008-0-25).lp12o

Name of plot output file:
Tower PR-11 (B-008-0-25).lp12p

Name of runtime message file:
Tower PR-11 (B-008-0-25).lp12r



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:42:36

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower PR-11 (B-008-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	6.600000 ft
Effective unit weight at top of layer	=	56.000000 pcf
Effective unit weight at bottom of layer	=	56.000000 pcf
Undrained cohesion at top of layer	=	3750. psf
Undrained cohesion at bottom of layer	=	3750. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	6.600000 ft
Distance from top of pile to bottom of layer	=	14.600000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Undrained cohesion at top of layer	=	3750. psf
Undrained cohesion at bottom of layer	=	3750. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	14.600000 ft
Distance from top of pile to bottom of layer	=	17.100000 ft
Effective unit weight at top of layer	=	63.000000 pcf

```
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =    17.100000 ft
   Distance from top of pile to bottom of layer        =    22.100000 ft
   Effective unit weight at top of layer               =    66.000000 pcf
   Effective unit weight at bottom of layer            =    66.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =    22.100000 ft
   Distance from top of pile to bottom of layer        =    29.100000 ft
   Effective unit weight at top of layer               =    63.000000 pcf
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 20.100 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000 4.0000	98.0000 98.0000	250.0000 250.0000	0.02000 0.02000
2	Stiff Clay w/o Free Water	4.0000 6.6000	56.0000 56.0000	3750. 3750.	0.00500 0.00500
3	Stiff Clay w/o Free Water	6.6000 14.6000	60.0000 60.0000	3750. 3750.	0.00500 0.00500
4	Stiff Clay	14.6000	63.0000	4500.	0.00400

	w/o Free Water	17.1000	63.0000	4500.	0.00400
5	Stiff Clay	17.1000	66.0000	4500.	0.00400
	w/o Free Water	22.1000	66.0000	4500.	0.00400
6	Stiff Clay	22.1000	63.0000	4500.	0.00400
	w/o Free Water	29.1000	63.0000	4500.	0.00400

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	Run Analysis
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.	Yes	Yes
2	1	V = 2250. lbs	M = 724800. in-lbs	4600.	Yes	Yes
3	1	V = 2250. lbs	M = 724800. in-lbs	3800.	Yes	Yes

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

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	9.000000 ft
Shaft Diameter	=	36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)	=	3.500000 in
Number of Reinforcing Bars	=	16 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	1018. sq. in.
Total Area of Reinforcing Steel	=	16.000000 sq. in.
Area Ratio of Steel Reinforcement	=	1.57 percent
Edge-to-Edge Bar Spacing	=	4.114467 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	5.49
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in
Transverse Reinforcement		
Type: Spiral		
Number of Transverse Reinf. (per spacing)	=	1
Spacing of Transverse Reinf.	=	4.500000 in
Yield Stress of Transverse Reinf.	=	60000. psi
Diameter of Transverse Reinf.	=	0.500000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	4366.378 kips
Tensile Load for Cracking of Concrete	=	-470.222 kips
Nominal Axial Tensile Capacity	=	-960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735

9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Run Msg	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
6.25000E-07	240.5062135		384809942.	19.2929823	0.00001206	-0.00001044
0.0505030	0.2746478					
0.00000125	480.1472468		384117797.	18.6479768	0.00002331	-0.00002169
0.0973082	0.5259142					
0.00000188	718.9174733		383422652.	18.4329804	0.00003456	-0.00003294
0.1438345	0.7771808					
0.00000250	956.8168886		382726755.	18.3254857	0.00004581	-0.00004419
0.1900818	1.0284477					
0.00000313	1194.		382030558.	18.2609917	0.00005707	-0.00005543
0.2360502	1.2797149					
0.00000375	1430.		381334209.	18.2179981	0.00006832	-0.00006668
0.2817396	1.5309823					
0.00000438	1665.		380637775.	18.1872904	0.00007957	-0.00007793
0.3271500	1.7822500					
0.00000500	1900.		379941287.	18.1642614	0.00009082	-0.00008918
0.3722815	2.0335179					
0.00000563	2133.		379244764.	18.1463515	0.0001021	-0.000100
0.4171340	2.2847861					
0.00000625	2366.		378548215.	18.1320251	0.0001133	-0.000112
0.4617075	2.5360546					
0.00000688	2366.		344134741.	10.2494785	0.00007047	-0.000177
0.2882187	-4.308598	C				
0.00000750	2366.		315456846.	10.2198771	0.00007665	-0.000193
0.3129821	-4.706727	C				
0.00000813	2366.		291190934.	10.1952302	0.00008284	-0.000210
0.3376758	-5.104761	C				
0.00000875	2366.		270391582.	10.1744772	0.00008903	-0.000226
0.3622998	-5.502701	C				
0.00000938	2366.		252365477.	10.1568402	0.00009522	-0.000242
0.3868539	-5.900547	C				
0.00001000	2366.		236592634.	10.1417358	0.0001014	-0.000259
0.4113380	-6.298297	C				
0.00001063	2366.		222675420.	10.1287027	0.0001076	-0.000275
0.4357521	-6.695951	C				

```
0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
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0.00002938        2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063        2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188        3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313        3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438        3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563        3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688        3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813        3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938        3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063        3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188        3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313        4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438        4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563        4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938        5502.     92665342.    10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
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0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
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 0.0001444        10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494        10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544        10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594        11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644        11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694        11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744        11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794        11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844        11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894        11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944        11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994        11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044        11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094        11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
 0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
3.9998812    -60.000000 CY
 0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
3.9969940    -60.000000 CY
 0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
3.9997138    -60.000000 CY
 0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
3.9955528    -60.000000 CY
 0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
3.9989818    -60.000000 CY
 0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
3.9994466    -60.000000 CY
 0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
3.9965160    -60.000000 CY
 0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
3.9991770    -60.000000 CY
 0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
3.9995775    -60.000000 CY
 0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
3.9954763    -60.000000 CY
 0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
3.9984997    -60.000000 CY
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   0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
  3.9998981    -60.000000 CY
   0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
  3.9944635    -60.000000 CY
   0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
  3.9984635    -60.000000 CY
   0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
  3.9998209    -60.000000 CY
   0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
  3.9999551    -60.000000 CYT
   0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
  3.9996166    -60.000000 CYT
   0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
  3.9972132    -60.000000 CYT
   0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
  3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
   0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
   0.2364034     1.2822044
   0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
   0.2820914     1.5334776
   0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
   0.3275005     1.7847511
   0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
   0.3726306     2.0360248
   0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
   0.4174818     2.2872988
   0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
   0.4620539     2.5385732
   0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
   0.2893429     -4.300617 C
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0.00000750         2366.    315456672.    10.2575513    0.00007693     -0.000193
0.3141325     -4.698533 C
0.00000813         2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235     -5.096560 C
0.00000875         2366.    270391433.    10.2068278    0.00008931     -0.000226
0.3634446     -5.494492 C
0.00000938         2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959     -5.892330 C
0.00001000         2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772     -6.290073 C
0.00001063         2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884     -6.687720 C
0.00001125         2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294     -7.085271 C
0.00001188         2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002     -7.482727 C
0.00001250         2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005     -7.880086 C
0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963     -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433     -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
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0.00002313        2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375        2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438        2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563        2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688        2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813        2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
0.00002938        2779.     94598964.    10.0593353     0.0002955     -0.000762
1.1361324    -18.571425 C
0.00003063        2894.     94499555.    10.0607664     0.0003081     -0.000794
1.1804341    -19.360427 C
0.00003188        3009.     94403710.    10.0625387     0.0003207     -0.000827
1.2244416    -20.149010 C
0.00003313        3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688        3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
0.00003813        3582.     93965057.    10.0754214     0.0003841     -0.000988
1.4400326    -24.085550 C
0.00003938        3697.     93883511.    10.0786392     0.0003968     -0.001021
1.4822550    -24.871565 C
0.00004063        3811.     93803541.    10.0820299     0.0004096     -0.001053
1.5241766    -25.657144 C
0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
1.7292383    -29.578385 C
0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
1.7693344    -30.361284 C
0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
0.00005188        4831.     93133529.    10.1185657     0.0005249     -0.001343
1.8877721    -32.707231 C
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0.00005313         4944.     93062909.    10.1231546     0.0005378     -0.001375
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1.9651778    -34.268875 C
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   0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
  3.9992162    -60.000000 CY
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  3.9993713    -60.000000 CY
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  3.9955701    -60.000000 CY
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  3.9999119    -60.000000 CY
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  3.9942523    -60.000000 CY
   0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
  3.9985257    -60.000000 CY
   0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
  3.9998424    -60.000000 CY
   0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
  3.9999658    -60.000000 CYT
   0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
  3.9996505    -60.000000 CYT
   0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
  3.9973093    -60.000000 CYT
   0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
  3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
   0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
   0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
   0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
   0.1907908     1.0334154
   0.00000313        1194.     382029703.    18.3159341    0.00005724   -0.00005526
   0.2367565     1.2846940
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0.3278510     1.7872522
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0.3729798     2.0385317
0.00000563         2133.    379244280.    18.1771590     0.0001022     -0.000100
0.4178295     2.2898116
0.00000625         2366.    378547777.    18.1598165     0.0001135     -0.000112
0.4624003     2.5410917
0.00000688         2366.    344134343.    10.3291778    0.00007101     -0.000176
0.2904571     -4.292706 C
0.00000750         2366.    315456481.    10.2940289    0.00007721     -0.000193
0.3152465     -4.690597 C
0.00000813         2366.    291190598.    10.2646762    0.00008340     -0.000209
0.3399656     -5.088396 C
0.00000875         2366.    270391269.    10.2391817    0.00008959     -0.000225
0.3645893     -5.486283 C
0.00000938         2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378     -5.884113 C
0.00001000         2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162     -6.281848 C
0.00001063         2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246     -6.679488 C
0.00001125         2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628     -7.077032 C
0.00001188         2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307     -7.474480 C
0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
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0.6069124     -9.460271 C
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0.6307565     -9.857138 C
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0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
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0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
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 0.0001944       11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994       11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044       11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
```

```
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
 0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
 0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
 0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
 0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
 0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
3.9974037    -60.000000 CYT
 0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
3.9878351    -60.000000 CYT


--------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
--------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
```

Tens. No.	kips	in-kip	Strain	Strain
1	3.800	12169.214	0.00300000	-0.00952396
2	4.200	12173.120	0.00300000	-0.00952020
3	4.600	12177.027	0.00300000	-0.00951645

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.

```
   2       0.90           4.200000        12173.      3.780000        10956.
70254444.
   3       0.90           4.600000        12177.      4.140000        10959.
70287179.
```

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	1.0000	0.00	N.A.	No	0.00	8819.
2	4.0000	0.2591	No	No	8819.	96230.
3	6.6000	2.8573	Yes	No	105049.	101452.
4	14.6000	13.6000	No	No	206501.	0.00
5	17.1000	16.1000	No	No	0.00	0.00
6	22.1000	21.1000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

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

0.00	0.00995	315600.	1000.0000	-1.59E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.09000	0.00978	316681.	1000.0000	-1.58E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.1800	0.00961	317761.	1000.0000	-1.57E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.2700	0.00944	318842.	1000.0000	-1.56E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.3600	0.00927	319923.	1000.0000	-1.55E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.4500	0.00910	321004.	1000.0000	-1.55E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.5400	0.00893	322084.	1000.0000	-1.54E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.6300	0.00877	323165.	1000.0000	-1.53E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.7200	0.00860	324246.	1000.0000	-1.52E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.8100	0.00844	325326.	1000.0000	-1.51E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.9000	0.00828	326407.	1000.0000	-1.50E-04	0.00	3.84E+11
0.00	0.00	0.00				
0.9900	0.00812	327488.	1000.	-1.49E-04	0.00	3.84E+11
0.00	0.00	0.00				
1.0800	0.00796	328568.	991.5627	-1.48E-04	0.00	3.84E+11
-15.625	2121.	0.00				
1.1700	0.00780	329631.	974.6064	-1.47E-04	0.00	3.84E+11
-15.776	2185.	0.00				
1.2600	0.00764	330675.	957.4891	-1.46E-04	0.00	3.84E+11
-15.923	2252.	0.00				
1.3500	0.00748	331700.	940.2155	-1.45E-04	0.00	3.84E+11
-16.065	2320.	0.00				
1.4400	0.00732	332707.	922.7903	-1.44E-04	0.00	3.84E+11
-16.204	2390.	0.00				
1.5300	0.00717	333695.	905.2183	-1.44E-04	0.00	3.84E+11
-16.337	2462.	0.00				
1.6200	0.00701	334664.	887.5042	-1.43E-04	0.00	3.84E+11
-16.467	2536.	0.00				
1.7100	0.00686	335613.	869.6531	-1.42E-04	0.00	3.84E+11
-16.591	2612.	0.00				
1.8000	0.00671	336543.	851.6699	-1.41E-04	0.00	3.84E+11
-16.711	2691.	0.00				
1.8900	0.00656	337454.	833.5597	-1.40E-04	0.00	3.84E+11
-16.826	2772.	0.00				
1.9800	0.00641	338345.	815.3276	-1.39E-04	0.00	3.84E+11
-16.937	2856.	0.00				
2.0700	0.00626	339216.	796.9790	-1.38E-04	0.00	3.84E+11
-17.042	2942.	0.00				

```
    2.1600    0.00611    340068.   778.5191  -1.37E-04       0.00   3.84E+11
-17.143      3031.       0.00
    2.2500    0.00596    340899.   759.9534  -1.36E-04       0.00   3.84E+11
-17.238      3123.       0.00
    2.3400    0.00581    341711.   741.2875  -1.35E-04       0.00   3.84E+11
-17.328      3219.       0.00
    2.4300    0.00567    342502.   722.5268  -1.34E-04       0.00   3.84E+11
-17.413      3318.       0.00
    2.5200    0.00552    343272.   703.6774  -1.33E-04       0.00   3.84E+11
-17.493      3420.       0.00
    2.6100    0.00538    344023.   684.7449  -1.32E-04       0.00   3.84E+11
-17.567      3526.       0.00
    2.7000    0.00524    344753.   665.7354  -1.31E-04       0.00   3.84E+11
-17.636      3635.       0.00
    2.7900    0.00510    345462.   646.6550  -1.30E-04       0.00   3.84E+11
-17.698      3749.       0.00
    2.8800    0.00496    346151.   627.5100  -1.29E-04       0.00   3.84E+11
-17.755      3868.       0.00
    2.9700    0.00482    346819.   608.3068  -1.28E-04       0.00   3.84E+11
-17.806      3991.       0.00
    3.0600    0.00468    347466.   589.0520  -1.27E-04       0.00   3.84E+11
-17.851      4118.       0.00
    3.1500    0.00454    348092.   569.7523  -1.26E-04       0.00   3.84E+11
-17.889      4252.       0.00
    3.2400    0.00441    348698.   550.4145  -1.25E-04       0.00   3.84E+11
-17.921      4390.       0.00
    3.3300    0.00427    349282.   531.0459  -1.24E-04       0.00   3.84E+11
-17.947      4535.       0.00
    3.4200    0.00414    349846.   511.6536  -1.23E-04       0.00   3.84E+11
-17.965      4687.       0.00
    3.5100    0.00401    350388.   492.2452  -1.22E-04       0.00   3.84E+11
-17.976      4845.       0.00
    3.6000    0.00388    350910.   472.8284  -1.21E-04       0.00   3.84E+11
-17.981      5010.       0.00
    3.6900    0.00375    351411.   453.4112  -1.20E-04       0.00   3.84E+11
-17.977      5184.       0.00
    3.7800    0.00362    351891.   434.0019  -1.19E-04       0.00   3.84E+11
-17.966      5366.       0.00
    3.8700    0.00349    352349.   414.6088  -1.18E-04       0.00   3.84E+11
-17.947      5558.       0.00
    3.9600    0.00336    352787.   395.2410  -1.17E-04       0.00   3.84E+11
-17.919      5760.       0.00
    4.0500    0.00323    353204.   159.8894  -1.16E-04       0.00   3.84E+11
-417.917    139577.       0.00
    4.1400    0.00311    353134.   -290.502  -1.15E-04       0.00   3.84E+11
-416.141    144581.       0.00
    4.2300    0.00298    352578.   -738.899  -1.14E-04       0.00   3.84E+11
-414.223    149899.       0.00
    4.3200    0.00286    351539.     -1185.  -1.13E-04       0.00   3.84E+11
-412.155    155565.       0.00
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    4.4100    0.00274    350019.     -1629.  -1.12E-04       0.00   3.84E+11
-409.930    161614.       0.00
    4.5000    0.00262    348021.     -2071.  -1.11E-04       0.00   3.84E+11
-407.539    168091.       0.00
    4.5900    0.00250    345548.     -2509.  -1.10E-04       0.00   3.84E+11
-404.972    175045.       0.00
    4.6800    0.00238    342602.     -2945.  -1.10E-04       0.00   3.84E+11
-402.219    182534.       0.00
    4.7700    0.00226    339187.     -3378.  -1.09E-04       0.00   3.84E+11
-399.265    190627.       0.00
    4.8600    0.00215    335306.     -3807.  -1.08E-04       0.00   3.84E+11
-396.098    199406.       0.00
    4.9500    0.00203    330964.     -4233.  -1.07E-04       0.00   3.84E+11
-392.699    208967.       0.00
    5.0400    0.00191    326163.     -4656.  -1.06E-04       0.00   3.84E+11
-389.050    219429.       0.00
    5.1300    0.00180    320909.     -5074.  -1.05E-04       0.00   3.84E+11
-385.129    230933.       0.00
    5.2200    0.00169    315205.     -5487.  -1.04E-04       0.00   3.84E+11
-380.909    243656.       0.00
    5.3100    0.00158    309057.     -5896.  -1.03E-04       0.00   3.85E+11
-376.360    257817.       0.00
    5.4000    0.00147    302471.     -6300.  -1.02E-04       0.00   3.85E+11
-371.444    273696.       0.00
    5.4900    0.00136    295450.     -6698.  -1.01E-04       0.00   3.85E+11
-366.117    291647.       0.00
    5.5800    0.00125    288003.     -7091.  -1.01E-04       0.00   3.85E+11
-360.326    312140.       0.00
    5.6700    0.00114    280136.     -7476.  -9.98E-05       0.00   3.85E+11
-354.004    335800.       0.00
    5.7600    0.00103    271855.     -7855.  -9.90E-05       0.00   3.85E+11
-347.066    363483.       0.00
    5.8500   9.25E-04    263170.     -8226.  -9.82E-05       0.00   3.85E+11
-339.405    396398.       0.00
    5.9400   8.19E-04    254089.     -8588.  -9.75E-05       0.00   3.85E+11
-330.879    436314.       0.00
    6.0300   7.14E-04    244622.     -8938.  -9.68E-05       0.00   3.85E+11
-319.015    482485.       0.00
    6.1200   6.10E-04    234783.     -9259.  -9.61E-05       0.00   3.85E+11
-273.791    484828.       0.00
    6.2100   5.06E-04    224624.     -9530.  -9.55E-05       0.00   3.85E+11
-228.436    487170.       0.00
    6.3000   4.04E-04    214199.     -9752.  -9.49E-05       0.00   3.85E+11
-182.941    489511.       0.00
    6.3900   3.01E-04    203561.     -9925.  -9.43E-05       0.00   3.85E+11
-137.294    491850.       0.00
    6.4800   2.00E-04    192763.    -10048.  -9.37E-05       0.00   3.85E+11
-91.488    494188.       0.00
    6.5700   9.90E-05    181857.    -10122.  -9.32E-05       0.00   3.85E+11
-45.510    496524.       0.00
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    6.6600  -1.41E-06    170899.    -10147.  -9.27E-05       0.00   3.85E+11
0.6493    498815.       0.00
    6.7500  -1.01E-04    159942.    -10121.  -9.23E-05       0.00   3.85E+11
46.9993    501157.       0.00
    6.8400  -2.01E-04    149039.    -10045.  -9.18E-05       0.00   3.85E+11
93.5561    503497.       0.00
    6.9300  -3.00E-04    138245.     -9919.  -9.14E-05       0.00   3.85E+11
140.3319    505837.       0.00
    7.0200  -3.98E-04    127615.     -9742.  -9.10E-05       0.00   3.85E+11
187.3389    508175.       0.00
    7.1100  -4.96E-04    117204.     -9514.  -9.07E-05       0.00   3.85E+11
234.5894    510513.       0.00
    7.2000  -5.94E-04    107066.     -9235.  -9.04E-05       0.00   3.85E+11
282.0956    512851.       0.00
    7.2900  -6.92E-04     97257.     -8904.  -9.01E-05       0.00   3.85E+11
329.8698    515187.       0.00
    7.3800  -7.89E-04     87833.     -8535.  -8.98E-05       0.00   3.85E+11
353.3022    483806.       0.00
    7.4700  -8.86E-04     78822.     -8147.  -8.96E-05       0.00   3.85E+11
365.3286    445537.       0.00
    7.5600  -9.82E-04     70236.     -7747.  -8.94E-05       0.00   3.85E+11
376.5975    414085.       0.00
    7.6500   -0.00108     62089.     -7334.  -8.92E-05       0.00   3.85E+11
387.2435    387721.       0.00
    7.7400   -0.00117     54394.     -6911.  -8.90E-05       0.00   3.85E+11
397.3680    365263.       0.00
    7.8300   -0.00127     47163.     -6476.  -8.89E-05       0.00   3.85E+11
407.0496    345876.       0.00
    7.9200   -0.00137     40407.     -6032.  -8.88E-05       0.00   3.85E+11
416.3506    328947.       0.00
    8.0100   -0.00146     34136.     -5577.  -8.87E-05       0.00   3.85E+11
425.3210    314021.       0.00
    8.1000   -0.00156     28361.     -5113.  -8.86E-05       0.00   3.85E+11
434.0019    300750.       0.00
    8.1900   -0.00165     23092.     -4640.  -8.85E-05       0.00   3.85E+11
442.4272    288863.       0.00
    8.2800   -0.00175     18340.     -4158.  -8.85E-05       0.00   3.85E+11
450.6253    278146.       0.00
    8.3700   -0.00185     14113.     -3667.  -8.84E-05       0.00   3.85E+11
458.6203    268429.       0.00
    8.4600   -0.00194     10421.     -3167.  -8.84E-05       0.00   3.85E+11
466.4326    259572.       0.00
    8.5500   -0.00204      7273.     -2659.  -8.84E-05       0.00   3.85E+11
474.0799    251462.       0.00
    8.6400   -0.00213      4678.     -2143.  -8.83E-05       0.00   3.85E+11
481.5774    244004.       0.00
    8.7300   -0.00223      2644.     -1619.  -8.83E-05       0.00   3.85E+11
488.9382    237121.       0.00
    8.8200   -0.00232      1181.     -1087.  -8.83E-05       0.00   3.85E+11
496.1741    230746.       0.00
```

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    8.9100   -0.00242   297.2124   -547.347  -8.83E-05       0.00   3.85E+11
503.2952    224824.       0.00
    9.0000   -0.00251     0.00       0.00  -8.83E-05       0.00   3.85E+11
510.3104    109652.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.00994684 inches
Computed slope at pile head      =     -0.0001590 radians
Maximum bending moment           =        353204. inch-lbs
Maximum shear force              =        -10147. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             18
Number of zero deflection points =              1
Pile deflection at ground        =     0.00809824 inches



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

Boundary Condition Type 1, Shear and Moment

Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.00994684       353204.       -10147.
    8.55000    0.01716555       350419.       -11282.
    8.10000    0.03823379       346638.       -12590.
    7.65000    0.09262957       342419.       -13886.
    7.20000    0.23227394       338441.       -15178.
    6.75000    0.72059081       336070.       -16868.
    6.30000    2.40516694       336128.       -18888.
    5.85000   14.77115521       352792.       -23693.
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 4600.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. p	Distrib. Lat. Load
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.1917	724800.	2250.	-0.00248	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1890	727242.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1864	729685.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1837	732127.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1810	734569.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1784	737011.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1757	739454.	2250.	-0.00246	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.1730	741896.	2250.	-0.00246	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.1704	744338.	2250.	-0.00246	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.1677	746780.	2250.	-0.00246	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.1651	749222.	2250.	-0.00245	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.1624	751665.	2250.	-0.00245	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.1598	754107.	2227.	-0.00245	0.00	3.83E+11	-42.444	286.9031	0.00
1.1700	0.1571	756500.	2181.	-0.00245	0.00	3.83E+11	-42.906	294.9054	0.00
1.2600	0.1545	758842.	2134.	-0.00245	0.00	3.83E+11			

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-43.357   303.1051       0.00
    1.3500     0.1518    761134.      2087.   -0.00244       0.00   3.83E+11
-43.798   311.5108       0.00
    1.4400     0.1492    763375.      2040.   -0.00244       0.00   3.83E+11
-44.228   320.1316       0.00
    1.5300     0.1466    765564.      1992.   -0.00244       0.00   3.83E+11
-44.647   328.9772       0.00
    1.6200     0.1439    767702.      1943.   -0.00244       0.00   3.83E+11
-45.055   338.0578       0.00
    1.7100     0.1413    769786.      1895.   -0.00244       0.00   3.83E+11
-45.451   347.3843       0.00
    1.8000     0.1387    771818.      1845.   -0.00243       0.00   3.83E+11
-45.836   356.9684       0.00
    1.8900     0.1360    773796.      1796.   -0.00243       0.00   3.83E+11
-46.209   366.8226       0.00
    1.9800     0.1334    775720.      1745.   -0.00243       0.00   3.83E+11
-46.570   376.9601       0.00
    2.0700     0.1308    777590.      1695.   -0.00243       0.00   3.83E+11
-46.919   387.3953       0.00
    2.1600     0.1282    779406.      1644.   -0.00242       0.00   3.83E+11
-47.255   398.1433       0.00
    2.2500     0.1256    781166.      1593.   -0.00242       0.00   3.83E+11
-47.578   409.2207       0.00
    2.3400     0.1230    782870.      1541.   -0.00242       0.00   3.83E+11
-47.887   420.6449       0.00
    2.4300     0.1203    784519.      1489.   -0.00242       0.00   3.83E+11
-48.183   432.4350       0.00
    2.5200     0.1177    786111.      1437.   -0.00242       0.00   3.83E+11
-48.466   444.6114       0.00
    2.6100     0.1151    787647.      1385.   -0.00241       0.00   3.83E+11
-48.733   457.1962       0.00
    2.7000     0.1125    789126.      1332.   -0.00241       0.00   3.83E+11
-48.987   470.2132       0.00
    2.7900     0.1099    790548.      1279.   -0.00241       0.00   3.83E+11
-49.225   483.6884       0.00
    2.8800     0.1073    791913.      1226.   -0.00241       0.00   3.83E+11
-49.447   497.6497       0.00
    2.9700     0.1047    793220.      1172.   -0.00240       0.00   3.83E+11
-49.654   512.1279       0.00
    3.0600     0.1021    794469.      1118.   -0.00240       0.00   3.83E+11
-49.844   527.1561       0.00
    3.1500    0.09952    795659.      1065.   -0.00240       0.00   3.83E+11
-50.017   542.7708       0.00
    3.2400    0.09693    796792.      1010.   -0.00240       0.00   3.83E+11
-50.172   559.0117       0.00
    3.3300    0.09434    797866.   956.1397   -0.00240       0.00   3.83E+11
-50.309   575.9226       0.00
    3.4200    0.09176    798881.   901.7414   -0.00239       0.00   3.83E+11
-50.428   593.5514       0.00
    3.5100    0.08917    799837.   847.2254   -0.00239       0.00   3.83E+11
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-50.527   611.9513       0.00
    3.6000    0.08659    800735.   792.6132   -0.00239       0.00   3.83E+11
-50.607   631.1806       0.00
    3.6900    0.08401    801573.   737.9266   -0.00239       0.00   3.83E+11
-50.665   651.3045       0.00
    3.7800    0.08144    802352.   683.1889   -0.00238       0.00   3.83E+11
-50.701   672.3953       0.00
    3.8700    0.07886    803072.   628.4238   -0.00238       0.00   3.83E+11
-50.715   694.5335       0.00
    3.9600    0.07629    803733.   573.6563   -0.00238       0.00   3.83E+11
-50.706   717.8096       0.00
    4.0500    0.07372    804335.    53.5501   -0.00238       0.00   3.83E+11
-912.454     13367.       0.00
    4.1400    0.07116    803873.   -930.301   -0.00238       0.00   3.83E+11
-909.493     13804.       0.00
    4.2300    0.06859    802349.     -1911.   -0.00237       0.00   3.83E+11
-906.213     14269.       0.00
    4.3200    0.06603    799769.     -2888.   -0.00237       0.00   3.83E+11
-902.597     14763.       0.00
    4.4100    0.06347    796136.     -3860.   -0.00237       0.00   3.83E+11
-898.626     15291.       0.00
    4.5000    0.06091    791454.     -4828.   -0.00237       0.00   3.83E+11
-894.280     15856.       0.00
    4.5900    0.05836    785730.     -5792.   -0.00236       0.00   3.83E+11
-889.537     16462.       0.00
    4.6800    0.05581    778968.     -6750.   -0.00236       0.00   3.83E+11
-884.369     17115.       0.00
    4.7700    0.05326    771175.     -7702.   -0.00236       0.00   3.83E+11
-878.748     17820.       0.00
    4.8600    0.05071    762356.     -8647.   -0.00236       0.00   3.83E+11
-872.640     18585.       0.00
    4.9500    0.04816    752520.     -9586.   -0.00236       0.00   3.83E+11
-866.007     19419.       0.00
    5.0400    0.04562    741673.    -10518.   -0.00235       0.00   3.83E+11
-858.804     20330.       0.00
    5.1300    0.04308    729825.    -11441.   -0.00235       0.00   3.83E+11
-850.981     21333.       0.00
    5.2200    0.04054    716984.    -12355.   -0.00235       0.00   3.83E+11
-842.480     22442.       0.00
    5.3100    0.03801    703161.    -13260.   -0.00235       0.00   3.83E+11
-833.229     23677.       0.00
    5.4000    0.03547    688365.    -14155.   -0.00235       0.00   3.83E+11
-823.148     25061.       0.00
    5.4900    0.03294    672610.    -15038.   -0.00234       0.00   3.84E+11
-812.137     26626.       0.00
    5.5800    0.03041    655907.    -15908.   -0.00234       0.00   3.84E+11
-800.077     28413.       0.00
    5.6700    0.02788    638271.    -16765.   -0.00234       0.00   3.84E+11
-786.820     30475.       0.00
    5.7600    0.02536    619717.    -17607.   -0.00234       0.00   3.84E+11
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-772.180	32888.	0.00				
5.8500	0.02283	600263.	-18432.	-0.00234	0.00	3.84E+11
-755.919	35754.	0.00				
5.9400	0.02031	579926.	-19239.	-0.00233	0.00	3.84E+11
-737.726	39226.	0.00				
6.0300	0.01779	558730.	-20025.	-0.00233	0.00	3.84E+11
-717.177	43536.	0.00				
6.1200	0.01527	536697.	-20786.	-0.00233	0.00	3.84E+11
-693.677	49054.	0.00				
6.2100	0.01276	513854.	-21521.	-0.00233	0.00	3.84E+11
-666.340	56419.	0.00				
6.3000	0.01024	490235.	-22223.	-0.00233	0.00	3.84E+11
-633.764	66843.	0.00				
6.3900	0.00773	465876.	-22886.	-0.00233	0.00	3.84E+11
-593.487	82963.	0.00				
6.4800	0.00521	440825.	-23498.	-0.00233	0.00	3.84E+11
-540.457	111962.	0.00				
6.5700	0.00270	415144.	-24039.	-0.00232	0.00	3.84E+11
-460.736	184156.	0.00				
6.6600	1.92E-04	388925.	-24335.	-0.00232	0.00	3.84E+11
-88.691	498815.	0.00				
6.7500	-0.00232	362603.	-24141.	-0.00232	0.00	3.84E+11
447.4987	208606.	0.00				
6.8400	-0.00482	336802.	-23608.	-0.00232	0.00	3.84E+11
540.0759	120899.	0.00				
6.9300	-0.00733	311632.	-22991.	-0.00232	0.00	3.84E+11
602.4181	88745.	0.00				
7.0200	-0.00984	287164.	-22314.	-0.00232	0.00	3.85E+11
651.3620	71513.	0.00				
7.1100	-0.01234	263456.	-21589.	-0.00232	0.00	3.85E+11
692.5409	60602.	0.00				
7.2000	-0.01485	240556.	-20821.	-0.00232	0.00	3.85E+11
728.5944	53003.	0.00				
7.2900	-0.01735	218506.	-20017.	-0.00232	0.00	3.85E+11
760.9890	47372.	0.00				
7.3800	-0.01985	197343.	-19179.	-0.00232	0.00	3.85E+11
790.6302	43012.	0.00				
7.4700	-0.02235	177103.	-18310.	-0.00232	0.00	3.85E+11
818.1195	39526.	0.00				
7.5600	-0.02486	157816.	-17413.	-0.00232	0.00	3.85E+11
843.8779	36667.	0.00				
7.6500	-0.02736	139514.	-16488.	-0.00232	0.00	3.85E+11
868.2125	34276.	0.00				
7.7400	-0.02986	122225.	-15538.	-0.00232	0.00	3.85E+11
891.3546	32242.	0.00				
7.8300	-0.03236	105975.	-14563.	-0.00231	0.00	3.85E+11
913.4831	30489.	0.00				
7.9200	-0.03486	90791.	-13565.	-0.00231	0.00	3.85E+11
934.7391	28961.	0.00				
8.0100	-0.03736	76697.	-12545.	-0.00231	0.00	3.85E+11

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955.2363     27616.       0.00
    8.1000   -0.03986     63718.    -11502.   -0.00231       0.00   3.85E+11
975.0675     26421.       0.00
    8.1900   -0.04236     51875.    -10439.   -0.00231       0.00   3.85E+11
994.3096     25353.       0.00
    8.2800   -0.04486     41193.     -9355.   -0.00231       0.00   3.85E+11
1013.     24391.       0.00
    8.3700   -0.04735     31692.     -8251.   -0.00231       0.00   3.85E+11
1031.     23520.       0.00
    8.4600   -0.04985     23393.     -7128.   -0.00231       0.00   3.85E+11
1049.     22727.       0.00
    8.5500   -0.05235     16319.     -5985.   -0.00231       0.00   3.85E+11
1067.     22002.       0.00
    8.6400   -0.05485     10488.     -4824.   -0.00231       0.00   3.85E+11
1084.     21336.       0.00
    8.7300   -0.05735      5922.     -3645.   -0.00231       0.00   3.85E+11
1100.     20723.       0.00
    8.8200   -0.05985      2639.     -2447.   -0.00231       0.00   3.85E+11
1117.     20155.       0.00
    8.9100   -0.06235   658.6382     -1232.   -0.00231       0.00   3.85E+11
1133.     19628.       0.00
    9.0000   -0.06485       0.00       0.00   -0.00231       0.00   3.85E+11
1149.      9569.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.19169746 inches
Computed slope at pile head      =     -0.0024756 radians
Maximum bending moment           =        804335. inch-lbs
Maximum shear force              =        -24335. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.16212840 inches


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            Pile-head Deflection vs. Pile Length for Load Case 2
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Boundary Condition Type 1, Shear and Moment

Shear = 2250. lbs
Moment = 724800. in-lbs
Axial Load = 4600. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.19169746	804335.	-24335.
8.55000	0.37775695	796165.	-26096.
8.10000	0.89677128	787900.	-28545.
7.65000	2.24193664	782880.	-31390.
7.20000	5.93125757	781482.	-34820.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 3800.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.1915	724800.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1889	727240.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1862	729680.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1835	732120.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1809	734561.	2250.	-0.00247	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1782	737001.	2250.	-0.00246	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1755	739441.	2250.	-0.00246	0.00	3.83E+11			

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0.00       0.00       0.00
    0.6300     0.1729    741881.      2250.   -0.00246       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.1702    744321.      2250.   -0.00246       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.1676    746761.      2250.   -0.00245       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.1649    749201.      2250.   -0.00245       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.1623    751641.      2250.   -0.00245       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.1596    754081.      2227.   -0.00245       0.00   3.83E+11
-42.432   287.0681       0.00
    1.1700     0.1570    756472.      2181.   -0.00245       0.00   3.83E+11
-42.893   295.0750       0.00
    1.2600     0.1544    758812.      2134.   -0.00244       0.00   3.83E+11
-43.344   303.2795       0.00
    1.3500     0.1517    761102.      2087.   -0.00244       0.00   3.83E+11
-43.785   311.6901       0.00
    1.4400     0.1491    763341.      2040.   -0.00244       0.00   3.83E+11
-44.215   320.3160       0.00
    1.5300     0.1464    765528.      1992.   -0.00244       0.00   3.83E+11
-44.634   329.1667       0.00
    1.6200     0.1438    767664.      1943.   -0.00244       0.00   3.83E+11
-45.042   338.2525       0.00
    1.7100     0.1412    769746.      1895.   -0.00243       0.00   3.83E+11
-45.438   347.5845       0.00
    1.8000     0.1386    771776.      1845.   -0.00243       0.00   3.83E+11
-45.823   357.1742       0.00
    1.8900     0.1359    773752.      1796.   -0.00243       0.00   3.83E+11
-46.196   367.0341       0.00
    1.9800     0.1333    775674.      1746.   -0.00243       0.00   3.83E+11
-46.557   377.1776       0.00
    2.0700     0.1307    777542.      1695.   -0.00242       0.00   3.83E+11
-46.905   387.6188       0.00
    2.1600     0.1281    779356.      1644.   -0.00242       0.00   3.83E+11
-47.241   398.3732       0.00
    2.2500     0.1255    781114.      1593.   -0.00242       0.00   3.83E+11
-47.564   409.4570       0.00
    2.3400     0.1228    782817.      1542.   -0.00242       0.00   3.83E+11
-47.873   420.8879       0.00
    2.4300     0.1202    784463.      1490.   -0.00242       0.00   3.83E+11
-48.169   432.6848       0.00
    2.5200     0.1176    786054.      1437.   -0.00241       0.00   3.83E+11
-48.452   444.8683       0.00
    2.6100     0.1150    787588.      1385.   -0.00241       0.00   3.83E+11
-48.719   457.4605       0.00
    2.7000     0.1124    789065.      1332.   -0.00241       0.00   3.83E+11
-48.972   470.4851       0.00
    2.7900     0.1098    790486.      1279.   -0.00241       0.00   3.83E+11
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-49.210   483.9681       0.00
    2.8800     0.1072    791848.      1226.   -0.00240       0.00   3.83E+11
-49.433   497.9376       0.00
    2.9700     0.1046    793153.      1172.   -0.00240       0.00   3.83E+11
-49.639   512.4242       0.00
    3.0600     0.1020    794401.      1119.   -0.00240       0.00   3.83E+11
-49.829   527.4612       0.00
    3.1500    0.09944    795590.      1065.   -0.00240       0.00   3.83E+11
-50.002   543.0850       0.00
    3.2400    0.09685    796720.      1011.   -0.00240       0.00   3.83E+11
-50.158   559.3354       0.00
    3.3300    0.09426    797793.   956.5132   -0.00239       0.00   3.83E+11
-50.295   576.2562       0.00
    3.4200    0.09168    798806.   902.1307   -0.00239       0.00   3.83E+11
-50.413   593.8953       0.00
    3.5100    0.08910    799761.   847.6306   -0.00239       0.00   3.83E+11
-50.513   612.3058       0.00
    3.6000    0.08652    800657.   793.0341   -0.00239       0.00   3.83E+11
-50.592   631.5464       0.00
    3.6900    0.08394    801493.   738.3635   -0.00238       0.00   3.83E+11
-50.650   651.6820       0.00
    3.7800    0.08137    802271.   683.6416   -0.00238       0.00   3.83E+11
-50.687   672.7850       0.00
    3.8700    0.07879    802990.   628.8924   -0.00238       0.00   3.83E+11
-50.701   694.9361       0.00
    3.9600    0.07622    803649.   574.1407   -0.00238       0.00   3.83E+11
-50.691   718.2257       0.00
    4.0500    0.07366    804249.    54.1497   -0.00238       0.00   3.83E+11
-912.255     13376.       0.00
    4.1400    0.07109    803785.   -929.488   -0.00237       0.00   3.83E+11
-909.295     13813.       0.00
    4.2300    0.06853    802261.     -1910.   -0.00237       0.00   3.83E+11
-906.016     14278.       0.00
    4.3200    0.06597    799680.     -2886.   -0.00237       0.00   3.83E+11
-902.400     14773.       0.00
    4.4100    0.06341    796046.     -3859.   -0.00237       0.00   3.83E+11
-898.430     15301.       0.00
    4.5000    0.06086    791364.     -4827.   -0.00236       0.00   3.83E+11
-894.086     15866.       0.00
    4.5900    0.05831    785640.     -5790.   -0.00236       0.00   3.83E+11
-889.343     16473.       0.00
    4.6800    0.05576    778878.     -6747.   -0.00236       0.00   3.83E+11
-884.177     17126.       0.00
    4.7700    0.05321    771085.     -7699.   -0.00236       0.00   3.83E+11
-878.557     17832.       0.00
    4.8600    0.05067    762267.     -8645.   -0.00236       0.00   3.83E+11
-872.450     18597.       0.00
    4.9500    0.04812    752431.     -9584.   -0.00235       0.00   3.83E+11
-865.818     19431.       0.00
    5.0400    0.04558    741585.    -10515.   -0.00235       0.00   3.83E+11
```

-858.617	20344.	0.00				
5.1300	0.04304	729738.	-11438.	-0.00235	0.00	3.83E+11
-850.797	21347.	0.00				
5.2200	0.04051	716899.	-12352.	-0.00235	0.00	3.83E+11
-842.297	22457.	0.00				
5.3100	0.03797	703077.	-13257.	-0.00235	0.00	3.83E+11
-833.049	23692.	0.00				
5.4000	0.03544	688284.	-14151.	-0.00234	0.00	3.83E+11
-822.970	25078.	0.00				
5.4900	0.03291	672530.	-15034.	-0.00234	0.00	3.84E+11
-811.962	26644.	0.00				
5.5800	0.03039	655830.	-15904.	-0.00234	0.00	3.84E+11
-799.904	28431.	0.00				
5.6700	0.02786	638196.	-16761.	-0.00234	0.00	3.84E+11
-786.650	30495.	0.00				
5.7600	0.02534	619645.	-17603.	-0.00234	0.00	3.84E+11
-772.013	32909.	0.00				
5.8500	0.02281	600193.	-18428.	-0.00233	0.00	3.84E+11
-755.757	35777.	0.00				
5.9400	0.02029	579860.	-19234.	-0.00233	0.00	3.84E+11
-737.568	39251.	0.00				
6.0300	0.01778	558667.	-20020.	-0.00233	0.00	3.84E+11
-717.025	43563.	0.00				
6.1200	0.01526	536637.	-20781.	-0.00233	0.00	3.84E+11
-693.530	49085.	0.00				
6.2100	0.01274	513798.	-21516.	-0.00233	0.00	3.84E+11
-666.201	56454.	0.00				
6.3000	0.01023	490183.	-22217.	-0.00233	0.00	3.84E+11
-633.633	66884.	0.00				
6.3900	0.00772	465828.	-22880.	-0.00233	0.00	3.84E+11
-593.367	83013.	0.00				
6.4800	0.00521	440781.	-23492.	-0.00232	0.00	3.84E+11
-540.352	112027.	0.00				
6.5700	0.00270	415104.	-24033.	-0.00232	0.00	3.84E+11
-460.660	184247.	0.00				
6.6600	1.92E-04	388889.	-24330.	-0.00232	0.00	3.84E+11
-88.892	498815.	0.00				
6.7500	-0.00231	362571.	-24136.	-0.00232	0.00	3.84E+11
447.3702	208786.	0.00				
6.8400	-0.00482	336774.	-23603.	-0.00232	0.00	3.84E+11
539.9391	120991.	0.00				
6.9300	-0.00732	311608.	-22986.	-0.00232	0.00	3.84E+11
602.2721	88810.	0.00				
7.0200	-0.00983	287144.	-22309.	-0.00232	0.00	3.85E+11
651.2074	71564.	0.00				
7.1100	-0.01233	263439.	-21584.	-0.00232	0.00	3.85E+11
692.3787	60645.	0.00				
7.2000	-0.01483	240542.	-20816.	-0.00232	0.00	3.85E+11
728.4253	53040.	0.00				
7.2900	-0.01733	218495.	-20012.	-0.00232	0.00	3.85E+11

```
760.8134     47405.       0.00
    7.3800   -0.01983    197335.    -19175.   -0.00231       0.00   3.85E+11
790.4487     43042.       0.00
    7.4700   -0.02233    177097.    -18306.   -0.00231       0.00   3.85E+11
817.9323     39553.       0.00
    7.5600   -0.02483    157813.    -17409.   -0.00231       0.00   3.85E+11
843.6854     36692.       0.00
    7.6500   -0.02733    139513.    -16484.   -0.00231       0.00   3.85E+11
868.0149     34299.       0.00
    7.7400   -0.02983    122225.    -15534.   -0.00231       0.00   3.85E+11
891.1521     32264.       0.00
    7.8300   -0.03233    105977.    -14560.   -0.00231       0.00   3.85E+11
913.2759     30510.       0.00
    7.9200   -0.03483     90795.    -13562.   -0.00231       0.00   3.85E+11
934.5274     28981.       0.00
    8.0100   -0.03732     76702.    -12542.   -0.00231       0.00   3.85E+11
955.0202     27635.       0.00
    8.1000   -0.03982     63723.    -11500.   -0.00231       0.00   3.85E+11
974.8471     26439.       0.00
    8.1900   -0.04232     51882.    -10437.   -0.00231       0.00   3.85E+11
994.0851     25370.       0.00
    8.2800   -0.04481     41199.     -9353.   -0.00231       0.00   3.85E+11
1013.     24408.       0.00
    8.3700   -0.04731     31698.     -8249.   -0.00231       0.00   3.85E+11
1031.     23536.       0.00
    8.4600   -0.04981     23400.     -7126.   -0.00231       0.00   3.85E+11
1049.     22743.       0.00
    8.5500   -0.05230     16325.     -5984.   -0.00231       0.00   3.85E+11
1066.     22017.       0.00
    8.6400   -0.05480     10494.     -4823.   -0.00231       0.00   3.85E+11
1083.     21351.       0.00
    8.7300   -0.05730      5927.     -3644.   -0.00231       0.00   3.85E+11
1100.     20737.       0.00
    8.8200   -0.05979      2642.     -2447.   -0.00231       0.00   3.85E+11
1117.     20168.       0.00
    8.9100   -0.06229   660.4951     -1232.   -0.00231       0.00   3.85E+11
1133.     19641.       0.00
    9.0000   -0.06479      0.00       0.00   -0.00231       0.00   3.85E+11
1149.      9575.       0.00

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


Output Summary for Load Case No. 3:
```

```
Pile-head deflection             =     0.19153288 inches
Computed slope at pile head      =     -0.0024735 radians
Maximum bending moment           =        804249. inch-lbs
Maximum shear force              =        -24330. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.16198865 inches
```

Pile-head Deflection vs. Pile Length for Load Case 3

Boundary Condition Type 1, Shear and Moment

```
Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.19153288	804249.	-24330.
8.55000	0.37710996	795994.	-26084.
8.10000	0.89311868	787530.	-28514.
7.65000	2.21897455	782020.	-31305.
7.20000	5.76576870	779289.	-34559.
6.75000	23.50119492	800187.	-41456.

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 Load               Load                 Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
```

Pile No.	in Pile 1 Load 1		2 Load 2		lbs	inches	radians	lbs in-lbs
1	V, lb	1000.0000	M, in-lb	315600.	4200.	0.00995	-1.59E-04	-10147. 353204.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.1917	-0.00248	-24335. 804335.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.1915	-0.00247	-24330. 804249.

Maximum pile-head deflection = 0.1916974613 inches
Maximum pile-head rotation = -0.0024755824 radians = -0.141840 deg.

The analysis ended normally.

LATERAL LOAD (LPILE) ANALYSES
EASTBOUND PARKING AREA
LIGHT TOWER PR-12 (B-009-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-12 (Boring B-009-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

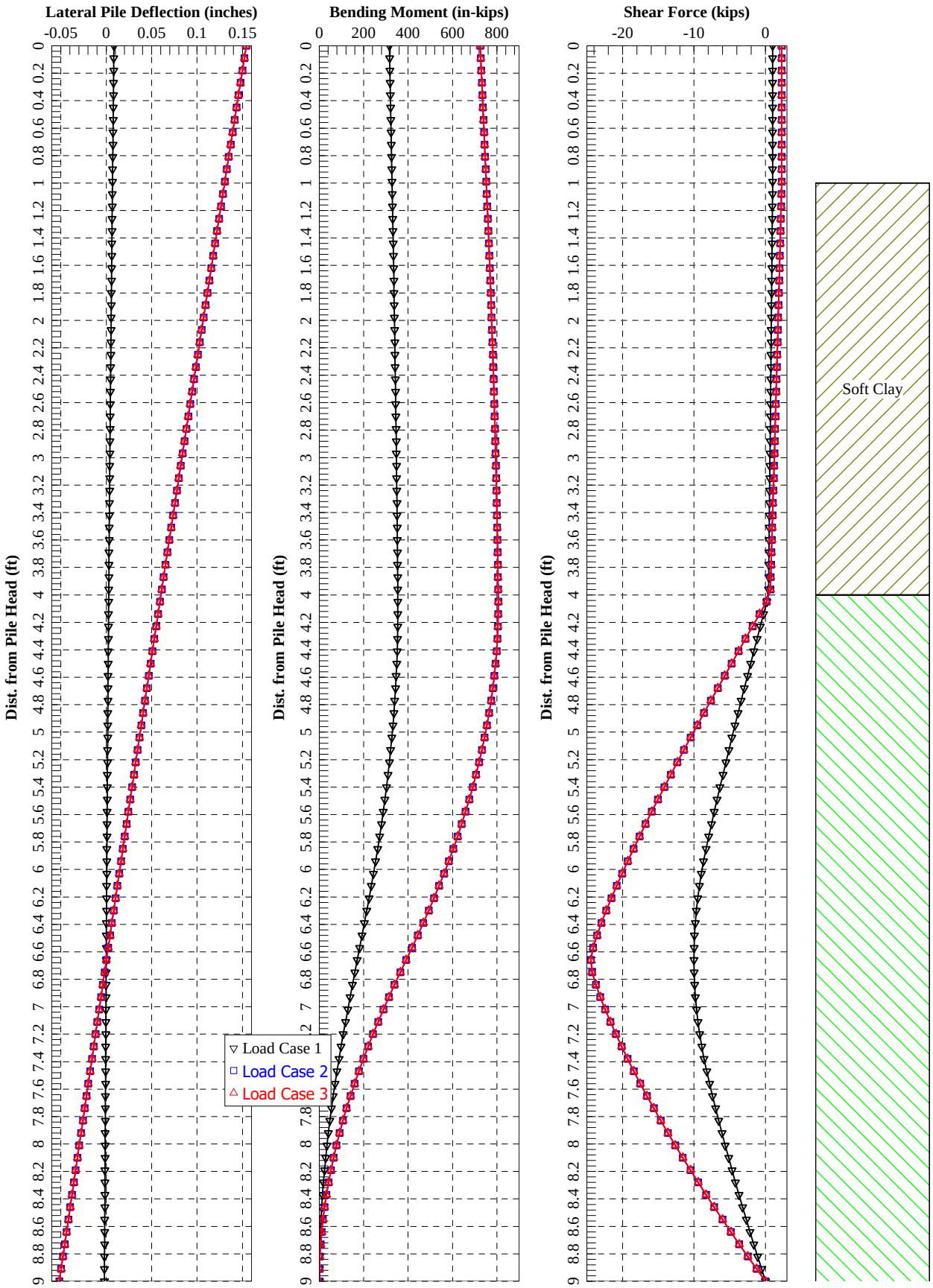


PLATE 225

```
================================================================================

                          LPile for Version 2022-12.012

                            License ID : 228332755
                       License Type : (Single User License)

                  Analysis of Individual Piles and Drilled Shafts
                 Subjected to Lateral Loading Using the p-y Method
                           © 1985-2024 by Ensoft, Inc.
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                                 S&ME, Inc.
                               Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                           Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\EB\

Name of input data file:
Tower PR-12 (B-009-0-25).lp12d

Name of output report file:
Tower PR-12 (B-009-0-25).lp12o

Name of plot output file:
Tower PR-12 (B-009-0-25).lp12p

Name of runtime message file:
Tower PR-12 (B-009-0-25).lp12r



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:44:55

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower PR-12 (B-009-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	14.800000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Undrained cohesion at top of layer	=	4000. psf
Undrained cohesion at bottom of layer	=	4000. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	14.800000 ft
Distance from top of pile to bottom of layer	=	29.800000 ft
Effective unit weight at top of layer	=	63.000000 pcf
Effective unit weight at bottom of layer	=	63.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.004000
Epsilon-50 at bottom of layer	=	0.004000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	29.800000 ft
Distance from top of pile to bottom of layer	=	31.800000 ft
Effective unit weight at top of layer	=	63.000000 pcf

```
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 22.800 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000 4.0000	98.0000 98.0000	250.0000 250.0000	0.02000 0.02000
2	Stiff Clay w/o Free Water	4.0000 14.8000	60.0000 60.0000	4000. 4000.	0.00500 0.00500
3	Stiff Clay w/o Free Water	14.8000 29.8000	63.0000 63.0000	4500. 4500.	0.00400 0.00400
4	Stiff Clay w/o Free Water	29.8000 31.8000	63.0000 63.0000	4500. 4500.	0.00400 0.00400

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 Compute Top y vs. Pile Length Type	Condition Run Analysis 1	Condition 2	Axial Thrust Force, lbs
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.

```
    Yes               Yes
   2     1     V =        2250. lbs   M =      724800. in-lbs             4600.
    Yes               Yes
   3     1     V =        2250. lbs   M =      724800. in-lbs             3800.
    Yes               Yes

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



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
-------------------------------------------------------

Length of Section                                  =     9.000000 ft
Shaft Diameter                                     =    36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)=     3.500000 in
Number of Reinforcing Bars                         =           16 bars
Yield Stress of Reinforcing Bars                   =      60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =        1018. sq. in.
Total Area of Reinforcing Steel                    =    16.000000 sq. in.
Area Ratio of Steel Reinforcement                  =         1.57 percent
Edge-to-Edge Bar Spacing                           =     4.114467 in
Maximum Concrete Aggregate Size                    =     0.750000 in
Ratio of Bar Spacing to Aggregate Size             =         5.49
Offset of Center of Rebar Cage from Center of Pile =       0.0000 in
Transverse Reinforcement
Type: Spiral
Number of Transverse Reinf. (per spacing)          =            1
Spacing of Transverse Reinf.                       =     4.500000 in
Yield Stress of Transverse Reinf.                  =      60000. psi
Diameter of Transverse Reinf.                      =     0.500000 in
```

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As = 4366.378 kips
Tensile Load for Cracking of Concrete = -470.222 kips
Nominal Axial Tensile Capacity = -960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete = 4000. psi
Modulus of Elasticity of Concrete = 3604997. psi
Modulus of Rupture of Concrete = -474.34165 psi
Compression Strain at Peak Stress = 0.001886
Tensile Strain at Fracture of Concrete = -0.0001154
Maximum Coarse Aggregate Size = 0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Stress ksi	Bending Curvature rad/in.	Bending Max Steel Stress ksi	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
6.25000E-07	240.5062135	384809942.	19.2929823	0.00001206	-0.00001044	0.0505030	0.2746478	
0.00000125	480.1472468	384117797.	18.6479768	0.00002331	-0.00002169	0.0973082	0.5259142	
0.00000188	718.9174733	383422652.	18.4329804	0.00003456	-0.00003294	0.1438345	0.7771808	
0.00000250	956.8168886	382726755.	18.3254857	0.00004581	-0.00004419	0.1900818	1.0284477	
0.00000313	1194.	382030558.	18.2609917	0.00005707	-0.00005543	0.2360502	1.2797149	
0.00000375	1430.	381334209.	18.2179981	0.00006832	-0.00006668	0.2817396	1.5309823	

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0.00000438         1665.    380637775.    18.1872904    0.00007957   -0.00007793
0.3271500     1.7822500
0.00000500         1900.    379941287.    18.1642614    0.00009082   -0.00008918
0.3722815     2.0335179
0.00000563         2133.    379244764.    18.1463515     0.0001021     -0.000100
0.4171340     2.2847861
0.00000625         2366.    378548215.    18.1320251     0.0001133     -0.000112
0.4617075     2.5360546
0.00000688         2366.    344134741.    10.2494785    0.00007047     -0.000177
0.2882187     -4.308598 C
0.00000750         2366.    315456846.    10.2198771    0.00007665     -0.000193
0.3129821     -4.706727 C
0.00000813         2366.    291190934.    10.1952302    0.00008284     -0.000210
0.3376758     -5.104761 C
0.00000875         2366.    270391582.    10.1744772    0.00008903     -0.000226
0.3622998     -5.502701 C
0.00000938         2366.    252365477.    10.1568402    0.00009522     -0.000242
0.3868539     -5.900547 C
0.00001000         2366.    236592634.    10.1417358     0.0001014     -0.000259
0.4113380     -6.298297 C
0.00001063         2366.    222675420.    10.1287027     0.0001076     -0.000275
0.4357521     -6.695951 C
0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
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0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063         3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188         3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313         4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438         4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563         4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
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0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938        5502.     92665342.    10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
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0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
 0.0001444       10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494       10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544       10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594       11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644       11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694       11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744       11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794       11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844       11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894       11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944       11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994       11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044       11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094       11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
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   0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
  3.9998812    -60.000000 CY
   0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
  3.9969940    -60.000000 CY
   0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
  3.9997138    -60.000000 CY
   0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
  3.9955528    -60.000000 CY
   0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
  3.9989818    -60.000000 CY
   0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
  3.9994466    -60.000000 CY
   0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
  3.9965160    -60.000000 CY
   0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
  3.9991770    -60.000000 CY
   0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
  3.9995775    -60.000000 CY
   0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
  3.9954763    -60.000000 CY
   0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
  3.9984997    -60.000000 CY
   0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
  3.9998981    -60.000000 CY
   0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
  3.9944635    -60.000000 CY
   0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
  3.9984635    -60.000000 CY
   0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
  3.9998209    -60.000000 CY
   0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
  3.9999551    -60.000000 CYT
   0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
  3.9996166    -60.000000 CYT
   0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
  3.9972132    -60.000000 CYT
   0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
  3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
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6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
 0.0508615     0.2771147
 0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
 0.0976654     0.5283867
 0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
 0.1441903     0.7796589
 0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
 0.1904363     1.0309315
 0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
 0.2364034     1.2822044
 0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
 0.2820914     1.5334776
 0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
 0.3275005     1.7847511
 0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
 0.3726306     2.0360248
 0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
 0.4174818     2.2872988
 0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
 0.4620539     2.5385732
 0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
 0.2893429    -4.300617 C
 0.00000750        2366.     315456672.    10.2575513    0.00007693     -0.000193
 0.3141325    -4.698533 C
 0.00000813        2366.     291190774.    10.2300378    0.00008312     -0.000209
 0.3388235    -5.096560 C
 0.00000875        2366.     270391433.    10.2068278    0.00008931     -0.000226
 0.3634446    -5.494492 C
 0.00000938        2366.     252365338.    10.1870615    0.00009550     -0.000242
 0.3879959    -5.892330 C
 0.00001000        2366.     236592504.    10.1700940     0.0001017     -0.000258
 0.4124772    -6.290073 C
 0.00001063        2366.     222675298.    10.1554324     0.0001079     -0.000275
 0.4368884    -6.687720 C
 0.00001125        2366.     210304448.    10.1426931     0.0001141     -0.000291
 0.4612294    -7.085271 C
 0.00001188        2366.     199235793.    10.1315564     0.0001203     -0.000307
 0.4855002    -7.482727 C
 0.00001250        2366.     189274003.    10.1218127     0.0001265     -0.000323
 0.5097005    -7.880086 C
 0.00001313        2366.     180260955.    10.1132503     0.0001327     -0.000340
 0.5338304    -8.277349 C
 0.00001375        2366.     172067276.    10.1057088     0.0001390     -0.000356
 0.5578898    -8.674515 C
 0.00001438        2366.     164586090.    10.0990556     0.0001452     -0.000372
 0.5818784    -9.071585 C
 0.00001500        2366.     157728336.    10.0931803     0.0001514     -0.000389
 0.6057963    -9.468556 C
 0.00001563        2366.     151419203.    10.0879903     0.0001576     -0.000405
 0.6296433    -9.865431 C
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0.00001625        2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688        2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750        2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813        2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875        2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938        2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000        2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063        2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125        2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188        2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250        2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
0.00002313        2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375        2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438        2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563        2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688        2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813        2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
0.00002938        2779.     94598964.    10.0593353     0.0002955     -0.000762
1.1361324    -18.571425 C
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1.1804341    -19.360427 C
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1.2244416    -20.149010 C
0.00003313        3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688        3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
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1.4400326    -24.085550 C
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1.5241766    -25.657144 C
0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
1.7292383    -29.578385 C
0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
1.7693344    -30.361284 C
0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
0.00005188        4831.     93133529.    10.1185657     0.0005249     -0.001343
1.8877721    -32.707231 C
0.00005313        4944.     93062909.    10.1231546     0.0005378     -0.001375
1.9266309    -33.488287 C
0.00005438        5056.     92992807.    10.1278294     0.0005507     -0.001407
1.9651778    -34.268875 C
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2.0034117    -35.048992 C
0.00005688        5281.     92853961.    10.1374215     0.0005766     -0.001471
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0.00005813        5393.     92785130.    10.1423320     0.0005895     -0.001503
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0.00006188        5728.     92580549.    10.1574868     0.0006285     -0.001599
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0.00006313        5840.     92512883.    10.1626714     0.0006415     -0.001631
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0.00006438        5951.     92445433.    10.1679189     0.0006546     -0.001663
2.2621930    -40.496353 C
0.00006563        6062.     92378172.    10.1732276     0.0006676     -0.001695
2.2978832    -41.272587 C
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2.5051976    -45.919366 C
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2.6688860    -49.777380 C
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2.7937834    -52.854093 C
0.00008938        8143.     91111830.    10.2831857     0.0009191     -0.002298
2.9130226    -55.924331 C
0.00009438        8573.     90843621.    10.3077273     0.0009728     -0.002425
3.0266854    -58.985869 C
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3.1332951    -60.000000 CY
 0.0001044        9308.     89176212.    10.3143071     0.0010766     -0.002681
3.2283182    -60.000000 CY
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3.3122821    -60.000000 CY
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3.3913727    -60.000000 CY
 0.0001194       10007.     83830919.    10.2019402     0.0012179     -0.003080
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3.5876602    -60.000000 CY
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3.6942550    -60.000000 CY
 0.0001444       10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494       10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
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3.8245440    -60.000000 CY
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3.9121613    -60.000000 CY
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3.9820503    -60.000000 CY
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3.9913005    -60.000000 CY
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3.9972564    -60.000000 CY
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3.9998723    -60.000000 CY
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3.9975077    -60.000000 CY
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3.9998931    -60.000000 CY
 0.0002194        11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
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3.9997330    -60.000000 CY
 0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
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3.9990203    -60.000000 CY
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3.9992468    -60.000000 CY
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3.9992162    -60.000000 CY
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3.9993713    -60.000000 CY
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3.9955701    -60.000000 CY
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3.9985538    -60.000000 CY
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3.9942523    -60.000000 CY
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3.9985257    -60.000000 CY
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3.9998424    -60.000000 CY
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3.9999658    -60.000000 CYT
 0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
3.9996505    -60.000000 CYT
 0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
3.9973093    -60.000000 CYT
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3.9875919    -60.000000 CYT
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Axial Thrust Force = 4.600 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Run Stiffness Msg kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
6.25000E-07	240.5035986	384805758.	19.5651901	0.00001223	-0.00001027
0.0512199	0.2795816				
0.00000125	480.1446137	384115691.	18.7843907	0.00002348	-0.00002152
0.0980225	0.5308592				
0.00000188	718.9148267	383421241.	18.5241312	0.00003473	-0.00003277
0.1445462	0.7821371				
0.00000250	956.8142298	382725692.	18.3940059	0.00004599	-0.00004401
0.1907908	1.0334154				
0.00000313	1194.	382029703.	18.3159341	0.00005724	-0.00005526
0.2367565	1.2846940				
0.00000375	1430.	381333494.	18.2638891	0.00006849	-0.00006651
0.2824433	1.5359729				
0.00000438	1665.	380637159.	18.2267166	0.00007974	-0.00007776
0.3278510	1.7872522				
0.00000500	1900.	379940746.	18.1988394	0.00009099	-0.00008901
0.3729798	2.0385317				
0.00000563	2133.	379244280.	18.1771590	0.0001022	-0.000100
0.4178295	2.2898116				
0.00000625	2366.	378547777.	18.1598165	0.0001135	-0.000112
0.4624003	2.5410917				
0.00000688	2366.	344134343.	10.3291778	0.00007101	-0.000176
0.2904571	-4.292706 C				
0.00000750	2366.	315456481.	10.2940289	0.00007721	-0.000193
0.3152465	-4.690597 C				
0.00000813	2366.	291190598.	10.2646762	0.00008340	-0.000209
0.3399656	-5.088396 C				
0.00000875	2366.	270391269.	10.2391817	0.00008959	-0.000225
0.3645893	-5.486283 C				
0.00000938	2366.	252365185.	10.2172859	0.00009579	-0.000242
0.3891378	-5.884113 C				
0.00001000	2366.	236592361.	10.1984552	0.0001020	-0.000258
0.4136162	-6.281848 C				
0.00001063	2366.	222675163.	10.1821496	0.0001082	-0.000274
0.4380246	-6.679488 C				
0.00001125	2366.	210304321.	10.1679490	0.0001144	-0.000291
0.4623628	-7.077032 C				
0.00001188	2366.	199235672.	10.1555219	0.0001206	-0.000307
0.4866307	-7.474480 C				

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0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
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0.8421464    -13.424502 C
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0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
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1.0025364    -16.193510 C
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1.0925912    -17.773555 C
0.00002938         2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
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1.3125933   -21.716373 C
0.00003563        3357.    94221794.    10.0778462    0.0003590    -0.000923
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1.3985212   -23.290530 C
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0.00004063        3814.    93880388.    10.0893491    0.0004099    -0.001053
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2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
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 0.0001544        10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594        11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644        11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694        11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
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    0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
   3.9985866    -60.000000 CY
    0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
   3.9998625    -60.000000 CY
    0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
   3.9999751    -60.000000 CYT
    0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
   3.9996828    -60.000000 CYT
    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
   3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
   3.9878351    -60.000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ----------------     ------------------     ------------
------------
   1                 3.800            12169.214          0.00300000
-0.00952396
   2                 4.200            12173.120          0.00300000
-0.00952020
   3                 4.600            12177.027          0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318,
or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal        Nominal     Ult. (Fac)    Ult. (Fac)   Bend.
Stiff.
```

Load No.	Factor	Ax. Thrust kips	Moment Cap in-kips	Ax. Thrust kips	Moment Cap in-kips	at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.
2	0.90	4.200000	12173.	3.780000	10956.	70254444.
3	0.90	4.600000	12177.	4.140000	10959.	70287179.

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	1.0000	0.00	N.A.	No	0.00	8832.
2	4.0000	0.2434	No	No	8832.	210404.
3	14.8000	13.8000	No	No	219236.	0.00
4	29.8000	28.8000	No	No	0.00	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.

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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                              =       1000.0 lbs
Applied moment at pile head                           =     315600.0 in-lbs
Axial thrust load on pile head                        =       4200.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00    0.00854    315600.  1000.0000  -1.41E-04       0.00   3.84E+11
0.00       0.00       0.00
   0.09000    0.00839    316681.  1000.0000  -1.41E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.1800    0.00823    317761.      1000.  -1.40E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.2700    0.00808    318842.  1000.0000  -1.39E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.3600    0.00793    319923.      1000.  -1.38E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.4500    0.00779    321003.      1000.  -1.37E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.5400    0.00764    322084.      1000.  -1.36E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.6300    0.00749    323164.      1000.  -1.35E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.7200    0.00735    324245.      1000.  -1.34E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.8100    0.00720    325326.      1000.  -1.33E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9000    0.00706    326406.      1000.  -1.32E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9900    0.00692    327487.      1000.  -1.32E-04       0.00   3.84E+11
0.00       0.00       0.00
    1.0800    0.00677    328567.   992.0017  -1.31E-04       0.00   3.84E+11
-14.812      2361.       0.00
    1.1700    0.00663    329631.   975.9296  -1.30E-04       0.00   3.84E+11
-14.951      2434.       0.00
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1.2600	0.00649	330677.	959.7088	-1.29E-04	0.00	3.84E+11	
-15.087	2509.	0.00					
1.3500	0.00636	331705.	943.3437	-1.28E-04	0.00	3.84E+11	
-15.219	2586.	0.00					
1.4400	0.00622	332715.	926.8391	-1.27E-04	0.00	3.84E+11	
-15.346	2665.	0.00					
1.5300	0.00608	333708.	910.1994	-1.26E-04	0.00	3.84E+11	
-15.469	2747.	0.00					
1.6200	0.00595	334683.	893.4293	-1.25E-04	0.00	3.84E+11	
-15.587	2831.	0.00					
1.7100	0.00581	335639.	876.5337	-1.24E-04	0.00	3.84E+11	
-15.701	2918.	0.00					
1.8000	0.00568	336577.	859.5174	-1.23E-04	0.00	3.84E+11	
-15.811	3007.	0.00					
1.8900	0.00555	337497.	842.3853	-1.22E-04	0.00	3.84E+11	
-15.916	3100.	0.00					
1.9800	0.00541	338398.	825.1423	-1.21E-04	0.00	3.84E+11	
-16.016	3195.	0.00					
2.0700	0.00528	339280.	807.7936	-1.20E-04	0.00	3.84E+11	
-16.111	3293.	0.00					
2.1600	0.00515	340144.	790.3443	-1.19E-04	0.00	3.84E+11	
-16.202	3395.	0.00					
2.2500	0.00503	340988.	772.7996	-1.18E-04	0.00	3.84E+11	
-16.288	3500.	0.00					
2.3400	0.00490	341814.	755.1648	-1.17E-04	0.00	3.84E+11	
-16.369	3609.	0.00					
2.4300	0.00477	342620.	737.4454	-1.16E-04	0.00	3.84E+11	
-16.445	3722.	0.00					
2.5200	0.00465	343408.	719.6470	-1.16E-04	0.00	3.84E+11	
-16.515	3838.	0.00					
2.6100	0.00452	344176.	701.7751	-1.15E-04	0.00	3.84E+11	
-16.581	3959.	0.00					
2.7000	0.00440	344925.	683.8354	-1.14E-04	0.00	3.84E+11	
-16.641	4085.	0.00					
2.7900	0.00428	345654.	665.8340	-1.13E-04	0.00	3.84E+11	
-16.695	4215.	0.00					
2.8800	0.00416	346364.	647.7767	-1.12E-04	0.00	3.84E+11	
-16.744	4351.	0.00					
2.9700	0.00404	347054.	629.6697	-1.11E-04	0.00	3.84E+11	
-16.787	4492.	0.00					
3.0600	0.00392	347725.	611.5192	-1.10E-04	0.00	3.84E+11	
-16.825	4638.	0.00					
3.1500	0.00380	348376.	593.3318	-1.09E-04	0.00	3.84E+11	
-16.856	4791.	0.00					
3.2400	0.00368	349008.	575.1138	-1.08E-04	0.00	3.84E+11	
-16.881	4951.	0.00					
3.3300	0.00357	349619.	556.8722	-1.07E-04	0.00	3.84E+11	
-16.900	5117.	0.00					
3.4200	0.00345	350211.	538.6138	-1.06E-04	0.00	3.84E+11	
-16.912	5291.	0.00					

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    3.5100    0.00334    350784.   520.3458  -1.05E-04       0.00   3.84E+11
-16.918      5473.       0.00
    3.6000    0.00323    351336.   502.0755  -1.04E-04       0.00   3.84E+11
-16.916      5664.       0.00
    3.6900    0.00311    351869.   483.8104  -1.03E-04       0.00   3.84E+11
-16.908      5864.       0.00
    3.7800    0.00300    352382.   465.5584  -1.02E-04       0.00   3.84E+11
-16.892      6074.       0.00
    3.8700    0.00289    352876.   447.3274  -1.01E-04       0.00   3.84E+11
-16.869      6295.       0.00
    3.9600    0.00279    353349.   429.1258  -9.98E-05       0.00   3.84E+11
-16.838      6527.       0.00
    4.0500    0.00268    353804.   190.5980  -9.88E-05       0.00   3.84E+11
-424.880    171306.       0.00
    4.1400    0.00257    353762.  -267.236   -9.78E-05       0.00   3.84E+11
-422.960    177572.       0.00
    4.2300    0.00247    353227.  -722.917   -9.68E-05       0.00   3.84E+11
-420.895    184234.       0.00
    4.3200    0.00236    352201.    -1176.   -9.59E-05       0.00   3.84E+11
-418.681    191333.       0.00
    4.4100    0.00226    350687.    -1627.   -9.49E-05       0.00   3.84E+11
-416.308    198917.       0.00
    4.5000    0.00216    348688.    -2075.   -9.39E-05       0.00   3.84E+11
-413.768    207039.       0.00
    4.5900    0.00206    346205.    -2521.   -9.29E-05       0.00   3.84E+11
-411.051    215763.       0.00
    4.6800    0.00196    343243.    -2963.   -9.19E-05       0.00   3.84E+11
-408.146    225161.       0.00
    4.7700    0.00186    339806.    -3402.   -9.10E-05       0.00   3.84E+11
-405.040    235320.       0.00
    4.8600    0.00176    335895.    -3838.   -9.00E-05       0.00   3.84E+11
-401.718    246342.       0.00
    4.9500    0.00166    331516.    -4270.   -8.91E-05       0.00   3.84E+11
-398.164    258351.       0.00
    5.0400    0.00157    326673.    -4698.   -8.82E-05       0.00   3.84E+11
-394.358    271493.       0.00
    5.1300    0.00147    321370.    -5122.   -8.73E-05       0.00   3.84E+11
-390.277    285949.       0.00
    5.2200    0.00138    315611.    -5541.   -8.64E-05       0.00   3.84E+11
-385.895    301942.       0.00
    5.3100    0.00129    309403.    -5955.   -8.55E-05       0.00   3.84E+11
-381.181    319749.       0.00
    5.4000    0.00120    302749.    -6364.   -8.46E-05       0.00   3.85E+11
-376.096    339720.       0.00
    5.4900    0.00110    295658.    -6767.   -8.38E-05       0.00   3.85E+11
-370.597    362308.       0.00
    5.5800    0.00101    288133.    -7164.   -8.30E-05       0.00   3.85E+11
-364.628    388104.       0.00
    5.6700   9.26E-04    280184.    -7554.   -8.22E-05       0.00   3.85E+11
-358.122    417902.       0.00
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    5.7600   8.37E-04    271817.     -7937.  -8.14E-05       0.00   3.85E+11
-350.992    452788.       0.00
    5.8500   7.50E-04    263040.     -8312.  -8.06E-05       0.00   3.85E+11
-343.128    494299.       0.00
    5.9400   6.63E-04    253863.     -8667.  -7.99E-05       0.00   3.85E+11
-313.942    511388.       0.00
    6.0300   5.77E-04    244320.     -8985.  -7.92E-05       0.00   3.85E+11
-274.590    513884.       0.00
    6.1200   4.92E-04    234457.     -9260.  -7.85E-05       0.00   3.85E+11
-235.195    516377.       0.00
    6.2100   4.07E-04    224319.     -9493.  -7.79E-05       0.00   3.85E+11
-195.747    518870.       0.00
    6.3000   3.24E-04    213953.     -9683.  -7.73E-05       0.00   3.85E+11
-156.238    521360.       0.00
    6.3900   2.41E-04    203405.     -9830.  -7.67E-05       0.00   3.85E+11
-116.656    523850.       0.00
    6.4800   1.58E-04    192721.     -9935.  -7.61E-05       0.00   3.85E+11
-76.991    526339.       0.00
    6.5700   7.60E-05    181947.     -9996.  -7.56E-05       0.00   3.85E+11
-37.231    528826.       0.00
    6.6600  -5.35E-06    171129.    -10015.  -7.51E-05       0.00   3.85E+11
2.6340    531312.       0.00
    6.7500  -8.62E-05    160315.     -9991.  -7.47E-05       0.00   3.85E+11
42.6176    533797.       0.00
    6.8400  -1.67E-04    149550.     -9923.  -7.42E-05       0.00   3.85E+11
82.7320    536281.       0.00
    6.9300  -2.47E-04    138882.     -9812.  -7.38E-05       0.00   3.85E+11
122.9898    538764.       0.00
    7.0200  -3.26E-04    128357.     -9657.  -7.34E-05       0.00   3.85E+11
163.4039    541246.       0.00
    7.1100  -4.05E-04    118023.     -9459.  -7.31E-05       0.00   3.85E+11
203.9873    543728.       0.00
    7.2000  -4.84E-04    107927.     -9217.  -7.28E-05       0.00   3.85E+11
244.7530    546208.       0.00
    7.2900  -5.62E-04     98116.     -8930.  -7.25E-05       0.00   3.85E+11
285.7138    548688.       0.00
    7.3800  -6.41E-04     88638.     -8599.  -7.22E-05       0.00   3.85E+11
326.8826    551167.       0.00
    7.4700  -7.18E-04     79542.     -8224.  -7.20E-05       0.00   3.85E+11
368.2719    553645.       0.00
    7.5600  -7.96E-04     70876.     -7819.  -7.18E-05       0.00   3.85E+11
380.5976    516375.       0.00
    7.6500  -8.73E-04     62653.     -7403.  -7.16E-05       0.00   3.85E+11
391.2703    483804.       0.00
    7.7400  -9.51E-04     54886.     -6975.  -7.14E-05       0.00   3.85E+11
401.4211    456034.       0.00
    7.8300   -0.00103     47588.     -6536.  -7.13E-05       0.00   3.85E+11
411.1285    432042.       0.00
    7.9200   -0.00110     40770.     -6087.  -7.12E-05       0.00   3.85E+11
420.4550    411078.       0.00
```

```
    8.0100   -0.00118     34441.     -5628.  -7.11E-05       0.00   3.85E+11
429.4507    392582.       0.00
    8.1000   -0.00126     28614.     -5159.  -7.10E-05       0.00   3.85E+11
438.1568    376126.       0.00
    8.1900   -0.00133     23298.     -4682.  -7.09E-05       0.00   3.85E+11
446.6073    361377.       0.00
    8.2800   -0.00141     18503.     -4195.  -7.08E-05       0.00   3.85E+11
454.8307    348074.       0.00
    8.3700   -0.00149     14238.     -3699.  -7.08E-05       0.00   3.85E+11
462.8512    336004.       0.00
    8.4600   -0.00156     10513.     -3195.  -7.08E-05       0.00   3.85E+11
470.6892    324998.       0.00
    8.5500   -0.00164      7337.     -2683.  -7.07E-05       0.00   3.85E+11
478.3625    314914.       0.00
    8.6400   -0.00172      4719.     -2162.  -7.07E-05       0.00   3.85E+11
485.8863    305638.       0.00
    8.7300   -0.00179      2668.     -1633.  -7.07E-05       0.00   3.85E+11
493.2739    297073.       0.00
    8.8200   -0.00187      1192.     -1097.  -7.07E-05       0.00   3.85E+11
500.5368    289136.       0.00
    8.9100   -0.00195   299.8686   -552.103  -7.07E-05       0.00   3.85E+11
507.6851    281759.       0.00
    9.0000   -0.00202       0.00       0.00  -7.07E-05       0.00   3.85E+11
514.7279    137441.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection              =     0.00853826 inches
Computed slope at pile head       =     -0.0001415 radians
Maximum bending moment            =        353804. inch-lbs
Maximum shear force               =        -10015. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             16
Number of zero deflection points  =              1
Pile deflection at ground         =     0.00690037 inches


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

Boundary Condition Type 1, Shear and Moment

```
Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.00853826	353804.	-10015.
8.55000	0.01421360	351275.	-11230.
8.10000	0.03112913	347813.	-12629.
7.65000	0.07535811	343355.	-13980.
7.20000	0.19023807	339074.	-15306.
6.75000	0.59709115	336353.	-17048.
6.30000	2.00596798	335879.	-19080.
5.85000	11.17610056	347716.	-23261.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

```
Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       4600.0 lbs
```

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.1543	724800.	2250.	-0.00201	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1522	727240.	2250.	-0.00201	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1500	729680.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1478	732120.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1457	734560.	2250.	-0.00200	0.00	3.83E+11			

```
0.00       0.00       0.00
    0.4500     0.1435    737000.      2250.   -0.00200       0.00   3.83E+11
0.00       0.00       0.00
    0.5400     0.1414    739440.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.6300     0.1392    741880.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.1370    744319.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.1349    746759.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.1328    749199.      2250.   -0.00199       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.1306    751639.      2250.   -0.00198       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.1285    754079.      2229.   -0.00198       0.00   3.83E+11
-39.468   331.8097       0.00
    1.1700     0.1263    756473.      2186.   -0.00198       0.00   3.83E+11
-39.896   341.0873       0.00
    1.2600     0.1242    758820.      2143.   -0.00198       0.00   3.83E+11
-40.314   350.5945       0.00
    1.3500     0.1221    761120.      2099.   -0.00198       0.00   3.83E+11
-40.723   360.3411       0.00
    1.4400     0.1199    763373.      2055.   -0.00197       0.00   3.83E+11
-41.121   370.3379       0.00
    1.5300     0.1178    765578.      2010.   -0.00197       0.00   3.83E+11
-41.509   380.5959       0.00
    1.6200     0.1157    767734.      1965.   -0.00197       0.00   3.83E+11
-41.887   391.1271       0.00
    1.7100     0.1135    769841.      1919.   -0.00197       0.00   3.83E+11
-42.254   401.9442       0.00
    1.8000     0.1114    771900.      1874.   -0.00197       0.00   3.83E+11
-42.611   413.0606       0.00
    1.8900     0.1093    773908.      1827.   -0.00196       0.00   3.83E+11
-42.956   424.4909       0.00
    1.9800     0.1072    775866.      1781.   -0.00196       0.00   3.83E+11
-43.291   436.2505       0.00
    2.0700     0.1051    777774.      1734.   -0.00196       0.00   3.83E+11
-43.613   448.3560       0.00
    2.1600     0.1029    779631.      1687.   -0.00196       0.00   3.83E+11
-43.924   460.8249       0.00
    2.2500     0.1008    781437.      1639.   -0.00195       0.00   3.83E+11
-44.223   473.6765       0.00
    2.3400    0.09872    783191.      1591.   -0.00195       0.00   3.83E+11
-44.509   486.9310       0.00
    2.4300    0.09661    784893.      1543.   -0.00195       0.00   3.83E+11
-44.783   500.6105       0.00
    2.5200    0.09451    786543.      1494.   -0.00195       0.00   3.83E+11
-45.044   514.7386       0.00
    2.6100    0.09241    788140.      1446.   -0.00195       0.00   3.83E+11
```

```
-45.291   529.3410       0.00
    2.7000    0.09031    789685.      1397.   -0.00194       0.00   3.83E+11
-45.525   544.4454       0.00
    2.7900    0.08821    791176.      1347.   -0.00194       0.00   3.83E+11
-45.745   560.0818       0.00
    2.8800    0.08612    792614.      1298.   -0.00194       0.00   3.83E+11
-45.951   576.2826       0.00
    2.9700    0.08402    793999.      1248.   -0.00194       0.00   3.83E+11
-46.141   593.0833       0.00
    3.0600    0.08193    795330.      1198.   -0.00193       0.00   3.83E+11
-46.316   610.5226       0.00
    3.1500    0.07984    796606.      1148.   -0.00193       0.00   3.83E+11
-46.476   628.6424       0.00
    3.2400    0.07776    797828.      1098.   -0.00193       0.00   3.83E+11
-46.619   647.4890       0.00
    3.3300    0.07568    798996.      1047.   -0.00193       0.00   3.83E+11
-46.745   667.1129       0.00
    3.4200    0.07360    800110.   996.8060   -0.00193       0.00   3.83E+11
-46.854   687.5698       0.00
    3.5100    0.07152    801169.   946.1542   -0.00192       0.00   3.83E+11
-46.945   708.9210       0.00
    3.6000    0.06944    802173.   895.4142   -0.00192       0.00   3.83E+11
-47.018   731.2344       0.00
    3.6900    0.06737    803122.   844.6065   -0.00192       0.00   3.83E+11
-47.071   754.5851       0.00
    3.7800    0.06530    804016.   793.7524   -0.00192       0.00   3.83E+11
-47.104   779.0567       0.00
    3.8700    0.06323    804855.   742.8740   -0.00191       0.00   3.83E+11
-47.116   804.7427       0.00
    3.9600    0.06117    805640.   691.9945   -0.00191       0.00   3.83E+11
-47.106   831.7475       0.00
    4.0500    0.05910    806369.   169.8012   -0.00191       0.00   3.83E+11
-919.919     16810.        0.00
    4.1400    0.05704    806025.   -822.076   -0.00191       0.00   3.83E+11
-916.891     17360.        0.00
    4.2300    0.05498    804612.     -1811.   -0.00190       0.00   3.83E+11
-913.545     17944.        0.00
    4.3200    0.05293    802134.     -2795.   -0.00190       0.00   3.83E+11
-909.864     18566.        0.00
    4.4100    0.05087    798594.     -3776.   -0.00190       0.00   3.83E+11
-905.829     19230.        0.00
    4.5000    0.04882    793997.     -4752.   -0.00190       0.00   3.83E+11
-901.420     19940.        0.00
    4.5900    0.04677    788349.     -5722.   -0.00190       0.00   3.83E+11
-896.613     20703.        0.00
    4.6800    0.04473    781656.     -6688.   -0.00189       0.00   3.83E+11
-891.383     21523.        0.00
    4.7700    0.04268    773922.     -7648.   -0.00189       0.00   3.83E+11
-885.699     22410.        0.00
    4.8600    0.04064    765155.     -8601.   -0.00189       0.00   3.83E+11
```

-879.528	23372.	0.00				
4.9500	0.03860	755363.	-9547.	-0.00189	0.00	3.83E+11
-872.832	24419.	0.00				
5.0400	0.03657	744552.	-10486.	-0.00188	0.00	3.83E+11
-865.567	25565.	0.00				
5.1300	0.03453	732732.	-11416.	-0.00188	0.00	3.83E+11
-857.682	26824.	0.00				
5.2200	0.03250	719912.	-12338.	-0.00188	0.00	3.83E+11
-849.117	28217.	0.00				
5.3100	0.03047	706101.	-13250.	-0.00188	0.00	3.83E+11
-839.804	29767.	0.00				
5.4000	0.02844	691310.	-14152.	-0.00188	0.00	3.83E+11
-829.659	31504.	0.00				
5.4900	0.02642	675552.	-15042.	-0.00187	0.00	3.84E+11
-818.585	33468.	0.00				
5.5800	0.02439	658839.	-15919.	-0.00187	0.00	3.84E+11
-806.462	35708.	0.00				
5.6700	0.02237	641185.	-16783.	-0.00187	0.00	3.84E+11
-793.142	38292.	0.00				
5.7600	0.02035	622606.	-17632.	-0.00187	0.00	3.84E+11
-778.441	41313.	0.00				
5.8500	0.01833	603119.	-18464.	-0.00187	0.00	3.84E+11
-762.122	44899.	0.00				
5.9400	0.01632	582744.	-19277.	-0.00187	0.00	3.84E+11
-743.874	49240.	0.00				
6.0300	0.01430	561500.	-20069.	-0.00186	0.00	3.84E+11
-723.279	54620.	0.00				
6.1200	0.01229	539413.	-20837.	-0.00186	0.00	3.84E+11
-699.745	61497.	0.00				
6.2100	0.01028	516510.	-21578.	-0.00186	0.00	3.84E+11
-672.400	70657.	0.00				
6.3000	0.00827	492822.	-22287.	-0.00186	0.00	3.84E+11
-639.862	83579.	0.00				
6.3900	0.00626	468388.	-22956.	-0.00186	0.00	3.84E+11
-599.721	103463.	0.00				
6.4800	0.00425	443255.	-23576.	-0.00186	0.00	3.84E+11
-547.078	138903.	0.00				
6.5700	0.00225	417483.	-24124.	-0.00186	0.00	3.84E+11
-468.677	225123.	0.00				
6.6600	2.44E-04	391165.	-24442.	-0.00185	0.00	3.84E+11
-120.264	531312.	0.00				
6.7500	-0.00176	364706.	-24267.	-0.00185	0.00	3.84E+11
444.8911	273264.	0.00				
6.8400	-0.00376	338767.	-23735.	-0.00185	0.00	3.84E+11
540.4914	155249.	0.00				
6.9300	-0.00576	313458.	-23117.	-0.00185	0.00	3.84E+11
604.1084	113259.	0.00				
7.0200	-0.00776	288853.	-22437.	-0.00185	0.00	3.85E+11
653.8274	90993.	0.00				
7.1100	-0.00976	265011.	-21709.	-0.00185	0.00	3.85E+11

```
695.5561     76974.       0.00
    7.2000   -0.01176    241980.    -20938.   -0.00185       0.00   3.85E+11
732.0342     67244.       0.00
    7.2900   -0.01375    219804.    -20130.   -0.00185       0.00   3.85E+11
764.7748     60051.       0.00
    7.3800   -0.01575    198519.    -19287.   -0.00185       0.00   3.85E+11
794.7084     54491.       0.00
    7.4700   -0.01775    178161.    -18414.   -0.00185       0.00   3.85E+11
822.4515     50051.       0.00
    7.5600   -0.01974    158762.    -17512.   -0.00185       0.00   3.85E+11
848.4347     46413.       0.00
    7.6500   -0.02174    140354.    -16582.   -0.00185       0.00   3.85E+11
872.9715     43373.       0.00
    7.7400   -0.02373    122963.    -15627.   -0.00185       0.00   3.85E+11
896.2980     40789.       0.00
    7.8300   -0.02573    106618.    -14647.   -0.00185       0.00   3.85E+11
918.5961     38563.       0.00
    7.9200   -0.02772     91344.    -13643.   -0.00185       0.00   3.85E+11
940.0096     36624.       0.00
    8.0100   -0.02971     77166.    -12617.   -0.00185       0.00   3.85E+11
960.6542     34917.       0.00
    8.1000   -0.03171     64110.    -11569.   -0.00185       0.00   3.85E+11
980.6241     33402.       0.00
    8.1900   -0.03370     52197.    -10499.   -0.00185       0.00   3.85E+11
999.9975     32047.       0.00
    8.2800   -0.03569     41450.     -9409.   -0.00185       0.00   3.85E+11
1019.     30828.       0.00
    8.3700   -0.03769     31892.     -8299.   -0.00185       0.00   3.85E+11
1037.     29724.       0.00
    8.4600   -0.03968     23543.     -7169.   -0.00185       0.00   3.85E+11
1055.     28720.       0.00
    8.5500   -0.04167     16425.     -6020.   -0.00185       0.00   3.85E+11
1073.     27801.       0.00
    8.6400   -0.04366     10559.     -4852.   -0.00185       0.00   3.85E+11
1090.     26958.       0.00
    8.7300   -0.04566      5963.     -3666.   -0.00185       0.00   3.85E+11
1107.     26180.       0.00
    8.8200   -0.04765      2659.     -2462.   -0.00184       0.00   3.85E+11
1123.     25461.       0.00
    8.9100   -0.04964   664.8454     -1239.   -0.00184       0.00   3.85E+11
1140.     24794.       0.00
    9.0000   -0.05163      0.00       0.00   -0.00184       0.00   3.85E+11
1156.     12087.       0.00

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

```
Output Summary for Load Case No. 2:

Pile-head deflection              =     0.15431827 inches
Computed slope at pile head       =     -0.0020073 radians
Maximum bending moment            =        806369. inch-lbs
Maximum shear force               =        -24442. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             34
Number of zero deflection points  =              1
Pile deflection at ground         =     0.13036871 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.15431827       806369.       -24442.
    8.55000    0.30429509       798622.       -26233.
    8.10000    0.72494793       789869.       -28715.
    7.65000    1.81648534       783817.       -31576.
    7.20000    4.78350908       780825.       -34946.
    6.75000   19.47559759       800742.       -41867.


--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 3
--------------------------------------------------------------------------------

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

Shear force at pile head                          =       2250.0 lbs
Applied moment at pile head                       =     724800.0 in-lbs
Axial thrust load on pile head                    =       3800.0 lbs
```

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Eastbound Parking Area
Light Tower PR-12 (Boring B-009-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.1542	724800.	2250.	-0.00201	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1520	727238.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1499	729676.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1477	732115.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1456	734553.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1434	736991.	2250.	-0.00200	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1413	739429.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.1391	741867.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.1370	744306.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.1348	746744.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.1327	749182.	2250.	-0.00199	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.1305	751620.	2250.	-0.00198	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.1284	754058.	2229.	-0.00198	0.00	3.83E+11	-39.459	331.9623	0.00
1.1700	0.1262	756450.	2186.	-0.00198	0.00	3.83E+11	-39.887	341.2442	0.00
1.2600	0.1241	758796.	2143.	-0.00198	0.00	3.83E+11	-40.305	350.7558	0.00
1.3500	0.1220	761094.	2099.	-0.00197	0.00	3.83E+11	-40.713	360.5070	0.00
1.4400	0.1198	763345.	2055.	-0.00197	0.00	3.83E+11	-41.112	370.5085	0.00
1.5300	0.1177	765549.	2010.	-0.00197	0.00	3.83E+11	-41.500	380.7713	0.00
1.6200	0.1156	767703.	1965.	-0.00197	0.00	3.83E+11	-41.878	391.3074	0.00
1.7100	0.1135	769809.	1920.	-0.00197	0.00	3.83E+11	-42.245	402.1295	0.00
1.8000	0.1113	771866.	1874.	-0.00196	0.00	3.83E+11	-42.601	413.2512	0.00

```
    1.8900     0.1092    773872.      1828.   -0.00196       0.00   3.83E+11
-42.946   424.6868       0.00
    1.9800     0.1071    775829.      1781.   -0.00196       0.00   3.83E+11
-43.281   436.4519       0.00
    2.0700     0.1050    777735.      1734.   -0.00196       0.00   3.83E+11
-43.603   448.5630       0.00
    2.1600     0.1029    779591.      1687.   -0.00196       0.00   3.83E+11
-43.914   461.0379       0.00
    2.2500     0.1008    781395.      1639.   -0.00195       0.00   3.83E+11
-44.213   473.8954       0.00
    2.3400    0.09865    783147.      1591.   -0.00195       0.00   3.83E+11
-44.499   487.1561       0.00
    2.4300    0.09655    784848.      1543.   -0.00195       0.00   3.83E+11
-44.773   500.8420       0.00
    2.5200    0.09444    786497.      1495.   -0.00195       0.00   3.83E+11
-45.034   514.9768       0.00
    2.6100    0.09234    788092.      1446.   -0.00194       0.00   3.83E+11
-45.281   529.5861       0.00
    2.7000    0.09024    789635.      1397.   -0.00194       0.00   3.83E+11
-45.515   544.6976       0.00
    2.7900    0.08815    791125.      1348.   -0.00194       0.00   3.83E+11
-45.735   560.3412       0.00
    2.8800    0.08606    792562.      1298.   -0.00194       0.00   3.83E+11
-45.940   576.5496       0.00
    2.9700    0.08396    793945.      1248.   -0.00194       0.00   3.83E+11
-46.130   593.3583       0.00
    3.0600    0.08188    795274.      1198.   -0.00193       0.00   3.83E+11
-46.306   610.8057       0.00
    3.1500    0.07979    796549.      1148.   -0.00193       0.00   3.83E+11
-46.465   628.9340       0.00
    3.2400    0.07771    797770.      1098.   -0.00193       0.00   3.83E+11
-46.608   647.7894       0.00
    3.3300    0.07562    798937.      1048.   -0.00193       0.00   3.83E+11
-46.734   667.4226       0.00
    3.4200    0.07355    800049.   997.0958   -0.00192       0.00   3.83E+11
-46.843   687.8890       0.00
    3.5100    0.07147    801107.   946.4558   -0.00192       0.00   3.83E+11
-46.934   709.2502       0.00
    3.6000    0.06939    802109.   895.7275   -0.00192       0.00   3.83E+11
-47.007   731.5740       0.00
    3.6900    0.06732    803057.   844.9316   -0.00192       0.00   3.83E+11
-47.060   754.9356       0.00
    3.7800    0.06525    803950.   794.0893   -0.00191       0.00   3.83E+11
-47.093   779.4187       0.00
    3.8700    0.06319    804788.   743.2228   -0.00191       0.00   3.83E+11
-47.105   805.1167       0.00
    3.9600    0.06112    805571.   692.3551   -0.00191       0.00   3.83E+11
-47.095   832.1341       0.00
    4.0500    0.05906    806299.   170.2545   -0.00191       0.00   3.83E+11
-919.758     16819.       0.00
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    4.1400    0.05700    805955.   -821.450   -0.00191       0.00   3.83E+11
-916.731     17369.       0.00
    4.2300    0.05494    804541.     -1810.   -0.00190       0.00   3.83E+11
-913.385     17954.       0.00
    4.3200    0.05289    802061.     -2794.   -0.00190       0.00   3.83E+11
-909.705     18576.       0.00
    4.4100    0.05084    798521.     -3774.   -0.00190       0.00   3.83E+11
-905.671     19240.       0.00
    4.5000    0.04879    793924.     -4750.   -0.00190       0.00   3.83E+11
-901.262     19951.       0.00
    4.5900    0.04674    788276.     -5721.   -0.00189       0.00   3.83E+11
-896.456     20713.       0.00
    4.6800    0.04470    781582.     -6686.   -0.00189       0.00   3.83E+11
-891.227     21535.       0.00
    4.7700    0.04265    773849.     -7646.   -0.00189       0.00   3.83E+11
-885.544     22422.       0.00
    4.8600    0.04061    765083.     -8599.   -0.00189       0.00   3.83E+11
-879.375     23384.       0.00
    4.9500    0.03858    755291.     -9545.   -0.00189       0.00   3.83E+11
-872.680     24432.       0.00
    5.0400    0.03654    744481.    -10484.   -0.00188       0.00   3.83E+11
-865.416     25578.       0.00
    5.1300    0.03451    732662.    -11414.   -0.00188       0.00   3.83E+11
-857.532     26838.       0.00
    5.2200    0.03248    719842.    -12335.   -0.00188       0.00   3.83E+11
-848.969     28232.       0.00
    5.3100    0.03045    706033.    -13247.   -0.00188       0.00   3.83E+11
-839.657     29783.       0.00
    5.4000    0.02842    691244.    -14149.   -0.00188       0.00   3.83E+11
-829.515     31521.       0.00
    5.4900    0.02640    675487.    -15039.   -0.00187       0.00   3.84E+11
-818.443     33485.       0.00
    5.5800    0.02437    658776.    -15916.   -0.00187       0.00   3.84E+11
-806.322     35726.       0.00
    5.6700    0.02235    641124.    -16780.   -0.00187       0.00   3.84E+11
-793.005     38312.       0.00
    5.7600    0.02034    622547.    -17628.   -0.00187       0.00   3.84E+11
-778.306     41334.       0.00
    5.8500    0.01832    603063.    -18460.   -0.00187       0.00   3.84E+11
-761.990     44922.       0.00
    5.9400    0.01630    582689.    -19273.   -0.00186       0.00   3.84E+11
-743.747     49265.       0.00
    6.0300    0.01429    561448.    -20065.   -0.00186       0.00   3.84E+11
-723.156     54648.       0.00
    6.1200    0.01228    539364.    -20833.   -0.00186       0.00   3.84E+11
-699.627     61529.       0.00
    6.2100    0.01027    516464.    -21574.   -0.00186       0.00   3.84E+11
-672.287     70693.       0.00
    6.3000    0.00826    492779.    -22283.   -0.00186       0.00   3.84E+11
-639.756     83621.       0.00
```

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    6.3900    0.00626    468348.    -22952.   -0.00186       0.00   3.84E+11
-599.624    103513.       0.00
    6.4800    0.00425    443218.    -23571.   -0.00186       0.00   3.84E+11
-546.994    138967.       0.00
    6.5700    0.00225    417450.    -24120.   -0.00185       0.00   3.84E+11
-468.615    225212.       0.00
    6.6600   2.45E-04    391135.    -24438.   -0.00185       0.00   3.84E+11
-120.384    531312.       0.00
    6.7500   -0.00176    364680.    -24262.   -0.00185       0.00   3.84E+11
444.7852    273459.       0.00
    6.8400   -0.00376    338743.    -23730.   -0.00185       0.00   3.84E+11
540.3799    155345.       0.00
    6.9300   -0.00576    313437.    -23112.   -0.00185       0.00   3.84E+11
603.9896    113325.       0.00
    7.0200   -0.00775    288836.    -22433.   -0.00185       0.00   3.85E+11
653.7018     91046.       0.00
    7.1100   -0.00975    264996.    -21705.   -0.00185       0.00   3.85E+11
695.4245     77018.       0.00
    7.2000   -0.01175    241968.    -20934.   -0.00185       0.00   3.85E+11
731.8970     67282.       0.00
    7.2900   -0.01374    219794.    -20126.   -0.00185       0.00   3.85E+11
764.6323     60084.       0.00
    7.3800   -0.01574    198512.    -19284.   -0.00185       0.00   3.85E+11
794.5611     54521.       0.00
    7.4700   -0.01773    178156.    -18411.   -0.00185       0.00   3.85E+11
822.2997     50078.       0.00
    7.5600   -0.01973    158759.    -17509.   -0.00185       0.00   3.85E+11
848.2785     46439.       0.00
    7.6500   -0.02172    140352.    -16579.   -0.00185       0.00   3.85E+11
872.8113     43397.       0.00
    7.7400   -0.02371    122963.    -15624.   -0.00185       0.00   3.85E+11
896.1337     40811.       0.00
    7.8300   -0.02571    106619.    -14644.   -0.00184       0.00   3.85E+11
918.4281     38584.       0.00
    7.9200   -0.02770     91346.    -13641.   -0.00184       0.00   3.85E+11
939.8380     36644.       0.00
    8.0100   -0.02969     77170.    -12615.   -0.00184       0.00   3.85E+11
960.4790     34936.       0.00
    8.1000   -0.03168     64114.    -11567.   -0.00184       0.00   3.85E+11
980.4455     33420.       0.00
    8.1900   -0.03368     52201.    -10497.   -0.00184       0.00   3.85E+11
999.8155     32065.       0.00
    8.2800   -0.03567     41455.     -9407.   -0.00184       0.00   3.85E+11
1019.     30845.       0.00
    8.3700   -0.03766     31897.     -8297.   -0.00184       0.00   3.85E+11
1037.     29740.       0.00
    8.4600   -0.03965     23548.     -7167.   -0.00184       0.00   3.85E+11
1055.     28735.       0.00
    8.5500   -0.04164     16430.     -6019.   -0.00184       0.00   3.85E+11
1072.     27816.       0.00
```

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    8.6400   -0.04363     10563.     -4851.   -0.00184       0.00   3.85E+11
1090.     26972.       0.00
    8.7300   -0.04562      5967.     -3665.   -0.00184       0.00   3.85E+11
1107.     26195.       0.00
    8.8200   -0.04761      2662.     -2461.   -0.00184       0.00   3.85E+11
1123.     25475.       0.00
    8.9100   -0.04961   666.3229     -1239.   -0.00184       0.00   3.85E+11
1139.     24808.       0.00
    9.0000   -0.05160       0.00       0.00   -0.00184       0.00   3.85E+11
1156.     12093.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection              =     0.15421244 inches
Computed slope at pile head       =     -0.0020060 radians
Maximum bending moment            =        806299. inch-lbs
Maximum shear force               =        -24438. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             34
Number of zero deflection points  =              1
Pile deflection at ground         =     0.13027885 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.15421244       806299.       -24438.
    8.55000    0.30387574       798483.       -26223.
```

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    8.10000    0.72255988       789557.       -28690.
    7.65000    1.80143048       783109.       -31507.
    7.20000    4.67689618       779051.       -34739.
    6.75000   17.33055455       790934.       -40593.

--------------------------------------------------------------------------------
            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 Load                Load                  Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
Pile    in Pile
 No.  1      Load 1       2        Load 2       lbs      inches     radians      lbs
     in-lbs
---- ----- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
  1  V, lb  1000.0000  M, in-lb     315600.      4200.    0.00854  -1.41E-04
-10015.    353804.
  2  V, lb      2250.  M, in-lb     724800.      4600.     0.1543   -0.00201
-24442.    806369.
  3  V, lb      2250.  M, in-lb     724800.      3800.     0.1542   -0.00201
-24438.    806299.


Maximum pile-head deflection = 0.1543182744 inches
Maximum pile-head rotation   = -0.0020072908 radians = -0.115009 deg.

The analysis ended normally.
```

LATERAL LOAD (LPILE) ANALYSES
WESTBOUND PARKING AREA
LPILE SOIL PARAMETERS

LPILE Parameters for Lateral Analyses – ATB-90 Westbound Parking Area

The following tables include parameters used by S&ME to perform a lateral load (LPILE) analysis on the foundations of each light tower at the westbound parking area. These tables include p-y models, soil unit weights, friction angle and subgrade modulus value for granular, and cohesion and strain values for cohesive soils. These parameters are based on the soil encountered and lab data shown on the boring logs, and recommended values given in the LPile 2022 user's manual and guidance provided by ODOT Office of Geotechnical Engineering (OGE).

Table 7 – LPile Input Parameters at Light Tower WR-6 (Boring B-023-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	825.2 – 822.2	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 3.1	822.2 – 822.1	Stiff Clay w/o Free Water	56 pcf	---	3,000	0.005
Sandy Silt (A-4a)	3.1 – 6.1	822.1 – 819.1	Stiff Clay w/o Free Water	58 pcf	---	4,500	0.004
Sandy Silt (A-4a)	6.1 – 16.1	819.1 – 809.1	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004
Sandy Silt (A-4a)	16.1 – 25.6	809.1 – 799.6	Stiff Clay w/o Free Water	58 pcf	---	2,250	0.005

*Below proposed ground surface at light tower, estimated to be at El. 825.17.

Table 8 – LPile Input Parameters at Light Tower WR-7 (Boring B-022-0-25 & B-019-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	824.8 – 821.8	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 10.1	821.8 – 814.7	Stiff Clay w/o Free Water	56 pcf	---	4,500	0.004
Silt and Clay (A-6a)	10.1 – 18.1	814.7 – 806.7	Stiff Clay w/o Free Water	60 pcf	---	3,250	0.005
Gravel with Sand and Silt (A-2-4)	18.1 – 20.6	806.7 – 804.2	Sand (Reese)	66 pcf	60 pci	36°	---
Sandy Silt (A-4a)	20.6 – 25.1	804.2 – 799.7	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004

*Below proposed ground surface at light tower, estimated to be at El. 824.76.

Table 9 – LPile Input Parameters at Light Tower WR-8 (Boring B-019-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	824.6 – 821.6	Soft Clay (Matlock)	98 pcf	---	250	0.02
Gravel with Sand and Silt (A-2-4)	3.0 – 5.9	821.6 – 818.7	Sand (Reese)	58 pcf	20 pci	31°	---
Silt and Clay (A-6a)	5.9 – 17.9	818.7 – 806.7	Stiff Clay w/o Free Water	60 pcf	---	3,250	0.005
Gravel with Sand and Silt (A-2-4)	17.9 – 20.4	806.7 – 804.2	Sand (Reese)	66 pcf	60 pci	35°	---
Sandy Silt (A-4a)	20.4 – 24.9	804.2 – 799.7	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004
Gravel with Sand and Silt (A-2-4)	3.0 – 5.9	821.6 – 818.7	Sand (Reese)	58 pcf	20 pci	31°	---

*Below proposed ground surface at light tower, estimated to be at El. 824.61.

Table 10 – LPile Input Parameters at Light Tower WR-9 (Boring B-023-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	824.7 – 821.7	Soft Clay (Matlock)	98 pcf	---	250	0.02
Sandy Silt (A-4a)	3.0 – 5.6	821.7 – 819.1	Stiff Clay w/o Free Water	58 pcf	---	4,500	0.004
Sandy Silt (A-4a)	5.6 – 15.6	819.1 – 809.1	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004
Sandy Silt (A-4a)	15.6 – 25.1	809.1 – 799.6	Stiff Clay w/o Free Water	58 pcf	---	2,250	0.005

*Below proposed ground surface at light tower, estimated to be at El. 824.74.

Table 11 – LPile Input Parameters at Light Tower WR-10 (Boring B-021-0-25 & B-018-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	825.4 – 822.4	Soft Clay (Matlock)	98 pcf	---	250	0.02
Silt and Clay (A-6a)	3.0 – 6.2	822.4 – 819.2	Stiff Clay w/o Free Water	63 pcf	---	4,000	0.005
Silty Clay (A-6b)	6.2 – 9.5	819.2 – 815.9	Stiff Clay w/o Free Water	58 pcf	---	3,500	0.005
Silt and Clay (A-6a)	9.5 – 13.2	815.9 – 812.2	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Coarse and Fine Sand (A-3a)	13.2 – 14.5	812.2 – 810.9	Sand (Reese)	58 pcf	20 pci	32°	---
Silt (A-4b)	14.5 – 15.8	810.9 – 809.6	Sand (Reese)	58 pcf	20 pci	30°	---
Sandy Silt (A-4a)	15.8 – 24.0	809.6 – 801.4	Stiff Clay w/o Free Water	58 pcf	---	3,250	0.005

*Below proposed ground surface at light tower, estimated to be at El. 825.35.

Table 12 – LPile Input Parameters at Light Tower WR-11 (Boring B-018-0-25)

Stratum	Depth* Interval (ft.)	Elevation Range	p-y Soil Model	Effective Unit Weight	Subgrade Modulus, k	C (psf) or ϕ (deg)	Strain ε_{50}
Disturbed Layer (per GDM Sec. 1201)	0.0 – 3.0	828.8 – 825.8	Soft Clay (Matlock)	98 pcf	---	250	0.02
Gravel with Sand, Silt, and Clay (A-2-6)	3.0 – 4.9	825.8 – 823.9	Sand (Reese)	60 pcf	60 pci	36°	---
Gravel with Sand (A-1-b)	4.9 – 6.4	823.9 – 822.4	Sand (Reese)	63 pcf	60 pci	36°	---
Silt and Clay (A-6a)	6.4 – 7.9	822.4 – 820.9	Stiff Clay w/o Free Water	60 pcf	---	4,500	0.004
Silty Clay (A-6b)	7.9 – 12.9	820.9 – 815.9	Stiff Clay w/o Free Water	58 pcf	---	3,500	0.005
Silt and Clay (A-6a)	12.9 – 16.6	815.9 – 812.2	Stiff Clay w/o Free Water	63 pcf	---	4,500	0.004
Coarse and Fine Sand (A-3a)	16.6 – 17.9	812.2 – 810.9	Sand (Reese)	58 pcf	20 pci	32°	---
Silt (A-4b)	17.9 – 19.2	810.9 – 809.6	Sand (Reese)	58 pcf	20 pci	30°	---
Sandy Silt (A-4a)	19.2 – 27.4	809.6 – 801.4	Stiff Clay w/o Free Water	58 pcf	---	3,250	0.005

*Below proposed ground surface at light tower, estimated to be at El. 828.79.

LATERAL LOAD (LPILE) ANALYSES
WESTBOUND PARKING AREA
LIGHT TOWER WR-6 (B-023-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-6 (Boring B-023-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

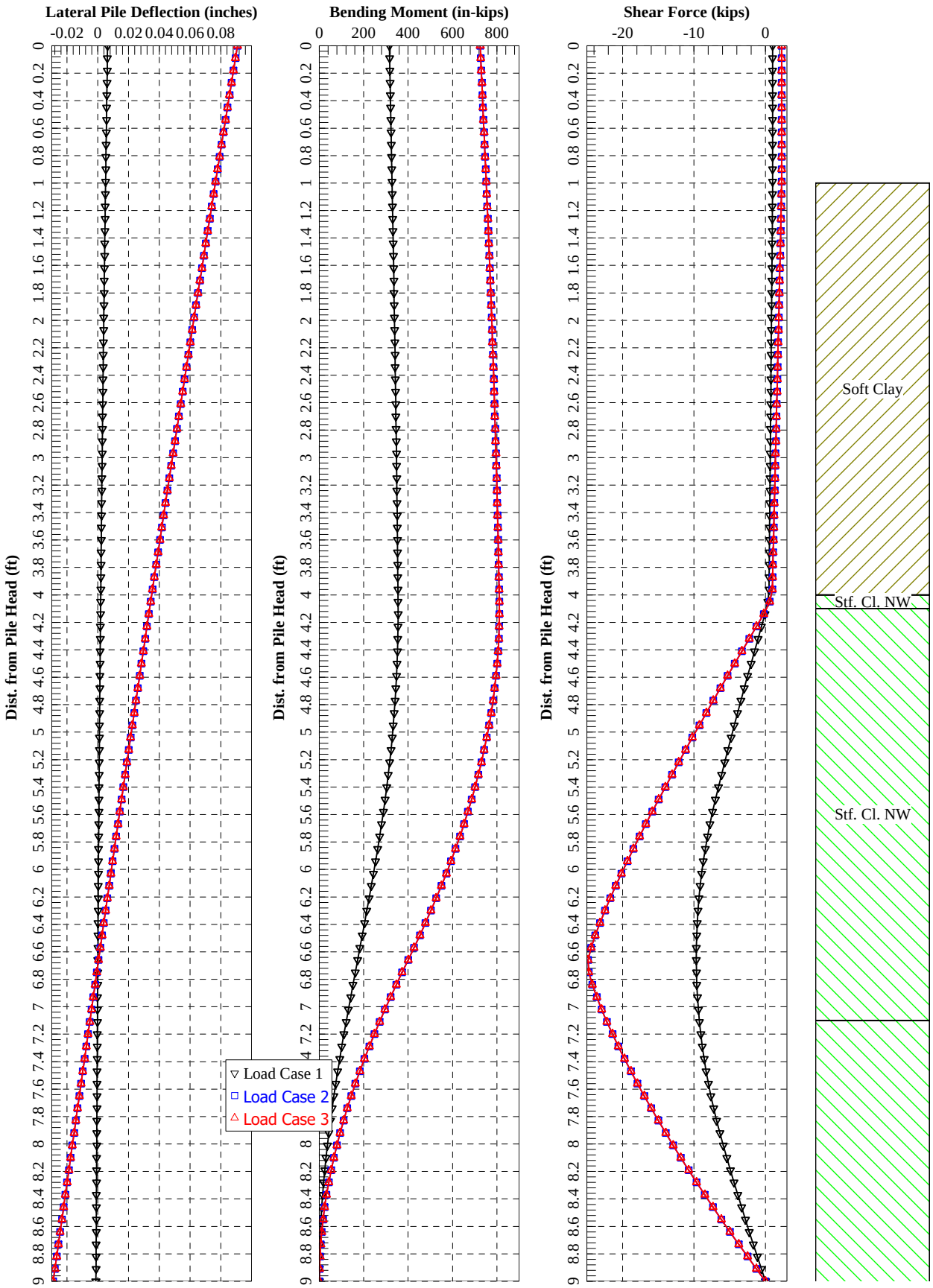


PLATE 271

```
==========================================================================

                        LPile for Version 2022-12.012

                          License ID : 228332755
                     License Type : (Single User License)

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

==========================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------
                          Files Used for Analysis
--------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\WB\

Name of input data file:
Tower WR-6 (B-023-0-25).lp12d

Name of output report file:
Tower WR-6 (B-023-0-25).lp12o

Name of plot output file:
Tower WR-6 (B-023-0-25).lp12p

Name of runtime message file:
Tower WR-6 (B-023-0-25).lp12r



--------------------------------------------------------------------------
                        Date and Time of Analysis
--------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:48:08

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower WR-6 (B-023-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	4.100000 ft
Effective unit weight at top of layer	=	56.000000 pcf
Effective unit weight at bottom of layer	=	56.000000 pcf
Undrained cohesion at top of layer	=	3000. psf
Undrained cohesion at bottom of layer	=	3000. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	4.100000 ft
Distance from top of pile to bottom of layer	=	7.100000 ft
Effective unit weight at top of layer	=	58.000000 pcf
Effective unit weight at bottom of layer	=	58.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.004000
Epsilon-50 at bottom of layer	=	0.004000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	7.100000 ft
Distance from top of pile to bottom of layer	=	17.100000 ft
Effective unit weight at top of layer	=	60.000000 pcf

```
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =    17.100000 ft
   Distance from top of pile to bottom of layer        =    26.600000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Undrained cohesion at top of layer                  =        2250. psf
   Undrained cohesion at bottom of layer               =        2250. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


 (Depth of the lowest soil layer extends 17.600 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000 4.0000	98.0000 98.0000	250.0000 250.0000	0.02000 0.02000
2	Stiff Clay w/o Free Water	4.0000 4.1000	56.0000 56.0000	3000. 3000.	0.00500 0.00500
3	Stiff Clay w/o Free Water	4.1000 7.1000	58.0000 58.0000	4500. 4500.	0.00400 0.00400
4	Stiff Clay w/o Free Water	7.1000 17.1000	60.0000 60.0000	4500. 4500.	0.00400 0.00400
5	Stiff Clay w/o Free Water	17.1000 26.6000	58.0000 58.0000	2250. 2250.	0.00500 0.00500

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	Run Analysis
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.	Yes	Yes
2	1	V = 2250. lbs	M = 724800. in-lbs	4600.	Yes	Yes
3	1	V = 2250. lbs	M = 724800. in-lbs	3800.	Yes	Yes

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

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	9.000000 ft
Shaft Diameter	=	36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)	=	3.500000 in
Number of Reinforcing Bars	=	16 bars
Yield Stress of Reinforcing Bars	=	60000. psi

Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	1018. sq. in.
Total Area of Reinforcing Steel	=	16.000000 sq. in.
Area Ratio of Steel Reinforcement	=	1.57 percent
Edge-to-Edge Bar Spacing	=	4.114467 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	5.49
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in
Transverse Reinforcement		
Type: Spiral		
Number of Transverse Reinf. (per spacing)	=	1
Spacing of Transverse Reinf.	=	4.500000 in
Yield Stress of Transverse Reinf.	=	60000. psi
Diameter of Transverse Reinf.	=	0.500000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	4366.378 kips
Tensile Load for Cracking of Concrete	=	-470.222 kips
Nominal Axial Tensile Capacity	=	-960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Curvature rad/in.	Bending Max Conc Stress ksi	Bending Max Steel Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg

```
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5062135    384809942.    19.2929823    0.00001206   -0.00001044
   0.0505030     0.2746478
   0.00000125   480.1472468    384117797.    18.6479768    0.00002331   -0.00002169
   0.0973082     0.5259142
   0.00000188   718.9174733    383422652.    18.4329804    0.00003456   -0.00003294
   0.1438345     0.7771808
   0.00000250   956.8168886    382726755.    18.3254857    0.00004581   -0.00004419
   0.1900818     1.0284477
   0.00000313        1194.    382030558.    18.2609917    0.00005707   -0.00005543
   0.2360502     1.2797149
   0.00000375        1430.    381334209.    18.2179981    0.00006832   -0.00006668
   0.2817396     1.5309823
   0.00000438        1665.    380637775.    18.1872904    0.00007957   -0.00007793
   0.3271500     1.7822500
   0.00000500        1900.    379941287.    18.1642614    0.00009082   -0.00008918
   0.3722815     2.0335179
   0.00000563        2133.    379244764.    18.1463515     0.0001021     -0.000100
   0.4171340     2.2847861
   0.00000625        2366.    378548215.    18.1320251     0.0001133     -0.000112
   0.4617075     2.5360546
   0.00000688        2366.    344134741.    10.2494785    0.00007047     -0.000177
   0.2882187    -4.308598 C
   0.00000750        2366.    315456846.    10.2198771    0.00007665     -0.000193
   0.3129821    -4.706727 C
   0.00000813        2366.    291190934.    10.1952302    0.00008284     -0.000210
   0.3376758    -5.104761 C
   0.00000875        2366.    270391582.    10.1744772    0.00008903     -0.000226
   0.3622998    -5.502701 C
   0.00000938        2366.    252365477.    10.1568402    0.00009522     -0.000242
   0.3868539    -5.900547 C
   0.00001000        2366.    236592634.    10.1417358     0.0001014     -0.000259
   0.4113380    -6.298297 C
   0.00001063        2366.    222675420.    10.1287027     0.0001076     -0.000275
   0.4357521    -6.695951 C
   0.00001125        2366.    210304564.    10.1174231     0.0001138     -0.000291
   0.4600960    -7.093510 C
   0.00001188        2366.    199235903.    10.1076093     0.0001200     -0.000307
   0.4843696    -7.490973 C
   0.00001250        2366.    189274107.    10.0990420     0.0001262     -0.000324
   0.5085729    -7.888340 C
   0.00001313        2366.    180261055.    10.0915439     0.0001325     -0.000340
   0.5327056    -8.285611 C
   0.00001375        2366.    172067370.    10.0849699     0.0001387     -0.000356
   0.5567678    -8.682785 C
   0.00001438        2366.    164586180.    10.0792000     0.0001449     -0.000373
   0.5807594    -9.079861 C
   0.00001500        2366.    157728423.    10.0741344     0.0001511     -0.000389
   0.6046801    -9.476841 C
```

```
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
```

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0.00003813        3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938        3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063        3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188        3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313        4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438        4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563        4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938        5502.     92665342.    10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
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2.3674485    -42.832591 C
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3.9999551    -60.000000 CYT
 0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
3.9996166    -60.000000 CYT
 0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
3.9972132    -60.000000 CYT
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    0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
   3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
   0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
   0.2364034     1.2822044
   0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
   0.2820914     1.5334776
   0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
   0.3275005     1.7847511
   0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
   0.3726306     2.0360248
   0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
   0.4174818     2.2872988
   0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
   0.4620539     2.5385732
   0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
   0.2893429    -4.300617 C
   0.00000750        2366.     315456672.    10.2575513    0.00007693     -0.000193
   0.3141325    -4.698533 C
   0.00000813        2366.     291190774.    10.2300378    0.00008312     -0.000209
   0.3388235    -5.096560 C
   0.00000875        2366.     270391433.    10.2068278    0.00008931     -0.000226
   0.3634446    -5.494492 C
   0.00000938        2366.     252365338.    10.1870615    0.00009550     -0.000242
   0.3879959    -5.892330 C
   0.00001000        2366.     236592504.    10.1700940     0.0001017     -0.000258
   0.4124772    -6.290073 C
   0.00001063        2366.     222675298.    10.1554324     0.0001079     -0.000275
   0.4368884    -6.687720 C
   0.00001125        2366.     210304448.    10.1426931     0.0001141     -0.000291
   0.4612294    -7.085271 C
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0.5097005     -7.880086 C
0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963     -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433     -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
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0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
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 0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
 0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
 0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
3.9955701    -60.000000 CY
 0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
3.9985538    -60.000000 CY
 0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
3.9999119    -60.000000 CY
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   0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
  3.9942523    -60.000000 CY
   0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
  3.9985257    -60.000000 CY
   0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
  3.9998424    -60.000000 CY
   0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
  3.9999658    -60.000000 CYT
   0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
  3.9996505    -60.000000 CYT
   0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
  3.9973093    -60.000000 CYT
   0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
  3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------- ------------- ------------- ------------- ------------- -------------
------------- ------------- ---
  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
   0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
   0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
   0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
   0.1907908     1.0334154
   0.00000313         1194.    382029703.    18.3159341    0.00005724   -0.00005526
   0.2367565     1.2846940
   0.00000375         1430.    381333494.    18.2638891    0.00006849   -0.00006651
   0.2824433     1.5359729
   0.00000438         1665.    380637159.    18.2267166    0.00007974   -0.00007776
   0.3278510     1.7872522
   0.00000500         1900.    379940746.    18.1988394    0.00009099   -0.00008901
   0.3729798     2.0385317
   0.00000563         2133.    379244280.    18.1771590     0.0001022     -0.000100
   0.4178295     2.2898116
   0.00000625         2366.    378547777.    18.1598165     0.0001135     -0.000112
   0.4624003     2.5410917
   0.00000688         2366.    344134343.    10.3291778    0.00007101     -0.000176
   0.2904571     -4.292706 C
   0.00000750         2366.    315456481.    10.2940289    0.00007721     -0.000193
   0.3152465     -4.690597 C
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0.00000813         2366.    291190598.    10.2646762    0.00008340     -0.000209
0.3399656     -5.088396 C
0.00000875         2366.    270391269.    10.2391817    0.00008959     -0.000225
0.3645893     -5.486283 C
0.00000938         2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378     -5.884113 C
0.00001000         2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162     -6.281848 C
0.00001063         2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246     -6.679488 C
0.00001125         2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628     -7.077032 C
0.00001188         2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307     -7.474480 C
0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
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0.00002375        2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438        2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
0.00002563        2436.     95048091.    10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688        2551.     94928657.    10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813        2667.     94815115.    10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938        2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063        2897.     94602733.    10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
0.00003188        3012.     94502697.    10.0717368     0.0003210     -0.000826
1.2254772    -20.140508 C
0.00003313        3127.     94406117.    10.0734845     0.0003337     -0.000859
1.2691834    -20.928652 C
0.00003438        3242.     94312597.    10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563        3357.     94221794.    10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
0.00003688        3471.     94133413.    10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813        3586.     94047197.    10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938        3700.     93962921.    10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063        3814.     93880388.    10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188        3928.     93799425.    10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313        4042.     93719877.    10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438        4155.     93641609.    10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
0.00004563        4269.     93564497.    10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688        4382.     93488434.    10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813        4496.     93413321.    10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938        4609.     93339070.    10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063        4722.     93265602.    10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188        4834.     93192845.    10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313        4947.     93120733.    10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
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0.00005438         5060.     93049206.    10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563         5172.     92978211.    10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
0.00005688         5284.     92907697.    10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813         5396.     92837619.    10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938         5508.     92767935.    10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063         5620.     92698606.    10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188         5731.     92629597.    10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
0.00006313         5843.     92560874.    10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438         5954.     92492407.    10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563         6065.     92424168.    10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688         6176.     92356130.    10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
0.00006813         6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938         6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063         6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188         6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313         6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438         6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938         7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438         7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938         8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438         8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938         8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044         9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094         9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144         9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
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 0.0001194        10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244        10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294        10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344        10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394        10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444        10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494        10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
 0.0001544        10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594        11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644        11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694        11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
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    0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
   3.9966747    -60.000000 CY
    0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
   3.9992545    -60.000000 CY
    0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
   3.9991650    -60.000000 CY
    0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
   3.9956629    -60.000000 CY
    0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
   3.9986069    -60.000000 CY
    0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
   3.9999247    -60.000000 CY
    0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
   3.9940409    -60.000000 CY
    0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
   3.9985866    -60.000000 CY
    0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
   3.9998625    -60.000000 CY
    0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
   3.9999751    -60.000000 CYT
    0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
   3.9996828    -60.000000 CYT
    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
   3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
   3.9878351    -60.000000 CYT


--------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
--------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ---------------     ------------------     ------------
------------
   1                3.800             12169.214          0.00300000
-0.00952396
   2                4.200             12173.120          0.00300000
-0.00952020
   3                4.600             12177.027          0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).
```

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.
2	0.90	4.200000	12173.	3.780000	10956.	70254444.
3	0.90	4.600000	12177.	4.140000	10959.	70287179.

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer	Top of Layer Below	Equivalent Top Depth Below	Same Layer Type As	Layer is Rock or	F0 Integral	F1 Integral

No.	Pile Head ft	Grnd Surf ft	Layer Above	is Below Rock Layer	for Layer lbs	for Layer lbs
1	1.0000	0.00	N.A.	No	0.00	8780.
2	4.0000	0.3217	No	No	8780.	2765.
3	4.1000	0.2825	Yes	No	11545.	134787.
4	7.1000	3.2828	Yes	No	146331.	96859.
5	17.1000	16.1000	No	No	243191.	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.00634	315600.	1000.0000	-1.14E-04	0.00	3.84E+11	0.00	0.00	0.00
0.09000	0.00622	316681.	1000.0000	-1.13E-04	0.00	3.84E+11	0.00	0.00	0.00
0.1800	0.00609	317761.	1000.	-1.12E-04	0.00	3.84E+11	0.00	0.00	0.00
0.2700	0.00597	318842.	1000.	-1.11E-04	0.00	3.84E+11	0.00	0.00	0.00
0.3600	0.00585	319922.	1000.	-1.11E-04	0.00	3.84E+11	0.00	0.00	0.00
0.4500	0.00574	321003.	1000.	-1.10E-04	0.00	3.84E+11	0.00	0.00	0.00
0.5400	0.00562	322083.	1000.	-1.09E-04	0.00	3.84E+11			

```
0.00       0.00       0.00
    0.6300    0.00550    323164.      1000.  -1.08E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.7200    0.00538    324244.      1000.  -1.07E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.8100    0.00527    325324.      1000.  -1.06E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9000    0.00516    326405.      1000.  -1.05E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9900    0.00504    327485.      1000.  -1.04E-04       0.00   3.84E+11
0.00       0.00       0.00
    1.0800    0.00493    328566.   992.8035  -1.03E-04       0.00   3.84E+11
-13.327      2919.       0.00
    1.1700    0.00482    329631.   978.3470  -1.02E-04       0.00   3.84E+11
-13.445      3013.       0.00
    1.2600    0.00471    330680.   963.7655  -1.01E-04       0.00   3.84E+11
-13.558      3109.       0.00
    1.3500    0.00460    331713.   949.0632  -1.00E-04       0.00   3.84E+11
-13.668      3209.       0.00
    1.4400    0.00449    332731.   934.2446  -9.95E-05       0.00   3.84E+11
-13.774      3311.       0.00
    1.5300    0.00439    333732.   919.3141  -9.86E-05       0.00   3.84E+11
-13.875      3417.       0.00
    1.6200    0.00428    334718.   904.2762  -9.76E-05       0.00   3.84E+11
-13.973      3526.       0.00
    1.7100    0.00417    335686.   889.1353  -9.67E-05       0.00   3.84E+11
-14.066      3639.       0.00
    1.8000    0.00407    336639.   873.8961  -9.57E-05       0.00   3.84E+11
-14.155      3755.       0.00
    1.8900    0.00397    337575.   858.5633  -9.48E-05       0.00   3.84E+11
-14.239      3876.       0.00
    1.9800    0.00387    338494.   843.1415  -9.39E-05       0.00   3.84E+11
-14.320      4000.       0.00
    2.0700    0.00377    339397.   827.6355  -9.29E-05       0.00   3.84E+11
-14.395      4129.       0.00
    2.1600    0.00367    340283.   812.0503  -9.19E-05       0.00   3.84E+11
-14.466      4262.       0.00
    2.2500    0.00357    341152.   796.3907  -9.10E-05       0.00   3.84E+11
-14.533      4401.       0.00
    2.3400    0.00347    342004.   780.6617  -9.00E-05       0.00   3.84E+11
-14.595      4544.       0.00
    2.4300    0.00337    342839.   764.8685  -8.91E-05       0.00   3.84E+11
-14.652      4693.       0.00
    2.5200    0.00328    343657.   749.0161  -8.81E-05       0.00   3.84E+11
-14.704      4847.       0.00
    2.6100    0.00318    344458.   733.1100  -8.71E-05       0.00   3.84E+11
-14.752      5007.       0.00
    2.7000    0.00309    345241.   717.1553  -8.62E-05       0.00   3.84E+11
-14.794      5174.       0.00
    2.7900    0.00300    346007.   701.1575  -8.52E-05       0.00   3.84E+11
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-14.831      5347.       0.00
    2.8800    0.00290    346756.   685.1223  -8.42E-05       0.00   3.84E+11
-14.863      5527.       0.00
    2.9700    0.00281    347488.   669.0553  -8.32E-05       0.00   3.84E+11
-14.890      5715.       0.00
    3.0600    0.00272    348202.   652.9622  -8.23E-05       0.00   3.84E+11
-14.912      5911.       0.00
    3.1500    0.00264    348899.   636.8490  -8.13E-05       0.00   3.84E+11
-14.928      6116.       0.00
    3.2400    0.00255    349579.   620.7216  -8.03E-05       0.00   3.84E+11
-14.938      6329.       0.00
    3.3300    0.00246    350241.   604.5863  -7.93E-05       0.00   3.84E+11
-14.942      6553.       0.00
    3.4200    0.00238    350885.   588.4493  -7.83E-05       0.00   3.84E+11
-14.941      6787.       0.00
    3.5100    0.00229    351512.   572.3172  -7.74E-05       0.00   3.84E+11
-14.933      7032.       0.00
    3.6000    0.00221    352122.   556.1966  -7.64E-05       0.00   3.84E+11
-14.920      7290.       0.00
    3.6900    0.00213    352715.   540.0942  -7.54E-05       0.00   3.84E+11
-14.900      7560.       0.00
    3.7800    0.00205    353289.   524.0172  -7.44E-05       0.00   3.84E+11
-14.873      7844.       0.00
    3.8700    0.00197    353847.   507.9727  -7.34E-05       0.00   3.84E+11
-14.839      8144.       0.00
    3.9600    0.00189    354387.   491.9682  -7.24E-05       0.00   3.84E+11
-14.799      8460.       0.00
    4.0500    0.00181    354910.   326.9404  -7.14E-05       0.00   3.84E+11
-290.808    173381.       0.00
    4.1400    0.00173    355094.    -75.422  -7.04E-05       0.00   3.84E+11
-454.308    282814.       0.00
    4.2300    0.00166    354748.   -564.698  -6.94E-05       0.00   3.84E+11
-451.759    294022.       0.00
    4.3200    0.00158    353875.     -1051.  -6.84E-05       0.00   3.84E+11
-449.050    305980.       0.00
    4.4100    0.00151    352478.     -1535.  -6.74E-05       0.00   3.84E+11
-446.172    318770.       0.00
    4.5000    0.00144    350561.     -2015.  -6.64E-05       0.00   3.84E+11
-443.117    332484.       0.00
    4.5900    0.00137    348127.     -2492.  -6.54E-05       0.00   3.84E+11
-439.874    347229.       0.00
    4.6800    0.00130    345180.     -2965.  -6.45E-05       0.00   3.84E+11
-436.432    363132.       0.00
    4.7700    0.00123    341724.     -3434.  -6.35E-05       0.00   3.84E+11
-432.778    380341.       0.00
    4.8600    0.00116    337763.     -3899.  -6.26E-05       0.00   3.84E+11
-428.896    399031.       0.00
    4.9500    0.00109    333301.     -4360.  -6.16E-05       0.00   3.84E+11
-424.768    419414.       0.00
    5.0400    0.00103    328345.     -4817.  -6.07E-05       0.00   3.84E+11
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-420.374    441744.       0.00
    5.1300   9.63E-04    322898.     -5268.  -5.98E-05       0.00   3.84E+11
-415.690    466332.       0.00
    5.2200   8.99E-04    316966.     -5715.  -5.89E-05       0.00   3.84E+11
-410.688    493561.       0.00
    5.3100   8.36E-04    310555.     -6155.  -5.80E-05       0.00   3.84E+11
-405.334    523911.       0.00
    5.4000   7.73E-04    303671.     -6590.  -5.71E-05       0.00   3.85E+11
-399.589    557991.       0.00
    5.4900   7.12E-04    296321.     -7016.  -5.63E-05       0.00   3.85E+11
-389.489    590649.       0.00
    5.5800   6.52E-04    288517.     -7420.  -5.55E-05       0.00   3.85E+11
-358.268    593591.       0.00
    5.6700   5.92E-04    280295.     -7790.  -5.47E-05       0.00   3.85E+11
-327.201    596531.       0.00
    5.7600   5.34E-04    271691.     -8127.  -5.39E-05       0.00   3.85E+11
-296.281    599469.       0.00
    5.8500   4.76E-04    262742.     -8430.  -5.31E-05       0.00   3.85E+11
-265.501    602404.       0.00
    5.9400   4.19E-04    253483.     -8700.  -5.24E-05       0.00   3.85E+11
-234.853    605338.       0.00
    6.0300   3.63E-04    243950.     -8937.  -5.17E-05       0.00   3.85E+11
-204.327    608270.       0.00
    6.1200   3.07E-04    234179.     -9142.  -5.10E-05       0.00   3.85E+11
-173.914    611200.       0.00
    6.2100   2.53E-04    224205.     -9313.  -5.04E-05       0.00   3.85E+11
-143.603    614129.       0.00
    6.3000   1.98E-04    214063.     -9452.  -4.98E-05       0.00   3.85E+11
-113.383    617056.       0.00
    6.3900   1.45E-04    203790.     -9558.  -4.92E-05       0.00   3.85E+11
-83.242    619981.       0.00
    6.4800   9.22E-05    193419.     -9632.  -4.86E-05       0.00   3.85E+11
-53.168    622906.       0.00
    6.5700   3.99E-05    182986.     -9673.  -4.81E-05       0.00   3.85E+11
-23.147    625828.       0.00
    6.6600  -1.17E-05    172526.     -9682.  -4.76E-05       0.00   3.85E+11
6.8329    628750.       0.00
    6.7500  -6.29E-05    162074.     -9658.  -4.71E-05       0.00   3.85E+11
36.7870    631671.       0.00
    6.8400  -1.14E-04    151665.     -9602.  -4.67E-05       0.00   3.85E+11
66.7290    634590.       0.00
    6.9300  -1.64E-04    141334.     -9514.  -4.63E-05       0.00   3.85E+11
96.6734    637508.       0.00
    7.0200  -2.14E-04    131115.     -9393.  -4.59E-05       0.00   3.85E+11
126.6349    640425.       0.00
    7.1100  -2.63E-04    121044.     -9240.  -4.56E-05       0.00   3.85E+11
156.6304    643350.       0.00
    7.2000  -3.12E-04    111156.     -9055.  -4.52E-05       0.00   3.85E+11
186.6722    646269.       0.00
    7.2900  -3.61E-04    101486.     -8837.  -4.49E-05       0.00   3.85E+11
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216.7762    649187.       0.00
    7.3800  -4.09E-04     92068.     -8587.  -4.47E-05       0.00   3.85E+11
246.9572    652105.       0.00
    7.4700  -4.57E-04     82939.     -8304.  -4.44E-05       0.00   3.85E+11
277.2300    655022.       0.00
    7.5600  -5.05E-04     74133.     -7988.  -4.42E-05       0.00   3.85E+11
307.6090    657938.       0.00
    7.6500  -5.53E-04     65686.     -7639.  -4.40E-05       0.00   3.85E+11
338.1086    660853.       0.00
    7.7400  -6.00E-04     57633.     -7257.  -4.38E-05       0.00   3.85E+11
368.7425    663768.       0.00
    7.8300  -6.47E-04     50010.     -6843.  -4.37E-05       0.00   3.85E+11
399.5241    666682.       0.00
    7.9200  -6.94E-04     42853.     -6394.  -4.35E-05       0.00   3.85E+11
430.4663    669595.       0.00
    8.0100  -7.41E-04     36198.     -5918.  -4.34E-05       0.00   3.85E+11
452.3940    659123.       0.00
    8.1000  -7.88E-04     30071.     -5424.  -4.33E-05       0.00   3.85E+11
461.3748    632247.       0.00
    8.1900  -8.35E-04     24482.     -4921.  -4.33E-05       0.00   3.85E+11
470.0950    608116.       0.00
    8.2800  -8.82E-04     19442.     -4409.  -4.32E-05       0.00   3.85E+11
478.5841    586311.       0.00
    8.3700  -9.28E-04     14960.     -3888.  -4.32E-05       0.00   3.85E+11
486.8671    566496.       0.00
    8.4600  -9.75E-04     11045.     -3357.  -4.31E-05       0.00   3.85E+11
494.9651    548397.       0.00
    8.5500   -0.00102      7708.     -2819.  -4.31E-05       0.00   3.85E+11
502.8965    531790.       0.00
    8.6400   -0.00107      4957.     -2271.  -4.31E-05       0.00   3.85E+11
510.6768    516489.       0.00
    8.7300   -0.00111      2802.     -1716.  -4.31E-05       0.00   3.85E+11
518.3196    502340.       0.00
    8.8200   -0.00116      1252.     -1152.  -4.31E-05       0.00   3.85E+11
525.8368    489211.       0.00
    8.9100   -0.00121   315.0442   -579.837  -4.31E-05       0.00   3.85E+11
533.2386    476991.       0.00
    9.0000   -0.00125       0.00       0.00  -4.31E-05       0.00   3.85E+11
540.5341    232793.       0.00
```

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

Output Summary for Load Case No. 1:

```
Pile-head deflection              =     0.00633920 inches
Computed slope at pile head       =     -0.0001141 radians
Maximum bending moment            =        355094. inch-lbs
Maximum shear force               =         -9682. lbs
Depth of maximum bending moment   =     4.14000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             11
Number of zero deflection points  =              1
Pile deflection at ground         =     0.00503009 inches
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.00633920	355094.	-9682.
8.55000	0.00934143	353088.	-11045.
8.10000	0.01909932	350326.	-12695.
7.65000	0.04563107	345951.	-14219.
7.20000	0.11686372	340864.	-15698.
6.75000	0.37756572	337277.	-17591.
6.30000	1.38385197	335676.	-19788.
5.85000	7.14231070	342200.	-23392.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

```
Shear force at pile head                          =       2250.0 lbs
Applied moment at pile head                       =     724800.0 in-lbs
Axial thrust load on pile head                    =       4600.0 lbs
```

```
   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
```

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-6 (Boring B-023-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

X	y	Moment	Force	S	Stress	Stiffness	p	Es*H	Lat. Load
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.09087	724800.	2250.	-0.00121	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.08956	727236.	2250.	-0.00121	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.08826	729672.	2250.	-0.00121	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.08696	732108.	2250.	-0.00120	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.08566	734544.	2250.	-0.00120	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.08436	736980.	2250.	-0.00120	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.08306	739416.	2250.	-0.00120	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.08177	741852.	2250.	-0.00120	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.08048	744288.	2250.	-0.00119	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.07919	746724.	2250.	-0.00119	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.07790	749160.	2250.	-0.00119	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.07662	751596.	2250.	-0.00119	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.07533	754031.	2232.	-0.00119	0.00	3.83E+11	-33.037	473.6161	0.00
1.1700	0.07405	756429.	2196.	-0.00118	0.00	3.83E+11	-33.391	486.9686	0.00
1.2600	0.07278	758787.	2160.	-0.00118	0.00	3.83E+11	-33.737	500.6545	0.00
1.3500	0.07150	761106.	2123.	-0.00118	0.00	3.83E+11	-34.075	514.6881	0.00
1.4400	0.07023	763386.	2086.	-0.00118	0.00	3.83E+11	-34.405	529.0848	0.00
1.5300	0.06896	765625.	2049.	-0.00118	0.00	3.83E+11	-34.726	543.8605	0.00
1.6200	0.06769	767823.	2011.	-0.00117	0.00	3.83E+11	-35.038	559.0325	0.00
1.7100	0.06642	769981.	1973.	-0.00117	0.00	3.83E+11	-35.341	574.6190	0.00
1.8000	0.06516	772098.	1935.	-0.00117	0.00	3.83E+11	-35.635	590.6395	0.00
1.8900	0.06390	774172.	1896.	-0.00117	0.00	3.83E+11	-35.920	607.1149	0.00

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    1.9800    0.06264    776206.      1858.   -0.00116       0.00   3.83E+11
-36.196   624.0673       0.00
    2.0700    0.06138    778196.      1818.   -0.00116       0.00   3.83E+11
-36.462   641.5204       0.00
    2.1600    0.06013    780145.      1779.   -0.00116       0.00   3.83E+11
-36.718   659.4998       0.00
    2.2500    0.05888    782050.      1739.   -0.00116       0.00   3.83E+11
-36.964   678.0328       0.00
    2.3400    0.05763    783912.      1699.   -0.00116       0.00   3.83E+11
-37.200   697.1486       0.00
    2.4300    0.05638    785731.      1659.   -0.00115       0.00   3.83E+11
-37.425   716.8788       0.00
    2.5200    0.05514    787506.      1618.   -0.00115       0.00   3.83E+11
-37.639   737.2575       0.00
    2.6100    0.05389    789238.      1577.   -0.00115       0.00   3.83E+11
-37.842   758.3212       0.00
    2.7000    0.05265    790925.      1536.   -0.00115       0.00   3.83E+11
-38.034   780.1096       0.00
    2.7900    0.05142    792568.      1495.   -0.00114       0.00   3.83E+11
-38.214   802.6657       0.00
    2.8800    0.05018    794166.      1454.   -0.00114       0.00   3.83E+11
-38.382   826.0359       0.00
    2.9700    0.04895    795719.      1412.   -0.00114       0.00   3.83E+11
-38.537   850.2710       0.00
    3.0600    0.04772    797228.      1371.   -0.00114       0.00   3.83E+11
-38.680   875.4261       0.00
    3.1500    0.04649    798691.      1329.   -0.00114       0.00   3.83E+11
-38.810   901.5612       0.00
    3.2400    0.04527    800109.      1287.   -0.00113       0.00   3.83E+11
-38.927   928.7421       0.00
    3.3300    0.04404    801482.      1245.   -0.00113       0.00   3.83E+11
-39.029   957.0409       0.00
    3.4200    0.04282    802809.      1202.   -0.00113       0.00   3.83E+11
-39.117   986.5370       0.00
    3.5100    0.04161    804090.      1160.   -0.00113       0.00   3.83E+11
-39.190      1017.       0.00
    3.6000    0.04039    805326.      1118.   -0.00112       0.00   3.83E+11
-39.248      1049.       0.00
    3.6900    0.03918    806516.      1075.   -0.00112       0.00   3.83E+11
-39.290      1083.       0.00
    3.7800    0.03797    807660.      1033.   -0.00112       0.00   3.83E+11
-39.315      1118.       0.00
    3.8700    0.03676    808758.   990.5198   -0.00112       0.00   3.83E+11
-39.323      1155.       0.00
    3.9600    0.03555    809811.   948.0563   -0.00112       0.00   3.83E+11
-39.313      1194.       0.00
    4.0500    0.03435    810817.   599.6079   -0.00111       0.00   3.83E+11
-605.962     19053.       0.00
    4.1400    0.03315    811117.   -239.767   -0.00111       0.00   3.83E+11
-948.436     30901.       0.00
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    4.2300    0.03195    810311.     -1262.   -0.00111       0.00   3.83E+11
-944.912     31941.       0.00
    4.3200    0.03075    808402.     -2281.   -0.00111       0.00   3.83E+11
-941.049     33047.       0.00
    4.4100    0.02956    805395.     -3295.   -0.00110       0.00   3.83E+11
-936.830     34227.       0.00
    4.5000    0.02837    801296.     -4304.   -0.00110       0.00   3.83E+11
-932.234     35489.       0.00
    4.5900    0.02718    796110.     -5308.   -0.00110       0.00   3.83E+11
-927.237     36843.       0.00
    4.6800    0.02599    789842.     -6307.   -0.00110       0.00   3.83E+11
-921.813     38298.       0.00
    4.7700    0.02481    782499.     -7299.   -0.00109       0.00   3.83E+11
-915.934     39869.       0.00
    4.8600    0.02363    774087.     -8285.   -0.00109       0.00   3.83E+11
-909.565     41571.       0.00
    4.9500    0.02245    764615.     -9263.   -0.00109       0.00   3.83E+11
-902.669     43423.       0.00
    5.0400    0.02127    754089.    -10234.   -0.00109       0.00   3.83E+11
-895.202     45445.       0.00
    5.1300    0.02010    742520.    -11197.   -0.00109       0.00   3.83E+11
-887.114     47665.       0.00
    5.2200    0.01893    729915.    -12150.   -0.00108       0.00   3.83E+11
-878.347     50117.       0.00
    5.3100    0.01776    716286.    -13093.   -0.00108       0.00   3.83E+11
-868.832     52839.       0.00
    5.4000    0.01659    701644.    -14026.   -0.00108       0.00   3.83E+11
-858.489     55885.       0.00
    5.4900    0.01543    686001.    -14947.   -0.00108       0.00   3.83E+11
-847.220     59319.       0.00
    5.5800    0.01426    669369.    -15856.   -0.00108       0.00   3.84E+11
-834.911     63225.       0.00
    5.6700    0.01310    651763.    -16750.   -0.00107       0.00   3.84E+11
-821.416     67718.       0.00
    5.7600    0.01194    633199.    -17629.   -0.00107       0.00   3.84E+11
-806.558     72949.       0.00
    5.8500    0.01078    613695.    -18491.   -0.00107       0.00   3.84E+11
-790.109     79132.       0.00
    5.9400    0.00963    593269.    -19335.   -0.00107       0.00   3.84E+11
-771.773     86574.       0.00
    6.0300    0.00847    571942.    -20157.   -0.00107       0.00   3.84E+11
-751.153     95733.       0.00
    6.1200    0.00732    549740.    -20956.   -0.00107       0.00   3.84E+11
-727.696    107336.       0.00
    6.2100    0.00617    526689.    -21727.   -0.00106       0.00   3.84E+11
-700.596    122602.       0.00
    6.3000    0.00502    502820.    -22466.   -0.00106       0.00   3.84E+11
-668.605    143765.       0.00
    6.3900    0.00388    478172.    -23167.   -0.00106       0.00   3.84E+11
-629.607    175456.       0.00
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    6.4800    0.00273    452789.    -23820.   -0.00106       0.00   3.84E+11
-579.507    229285.       0.00
    6.5700    0.00159    426731.    -24408.   -0.00106       0.00   3.84E+11
-508.261    346280.       0.00
    6.6600   4.42E-04    400079.    -24821.   -0.00106       0.00   3.84E+11
-257.349    628750.       0.00
    6.7500  -7.00E-04    373127.    -24739.   -0.00106       0.00   3.84E+11
409.3522    631671.       0.00
    6.8400   -0.00184    346653.    -24229.   -0.00106       0.00   3.84E+11
534.9929    313899.       0.00
    6.9300   -0.00298    320803.    -23613.   -0.00105       0.00   3.84E+11
606.2695    219689.       0.00
    7.0200   -0.00412    295660.    -22929.   -0.00105       0.00   3.85E+11
660.3622    173137.       0.00
    7.1100   -0.00526    271287.    -22192.   -0.00105       0.00   3.85E+11
705.0887    144851.       0.00
    7.2000   -0.00639    247737.    -21409.   -0.00105       0.00   3.85E+11
743.8223    125634.       0.00
    7.2900   -0.00753    225054.    -20587.   -0.00105       0.00   3.85E+11
778.3690    111631.       0.00
    7.3800   -0.00867    203279.    -19729.   -0.00105       0.00   3.85E+11
809.8104    100921.       0.00
    7.4700   -0.00980    182449.    -18839.   -0.00105       0.00   3.85E+11
838.8503     92434.       0.00
    7.5600   -0.01094    162597.    -17919.   -0.00105       0.00   3.85E+11
865.9746     85524.       0.00
    7.6500   -0.01207    143755.    -16970.   -0.00105       0.00   3.85E+11
891.5333     79776.       0.00
    7.7400   -0.01320    125953.    -15994.   -0.00105       0.00   3.85E+11
915.7879     74911.       0.00
    7.8300   -0.01434    109219.    -14992.   -0.00105       0.00   3.85E+11
938.9389     70734.       0.00
    7.9200   -0.01547     93581.    -13966.   -0.00105       0.00   3.85E+11
961.1436     67104.       0.00
    8.0100   -0.01660     79063.    -12916.   -0.00105       0.00   3.85E+11
982.5280     63917.       0.00
    8.1000   -0.01773     65692.    -11844.   -0.00105       0.00   3.85E+11
1003.     61095.       0.00
    8.1900   -0.01887     53490.    -10750.   -0.00105       0.00   3.85E+11
1023.     58576.       0.00
    8.2800   -0.02000     42482.     -9634.   -0.00105       0.00   3.85E+11
1043.     56312.       0.00
    8.3700   -0.02113     32691.     -8498.   -0.00105       0.00   3.85E+11
1062.     54265.       0.00
    8.4600   -0.02226     24137.     -7341.   -0.00105       0.00   3.85E+11
1080.     52404.       0.00
    8.5500   -0.02339     16844.     -6165.   -0.00105       0.00   3.85E+11
1098.     50705.       0.00
    8.6400   -0.02452     10831.     -4969.   -0.00105       0.00   3.85E+11
1116.     49147.       0.00
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    8.7300   -0.02566      6121.     -3755.   -0.00105       0.00   3.85E+11
1133.     47711.       0.00
    8.8200   -0.02679      2732.     -2521.   -0.00105       0.00   3.85E+11
1150.     46385.       0.00
    8.9100   -0.02792   685.2069     -1270.   -0.00105       0.00   3.85E+11
1167.     45155.       0.00
    9.0000   -0.02905       0.00       0.00   -0.00105       0.00   3.85E+11
1184.     22005.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.09086955 inches
Computed slope at pile head      =     -0.0012111 radians
Maximum bending moment           =        811117. inch-lbs
Maximum shear force              =        -24821. lbs
Depth of maximum bending moment  =     4.14000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             32
Number of zero deflection points =              1
Pile deflection at ground        =     0.07647409 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.09086955       811117.       -24821.
    8.55000    0.17874075       804068.       -26716.
    8.10000    0.42925152       795661.       -29304.
    7.65000    1.08659782       787123.       -32250.
```

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    7.20000    2.86850036       780918.       -35592.
    6.75000   10.47362218       787218.       -41212.


--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 3
--------------------------------------------------------------------------------

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

Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       3800.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00    0.09083    724800.      2250.   -0.00121       0.00   3.83E+11
0.00       0.00       0.00
   0.09000    0.08953    727235.      2250.   -0.00121       0.00   3.83E+11
0.00       0.00       0.00
    0.1800    0.08822    729670.      2250.   -0.00121       0.00   3.83E+11
0.00       0.00       0.00
    0.2700    0.08692    732105.      2250.   -0.00120       0.00   3.83E+11
0.00       0.00       0.00
    0.3600    0.08562    734540.      2250.   -0.00120       0.00   3.83E+11
0.00       0.00       0.00
    0.4500    0.08432    736975.      2250.   -0.00120       0.00   3.83E+11
0.00       0.00       0.00
    0.5400    0.08303    739410.      2250.   -0.00120       0.00   3.83E+11
0.00       0.00       0.00
    0.6300    0.08174    741845.      2250.   -0.00120       0.00   3.83E+11
0.00       0.00       0.00
    0.7200    0.08044    744279.      2250.   -0.00119       0.00   3.83E+11
0.00       0.00       0.00
    0.8100    0.07916    746714.      2250.   -0.00119       0.00   3.83E+11
0.00       0.00       0.00
    0.9000    0.07787    749149.      2250.   -0.00119       0.00   3.83E+11
0.00       0.00       0.00
    0.9900    0.07659    751584.      2250.   -0.00119       0.00   3.83E+11
0.00       0.00       0.00
    1.0800    0.07530    754019.      2232.   -0.00119       0.00   3.83E+11
-33.032   473.7409       0.00
    1.1700    0.07403    756415.      2196.   -0.00118       0.00   3.83E+11
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-33.387   487.0970       0.00
    1.2600    0.07275    758773.      2160.   -0.00118       0.00   3.83E+11
-33.733   500.7867       0.00
    1.3500    0.07147    761091.      2123.   -0.00118       0.00   3.83E+11
-34.071   514.8241       0.00
    1.4400    0.07020    763369.      2086.   -0.00118       0.00   3.83E+11
-34.400   529.2247       0.00
    1.5300    0.06893    765607.      2049.   -0.00117       0.00   3.83E+11
-34.721   544.0044       0.00
    1.6200    0.06766    767805.      2011.   -0.00117       0.00   3.83E+11
-35.033   559.1805       0.00
    1.7100    0.06640    769962.      1973.   -0.00117       0.00   3.83E+11
-35.336   574.7713       0.00
    1.8000    0.06513    772077.      1935.   -0.00117       0.00   3.83E+11
-35.631   590.7962       0.00
    1.8900    0.06387    774151.      1897.   -0.00117       0.00   3.83E+11
-35.916   607.2761       0.00
    1.9800    0.06262    776183.      1858.   -0.00116       0.00   3.83E+11
-36.191   624.2331       0.00
    2.0700    0.06136    778173.      1818.   -0.00116       0.00   3.83E+11
-36.457   641.6911       0.00
    2.1600    0.06011    780120.      1779.   -0.00116       0.00   3.83E+11
-36.713   659.6754       0.00
    2.2500    0.05885    782025.      1739.   -0.00116       0.00   3.83E+11
-36.959   678.2134       0.00
    2.3400    0.05761    783886.      1699.   -0.00116       0.00   3.83E+11
-37.195   697.3345       0.00
    2.4300    0.05636    785704.      1659.   -0.00115       0.00   3.83E+11
-37.420   717.0701       0.00
    2.5200    0.05511    787478.      1618.   -0.00115       0.00   3.83E+11
-37.634   737.4543       0.00
    2.6100    0.05387    789209.      1577.   -0.00115       0.00   3.83E+11
-37.837   758.5238       0.00
    2.7000    0.05263    790895.      1536.   -0.00115       0.00   3.83E+11
-38.029   780.3182       0.00
    2.7900    0.05140    792537.      1495.   -0.00114       0.00   3.83E+11
-38.209   802.8805       0.00
    2.8800    0.05016    794134.      1454.   -0.00114       0.00   3.83E+11
-38.377   826.2572       0.00
    2.9700    0.04893    795687.      1412.   -0.00114       0.00   3.83E+11
-38.532   850.4990       0.00
    3.0600    0.04770    797195.      1371.   -0.00114       0.00   3.83E+11
-38.675   875.6609       0.00
    3.1500    0.04647    798657.      1329.   -0.00114       0.00   3.83E+11
-38.805   901.8032       0.00
    3.2400    0.04525    800074.      1287.   -0.00113       0.00   3.83E+11
-38.921   928.9916       0.00
    3.3300    0.04403    801446.      1245.   -0.00113       0.00   3.83E+11
-39.024   957.2983       0.00
    3.4200    0.04281    802772.      1203.   -0.00113       0.00   3.83E+11
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-39.112   986.8024       0.00
    3.5100    0.04159    804053.      1160.   -0.00113       0.00   3.83E+11
-39.185      1018.       0.00
    3.6000    0.04037    805288.      1118.   -0.00112       0.00   3.83E+11
-39.243      1050.       0.00
    3.6900    0.03916    806477.      1076.   -0.00112       0.00   3.83E+11
-39.285      1083.       0.00
    3.7800    0.03795    807620.      1033.   -0.00112       0.00   3.83E+11
-39.310      1119.       0.00
    3.8700    0.03674    808718.   990.6881   -0.00112       0.00   3.83E+11
-39.318      1156.       0.00
    3.9600    0.03554    809769.   948.2303   -0.00111       0.00   3.83E+11
-39.308      1195.       0.00
    4.0500    0.03433    810775.   599.8181   -0.00111       0.00   3.83E+11
-605.900     19059.       0.00
    4.1400    0.03313    811074.   -239.471   -0.00111       0.00   3.83E+11
-948.339     30911.       0.00
    4.2300    0.03194    810267.     -1262.   -0.00111       0.00   3.83E+11
-944.816     31951.       0.00
    4.3200    0.03074    808358.     -2280.   -0.00111       0.00   3.83E+11
-940.954     33058.       0.00
    4.4100    0.02955    805351.     -3294.   -0.00110       0.00   3.83E+11
-936.735     34238.       0.00
    4.5000    0.02836    801252.     -4303.   -0.00110       0.00   3.83E+11
-932.139     35500.       0.00
    4.5900    0.02717    796065.     -5307.   -0.00110       0.00   3.83E+11
-927.142     36854.       0.00
    4.6800    0.02598    789797.     -6306.   -0.00110       0.00   3.83E+11
-921.719     38310.       0.00
    4.7700    0.02480    782454.     -7298.   -0.00109       0.00   3.83E+11
-915.840     39882.       0.00
    4.8600    0.02362    774043.     -8284.   -0.00109       0.00   3.83E+11
-909.472     41584.       0.00
    4.9500    0.02244    764570.     -9262.   -0.00109       0.00   3.83E+11
-902.577     43436.       0.00
    5.0400    0.02127    754045.    -10233.   -0.00109       0.00   3.83E+11
-895.110     45459.       0.00
    5.1300    0.02009    742476.    -11195.   -0.00109       0.00   3.83E+11
-887.023     47680.       0.00
    5.2200    0.01892    729873.    -12148.   -0.00108       0.00   3.83E+11
-878.257     50132.       0.00
    5.3100    0.01775    716245.    -13092.   -0.00108       0.00   3.83E+11
-868.743     52856.       0.00
    5.4000    0.01658    701603.    -14024.   -0.00108       0.00   3.83E+11
-858.401     55902.       0.00
    5.4900    0.01542    685961.    -14945.   -0.00108       0.00   3.83E+11
-847.134     59337.       0.00
    5.5800    0.01426    669330.    -15854.   -0.00108       0.00   3.84E+11
-834.825     63245.       0.00
    5.6700    0.01309    651725.    -16748.   -0.00107       0.00   3.84E+11
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-821.332	67739.	0.00				
5.7600	0.01194	633163.	-17627.	-0.00107	0.00	3.84E+11
-806.476	72972.	0.00				
5.8500	0.01078	613660.	-18489.	-0.00107	0.00	3.84E+11
-790.029	79156.	0.00				
5.9400	0.00962	593235.	-19333.	-0.00107	0.00	3.84E+11
-771.695	86600.	0.00				
6.0300	0.00847	571910.	-20155.	-0.00107	0.00	3.84E+11
-751.077	95762.	0.00				
6.1200	0.00732	549710.	-20953.	-0.00107	0.00	3.84E+11
-727.622	107369.	0.00				
6.2100	0.00617	526660.	-21725.	-0.00106	0.00	3.84E+11
-700.525	122639.	0.00				
6.3000	0.00502	502793.	-22464.	-0.00106	0.00	3.84E+11
-668.538	143808.	0.00				
6.3900	0.00387	478147.	-23165.	-0.00106	0.00	3.84E+11
-629.545	175509.	0.00				
6.4800	0.00273	452766.	-23818.	-0.00106	0.00	3.84E+11
-579.451	229352.	0.00				
6.5700	0.00158	426710.	-24405.	-0.00106	0.00	3.84E+11
-508.214	346375.	0.00				
6.6600	4.42E-04	400060.	-24818.	-0.00106	0.00	3.84E+11
-257.287	628750.	0.00				
6.7500	-7.00E-04	373111.	-24736.	-0.00106	0.00	3.84E+11
409.1369	631671.	0.00				
6.8400	-0.00184	346638.	-24227.	-0.00106	0.00	3.84E+11
534.9315	314007.	0.00				
6.9300	-0.00298	320790.	-23610.	-0.00105	0.00	3.84E+11
606.2023	219762.	0.00				
7.0200	-0.00412	295649.	-22926.	-0.00105	0.00	3.85E+11
660.2901	173194.	0.00				
7.1100	-0.00525	271278.	-22189.	-0.00105	0.00	3.85E+11
705.0125	144897.	0.00				
7.2000	-0.00639	247729.	-21407.	-0.00105	0.00	3.85E+11
743.7424	125675.	0.00				
7.2900	-0.00753	225047.	-20585.	-0.00105	0.00	3.85E+11
778.2857	111667.	0.00				
7.3800	-0.00866	203274.	-19727.	-0.00105	0.00	3.85E+11
809.7239	100954.	0.00				
7.4700	-0.00980	182445.	-18837.	-0.00105	0.00	3.85E+11
838.7610	92464.	0.00				
7.5600	-0.01093	162594.	-17917.	-0.00105	0.00	3.85E+11
865.8825	85551.	0.00				
7.6500	-0.01206	143753.	-16968.	-0.00105	0.00	3.85E+11
891.4386	79801.	0.00				
7.7400	-0.01320	125952.	-15992.	-0.00105	0.00	3.85E+11
915.6907	74934.	0.00				
7.8300	-0.01433	109219.	-14990.	-0.00105	0.00	3.85E+11
938.8393	70756.	0.00				
7.9200	-0.01546	93582.	-13965.	-0.00105	0.00	3.85E+11

```
961.0417     67125.       0.00
    8.0100   -0.01659     79065.    -12915.   -0.00105       0.00   3.85E+11
982.4239     63938.       0.00
    8.1000   -0.01773     65694.    -11843.   -0.00105       0.00   3.85E+11
1003.     61114.       0.00
    8.1900   -0.01886     53493.    -10749.   -0.00105       0.00   3.85E+11
1023.     58594.       0.00
    8.2800   -0.01999     42485.     -9633.   -0.00105       0.00   3.85E+11
1043.     56329.       0.00
    8.3700   -0.02112     32693.     -8497.   -0.00105       0.00   3.85E+11
1062.     54282.       0.00
    8.4600   -0.02225     24140.     -7341.   -0.00105       0.00   3.85E+11
1080.     52421.       0.00
    8.5500   -0.02338     16846.     -6164.   -0.00105       0.00   3.85E+11
1098.     50721.       0.00
    8.6400   -0.02451     10834.     -4969.   -0.00105       0.00   3.85E+11
1116.     49162.       0.00
    8.7300   -0.02565      6123.     -3754.   -0.00105       0.00   3.85E+11
1133.     47726.       0.00
    8.8200   -0.02678      2733.     -2521.   -0.00105       0.00   3.85E+11
1150.     46399.       0.00
    8.9100   -0.02791   686.0411     -1269.   -0.00105       0.00   3.85E+11
1167.     45169.       0.00
    9.0000   -0.02904      0.00       0.00   -0.00105       0.00   3.85E+11
1184.     22012.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection              =     0.09083397 inches
Computed slope at pile head       =     -0.0012107 radians
Maximum bending moment            =        811074. inch-lbs
Maximum shear force               =        -24818. lbs
Depth of maximum bending moment   =     4.14000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             32
Number of zero deflection points  =              1
Pile deflection at ground         =     0.07644386 inches


--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
```

Boundary Condition Type 1, Shear and Moment

Shear = 2250. lbs
Moment = 724800. in-lbs
Axial Load = 3800. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.09083397	811074.	-24818.
8.55000	0.17859810	803985.	-26710.
8.10000	0.42841186	795458.	-29289.
7.65000	1.08125987	786666.	-32208.
7.20000	2.83100985	779817.	-35468.
6.75000	9.94047410	782949.	-40648.

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	Load Type	Load 1	Load Type 2	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	1000.0000	M, in-lb	315600.	4200.	0.00634	-1.14E-04	-9682.	355094.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.09087	-0.00121	-24821.	811117.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.09083	-0.00121	-24818.	811074.

Maximum pile-head deflection = 0.0908695540 inches

```
Maximum pile-head rotation   = -0.0012111154 radians = -0.069392 deg.

The analysis ended normally.
```

LATERAL LOAD (LPILE) ANALYSES
WESTBOUND PARKING AREA
LIGHT TOWER WR-7
(B-022-0-25 & B-019-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-7 (Boring B-022-0-25 & B-019-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

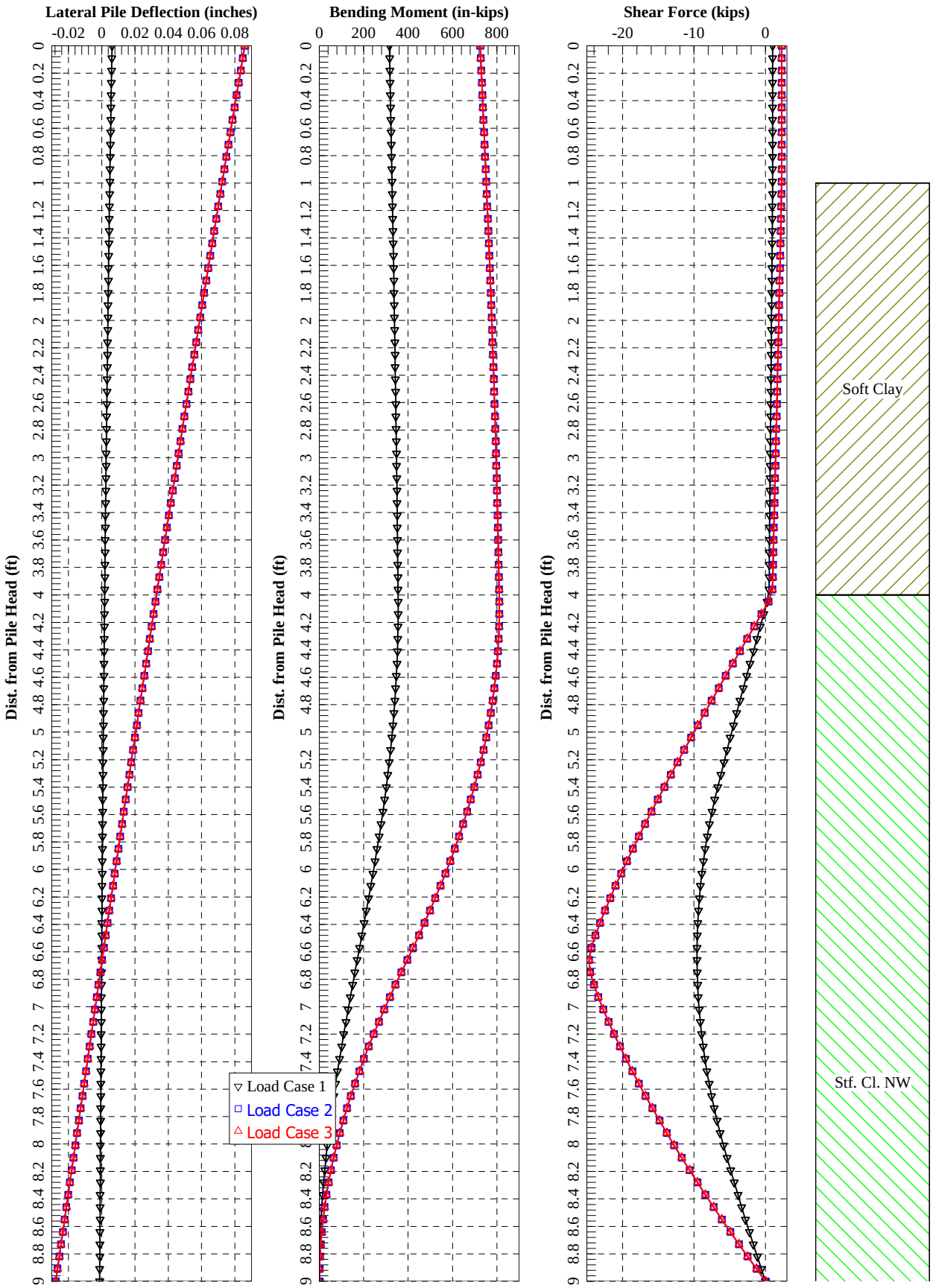


PLATE 315

==========

LPile for Version 2022-12.012

License ID : 228332755
License Type : (Single User License)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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S&ME, Inc.
Valley View, OH

==========

This model was prepared by:
BSears

Files Used for Analysis

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site 2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\WB\

Name of input data file:
Tower WR-7 (B-022-0-25 & B-019-0-25).lp12d

Name of output report file:
Tower WR-7 (B-022-0-25 & B-019-0-25).lp12o

Name of plot output file:
Tower WR-7 (B-022-0-25 & B-019-0-25).lp12p

Name of runtime message file:
Tower WR-7 (B-022-0-25 & B-019-0-25).lp12r

Date and Time of Analysis

Date: April 27, 2026 Time: 7:55:03

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower WR-7 (B-022-0-25 & B-019-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	11.100000 ft
Effective unit weight at top of layer	=	56.000000 pcf
Effective unit weight at bottom of layer	=	56.000000 pcf
Undrained cohesion at top of layer	=	4500. psf
Undrained cohesion at bottom of layer	=	4500. psf
Epsilon-50 at top of layer	=	0.004000
Epsilon-50 at bottom of layer	=	0.004000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	11.100000 ft
Distance from top of pile to bottom of layer	=	19.100000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Undrained cohesion at top of layer	=	3250. psf
Undrained cohesion at bottom of layer	=	3250. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

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

Distance from top of pile to top of layer	=	19.100000 ft
Distance from top of pile to bottom of layer	=	21.600000 ft
Effective unit weight at top of layer	=	66.000000 pcf

```
   Effective unit weight at bottom of layer            =    66.000000 pcf
   Friction angle at top of layer                      =    36.000000 deg.
   Friction angle at bottom of layer                   =    36.000000 deg.
   Subgrade k at top of layer                          =    60.000000 pci
   Subgrade k at bottom of layer                       =    60.000000 pci


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =    21.600000 ft
   Distance from top of pile to bottom of layer        =    26.100000 ft
   Effective unit weight at top of layer               =    60.000000 pcf
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 17.100 ft below the pile tip)



--------------------------------------------------------------------------------
                        Summary of Input Soil Properties
--------------------------------------------------------------------------------

Layer         Soil Type          Layer      Effective    Cohesion     Angle of
 E50
 Num.           Name             Depth       Unit Wt.                 Friction
 or            kpy
          (p-y Curve Type)        ft           pcf          psf          deg.
 krm           pci
-----   -------------------   ----------   ----------   ----------   ----------
----------   ----------
  1             Soft              1.0000      98.0000     250.0000       --
0.02000       --
                Clay              4.0000      98.0000     250.0000       --
0.02000       --
  2           Stiff Clay          4.0000      56.0000        4500.       --
0.00400       --
          w/o Free Water         11.1000      56.0000        4500.       --
0.00400       --
  3           Stiff Clay         11.1000      60.0000        3250.       --
0.00500       --
          w/o Free Water         19.1000      60.0000        3250.       --
0.00500       --
  4             Sand             19.1000      66.0000       --          36.0000
 --           60.0000
          (Reese, et al.)        21.6000      66.0000       --          36.0000
```

```
 --          60.0000
  5         Stiff Clay           21.6000      60.0000        4500.       --
0.00400       --
          w/o Free Water         26.1000      60.0000        4500.       --
0.00400       --


--------------------------------------------------------------------------------
                              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    Load         Condition               Condition            Axial Thrust
Compute Top y     Run Analysis
 No.    Type             1                       2                 Force, lbs
vs. Pile Length
-----   ----   --------------------   ------------------------   ----------------
---------------    ------------
   1     1     V =  1000.000000 lbs   M =      315600. in-lbs             4200.
    Yes               Yes
   2     1     V =        2250. lbs   M =      724800. in-lbs             4600.
    Yes               Yes
   3     1     V =        2250. lbs   M =      724800. in-lbs             3800.
    Yes               Yes

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



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	9.000000 ft
Shaft Diameter	=	36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)	=	3.500000 in
Number of Reinforcing Bars	=	16 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	1018. sq. in.
Total Area of Reinforcing Steel	=	16.000000 sq. in.
Area Ratio of Steel Reinforcement	=	1.57 percent
Edge-to-Edge Bar Spacing	=	4.114467 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	5.49
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in
Transverse Reinforcement		
Type: Spiral		
Number of Transverse Reinf. (per spacing)	=	1
Spacing of Transverse Reinf.	=	4.500000 in
Yield Stress of Transverse Reinf.	=	60000. psi
Diameter of Transverse Reinf.	=	0.500000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	4366.378 kips
Tensile Load for Cracking of Concrete	=	-470.222 kips
Nominal Axial Tensile Capacity	=	-960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735

9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Stress Moment in-kip ksi	Run Msg	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
6.25000E-07	240.5062135		384809942.	19.2929823	0.00001206	-0.00001044
0.0505030	0.2746478					
0.00000125	480.1472468		384117797.	18.6479768	0.00002331	-0.00002169
0.0973082	0.5259142					
0.00000188	718.9174733		383422652.	18.4329804	0.00003456	-0.00003294
0.1438345	0.7771808					
0.00000250	956.8168886		382726755.	18.3254857	0.00004581	-0.00004419
0.1900818	1.0284477					
0.00000313	1194.		382030558.	18.2609917	0.00005707	-0.00005543
0.2360502	1.2797149					
0.00000375	1430.		381334209.	18.2179981	0.00006832	-0.00006668
0.2817396	1.5309823					
0.00000438	1665.		380637775.	18.1872904	0.00007957	-0.00007793
0.3271500	1.7822500					
0.00000500	1900.		379941287.	18.1642614	0.00009082	-0.00008918
0.3722815	2.0335179					
0.00000563	2133.		379244764.	18.1463515	0.0001021	-0.000100
0.4171340	2.2847861					
0.00000625	2366.		378548215.	18.1320251	0.0001133	-0.000112
0.4617075	2.5360546					
0.00000688	2366.		344134741.	10.2494785	0.00007047	-0.000177
0.2882187	-4.308598	C				
0.00000750	2366.		315456846.	10.2198771	0.00007665	-0.000193
0.3129821	-4.706727	C				
0.00000813	2366.		291190934.	10.1952302	0.00008284	-0.000210
0.3376758	-5.104761	C				
0.00000875	2366.		270391582.	10.1744772	0.00008903	-0.000226
0.3622998	-5.502701	C				
0.00000938	2366.		252365477.	10.1568402	0.00009522	-0.000242
0.3868539	-5.900547	C				
0.00001000	2366.		236592634.	10.1417358	0.0001014	-0.000259
0.4113380	-6.298297	C				
0.00001063	2366.		222675420.	10.1287027	0.0001076	-0.000275
0.4357521	-6.695951	C				

```
0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
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1.1793922    -19.368912 C
0.00003188        3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313        3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438        3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563        3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688        3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813        3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938        3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063        3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188        3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313        4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438        4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563        4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
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2.1153313    -37.395383 C
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0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
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3.6937845    -60.000000 CY
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3.7851328    -60.000000 CY
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3.8241552    -60.000000 CY
 0.0001594        11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644        11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694        11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744        11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794        11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844        11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894        11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944        11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994        11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044        11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094        11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
 0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
3.9998812    -60.000000 CY
 0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
3.9969940    -60.000000 CY
 0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
3.9997138    -60.000000 CY
 0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
3.9955528    -60.000000 CY
 0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
3.9989818    -60.000000 CY
 0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
3.9994466    -60.000000 CY
 0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
3.9965160    -60.000000 CY
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3.9991770    -60.000000 CY
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3.9995775    -60.000000 CY
 0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
3.9954763    -60.000000 CY
 0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
3.9984997    -60.000000 CY
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    0.0002694         11961.      44401256.      8.9468563      0.0024101      -0.007287
   3.9998981    -60.000000 CY
    0.0002744         11976.      43648250.      8.9191370      0.0024472      -0.007430
   3.9944635    -60.000000 CY
    0.0003044         12062.      39628140.      8.7757363      0.0026711      -0.008286
   3.9984635    -60.000000 CY
    0.0003344         12138.      36300180.      8.6628609      0.0028966      -0.009141
   3.9998209    -60.000000 CY
    0.0003644         12207.      33502446.      8.5793723      0.0031261      -0.009991
   3.9999551    -60.000000 CYT
    0.0003944         12272.      31117026.      8.5161103      0.0033585      -0.010839
   3.9996166    -60.000000 CYT
    0.0004244         12331.      29056485.      8.4674428      0.0035934      -0.011684
   3.9972132    -60.000000 CYT
    0.0004544         12377.      27238942.      8.4178614      0.0038249      -0.012533
   3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
   0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
   0.2364034     1.2822044
   0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
   0.2820914     1.5334776
   0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
   0.3275005     1.7847511
   0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
   0.3726306     2.0360248
   0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
   0.4174818     2.2872988
   0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
   0.4620539     2.5385732
   0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
   0.2893429     -4.300617 C
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0.00000750         2366.    315456672.    10.2575513    0.00007693     -0.000193
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0.00000813         2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235     -5.096560 C
0.00000875         2366.    270391433.    10.2068278    0.00008931     -0.000226
0.3634446     -5.494492 C
0.00000938         2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959     -5.892330 C
0.00001000         2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772     -6.290073 C
0.00001063         2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884     -6.687720 C
0.00001125         2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294     -7.085271 C
0.00001188         2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002     -7.482727 C
0.00001250         2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005     -7.880086 C
0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963     -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433     -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
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0.9331568    -15.015796 C
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0.9560005    -15.411276 C
0.00002563        2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
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1.2244416    -20.149010 C
0.00003313        3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
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0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
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1.3975103    -23.299100 C
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0.00003938        3697.     93883511.    10.0786392     0.0003968     -0.001021
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0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
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0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
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0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
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2.2621930    -40.496353 C
0.00006563        6062.     92378172.    10.1732276     0.0006676     -0.001695
2.2978832    -41.272587 C
0.00006688        6173.     92311077.    10.1785957     0.0006807     -0.001727
2.3332503    -42.048320 C
0.00006813        6284.     92244124.    10.1840217     0.0006938     -0.001759
2.3682931    -42.823550 C
0.00006938        6395.     92177292.    10.1895041     0.0007069     -0.001791
2.4030104    -43.598274 C
0.00007063        6505.     92110561.    10.1950417     0.0007200     -0.001822
2.4374011    -44.372486 C
0.00007188        6616.     92043913.    10.2006608     0.0007332     -0.001854
2.4714639    -45.146185 C
0.00007313        6726.     91977331.    10.2063053     0.0007463     -0.001886
2.5051976    -45.919366 C
0.00007438        6836.     91910797.    10.2120017     0.0007595     -0.001918
2.5386010    -46.692026 C
0.00007938        7274.     91644853.    10.2352897     0.0008124     -0.002045
2.6688860    -49.777380 C
0.00008438        7710.     91378587.    10.2593338     0.0008656     -0.002172
2.7937834    -52.854093 C
0.00008938        8143.     91111830.    10.2831857     0.0009191     -0.002298
2.9130226    -55.924331 C
0.00009438        8573.     90843621.    10.3077273     0.0009728     -0.002425
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0.00009938        8982.     90387473.    10.3258078     0.0010261     -0.002551
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 0.0001044        9308.     89176212.    10.3143071     0.0010766     -0.002681
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3.3122821    -60.000000 CY
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  3.9992162    -60.000000 CY
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  3.9993713    -60.000000 CY
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   0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
  3.9985538    -60.000000 CY
   0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
  3.9999119    -60.000000 CY
   0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
  3.9942523    -60.000000 CY
   0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
  3.9985257    -60.000000 CY
   0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
  3.9998424    -60.000000 CY
   0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
  3.9999658    -60.000000 CYT
   0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
  3.9996505    -60.000000 CYT
   0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
  3.9973093    -60.000000 CYT
   0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
  3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
   0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
   0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
   0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
   0.1907908     1.0334154
   0.00000313        1194.     382029703.    18.3159341    0.00005724   -0.00005526
   0.2367565     1.2846940
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0.00000375        1430.    381333494.    18.2638891    0.00006849   -0.00006651
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0.00000438        1665.    380637159.    18.2267166    0.00007974   -0.00007776
0.3278510    1.7872522
0.00000500        1900.    379940746.    18.1988394    0.00009099   -0.00008901
0.3729798    2.0385317
0.00000563        2133.    379244280.    18.1771590     0.0001022     -0.000100
0.4178295    2.2898116
0.00000625        2366.    378547777.    18.1598165     0.0001135     -0.000112
0.4624003    2.5410917
0.00000688        2366.    344134343.    10.3291778    0.00007101     -0.000176
0.2904571    -4.292706 C
0.00000750        2366.    315456481.    10.2940289    0.00007721     -0.000193
0.3152465    -4.690597 C
0.00000813        2366.    291190598.    10.2646762    0.00008340     -0.000209
0.3399656    -5.088396 C
0.00000875        2366.    270391269.    10.2391817    0.00008959     -0.000225
0.3645893    -5.486283 C
0.00000938        2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378    -5.884113 C
0.00001000        2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162    -6.281848 C
0.00001063        2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246    -6.679488 C
0.00001125        2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628    -7.077032 C
0.00001188        2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307    -7.474480 C
0.00001250        2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282    -7.871831 C
0.00001313        2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552    -8.269087 C
0.00001375        2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117    -8.666245 C
0.00001438        2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974    -9.063307 C
0.00001500        2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124    -9.460271 C
0.00001563        2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565    -9.857138 C
0.00001625        2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296   -10.253907 C
0.00001688        2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316   -10.650577 C
0.00001750        2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624   -11.047150 C
0.00001813        2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219   -11.443623 C
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0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
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3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
 0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
 0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
 0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
 0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
 0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
3.9974037    -60.000000 CYT
 0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
3.9878351    -60.000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
```

Tens. No.	kips	in-kip	Strain	Strain
1	3.800	12169.214	0.00300000	-0.00952396
2	4.200	12173.120	0.00300000	-0.00952020
3	4.600	12177.027	0.00300000	-0.00951645

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.

```
   2       0.90           4.200000        12173.      3.780000        10956.
70254444.
   3       0.90           4.600000        12177.      4.140000        10959.
70287179.
```

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	1.0000	0.00	N.A.	No	0.00	8859.
2	4.0000	0.2172	No	No	8859.	235887.
3	11.1000	10.1000	No	No	244746.	0.00
4	19.1000	18.1000	No	No	0.00	0.00
5	21.6000	20.6000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

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

```
---------- ---------- ----------
      0.00    0.00616    315600.      1000.  -1.12E-04       0.00   3.84E+11
0.00       0.00       0.00
   0.09000    0.00604    316681.      1000.  -1.11E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.1800    0.00592    317761.  1000.0000  -1.10E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.2700    0.00580    318842.  1000.0000  -1.09E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.3600    0.00568    319922.  1000.0000  -1.08E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.4500    0.00557    321002.      1000.  -1.07E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.5400    0.00545    322083.      1000.  -1.07E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.6300    0.00534    323163.  1000.0000  -1.06E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.7200    0.00522    324244.  1000.0000  -1.05E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.8100    0.00511    325324.  1000.0000  -1.04E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9000    0.00500    326405.  1000.0000  -1.03E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9900    0.00489    327485.  1000.0000  -1.02E-04       0.00   3.84E+11
0.00       0.00       0.00
    1.0800    0.00478    328566.   992.8799  -1.01E-04       0.00   3.84E+11
-13.185      2980.       0.00
    1.1700    0.00467    329631.   978.5773  -1.00E-04       0.00   3.84E+11
-13.301      3077.       0.00
    1.2600    0.00456    330680.   964.1521  -9.92E-05       0.00   3.84E+11
-13.412      3176.       0.00
    1.3500    0.00445    331714.   949.6087  -9.83E-05       0.00   3.84E+11
-13.520      3278.       0.00
    1.4400    0.00435    332732.   934.9515  -9.74E-05       0.00   3.84E+11
-13.623      3383.       0.00
    1.5300    0.00424    333735.   920.1849  -9.64E-05       0.00   3.84E+11
-13.722      3492.       0.00
    1.6200    0.00414    334721.   905.3132  -9.55E-05       0.00   3.84E+11
-13.818      3604.       0.00
    1.7100    0.00404    335691.   890.3411  -9.45E-05       0.00   3.84E+11
-13.908      3720.       0.00
    1.8000    0.00394    336645.   875.2732  -9.36E-05       0.00   3.84E+11
-13.995      3839.       0.00
    1.8900    0.00384    337583.   860.1141  -9.26E-05       0.00   3.84E+11
-14.077      3963.       0.00
    1.9800    0.00374    338504.   844.8684  -9.17E-05       0.00   3.84E+11
-14.155      4091.       0.00
    2.0700    0.00364    339408.   829.5410  -9.07E-05       0.00   3.84E+11
-14.229      4224.       0.00
    2.1600    0.00354    340296.   814.1368  -8.98E-05       0.00   3.84E+11
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```
-14.298      4361.       0.00
    2.2500    0.00344    341168.   798.6606  -8.88E-05       0.00   3.84E+11
-14.362      4504.       0.00
    2.3400    0.00335    342022.   783.1174  -8.79E-05       0.00   3.84E+11
-14.422      4651.       0.00
    2.4300    0.00325    342860.   767.5124  -8.69E-05       0.00   3.84E+11
-14.477      4804.       0.00
    2.5200    0.00316    343681.   751.8506  -8.59E-05       0.00   3.84E+11
-14.527      4963.       0.00
    2.6100    0.00307    344485.   736.1373  -8.50E-05       0.00   3.84E+11
-14.572      5128.       0.00
    2.7000    0.00298    345272.   720.3779  -8.40E-05       0.00   3.84E+11
-14.612      5300.       0.00
    2.7900    0.00289    346041.   704.5778  -8.30E-05       0.00   3.84E+11
-14.647      5479.       0.00
    2.8800    0.00280    346794.   688.7425  -8.21E-05       0.00   3.84E+11
-14.677      5665.       0.00
    2.9700    0.00271    347530.   672.8776  -8.11E-05       0.00   3.84E+11
-14.702      5859.       0.00
    3.0600    0.00262    348248.   656.9890  -8.01E-05       0.00   3.84E+11
-14.721      6062.       0.00
    3.1500    0.00254    348950.   641.0825  -7.91E-05       0.00   3.84E+11
-14.735      6273.       0.00
    3.2400    0.00245    349634.   625.1641  -7.82E-05       0.00   3.84E+11
-14.743      6494.       0.00
    3.3300    0.00237    350301.   609.2399  -7.72E-05       0.00   3.84E+11
-14.746      6725.       0.00
    3.4200    0.00229    350951.   593.3163  -7.62E-05       0.00   3.84E+11
-14.742      6967.       0.00
    3.5100    0.00220    351583.   577.3997  -7.52E-05       0.00   3.84E+11
-14.733      7221.       0.00
    3.6000    0.00212    352198.   561.4967  -7.42E-05       0.00   3.84E+11
-14.717      7487.       0.00
    3.6900    0.00204    352797.   545.6141  -7.32E-05       0.00   3.84E+11
-14.695      7767.       0.00
    3.7800    0.00196    353378.   529.7588  -7.22E-05       0.00   3.84E+11
-14.666      8062.       0.00
    3.8700    0.00189    353941.   513.9381  -7.12E-05       0.00   3.84E+11
-14.631      8373.       0.00
    3.9600    0.00181    354488.   498.1594  -7.02E-05       0.00   3.84E+11
-14.589      8701.       0.00
    4.0500    0.00174    355018.   245.8170  -6.92E-05       0.00   3.84E+11
-452.712    281708.       0.00
    4.1400    0.00166    355020.   -241.794  -6.82E-05       0.00   3.84E+11
-450.271    292709.       0.00
    4.2300    0.00159    354497.   -726.686  -6.72E-05       0.00   3.84E+11
-447.677    304429.       0.00
    4.3200    0.00152    353451.     -1209.  -6.62E-05       0.00   3.84E+11
-444.921    316941.       0.00
    4.4100    0.00145    351886.     -1688.  -6.53E-05       0.00   3.84E+11
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-441.997	330330.	0.00				
4.5000	0.00138	349806.	-2163.	-6.43E-05	0.00	3.84E+11
-438.895	344696.	0.00				
4.5900	0.00131	347214.	-2636.	-6.33E-05	0.00	3.84E+11
-435.605	360153.	0.00				
4.6800	0.00124	344114.	-3104.	-6.23E-05	0.00	3.84E+11
-432.115	376835.	0.00				
4.7700	0.00117	340510.	-3569.	-6.14E-05	0.00	3.84E+11
-428.411	394902.	0.00				
4.8600	0.00111	336406.	-4029.	-6.04E-05	0.00	3.84E+11
-424.479	414542.	0.00				
4.9500	0.00104	331807.	-4486.	-5.95E-05	0.00	3.84E+11
-420.300	435980.	0.00				
5.0400	9.77E-04	326718.	-4937.	-5.85E-05	0.00	3.84E+11
-415.853	459491.	0.00				
5.1300	9.15E-04	321144.	-5384.	-5.76E-05	0.00	3.84E+11
-411.114	485410.	0.00				
5.2200	8.53E-04	315090.	-5825.	-5.67E-05	0.00	3.84E+11
-406.054	514151.	0.00				
5.3100	7.92E-04	308562.	-6261.	-5.59E-05	0.00	3.85E+11
-400.639	546234.	0.00				
5.4000	7.32E-04	301568.	-6690.	-5.50E-05	0.00	3.85E+11
-394.827	582321.	0.00				
5.4900	6.73E-04	294112.	-7102.	-5.42E-05	0.00	3.85E+11
-368.922	591756.	0.00				
5.5800	6.15E-04	286227.	-7485.	-5.34E-05	0.00	3.85E+11
-338.782	594693.	0.00				
5.6700	5.58E-04	277946.	-7834.	-5.26E-05	0.00	3.85E+11
-308.806	597628.	0.00				
5.7600	5.02E-04	269305.	-8152.	-5.18E-05	0.00	3.85E+11
-278.986	600560.	0.00				
5.8500	4.46E-04	260339.	-8437.	-5.11E-05	0.00	3.85E+11
-249.316	603491.	0.00				
5.9400	3.91E-04	251081.	-8690.	-5.03E-05	0.00	3.85E+11
-219.787	606419.	0.00				
6.0300	3.37E-04	241568.	-8912.	-4.96E-05	0.00	3.85E+11
-190.390	609346.	0.00				
6.1200	2.84E-04	231832.	-9102.	-4.90E-05	0.00	3.85E+11
-161.115	612271.	0.00				
6.2100	2.32E-04	221909.	-9260.	-4.83E-05	0.00	3.85E+11
-131.951	615194.	0.00				
6.3000	1.80E-04	211831.	-9387.	-4.77E-05	0.00	3.85E+11
-102.888	618116.	0.00				
6.3900	1.29E-04	201634.	-9482.	-4.72E-05	0.00	3.85E+11
-73.913	621036.	0.00				
6.4800	7.79E-05	191350.	-9546.	-4.66E-05	0.00	3.85E+11
-45.014	623955.	0.00				
6.5700	2.79E-05	181014.	-9579.	-4.61E-05	0.00	3.85E+11
-16.178	626872.	0.00				
6.6600	-2.16E-05	170659.	-9581.	-4.56E-05	0.00	3.85E+11

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12.6082    629788.       0.00
    6.7500  -7.06E-05    160319.     -9552.  -4.51E-05       0.00   3.85E+11
41.3586    632703.       0.00
    6.8400  -1.19E-04    150027.     -9492.  -4.47E-05       0.00   3.85E+11
70.0873    635616.       0.00
    6.9300  -1.67E-04    139816.     -9401.  -4.43E-05       0.00   3.85E+11
98.8086    638529.       0.00
    7.0200  -2.15E-04    129721.     -9279.  -4.39E-05       0.00   3.85E+11
127.5371    641440.       0.00
    7.1100  -2.62E-04    119775.     -9125.  -4.36E-05       0.00   3.85E+11
156.2874    644350.       0.00
    7.2000  -3.09E-04    110011.     -8941.  -4.32E-05       0.00   3.85E+11
185.0743    647260.       0.00
    7.2900  -3.55E-04    100463.     -8726.  -4.29E-05       0.00   3.85E+11
213.9126    650168.       0.00
    7.3800  -4.02E-04     91164.     -8479.  -4.27E-05       0.00   3.85E+11
242.8170    653076.       0.00
    7.4700  -4.47E-04     82149.     -8201.  -4.24E-05       0.00   3.85E+11
271.8021    655982.       0.00
    7.5600  -4.93E-04     73450.     -7892.  -4.22E-05       0.00   3.85E+11
300.8821    658888.       0.00
    7.6500  -5.39E-04     65103.     -7551.  -4.20E-05       0.00   3.85E+11
330.0712    661793.       0.00
    7.7400  -5.84E-04     57140.     -7179.  -4.18E-05       0.00   3.85E+11
359.3831    664697.       0.00
    7.8300  -6.29E-04     49597.     -6775.  -4.17E-05       0.00   3.85E+11
388.8309    667601.       0.00
    7.9200  -6.74E-04     42507.     -6339.  -4.16E-05       0.00   3.85E+11
418.4275    670503.       0.00
    8.0100  -7.19E-04     35905.     -5871.  -4.14E-05       0.00   3.85E+11
448.1849    673406.       0.00
    8.1000  -7.64E-04     29826.     -5381.  -4.14E-05       0.00   3.85E+11
458.1599    648081.       0.00
    8.1900  -8.08E-04     24282.     -4882.  -4.13E-05       0.00   3.85E+11
466.7123    623726.       0.00
    8.2800  -8.53E-04     19282.     -4373.  -4.12E-05       0.00   3.85E+11
475.0416    601690.       0.00
    8.3700  -8.97E-04     14836.     -3856.  -4.12E-05       0.00   3.85E+11
483.1716    581640.       0.00
    8.4600  -9.42E-04     10953.     -3330.  -4.11E-05       0.00   3.85E+11
491.1228    563307.       0.00
    8.5500  -9.86E-04      7643.     -2795.  -4.11E-05       0.00   3.85E+11
498.9126    546468.       0.00
    8.6400   -0.00103      4916.     -2252.  -4.11E-05       0.00   3.85E+11
506.5562    530939.       0.00
    8.7300   -0.00107      2779.     -1701.  -4.11E-05       0.00   3.85E+11
514.0665    516565.       0.00
    8.8200   -0.00112      1241.     -1142.  -4.11E-05       0.00   3.85E+11
521.4551    503218.       0.00
    8.9100   -0.00116   312.3535   -574.904  -4.11E-05       0.00   3.85E+11
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528.7317    490787.       0.00
    9.0000   -0.00121       0.00       0.00  -4.11E-05       0.00   3.85E+11
535.9051    239588.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.00615853 inches
Computed slope at pile head      =     -0.0001119 radians
Maximum bending moment           =        355020. inch-lbs
Maximum shear force              =         -9581. lbs
Depth of maximum bending moment  =     4.14000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             11
Number of zero deflection points =              1
Pile deflection at ground        =     0.00487529 inches



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

Boundary Condition Type 1, Shear and Moment

Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.00615853       355020.        -9581.
    8.55000    0.00895011       353191.       -10938.
    8.10000    0.01807762       350592.       -12597.
    7.65000    0.04291011       346311.       -14146.
    7.20000    0.10964363       341127.       -15620.
    6.75000    0.35386933       337436.       -17510.
    6.30000    1.21941580       335710.       -19609.
    5.85000    6.13491457       341003.       -23087.
```

```
--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 2
--------------------------------------------------------------------------------

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

Shear force at pile head                                =       2250.0 lbs
Applied moment at pile head                             =     724800.0 in-lbs
Axial thrust load on pile head                          =       4600.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00    0.08600    724800.      2250.   -0.00115       0.00   3.83E+11
0.00       0.00       0.00
   0.09000    0.08476    727236.      2250.   -0.00115       0.00   3.83E+11
0.00       0.00       0.00
    0.1800    0.08352    729671.      2250.   -0.00115       0.00   3.83E+11
0.00       0.00       0.00
    0.2700    0.08228    732107.      2250.   -0.00115       0.00   3.83E+11
0.00       0.00       0.00
    0.3600    0.08104    734543.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.4500    0.07981    736979.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.5400    0.07857    739414.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.6300    0.07734    741850.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.7200    0.07611    744285.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.8100    0.07489    746721.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    0.9000    0.07366    749157.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    0.9900    0.07244    751592.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    1.0800    0.07122    754028.      2232.   -0.00113       0.00   3.83E+11
-32.425   491.6631       0.00
    1.1700    0.07001    756426.      2197.   -0.00113       0.00   3.83E+11
-32.771   505.5561       0.00
    1.2600    0.06879    758785.      2162.   -0.00112       0.00   3.83E+11
-33.110   519.7975       0.00
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    1.3500    0.06758    761106.      2126.   -0.00112       0.00   3.83E+11
-33.441   534.4024       0.00
    1.4400    0.06637    763388.      2089.   -0.00112       0.00   3.83E+11
-33.763   549.3866       0.00
    1.5300    0.06516    765631.      2053.   -0.00112       0.00   3.83E+11
-34.077   564.7671       0.00
    1.6200    0.06396    767833.      2016.   -0.00111       0.00   3.83E+11
-34.382   580.5619       0.00
    1.7100    0.06276    769996.      1979.   -0.00111       0.00   3.83E+11
-34.678   596.7901       0.00
    1.8000    0.06156    772118.      1941.   -0.00111       0.00   3.83E+11
-34.966   613.4721       0.00
    1.8900    0.06036    774200.      1903.   -0.00111       0.00   3.83E+11
-35.244   630.6298       0.00
    1.9800    0.05916    776240.      1865.   -0.00111       0.00   3.83E+11
-35.513   648.2864       0.00
    2.0700    0.05797    778239.      1826.   -0.00110       0.00   3.83E+11
-35.773   666.4669       0.00
    2.1600    0.05678    780196.      1788.   -0.00110       0.00   3.83E+11
-36.023   685.1979       0.00
    2.2500    0.05559    782111.      1749.   -0.00110       0.00   3.83E+11
-36.263   704.5082       0.00
    2.3400    0.05440    783984.      1709.   -0.00110       0.00   3.83E+11
-36.492   724.4284       0.00
    2.4300    0.05322    785814.      1670.   -0.00109       0.00   3.83E+11
-36.712   744.9917       0.00
    2.5200    0.05204    787601.      1630.   -0.00109       0.00   3.83E+11
-36.920   766.2338       0.00
    2.6100    0.05086    789345.      1590.   -0.00109       0.00   3.83E+11
-37.118   788.1932       0.00
    2.7000    0.04968    791046.      1550.   -0.00109       0.00   3.83E+11
-37.304   810.9115       0.00
    2.7900    0.04851    792704.      1509.   -0.00109       0.00   3.83E+11
-37.479   834.4338       0.00
    2.8800    0.04734    794317.      1469.   -0.00108       0.00   3.83E+11
-37.642   858.8091       0.00
    2.9700    0.04617    795887.      1428.   -0.00108       0.00   3.83E+11
-37.793   884.0906       0.00
    3.0600    0.04500    797413.      1387.   -0.00108       0.00   3.83E+11
-37.931   910.3361       0.00
    3.1500    0.04384    798894.      1346.   -0.00108       0.00   3.83E+11
-38.057   937.6090       0.00
    3.2400    0.04267    800331.      1305.   -0.00107       0.00   3.83E+11
-38.169   965.9785       0.00
    3.3300    0.04151    801724.      1264.   -0.00107       0.00   3.83E+11
-38.267   995.5205       0.00
    3.4200    0.04036    803072.      1222.   -0.00107       0.00   3.83E+11
-38.352      1026.       0.00
    3.5100    0.03920    804375.      1181.   -0.00107       0.00   3.83E+11
-38.421      1058.       0.00
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    3.6000    0.03805    805633.      1139.   -0.00107       0.00   3.83E+11
-38.475      1092.       0.00
    3.6900    0.03690    806847.      1098.   -0.00106       0.00   3.83E+11
-38.514      1127.       0.00
    3.7800    0.03575    808015.      1056.   -0.00106       0.00   3.83E+11
-38.536      1164.       0.00
    3.8700    0.03461    809139.      1015.   -0.00106       0.00   3.83E+11
-38.541      1203.       0.00
    3.9600    0.03347    810217.   972.9887   -0.00106       0.00   3.83E+11
-38.529      1243.       0.00
    4.0500    0.03233    811251.   444.9518   -0.00105       0.00   3.83E+11
-939.318     31382.       0.00
    4.1400    0.03119    811189.   -567.766   -0.00105       0.00   3.83E+11
-936.086     32415.       0.00
    4.2300    0.03005    810035.     -1577.   -0.00105       0.00   3.83E+11
-932.534     33512.       0.00
    4.3200    0.02892    807793.     -2582.   -0.00105       0.00   3.83E+11
-928.644     34679.       0.00
    4.4100    0.02779    804468.     -3583.   -0.00105       0.00   3.83E+11
-924.400     35924.       0.00
    4.5000    0.02666    800065.     -4578.   -0.00104       0.00   3.83E+11
-919.779     37256.       0.00
    4.5900    0.02554    794590.     -5569.   -0.00104       0.00   3.83E+11
-914.759     38686.       0.00
    4.6800    0.02441    788047.     -6554.   -0.00104       0.00   3.83E+11
-909.314     40224.       0.00
    4.7700    0.02329    780443.     -7533.   -0.00104       0.00   3.83E+11
-903.414     41885.       0.00
    4.8600    0.02218    771786.     -8505.   -0.00103       0.00   3.83E+11
-897.026     43686.       0.00
    4.9500    0.02106    762082.     -9470.   -0.00103       0.00   3.83E+11
-890.111     45646.       0.00
    5.0400    0.01995    751341.    -10427.   -0.00103       0.00   3.83E+11
-882.625     47788.       0.00
    5.1300    0.01884    739569.    -11376.   -0.00103       0.00   3.83E+11
-874.519     50142.       0.00
    5.2200    0.01773    726778.    -12316.   -0.00103       0.00   3.83E+11
-865.732     52743.       0.00
    5.3100    0.01662    712977.    -13246.   -0.00102       0.00   3.83E+11
-856.197     55636.       0.00
    5.4000    0.01552    698177.    -14165.   -0.00102       0.00   3.83E+11
-845.830     58874.       0.00
    5.4900    0.01441    682391.    -15072.   -0.00102       0.00   3.83E+11
-834.535     62531.       0.00
    5.5800    0.01331    665631.    -15967.   -0.00102       0.00   3.84E+11
-822.192     66697.       0.00
    5.6700    0.01222    647912.    -16848.   -0.00102       0.00   3.84E+11
-808.656     71497.       0.00
    5.7600    0.01112    629250.    -17713.   -0.00101       0.00   3.84E+11
-793.743     77098.       0.00
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    5.8500    0.01002    609662.    -18561.   -0.00101       0.00   3.84E+11
-777.221     83735.       0.00
    5.9400    0.00893    589168.    -19391.   -0.00101       0.00   3.84E+11
-758.784     91748.       0.00
    6.0300    0.00784    567788.    -20199.   -0.00101       0.00   3.84E+11
-738.020    101650.       0.00
    6.1200    0.00675    545548.    -20983.   -0.00101       0.00   3.84E+11
-714.354    114259.       0.00
    6.2100    0.00566    522474.    -21740.   -0.00101       0.00   3.84E+11
-686.938    130963.       0.00
    6.3000    0.00458    498600.    -22464.   -0.00100       0.00   3.84E+11
-654.444    154352.       0.00
    6.3900    0.00349    473961.    -23150.   -0.00100       0.00   3.84E+11
-614.584    189919.       0.00
    6.4800    0.00241    448606.    -23785.   -0.00100       0.00   3.84E+11
-562.803    251990.       0.00
    6.5700    0.00133    422595.    -24352.   -0.00100       0.00   3.84E+11
-487.300    395502.       0.00
    6.6600   2.51E-04    396015.    -24694.  -1.00E-03       0.00   3.84E+11
-146.087    629788.       0.00
    6.7500  -8.28E-04    369265.    -24537.  -9.99E-04       0.00   3.84E+11
436.9087    569582.       0.00
    6.8400   -0.00191    343024.    -24010.  -9.98E-04       0.00   3.84E+11
540.5775    306266.       0.00
    6.9300   -0.00298    317414.    -23390.  -9.97E-04       0.00   3.84E+11
607.3797    219899.       0.00
    7.0200   -0.00406    292512.    -22706.  -9.96E-04       0.00   3.85E+11
658.9782    175343.       0.00
    7.1100   -0.00513    268379.    -21971.  -9.95E-04       0.00   3.85E+11
702.0127    147682.       0.00
    7.2000   -0.00621    245065.    -21193.  -9.94E-04       0.00   3.85E+11
739.4824    128648.       0.00
    7.2900   -0.00728    222613.    -20376.  -9.94E-04       0.00   3.85E+11
773.0192    114658.       0.00
    7.3800   -0.00835    201063.    -19524.  -9.93E-04       0.00   3.85E+11
803.6173    103891.       0.00
    7.4700   -0.00943    180451.    -18641.  -9.92E-04       0.00   3.85E+11
831.9305     95318.       0.00
    7.5600   -0.01050    160808.    -17728.  -9.92E-04       0.00   3.85E+11
858.4133     88313.       0.00
    7.6500   -0.01157    142167.    -16788.  -9.92E-04       0.00   3.85E+11
883.3953     82469.       0.00
    7.7400   -0.01264    124556.    -15821.  -9.91E-04       0.00   3.85E+11
907.1238     77511.       0.00
    7.8300   -0.01371    108004.    -14829.  -9.91E-04       0.00   3.85E+11
929.7891     73246.       0.00
    7.9200   -0.01478     92536.    -13813.  -9.91E-04       0.00   3.85E+11
951.5412     69533.       0.00
    8.0100   -0.01585     78177.    -12774.  -9.90E-04       0.00   3.85E+11
972.5002     66268.       0.00
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    8.1000   -0.01692     64953.    -11713.  -9.90E-04       0.00   3.85E+11
992.7644     63373.       0.00
    8.1900   -0.01799     52887.    -10630.  -9.90E-04       0.00   3.85E+11
1012.     60786.       0.00
    8.2800   -0.01906     42002.     -9526.  -9.90E-04       0.00   3.85E+11
1032.     58459.       0.00
    8.3700   -0.02013     32320.     -8402.  -9.90E-04       0.00   3.85E+11
1050.     56353.       0.00
    8.4600   -0.02119     23863.     -7258.  -9.90E-04       0.00   3.85E+11
1068.     54437.       0.00
    8.5500   -0.02226     16652.     -6095.  -9.90E-04       0.00   3.85E+11
1086.     52686.       0.00
    8.6400   -0.02333     10708.     -4913.  -9.90E-04       0.00   3.85E+11
1104.     51079.       0.00
    8.7300   -0.02440      6051.     -3712.  -9.90E-04       0.00   3.85E+11
1121.     49598.       0.00
    8.8200   -0.02547      2701.     -2492.  -9.89E-04       0.00   3.85E+11
1137.     48229.       0.00
    8.9100   -0.02654   677.5015     -1255.  -9.89E-04       0.00   3.85E+11
1154.     46958.       0.00
    9.0000   -0.02761      0.00       0.00  -9.89E-04       0.00   3.85E+11
1170.     22888.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.08600116 inches
Computed slope at pile head      =     -0.0011526 radians
Maximum bending moment           =        811251. inch-lbs
Maximum shear force              =        -24694. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             32
Number of zero deflection points =              1
Pile deflection at ground        =     0.07230826 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment
```

```
Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.08600116	811251.	-24694.
8.55000	0.16875193	804620.	-26566.
8.10000	0.40448936	796380.	-29144.
7.65000	1.02153310	787630.	-32081.
7.20000	2.68846313	781089.	-35411.
6.75000	9.69755707	786315.	-40874.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

```
Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       3800.0 lbs
```

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.08597	724800.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.08473	727235.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.08349	729669.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.08225	732104.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.08101	734539.	2250.	-0.00114	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.07978	736974.	2250.	-0.00114	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.07854	739408.	2250.	-0.00114	0.00	3.83E+11			

```
0.00       0.00       0.00
    0.6300    0.07731    741843.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.7200    0.07609    744278.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.8100    0.07486    746712.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    0.9000    0.07364    749147.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    0.9900    0.07242    751582.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    1.0800    0.07120    754016.      2232.   -0.00113       0.00   3.83E+11
-32.421   491.7856       0.00
    1.1700    0.06998    756413.      2197.   -0.00113       0.00   3.83E+11
-32.767   505.6822       0.00
    1.2600    0.06877    758772.      2162.   -0.00112       0.00   3.83E+11
-33.106   519.9273       0.00
    1.3500    0.06756    761091.      2126.   -0.00112       0.00   3.83E+11
-33.436   534.5359       0.00
    1.4400    0.06635    763372.      2090.   -0.00112       0.00   3.83E+11
-33.759   549.5240       0.00
    1.5300    0.06514    765614.      2053.   -0.00112       0.00   3.83E+11
-34.072   564.9084       0.00
    1.6200    0.06394    767816.      2016.   -0.00111       0.00   3.83E+11
-34.378   580.7073       0.00
    1.7100    0.06273    769977.      1979.   -0.00111       0.00   3.83E+11
-34.674   596.9397       0.00
    1.8000    0.06153    772099.      1941.   -0.00111       0.00   3.83E+11
-34.962   613.6260       0.00
    1.8900    0.06034    774179.      1903.   -0.00111       0.00   3.83E+11
-35.240   630.7881       0.00
    1.9800    0.05914    776219.      1865.   -0.00111       0.00   3.83E+11
-35.509   648.4493       0.00
    2.0700    0.05795    778216.      1826.   -0.00110       0.00   3.83E+11
-35.768   666.6345       0.00
    2.1600    0.05676    780173.      1788.   -0.00110       0.00   3.83E+11
-36.018   685.3704       0.00
    2.2500    0.05557    782087.      1749.   -0.00110       0.00   3.83E+11
-36.258   704.6856       0.00
    2.3400    0.05438    783959.      1709.   -0.00110       0.00   3.83E+11
-36.488   724.6110       0.00
    2.4300    0.05320    785788.      1670.   -0.00109       0.00   3.83E+11
-36.707   745.1797       0.00
    2.5200    0.05202    787574.      1630.   -0.00109       0.00   3.83E+11
-36.916   766.4273       0.00
    2.6100    0.05084    789318.      1590.   -0.00109       0.00   3.83E+11
-37.113   788.3923       0.00
    2.7000    0.04966    791018.      1550.   -0.00109       0.00   3.83E+11
-37.300   811.1165       0.00
    2.7900    0.04849    792675.      1510.   -0.00109       0.00   3.83E+11
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-37.474   834.6450       0.00
    2.8800    0.04732    794287.      1469.   -0.00108       0.00   3.83E+11
-37.637   859.0266       0.00
    2.9700    0.04615    795856.      1428.   -0.00108       0.00   3.83E+11
-37.788   884.3146       0.00
    3.0600    0.04498    797381.      1387.   -0.00108       0.00   3.83E+11
-37.927   910.5670       0.00
    3.1500    0.04382    798862.      1346.   -0.00108       0.00   3.83E+11
-38.052   937.8470       0.00
    3.2400    0.04266    800298.      1305.   -0.00107       0.00   3.83E+11
-38.164   966.2239       0.00
    3.3300    0.04150    801690.      1264.   -0.00107       0.00   3.83E+11
-38.262   995.7735       0.00
    3.4200    0.04034    803037.      1223.   -0.00107       0.00   3.83E+11
-38.347      1027.       0.00
    3.5100    0.03919    804339.      1181.   -0.00107       0.00   3.83E+11
-38.416      1059.       0.00
    3.6000    0.03804    805597.      1140.   -0.00107       0.00   3.83E+11
-38.470      1092.       0.00
    3.6900    0.03689    806810.      1098.   -0.00106       0.00   3.83E+11
-38.509      1128.       0.00
    3.7800    0.03574    807977.      1056.   -0.00106       0.00   3.83E+11
-38.531      1164.       0.00
    3.8700    0.03460    809100.      1015.   -0.00106       0.00   3.83E+11
-38.536      1203.       0.00
    3.9600    0.03345    810178.   973.1502   -0.00106       0.00   3.83E+11
-38.524      1244.       0.00
    4.0500    0.03231    811211.   445.1646   -0.00105       0.00   3.83E+11
-939.227     31391.       0.00
    4.1400    0.03118    811148.   -567.456   -0.00105       0.00   3.83E+11
-935.996     32424.       0.00
    4.2300    0.03004    809994.     -1576.   -0.00105       0.00   3.83E+11
-932.444     33521.       0.00
    4.3200    0.02891    807752.     -2581.   -0.00105       0.00   3.83E+11
-928.555     34689.       0.00
    4.4100    0.02778    804426.     -3582.   -0.00104       0.00   3.83E+11
-924.311     35935.       0.00
    4.5000    0.02665    800023.     -4578.   -0.00104       0.00   3.83E+11
-919.691     37267.       0.00
    4.5900    0.02553    794547.     -5568.   -0.00104       0.00   3.83E+11
-914.671     38697.       0.00
    4.6800    0.02441    788004.     -6553.   -0.00104       0.00   3.83E+11
-909.226     40236.       0.00
    4.7700    0.02329    780401.     -7532.   -0.00104       0.00   3.83E+11
-903.327     41897.       0.00
    4.8600    0.02217    771744.     -8504.   -0.00103       0.00   3.83E+11
-896.939     43699.       0.00
    4.9500    0.02105    762041.     -9469.   -0.00103       0.00   3.83E+11
-890.025     45659.       0.00
    5.0400    0.01994    751299.    -10426.   -0.00103       0.00   3.83E+11
```

-882.540	47802.	0.00				
5.1300	0.01883	739529.	-11375.	-0.00103	0.00	3.83E+11
-874.435	50157.	0.00				
5.2200	0.01772	726738.	-12315.	-0.00103	0.00	3.83E+11
-865.649	52759.	0.00				
5.3100	0.01661	712938.	-13244.	-0.00102	0.00	3.83E+11
-856.114	55652.	0.00				
5.4000	0.01551	698139.	-14163.	-0.00102	0.00	3.83E+11
-845.749	58891.	0.00				
5.4900	0.01441	682353.	-15071.	-0.00102	0.00	3.83E+11
-834.455	62549.	0.00				
5.5800	0.01331	665594.	-15965.	-0.00102	0.00	3.84E+11
-822.113	66716.	0.00				
5.6700	0.01221	647877.	-16846.	-0.00102	0.00	3.84E+11
-808.578	71518.	0.00				
5.7600	0.01111	629216.	-17711.	-0.00101	0.00	3.84E+11
-793.667	77120.	0.00				
5.8500	0.01002	609629.	-18559.	-0.00101	0.00	3.84E+11
-777.147	83759.	0.00				
5.9400	0.00893	589136.	-19389.	-0.00101	0.00	3.84E+11
-758.712	91774.	0.00				
6.0300	0.00784	567758.	-20197.	-0.00101	0.00	3.84E+11
-737.950	101679.	0.00				
6.1200	0.00675	545519.	-20981.	-0.00101	0.00	3.84E+11
-714.287	114291.	0.00				
6.2100	0.00566	522447.	-21738.	-0.00101	0.00	3.84E+11
-686.874	130999.	0.00				
6.3000	0.00458	498574.	-22462.	-0.00100	0.00	3.84E+11
-654.385	154394.	0.00				
6.3900	0.00349	473938.	-23147.	-0.00100	0.00	3.84E+11
-614.530	189970.	0.00				
6.4800	0.00241	448585.	-23783.	-0.00100	0.00	3.84E+11
-562.755	252054.	0.00				
6.5700	0.00133	422575.	-24350.	-0.00100	0.00	3.84E+11
-487.264	395589.	0.00				
6.6600	2.51E-04	395997.	-24692.	-9.99E-04	0.00	3.84E+11
-146.108	629788.	0.00				
6.7500	-8.28E-04	369249.	-24535.	-9.98E-04	0.00	3.84E+11
436.8475	569821.	0.00				
6.8400	-0.00191	343010.	-24007.	-9.97E-04	0.00	3.84E+11
540.5143	306373.	0.00				
6.9300	-0.00298	317402.	-23387.	-9.96E-04	0.00	3.84E+11
607.3126	219971.	0.00				
7.0200	-0.00406	292502.	-22704.	-9.95E-04	0.00	3.85E+11
658.9073	175399.	0.00				
7.1100	-0.00513	268370.	-21969.	-9.95E-04	0.00	3.85E+11
701.9383	147729.	0.00				
7.2000	-0.00621	245057.	-21190.	-9.94E-04	0.00	3.85E+11
739.4049	128688.	0.00				
7.2900	-0.00728	222607.	-20374.	-9.93E-04	0.00	3.85E+11

```
772.9388    114693.       0.00
    7.3800   -0.00835    201058.    -19522.  -9.93E-04       0.00   3.85E+11
803.5342    103923.       0.00
    7.4700   -0.00942    180447.    -18639.  -9.92E-04       0.00   3.85E+11
831.8448     95348.       0.00
    7.5600   -0.01049    160806.    -17727.  -9.92E-04       0.00   3.85E+11
858.3251     88340.       0.00
    7.6500   -0.01156    142166.    -16786.  -9.91E-04       0.00   3.85E+11
883.3049     82494.       0.00
    7.7400   -0.01263    124556.    -15819.  -9.91E-04       0.00   3.85E+11
907.0311     77535.       0.00
    7.8300   -0.01370    108004.    -14828.  -9.90E-04       0.00   3.85E+11
929.6943     73268.       0.00
    7.9200   -0.01477     92536.    -13812.  -9.90E-04       0.00   3.85E+11
951.4443     69554.       0.00
    8.0100   -0.01584     78179.    -12773.  -9.90E-04       0.00   3.85E+11
972.4013     66288.       0.00
    8.1000   -0.01691     64955.    -11712.  -9.90E-04       0.00   3.85E+11
992.6635     63392.       0.00
    8.1900   -0.01798     52890.    -10629.  -9.90E-04       0.00   3.85E+11
1012.     60804.       0.00
    8.2800   -0.01905     42005.     -9525.  -9.89E-04       0.00   3.85E+11
1031.     58476.       0.00
    8.3700   -0.02012     32323.     -8401.  -9.89E-04       0.00   3.85E+11
1050.     56370.       0.00
    8.4600   -0.02119     23866.     -7258.  -9.89E-04       0.00   3.85E+11
1068.     54453.       0.00
    8.5500   -0.02225     16655.     -6094.  -9.89E-04       0.00   3.85E+11
1086.     52702.       0.00
    8.6400   -0.02332     10710.     -4912.  -9.89E-04       0.00   3.85E+11
1103.     51094.       0.00
    8.7300   -0.02439      6053.     -3711.  -9.89E-04       0.00   3.85E+11
1120.     49613.       0.00
    8.8200   -0.02546      2702.     -2492.  -9.89E-04       0.00   3.85E+11
1137.     48243.       0.00
    8.9100   -0.02653   678.2892     -1255.  -9.89E-04       0.00   3.85E+11
1154.     46973.       0.00
    9.0000   -0.02760      0.00       0.00  -9.89E-04       0.00   3.85E+11
1170.     22895.       0.00

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


Output Summary for Load Case No. 3:
```

```
Pile-head deflection             =     0.08596933 inches
Computed slope at pile head      =     -0.0011522 radians
Maximum bending moment           =        811211. inch-lbs
Maximum shear force              =        -24692. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             32
Number of zero deflection points =              1
Pile deflection at ground        =     0.07228124 inches
```

Pile-head Deflection vs. Pile Length for Load Case 3

Boundary Condition Type 1, Shear and Moment

```
Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.08596933	811211.	-24692.
8.55000	0.16862465	804541.	-26561.
8.10000	0.40374942	796188.	-29130.
7.65000	1.01679867	787192.	-32042.
7.20000	2.65545452	780057.	-35296.
6.75000	9.24284579	782385.	-40361.

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 Load               Load                 Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
```

Pile No.	in Pile 1 Load 1		2 Load 2		lbs	inches	radians	lbs in-lbs
1	V, lb	1000.0000	M, in-lb	315600.	4200.	0.00616	-1.12E-04	-9581. 355020.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.08600	-0.00115	-24694. 811251.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.08597	-0.00115	-24692. 811211.

Maximum pile-head deflection = 0.0860011647 inches
Maximum pile-head rotation = -0.0011525686 radians = -0.066037 deg.

The analysis ended normally.

LATERAL LOAD (LPILE) ANALYSES
WESTBOUND PARKING AREA
LIGHT TOWER WR-8 (B-019-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-8 (Boring B-019-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

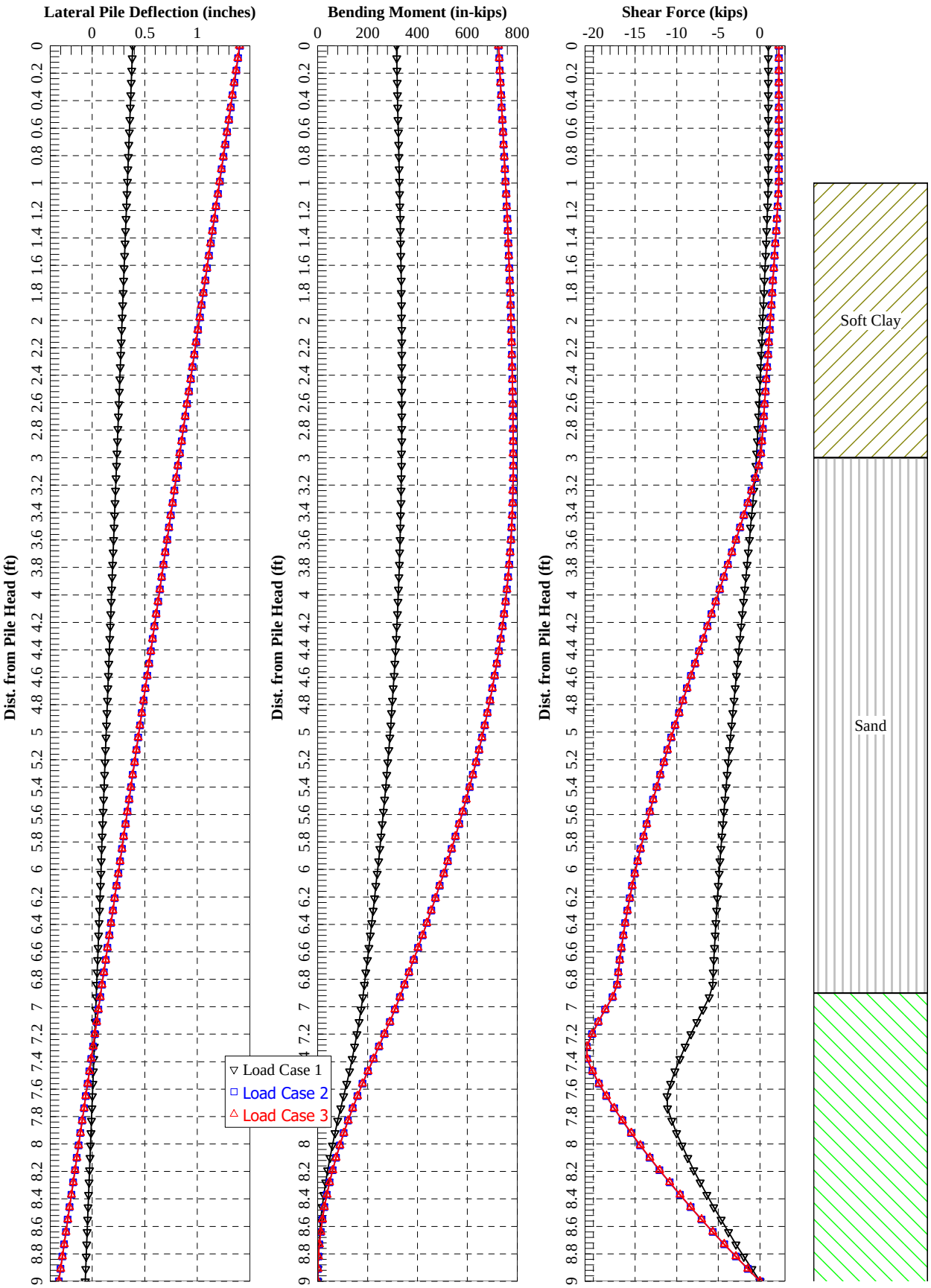


PLATE 359

==========

LPile for Version 2022-12.012

License ID : 228332755
License Type : (Single User License)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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S&ME, Inc.
Valley View, OH

==========

This model was prepared by:
BSears

Files Used for Analysis

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site 2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\WB\

Name of input data file:
Tower WR-8 (B-019-0-25).lp12d

Name of output report file:
Tower WR-8 (B-019-0-25).lp12o

Name of plot output file:
Tower WR-8 (B-019-0-25).lp12p

Name of runtime message file:
Tower WR-8 (B-019-0-25).lp12r

Date and Time of Analysis

Date: April 27, 2026 Time: 7:53:02

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower WR-8 (B-019-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	3.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

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

Distance from top of pile to top of layer	=	3.000000 ft
Distance from top of pile to bottom of layer	=	6.900000 ft
Effective unit weight at top of layer	=	58.000000 pcf
Effective unit weight at bottom of layer	=	58.000000 pcf
Friction angle at top of layer	=	31.000000 deg.
Friction angle at bottom of layer	=	31.000000 deg.
Subgrade k at top of layer	=	20.000000 pci
Subgrade k at bottom of layer	=	20.000000 pci

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	6.900000 ft
Distance from top of pile to bottom of layer	=	18.900000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Undrained cohesion at top of layer	=	3250. psf
Undrained cohesion at bottom of layer	=	3250. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

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

Distance from top of pile to top of layer	=	18.900000 ft
Distance from top of pile to bottom of layer	=	21.400000 ft
Effective unit weight at top of layer	=	66.000000 pcf

```
   Effective unit weight at bottom of layer            =    66.000000 pcf
   Friction angle at top of layer                      =    35.000000 deg.
   Friction angle at bottom of layer                   =    35.000000 deg.
   Subgrade k at top of layer                          =    60.000000 pci
   Subgrade k at bottom of layer                       =    60.000000 pci


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =    21.400000 ft
   Distance from top of pile to bottom of layer        =    25.900000 ft
   Effective unit weight at top of layer               =    60.000000 pcf
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


 (Depth of the lowest soil layer extends 16.900 ft below the pile tip)



--------------------------------------------------------------------------------
                        Summary of Input Soil Properties
--------------------------------------------------------------------------------

Layer         Soil Type          Layer      Effective    Cohesion     Angle of
 E50
 Num.           Name             Depth       Unit Wt.                  Friction
 or            kpy
          (p-y Curve Type)        ft           pcf          psf          deg.
 krm           pci
-----   -------------------   ----------   ----------   ----------   ----------
----------   ----------
  1             Soft              1.0000      98.0000     250.0000       --
0.02000       --
                Clay              3.0000      98.0000     250.0000       --
0.02000       --
  2             Sand              3.0000      58.0000       --          31.0000
 --           20.0000
          (Reese, et al.)         6.9000      58.0000       --          31.0000
 --           20.0000
  3           Stiff Clay          6.9000      60.0000        3250.       --
0.00500       --
          w/o Free Water         18.9000      60.0000        3250.       --
0.00500       --
  4             Sand             18.9000      66.0000       --          35.0000
 --           60.0000
          (Reese, et al.)        21.4000      66.0000       --          35.0000
```

```
 --          60.0000
  5         Stiff Clay           21.4000      60.0000        4500.       --
0.00400       --
          w/o Free Water         25.9000      60.0000        4500.       --
0.00400       --
```

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	Run Analysis
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.	Yes	Yes
2	1	V = 2250. lbs	M = 724800. in-lbs	4600.	Yes	Yes
3	1	V = 2250. lbs	M = 724800. in-lbs	3800.	Yes	Yes

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

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	9.000000 ft
Shaft Diameter	=	36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)	=	3.500000 in
Number of Reinforcing Bars	=	16 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	1018. sq. in.
Total Area of Reinforcing Steel	=	16.000000 sq. in.
Area Ratio of Steel Reinforcement	=	1.57 percent
Edge-to-Edge Bar Spacing	=	4.114467 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	5.49
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in
Transverse Reinforcement		
Type: Spiral		
Number of Transverse Reinf. (per spacing)	=	1
Spacing of Transverse Reinf.	=	4.500000 in
Yield Stress of Transverse Reinf.	=	60000. psi
Diameter of Transverse Reinf.	=	0.500000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	4366.378 kips
Tensile Load for Cracking of Concrete	=	-470.222 kips
Nominal Axial Tensile Capacity	=	-960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735

9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Curvature rad/in.	Bending Max Conc Stress ksi	Bending Max Steel Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
6.25000E-07	240.5062135	384809942.	19.2929823	0.00001206	-0.00001044	0.0505030	0.2746478	
0.00000125	480.1472468	384117797.	18.6479768	0.00002331	-0.00002169	0.0973082	0.5259142	
0.00000188	718.9174733	383422652.	18.4329804	0.00003456	-0.00003294	0.1438345	0.7771808	
0.00000250	956.8168886	382726755.	18.3254857	0.00004581	-0.00004419	0.1900818	1.0284477	
0.00000313	1194.	382030558.	18.2609917	0.00005707	-0.00005543	0.2360502	1.2797149	
0.00000375	1430.	381334209.	18.2179981	0.00006832	-0.00006668	0.2817396	1.5309823	
0.00000438	1665.	380637775.	18.1872904	0.00007957	-0.00007793	0.3271500	1.7822500	
0.00000500	1900.	379941287.	18.1642614	0.00009082	-0.00008918	0.3722815	2.0335179	
0.00000563	2133.	379244764.	18.1463515	0.0001021	-0.000100	0.4171340	2.2847861	
0.00000625	2366.	378548215.	18.1320251	0.0001133	-0.000112	0.4617075	2.5360546	
0.00000688	2366.	344134741.	10.2494785	0.00007047	-0.000177	0.2882187	-4.308598	C
0.00000750	2366.	315456846.	10.2198771	0.00007665	-0.000193	0.3129821	-4.706727	C
0.00000813	2366.	291190934.	10.1952302	0.00008284	-0.000210	0.3376758	-5.104761	C
0.00000875	2366.	270391582.	10.1744772	0.00008903	-0.000226	0.3622998	-5.502701	C
0.00000938	2366.	252365477.	10.1568402	0.00009522	-0.000242	0.3868539	-5.900547	C
0.00001000	2366.	236592634.	10.1417358	0.0001014	-0.000259	0.4113380	-6.298297	C
0.00001063	2366.	222675420.	10.1287027	0.0001076	-0.000275	0.4357521	-6.695951	C

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0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
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0.00002938        2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063        2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188        3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313        3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438        3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563        3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688        3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813        3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938        3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063        3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188        3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313        4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438        4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563        4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938        5502.     92665342.    10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
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0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
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 0.0001444        10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494        10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544        10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594        11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644        11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694        11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744        11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794        11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844        11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894        11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944        11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994        11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044        11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094        11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
 0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
3.9998812    -60.000000 CY
 0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
3.9969940    -60.000000 CY
 0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
3.9997138    -60.000000 CY
 0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
3.9955528    -60.000000 CY
 0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
3.9989818    -60.000000 CY
 0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
3.9994466    -60.000000 CY
 0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
3.9965160    -60.000000 CY
 0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
3.9991770    -60.000000 CY
 0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
3.9995775    -60.000000 CY
 0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
3.9954763    -60.000000 CY
 0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
3.9984997    -60.000000 CY
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    0.0002694         11961.      44401256.      8.9468563      0.0024101      -0.007287
   3.9998981    -60.000000 CY
    0.0002744         11976.      43648250.      8.9191370      0.0024472      -0.007430
   3.9944635    -60.000000 CY
    0.0003044         12062.      39628140.      8.7757363      0.0026711      -0.008286
   3.9984635    -60.000000 CY
    0.0003344         12138.      36300180.      8.6628609      0.0028966      -0.009141
   3.9998209    -60.000000 CY
    0.0003644         12207.      33502446.      8.5793723      0.0031261      -0.009991
   3.9999551    -60.000000 CYT
    0.0003944         12272.      31117026.      8.5161103      0.0033585      -0.010839
   3.9996166    -60.000000 CYT
    0.0004244         12331.      29056485.      8.4674428      0.0035934      -0.011684
   3.9972132    -60.000000 CYT
    0.0004544         12377.      27238942.      8.4178614      0.0038249      -0.012533
   3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
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  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
   0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
   0.2364034     1.2822044
   0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
   0.2820914     1.5334776
   0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
   0.3275005     1.7847511
   0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
   0.3726306     2.0360248
   0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
   0.4174818     2.2872988
   0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
   0.4620539     2.5385732
   0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
   0.2893429     -4.300617 C
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0.00000750         2366.    315456672.    10.2575513    0.00007693     -0.000193
0.3141325     -4.698533 C
0.00000813         2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235     -5.096560 C
0.00000875         2366.    270391433.    10.2068278    0.00008931     -0.000226
0.3634446     -5.494492 C
0.00000938         2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959     -5.892330 C
0.00001000         2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772     -6.290073 C
0.00001063         2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884     -6.687720 C
0.00001125         2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294     -7.085271 C
0.00001188         2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002     -7.482727 C
0.00001250         2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005     -7.880086 C
0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963     -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433     -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
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0.00002313        2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375        2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438        2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563        2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688        2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813        2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
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0.00003063        2894.     94499555.    10.0607664     0.0003081     -0.000794
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0.00003188        3009.     94403710.    10.0625387     0.0003207     -0.000827
1.2244416    -20.149010 C
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1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688        3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
0.00003813        3582.     93965057.    10.0754214     0.0003841     -0.000988
1.4400326    -24.085550 C
0.00003938        3697.     93883511.    10.0786392     0.0003968     -0.001021
1.4822550    -24.871565 C
0.00004063        3811.     93803541.    10.0820299     0.0004096     -0.001053
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0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
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0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
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0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
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1.8877721    -32.707231 C
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2.4714639    -45.146185 C
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2.5051976    -45.919366 C
0.00007438         6836.     91910797.    10.2120017     0.0007595     -0.001918
2.5386010    -46.692026 C
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2.9130226    -55.924331 C
0.00009438         8573.     90843621.    10.3077273     0.0009728     -0.002425
3.0266854    -58.985869 C
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3.1332951    -60.000000 CY
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3.3122821    -60.000000 CY
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3.4649106    -60.000000 CY
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3.5287895    -60.000000 CY
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3.5876602    -60.000000 CY
 0.0001344       10423.     77564670.    10.0227059     0.0013468     -0.003491
3.6428308    -60.000000 CY
 0.0001394       10554.     75720878.     9.9720357     0.0013899     -0.003628
3.6942550    -60.000000 CY
 0.0001444       10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494       10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
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3.8245440    -60.000000 CY
 0.0001594       11012.     69097838.     9.7838573     0.0015593     -0.004178
3.8578061    -60.000000 CY
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3.8866026    -60.000000 CY
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3.9121613    -60.000000 CY
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3.9820503    -60.000000 CY
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3.9972564    -60.000000 CY
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3.9998723    -60.000000 CY
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3.9975077    -60.000000 CY
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3.9998931    -60.000000 CY
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3.9970558    -60.000000 CY
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3.9997330    -60.000000 CY
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3.9990203    -60.000000 CY
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  3.9992468    -60.000000 CY
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  3.9965958    -60.000000 CY
   0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
  3.9992162    -60.000000 CY
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  3.9993713    -60.000000 CY
   0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
  3.9955701    -60.000000 CY
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  3.9985538    -60.000000 CY
   0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
  3.9999119    -60.000000 CY
   0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
  3.9942523    -60.000000 CY
   0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
  3.9985257    -60.000000 CY
   0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
  3.9998424    -60.000000 CY
   0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
  3.9999658    -60.000000 CYT
   0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
  3.9996505    -60.000000 CYT
   0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
  3.9973093    -60.000000 CYT
   0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
  3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
   0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
   0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
   0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
   0.1907908     1.0334154
   0.00000313        1194.     382029703.    18.3159341    0.00005724   -0.00005526
   0.2367565     1.2846940
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0.00000375        1430.    381333494.    18.2638891    0.00006849   -0.00006651
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0.3278510    1.7872522
0.00000500        1900.    379940746.    18.1988394    0.00009099   -0.00008901
0.3729798    2.0385317
0.00000563        2133.    379244280.    18.1771590     0.0001022     -0.000100
0.4178295    2.2898116
0.00000625        2366.    378547777.    18.1598165     0.0001135     -0.000112
0.4624003    2.5410917
0.00000688        2366.    344134343.    10.3291778    0.00007101     -0.000176
0.2904571    -4.292706 C
0.00000750        2366.    315456481.    10.2940289    0.00007721     -0.000193
0.3152465    -4.690597 C
0.00000813        2366.    291190598.    10.2646762    0.00008340     -0.000209
0.3399656    -5.088396 C
0.00000875        2366.    270391269.    10.2391817    0.00008959     -0.000225
0.3645893    -5.486283 C
0.00000938        2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378    -5.884113 C
0.00001000        2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162    -6.281848 C
0.00001063        2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246    -6.679488 C
0.00001125        2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628    -7.077032 C
0.00001188        2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307    -7.474480 C
0.00001250        2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282    -7.871831 C
0.00001313        2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552    -8.269087 C
0.00001375        2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117    -8.666245 C
0.00001438        2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974    -9.063307 C
0.00001500        2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124    -9.460271 C
0.00001563        2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565    -9.857138 C
0.00001625        2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296   -10.253907 C
0.00001688        2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316   -10.650577 C
0.00001750        2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624   -11.047150 C
0.00001813        2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219   -11.443623 C
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0.7489100   -11.839998 C
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0.00007188        6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313        6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
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0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
 0.0001544       10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594       11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644       11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694       11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744       11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794       11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844       11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894       11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944       11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994       11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044       11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
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 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
 0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
 0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
 0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
 0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
 0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
3.9974037    -60.000000 CYT
 0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
3.9878351    -60.000000 CYT


--------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
--------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
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Tens. No.	kips	in-kip	Strain	Strain
1	3.800	12169.214	0.00300000	-0.00952396
2	4.200	12173.120	0.00300000	-0.00952020
3	4.600	12177.027	0.00300000	-0.00951645

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.

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   2       0.90           4.200000        12173.      3.780000        10956.
70254444.
   3       0.90           4.600000        12177.      4.140000        10959.
70287179.
```

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	1.0000	0.00	N.A.	No	0.00	5338.
2	3.0000	1.9802	No	No	5338.	36809.
3	6.9000	1.3810	No	No	42147.	70788.
4	18.9000	17.9000	No	No	112935.	0.00
5	21.4000	20.4000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

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

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      0.00     0.3850    315600.  1000.0000   -0.00422       0.00   3.84E+11
0.00       0.00       0.00
   0.09000     0.3804    316699.   999.9998   -0.00422       0.00   3.84E+11
0.00       0.00       0.00
    0.1800     0.3758    317798.  1000.0000   -0.00422       0.00   3.84E+11
0.00       0.00       0.00
    0.2700     0.3713    318897.      1000.   -0.00422       0.00   3.84E+11
0.00       0.00       0.00
    0.3600     0.3667    319997.      1000.   -0.00422       0.00   3.84E+11
0.00       0.00       0.00
    0.4500     0.3622    321096.      1000.   -0.00422       0.00   3.84E+11
0.00       0.00       0.00
    0.5400     0.3576    322195.      1000.   -0.00421       0.00   3.84E+11
0.00       0.00       0.00
    0.6300     0.3531    323294.      1000.   -0.00421       0.00   3.84E+11
0.00       0.00       0.00
    0.7200     0.3485    324393.      1000.   -0.00421       0.00   3.84E+11
0.00       0.00       0.00
    0.8100     0.3440    325492.      1000.   -0.00421       0.00   3.84E+11
0.00       0.00       0.00
    0.9000     0.3394    326591.      1000.   -0.00421       0.00   3.84E+11
0.00       0.00       0.00
    0.9900     0.3349    327690.      1000.   -0.00421       0.00   3.84E+11
0.00       0.00       0.00
    1.0800     0.3303    328789.   970.8021   -0.00421       0.00   3.84E+11
-54.070   176.7794       0.00
    1.1700     0.3258    329825.   912.0608   -0.00421       0.00   3.84E+11
-54.710   181.3663       0.00
    1.2600     0.3212    330798.   852.6344   -0.00421       0.00   3.84E+11
-55.339   186.0468       0.00
    1.3500     0.3167    331705.   792.5344   -0.00421       0.00   3.84E+11
-55.957   190.8244       0.00
    1.4400     0.3122    332548.   731.7725   -0.00421       0.00   3.84E+11
-56.565   195.7027       0.00
    1.5300     0.3076    333324.   670.3606   -0.00420       0.00   3.84E+11
-57.161   200.6854       0.00
    1.6200     0.3031    334034.   608.3108   -0.00420       0.00   3.84E+11
-57.746   205.7765       0.00
    1.7100     0.2985    334676.   545.6353   -0.00420       0.00   3.84E+11
-58.320   210.9803       0.00
    1.8000     0.2940    335250.   482.3468   -0.00420       0.00   3.84E+11
-58.881   216.3011       0.00
    1.8900     0.2895    335756.   418.4579   -0.00420       0.00   3.84E+11
-59.431   221.7435       0.00
    1.9800     0.2849    336192.   353.9816   -0.00420       0.00   3.84E+11
-59.969   227.3127       0.00
    2.0700     0.2804    336559.   288.9310   -0.00420       0.00   3.84E+11
-60.495   233.0137       0.00
    2.1600     0.2759    336855.   223.3196   -0.00420       0.00   3.84E+11
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-61.008   238.8521       0.00
    2.2500     0.2713    337079.   157.1611   -0.00420       0.00   3.84E+11
-61.508   244.8338       0.00
    2.3400     0.2668    337232.    90.4695   -0.00420       0.00   3.84E+11
-61.995   250.9649       0.00
    2.4300     0.2623    337313.    23.2590   -0.00420       0.00   3.84E+11
-62.469   257.2521       0.00
    2.5200     0.2577    337320.    -44.456   -0.00419       0.00   3.84E+11
-62.929   263.7024       0.00
    2.6100     0.2532    337255.   -112.660   -0.00419       0.00   3.84E+11
-63.375   270.3233       0.00
    2.7000     0.2487    337115.   -181.339   -0.00419       0.00   3.84E+11
-63.808   277.1227       0.00
    2.7900     0.2441    336901.   -250.477   -0.00419       0.00   3.84E+11
-64.225   284.1091       0.00
    2.8800     0.2396    336612.   -320.058   -0.00419       0.00   3.84E+11
-64.628   291.2916       0.00
    2.9700     0.2351    336248.   -390.066   -0.00419       0.00   3.84E+11
-65.016   298.6798       0.00
    3.0600     0.2306    335808.   -486.731   -0.00419       0.00   3.84E+11
-113.993   533.9520       0.00
    3.1500     0.2260    335234.   -611.272   -0.00419       0.00   3.84E+11
-116.639   557.2800       0.00
    3.2400     0.2215    334525.   -738.567   -0.00419       0.00   3.84E+11
-119.091   580.6080       0.00
    3.3300     0.2170    333677.   -868.403   -0.00419       0.00   3.84E+11
-121.348   603.9360       0.00
    3.4200     0.2125    332688.     -1001.   -0.00418       0.00   3.84E+11
-123.410   627.2640       0.00
    3.5100     0.2080    331554.     -1135.   -0.00418       0.00   3.84E+11
-125.277   650.5920       0.00
    3.6000     0.2034    330274.     -1271.   -0.00418       0.00   3.84E+11
-126.950   673.9200       0.00
    3.6900     0.1989    328846.     -1409.   -0.00418       0.00   3.84E+11
-128.428   697.2480       0.00
    3.7800     0.1944    327269.     -1548.   -0.00418       0.00   3.84E+11
-129.712   720.5760       0.00
    3.8700     0.1899    325540.     -1689.   -0.00418       0.00   3.84E+11
-130.802   743.9040       0.00
    3.9600     0.1854    323658.     -1831.   -0.00418       0.00   3.84E+11
-131.697   767.2320       0.00
    4.0500     0.1809    321623.     -1973.   -0.00418       0.00   3.84E+11
-132.398   790.5600       0.00
    4.1400     0.1764    319434.     -2117.   -0.00418       0.00   3.84E+11
-132.904   813.8880       0.00
    4.2300     0.1718    317089.     -2260.   -0.00418       0.00   3.84E+11
-133.217   837.2160       0.00
    4.3200     0.1673    314589.     -2404.   -0.00418       0.00   3.84E+11
-133.335   860.5440       0.00
    4.4100     0.1628    311934.     -2548.   -0.00417       0.00   3.84E+11
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4.5900	0.1538	306157.	-2835.	-0.00417	0.00	3.85E+11
-132.526	930.5280	0.00				
4.6800	0.1493	303036.	-2978.	-0.00417	0.00	3.85E+11
-131.868	953.8560	0.00				
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-131.017	977.1840	0.00				
4.8600	0.1403	296334.	-3261.	-0.00417	0.00	3.85E+11
-129.971	1001.	0.00				
4.9500	0.1358	292756.	-3401.	-0.00417	0.00	3.85E+11
-128.732	1024.	0.00				
5.0400	0.1313	289027.	-3539.	-0.00417	0.00	3.85E+11
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-68.436	1467.	0.00				
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-63.330	1490.	0.00				
6.8400	0.04140	187138.	-5679.	-0.00416	0.00	3.85E+11
-58.031	1514.	0.00				
6.9300	0.03692	180989.	-6094.	-0.00415	0.00	3.85E+11
-710.076	20774.	0.00				
7.0200	0.03243	174012.	-6851.	-0.00415	0.00	3.85E+11
-690.989	23012.	0.00				
7.1100	0.02794	166229.	-7585.	-0.00415	0.00	3.85E+11
-669.155	25863.	0.00				
7.2000	0.02346	157665.	-8294.	-0.00415	0.00	3.85E+11
-643.774	29640.	0.00				
7.2900	0.01897	148351.	-8973.	-0.00415	0.00	3.85E+11
-613.595	34929.	0.00				
7.3800	0.01449	138321.	-9616.	-0.00415	0.00	3.85E+11
-576.457	42973.	0.00				
7.4700	0.01000	127618.	-10212.	-0.00415	0.00	3.85E+11
-528.061	57012.	0.00				
7.5600	0.00552	116300.	-10744.	-0.00415	0.00	3.85E+11
-457.255	89473.	0.00				
7.6500	0.00104	104448.	-11154.	-0.00415	0.00	3.85E+11
-301.575	314453.	0.00				
7.7400	-0.00345	92245.	-11095.	-0.00415	0.00	3.85E+11
411.2722	128839.	0.00				
7.8300	-0.00793	80521.	-10598.	-0.00415	0.00	3.85E+11
508.6840	69274.	0.00				
7.9200	-0.01241	69390.	-10015.	-0.00415	0.00	3.85E+11
571.6692	49737.	0.00				
8.0100	-0.01690	58927.	-9371.	-0.00415	0.00	3.85E+11
620.4357	39659.	0.00				
8.1000	-0.02138	49187.	-8679.	-0.00415	0.00	3.85E+11
661.1913	33402.	0.00				
8.1900	-0.02586	40218.	-7946.	-0.00415	0.00	3.85E+11
696.7420	29098.	0.00				
8.2800	-0.03034	32062.	-7176.	-0.00415	0.00	3.85E+11
728.6150	25934.	0.00				
8.3700	-0.03482	24756.	-6373.	-0.00415	0.00	3.85E+11
757.7406	23499.	0.00				
8.4600	-0.03931	18333.	-5540.	-0.00415	0.00	3.85E+11
784.7305	21562.	0.00				
8.5500	-0.04379	12826.	-4679.	-0.00415	0.00	3.85E+11
810.0099	19978.	0.00				
8.6400	-0.04827	8264.	-3792.	-0.00415	0.00	3.85E+11
833.8873	18657.	0.00				
8.7300	-0.05275	4674.	-2879.	-0.00415	0.00	3.85E+11
856.5938	17537.	0.00				
8.8200	-0.05723	2083.	-1942.	-0.00415	0.00	3.85E+11
878.3072	16574.	0.00				
8.9100	-0.06172	517.3053	-981.966	-0.00415	0.00	3.85E+11

```
899.1679     15735.       0.00
    9.0000   -0.06620       0.00       0.00   -0.00415       0.00   3.85E+11
919.2882      7499.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.38495326 inches
Computed slope at pile head      =     -0.0042200 radians
Maximum bending moment           =        337320. inch-lbs
Maximum shear force              =        -11154. lbs
Depth of maximum bending moment  =     2.52000000 feet below pile head
Depth of maximum shear force     =     7.65000000 feet below pile head
Number of iterations             =             26
Number of zero deflection points =              1
Pile deflection at ground        =     0.33437326 inches



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

Boundary Condition Type 1, Shear and Moment

Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.38495326       337320.       -11154.
    8.55000    0.52821548       336108.       -10358.
    8.10000    0.71274401       335973.        -9330.
    7.65000    1.00855041       335961.        -9095.
    7.20000    1.70609285       335422.        -9475.
    6.75000    3.39234533       337001.       -11457.


--------------------------------------------------------------------------------
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Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 4600.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	1.4044	724800.	2250.	-0.01606	0.00	3.83E+11	0.00	0.00	0.00
0.09000	1.3870	727310.	2250.	-0.01605	0.00	3.83E+11	0.00	0.00	0.00
0.1800	1.3697	729820.	2250.	-0.01605	0.00	3.83E+11	0.00	0.00	0.00
0.2700	1.3523	732329.	2250.	-0.01605	0.00	3.83E+11	0.00	0.00	0.00
0.3600	1.3350	734839.	2250.	-0.01605	0.00	3.83E+11	0.00	0.00	0.00
0.4500	1.3177	737349.	2250.	-0.01605	0.00	3.83E+11	0.00	0.00	0.00
0.5400	1.3003	739858.	2250.	-0.01604	0.00	3.83E+11	0.00	0.00	0.00
0.6300	1.2830	742368.	2250.	-0.01604	0.00	3.83E+11	0.00	0.00	0.00
0.7200	1.2657	744878.	2250.	-0.01604	0.00	3.83E+11	0.00	0.00	0.00
0.8100	1.2484	747388.	2250.	-0.01604	0.00	3.83E+11	0.00	0.00	0.00
0.9000	1.2311	749897.	2250.	-0.01604	0.00	3.83E+11	0.00	0.00	0.00
0.9900	1.2137	752407.	2250.	-0.01603	0.00	3.83E+11	0.00	0.00	0.00
1.0800	1.1964	754917.	2205.	-0.01603	0.00	3.83E+11	-83.036	74.9559	0.00
1.1700	1.1791	757329.	2115.	-0.01603	0.00	3.83E+11	-83.998	76.9378	0.00
1.2600	1.1618	759644.	2024.	-0.01603	0.00	3.83E+11	-84.943	78.9625	0.00
1.3500	1.1445	761860.	1931.	-0.01603	0.00	3.83E+11	-85.870	81.0316	0.00

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    1.4400     1.1272    763975.      1838.   -0.01602       0.00   3.83E+11
-86.779    83.1469       0.00
    1.5300     1.1099    765990.      1744.   -0.01602       0.00   3.83E+11
-87.670    85.3103       0.00
    1.6200     1.0926    767902.      1649.   -0.01602       0.00   3.83E+11
-88.543    87.5236       0.00
    1.7100     1.0753    769710.      1553.   -0.01602       0.00   3.83E+11
-89.396    89.7890       0.00
    1.8000     1.0580    771415.      1456.   -0.01601       0.00   3.83E+11
-90.230    92.1085       0.00
    1.8900     1.0407    773014.      1358.   -0.01601       0.00   3.83E+11
-91.045    94.4846       0.00
    1.9800     1.0234    774507.      1259.   -0.01601       0.00   3.83E+11
-91.839    96.9197       0.00
    2.0700     1.0061    775893.      1160.   -0.01601       0.00   3.83E+11
-92.614    99.4163       0.00
    2.1600     0.9888    777171.      1059.   -0.01601       0.00   3.83E+11
-93.367   101.9772       0.00
    2.2500     0.9715    778340.   957.9091   -0.01600       0.00   3.83E+11
-94.099   104.6053       0.00
    2.3400     0.9542    779399.   855.8987   -0.01600       0.00   3.83E+11
-94.809   107.3039       0.00
    2.4300     0.9370    780348.   753.1331   -0.01600       0.00   3.83E+11
-95.497   110.0761       0.00
    2.5200     0.9197    781185.   649.6365   -0.01600       0.00   3.83E+11
-96.163   112.9256       0.00
    2.6100     0.9024    781910.   545.4337   -0.01599       0.00   3.83E+11
-96.805   115.8561       0.00
    2.7000     0.8851    782522.   440.5501   -0.01599       0.00   3.83E+11
-97.424   118.8717       0.00
    2.7900     0.8679    783020.   335.0115   -0.01599       0.00   3.83E+11
-98.018   121.9769       0.00
    2.8800     0.8506    783404.   228.8445   -0.01599       0.00   3.83E+11
-98.587   125.1761       0.00
    2.9700     0.8333    783673.   122.0764   -0.01599       0.00   3.83E+11
-99.131   128.4746       0.00
    3.0600     0.8161    783827.   -146.039   -0.01598       0.00   3.83E+11
-397.378   525.8990       0.00
    3.1500     0.7988    783517.   -580.309   -0.01598       0.00   3.83E+11
-406.826   550.0372       0.00
    3.2400     0.7815    782732.     -1025.   -0.01598       0.00   3.83E+11
-416.047   574.9257       0.00
    3.3300     0.7643    781462.     -1479.   -0.01598       0.00   3.83E+11
-425.031   600.6014       0.00
    3.4200     0.7470    779697.     -1943.   -0.01598       0.00   3.83E+11
-433.768   627.1050       0.00
    3.5100     0.7298    777425.     -2414.   -0.01597       0.00   3.83E+11
-439.621   650.5920       0.00
    3.6000     0.7125    774641.     -2892.   -0.01597       0.00   3.83E+11
-444.621   673.9200       0.00
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    3.6900     0.6953    771338.     -3374.   -0.01597       0.00   3.83E+11
-448.877   697.2480       0.00
    3.7800     0.6780    767511.     -3861.   -0.01597       0.00   3.83E+11
-452.389   720.5760       0.00
    3.8700     0.6608    763157.     -4351.   -0.01596       0.00   3.83E+11
-455.158   743.9040       0.00
    3.9600     0.6436    758272.     -4844.   -0.01596       0.00   3.83E+11
-457.184   767.2320       0.00
    4.0500     0.6263    752853.     -5338.   -0.01596       0.00   3.83E+11
-458.467   790.5600       0.00
    4.1400     0.6091    746900.     -5834.   -0.01596       0.00   3.83E+11
-459.006   813.8880       0.00
    4.2300     0.5919    740411.     -6329.   -0.01596       0.00   3.83E+11
-458.803   837.2160       0.00
    4.3200     0.5746    733387.     -6824.   -0.01595       0.00   3.83E+11
-457.857   860.5440       0.00
    4.4100     0.5574    725830.     -7318.   -0.01595       0.00   3.83E+11
-456.169   883.8720       0.00
    4.5000     0.5402    717740.     -7809.   -0.01595       0.00   3.83E+11
-453.738   907.2000       0.00
    4.5900     0.5229    709121.     -8297.   -0.01595       0.00   3.83E+11
-450.565   930.5280       0.00
    4.6800     0.5057    699976.     -8782.   -0.01595       0.00   3.83E+11
-446.650   953.8560       0.00
    4.7700     0.4885    690310.     -9262.   -0.01594       0.00   3.83E+11
-441.993   977.1840       0.00
    4.8600     0.4713    680129.     -9736.   -0.01594       0.00   3.84E+11
-436.594      1001.       0.00
    4.9500     0.4541    669438.    -10204.   -0.01594       0.00   3.84E+11
-430.452      1024.       0.00
    5.0400     0.4368    658246.    -10666.   -0.01594       0.00   3.84E+11
-423.569      1047.       0.00
    5.1300     0.4196    646559.    -11119.   -0.01594       0.00   3.84E+11
-415.945      1070.       0.00
    5.2200     0.4024    634387.    -11564.   -0.01593       0.00   3.84E+11
-407.579      1094.       0.00
    5.3100     0.3852    621740.    -11999.   -0.01593       0.00   3.84E+11
-398.471      1117.       0.00
    5.4000     0.3680    608628.    -12424.   -0.01593       0.00   3.84E+11
-388.622      1140.       0.00
    5.4900     0.3508    595063.    -12838.   -0.01593       0.00   3.84E+11
-378.032      1164.       0.00
    5.5800     0.3336    581057.    -13240.   -0.01593       0.00   3.84E+11
-366.700      1187.       0.00
    5.6700     0.3164    566623.    -13630.   -0.01593       0.00   3.84E+11
-354.628      1210.       0.00
    5.7600     0.2992    551775.    -14006.   -0.01592       0.00   3.84E+11
-341.814      1234.       0.00
    5.8500     0.2820    536529.    -14367.   -0.01592       0.00   3.84E+11
-328.259      1257.       0.00
```

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    5.9400     0.2648    520899.    -14714.   -0.01592       0.00   3.84E+11
-313.963      1280.       0.00
    6.0300     0.2476    504904.    -15045.   -0.01592       0.00   3.84E+11
-298.926      1304.       0.00
    6.1200     0.2304    488560.    -15360.   -0.01592       0.00   3.84E+11
-283.148      1327.       0.00
    6.2100     0.2132    471886.    -15656.   -0.01592       0.00   3.84E+11
-266.630      1350.       0.00
    6.3000     0.1960    454900.    -15935.   -0.01592       0.00   3.84E+11
-249.370      1374.       0.00
    6.3900     0.1789    437624.    -16195.   -0.01591       0.00   3.84E+11
-231.370      1397.       0.00
    6.4800     0.1617    420078.    -16434.   -0.01591       0.00   3.84E+11
-212.629      1420.       0.00
    6.5700     0.1445    402284.    -16654.   -0.01591       0.00   3.84E+11
-193.147      1444.       0.00
    6.6600     0.1273    384264.    -16851.   -0.01591       0.00   3.84E+11
-172.925      1467.       0.00
    6.7500     0.1101    366043.    -17027.   -0.01591       0.00   3.84E+11
-151.962      1490.       0.00
    6.8400    0.09293    347645.    -17179.   -0.01591       0.00   3.84E+11
-130.257      1514.       0.00
    6.9300    0.07575    329094.    -17708.   -0.01591       0.00   3.84E+11
-849.903     12117.       0.00
    7.0200    0.05857    309553.    -18600.   -0.01591       0.00   3.84E+11
-801.087     14771.       0.00
    7.1100    0.04139    289077.    -19431.   -0.01591       0.00   3.85E+11
-738.260     19262.       0.00
    7.2000    0.02422    267740.    -20180.   -0.01591       0.00   3.85E+11
-648.923     28941.       0.00
    7.2900    0.00704    245645.    -20789.   -0.01590       0.00   3.85E+11
-478.748     73461.       0.00
    7.3800   -0.01014    222993.    -20763.   -0.01590       0.00   3.85E+11
527.5264     56195.       0.00
    7.4700   -0.02731    200956.    -20111.   -0.01590       0.00   3.85E+11
679.1230     26852.       0.00
    7.5600   -0.04449    179711.    -19328.   -0.01590       0.00   3.85E+11
771.0209     18717.       0.00
    7.6500   -0.06167    159365.    -18458.   -0.01590       0.00   3.85E+11
840.7360     14725.       0.00
    7.7400   -0.07884    140000.    -17519.   -0.01590       0.00   3.85E+11
898.4164     12307.       0.00
    7.8300   -0.09601    121683.    -16521.   -0.01590       0.00   3.85E+11
948.4340     10668.       0.00
    7.9200     -0.113    104472.    -15473.   -0.01590       0.00   3.85E+11
993.1057      9476.       0.00
    8.0100     -0.130     88419.    -14378.   -0.01590       0.00   3.85E+11
1034.      8565.       0.00
    8.1000     -0.148     73572.    -13242.   -0.01590       0.00   3.85E+11
1071.      7844.       0.00
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    8.1900     -0.165     59975.    -12065.   -0.01590       0.00   3.85E+11
1107.      7257.       0.00
    8.2800     -0.182     47669.    -10852.   -0.01590       0.00   3.85E+11
1140.      6769.       0.00
    8.3700     -0.199     36693.     -9604.   -0.01590       0.00   3.85E+11
1172.      6356.       0.00
    8.4600     -0.216     27083.     -8322.   -0.01590       0.00   3.85E+11
1202.      6002.       0.00
    8.5500     -0.233     18874.     -7009.   -0.01590       0.00   3.85E+11
1231.      5695.       0.00
    8.6400     -0.251     12101.     -5665.   -0.01590       0.00   3.85E+11
1259.      5425.       0.00
    8.7300     -0.268      6796.     -4291.   -0.01590       0.00   3.85E+11
1286.      5186.       0.00
    8.8200     -0.285      2991.     -2888.   -0.01590       0.00   3.85E+11
1312.      4973.       0.00
    8.9100     -0.302   715.4561     -1458.   -0.01590       0.00   3.85E+11
1337.      4781.       0.00
    9.0000     -0.319       0.00       0.00   -0.01590       0.00   3.85E+11
1362.      2304.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     1.40435526 inches
Computed slope at pile head      =     -0.0160569 radians
Maximum bending moment           =        783827. inch-lbs
Maximum shear force              =        -20789. lbs
Depth of maximum bending moment  =     3.06000000 feet below pile head
Depth of maximum shear force     =     7.29000000 feet below pile head
Number of iterations             =             32
Number of zero deflection points =              1
Pile deflection at ground        =     1.21181005 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
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```
Moment     =          724800. in-lbs
Axial Load =            4600. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    1.40435526       783827.       -20789.
    8.55000    2.00332765       780764.       -20709.
    8.10000    3.48051484       780387.       -21788.
    7.65000   12.34446237       788409.       -26143.


--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 3
--------------------------------------------------------------------------------

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

Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       3800.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00     1.4008    724800.      2250.   -0.01601       0.00   3.83E+11
0.00       0.00       0.00
   0.09000     1.3835    727296.      2250.   -0.01601       0.00   3.83E+11
0.00       0.00       0.00
    0.1800     1.3663    729791.      2250.   -0.01601       0.00   3.83E+11
0.00       0.00       0.00
    0.2700     1.3490    732287.      2250.   -0.01601       0.00   3.83E+11
0.00       0.00       0.00
    0.3600     1.3317    734783.      2250.   -0.01601       0.00   3.83E+11
0.00       0.00       0.00
    0.4500     1.3144    737279.      2250.   -0.01600       0.00   3.83E+11
0.00       0.00       0.00
    0.5400     1.2971    739774.      2250.   -0.01600       0.00   3.83E+11
0.00       0.00       0.00
    0.6300     1.2798    742270.      2250.   -0.01600       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     1.2626    744766.      2250.   -0.01600       0.00   3.83E+11
```

```
0.00       0.00       0.00
    0.8100     1.2453    747261.      2250.   -0.01600       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     1.2280    749757.      2250.   -0.01599       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     1.2107    752252.      2250.   -0.01599       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     1.1935    754748.      2205.   -0.01599       0.00   3.83E+11
-82.967    75.0798       0.00
    1.1700     1.1762    757147.      2115.   -0.01599       0.00   3.83E+11
-83.929    77.0648       0.00
    1.2600     1.1589    759448.      2024.   -0.01598       0.00   3.83E+11
-84.873    79.0926       0.00
    1.3500     1.1417    761650.      1932.   -0.01598       0.00   3.83E+11
-85.799    81.1650       0.00
    1.4400     1.1244    763752.      1839.   -0.01598       0.00   3.83E+11
-86.708    83.2836       0.00
    1.5300     1.1071    765752.      1744.   -0.01598       0.00   3.83E+11
-87.598    85.4503       0.00
    1.6200     1.0899    767651.      1649.   -0.01598       0.00   3.83E+11
-88.470    87.6671       0.00
    1.7100     1.0726    769446.      1553.   -0.01597       0.00   3.83E+11
-89.323    89.9360       0.00
    1.8000     1.0554    771137.      1456.   -0.01597       0.00   3.83E+11
-90.157    92.2591       0.00
    1.8900     1.0381    772723.      1359.   -0.01597       0.00   3.83E+11
-90.971    94.6389       0.00
    1.9800     1.0209    774203.      1260.   -0.01597       0.00   3.83E+11
-91.765    97.0776       0.00
    2.0700     1.0036    775576.      1160.   -0.01597       0.00   3.83E+11
-92.538    99.5780       0.00
    2.1600     0.9864    776841.      1060.   -0.01596       0.00   3.83E+11
-93.291   102.1428       0.00
    2.2500     0.9692    777997.   958.9690   -0.01596       0.00   3.83E+11
-94.023   104.7749       0.00
    2.3400     0.9519    779043.   857.0411   -0.01596       0.00   3.83E+11
-94.733   107.4775       0.00
    2.4300     0.9347    779979.   754.3585   -0.01596       0.00   3.83E+11
-95.420   110.2539       0.00
    2.5200     0.9175    780804.   650.9453   -0.01595       0.00   3.83E+11
-96.086   113.1076       0.00
    2.6100     0.9002    781516.   546.8264   -0.01595       0.00   3.83E+11
-96.727   116.0425       0.00
    2.7000     0.8830    782116.   442.0269   -0.01595       0.00   3.83E+11
-97.346   119.0625       0.00
    2.7900     0.8658    782602.   336.5729   -0.01595       0.00   3.83E+11
-97.940   122.1722       0.00
    2.8800     0.8486    782973.   230.4908   -0.01595       0.00   3.83E+11
-98.509   125.3761       0.00
    2.9700     0.8313    783230.   123.8078   -0.01594       0.00   3.83E+11
```

```
-99.052   128.6794       0.00
    3.0600     0.8141    783372.   -144.084   -0.01594       0.00   3.83E+11
-397.043   526.7082       0.00
    3.1500     0.7969    783050.   -577.990   -0.01594       0.00   3.83E+11
-406.488   550.8867       0.00
    3.2400     0.7797    782254.     -1022.   -0.01594       0.00   3.83E+11
-415.706   575.8168       0.00
    3.3300     0.7625    780973.     -1476.   -0.01593       0.00   3.83E+11
-424.687   601.5355       0.00
    3.4200     0.7453    779197.     -1939.   -0.01593       0.00   3.83E+11
-432.857   627.2640       0.00
    3.5100     0.7281    776916.     -2409.   -0.01593       0.00   3.83E+11
-438.590   650.5920       0.00
    3.6000     0.7109    774124.     -2886.   -0.01593       0.00   3.83E+11
-443.582   673.9200       0.00
    3.6900     0.6937    770814.     -3367.   -0.01593       0.00   3.83E+11
-447.832   697.2480       0.00
    3.7800     0.6765    766981.     -3853.   -0.01592       0.00   3.83E+11
-451.340   720.5760       0.00
    3.8700     0.6593    762622.     -4342.   -0.01592       0.00   3.83E+11
-454.107   743.9040       0.00
    3.9600     0.6421    757734.     -4833.   -0.01592       0.00   3.83E+11
-456.133   767.2320       0.00
    4.0500     0.6249    752313.     -5327.   -0.01592       0.00   3.83E+11
-457.417   790.5600       0.00
    4.1400     0.6077    746359.     -5821.   -0.01592       0.00   3.83E+11
-457.961   813.8880       0.00
    4.2300     0.5905    739871.     -6315.   -0.01591       0.00   3.83E+11
-457.763   837.2160       0.00
    4.3200     0.5733    732849.     -6809.   -0.01591       0.00   3.83E+11
-456.826   860.5440       0.00
    4.4100     0.5561    725294.     -7302.   -0.01591       0.00   3.83E+11
-455.147   883.8720       0.00
    4.5000     0.5390    717208.     -7792.   -0.01591       0.00   3.83E+11
-452.728   907.2000       0.00
    4.5900     0.5218    708594.     -8279.   -0.01590       0.00   3.83E+11
-449.569   930.5280       0.00
    4.6800     0.5046    699455.     -8763.   -0.01590       0.00   3.83E+11
-445.670   953.8560       0.00
    4.7700     0.4874    689797.     -9241.   -0.01590       0.00   3.83E+11
-441.030   977.1840       0.00
    4.8600     0.4703    679624.     -9715.   -0.01590       0.00   3.84E+11
-435.651      1001.       0.00
    4.9500     0.4531    668944.    -10182.   -0.01590       0.00   3.84E+11
-429.531      1024.       0.00
    5.0400     0.4359    657762.    -10642.   -0.01590       0.00   3.84E+11
-422.672      1047.       0.00
    5.1300     0.4188    646087.    -11095.   -0.01589       0.00   3.84E+11
-415.073      1070.       0.00
    5.2200     0.4016    633928.    -11538.   -0.01589       0.00   3.84E+11
```

-406.735	1094.	0.00				
5.3100	0.3844	621295.	-11973.	-0.01589	0.00	3.84E+11
-397.657	1117.	0.00				
5.4000	0.3673	608197.	-12397.	-0.01589	0.00	3.84E+11
-387.840	1140.	0.00				
5.4900	0.3501	594648.	-12810.	-0.01589	0.00	3.84E+11
-377.283	1164.	0.00				
5.5800	0.3330	580658.	-13211.	-0.01588	0.00	3.84E+11
-365.988	1187.	0.00				
5.6700	0.3158	566241.	-13600.	-0.01588	0.00	3.84E+11
-353.953	1210.	0.00				
5.7600	0.2987	551412.	-13976.	-0.01588	0.00	3.84E+11
-341.179	1234.	0.00				
5.8500	0.2815	536185.	-14337.	-0.01588	0.00	3.84E+11
-327.665	1257.	0.00				
5.9400	0.2643	520575.	-14683.	-0.01588	0.00	3.84E+11
-313.413	1280.	0.00				
6.0300	0.2472	504600.	-15013.	-0.01588	0.00	3.84E+11
-298.422	1304.	0.00				
6.1200	0.2301	488277.	-15327.	-0.01588	0.00	3.84E+11
-282.692	1327.	0.00				
6.2100	0.2129	471624.	-15624.	-0.01587	0.00	3.84E+11
-266.223	1350.	0.00				
6.3000	0.1958	454660.	-15902.	-0.01587	0.00	3.84E+11
-249.016	1374.	0.00				
6.3900	0.1786	437406.	-16161.	-0.01587	0.00	3.84E+11
-231.069	1397.	0.00				
6.4800	0.1615	419882.	-16400.	-0.01587	0.00	3.84E+11
-212.384	1420.	0.00				
6.5700	0.1443	402111.	-16619.	-0.01587	0.00	3.84E+11
-192.960	1444.	0.00				
6.6600	0.1272	384115.	-16817.	-0.01587	0.00	3.84E+11
-172.797	1467.	0.00				
6.7500	0.1101	365917.	-16992.	-0.01587	0.00	3.84E+11
-151.895	1490.	0.00				
6.8400	0.09293	347542.	-17145.	-0.01587	0.00	3.84E+11
-130.255	1514.	0.00				
6.9300	0.07580	329015.	-17674.	-0.01587	0.00	3.84E+11
-850.028	12112.	0.00				
7.0200	0.05866	309497.	-18566.	-0.01586	0.00	3.85E+11
-801.398	14754.	0.00				
7.1100	0.04153	289043.	-19397.	-0.01586	0.00	3.85E+11
-738.870	19214.	0.00				
7.2000	0.02440	267728.	-20147.	-0.01586	0.00	3.85E+11
-650.148	28779.	0.00				
7.2900	0.00727	245655.	-20759.	-0.01586	0.00	3.85E+11
-482.608	71721.	0.00				
7.3800	-0.00986	223019.	-20737.	-0.01586	0.00	3.85E+11
523.9093	57366.	0.00				
7.4700	-0.02699	200994.	-20088.	-0.01586	0.00	3.85E+11

```
677.1152     27091.       0.00
    7.5600   -0.04412    179758.    -19307.   -0.01586       0.00   3.85E+11
769.4224     18833.       0.00
    7.6500   -0.06125    159420.    -18438.   -0.01586       0.00   3.85E+11
839.3212     14799.       0.00
    7.7400   -0.07838    140061.    -17501.   -0.01586       0.00   3.85E+11
897.1024     12361.       0.00
    7.8300   -0.09551    121749.    -16505.   -0.01586       0.00   3.85E+11
947.1809     10711.       0.00
    7.9200     -0.113    104541.    -15458.   -0.01586       0.00   3.85E+11
991.8913      9511.       0.00
    8.0100     -0.130     88490.    -14365.   -0.01586       0.00   3.85E+11
1033.      8594.       0.00
    8.1000     -0.147     73644.    -13229.   -0.01586       0.00   3.85E+11
1070.      7869.       0.00
    8.1900     -0.164     60046.    -12054.   -0.01586       0.00   3.85E+11
1106.      7280.       0.00
    8.2800     -0.181     47737.    -10842.   -0.01586       0.00   3.85E+11
1139.      6790.       0.00
    8.3700     -0.198     36757.     -9595.   -0.01586       0.00   3.85E+11
1170.      6375.       0.00
    8.4600     -0.215     27142.     -8315.   -0.01586       0.00   3.85E+11
1201.      6019.       0.00
    8.5500     -0.233     18927.     -7003.   -0.01586       0.00   3.85E+11
1229.      5711.       0.00
    8.6400     -0.250     12146.     -5660.   -0.01586       0.00   3.85E+11
1257.      5440.       0.00
    8.7300     -0.267      6832.     -4287.   -0.01586       0.00   3.85E+11
1284.      5200.       0.00
    8.8200     -0.284      3016.     -2886.   -0.01586       0.00   3.85E+11
1311.      4986.       0.00
    8.9100     -0.301   728.6798     -1456.   -0.01586       0.00   3.85E+11
1336.      4794.       0.00
    9.0000     -0.318       0.00       0.00   -0.01586       0.00   3.85E+11
1361.      2310.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection             =     1.40084112 inches
Computed slope at pile head      =     -0.0160141 radians
Maximum bending moment           =        783372. inch-lbs
Maximum shear force              =        -20759. lbs
```

```
Depth of maximum bending moment  =     3.06000000 feet below pile head
Depth of maximum shear force     =     7.29000000 feet below pile head
Number of iterations             =             32
Number of zero deflection points =              1
Pile deflection at ground        =     1.20880976 inches
```

Pile-head Deflection vs. Pile Length for Load Case 3

Boundary Condition Type 1, Shear and Moment

```
Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	1.40084112	783372.	-20759.
8.55000	1.99329687	780124.	-20661.
8.10000	3.43055880	779253.	-21671.
7.65000	10.90010758	783302.	-25463.

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	Load Pile-head Load 1	Load Type	Load Pile-head Load 2	Axial Loading lbs	Pile-head Deflection inches	Pile-head Rotation radians	Max Shear in Pile lbs	Max Moment in Pile in-lbs
1	V, lb	1000.0000	M, in-lb	315600.	4200.	0.3850	-0.00422		

```
-11154.    337320.
  2  V, lb      2250.  M, in-lb     724800.      4600.     1.4044   -0.01606
-20789.    783827.
  3  V, lb      2250.  M, in-lb     724800.      3800.     1.4008   -0.01601
-20759.    783372.


Maximum pile-head deflection = 1.4043552642 inches
Maximum pile-head rotation   = -0.0160569317 radians = -0.919994 deg.

The analysis ended normally.
```

LATERAL LOAD (LPILE) ANALYSES
WESTBOUND PARKING AREA
LIGHT TOWER WR-9 (B-023-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-9 (Boring B-023-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

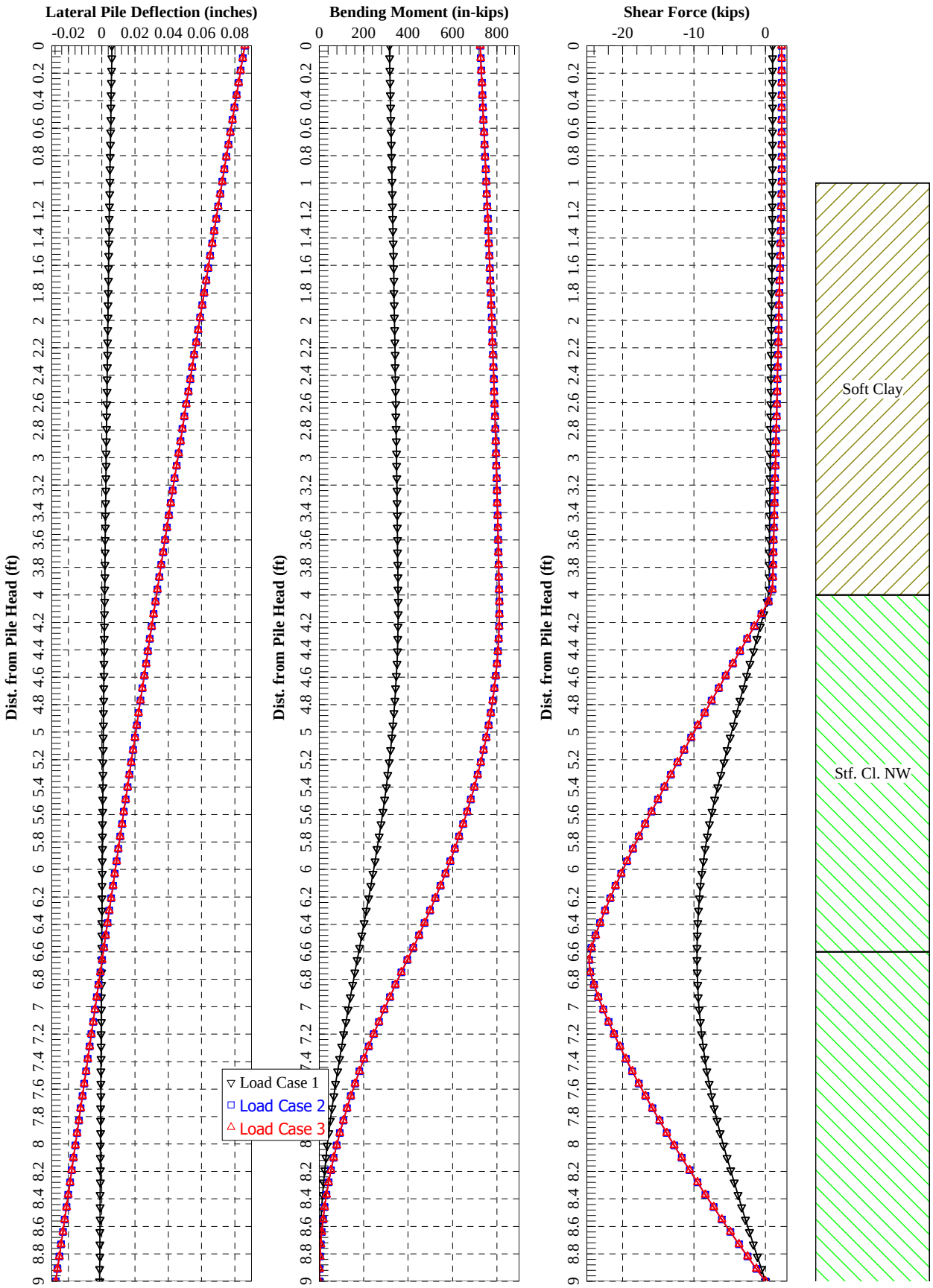


PLATE 403

```
================================================================================

                          LPile for Version 2022-12.012

                            License ID : 228332755
                       License Type : (Single User License)

                  Analysis of Individual Piles and Drilled Shafts
                 Subjected to Lateral Loading Using the p-y Method
                            © 1985-2024 by Ensoft, Inc.
                                All Rights Reserved

                 This software is licensed for exclusive use by:
                                  S&ME, Inc.
                                Valley View, OH

================================================================================


This model was prepared by:
BSears




--------------------------------------------------------------------------------
                           Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site
2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\WB\

Name of input data file:
Tower WR-9 (B-023-0-25).lp12d

Name of output report file:
Tower WR-9 (B-023-0-25).lp12o

Name of plot output file:
Tower WR-9 (B-023-0-25).lp12p

Name of runtime message file:
Tower WR-9 (B-023-0-25).lp12r



--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------
```

Date: April 27, 2026 Time: 7:56:23

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower WR-9 (B-023-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000	ft
Distance from top of pile to bottom of layer	=	4.000000	ft
Effective unit weight at top of layer	=	98.000000	pcf
Effective unit weight at bottom of layer	=	98.000000	pcf
Undrained cohesion at top of layer	=	250.000000	psf
Undrained cohesion at bottom of layer	=	250.000000	psf
Epsilon-50 at top of layer	=	0.020000	
Epsilon-50 at bottom of layer	=	0.020000	

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000	ft
Distance from top of pile to bottom of layer	=	6.600000	ft
Effective unit weight at top of layer	=	58.000000	pcf
Effective unit weight at bottom of layer	=	58.000000	pcf
Undrained cohesion at top of layer	=	4500.	psf
Undrained cohesion at bottom of layer	=	4500.	psf
Epsilon-50 at top of layer	=	0.004000	
Epsilon-50 at bottom of layer	=	0.004000	

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	6.600000	ft
Distance from top of pile to bottom of layer	=	16.600000	ft
Effective unit weight at top of layer	=	60.000000	pcf
Effective unit weight at bottom of layer	=	60.000000	pcf
Undrained cohesion at top of layer	=	4500.	psf
Undrained cohesion at bottom of layer	=	4500.	psf
Epsilon-50 at top of layer	=	0.004000	
Epsilon-50 at bottom of layer	=	0.004000	

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	16.600000	ft
Distance from top of pile to bottom of layer	=	26.100000	ft
Effective unit weight at top of layer	=	58.000000	pcf

```
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Undrained cohesion at top of layer                  =        2250. psf
   Undrained cohesion at bottom of layer               =        2250. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


 (Depth of the lowest soil layer extends 17.100 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	Cohesion psf	E50 or krm
1	Soft Clay	1.0000	98.0000	250.0000	0.02000
		4.0000	98.0000	250.0000	0.02000
2	Stiff Clay w/o Free Water	4.0000	58.0000	4500.	0.00400
		6.6000	58.0000	4500.	0.00400
3	Stiff Clay w/o Free Water	6.6000	60.0000	4500.	0.00400
		16.6000	60.0000	4500.	0.00400
4	Stiff Clay w/o Free Water	16.6000	58.0000	2250.	0.00500
		26.1000	58.0000	2250.	0.00500

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 Compute Top y vs. Pile Length Type	Condition Run Analysis 1	Condition 2	Axial Thrust Force, lbs
1	1	V = 1000.000000 lbs	M = 315600. in-lbs	4200.

```
    Yes                Yes
   2     1     V =        2250. lbs    M =      724800. in-lbs             4600.
    Yes                Yes
   3     1     V =        2250. lbs    M =      724800. in-lbs             3800.
    Yes                Yes

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



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
-------------------------------------------------------

Length of Section                                  =     9.000000 ft
Shaft Diameter                                     =    36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)=     3.500000 in
Number of Reinforcing Bars                         =           16 bars
Yield Stress of Reinforcing Bars                   =      60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =        1018. sq. in.
Total Area of Reinforcing Steel                    =    16.000000 sq. in.
Area Ratio of Steel Reinforcement                  =         1.57 percent
Edge-to-Edge Bar Spacing                           =     4.114467 in
Maximum Concrete Aggregate Size                    =     0.750000 in
Ratio of Bar Spacing to Aggregate Size             =         5.49
Offset of Center of Rebar Cage from Center of Pile =       0.0000 in
Transverse Reinforcement
Type: Spiral
Number of Transverse Reinf. (per spacing)          =            1
Spacing of Transverse Reinf.                       =     4.500000 in
Yield Stress of Transverse Reinf.                  =      60000. psi
Diameter of Transverse Reinf.                      =     0.500000 in
```

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As = 4366.378 kips
Tensile Load for Cracking of Concrete = -470.222 kips
Nominal Axial Tensile Capacity = -960.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete = 4000. psi
Modulus of Elasticity of Concrete = 3604997. psi
Modulus of Rupture of Concrete = -474.34165 psi
Compression Strain at Peak Stress = 0.001886
Tensile Strain at Fracture of Concrete = -0.0001154
Maximum Coarse Aggregate Size = 0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Stress ksi	Bending Max Steel Stress ksi	Bending Curvature rad/in.	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
6.25000E-07	240.5062135	384809942.	19.2929823	0.00001206	-0.00001044	0.0505030	0.2746478	
0.00000125	480.1472468	384117797.	18.6479768	0.00002331	-0.00002169	0.0973082	0.5259142	
0.00000188	718.9174733	383422652.	18.4329804	0.00003456	-0.00003294	0.1438345	0.7771808	
0.00000250	956.8168886	382726755.	18.3254857	0.00004581	-0.00004419	0.1900818	1.0284477	
0.00000313	1194.	382030558.	18.2609917	0.00005707	-0.00005543	0.2360502	1.2797149	
0.00000375	1430.	381334209.	18.2179981	0.00006832	-0.00006668	0.2817396	1.5309823	

```
0.00000438        1665.    380637775.    18.1872904    0.00007957   -0.00007793
0.3271500     1.7822500
0.00000500        1900.    379941287.    18.1642614    0.00009082   -0.00008918
0.3722815     2.0335179
0.00000563        2133.    379244764.    18.1463515     0.0001021     -0.000100
0.4171340     2.2847861
0.00000625        2366.    378548215.    18.1320251     0.0001133     -0.000112
0.4617075     2.5360546
0.00000688        2366.    344134741.    10.2494785    0.00007047     -0.000177
0.2882187     -4.308598 C
0.00000750        2366.    315456846.    10.2198771    0.00007665     -0.000193
0.3129821     -4.706727 C
0.00000813        2366.    291190934.    10.1952302    0.00008284     -0.000210
0.3376758     -5.104761 C
0.00000875        2366.    270391582.    10.1744772    0.00008903     -0.000226
0.3622998     -5.502701 C
0.00000938        2366.    252365477.    10.1568402    0.00009522     -0.000242
0.3868539     -5.900547 C
0.00001000        2366.    236592634.    10.1417358     0.0001014     -0.000259
0.4113380     -6.298297 C
0.00001063        2366.    222675420.    10.1287027     0.0001076     -0.000275
0.4357521     -6.695951 C
0.00001125        2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188        2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250        2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313        2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375        2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438        2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500        2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563        2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625        2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688        2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750        2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813        2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875        2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938        2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
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0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
0.00004063         3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188         3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313         4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438         4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563         4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
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0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938        5502.     92665342.    10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
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0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
 0.0001444       10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494       10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544       10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594       11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644       11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694       11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744       11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794       11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844       11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
 0.0001894       11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944       11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994       11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044       11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094       11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
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   0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
   3.9998812    -60.000000 CY
   0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
   3.9969940    -60.000000 CY
   0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
   3.9997138    -60.000000 CY
   0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
   3.9955528    -60.000000 CY
   0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
   3.9989818    -60.000000 CY
   0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
   3.9994466    -60.000000 CY
   0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
   3.9965160    -60.000000 CY
   0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
   3.9991770    -60.000000 CY
   0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
   3.9995775    -60.000000 CY
   0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
   3.9954763    -60.000000 CY
   0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
   3.9984997    -60.000000 CY
   0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
   3.9998981    -60.000000 CY
   0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
   3.9944635    -60.000000 CY
   0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
   3.9984635    -60.000000 CY
   0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
   3.9998209    -60.000000 CY
   0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
   3.9999551    -60.000000 CYT
   0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
   3.9996166    -60.000000 CYT
   0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
   3.9972132    -60.000000 CYT
   0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
   3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
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6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
 0.0508615     0.2771147
 0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
 0.0976654     0.5283867
 0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
 0.1441903     0.7796589
 0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
 0.1904363     1.0309315
 0.00000313        1194.     382030150.    18.2884629    0.00005715   -0.00005535
 0.2364034     1.2822044
 0.00000375        1430.     381333869.    18.2409436    0.00006840   -0.00006660
 0.2820914     1.5334776
 0.00000438        1665.     380637482.    18.2070035    0.00007966   -0.00007784
 0.3275005     1.7847511
 0.00000500        1900.     379941029.    18.1815504    0.00009091   -0.00008909
 0.3726306     2.0360248
 0.00000563        2133.     379244533.    18.1617553     0.0001022     -0.000100
 0.4174818     2.2872988
 0.00000625        2366.     378548006.    18.1459208     0.0001134     -0.000112
 0.4620539     2.5385732
 0.00000688        2366.     344134551.    10.2895004    0.00007074     -0.000177
 0.2893429    -4.300617 C
 0.00000750        2366.     315456672.    10.2575513    0.00007693     -0.000193
 0.3141325    -4.698533 C
 0.00000813        2366.     291190774.    10.2300378    0.00008312     -0.000209
 0.3388235    -5.096560 C
 0.00000875        2366.     270391433.    10.2068278    0.00008931     -0.000226
 0.3634446    -5.494492 C
 0.00000938        2366.     252365338.    10.1870615    0.00009550     -0.000242
 0.3879959    -5.892330 C
 0.00001000        2366.     236592504.    10.1700940     0.0001017     -0.000258
 0.4124772    -6.290073 C
 0.00001063        2366.     222675298.    10.1554324     0.0001079     -0.000275
 0.4368884    -6.687720 C
 0.00001125        2366.     210304448.    10.1426931     0.0001141     -0.000291
 0.4612294    -7.085271 C
 0.00001188        2366.     199235793.    10.1315564     0.0001203     -0.000307
 0.4855002    -7.482727 C
 0.00001250        2366.     189274003.    10.1218127     0.0001265     -0.000323
 0.5097005    -7.880086 C
 0.00001313        2366.     180260955.    10.1132503     0.0001327     -0.000340
 0.5338304    -8.277349 C
 0.00001375        2366.     172067276.    10.1057088     0.0001390     -0.000356
 0.5578898    -8.674515 C
 0.00001438        2366.     164586090.    10.0990556     0.0001452     -0.000372
 0.5818784    -9.071585 C
 0.00001500        2366.     157728336.    10.0931803     0.0001514     -0.000389
 0.6057963    -9.468556 C
 0.00001563        2366.     151419203.    10.0879903     0.0001576     -0.000405
 0.6296433    -9.865431 C
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0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
0.00002313         2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375         2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438         2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563         2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688         2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813         2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
0.00002938         2779.     94598964.    10.0593353     0.0002955     -0.000762
1.1361324    -18.571425 C
0.00003063         2894.     94499555.    10.0607664     0.0003081     -0.000794
1.1804341    -19.360427 C
0.00003188         3009.     94403710.    10.0625387     0.0003207     -0.000827
1.2244416    -20.149010 C
0.00003313         3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438         3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563         3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688         3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
0.00003813         3582.     93965057.    10.0754214     0.0003841     -0.000988
1.4400326    -24.085550 C
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0.00003938        3697.     93883511.    10.0786392     0.0003968     -0.001021
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0.00004063        3811.     93803541.    10.0820299     0.0004096     -0.001053
1.5241766    -25.657144 C
0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
1.7292383    -29.578385 C
0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
1.7693344    -30.361284 C
0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
0.00005188        4831.     93133529.    10.1185657     0.0005249     -0.001343
1.8877721    -32.707231 C
0.00005313        4944.     93062909.    10.1231546     0.0005378     -0.001375
1.9266309    -33.488287 C
0.00005438        5056.     92992807.    10.1278294     0.0005507     -0.001407
1.9651778    -34.268875 C
0.00005563        5169.     92923173.    10.1325862     0.0005636     -0.001439
2.0034117    -35.048992 C
0.00005688        5281.     92853961.    10.1374215     0.0005766     -0.001471
2.0413316    -35.828634 C
0.00005813        5393.     92785130.    10.1423320     0.0005895     -0.001503
2.0789362    -36.607799 C
0.00005938        5505.     92716640.    10.1473148     0.0006025     -0.001535
2.1162246    -37.386484 C
0.00006063        5617.     92648458.    10.1523672     0.0006155     -0.001567
2.1531956    -38.164685 C
0.00006188        5728.     92580549.    10.1574868     0.0006285     -0.001599
2.1898481    -38.942399 C
0.00006313        5840.     92512883.    10.1626714     0.0006415     -0.001631
2.2261809    -39.719622 C
0.00006438        5951.     92445433.    10.1679189     0.0006546     -0.001663
2.2621930    -40.496353 C
0.00006563        6062.     92378172.    10.1732276     0.0006676     -0.001695
2.2978832    -41.272587 C
0.00006688        6173.     92311077.    10.1785957     0.0006807     -0.001727
2.3332503    -42.048320 C
0.00006813        6284.     92244124.    10.1840217     0.0006938     -0.001759
2.3682931    -42.823550 C
0.00006938        6395.     92177292.    10.1895041     0.0007069     -0.001791
2.4030104    -43.598274 C
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2.4374011    -44.372486 C
0.00007188        6616.     92043913.    10.2006608     0.0007332     -0.001854
2.4714639    -45.146185 C
0.00007313        6726.     91977331.    10.2063053     0.0007463     -0.001886
2.5051976    -45.919366 C
0.00007438        6836.     91910797.    10.2120017     0.0007595     -0.001918
2.5386010    -46.692026 C
0.00007938        7274.     91644853.    10.2352897     0.0008124     -0.002045
2.6688860    -49.777380 C
0.00008438        7710.     91378587.    10.2593338     0.0008656     -0.002172
2.7937834    -52.854093 C
0.00008938        8143.     91111830.    10.2831857     0.0009191     -0.002298
2.9130226    -55.924331 C
0.00009438        8573.     90843621.    10.3077273     0.0009728     -0.002425
3.0266854    -58.985869 C
0.00009938        8982.     90387473.    10.3258078     0.0010261     -0.002551
3.1332951    -60.000000 CY
 0.0001044        9308.     89176212.    10.3143071     0.0010766     -0.002681
3.2283182    -60.000000 CY
 0.0001094        9549.     87304848.    10.2749831     0.0011238     -0.002814
3.3122821    -60.000000 CY
 0.0001144        9785.     85553556.    10.2389100     0.0011711     -0.002946
3.3913727    -60.000000 CY
 0.0001194       10007.     83830919.    10.2019402     0.0012179     -0.003080
3.4649106    -60.000000 CY
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3.5287895    -60.000000 CY
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3.5876602    -60.000000 CY
 0.0001344       10423.     77564670.    10.0227059     0.0013468     -0.003491
3.6428308    -60.000000 CY
 0.0001394       10554.     75720878.     9.9720357     0.0013899     -0.003628
3.6942550    -60.000000 CY
 0.0001444       10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494       10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
 0.0001544       10929.     70796718.     9.8396771     0.0015190     -0.004038
3.8245440    -60.000000 CY
 0.0001594       11012.     69097838.     9.7838573     0.0015593     -0.004178
3.8578061    -60.000000 CY
 0.0001644       11075.     67376662.     9.7232508     0.0015983     -0.004319
3.8866026    -60.000000 CY
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3.9121613    -60.000000 CY
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3.9537182    -60.000000 CY
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3.9820503    -60.000000 CY
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3.9913005    -60.000000 CY
 0.0001994        11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
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3.9998723    -60.000000 CY
 0.0002094        11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
 0.0002144        11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
 0.0002194        11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
 0.0002244        11744.     52339157.     9.2380944     0.0020728     -0.006005
3.9997330    -60.000000 CY
 0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
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3.9990203    -60.000000 CY
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3.9992468    -60.000000 CY
 0.0002444        11880.     48615611.     9.1135780     0.0022271     -0.006570
3.9965958    -60.000000 CY
 0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
 0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
 0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
3.9955701    -60.000000 CY
 0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
3.9985538    -60.000000 CY
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3.9999119    -60.000000 CY
 0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
3.9942523    -60.000000 CY
 0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
3.9985257    -60.000000 CY
 0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
3.9998424    -60.000000 CY
 0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
3.9999658    -60.000000 CYT
 0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
3.9996505    -60.000000 CYT
 0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
3.9973093    -60.000000 CYT
 0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
3.9875919    -60.000000 CYT
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Axial Thrust Force = 4.600 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Run Msg	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
6.25000E-07	240.5035986		384805758.	19.5651901	0.00001223	-0.00001027
0.0512199	0.2795816					
0.00000125	480.1446137		384115691.	18.7843907	0.00002348	-0.00002152
0.0980225	0.5308592					
0.00000188	718.9148267		383421241.	18.5241312	0.00003473	-0.00003277
0.1445462	0.7821371					
0.00000250	956.8142298		382725692.	18.3940059	0.00004599	-0.00004401
0.1907908	1.0334154					
0.00000313	1194.		382029703.	18.3159341	0.00005724	-0.00005526
0.2367565	1.2846940					
0.00000375	1430.		381333494.	18.2638891	0.00006849	-0.00006651
0.2824433	1.5359729					
0.00000438	1665.		380637159.	18.2267166	0.00007974	-0.00007776
0.3278510	1.7872522					
0.00000500	1900.		379940746.	18.1988394	0.00009099	-0.00008901
0.3729798	2.0385317					
0.00000563	2133.		379244280.	18.1771590	0.0001022	-0.000100
0.4178295	2.2898116					
0.00000625	2366.		378547777.	18.1598165	0.0001135	-0.000112
0.4624003	2.5410917					
0.00000688	2366.		344134343.	10.3291778	0.00007101	-0.000176
0.2904571	-4.292706	C				
0.00000750	2366.		315456481.	10.2940289	0.00007721	-0.000193
0.3152465	-4.690597	C				
0.00000813	2366.		291190598.	10.2646762	0.00008340	-0.000209
0.3399656	-5.088396	C				
0.00000875	2366.		270391269.	10.2391817	0.00008959	-0.000225
0.3645893	-5.486283	C				
0.00000938	2366.		252365185.	10.2172859	0.00009579	-0.000242
0.3891378	-5.884113	C				
0.00001000	2366.		236592361.	10.1984552	0.0001020	-0.000258
0.4136162	-6.281848	C				
0.00001063	2366.		222675163.	10.1821496	0.0001082	-0.000274
0.4380246	-6.679488	C				
0.00001125	2366.		210304321.	10.1679490	0.0001144	-0.000291
0.4623628	-7.077032	C				
0.00001188	2366.		199235672.	10.1555219	0.0001206	-0.000307
0.4866307	-7.474480	C				

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0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
0.00002563         2436.     95048091.    10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688         2551.     94928657.    10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813         2667.     94815115.    10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938         2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063         2897.     94602733.    10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
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0.00003188        3012.     94502697.    10.0717368     0.0003210     -0.000826
1.2254772    -20.140508 C
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1.2691834    -20.928652 C
0.00003438        3242.     94312597.    10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563        3357.     94221794.    10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
0.00003688        3471.     94133413.    10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813        3586.     94047197.    10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938        3700.     93962921.    10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063        3814.     93880388.    10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188        3928.     93799425.    10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313        4042.     93719877.    10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438        4155.     93641609.    10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
0.00004563        4269.     93564497.    10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688        4382.     93488434.    10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813        4496.     93413321.    10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938        4609.     93339070.    10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063        4722.     93265602.    10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188        4834.     93192845.    10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313        4947.     93120733.    10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
0.00005438        5060.     93049206.    10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563        5172.     92978211.    10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
0.00005688        5284.     92907697.    10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813        5396.     92837619.    10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938        5508.     92767935.    10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063        5620.     92698606.    10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188        5731.     92629597.    10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
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0.00006313        5843.     92560874.    10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438        5954.     92492407.    10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563        6065.     92424168.    10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688        6176.     92356130.    10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
0.00006813        6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938        6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063        6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188        6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313        6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
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 0.0001544        10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594        11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644        11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694        11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
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    0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
   3.9985866    -60.000000 CY
    0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
   3.9998625    -60.000000 CY
    0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
   3.9999751    -60.000000 CYT
    0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
   3.9996828    -60.000000 CYT
    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
   3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
   3.9878351    -60.000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ----------------     ------------------     ------------
------------
   1                 3.800             12169.214           0.00300000
-0.00952396
   2                 4.200             12173.120           0.00300000
-0.00952020
   3                 4.600             12177.027           0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318,
or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal        Nominal     Ult. (Fac)    Ult. (Fac)   Bend.
Stiff.
```

Load No.	Factor	Ax. Thrust kips	Moment Cap in-kips	Ax. Thrust kips	Moment Cap in-kips	at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.
2	0.90	4.200000	12173.	3.780000	10956.	70254444.
3	0.90	4.600000	12177.	4.140000	10959.	70287179.

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	1.0000	0.00	N.A.	No	0.00	8859.
2	4.0000	0.2172	No	No	8859.	115005.
3	6.6000	2.8149	Yes	No	123864.	121074.
4	16.6000	15.6000	No	No	244938.	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.

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--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 1
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Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head                              =       1000.0 lbs
Applied moment at pile head                           =     315600.0 in-lbs
Axial thrust load on pile head                        =       4200.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00    0.00616    315600.      1000.  -1.12E-04       0.00   3.84E+11
0.00       0.00       0.00
   0.09000    0.00604    316681.  1000.0000  -1.11E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.1800    0.00592    317761.  1000.0000  -1.10E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.2700    0.00580    318842.  1000.0000  -1.09E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.3600    0.00568    319922.      1000.  -1.08E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.4500    0.00556    321002.      1000.  -1.07E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.5400    0.00545    322083.      1000.  -1.07E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.6300    0.00533    323163.      1000.  -1.06E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.7200    0.00522    324244.      1000.  -1.05E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.8100    0.00511    325324.      1000.  -1.04E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9000    0.00500    326405.      1000.  -1.03E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9900    0.00489    327485.  1000.0000  -1.02E-04       0.00   3.84E+11
0.00       0.00       0.00
    1.0800    0.00478    328566.   992.8804  -1.01E-04       0.00   3.84E+11
-13.184      2981.       0.00
    1.1700    0.00467    329631.   978.5790  -1.00E-04       0.00   3.84E+11
-13.300      3077.       0.00
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    1.2600    0.00456    330680.   964.1550  -9.92E-05       0.00   3.84E+11
-13.411      3176.       0.00
    1.3500    0.00445    331714.   949.6128  -9.83E-05       0.00   3.84E+11
-13.519      3278.       0.00
    1.4400    0.00435    332732.   934.9568  -9.73E-05       0.00   3.84E+11
-13.622      3383.       0.00
    1.5300    0.00424    333735.   920.1914  -9.64E-05       0.00   3.84E+11
-13.721      3492.       0.00
    1.6200    0.00414    334721.   905.3210  -9.55E-05       0.00   3.84E+11
-13.816      3604.       0.00
    1.7100    0.00404    335691.   890.3502  -9.45E-05       0.00   3.84E+11
-13.907      3720.       0.00
    1.8000    0.00394    336645.   875.2835  -9.36E-05       0.00   3.84E+11
-13.994      3840.       0.00
    1.8900    0.00384    337583.   860.1257  -9.26E-05       0.00   3.84E+11
-14.076      3964.       0.00
    1.9800    0.00374    338504.   844.8813  -9.17E-05       0.00   3.84E+11
-14.154      4092.       0.00
    2.0700    0.00364    339408.   829.5553  -9.07E-05       0.00   3.84E+11
-14.228      4225.       0.00
    2.1600    0.00354    340296.   814.1523  -8.98E-05       0.00   3.84E+11
-14.296      4362.       0.00
    2.2500    0.00344    341168.   798.6775  -8.88E-05       0.00   3.84E+11
-14.361      4504.       0.00
    2.3400    0.00335    342022.   783.1357  -8.79E-05       0.00   3.84E+11
-14.420      4652.       0.00
    2.4300    0.00325    342860.   767.5320  -8.69E-05       0.00   3.84E+11
-14.475      4805.       0.00
    2.5200    0.00316    343681.   751.8716  -8.59E-05       0.00   3.84E+11
-14.525      4964.       0.00
    2.6100    0.00307    344485.   736.1597  -8.50E-05       0.00   3.84E+11
-14.571      5129.       0.00
    2.7000    0.00298    345272.   720.4017  -8.40E-05       0.00   3.84E+11
-14.611      5301.       0.00
    2.7900    0.00289    346042.   704.6030  -8.30E-05       0.00   3.84E+11
-14.646      5480.       0.00
    2.8800    0.00280    346795.   688.7691  -8.20E-05       0.00   3.84E+11
-14.676      5666.       0.00
    2.9700    0.00271    347530.   672.9057  -8.11E-05       0.00   3.84E+11
-14.701      5860.       0.00
    3.0600    0.00262    348249.   657.0185  -8.01E-05       0.00   3.84E+11
-14.720      6063.       0.00
    3.1500    0.00254    348950.   641.1135  -7.91E-05       0.00   3.84E+11
-14.734      6274.       0.00
    3.2400    0.00245    349634.   625.1965  -7.81E-05       0.00   3.84E+11
-14.742      6495.       0.00
    3.3300    0.00237    350301.   609.2738  -7.71E-05       0.00   3.84E+11
-14.744      6726.       0.00
    3.4200    0.00228    350951.   593.3517  -7.62E-05       0.00   3.84E+11
-14.741      6968.       0.00
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    3.5100    0.00220    351584.   577.4366  -7.52E-05       0.00   3.84E+11
-14.731      7222.       0.00
    3.6000    0.00212    352199.   561.5350  -7.42E-05       0.00   3.84E+11
-14.716      7488.       0.00
    3.6900    0.00204    352797.   545.6539  -7.32E-05       0.00   3.84E+11
-14.694      7769.       0.00
    3.7800    0.00196    353378.   529.8002  -7.22E-05       0.00   3.84E+11
-14.665      8063.       0.00
    3.8700    0.00189    353942.   513.9810  -7.12E-05       0.00   3.84E+11
-14.630      8374.       0.00
    3.9600    0.00181    354489.   498.2037  -7.02E-05       0.00   3.84E+11
-14.587      8702.       0.00
    4.0500    0.00174    355019.   245.8797  -6.92E-05       0.00   3.84E+11
-452.679    281766.       0.00
    4.1400    0.00166    355021.   -241.697  -6.82E-05       0.00   3.84E+11
-450.240    292771.       0.00
    4.2300    0.00159    354498.   -726.555  -6.72E-05       0.00   3.84E+11
-447.646    304494.       0.00
    4.3200    0.00152    353452.     -1209.  -6.62E-05       0.00   3.84E+11
-444.892    317009.       0.00
    4.4100    0.00144    351888.     -1687.  -6.52E-05       0.00   3.84E+11
-441.969    330403.       0.00
    4.5000    0.00137    349808.     -2163.  -6.43E-05       0.00   3.84E+11
-438.869    344773.       0.00
    4.5900    0.00131    347216.     -2635.  -6.33E-05       0.00   3.84E+11
-435.581    360235.       0.00
    4.6800    0.00124    344116.     -3104.  -6.23E-05       0.00   3.84E+11
-432.093    376923.       0.00
    4.7700    0.00117    340512.     -3568.  -6.13E-05       0.00   3.84E+11
-428.392    394996.       0.00
    4.8600    0.00111    336409.     -4029.  -6.04E-05       0.00   3.84E+11
-424.463    414642.       0.00
    4.9500    0.00104    331810.     -4485.  -5.95E-05       0.00   3.84E+11
-420.286    436087.       0.00
    5.0400   9.77E-04    326721.     -4937.  -5.85E-05       0.00   3.84E+11
-415.842    459606.       0.00
    5.1300   9.14E-04    321147.     -5383.  -5.76E-05       0.00   3.84E+11
-411.106    485533.       0.00
    5.2200   8.53E-04    315094.     -5825.  -5.67E-05       0.00   3.84E+11
-406.049    514282.       0.00
    5.3100   7.92E-04    308567.     -6260.  -5.58E-05       0.00   3.85E+11
-400.636    546375.       0.00
    5.4000   7.32E-04    301573.     -6690.  -5.50E-05       0.00   3.85E+11
-394.828    582474.       0.00
    5.4900   6.73E-04    294118.     -7102.  -5.42E-05       0.00   3.85E+11
-368.857    591801.       0.00
    5.5800   6.15E-04    286233.     -7484.  -5.33E-05       0.00   3.85E+11
-338.727    594742.       0.00
    5.6700   5.58E-04    277952.     -7834.  -5.25E-05       0.00   3.85E+11
-308.761    597681.       0.00
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    5.7600   5.02E-04    269312.     -8151.  -5.18E-05       0.00   3.85E+11
-278.952    600618.       0.00
    5.8500   4.46E-04    260346.     -8436.  -5.10E-05       0.00   3.85E+11
-249.291    603553.       0.00
    5.9400   3.91E-04    251090.     -8690.  -5.03E-05       0.00   3.85E+11
-219.771    606486.       0.00
    6.0300   3.37E-04    241577.     -8911.  -4.96E-05       0.00   3.85E+11
-190.384    609418.       0.00
    6.1200   2.84E-04    231842.     -9101.  -4.90E-05       0.00   3.85E+11
-161.117    612348.       0.00
    6.2100   2.32E-04    221919.     -9259.  -4.83E-05       0.00   3.85E+11
-131.963    615276.       0.00
    6.3000   1.80E-04    211842.     -9386.  -4.77E-05       0.00   3.85E+11
-102.908    618202.       0.00
    6.3900   1.29E-04    201646.     -9482.  -4.71E-05       0.00   3.85E+11
-73.941    621128.       0.00
    6.4800   7.80E-05    191363.     -9546.  -4.66E-05       0.00   3.85E+11
-45.050    624051.       0.00
    6.5700   2.79E-05    181027.     -9579.  -4.61E-05       0.00   3.85E+11
-16.221    626974.       0.00
    6.6600  -2.15E-05    170672.     -9581.  -4.56E-05       0.00   3.85E+11
12.5565    629822.       0.00
    6.7500  -7.05E-05    160333.     -9552.  -4.51E-05       0.00   3.85E+11
41.2970    632746.       0.00
    6.8400  -1.19E-04    150041.     -9492.  -4.47E-05       0.00   3.85E+11
70.0165    635669.       0.00
    6.9300  -1.67E-04    139831.     -9401.  -4.43E-05       0.00   3.85E+11
98.7292    638590.       0.00
    7.0200  -2.15E-04    129736.     -9278.  -4.39E-05       0.00   3.85E+11
127.4497    641511.       0.00
    7.1100  -2.62E-04    119790.     -9125.  -4.35E-05       0.00   3.85E+11
156.1928    644431.       0.00
    7.2000  -3.09E-04    110026.     -8941.  -4.32E-05       0.00   3.85E+11
184.9733    647350.       0.00
    7.2900  -3.55E-04    100477.     -8726.  -4.29E-05       0.00   3.85E+11
213.8058    650269.       0.00
    7.3800  -4.01E-04     91178.     -8479.  -4.26E-05       0.00   3.85E+11
242.7052    653186.       0.00
    7.4700  -4.47E-04     82163.     -8201.  -4.24E-05       0.00   3.85E+11
271.6860    656103.       0.00
    7.5600  -4.93E-04     73464.     -7892.  -4.22E-05       0.00   3.85E+11
300.7625    659019.       0.00
    7.6500  -5.38E-04     65116.     -7552.  -4.20E-05       0.00   3.85E+11
329.9488    661934.       0.00
    7.7400  -5.84E-04     57152.     -7180.  -4.18E-05       0.00   3.85E+11
359.2586    664849.       0.00
    7.8300  -6.29E-04     49608.     -6776.  -4.17E-05       0.00   3.85E+11
388.7052    667763.       0.00
    7.9200  -6.74E-04     42517.     -6340.  -4.15E-05       0.00   3.85E+11
418.3013    670677.       0.00
```

```
    8.0100  -7.18E-04     35914.     -5872.  -4.14E-05       0.00   3.85E+11
448.0591    673590.       0.00
    8.1000  -7.63E-04     29834.     -5383.  -4.13E-05       0.00   3.85E+11
458.2282    648533.       0.00
    8.1900  -8.08E-04     24288.     -4883.  -4.13E-05       0.00   3.85E+11
466.7894    624169.       0.00
    8.2800  -8.52E-04     19287.     -4375.  -4.12E-05       0.00   3.85E+11
475.1276    602124.       0.00
    8.3700  -8.97E-04     14840.     -3857.  -4.12E-05       0.00   3.85E+11
483.2667    582067.       0.00
    8.4600  -9.41E-04     10956.     -3331.  -4.11E-05       0.00   3.85E+11
491.2271    563727.       0.00
    8.5500  -9.85E-04      7645.     -2796.  -4.11E-05       0.00   3.85E+11
499.0263    546882.       0.00
    8.6400   -0.00103      4917.     -2253.  -4.11E-05       0.00   3.85E+11
506.6794    531348.       0.00
    8.7300   -0.00107      2780.     -1702.  -4.11E-05       0.00   3.85E+11
514.1994    516971.       0.00
    8.8200   -0.00112      1242.     -1142.  -4.11E-05       0.00   3.85E+11
521.5978    503620.       0.00
    8.9100   -0.00116   312.4487   -575.074  -4.11E-05       0.00   3.85E+11
528.8845    491185.       0.00
    9.0000   -0.00121       0.00       0.00  -4.11E-05       0.00   3.85E+11
536.0681    239786.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.00615715 inches
Computed slope at pile head      =     -0.0001119 radians
Maximum bending moment           =        355021. inch-lbs
Maximum shear force              =         -9581. lbs
Depth of maximum bending moment  =     4.14000000 feet below pile head
Depth of maximum shear force     =     6.66000000 feet below pile head
Number of iterations             =             11
Number of zero deflection points =              1
Pile deflection at ground        =     0.00487414 inches


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

Boundary Condition Type 1, Shear and Moment

```
Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.00615715	355021.	-9581.
8.55000	0.00894738	353192.	-10937.
8.10000	0.01807180	350593.	-12597.
7.65000	0.04289872	346312.	-14146.
7.20000	0.10962130	341128.	-15620.
6.75000	0.35379865	337437.	-17510.
6.30000	1.21919117	335710.	-19609.
5.85000	6.13404444	341001.	-23087.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

```
Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       4600.0 lbs
```

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. Es*H lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.08595	724800.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.08471	727236.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.08347	729671.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.08223	732107.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.08099	734543.	2250.	-0.00114	0.00	3.83E+11			

```
0.00       0.00       0.00
    0.4500    0.07976    736978.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.5400    0.07853    739414.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.6300    0.07730    741850.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.7200    0.07607    744285.      2250.   -0.00114       0.00   3.83E+11
0.00       0.00       0.00
    0.8100    0.07485    746721.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    0.9000    0.07362    749157.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    0.9900    0.07240    751592.      2250.   -0.00113       0.00   3.83E+11
0.00       0.00       0.00
    1.0800    0.07119    754028.      2232.   -0.00113       0.00   3.83E+11
-32.419   491.8446       0.00
    1.1700    0.06997    756426.      2197.   -0.00112       0.00   3.83E+11
-32.765   505.7426       0.00
    1.2600    0.06876    758785.      2162.   -0.00112       0.00   3.83E+11
-33.104   519.9893       0.00
    1.3500    0.06754    761106.      2126.   -0.00112       0.00   3.83E+11
-33.434   534.5995       0.00
    1.4400    0.06634    763388.      2090.   -0.00112       0.00   3.83E+11
-33.757   549.5892       0.00
    1.5300    0.06513    765631.      2053.   -0.00112       0.00   3.83E+11
-34.070   564.9753       0.00
    1.6200    0.06392    767833.      2016.   -0.00111       0.00   3.83E+11
-34.376   580.7759       0.00
    1.7100    0.06272    769996.      1979.   -0.00111       0.00   3.83E+11
-34.672   597.0100       0.00
    1.8000    0.06152    772118.      1941.   -0.00111       0.00   3.83E+11
-34.960   613.6980       0.00
    1.8900    0.06033    774200.      1903.   -0.00111       0.00   3.83E+11
-35.238   630.8619       0.00
    1.9800    0.05913    776240.      1865.   -0.00111       0.00   3.83E+11
-35.507   648.5249       0.00
    2.0700    0.05794    778239.      1826.   -0.00110       0.00   3.83E+11
-35.766   666.7120       0.00
    2.1600    0.05675    780196.      1788.   -0.00110       0.00   3.83E+11
-36.016   685.4497       0.00
    2.2500    0.05556    782111.      1749.   -0.00110       0.00   3.83E+11
-36.256   704.7669       0.00
    2.3400    0.05437    783984.      1709.   -0.00110       0.00   3.83E+11
-36.486   724.6942       0.00
    2.4300    0.05319    785814.      1670.   -0.00109       0.00   3.83E+11
-36.705   745.2648       0.00
    2.5200    0.05201    787602.      1630.   -0.00109       0.00   3.83E+11
-36.913   766.5144       0.00
    2.6100    0.05083    789346.      1590.   -0.00109       0.00   3.83E+11
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-37.111   788.4815       0.00
    2.7000    0.04966    791047.      1550.   -0.00109       0.00   3.83E+11
-37.297   811.2077       0.00
    2.7900    0.04848    792705.      1510.   -0.00109       0.00   3.83E+11
-37.472   834.7383       0.00
    2.8800    0.04731    794319.      1469.   -0.00108       0.00   3.83E+11
-37.635   859.1220       0.00
    2.9700    0.04614    795889.      1428.   -0.00108       0.00   3.83E+11
-37.786   884.4122       0.00
    3.0600    0.04498    797415.      1387.   -0.00108       0.00   3.83E+11
-37.925   910.6667       0.00
    3.1500    0.04381    798896.      1346.   -0.00108       0.00   3.83E+11
-38.050   937.9489       0.00
    3.2400    0.04265    800334.      1305.   -0.00107       0.00   3.83E+11
-38.162   966.3280       0.00
    3.3300    0.04149    801726.      1264.   -0.00107       0.00   3.83E+11
-38.260   995.8799       0.00
    3.4200    0.04034    803074.      1223.   -0.00107       0.00   3.83E+11
-38.345      1027.       0.00
    3.5100    0.03918    804378.      1181.   -0.00107       0.00   3.83E+11
-38.414      1059.       0.00
    3.6000    0.03803    805636.      1140.   -0.00107       0.00   3.83E+11
-38.468      1092.       0.00
    3.6900    0.03688    806850.      1098.   -0.00106       0.00   3.83E+11
-38.507      1128.       0.00
    3.7800    0.03573    808018.      1056.   -0.00106       0.00   3.83E+11
-38.529      1164.       0.00
    3.8700    0.03459    809142.      1015.   -0.00106       0.00   3.83E+11
-38.534      1203.       0.00
    3.9600    0.03345    810221.   973.2215   -0.00106       0.00   3.83E+11
-38.522      1244.       0.00
    4.0500    0.03231    811255.   445.2548   -0.00105       0.00   3.83E+11
-939.194     31395.       0.00
    4.1400    0.03117    811193.   -567.331   -0.00105       0.00   3.83E+11
-935.965     32428.       0.00
    4.2300    0.03004    810040.     -1576.   -0.00105       0.00   3.83E+11
-932.416     33525.       0.00
    4.3200    0.02891    807799.     -2581.   -0.00105       0.00   3.83E+11
-928.531     34693.       0.00
    4.4100    0.02778    804475.     -3582.   -0.00104       0.00   3.83E+11
-924.290     35939.       0.00
    4.5000    0.02665    800073.     -4577.   -0.00104       0.00   3.83E+11
-919.675     37271.       0.00
    4.5900    0.02552    794598.     -5568.   -0.00104       0.00   3.83E+11
-914.660     38701.       0.00
    4.6800    0.02440    788056.     -6553.   -0.00104       0.00   3.83E+11
-909.221     40240.       0.00
    4.7700    0.02328    780454.     -7532.   -0.00104       0.00   3.83E+11
-903.327     41902.       0.00
    4.8600    0.02217    771798.     -8504.   -0.00103       0.00   3.83E+11
```

-896.945	43704.	0.00				
4.9500	0.02105	762096.	-9469.	-0.00103	0.00	3.83E+11
-890.037	45664.	0.00				
5.0400	0.01994	751356.	-10426.	-0.00103	0.00	3.83E+11
-882.558	47808.	0.00				
5.1300	0.01883	739586.	-11375.	-0.00103	0.00	3.83E+11
-874.459	50163.	0.00				
5.2200	0.01772	726797.	-12314.	-0.00103	0.00	3.83E+11
-865.681	52765.	0.00				
5.3100	0.01661	712997.	-13244.	-0.00102	0.00	3.83E+11
-856.153	55658.	0.00				
5.4000	0.01551	698199.	-14163.	-0.00102	0.00	3.83E+11
-845.795	58898.	0.00				
5.4900	0.01441	682415.	-15071.	-0.00102	0.00	3.83E+11
-834.509	62556.	0.00				
5.5800	0.01331	665657.	-15965.	-0.00102	0.00	3.84E+11
-822.175	66724.	0.00				
5.6700	0.01221	647940.	-16846.	-0.00102	0.00	3.84E+11
-808.648	71525.	0.00				
5.7600	0.01111	629280.	-17711.	-0.00101	0.00	3.84E+11
-793.745	77127.	0.00				
5.8500	0.01002	609694.	-18560.	-0.00101	0.00	3.84E+11
-777.234	83765.	0.00				
5.9400	0.00893	589202.	-19389.	-0.00101	0.00	3.84E+11
-758.808	91779.	0.00				
6.0300	0.00784	567824.	-20197.	-0.00101	0.00	3.84E+11
-738.057	101683.	0.00				
6.1200	0.00675	545585.	-20982.	-0.00101	0.00	3.84E+11
-714.405	114291.	0.00				
6.2100	0.00566	522514.	-21738.	-0.00101	0.00	3.84E+11
-687.006	130994.	0.00				
6.3000	0.00458	498641.	-22463.	-0.00100	0.00	3.84E+11
-654.533	154376.	0.00				
6.3900	0.00350	474004.	-23148.	-0.00100	0.00	3.84E+11
-614.701	189923.	0.00				
6.4800	0.00241	448650.	-23784.	-0.00100	0.00	3.84E+11
-562.964	251929.	0.00				
6.5700	0.00133	422640.	-24351.	-0.00100	0.00	3.84E+11
-487.557	395132.	0.00				
6.6600	2.53E-04	396061.	-24694.	-9.99E-04	0.00	3.84E+11
-147.627	629822.	0.00				
6.7500	-8.25E-04	369310.	-24538.	-9.98E-04	0.00	3.84E+11
436.5019	571333.	0.00				
6.8400	-0.00190	343068.	-24011.	-9.97E-04	0.00	3.84E+11
540.3391	306772.	0.00				
6.9300	-0.00298	317457.	-23391.	-9.96E-04	0.00	3.84E+11
607.2007	220178.	0.00				
7.0200	-0.00405	292553.	-22708.	-9.95E-04	0.00	3.85E+11
658.8342	175536.	0.00				
7.1100	-0.00513	268418.	-21973.	-9.94E-04	0.00	3.85E+11

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701.8946    147831.       0.00
    7.2000   -0.00620    245102.    -21195.  -9.94E-04       0.00   3.85E+11
739.3861    128770.       0.00
    7.2900   -0.00727    222648.    -20378.  -9.93E-04       0.00   3.85E+11
772.9426    114763.       0.00
    7.3800   -0.00835    201095.    -19527.  -9.92E-04       0.00   3.85E+11
803.5593    103983.       0.00
    7.4700   -0.00942    180480.    -18643.  -9.92E-04       0.00   3.85E+11
831.8905     95402.       0.00
    7.5600   -0.01049    160836.    -17731.  -9.91E-04       0.00   3.85E+11
858.3911     88390.       0.00
    7.6500   -0.01156    142192.    -16790.  -9.91E-04       0.00   3.85E+11
883.3910     82541.       0.00
    7.7400   -0.01263    124579.    -15823.  -9.91E-04       0.00   3.85E+11
907.1374     77578.       0.00
    7.8300   -0.01370    108024.    -14831.  -9.90E-04       0.00   3.85E+11
929.8208     73309.       0.00
    7.9200   -0.01477     92553.    -13815.  -9.90E-04       0.00   3.85E+11
951.5912     69594.       0.00
    8.0100   -0.01584     78193.    -12776.  -9.90E-04       0.00   3.85E+11
972.5689     66327.       0.00
    8.1000   -0.01691     64966.    -11715.  -9.89E-04       0.00   3.85E+11
992.8519     63429.       0.00
    8.1900   -0.01797     52898.    -10632.  -9.89E-04       0.00   3.85E+11
1013.     60840.       0.00
    8.2800   -0.01904     42011.     -9528.  -9.89E-04       0.00   3.85E+11
1032.     58511.       0.00
    8.3700   -0.02011     32327.     -8404.  -9.89E-04       0.00   3.85E+11
1050.     56404.       0.00
    8.4600   -0.02118     23868.     -7260.  -9.89E-04       0.00   3.85E+11
1068.     54487.       0.00
    8.5500   -0.02225     16656.     -6096.  -9.89E-04       0.00   3.85E+11
1086.     52735.       0.00
    8.6400   -0.02331     10710.     -4914.  -9.89E-04       0.00   3.85E+11
1104.     51127.       0.00
    8.7300   -0.02438      6052.     -3712.  -9.89E-04       0.00   3.85E+11
1121.     49645.       0.00
    8.8200   -0.02545      2702.     -2493.  -9.89E-04       0.00   3.85E+11
1138.     48275.       0.00
    8.9100   -0.02652   677.6766     -1255.  -9.89E-04       0.00   3.85E+11
1154.     47004.       0.00
    9.0000   -0.02759       0.00       0.00  -9.89E-04       0.00   3.85E+11
1170.     22911.       0.00

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

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.08595362 inches
Computed slope at pile head	=	-0.0011519 radians
Maximum bending moment	=	811255. inch-lbs
Maximum shear force	=	-24694. lbs
Depth of maximum bending moment	=	4.05000000 feet below pile head
Depth of maximum shear force	=	6.66000000 feet below pile head
Number of iterations	=	32
Number of zero deflection points	=	1
Pile deflection at ground	=	0.07226824 inches

Pile-head Deflection vs. Pile Length for Load Case 2

Boundary Condition Type 1, Shear and Moment

Shear	=	2250. lbs
Moment	=	724800. in-lbs
Axial Load	=	4600. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.08595362	811255.	-24694.
8.55000	0.16867407	804624.	-26566.
8.10000	0.40434031	796384.	-29145.
7.65000	1.02124497	787632.	-32082.
7.20000	2.68788928	781090.	-35412.
6.75000	9.69517028	786311.	-40874.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

Shear force at pile head	=	2250.0 lbs
Applied moment at pile head	=	724800.0 in-lbs
Axial thrust load on pile head	=	3800.0 lbs

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-9 (Boring B-023-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.08592	724800.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.08468	727235.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.08344	729669.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.08220	732104.	2250.	-0.00115	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.08096	734539.	2250.	-0.00114	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.07973	736974.	2250.	-0.00114	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.07850	739408.	2250.	-0.00114	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.07727	741843.	2250.	-0.00114	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.07604	744278.	2250.	-0.00113	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.07482	746712.	2250.	-0.00113	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.07360	749147.	2250.	-0.00113	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.07238	751581.	2250.	-0.00113	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.07116	754016.	2232.	-0.00113	0.00	3.83E+11	-32.415	491.9671	0.00
1.1700	0.06994	756413.	2197.	-0.00112	0.00	3.83E+11	-32.761	505.8687	0.00
1.2600	0.06873	758771.	2162.	-0.00112	0.00	3.83E+11	-33.100	520.1190	0.00
1.3500	0.06752	761091.	2126.	-0.00112	0.00	3.83E+11	-33.430	534.7330	0.00
1.4400	0.06631	763372.	2090.	-0.00112	0.00	3.83E+11	-33.752	549.7266	0.00
1.5300	0.06510	765614.	2053.	-0.00112	0.00	3.83E+11	-34.066	565.1166	0.00
1.6200	0.06390	767816.	2016.	-0.00111	0.00	3.83E+11	-34.371	580.9212	0.00
1.7100	0.06270	769978.	1979.	-0.00111	0.00	3.83E+11	-34.668	597.1595	0.00
1.8000	0.06150	772099.	1941.	-0.00111	0.00	3.83E+11	-34.955	613.8519	0.00

```
    1.8900    0.06030    774179.      1903.   -0.00111       0.00   3.83E+11
-35.233   631.0202       0.00
    1.9800    0.05911    776219.      1865.   -0.00110       0.00   3.83E+11
-35.502   648.6878       0.00
    2.0700    0.05792    778217.      1826.   -0.00110       0.00   3.83E+11
-35.762   666.8795       0.00
    2.1600    0.05673    780173.      1788.   -0.00110       0.00   3.83E+11
-36.012   685.6221       0.00
    2.2500    0.05554    782087.      1749.   -0.00110       0.00   3.83E+11
-36.251   704.9443       0.00
    2.3400    0.05435    783959.      1709.   -0.00110       0.00   3.83E+11
-36.481   724.8767       0.00
    2.4300    0.05317    785789.      1670.   -0.00109       0.00   3.83E+11
-36.700   745.4527       0.00
    2.5200    0.05199    787575.      1630.   -0.00109       0.00   3.83E+11
-36.909   766.7078       0.00
    2.6100    0.05081    789319.      1590.   -0.00109       0.00   3.83E+11
-37.106   788.6806       0.00
    2.7000    0.04964    791019.      1550.   -0.00109       0.00   3.83E+11
-37.293   811.4127       0.00
    2.7900    0.04846    792676.      1510.   -0.00109       0.00   3.83E+11
-37.468   834.9493       0.00
    2.8800    0.04729    794289.      1469.   -0.00108       0.00   3.83E+11
-37.631   859.3394       0.00
    2.9700    0.04613    795858.      1428.   -0.00108       0.00   3.83E+11
-37.781   884.6361       0.00
    3.0600    0.04496    797383.      1388.   -0.00108       0.00   3.83E+11
-37.920   910.8975       0.00
    3.1500    0.04380    798864.      1346.   -0.00108       0.00   3.83E+11
-38.045   938.1868       0.00
    3.2400    0.04263    800300.      1305.   -0.00107       0.00   3.83E+11
-38.157   966.5733       0.00
    3.3300    0.04148    801692.      1264.   -0.00107       0.00   3.83E+11
-38.256   996.1328       0.00
    3.4200    0.04032    803040.      1223.   -0.00107       0.00   3.83E+11
-38.340      1027.       0.00
    3.5100    0.03917    804342.      1181.   -0.00107       0.00   3.83E+11
-38.409      1059.       0.00
    3.6000    0.03802    805600.      1140.   -0.00106       0.00   3.83E+11
-38.464      1093.       0.00
    3.6900    0.03687    806813.      1098.   -0.00106       0.00   3.83E+11
-38.502      1128.       0.00
    3.7800    0.03572    807981.      1057.   -0.00106       0.00   3.83E+11
-38.524      1165.       0.00
    3.8700    0.03458    809104.      1015.   -0.00106       0.00   3.83E+11
-38.529      1203.       0.00
    3.9600    0.03344    810182.   973.3828   -0.00106       0.00   3.83E+11
-38.517      1244.       0.00
    4.0500    0.03230    811215.   445.4674   -0.00105       0.00   3.83E+11
-939.104     31404.       0.00
```

```
    4.1400    0.03116    811153.   -567.022   -0.00105       0.00   3.83E+11
-935.875     32437.       0.00
    4.2300    0.03003    809999.     -1576.   -0.00105       0.00   3.83E+11
-932.327     33535.       0.00
    4.3200    0.02889    807757.     -2581.   -0.00105       0.00   3.83E+11
-928.442     34703.       0.00
    4.4100    0.02777    804433.     -3581.   -0.00104       0.00   3.83E+11
-924.202     35949.       0.00
    4.5000    0.02664    800031.     -4577.   -0.00104       0.00   3.83E+11
-919.586     37282.       0.00
    4.5900    0.02551    794556.     -5567.   -0.00104       0.00   3.83E+11
-914.572     38712.       0.00
    4.6800    0.02439    788014.     -6552.   -0.00104       0.00   3.83E+11
-909.133     40252.       0.00
    4.7700    0.02327    780412.     -7531.   -0.00104       0.00   3.83E+11
-903.240     41914.       0.00
    4.8600    0.02216    771756.     -8503.   -0.00103       0.00   3.83E+11
-896.858     43716.       0.00
    4.9500    0.02104    762055.     -9468.   -0.00103       0.00   3.83E+11
-889.951     45677.       0.00
    5.0400    0.01993    751315.    -10425.   -0.00103       0.00   3.83E+11
-882.474     47821.       0.00
    5.1300    0.01882    739546.    -11373.   -0.00103       0.00   3.83E+11
-874.375     50177.       0.00
    5.2200    0.01771    726757.    -12313.   -0.00102       0.00   3.83E+11
-865.597     52780.       0.00
    5.3100    0.01661    712958.    -13243.   -0.00102       0.00   3.83E+11
-856.071     55674.       0.00
    5.4000    0.01550    698161.    -14162.   -0.00102       0.00   3.83E+11
-845.714     58915.       0.00
    5.4900    0.01440    682377.    -15069.   -0.00102       0.00   3.83E+11
-834.429     62574.       0.00
    5.5800    0.01330    665620.    -15963.   -0.00102       0.00   3.84E+11
-822.096     66743.       0.00
    5.6700    0.01221    647905.    -16844.   -0.00101       0.00   3.84E+11
-808.571     71545.       0.00
    5.7600    0.01111    629246.    -17709.   -0.00101       0.00   3.84E+11
-793.670     77149.       0.00
    5.8500    0.01002    609661.    -18557.   -0.00101       0.00   3.84E+11
-777.160     83789.       0.00
    5.9400    0.00893    589170.    -19387.   -0.00101       0.00   3.84E+11
-758.736     91805.       0.00
    6.0300    0.00784    567794.    -20195.   -0.00101       0.00   3.84E+11
-737.987    101711.       0.00
    6.1200    0.00675    545557.    -20979.   -0.00101       0.00   3.84E+11
-714.338    114323.       0.00
    6.2100    0.00566    522487.    -21736.   -0.00101       0.00   3.84E+11
-686.942    131030.       0.00
    6.3000    0.00458    498615.    -22460.   -0.00100       0.00   3.84E+11
-654.473    154418.       0.00
```

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    6.3900    0.00349    473980.    -23146.   -0.00100       0.00   3.84E+11
-614.646    189974.       0.00
    6.4800    0.00241    448629.    -23782.   -0.00100       0.00   3.84E+11
-562.916    251993.       0.00
    6.5700    0.00133    422620.    -24349.  -1.00E-03       0.00   3.84E+11
-487.521    395219.       0.00
    6.6600   2.53E-04    396043.    -24692.  -9.99E-04       0.00   3.84E+11
-147.647    629822.       0.00
    6.7500  -8.25E-04    369294.    -24536.  -9.97E-04       0.00   3.84E+11
436.4407    571572.       0.00
    6.8400   -0.00190    343054.    -24008.  -9.96E-04       0.00   3.84E+11
540.2759    306879.       0.00
    6.9300   -0.00298    317444.    -23389.  -9.96E-04       0.00   3.84E+11
607.1336    220251.       0.00
    7.0200   -0.00405    292542.    -22705.  -9.95E-04       0.00   3.85E+11
658.7633    175592.       0.00
    7.1100   -0.00513    268409.    -21971.  -9.94E-04       0.00   3.85E+11
701.8203    147878.       0.00
    7.2000   -0.00620    245094.    -21192.  -9.93E-04       0.00   3.85E+11
739.3086    128811.       0.00
    7.2900   -0.00727    222641.    -20376.  -9.93E-04       0.00   3.85E+11
772.8622    114798.       0.00
    7.3800   -0.00834    201090.    -19525.  -9.92E-04       0.00   3.85E+11
803.4762    104016.       0.00
    7.4700   -0.00941    180477.    -18642.  -9.91E-04       0.00   3.85E+11
831.8048     95432.       0.00
    7.5600   -0.01048    160833.    -17729.  -9.91E-04       0.00   3.85E+11
858.3030     88418.       0.00
    7.6500   -0.01155    142190.    -16788.  -9.91E-04       0.00   3.85E+11
883.3006     82566.       0.00
    7.7400   -0.01262    124578.    -15822.  -9.90E-04       0.00   3.85E+11
907.0447     77602.       0.00
    7.8300   -0.01369    108024.    -14830.  -9.90E-04       0.00   3.85E+11
929.7260     73332.       0.00
    7.9200   -0.01476     92554.    -13814.  -9.90E-04       0.00   3.85E+11
951.4943     69615.       0.00
    8.0100   -0.01583     78194.    -12775.  -9.89E-04       0.00   3.85E+11
972.4700     66347.       0.00
    8.1000   -0.01690     64968.    -11714.  -9.89E-04       0.00   3.85E+11
992.7511     63449.       0.00
    8.1900   -0.01797     52901.    -10631.  -9.89E-04       0.00   3.85E+11
1012.     60859.       0.00
    8.2800   -0.01903     42014.     -9527.  -9.89E-04       0.00   3.85E+11
1032.     58529.       0.00
    8.3700   -0.02010     32330.     -8403.  -9.89E-04       0.00   3.85E+11
1050.     56421.       0.00
    8.4600   -0.02117     23871.     -7259.  -9.89E-04       0.00   3.85E+11
1068.     54504.       0.00
    8.5500   -0.02224     16659.     -6096.  -9.89E-04       0.00   3.85E+11
1086.     52751.       0.00
```

```
    8.6400   -0.02331     10713.     -4913.  -9.89E-04       0.00   3.85E+11
1104.     51143.       0.00
    8.7300   -0.02437      6054.     -3712.  -9.88E-04       0.00   3.85E+11
1121.     49660.       0.00
    8.8200   -0.02544      2703.     -2493.  -9.88E-04       0.00   3.85E+11
1138.     48290.       0.00
    8.9100   -0.02651   678.4637     -1255.  -9.88E-04       0.00   3.85E+11
1154.     47018.       0.00
    9.0000   -0.02758       0.00       0.00  -9.88E-04       0.00   3.85E+11
1170.     22918.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection              =     0.08592182 inches
Computed slope at pile head       =     -0.0011515 radians
Maximum bending moment            =        811215. inch-lbs
Maximum shear force               =        -24692. lbs
Depth of maximum bending moment   =     4.05000000 feet below pile head
Depth of maximum shear force      =     6.66000000 feet below pile head
Number of iterations              =             32
Number of zero deflection points  =              1
Pile deflection at ground         =     0.07224125 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.08592182       811215.       -24692.
    8.55000    0.16854692       804545.       -26561.
```

```
    8.10000    0.40360093       796192.       -29130.
    7.65000    1.01651297       787194.       -32042.
    7.20000    2.65489606       780057.       -35296.
    6.75000    9.24077298       782384.       -40361.

--------------------------------------------------------------------------------
            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 Load                Load                   Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
Pile    in Pile
 No.  1      Load 1       2        Load 2       lbs      inches     radians      lbs
     in-lbs
---- ----- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
  1  V, lb  1000.0000  M, in-lb     315600.      4200.    0.00616  -1.12E-04
-9581.    355021.
  2  V, lb      2250.  M, in-lb     724800.      4600.    0.08595   -0.00115
-24694.    811255.
  3  V, lb      2250.  M, in-lb     724800.      3800.    0.08592   -0.00115
-24692.    811215.


Maximum pile-head deflection = 0.0859536190 inches
Maximum pile-head rotation   = -0.0011519411 radians = -0.066001 deg.

The analysis ended normally.
```

LATERAL LOAD (LPILE) ANALYSES

WESTBOUND PARKING AREA

LIGHT TOWER WR-10

(B-021-0-25 & B-018-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-10 (Boring B-021-0-25 & B-018-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

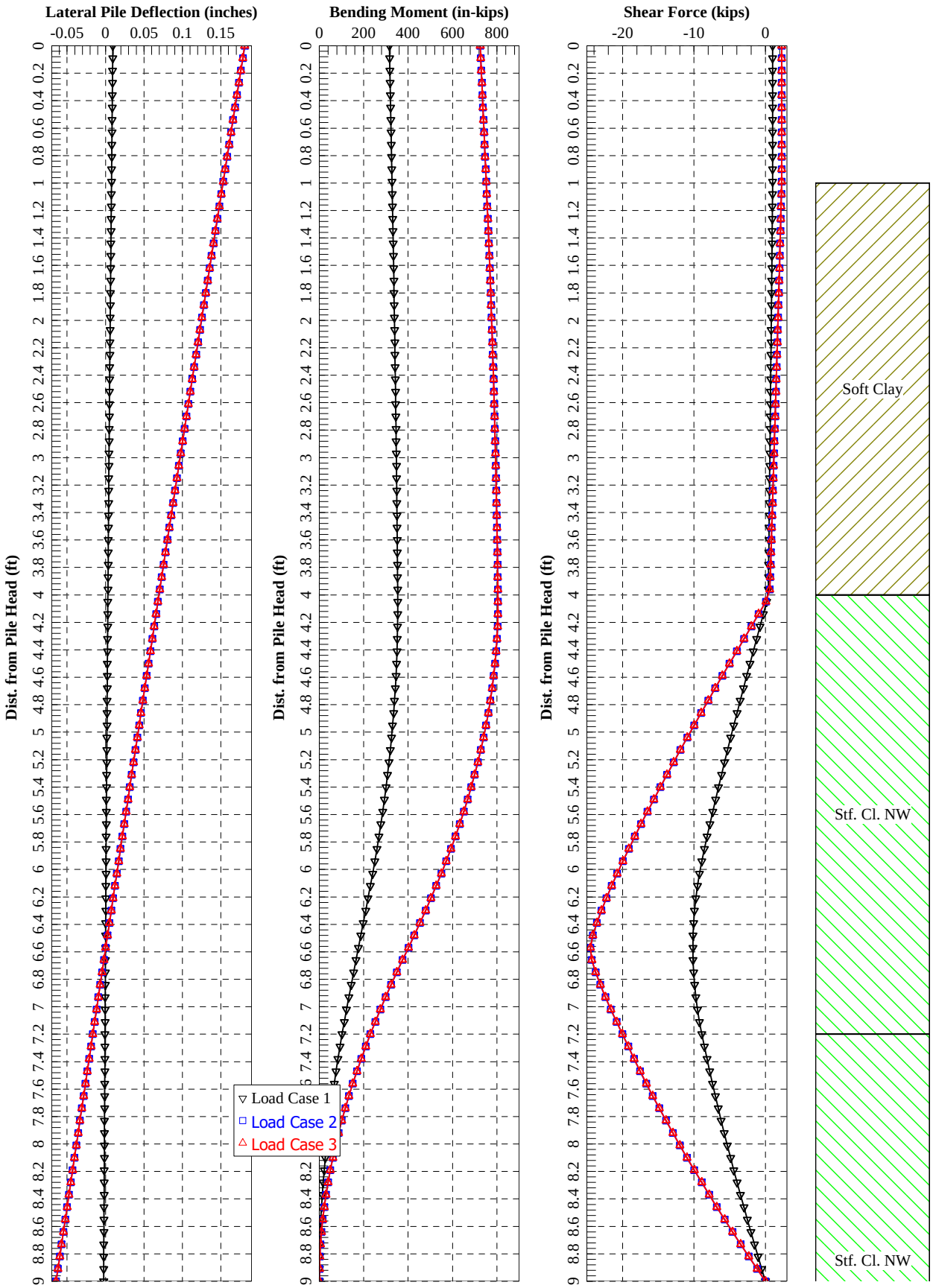


PLATE 446

==========

LPile for Version 2022-12.012

License ID : 228332755
License Type : (Single User License)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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S&ME, Inc.
Valley View, OH

==========

This model was prepared by:
BSears

Files Used for Analysis

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site 2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\WB\

Name of input data file:
Tower WR-10 (B-021-0-25 & B-018-0-25).lp12d

Name of output report file:
Tower WR-10 (B-021-0-25 & B-018-0-25).lp12o

Name of plot output file:
Tower WR-10 (B-021-0-25 & B-018-0-25).lp12p

Name of runtime message file:
Tower WR-10 (B-021-0-25 & B-018-0-25).lp12r

Date and Time of Analysis

Date: April 27, 2026 Time: 8:00:23

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower WR-10 (B-021-0-25 & B-018-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 7 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

Layer 2 is stiff clay without free water

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	7.200000 ft
Effective unit weight at top of layer	=	63.000000 pcf
Effective unit weight at bottom of layer	=	63.000000 pcf
Undrained cohesion at top of layer	=	4000. psf
Undrained cohesion at bottom of layer	=	4000. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 3 is stiff clay without free water

Distance from top of pile to top of layer	=	7.200000 ft
Distance from top of pile to bottom of layer	=	10.500000 ft
Effective unit weight at top of layer	=	58.000000 pcf
Effective unit weight at bottom of layer	=	58.000000 pcf
Undrained cohesion at top of layer	=	3500. psf
Undrained cohesion at bottom of layer	=	3500. psf
Epsilon-50 at top of layer	=	0.005000
Epsilon-50 at bottom of layer	=	0.005000

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	10.500000 ft
Distance from top of pile to bottom of layer	=	14.200000 ft
Effective unit weight at top of layer	=	63.000000 pcf

```
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 5 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer           =    14.200000 ft
   Distance from top of pile to bottom of layer        =    15.500000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Friction angle at top of layer                      =    32.000000 deg.
   Friction angle at bottom of layer                   =    32.000000 deg.
   Subgrade k at top of layer                          =    20.000000 pci
   Subgrade k at bottom of layer                       =    20.000000 pci


Layer 6 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer           =    15.500000 ft
   Distance from top of pile to bottom of layer        =    16.800000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Friction angle at top of layer                      =    30.000000 deg.
   Friction angle at bottom of layer                   =    30.000000 deg.
   Subgrade k at top of layer                          =    20.000000 pci
   Subgrade k at bottom of layer                       =    20.000000 pci


Layer 7 is stiff clay without free water

   Distance from top of pile to top of layer           =    16.800000 ft
   Distance from top of pile to bottom of layer        =    25.000000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Undrained cohesion at top of layer                  =        3250. psf
   Undrained cohesion at bottom of layer               =        3250. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


 (Depth of the lowest soil layer extends 16.000 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	Cohesion psf	Angle of Friction deg.	E50 or kpy krm pci
1	Soft Clay	1.0000 4.0000	98.0000 98.0000	250.0000 250.0000	--	0.02000 0.02000
2	Stiff Clay w/o Free Water	4.0000 7.2000	63.0000 63.0000	4000. 4000.	--	0.00500 0.00500
3	Stiff Clay w/o Free Water	7.2000 10.5000	58.0000 58.0000	3500. 3500.	--	0.00500 0.00500
4	Stiff Clay w/o Free Water	10.5000 14.2000	63.0000 63.0000	4500. 4500.	--	0.00400 0.00400
5	Sand (Reese, et al.)	14.2000 15.5000	58.0000 58.0000	-- --	32.0000 32.0000	-- --
6	Sand (Reese, et al.)	15.5000 16.8000	58.0000 58.0000	-- --	30.0000 30.0000	-- --
7	Stiff Clay w/o Free Water	16.8000 25.0000	58.0000 58.0000	3250. 3250.	--	0.00500 0.00500

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    Load         Condition               Condition            Axial Thrust
Compute Top y     Run Analysis
 No.    Type             1                       2                 Force, lbs
vs. Pile Length
-----   ----   --------------------   -----------------------   ----------------
---------------    ------------
   1     1     V =  1000.000000 lbs   M =      315600. in-lbs             4200.
    Yes               Yes
   2     1     V =        2250. lbs   M =      724800. in-lbs             4600.
    Yes               Yes
   3     1     V =        2250. lbs   M =      724800. in-lbs             3800.
    Yes               Yes

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



-------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
-------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
--------------------------------------------------------

Length of Section                                  =     9.000000 ft
Shaft Diameter                                     =    36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)=     3.500000 in
Number of Reinforcing Bars                         =           16 bars
Yield Stress of Reinforcing Bars                   =       60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =        1018. sq. in.
Total Area of Reinforcing Steel                    =    16.000000 sq. in.
Area Ratio of Steel Reinforcement                  =         1.57 percent
```

```
Edge-to-Edge Bar Spacing                              =     4.114467 in
Maximum Concrete Aggregate Size                       =     0.750000 in
Ratio of Bar Spacing to Aggregate Size                =         5.49
Offset of Center of Rebar Cage from Center of Pile    =       0.0000 in
Transverse Reinforcement
Type: Spiral
Number of Transverse Reinf. (per spacing)             =            1
Spacing of Transverse Reinf.                          =     4.500000 in
Yield Stress of Transverse Reinf.                     =       60000. psi
Diameter of Transverse Reinf.                         =     0.500000 in

Axial Structural Capacities:
----------------------------

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As   =     4366.378 kips
Tensile Load for Cracking of Concrete                 =     -470.222 kips
Nominal Axial Tensile Capacity                        =     -960.000 kips
```

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200
3	4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Curvature rad/in.	Bending Max Conc Stress ksi	Bending Max Steel Stress ksi	Run Msg	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
6.25000E-07	240.5062135	384809942.		19.2929823	0.00001206	-0.00001044
0.0505030	0.2746478					

```
0.00000125   480.1472468    384117797.    18.6479768    0.00002331   -0.00002169
0.0973082     0.5259142
0.00000188   718.9174733    383422652.    18.4329804    0.00003456   -0.00003294
0.1438345     0.7771808
0.00000250   956.8168886    382726755.    18.3254857    0.00004581   -0.00004419
0.1900818     1.0284477
0.00000313        1194.     382030558.    18.2609917    0.00005707   -0.00005543
0.2360502     1.2797149
0.00000375        1430.     381334209.    18.2179981    0.00006832   -0.00006668
0.2817396     1.5309823
0.00000438        1665.     380637775.    18.1872904    0.00007957   -0.00007793
0.3271500     1.7822500
0.00000500        1900.     379941287.    18.1642614    0.00009082   -0.00008918
0.3722815     2.0335179
0.00000563        2133.     379244764.    18.1463515     0.0001021     -0.000100
0.4171340     2.2847861
0.00000625        2366.     378548215.    18.1320251     0.0001133     -0.000112
0.4617075     2.5360546
0.00000688        2366.     344134741.    10.2494785    0.00007047     -0.000177
0.2882187    -4.308598 C
0.00000750        2366.     315456846.    10.2198771    0.00007665     -0.000193
0.3129821    -4.706727 C
0.00000813        2366.     291190934.    10.1952302    0.00008284     -0.000210
0.3376758    -5.104761 C
0.00000875        2366.     270391582.    10.1744772    0.00008903     -0.000226
0.3622998    -5.502701 C
0.00000938        2366.     252365477.    10.1568402    0.00009522     -0.000242
0.3868539    -5.900547 C
0.00001000        2366.     236592634.    10.1417358     0.0001014     -0.000259
0.4113380    -6.298297 C
0.00001063        2366.     222675420.    10.1287027     0.0001076     -0.000275
0.4357521    -6.695951 C
0.00001125        2366.     210304564.    10.1174231     0.0001138     -0.000291
0.4600960    -7.093510 C
0.00001188        2366.     199235903.    10.1076093     0.0001200     -0.000307
0.4843696    -7.490973 C
0.00001250        2366.     189274107.    10.0990420     0.0001262     -0.000324
0.5085729    -7.888340 C
0.00001313        2366.     180261055.    10.0915439     0.0001325     -0.000340
0.5327056    -8.285611 C
0.00001375        2366.     172067370.    10.0849699     0.0001387     -0.000356
0.5567678    -8.682785 C
0.00001438        2366.     164586180.    10.0792000     0.0001449     -0.000373
0.5807594    -9.079861 C
0.00001500        2366.     157728423.    10.0741344     0.0001511     -0.000389
0.6046801    -9.476841 C
0.00001563        2366.     151419286.    10.0696892     0.0001573     -0.000405
0.6285300    -9.873723 C
0.00001625        2366.     145595467.    10.0657933     0.0001636     -0.000421
0.6523089   -10.270507 C
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0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
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0.00004063        3808.     93726688.    10.0747116     0.0004093     -0.001053
1.5231846    -25.665765 C
0.00004188        3922.     93650546.    10.0784659     0.0004220     -0.001085
1.5648108    -26.450921 C
0.00004313        4035.     93575540.    10.0823562     0.0004348     -0.001118
1.6061342    -27.235635 C
0.00004438        4149.     93501560.    10.0863731     0.0004476     -0.001150
1.6471540    -28.019904 C
0.00004563        4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
0.00004688        4376.     93356279.    10.0947545     0.0004732     -0.001214
1.7282784    -29.587096 C
0.00004813        4489.     93284807.    10.0991050     0.0004860     -0.001246
1.7683810    -30.370013 C
0.00004938        4602.     93214014.    10.1035538     0.0004989     -0.001279
1.8081759    -31.152474 C
0.00005063        4715.     93143835.    10.1080956     0.0005117     -0.001311
1.8476620    -31.934476 C
0.00005188        4828.     93074209.    10.1127258     0.0005246     -0.001343
1.8868384    -32.716016 C
0.00005313        4941.     93005082.    10.1174399     0.0005375     -0.001375
1.9257039    -33.497091 C
0.00005438        5053.     92936405.    10.1222340     0.0005504     -0.001407
1.9642575    -34.277698 C
0.00005563        5166.     92868132.    10.1271047     0.0005633     -0.001439
2.0024981    -35.057833 C
0.00005688        5278.     92800222.    10.1320488     0.0005763     -0.001471
2.0404247    -35.837495 C
0.00005813        5390.     92732637.    10.1370633     0.0005892     -0.001503
2.0780361    -36.616679 C
0.00005938        5502.     92665342.    10.1421457     0.0006022     -0.001535
2.1153313    -37.395383 C
0.00006063        5614.     92598305.    10.1472935     0.0006152     -0.001567
2.1523092    -38.173604 C
0.00006188        5725.     92531497.    10.1525046     0.0006282     -0.001599
2.1889685    -38.951338 C
0.00006313        5837.     92464888.    10.1577769     0.0006412     -0.001631
2.2253083    -39.728581 C
0.00006438        5948.     92398455.    10.1631088     0.0006543     -0.001663
2.2613274    -40.505332 C
0.00006563        6059.     92332173.    10.1684984     0.0006673     -0.001695
2.2970245    -41.281586 C
0.00006688        6170.     92266020.    10.1739444     0.0006804     -0.001727
2.3323987    -42.057340 C
0.00006813        6281.     92199976.    10.1794453     0.0006935     -0.001759
2.3674485    -42.832591 C
0.00006938        6392.     92134020.    10.1849998     0.0007066     -0.001791
2.4021730    -43.607335 C
0.00007063        6502.     92068136.    10.1906070     0.0007197     -0.001823
2.4365708    -44.381568 C
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0.00007188        6613.     92002305.    10.1962656     0.0007329     -0.001855
2.4706408    -45.155288 C
0.00007313        6723.     91936511.    10.2020028     0.0007460     -0.001886
2.5043818    -45.928490 C
0.00007438        6833.     91870742.    10.2077616     0.0007592     -0.001918
2.5377924    -46.701172 C
0.00007938        7271.     91607617.    10.2312788     0.0008121     -0.002045
2.6681070    -49.786612 C
0.00008438        7707.     91343844.    10.2555391     0.0008653     -0.002172
2.7930345    -52.863415 C
0.00008938        8140.     91079227.    10.2796933     0.0009187     -0.002299
2.9123325    -55.933382 C
0.00009438        8570.     90813004.    10.3043877     0.0009725     -0.002425
3.0260259    -58.995009 C
0.00009938        8979.     90357411.    10.3225581     0.0010258     -0.002552
3.1326575    -60.000000 CY
 0.0001044        9304.     89144470.    10.3110511     0.0010762     -0.002681
3.2276850    -60.000000 CY
 0.0001094        9546.     87273573.    10.2718035     0.0011235     -0.002814
3.3116704    -60.000000 CY
 0.0001144        9782.     85523680.    10.2357064     0.0011707     -0.002947
3.3907664    -60.000000 CY
 0.0001194       10004.     83800225.    10.1987328     0.0012175     -0.003080
3.4643165    -60.000000 CY
 0.0001244       10154.     81641326.    10.1374818     0.0012608     -0.003217
3.5282172    -60.000000 CY
 0.0001294       10287.     79513660.    10.0756441     0.0013035     -0.003354
3.5871212    -60.000000 CY
 0.0001344       10419.     77536664.    10.0197410     0.0013464     -0.003491
3.6423258    -60.000000 CY
 0.0001394       10550.     75693983.     9.9691573     0.0013895     -0.003628
3.6937845    -60.000000 CY
 0.0001444       10680.     73971519.     9.9233661     0.0014327     -0.003765
3.7414497    -60.000000 CY
 0.0001494       10808.     72355946.     9.8810316     0.0014760     -0.003902
3.7851328    -60.000000 CY
 0.0001544       10925.     70772035.     9.8368433     0.0015186     -0.004039
3.8241552    -60.000000 CY
 0.0001594       11008.     69072220.     9.7809580     0.0015588     -0.004179
3.8574366    -60.000000 CY
 0.0001644       11071.     67351790.     9.7204156     0.0015978     -0.004320
3.8862696    -60.000000 CY
 0.0001694       11131.     65719446.     9.6635689     0.0016368     -0.004461
3.9118664    -60.000000 CY
 0.0001744       11191.     64176802.     9.6094393     0.0016756     -0.004602
3.9342902    -60.000000 CY
 0.0001794       11250.     62716278.     9.5601863     0.0017149     -0.004743
3.9535015    -60.000000 CY
 0.0001844       11308.     61329164.     9.5136161     0.0017541     -0.004883
3.9693617    -60.000000 CY
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 0.0001894        11364.     60009896.     9.4690774     0.0017932     -0.005024
3.9819050    -60.000000 CY
 0.0001944        11420.     58754909.     9.4280227     0.0018326     -0.005165
3.9911986    -60.000000 CY
 0.0001994        11476.     57559296.     9.3897594     0.0018721     -0.005305
3.9971986    -60.000000 CY
 0.0002044        11531.     56418622.     9.3531932     0.0019116     -0.005446
3.9998595    -60.000000 CY
 0.0002094        11584.     55328385.     9.3201259     0.0019514     -0.005586
3.9974517    -60.000000 CY
 0.0002144        11637.     54285454.     9.2909722     0.0019918     -0.005726
3.9998812    -60.000000 CY
 0.0002194        11690.     53285909.     9.2626721     0.0020320     -0.005866
3.9969940    -60.000000 CY
 0.0002244        11740.     52321336.     9.2356724     0.0020723     -0.006005
3.9997138    -60.000000 CY
 0.0002294        11786.     51384137.     9.2093226     0.0021124     -0.006145
3.9955528    -60.000000 CY
 0.0002344        11823.     50445667.     9.1796872     0.0021515     -0.006286
3.9989818    -60.000000 CY
 0.0002394        11855.     49524943.     9.1473565     0.0021896     -0.006428
3.9994466    -60.000000 CY
 0.0002444        11876.     48598228.     9.1109548     0.0022265     -0.006571
3.9965160    -60.000000 CY
 0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
3.9991770    -60.000000 CY
 0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
3.9995775    -60.000000 CY
 0.0002594        11929.     45990067.     9.0077660     0.0023364     -0.007001
3.9954763    -60.000000 CY
 0.0002644        11945.     45181124.     8.9766457     0.0023732     -0.007144
3.9984997    -60.000000 CY
 0.0002694        11961.     44401256.     8.9468563     0.0024101     -0.007287
3.9998981    -60.000000 CY
 0.0002744        11976.     43648250.     8.9191370     0.0024472     -0.007430
3.9944635    -60.000000 CY
 0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
3.9984635    -60.000000 CY
 0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
3.9998209    -60.000000 CY
 0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
3.9999551    -60.000000 CYT
 0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
3.9996166    -60.000000 CYT
 0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
3.9972132    -60.000000 CYT
 0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
3.9873462    -60.000000 CYT
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Axial Thrust Force = 4.200 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Run Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Msg
6.25000E-07	240.5049676	384807948.	19.4290859	0.00001214	-0.00001036	
0.0508615	0.2771147					
0.00000125	480.1459926	384116794.	18.7161837	0.00002340	-0.00002160	
0.0976654	0.5283867					
0.00000188	718.9162127	383421980.	18.4785558	0.00003465	-0.00003285	
0.1441903	0.7796589					
0.00000250	956.8156222	382726249.	18.3597458	0.00004590	-0.00004410	
0.1904363	1.0309315					
0.00000313	1194.	382030150.	18.2884629	0.00005715	-0.00005535	
0.2364034	1.2822044					
0.00000375	1430.	381333869.	18.2409436	0.00006840	-0.00006660	
0.2820914	1.5334776					
0.00000438	1665.	380637482.	18.2070035	0.00007966	-0.00007784	
0.3275005	1.7847511					
0.00000500	1900.	379941029.	18.1815504	0.00009091	-0.00008909	
0.3726306	2.0360248					
0.00000563	2133.	379244533.	18.1617553	0.0001022	-0.000100	
0.4174818	2.2872988					
0.00000625	2366.	378548006.	18.1459208	0.0001134	-0.000112	
0.4620539	2.5385732					
0.00000688	2366.	344134551.	10.2895004	0.00007074	-0.000177	
0.2893429	-4.300617	C				
0.00000750	2366.	315456672.	10.2575513	0.00007693	-0.000193	
0.3141325	-4.698533	C				
0.00000813	2366.	291190774.	10.2300378	0.00008312	-0.000209	
0.3388235	-5.096560	C				
0.00000875	2366.	270391433.	10.2068278	0.00008931	-0.000226	
0.3634446	-5.494492	C				
0.00000938	2366.	252365338.	10.1870615	0.00009550	-0.000242	
0.3879959	-5.892330	C				
0.00001000	2366.	236592504.	10.1700940	0.0001017	-0.000258	
0.4124772	-6.290073	C				
0.00001063	2366.	222675298.	10.1554324	0.0001079	-0.000275	
0.4368884	-6.687720	C				
0.00001125	2366.	210304448.	10.1426931	0.0001141	-0.000291	
0.4612294	-7.085271	C				
0.00001188	2366.	199235793.	10.1315564	0.0001203	-0.000307	
0.4855002	-7.482727	C				
0.00001250	2366.	189274003.	10.1218127	0.0001265	-0.000323	
0.5097005	-7.880086	C				

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0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304     -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898     -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784     -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963     -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433     -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193    -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242    -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
0.7007579    -11.055466 C
0.00001813         2366.    130533795.    10.0726747     0.0001826     -0.000470
0.7243204    -11.451947 C
0.00001875         2366.    126182669.    10.0699372     0.0001888     -0.000486
0.7478114    -11.848330 C
0.00001938         2366.    122112260.    10.0675528     0.0001951     -0.000502
0.7712309    -12.244613 C
0.00002000         2366.    118296252.    10.0654889     0.0002013     -0.000519
0.7945789    -12.640797 C
0.00002063         2366.    114711517.    10.0637168     0.0002076     -0.000535
0.8178551    -13.036882 C
0.00002125         2366.    111337649.    10.0622112     0.0002138     -0.000551
0.8410595    -13.432866 C
0.00002188         2366.    108156573.    10.0609497     0.0002201     -0.000567
0.8641920    -13.828750 C
0.00002250         2366.    105152224.    10.0599125     0.0002263     -0.000584
0.8872524    -14.224533 C
0.00002313         2366.    102310272.    10.0590817     0.0002326     -0.000600
0.9102407    -14.620215 C
0.00002375         2366.     99617896.    10.0584414     0.0002389     -0.000616
0.9331568    -15.015796 C
0.00002438         2366.     97063591.    10.0579776     0.0002452     -0.000632
0.9560005    -15.411276 C
0.00002563         2432.     94924068.    10.0575288     0.0002577     -0.000665
1.0014704    -16.201930 C
0.00002688         2548.     94810571.    10.0576469     0.0002703     -0.000697
1.0466496    -16.992174 C
0.00002813         2664.     94702439.    10.0582592     0.0002829     -0.000730
1.0915372    -17.782007 C
0.00002938         2779.     94598964.    10.0593353     0.0002955     -0.000762
1.1361324    -18.571425 C
0.00003063         2894.     94499555.    10.0607664     0.0003081     -0.000794
1.1804341    -19.360427 C
0.00003188         3009.     94403710.    10.0625387     0.0003207     -0.000827
1.2244416    -20.149010 C
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0.00003313        3124.     94311007.    10.0646159     0.0003334     -0.000859
1.2681539    -20.937171 C
0.00003438        3239.     94221082.    10.0669675     0.0003461     -0.000891
1.3115700    -21.724908 C
0.00003563        3354.     94133623.    10.0695670     0.0003587     -0.000924
1.3546892    -22.512219 C
0.00003688        3468.     94048359.    10.0723915     0.0003714     -0.000956
1.3975103    -23.299100 C
0.00003813        3582.     93965057.    10.0754214     0.0003841     -0.000988
1.4400326    -24.085550 C
0.00003938        3697.     93883511.    10.0786392     0.0003968     -0.001021
1.4822550    -24.871565 C
0.00004063        3811.     93803541.    10.0820299     0.0004096     -0.001053
1.5241766    -25.657144 C
0.00004188        3925.     93724988.    10.0855803     0.0004223     -0.001085
1.5657965    -26.442282 C
0.00004313        4039.     93647711.    10.0892786     0.0004351     -0.001117
1.6071135    -27.226979 C
0.00004438        4152.     93571586.    10.0931145     0.0004479     -0.001150
1.6481268    -28.011230 C
0.00004563        4266.     93496502.    10.0970787     0.0004607     -0.001182
1.6888354    -28.795033 C
0.00004688        4379.     93422358.    10.1011630     0.0004735     -0.001214
1.7292383    -29.578385 C
0.00004813        4492.     93349066.    10.1053601     0.0004863     -0.001246
1.7693344    -30.361284 C
0.00004938        4606.     93276544.    10.1096634     0.0004992     -0.001278
1.8091228    -31.143727 C
0.00005063        4718.     93204721.    10.1140670     0.0005120     -0.001310
1.8486023    -31.925710 C
0.00005188        4831.     93133529.    10.1185657     0.0005249     -0.001343
1.8877721    -32.707231 C
0.00005313        4944.     93062909.    10.1231546     0.0005378     -0.001375
1.9266309    -33.488287 C
0.00005438        5056.     92992807.    10.1278294     0.0005507     -0.001407
1.9651778    -34.268875 C
0.00005563        5169.     92923173.    10.1325862     0.0005636     -0.001439
2.0034117    -35.048992 C
0.00005688        5281.     92853961.    10.1374215     0.0005766     -0.001471
2.0413316    -35.828634 C
0.00005813        5393.     92785130.    10.1423320     0.0005895     -0.001503
2.0789362    -36.607799 C
0.00005938        5505.     92716640.    10.1473148     0.0006025     -0.001535
2.1162246    -37.386484 C
0.00006063        5617.     92648458.    10.1523672     0.0006155     -0.001567
2.1531956    -38.164685 C
0.00006188        5728.     92580549.    10.1574868     0.0006285     -0.001599
2.1898481    -38.942399 C
0.00006313        5840.     92512883.    10.1626714     0.0006415     -0.001631
2.2261809    -39.719622 C
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0.00006438        5951.     92445433.    10.1679189     0.0006546     -0.001663
2.2621930    -40.496353 C
0.00006563        6062.     92378172.    10.1732276     0.0006676     -0.001695
2.2978832    -41.272587 C
0.00006688        6173.     92311077.    10.1785957     0.0006807     -0.001727
2.3332503    -42.048320 C
0.00006813        6284.     92244124.    10.1840217     0.0006938     -0.001759
2.3682931    -42.823550 C
0.00006938        6395.     92177292.    10.1895041     0.0007069     -0.001791
2.4030104    -43.598274 C
0.00007063        6505.     92110561.    10.1950417     0.0007200     -0.001822
2.4374011    -44.372486 C
0.00007188        6616.     92043913.    10.2006608     0.0007332     -0.001854
2.4714639    -45.146185 C
0.00007313        6726.     91977331.    10.2063053     0.0007463     -0.001886
2.5051976    -45.919366 C
0.00007438        6836.     91910797.    10.2120017     0.0007595     -0.001918
2.5386010    -46.692026 C
0.00007938        7274.     91644853.    10.2352897     0.0008124     -0.002045
2.6688860    -49.777380 C
0.00008438        7710.     91378587.    10.2593338     0.0008656     -0.002172
2.7937834    -52.854093 C
0.00008938        8143.     91111830.    10.2831857     0.0009191     -0.002298
2.9130226    -55.924331 C
0.00009438        8573.     90843621.    10.3077273     0.0009728     -0.002425
3.0266854    -58.985869 C
0.00009938        8982.     90387473.    10.3258078     0.0010261     -0.002551
3.1332951    -60.000000 CY
 0.0001044        9308.     89176212.    10.3143071     0.0010766     -0.002681
3.2283182    -60.000000 CY
 0.0001094        9549.     87304848.    10.2749831     0.0011238     -0.002814
3.3122821    -60.000000 CY
 0.0001144        9785.     85553556.    10.2389100     0.0011711     -0.002946
3.3913727    -60.000000 CY
 0.0001194       10007.     83830919.    10.2019402     0.0012179     -0.003080
3.4649106    -60.000000 CY
 0.0001244       10158.     81671814.    10.1406407     0.0012612     -0.003216
3.5287895    -60.000000 CY
 0.0001294       10291.     79542859.    10.0787027     0.0013039     -0.003354
3.5876602    -60.000000 CY
 0.0001344       10423.     77564670.    10.0227059     0.0013468     -0.003491
3.6428308    -60.000000 CY
 0.0001394       10554.     75720878.     9.9720357     0.0013899     -0.003628
3.6942550    -60.000000 CY
 0.0001444       10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494       10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
 0.0001544       10929.     70796718.     9.8396771     0.0015190     -0.004038
3.8245440    -60.000000 CY
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 0.0001594        11012.     69097838.     9.7838573     0.0015593     -0.004178
3.8578061    -60.000000 CY
 0.0001644        11075.     67376662.     9.7232508     0.0015983     -0.004319
3.8866026    -60.000000 CY
 0.0001694        11135.     65743511.     9.6663364     0.0016372     -0.004460
3.9121613    -60.000000 CY
 0.0001744        11195.     64200103.     9.6121495     0.0016761     -0.004601
3.9345463    -60.000000 CY
 0.0001794        11254.     62738857.     9.5628376     0.0017153     -0.004742
3.9537182    -60.000000 CY
 0.0001844        11312.     61351278.     9.5162917     0.0017546     -0.004883
3.9695496    -60.000000 CY
 0.0001894        11368.     60031354.     9.4717005     0.0017937     -0.005024
3.9820503    -60.000000 CY
 0.0001944        11425.     58775745.     9.4305957     0.0018331     -0.005164
3.9913005    -60.000000 CY
 0.0001994        11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
 0.0002044        11535.     56438298.     9.3556780     0.0019121     -0.005445
3.9998723    -60.000000 CY
 0.0002094        11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
 0.0002144        11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
 0.0002194        11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
 0.0002244        11744.     52339157.     9.2380944     0.0020728     -0.006005
3.9997330    -60.000000 CY
 0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
 0.0002344        11827.     50463153.     9.1821360     0.0021521     -0.006285
3.9990203    -60.000000 CY
 0.0002394        11859.     49542728.     9.1500193     0.0021903     -0.006427
3.9992468    -60.000000 CY
 0.0002444        11880.     48615611.     9.1135780     0.0022271     -0.006570
3.9965958    -60.000000 CY
 0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
 0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
 0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
3.9955701    -60.000000 CY
 0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
3.9985538    -60.000000 CY
 0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
3.9999119    -60.000000 CY
 0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
3.9942523    -60.000000 CY
 0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
3.9985257    -60.000000 CY
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    0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
   3.9998424    -60.000000 CY
    0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
   3.9999658    -60.000000 CYT
    0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
   3.9996505    -60.000000 CYT
    0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
   3.9973093    -60.000000 CYT
    0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
   3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
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  6.25000E-07   240.5035986    384805758.    19.5651901    0.00001223   -0.00001027
   0.0512199     0.2795816
   0.00000125   480.1446137    384115691.    18.7843907    0.00002348   -0.00002152
   0.0980225     0.5308592
   0.00000188   718.9148267    383421241.    18.5241312    0.00003473   -0.00003277
   0.1445462     0.7821371
   0.00000250   956.8142298    382725692.    18.3940059    0.00004599   -0.00004401
   0.1907908     1.0334154
   0.00000313        1194.     382029703.    18.3159341    0.00005724   -0.00005526
   0.2367565     1.2846940
   0.00000375        1430.     381333494.    18.2638891    0.00006849   -0.00006651
   0.2824433     1.5359729
   0.00000438        1665.     380637159.    18.2267166    0.00007974   -0.00007776
   0.3278510     1.7872522
   0.00000500        1900.     379940746.    18.1988394    0.00009099   -0.00008901
   0.3729798     2.0385317
   0.00000563        2133.     379244280.    18.1771590     0.0001022    -0.000100
   0.4178295     2.2898116
   0.00000625        2366.     378547777.    18.1598165     0.0001135    -0.000112
   0.4624003     2.5410917
   0.00000688        2366.     344134343.    10.3291778    0.00007101    -0.000176
   0.2904571    -4.292706 C
   0.00000750        2366.     315456481.    10.2940289    0.00007721    -0.000193
   0.3152465    -4.690597 C
   0.00000813        2366.     291190598.    10.2646762    0.00008340    -0.000209
   0.3399656    -5.088396 C
   0.00000875        2366.     270391269.    10.2391817    0.00008959    -0.000225
   0.3645893    -5.486283 C
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0.00000938         2366.    252365185.    10.2172859    0.00009579     -0.000242
0.3891378     -5.884113 C
0.00001000         2366.    236592361.    10.1984552     0.0001020     -0.000258
0.4136162     -6.281848 C
0.00001063         2366.    222675163.    10.1821496     0.0001082     -0.000274
0.4380246     -6.679488 C
0.00001125         2366.    210304321.    10.1679490     0.0001144     -0.000291
0.4623628     -7.077032 C
0.00001188         2366.    199235672.    10.1555219     0.0001206     -0.000307
0.4866307     -7.474480 C
0.00001250         2366.    189273889.    10.1446030     0.0001268     -0.000323
0.5108282     -7.871831 C
0.00001313         2366.    180260846.    10.1349589     0.0001330     -0.000339
0.5349552     -8.269087 C
0.00001375         2366.    172067171.    10.1264498     0.0001392     -0.000356
0.5590117     -8.666245 C
0.00001438         2366.    164585990.    10.1189132     0.0001455     -0.000372
0.5829974     -9.063307 C
0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
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0.00002563         2436.     95048091.     10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688         2551.     94928657.     10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813         2667.     94815115.     10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938         2782.     94706690.     10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063         2897.     94602733.     10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
0.00003188         3012.     94502697.     10.0717368     0.0003210     -0.000826
1.2254772    -20.140508 C
0.00003313         3127.     94406117.     10.0734845     0.0003337     -0.000859
1.2691834    -20.928652 C
0.00003438         3242.     94312597.     10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563         3357.     94221794.     10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
0.00003688         3471.     94133413.     10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813         3586.     94047197.     10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938         3700.     93962921.     10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063         3814.     93880388.     10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188         3928.     93799425.     10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313         4042.     93719877.     10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438         4155.     93641609.     10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
0.00004563         4269.     93564497.     10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688         4382.     93488434.     10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813         4496.     93413321.     10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938         4609.     93339070.     10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063         4722.     93265602.     10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188         4834.     93192845.     10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313         4947.     93120733.     10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
0.00005438         5060.     93049206.     10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563         5172.     92978211.     10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
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0.00005688         5284.     92907697.    10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813         5396.     92837619.    10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938         5508.     92767935.    10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063         5620.     92698606.    10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188         5731.     92629597.    10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
0.00006313         5843.     92560874.    10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438         5954.     92492407.    10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563         6065.     92424168.    10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688         6176.     92356130.    10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
0.00006813         6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938         6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063         6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188         6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313         6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438         6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938         7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438         7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938         8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438         8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938         8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044         9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094         9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144         9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194        10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244        10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
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 0.0001294        10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344        10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394        10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444        10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494        10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
 0.0001544        10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594        11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644        11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694        11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
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   0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
   0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
   0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
   0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
   0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
   0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
   0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
   0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
   0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
   0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
3.9974037    -60.000000 CYT
   0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
3.9878351    -60.000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ---------------     ------------------     ------------
------------
   1                3.800             12169.214          0.00300000
-0.00952396
   2                4.200             12173.120          0.00300000
-0.00952020
   3                4.600             12177.027          0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).
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The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	3.800000	12169.	2.470000	7910.	91219895.
2	0.65	4.200000	12173.	2.730000	7913.	91253873.
3	0.65	4.600000	12177.	2.990000	7915.	91287886.
1	0.75	3.800000	12169.	2.850000	9127.	89806706.
2	0.75	4.200000	12173.	3.150000	9130.	89838295.
3	0.75	4.600000	12177.	3.450000	9133.	89869877.
1	0.90	3.800000	12169.	3.420000	10952.	70221645.
2	0.90	4.200000	12173.	3.780000	10956.	70254444.
3	0.90	4.600000	12177.	4.140000	10959.	70287179.

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	1.0000	0.00	N.A.	No	0.00	8832.

2	4.0000	0.2434	No	No	8832.	128280.
3	7.2000	3.8778	Yes	No	137112.	73756.
4	10.5000	9.5000	No	No	210868.	0.00
5	14.2000	13.2000	No	No	0.00	0.00
6	15.5000	14.5000	No	No	0.00	0.00
7	16.8000	15.8000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. Lat. Load	Distrib. p
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.00952	315600.	1000.	-1.55E-04	0.00	3.84E+11	0.00	0.00	0.00
0.09000	0.00936	316681.	1000.	-1.54E-04	0.00	3.84E+11	0.00	0.00	0.00
0.1800	0.00919	317761.	1000.0000	-1.53E-04	0.00	3.84E+11	0.00	0.00	0.00
0.2700	0.00902	318842.	1000.0000	-1.52E-04	0.00	3.84E+11	0.00	0.00	0.00
0.3600	0.00886	319923.	1000.0000	-1.51E-04	0.00	3.84E+11	0.00	0.00	0.00
0.4500	0.00870	321003.	1000.	-1.50E-04	0.00	3.84E+11	0.00	0.00	0.00
0.5400	0.00854	322084.	1000.	-1.50E-04	0.00	3.84E+11	0.00	0.00	0.00
0.6300	0.00837	323165.	1000.0000	-1.49E-04	0.00	3.84E+11			

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0.00       0.00       0.00
    0.7200    0.00821    324245.  1000.0000  -1.48E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.8100    0.00806    325326.  1000.0000  -1.47E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9000    0.00790    326407.  1000.0000  -1.46E-04       0.00   3.84E+11
0.00       0.00       0.00
    0.9900    0.00774    327487.  1000.0000  -1.45E-04       0.00   3.84E+11
0.00       0.00       0.00
    1.0800    0.00758    328568.   991.6963  -1.44E-04       0.00   3.84E+11
-15.377      2190.       0.00
    1.1700    0.00743    329631.   975.0096  -1.43E-04       0.00   3.84E+11
-15.524      2257.       0.00
    1.2600    0.00728    330675.   958.1668  -1.42E-04       0.00   3.84E+11
-15.666      2326.       0.00
    1.3500    0.00712    331702.   941.1725  -1.41E-04       0.00   3.84E+11
-15.804      2396.       0.00
    1.4400    0.00697    332710.   924.0315  -1.40E-04       0.00   3.84E+11
-15.938      2469.       0.00
    1.5300    0.00682    333699.   906.7486  -1.39E-04       0.00   3.84E+11
-16.067      2545.       0.00
    1.6200    0.00667    334670.   889.3286  -1.38E-04       0.00   3.84E+11
-16.192      2622.       0.00
    1.7100    0.00652    335621.   871.7765  -1.38E-04       0.00   3.84E+11
-16.312      2702.       0.00
    1.8000    0.00637    336554.   854.0974  -1.37E-04       0.00   3.84E+11
-16.427      2784.       0.00
    1.8900    0.00623    337467.   836.2963  -1.36E-04       0.00   3.84E+11
-16.538      2869.       0.00
    1.9800    0.00608    338361.   818.3784  -1.35E-04       0.00   3.84E+11
-16.643      2957.       0.00
    2.0700    0.00593    339236.   800.3491  -1.34E-04       0.00   3.84E+11
-16.744      3047.       0.00
    2.1600    0.00579    340091.   782.2137  -1.33E-04       0.00   3.84E+11
-16.840      3141.       0.00
    2.2500    0.00565    340927.   763.9777  -1.32E-04       0.00   3.84E+11
-16.930      3238.       0.00
    2.3400    0.00551    341743.   745.6468  -1.31E-04       0.00   3.84E+11
-17.016      3338.       0.00
    2.4300    0.00537    342539.   727.2265  -1.30E-04       0.00   3.84E+11
-17.096      3441.       0.00
    2.5200    0.00523    343315.   708.7227  -1.29E-04       0.00   3.84E+11
-17.170      3549.       0.00
    2.6100    0.00509    344071.   690.1414  -1.28E-04       0.00   3.84E+11
-17.239      3660.       0.00
    2.7000    0.00495    344807.   671.4885  -1.27E-04       0.00   3.84E+11
-17.303      3776.       0.00
    2.7900    0.00481    345522.   652.7704  -1.26E-04       0.00   3.84E+11
-17.360      3896.       0.00
    2.8800    0.00468    346218.   633.9933  -1.25E-04       0.00   3.84E+11
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-17.412      4021.       0.00
    2.9700    0.00454    346893.   615.1638  -1.24E-04       0.00   3.84E+11
-17.458      4151.       0.00
    3.0600    0.00441    347548.   596.2884  -1.23E-04       0.00   3.84E+11
-17.497      4286.       0.00
    3.1500    0.00428    348182.   577.3740  -1.22E-04       0.00   3.84E+11
-17.530      4427.       0.00
    3.2400    0.00415    348796.   558.4277  -1.21E-04       0.00   3.84E+11
-17.556      4574.       0.00
    3.3300    0.00401    349389.   539.4566  -1.20E-04       0.00   3.84E+11
-17.576      4728.       0.00
    3.4200    0.00389    349962.   520.4681  -1.19E-04       0.00   3.84E+11
-17.588      4889.       0.00
    3.5100    0.00376    350515.   501.4699  -1.18E-04       0.00   3.84E+11
-17.594      5057.       0.00
    3.6000    0.00363    351046.   482.4698  -1.17E-04       0.00   3.84E+11
-17.592      5234.       0.00
    3.6900    0.00350    351558.   463.4760  -1.16E-04       0.00   3.84E+11
-17.582      5419.       0.00
    3.7800    0.00338    352049.   444.4969  -1.15E-04       0.00   3.84E+11
-17.564      5614.       0.00
    3.8700    0.00326    352519.   425.5411  -1.14E-04       0.00   3.84E+11
-17.539      5819.       0.00
    3.9600    0.00313    352969.   406.6178  -1.13E-04       0.00   3.84E+11
-17.504      6035.       0.00
    4.0500    0.00301    353398.   160.9935  -1.12E-04       0.00   3.84E+11
-437.355    156890.       0.00
    4.1400    0.00289    353318.  -310.255   -1.11E-04       0.00   3.84E+11
-435.328    162685.       0.00
    4.2300    0.00277    352729.  -779.230   -1.10E-04       0.00   3.84E+11
-433.144    168859.       0.00
    4.3200    0.00265    351635.    -1246.   -1.09E-04       0.00   3.84E+11
-430.795    175452.       0.00
    4.4100    0.00253    350039.    -1710.   -1.08E-04       0.00   3.84E+11
-428.273    182511.       0.00
    4.5000    0.00242    347944.    -2171.   -1.07E-04       0.00   3.84E+11
-425.566    190091.       0.00
    4.5900    0.00230    345351.    -2629.   -1.06E-04       0.00   3.84E+11
-422.664    198255.       0.00
    4.6800    0.00219    342266.    -3084.   -1.05E-04       0.00   3.84E+11
-419.553    207078.       0.00
    4.7700    0.00207    338692.    -3535.   -1.04E-04       0.00   3.84E+11
-416.217    216648.       0.00
    4.8600    0.00196    334632.    -3982.   -1.03E-04       0.00   3.84E+11
-412.640    227071.       0.00
    4.9500    0.00185    330091.    -4426.   -1.03E-04       0.00   3.84E+11
-408.800    238476.       0.00
    5.0400    0.00174    325073.    -4865.   -1.02E-04       0.00   3.84E+11
-404.675    251017.       0.00
    5.1300    0.00163    319583.    -5300.   -1.01E-04       0.00   3.84E+11
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-400.236	264886.	0.00				
5.2200	0.00152	313626.	-5730.	-9.98E-05	0.00	3.84E+11
-395.453	280322.	0.00				
5.3100	0.00142	307207.	-6154.	-9.90E-05	0.00	3.85E+11
-390.286	297627.	0.00				
5.4000	0.00131	300334.	-6572.	-9.81E-05	0.00	3.85E+11
-384.688	317189.	0.00				
5.4900	0.00120	293012.	-6985.	-9.73E-05	0.00	3.85E+11
-378.604	339517.	0.00				
5.5800	0.00110	285248.	-7390.	-9.65E-05	0.00	3.85E+11
-371.964	365291.	0.00				
5.6700	9.96E-04	277051.	-7788.	-9.57E-05	0.00	3.85E+11
-364.680	395439.	0.00				
5.7600	8.93E-04	268428.	-8177.	-9.49E-05	0.00	3.85E+11
-356.638	431276.	0.00				
5.8500	7.91E-04	259389.	-8558.	-9.42E-05	0.00	3.85E+11
-347.691	474719.	0.00				
5.9400	6.90E-04	249944.	-8922.	-9.34E-05	0.00	3.85E+11
-326.644	511485.	0.00				
6.0300	5.89E-04	240119.	-9249.	-9.28E-05	0.00	3.85E+11
-280.393	513987.	0.00				
6.1200	4.89E-04	229966.	-9527.	-9.21E-05	0.00	3.85E+11
-234.023	516487.	0.00				
6.2100	3.90E-04	219541.	-9755.	-9.15E-05	0.00	3.85E+11
-187.526	518987.	0.00				
6.3000	2.92E-04	208896.	-9932.	-9.09E-05	0.00	3.85E+11
-140.891	521485.	0.00				
6.3900	1.94E-04	198088.	-10059.	-9.03E-05	0.00	3.85E+11
-94.108	523981.	0.00				
6.4800	9.68E-05	187169.	-10135.	-8.98E-05	0.00	3.85E+11
-47.165	526477.	0.00				
6.5700	1.03E-07	176196.	-10161.	-8.92E-05	0.00	3.85E+11
-0.05023	528972.	0.00				
6.6600	-9.60E-05	165222.	-10135.	-8.88E-05	0.00	3.85E+11
47.2479	531465.	0.00				
6.7500	-1.92E-04	154304.	-10059.	-8.83E-05	0.00	3.85E+11
94.7420	533958.	0.00				
6.8400	-2.87E-04	143496.	-9931.	-8.79E-05	0.00	3.85E+11
142.4449	536450.	0.00				
6.9300	-3.81E-04	132855.	-9751.	-8.75E-05	0.00	3.85E+11
190.3696	538941.	0.00				
7.0200	-4.76E-04	122435.	-9519.	-8.72E-05	0.00	3.85E+11
238.5288	541431.	0.00				
7.1100	-5.70E-04	112294.	-9236.	-8.68E-05	0.00	3.85E+11
286.9356	543920.	0.00				
7.2000	-6.63E-04	102487.	-8907.	-8.65E-05	0.00	3.85E+11
322.0762	524385.	0.00				
7.2900	-7.57E-04	93056.	-8553.	-8.62E-05	0.00	3.85E+11
332.6551	474832.	0.00				
7.3800	-8.50E-04	84013.	-8188.	-8.60E-05	0.00	3.85E+11

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343.9621    437226.       0.00
    7.4700  -9.42E-04     75371.     -7811.  -8.58E-05       0.00   3.85E+11
354.5517    406330.       0.00
    7.5600   -0.00103     67143.     -7422.  -8.56E-05       0.00   3.85E+11
364.5512    380438.       0.00
    7.6500   -0.00113     59339.     -7023.  -8.54E-05       0.00   3.85E+11
374.0569    358388.       0.00
    7.7400   -0.00122     51973.     -6615.  -8.52E-05       0.00   3.85E+11
383.1433    339355.       0.00
    7.8300   -0.00131     45053.     -6196.  -8.51E-05       0.00   3.85E+11
391.8693    322738.       0.00
    7.9200   -0.00140     38590.     -5768.  -8.50E-05       0.00   3.85E+11
400.2824    308089.       0.00
    8.0100   -0.00149     32594.     -5332.  -8.49E-05       0.00   3.85E+11
408.4214    295065.       0.00
    8.1000   -0.00159     27074.     -4886.  -8.48E-05       0.00   3.85E+11
416.3185    283399.       0.00
    8.1900   -0.00168     22040.     -4432.  -8.47E-05       0.00   3.85E+11
424.0006    272883.       0.00
    8.2800   -0.00177     17501.     -3971.  -8.47E-05       0.00   3.85E+11
431.4904    263347.       0.00
    8.3700   -0.00186     13465.     -3501.  -8.46E-05       0.00   3.85E+11
438.8075    254655.       0.00
    8.4600   -0.00195      9941.     -3023.  -8.46E-05       0.00   3.85E+11
445.9684    246697.       0.00
    8.5500   -0.00204      6936.     -2537.  -8.46E-05       0.00   3.85E+11
452.9877    239379.       0.00
    8.6400   -0.00214      4461.     -2044.  -8.46E-05       0.00   3.85E+11
459.8779    232624.       0.00
    8.7300   -0.00223      2521.     -1544.  -8.46E-05       0.00   3.85E+11
466.6500    226367.       0.00
    8.8200   -0.00232      1126.     -1036.  -8.45E-05       0.00   3.85E+11
473.3136    220554.       0.00
    8.9100   -0.00241   283.2549   -521.762  -8.45E-05       0.00   3.85E+11
479.8772    215136.       0.00
    9.0000   -0.00250       0.00       0.00  -8.45E-05       0.00   3.85E+11
486.3484    105038.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection              =     0.00952236 inches
Computed slope at pile head       =     -0.0001549 radians
```

```
Maximum bending moment           =        353398. inch-lbs
Maximum shear force              =        -10161. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.57000000 feet below pile head
Number of iterations             =             18
Number of zero deflection points =              1
Pile deflection at ground        =     0.00772349 inches
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.00952236	353398.	-10161.
8.55000	0.01614372	350725.	-11370.
8.10000	0.03524370	347137.	-12731.
7.65000	0.08131296	343012.	-14067.
7.20000	0.19013968	339076.	-15306.
6.75000	0.59685078	336353.	-17049.
6.30000	2.00533390	335878.	-19080.
5.85000	11.17213133	347710.	-23260.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 2

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

```
Shear force at pile head                          =       2250.0 lbs
Applied moment at pile head                       =     724800.0 in-lbs
Axial thrust load on pile head                    =       4600.0 lbs
```

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. p Distrib. Lat. Load

feet	inches	in-lbs	lbs	radians	psi*	lb-in^2 lb/inch	lb/inch	lb/inch
0.00	0.1813	724800.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1787	727242.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1761	729684.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1736	732125.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1710	734567.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1685	737009.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1659	739451.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.1634	741892.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.1608	744334.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.1583	746776.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.1557	749217.	2250.	-0.00235	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.1532	751659.	2250.	-0.00235	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.1507	754101.	2228.	-0.00235	0.00	3.83E+11	-41.621	298.3618	0.00
1.1700	0.1481	756494.	2182.	-0.00235	0.00	3.83E+11	-42.070	306.7412	0.00
1.2600	0.1456	758838.	2137.	-0.00235	0.00	3.83E+11	-42.508	315.3310	0.00
1.3500	0.1431	761132.	2091.	-0.00234	0.00	3.83E+11	-42.936	324.1404	0.00
1.4400	0.1405	763377.	2044.	-0.00234	0.00	3.83E+11	-43.353	333.1794	0.00
1.5300	0.1380	765571.	1997.	-0.00234	0.00	3.83E+11	-43.759	342.4584	0.00
1.6200	0.1355	767713.	1949.	-0.00234	0.00	3.83E+11	-44.154	351.9885	0.00
1.7100	0.1330	769804.	1902.	-0.00233	0.00	3.83E+11	-44.537	361.7817	0.00
1.8000	0.1304	771844.	1853.	-0.00233	0.00	3.83E+11	-44.909	371.8506	0.00
1.8900	0.1279	773831.	1805.	-0.00233	0.00	3.83E+11	-45.269	382.2089	0.00
1.9800	0.1254	775765.	1755.	-0.00233	0.00	3.83E+11	-45.617	392.8711	0.00

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    2.0700     0.1229    777645.      1706.   -0.00233       0.00   3.83E+11
-45.953   403.8528       0.00
    2.1600     0.1204    779473.      1656.   -0.00232       0.00   3.83E+11
-46.275   415.1706       0.00
    2.2500     0.1179    781246.      1606.   -0.00232       0.00   3.83E+11
-46.585   426.8426       0.00
    2.3400     0.1154    782965.      1556.   -0.00232       0.00   3.83E+11
-46.881   438.8881       0.00
    2.4300     0.1129    784629.      1505.   -0.00232       0.00   3.83E+11
-47.164   451.3279       0.00
    2.5200     0.1104    786238.      1454.   -0.00231       0.00   3.83E+11
-47.433   464.1846       0.00
    2.6100     0.1079    787792.      1402.   -0.00231       0.00   3.83E+11
-47.687   477.4825       0.00
    2.7000     0.1054    789290.      1351.   -0.00231       0.00   3.83E+11
-47.926   491.2480       0.00
    2.7900     0.1029    790733.      1299.   -0.00231       0.00   3.83E+11
-48.150   505.5098       0.00
    2.8800     0.1004    792119.      1247.   -0.00231       0.00   3.83E+11
-48.359   520.2989       0.00
    2.9700    0.09789    793448.      1194.   -0.00230       0.00   3.83E+11
-48.551   535.6494       0.00
    3.0600    0.09540    794721.      1142.   -0.00230       0.00   3.83E+11
-48.727   551.5984       0.00
    3.1500    0.09292    795938.      1089.   -0.00230       0.00   3.83E+11
-48.885   568.1864       0.00
    3.2400    0.09044    797097.      1036.   -0.00230       0.00   3.83E+11
-49.026   585.4579       0.00
    3.3300    0.08796    798199.   983.2558   -0.00229       0.00   3.83E+11
-49.148   603.4619       0.00
    3.4200    0.08548    799243.   930.1201   -0.00229       0.00   3.83E+11
-49.251   622.2525       0.00
    3.5100    0.08301    800231.   876.8835   -0.00229       0.00   3.83E+11
-49.335   641.8893       0.00
    3.6000    0.08054    801160.   823.5676   -0.00229       0.00   3.83E+11
-49.398   662.4386       0.00
    3.6900    0.07807    802032.   770.1951   -0.00229       0.00   3.83E+11
-49.440   683.9740       0.00
    3.7800    0.07560    802847.   716.7892   -0.00228       0.00   3.83E+11
-49.460   706.5778       0.00
    3.8700    0.07313    803603.   663.3744   -0.00228       0.00   3.83E+11
-49.457   730.3419       0.00
    3.9600    0.07067    804302.   609.9761   -0.00228       0.00   3.83E+11
-49.429   755.3698       0.00
    4.0500    0.06821    804943.    68.4071   -0.00228       0.00   3.83E+11
-953.476     15096.       0.00
    4.1400    0.06575    804472.   -959.501   -0.00227       0.00   3.83E+11
-950.056     15604.       0.00
    4.2300    0.06330    802893.     -1984.   -0.00227       0.00   3.83E+11
-946.286     16145.       0.00
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    4.3200    0.06085    800211.     -3003.   -0.00227       0.00   3.83E+11
-942.146     16722.       0.00
    4.4100    0.05840    796429.     -4018.   -0.00227       0.00   3.83E+11
-937.616     17340.       0.00
    4.5000    0.05595    791554.     -5028.   -0.00227       0.00   3.83E+11
-932.669     18003.       0.00
    4.5900    0.05350    785590.     -6033.   -0.00226       0.00   3.83E+11
-927.281     18717.       0.00
    4.6800    0.05106    778545.     -7031.   -0.00226       0.00   3.83E+11
-921.418     19489.       0.00
    4.7700    0.04862    770426.     -8023.   -0.00226       0.00   3.83E+11
-915.047     20325.       0.00
    4.8600    0.04618    761239.     -9007.   -0.00226       0.00   3.83E+11
-908.127     21236.       0.00
    4.9500    0.04375    750993.     -9984.   -0.00225       0.00   3.83E+11
-900.611     22233.       0.00
    5.0400    0.04131    739696.    -10952.   -0.00225       0.00   3.83E+11
-892.448     23330.       0.00
    5.1300    0.03888    727358.    -11911.   -0.00225       0.00   3.83E+11
-883.575     24542.       0.00
    5.2200    0.03645    713990.    -12860.   -0.00225       0.00   3.83E+11
-873.920     25891.       0.00
    5.3100    0.03403    699603.    -13798.   -0.00225       0.00   3.83E+11
-863.396     27404.       0.00
    5.4000    0.03160    684208.    -14725.   -0.00224       0.00   3.83E+11
-851.900     29113.       0.00
    5.4900    0.02918    667820.    -15638.   -0.00224       0.00   3.84E+11
-839.308     31064.       0.00
    5.5800    0.02676    650452.    -16537.   -0.00224       0.00   3.84E+11
-825.464     33316.       0.00
    5.6700    0.02434    632122.    -17420.   -0.00224       0.00   3.84E+11
-810.177     35948.       0.00
    5.7600    0.02192    612847.    -18286.   -0.00224       0.00   3.84E+11
-793.197     39074.       0.00
    5.8500    0.01951    592647.    -19132.   -0.00224       0.00   3.84E+11
-774.201     42859.       0.00
    5.9400    0.01710    571543.    -19957.   -0.00223       0.00   3.84E+11
-752.747     47553.       0.00
    6.0300    0.01468    549562.    -20757.   -0.00223       0.00   3.84E+11
-728.217     53557.       0.00
    6.1200    0.01228    526731.    -21528.   -0.00223       0.00   3.84E+11
-699.695     61560.       0.00
    6.2100    0.00987    503084.    -22265.   -0.00223       0.00   3.84E+11
-665.727     72866.       0.00
    6.3000    0.00746    478661.    -22961.   -0.00223       0.00   3.84E+11
-623.775     90296.       0.00
    6.3900    0.00506    453510.    -23605.   -0.00223       0.00   3.84E+11
-568.659    121477.       0.00
    6.4800    0.00265    427696.    -24175.   -0.00223       0.00   3.84E+11
-486.254    198019.       0.00
```

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    6.5700   2.50E-04    401314.    -24504.   -0.00222       0.00   3.84E+11
-122.288    528972.       0.00
    6.6600   -0.00215    374790.    -24318.   -0.00222       0.00   3.84E+11
465.8602    233853.       0.00
    6.7500   -0.00455    348810.    -23762.   -0.00222       0.00   3.84E+11
564.4684    133940.       0.00
    6.8400   -0.00695    323487.    -23116.   -0.00222       0.00   3.84E+11
630.4136     97957.       0.00
    6.9300   -0.00935    298900.    -22408.   -0.00222       0.00   3.85E+11
682.0535     78796.       0.00
    7.0200   -0.01175    275109.    -21648.   -0.00222       0.00   3.85E+11
725.4431     66705.       0.00
    7.1100   -0.01414    252163.    -20844.   -0.00222       0.00   3.85E+11
763.4016     58301.       0.00
    7.2000   -0.01654    230108.    -20018.   -0.00222       0.00   3.85E+11
765.3471     49983.       0.00
    7.2900   -0.01893    208946.    -19203.   -0.00222       0.00   3.85E+11
743.3670     42406.       0.00
    7.3800   -0.02133    188651.    -18387.   -0.00222       0.00   3.85E+11
769.2374     38956.       0.00
    7.4700   -0.02372    169253.    -17543.   -0.00222       0.00   3.85E+11
793.4667     36128.       0.00
    7.5600   -0.02611    150781.    -16673.   -0.00222       0.00   3.85E+11
816.3466     33763.       0.00
    7.6500   -0.02851    133261.    -15780.   -0.00222       0.00   3.85E+11
838.0966     31754.       0.00
    7.7400   -0.03090    116718.    -14864.   -0.00221       0.00   3.85E+11
858.8862     30022.       0.00
    7.8300   -0.03329    101177.    -13925.   -0.00221       0.00   3.85E+11
878.8496     28512.       0.00
    7.9200   -0.03568     86661.    -12966.   -0.00221       0.00   3.85E+11
898.0943     27184.       0.00
    8.0100   -0.03807     73193.    -11986.   -0.00221       0.00   3.85E+11
916.7082     26004.       0.00
    8.1000   -0.04046     60794.    -10986.   -0.00221       0.00   3.85E+11
934.7643     24950.       0.00
    8.1900   -0.04285     49485.     -9967.   -0.00221       0.00   3.85E+11
952.3235     24000.       0.00
    8.2800   -0.04524     39288.     -8929.   -0.00221       0.00   3.85E+11
969.4374     23141.       0.00
    8.3700   -0.04764     30220.     -7873.   -0.00221       0.00   3.85E+11
986.1501     22358.       0.00
    8.4600   -0.05003     22304.     -6799.   -0.00221       0.00   3.85E+11
1002.     21643.       0.00
    8.5500   -0.05242     15556.     -5708.   -0.00221       0.00   3.85E+11
1019.     20986.       0.00
    8.6400   -0.05481      9996.     -4599.   -0.00221       0.00   3.85E+11
1034.     20380.       0.00
    8.7300   -0.05720      5643.     -3474.   -0.00221       0.00   3.85E+11
1050.     19820.       0.00
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    8.8200   -0.05959      2514.     -2332.   -0.00221       0.00   3.85E+11
1065.     19300.       0.00
    8.9100   -0.06198   627.3477     -1174.   -0.00221       0.00   3.85E+11
1080.     18817.       0.00
    9.0000   -0.06437       0.00       0.00   -0.00221       0.00   3.85E+11
1095.      9183.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     0.18127095 inches
Computed slope at pile head      =     -0.0023744 radians
Maximum bending moment           =        804943. inch-lbs
Maximum shear force              =        -24504. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.57000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.15291588 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 2
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Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    0.18127095       804943.       -24504.
    8.55000    0.35338557       797022.       -26389.
    8.10000    0.82523185       788718.       -28930.
    7.65000    1.96488831       783470.       -31767.
    7.20000    4.78077240       780824.       -34946.
    6.75000   19.46132045       800716.       -41864.
```

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

Shear force at pile head = 2250.0 lbs
Applied moment at pile head = 724800.0 in-lbs
Axial thrust load on pile head = 3800.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. p	Distrib. Lat. Load
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.1811	724800.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.09000	0.1786	727240.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.1800	0.1760	729679.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.2700	0.1734	732119.	2250.	-0.00237	0.00	3.83E+11	0.00	0.00	0.00
0.3600	0.1709	734559.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.4500	0.1683	736999.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.5400	0.1658	739438.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.6300	0.1632	741878.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.7200	0.1607	744318.	2250.	-0.00236	0.00	3.83E+11	0.00	0.00	0.00
0.8100	0.1582	746757.	2250.	-0.00235	0.00	3.83E+11	0.00	0.00	0.00
0.9000	0.1556	749197.	2250.	-0.00235	0.00	3.83E+11	0.00	0.00	0.00
0.9900	0.1531	751637.	2250.	-0.00235	0.00	3.83E+11	0.00	0.00	0.00
1.0800	0.1505	754076.	2228.	-0.00235	0.00	3.83E+11	-41.610	298.5265	0.00
1.1700	0.1480	756467.	2182.	-0.00235	0.00	3.83E+11	-42.058	306.9106	0.00
1.2600	0.1455	758809.	2137.	-0.00234	0.00	3.83E+11			

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-42.496   315.5052       0.00
    1.3500     0.1429    761102.      2091.   -0.00234       0.00   3.83E+11
-42.924   324.3195       0.00
    1.4400     0.1404    763344.      2044.   -0.00234       0.00   3.83E+11
-43.341   333.3636       0.00
    1.5300     0.1379    765536.      1997.   -0.00234       0.00   3.83E+11
-43.747   342.6477       0.00
    1.6200     0.1354    767677.      1949.   -0.00233       0.00   3.83E+11
-44.142   352.1832       0.00
    1.7100     0.1328    769766.      1902.   -0.00233       0.00   3.83E+11
-44.525   361.9819       0.00
    1.8000     0.1303    771803.      1853.   -0.00233       0.00   3.83E+11
-44.897   372.0565       0.00
    1.8900     0.1278    773788.      1805.   -0.00233       0.00   3.83E+11
-45.257   382.4206       0.00
    1.9800     0.1253    775721.      1756.   -0.00233       0.00   3.83E+11
-45.605   393.0887       0.00
    2.0700     0.1228    777600.      1706.   -0.00232       0.00   3.83E+11
-45.940   404.0765       0.00
    2.1600     0.1203    779425.      1656.   -0.00232       0.00   3.83E+11
-46.263   415.4007       0.00
    2.2500     0.1178    781196.      1606.   -0.00232       0.00   3.83E+11
-46.572   427.0792       0.00
    2.3400     0.1153    782913.      1556.   -0.00232       0.00   3.83E+11
-46.868   439.1315       0.00
    2.4300     0.1128    784576.      1505.   -0.00231       0.00   3.83E+11
-47.151   451.5783       0.00
    2.5200     0.1103    786183.      1454.   -0.00231       0.00   3.83E+11
-47.420   464.4422       0.00
    2.6100     0.1078    787735.      1403.   -0.00231       0.00   3.83E+11
-47.674   477.7475       0.00
    2.7000     0.1053    789232.      1351.   -0.00231       0.00   3.83E+11
-47.913   491.5208       0.00
    2.7900     0.1028    790672.      1299.   -0.00231       0.00   3.83E+11
-48.137   505.7905       0.00
    2.8800     0.1003    792057.      1247.   -0.00230       0.00   3.83E+11
-48.345   520.5880       0.00
    2.9700    0.09781    793385.      1195.   -0.00230       0.00   3.83E+11
-48.538   535.9471       0.00
    3.0600    0.09532    794656.      1142.   -0.00230       0.00   3.83E+11
-48.713   551.9050       0.00
    3.1500    0.09284    795871.      1089.   -0.00230       0.00   3.83E+11
-48.872   568.5022       0.00
    3.2400    0.09036    797028.      1037.   -0.00229       0.00   3.83E+11
-49.012   585.7834       0.00
    3.3300    0.08789    798129.   983.6071   -0.00229       0.00   3.83E+11
-49.134   603.7976       0.00
    3.4200    0.08541    799172.   930.4862   -0.00229       0.00   3.83E+11
-49.238   622.5987       0.00
    3.5100    0.08294    800157.   877.2643   -0.00229       0.00   3.83E+11
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-49.321   642.2465       0.00
    3.6000    0.08047    801085.   823.9633   -0.00229       0.00   3.83E+11
-49.384   662.8073       0.00
    3.6900    0.07800    801956.   770.6056   -0.00228       0.00   3.83E+11
-49.426   684.3547       0.00
    3.7800    0.07554    802768.   717.2146   -0.00228       0.00   3.83E+11
-49.446   706.9711       0.00
    3.8700    0.07307    803524.   663.8147   -0.00228       0.00   3.83E+11
-49.443   730.7484       0.00
    3.9600    0.07061    804221.   610.4313   -0.00228       0.00   3.83E+11
-49.415   755.7903       0.00
    4.0500    0.06816    804861.    68.9773   -0.00227       0.00   3.83E+11
-953.277     15106.       0.00
    4.1400    0.06570    804389.   -958.715   -0.00227       0.00   3.83E+11
-949.858     15614.       0.00
    4.2300    0.06325    802809.     -1983.   -0.00227       0.00   3.83E+11
-946.088     16155.       0.00
    4.3200    0.06080    800125.     -3002.   -0.00227       0.00   3.83E+11
-941.949     16733.       0.00
    4.4100    0.05835    796343.     -4017.   -0.00227       0.00   3.83E+11
-937.420     17351.       0.00
    4.5000    0.05590    791467.     -5027.   -0.00226       0.00   3.83E+11
-932.475     18015.       0.00
    4.5900    0.05346    785504.     -6031.   -0.00226       0.00   3.83E+11
-927.087     18729.       0.00
    4.6800    0.05102    778459.     -7029.   -0.00226       0.00   3.83E+11
-921.226     19501.       0.00
    4.7700    0.04858    770340.     -8020.   -0.00226       0.00   3.83E+11
-914.856     20338.       0.00
    4.8600    0.04615    761153.     -9005.   -0.00225       0.00   3.83E+11
-907.937     21250.       0.00
    4.9500    0.04371    750908.     -9981.   -0.00225       0.00   3.83E+11
-900.424     22247.       0.00
    5.0400    0.04128    739613.    -10949.   -0.00225       0.00   3.83E+11
-892.262     23344.       0.00
    5.1300    0.03885    727276.    -11908.   -0.00225       0.00   3.83E+11
-883.391     24557.       0.00
    5.2200    0.03642    713909.    -12857.   -0.00225       0.00   3.83E+11
-873.738     25907.       0.00
    5.3100    0.03400    699524.    -13795.   -0.00224       0.00   3.83E+11
-863.216     27421.       0.00
    5.4000    0.03158    684131.    -14721.   -0.00224       0.00   3.83E+11
-851.723     29131.       0.00
    5.4900    0.02916    667745.    -15634.   -0.00224       0.00   3.84E+11
-839.134     31084.       0.00
    5.5800    0.02674    650380.    -16533.   -0.00224       0.00   3.84E+11
-825.294     33336.       0.00
    5.6700    0.02432    632052.    -17416.   -0.00224       0.00   3.84E+11
-810.009     35970.       0.00
    5.7600    0.02191    612780.    -18282.   -0.00223       0.00   3.84E+11
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-793.034	39098.	0.00				
5.8500	0.01949	592582.	-19128.	-0.00223	0.00	3.84E+11
-774.042	42885.	0.00				
5.9400	0.01708	571482.	-19952.	-0.00223	0.00	3.84E+11
-752.593	47582.	0.00				
6.0300	0.01467	549504.	-20752.	-0.00223	0.00	3.84E+11
-728.070	53589.	0.00				
6.1200	0.01227	526676.	-21523.	-0.00223	0.00	3.84E+11
-699.554	61598.	0.00				
6.2100	0.00986	503033.	-22260.	-0.00223	0.00	3.84E+11
-665.595	72909.	0.00				
6.3000	0.00745	478614.	-22956.	-0.00223	0.00	3.84E+11
-623.654	90349.	0.00				
6.3900	0.00505	453466.	-23600.	-0.00222	0.00	3.84E+11
-568.553	121544.	0.00				
6.4800	0.00265	427656.	-24169.	-0.00222	0.00	3.84E+11
-486.176	198114.	0.00				
6.5700	2.50E-04	401279.	-24498.	-0.00222	0.00	3.84E+11
-122.459	528972.	0.00				
6.6600	-0.00215	374759.	-24313.	-0.00222	0.00	3.84E+11
465.7305	234049.	0.00				
6.7500	-0.00455	348782.	-23756.	-0.00222	0.00	3.84E+11
564.3307	134038.	0.00				
6.8400	-0.00694	323463.	-23111.	-0.00222	0.00	3.84E+11
630.2665	98026.	0.00				
6.9300	-0.00934	298879.	-22403.	-0.00222	0.00	3.85E+11
681.8979	78850.	0.00				
7.0200	-0.01173	275091.	-21643.	-0.00222	0.00	3.85E+11
725.2797	66750.	0.00				
7.1100	-0.01413	252149.	-20839.	-0.00222	0.00	3.85E+11
763.2312	58340.	0.00				
7.2000	-0.01652	230097.	-20014.	-0.00222	0.00	3.85E+11
765.1774	50016.	0.00				
7.2900	-0.01892	208937.	-19199.	-0.00222	0.00	3.85E+11
743.2029	42435.	0.00				
7.3800	-0.02131	188645.	-18383.	-0.00221	0.00	3.85E+11
769.0682	38982.	0.00				
7.4700	-0.02370	169249.	-17539.	-0.00221	0.00	3.85E+11
793.2927	36152.	0.00				
7.5600	-0.02609	150779.	-16670.	-0.00221	0.00	3.85E+11
816.1680	33786.	0.00				
7.6500	-0.02848	133261.	-15777.	-0.00221	0.00	3.85E+11
837.9135	31774.	0.00				
7.7400	-0.03087	116720.	-14860.	-0.00221	0.00	3.85E+11
858.6990	30041.	0.00				
7.8300	-0.03326	101180.	-13922.	-0.00221	0.00	3.85E+11
878.6582	28531.	0.00				
7.9200	-0.03565	86666.	-12963.	-0.00221	0.00	3.85E+11
897.8989	27202.	0.00				
8.0100	-0.03804	73198.	-11983.	-0.00221	0.00	3.85E+11

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916.5091     26021.       0.00
    8.1000   -0.04043     60800.    -10984.   -0.00221       0.00   3.85E+11
934.5614     24966.       0.00
    8.1900   -0.04282     49492.     -9965.   -0.00221       0.00   3.85E+11
952.1170     24016.       0.00
    8.2800   -0.04521     39294.     -8927.   -0.00221       0.00   3.85E+11
969.2273     23156.       0.00
    8.3700   -0.04759     30227.     -7871.   -0.00221       0.00   3.85E+11
985.9365     22373.       0.00
    8.4600   -0.04998     22310.     -6798.   -0.00221       0.00   3.85E+11
1002.     21657.       0.00
    8.5500   -0.05237     15562.     -5707.   -0.00221       0.00   3.85E+11
1018.     20999.       0.00
    8.6400   -0.05476     10002.     -4598.   -0.00221       0.00   3.85E+11
1034.     20394.       0.00
    8.7300   -0.05715      5648.     -3473.   -0.00221       0.00   3.85E+11
1049.     19833.       0.00
    8.8200   -0.05954      2517.     -2332.   -0.00221       0.00   3.85E+11
1065.     19313.       0.00
    8.9100   -0.06192   629.1299     -1174.   -0.00221       0.00   3.85E+11
1080.     18829.       0.00
    9.0000   -0.06431       0.00       0.00   -0.00221       0.00   3.85E+11
1094.      9188.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection             =     0.18112156 inches
Computed slope at pile head      =     -0.0023725 radians
Maximum bending moment           =        804861. inch-lbs
Maximum shear force              =        -24498. lbs
Depth of maximum bending moment  =     4.05000000 feet below pile head
Depth of maximum shear force     =     6.57000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.15278934 inches


--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
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Boundary Condition Type 1, Shear and Moment

```
Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	0.18112156	804861.	-24498.
8.55000	0.35281071	796860.	-26377.
8.10000	0.82210118	788367.	-28901.
7.65000	1.94721095	782702.	-31691.
7.20000	4.67429238	779051.	-34739.
6.75000	17.32045198	790916.	-40592.

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

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

Load Case No.	Load Type 1	Load 1 Pile-head	Load Type 2	Load 2 Pile-head	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	1000.0000	M, in-lb	315600.	4200.	0.00952	-1.55E-04	-10161.	353398.
2	V, lb	2250.	M, in-lb	724800.	4600.	0.1813	-0.00237	-24504.	804943.
3	V, lb	2250.	M, in-lb	724800.	3800.	0.1811	-0.00237	-24498.	804861.

Maximum pile-head deflection = 0.1812709458 inches
Maximum pile-head rotation = -0.0023744158 radians = -0.136044 deg.

```
The analysis ended normally.
```

LATERAL LOAD (LPILE) ANALYSES
WESTBOUND PARKING AREA
LIGHT TOWER WR-11 (B-018-0-25)

TP 26 NE Ohio Site 2 ATB-90 Vacant Rest Areas - Westbound Parking Area
Light Tower WR-11 (Boring B-018-0-25) Lateral Load Analysis
36" Diameter, 8' Embedment Light Tower Drilled Shaft Foundation

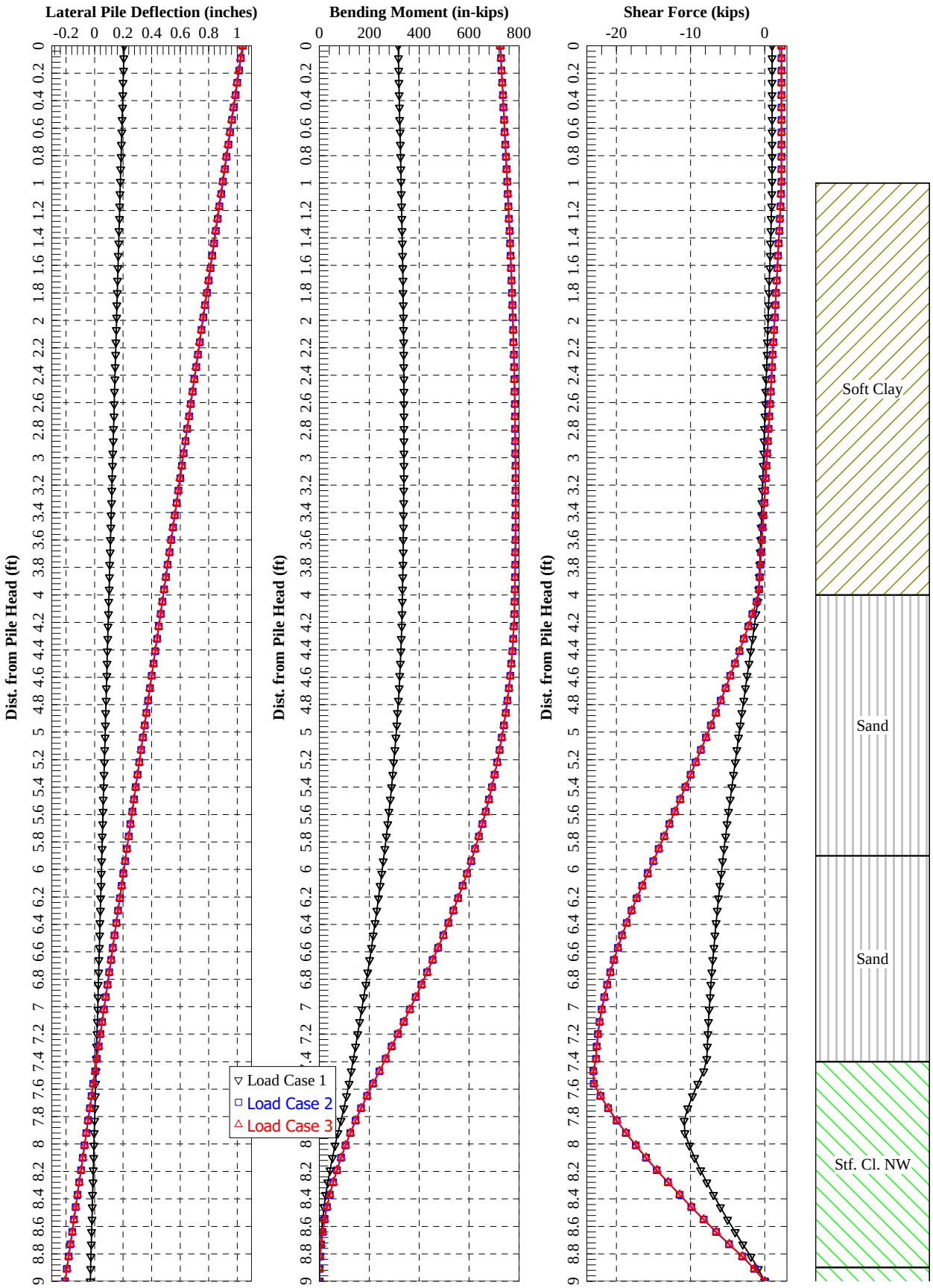


PLATE 491

==========

LPile for Version 2022-12.012

License ID : 228332755
License Type : (Single User License)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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S&ME, Inc.
Valley View, OH

==========

This model was prepared by:
BSears

Files Used for Analysis

Path to file locations:
\Columbus-1170\Projects\2024\24170232_ms_TP 26 NE Ohio\GEO\Project Docs\Site 2_ATB-90 (ms)\Calcs\Light Towers\LPILE Files\WB\

Name of input data file:
Tower WR-11 (B-018-0-25).lp12d

Name of output report file:
Tower WR-11 (B-018-0-25).lp12o

Name of plot output file:
Tower WR-11 (B-018-0-25).lp12p

Name of runtime message file:
Tower WR-11 (B-018-0-25).lp12r

Date and Time of Analysis

Date: April 27, 2026 Time: 8:03:44

Problem Title

Project Name: TP 26 NE Ohio Site 2 – ATB-90 Vacant Rest Areas

Job Number: 24170232A

Client: ms consultants, inc.

Engineer: BKS

Description: Light Tower WR-11 (B-018-0-25)

Program Options and Settings

Computational Options:
- Conventional Analysis

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

Analysis Control Options:

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

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

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

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



--------------------------------------------------------------------------------
                     Pile Structural Properties and Geometry
--------------------------------------------------------------------------------

Number of pile sections defined                        =            1
Total length of pile                                   =        9.000 ft
Depth of ground surface below top of pile              =       1.0000 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.

            Depth Below           Pile
Point        Pile Head          Diameter
 No.            feet             inches
-----      -------------     -------------
  1             0.000           36.0000
  2             9.000           36.0000


Input Structural Properties for Pile Sections:
----------------------------------------------

Pile Section No. 1:

   Section 1 is a round drilled shaft, bored pile, or CIDH pile
   Length of section                                   =     9.000000 ft
   Shaft Diameter                                      =    36.000000 in
```

Soil and Rock Layering Information

The soil profile is modelled using 9 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Epsilon-50 at top of layer	=	0.020000
Epsilon-50 at bottom of layer	=	0.020000

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

Distance from top of pile to top of layer	=	4.000000 ft
Distance from top of pile to bottom of layer	=	5.900000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Friction angle at top of layer	=	36.000000 deg.
Friction angle at bottom of layer	=	36.000000 deg.
Subgrade k at top of layer	=	60.000000 pci
Subgrade k at bottom of layer	=	60.000000 pci

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	5.900000 ft
Distance from top of pile to bottom of layer	=	7.400000 ft
Effective unit weight at top of layer	=	63.000000 pcf
Effective unit weight at bottom of layer	=	63.000000 pcf
Friction angle at top of layer	=	36.000000 deg.
Friction angle at bottom of layer	=	36.000000 deg.
Subgrade k at top of layer	=	60.000000 pci
Subgrade k at bottom of layer	=	60.000000 pci

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer	=	7.400000 ft
Distance from top of pile to bottom of layer	=	8.900000 ft
Effective unit weight at top of layer	=	60.000000 pcf

```
   Effective unit weight at bottom of layer            =    60.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 5 is stiff clay without free water

   Distance from top of pile to top of layer           =     8.900000 ft
   Distance from top of pile to bottom of layer        =    13.900000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Undrained cohesion at top of layer                  =        3500. psf
   Undrained cohesion at bottom of layer               =        3500. psf
   Epsilon-50 at top of layer                          =     0.005000
   Epsilon-50 at bottom of layer                       =     0.005000


Layer 6 is stiff clay without free water

   Distance from top of pile to top of layer           =    13.900000 ft
   Distance from top of pile to bottom of layer        =    17.600000 ft
   Effective unit weight at top of layer               =    63.000000 pcf
   Effective unit weight at bottom of layer            =    63.000000 pcf
   Undrained cohesion at top of layer                  =        4500. psf
   Undrained cohesion at bottom of layer               =        4500. psf
   Epsilon-50 at top of layer                          =     0.004000
   Epsilon-50 at bottom of layer                       =     0.004000


Layer 7 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer           =    17.600000 ft
   Distance from top of pile to bottom of layer        =    18.900000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Friction angle at top of layer                      =    32.000000 deg.
   Friction angle at bottom of layer                   =    32.000000 deg.
   Subgrade k at top of layer                          =    20.000000 pci
   Subgrade k at bottom of layer                       =    20.000000 pci


Layer 8 is sand, p-y criteria by Reese et al., 1974

   Distance from top of pile to top of layer           =    18.900000 ft
   Distance from top of pile to bottom of layer        =    20.200000 ft
   Effective unit weight at top of layer               =    58.000000 pcf
   Effective unit weight at bottom of layer            =    58.000000 pcf
   Friction angle at top of layer                      =    30.000000 deg.
```

```
   Friction angle at bottom of layer                    =    30.000000 deg.
   Subgrade k at top of layer                           =    20.000000 pci
   Subgrade k at bottom of layer                        =    20.000000 pci


Layer 9 is stiff clay without free water

   Distance from top of pile to top of layer            =    20.200000 ft
   Distance from top of pile to bottom of layer         =    28.400000 ft
   Effective unit weight at top of layer                =    58.000000 pcf
   Effective unit weight at bottom of layer             =    58.000000 pcf
   Undrained cohesion at top of layer                   =        3250. psf
   Undrained cohesion at bottom of layer                =        3250. psf
   Epsilon-50 at top of layer                           =     0.005000
   Epsilon-50 at bottom of layer                        =     0.005000


 (Depth of the lowest soil layer extends 19.400 ft below the pile tip)



--------------------------------------------------------------------------------
                        Summary of Input Soil Properties
--------------------------------------------------------------------------------

Layer         Soil Type          Layer      Effective    Cohesion     Angle of
 E50
 Num.           Name             Depth       Unit Wt.                  Friction
 or            kpy
          (p-y Curve Type)        ft           pcf          psf          deg.
 krm           pci
-----   -------------------   ----------   ----------   ----------   ----------
----------   ----------
  1             Soft              1.0000      98.0000     250.0000       --
0.02000       --
                Clay              4.0000      98.0000     250.0000       --
0.02000       --
  2             Sand              4.0000      60.0000       --          36.0000
 --           60.0000
          (Reese, et al.)         5.9000      60.0000       --          36.0000
 --           60.0000
  3             Sand              5.9000      63.0000       --          36.0000
 --           60.0000
          (Reese, et al.)         7.4000      63.0000       --          36.0000
 --           60.0000
  4           Stiff Clay          7.4000      60.0000        4500.       --
0.00400       --
          w/o Free Water          8.9000      60.0000        4500.       --
0.00400       --
  5           Stiff Clay          8.9000      58.0000        3500.       --
```

```
0.00500       --
          w/o Free Water         13.9000      58.0000        3500.       --
0.00500       --
  6         Stiff Clay           13.9000      63.0000        4500.       --
0.00400       --
          w/o Free Water         17.6000      63.0000        4500.       --
0.00400       --
  7            Sand              17.6000      58.0000       --          32.0000
 --          20.0000
          (Reese, et al.)        18.9000      58.0000       --          32.0000
 --          20.0000
  8            Sand              18.9000      58.0000       --          30.0000
 --          20.0000
          (Reese, et al.)        20.2000      58.0000       --          30.0000
 --          20.0000
  9         Stiff Clay           20.2000      58.0000        3250.       --
0.00500       --
          w/o Free Water         28.4000      58.0000        3250.       --
0.00500       --


-------------------------------------------------------------------------------
                              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    Load         Condition               Condition           Axial Thrust
Compute Top y     Run Analysis
 No.    Type             1                       2                Force, lbs
vs. Pile Length
-----   ----   --------------------   ----------------------   ---------------
---------------    ------------
   1     1     V =  1000.000000 lbs   M =      315600. in-lbs             4200.
    Yes               Yes
   2     1     V =        2250. lbs   M =      724800. in-lbs             4600.
    Yes               Yes
   3     1     V =        2250. lbs   M =      724800. in-lbs             3800.
    Yes               Yes

V = shear force applied normal to pile axis
M = bending moment applied to pile head
```

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



--------------------------------------------------------------------------------
     Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness
--------------------------------------------------------------------------------

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:
-------------------

Dimensions and Properties of Drilled Shaft (Bored Pile):
--------------------------------------------------------

Length of Section                                  =     9.000000 ft
Shaft Diameter                                     =    36.000000 in
Concrete Cover Thickness (to edge of trans. reinf.)=     3.500000 in
Number of Reinforcing Bars                         =           16 bars
Yield Stress of Reinforcing Bars                   =       60000. psi
Modulus of Elasticity of Reinforcing Bars          =    29000000. psi
Gross Area of Shaft                                =        1018. sq. in.
Total Area of Reinforcing Steel                    =    16.000000 sq. in.
Area Ratio of Steel Reinforcement                  =         1.57 percent
Edge-to-Edge Bar Spacing                           =     4.114467 in
Maximum Concrete Aggregate Size                    =     0.750000 in
Ratio of Bar Spacing to Aggregate Size             =         5.49
Offset of Center of Rebar Cage from Center of Pile =       0.0000 in
Transverse Reinforcement
Type: Spiral
Number of Transverse Reinf. (per spacing)          =            1
Spacing of Transverse Reinf.                       =     4.500000 in
Yield Stress of Transverse Reinf.                  =       60000. psi
Diameter of Transverse Reinf.                      =     0.500000 in

Axial Structural Capacities:
----------------------------

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As =     4366.378 kips
Tensile Load for Cracking of Concrete              =     -470.222 kips
Nominal Axial Tensile Capacity                     =     -960.000 kips
```

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.128000	1.000000	13.436000	0.00000
2	1.128000	1.000000	12.413245	5.141735
3	1.128000	1.000000	9.500687	9.500687
4	1.128000	1.000000	5.141735	12.413245
5	1.128000	1.000000	0.00000	13.436000
6	1.128000	1.000000	-5.14173	12.413245
7	1.128000	1.000000	-9.50069	9.500687
8	1.128000	1.000000	-12.41325	5.141735
9	1.128000	1.000000	-13.43600	0.00000
10	1.128000	1.000000	-12.41325	-5.14173
11	1.128000	1.000000	-9.50069	-9.50069
12	1.128000	1.000000	-5.14173	-12.41325
13	1.128000	1.000000	0.00000	-13.43600
14	1.128000	1.000000	5.141735	-12.41325
15	1.128000	1.000000	9.500687	-9.50069
16	1.128000	1.000000	12.413245	-5.14173

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 4.114 inches
between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 5.49

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.34165 psi
Compression Strain at Peak Stress	=	0.001886
Tensile Strain at Fracture of Concrete	=	-0.0001154
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 3

Number	Axial Thrust Force kips
1	3.800
2	4.200

3 4.600

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318-14, Section 21.2.3.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 3.800 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
6.25000E-07	240.5062135	384809942.	19.2929823	0.00001206	-0.00001044	
0.0505030	0.2746478					
0.00000125	480.1472468	384117797.	18.6479768	0.00002331	-0.00002169	
0.0973082	0.5259142					
0.00000188	718.9174733	383422652.	18.4329804	0.00003456	-0.00003294	
0.1438345	0.7771808					
0.00000250	956.8168886	382726755.	18.3254857	0.00004581	-0.00004419	
0.1900818	1.0284477					
0.00000313	1194.	382030558.	18.2609917	0.00005707	-0.00005543	
0.2360502	1.2797149					
0.00000375	1430.	381334209.	18.2179981	0.00006832	-0.00006668	
0.2817396	1.5309823					
0.00000438	1665.	380637775.	18.1872904	0.00007957	-0.00007793	
0.3271500	1.7822500					
0.00000500	1900.	379941287.	18.1642614	0.00009082	-0.00008918	
0.3722815	2.0335179					
0.00000563	2133.	379244764.	18.1463515	0.0001021	-0.000100	
0.4171340	2.2847861					
0.00000625	2366.	378548215.	18.1320251	0.0001133	-0.000112	
0.4617075	2.5360546					

```
0.00000688         2366.    344134741.    10.2494785    0.00007047     -0.000177
0.2882187     -4.308598 C
0.00000750         2366.    315456846.    10.2198771    0.00007665     -0.000193
0.3129821     -4.706727 C
0.00000813         2366.    291190934.    10.1952302    0.00008284     -0.000210
0.3376758     -5.104761 C
0.00000875         2366.    270391582.    10.1744772    0.00008903     -0.000226
0.3622998     -5.502701 C
0.00000938         2366.    252365477.    10.1568402    0.00009522     -0.000242
0.3868539     -5.900547 C
0.00001000         2366.    236592634.    10.1417358     0.0001014     -0.000259
0.4113380     -6.298297 C
0.00001063         2366.    222675420.    10.1287027     0.0001076     -0.000275
0.4357521     -6.695951 C
0.00001125         2366.    210304564.    10.1174231     0.0001138     -0.000291
0.4600960     -7.093510 C
0.00001188         2366.    199235903.    10.1076093     0.0001200     -0.000307
0.4843696     -7.490973 C
0.00001250         2366.    189274107.    10.0990420     0.0001262     -0.000324
0.5085729     -7.888340 C
0.00001313         2366.    180261055.    10.0915439     0.0001325     -0.000340
0.5327056     -8.285611 C
0.00001375         2366.    172067370.    10.0849699     0.0001387     -0.000356
0.5567678     -8.682785 C
0.00001438         2366.    164586180.    10.0792000     0.0001449     -0.000373
0.5807594     -9.079861 C
0.00001500         2366.    157728423.    10.0741344     0.0001511     -0.000389
0.6046801     -9.476841 C
0.00001563         2366.    151419286.    10.0696892     0.0001573     -0.000405
0.6285300     -9.873723 C
0.00001625         2366.    145595467.    10.0657933     0.0001636     -0.000421
0.6523089    -10.270507 C
0.00001688         2366.    140203043.    10.0623863     0.0001698     -0.000438
0.6760167    -10.667193 C
0.00001750         2366.    135195791.    10.0594163     0.0001760     -0.000454
0.6996534    -11.063781 C
0.00001813         2366.    130533867.    10.0568387     0.0001823     -0.000470
0.7232187    -11.460271 C
0.00001875         2366.    126182738.    10.0546147     0.0001885     -0.000486
0.7467127    -11.856661 C
0.00001938         2366.    122112327.    10.0527107     0.0001948     -0.000503
0.7701352    -12.252952 C
0.00002000         2366.    118296317.    10.0510970     0.0002010     -0.000519
0.7934860    -12.649144 C
0.00002063         2366.    114711580.    10.0497478     0.0002073     -0.000535
0.8167652    -13.045236 C
0.00002125         2366.    111337710.    10.0486401     0.0002135     -0.000551
0.8399726    -13.441228 C
0.00002188         2366.    108156633.    10.0477539     0.0002198     -0.000568
0.8631080    -13.837120 C
```

```
0.00002250         2366.    105152282.    10.0470709     0.0002261     -0.000584
0.8861714    -14.232911 C
0.00002313         2366.    102310328.    10.0465752     0.0002323     -0.000600
0.9091627    -14.628602 C
0.00002375         2366.     99617951.    10.0462524     0.0002386     -0.000616
0.9320817    -15.024191 C
0.00002438         2366.     97063645.    10.0460897     0.0002449     -0.000633
0.9549284    -15.419678 C
0.00002563         2429.     94800037.    10.0461990     0.0002574     -0.000665
1.0004043    -16.210348 C
0.00002688         2545.     94692477.    10.0468231     0.0002700     -0.000697
1.0455896    -17.000609 C
0.00002813         2660.     94589756.    10.0479254     0.0002826     -0.000730
1.0904832    -17.790458 C
0.00002938         2776.     94491232.    10.0493946     0.0002952     -0.000762
1.1350844    -18.579893 C
0.00003063         2891.     94396370.    10.0512127     0.0003078     -0.000795
1.1793922    -19.368912 C
0.00003188         3006.     94304718.    10.0533415     0.0003205     -0.000827
1.2234058    -20.157511 C
0.00003313         3121.     94215891.    10.0557483     0.0003331     -0.000859
1.2671243    -20.945689 C
0.00003438         3236.     94129561.    10.0584054     0.0003458     -0.000892
1.3105466    -21.733443 C
0.00003563         3350.     94045446.    10.0612887     0.0003584     -0.000924
1.3536720    -22.520771 C
0.00003688         3465.     93963300.    10.0643778     0.0003711     -0.000956
1.3964994    -23.307669 C
0.00003813         3579.     93882912.    10.0676547     0.0003838     -0.000989
1.4390279    -24.094136 C
0.00003938         3694.     93804096.    10.0711039     0.0003965     -0.001021
1.4812567    -24.880169 C
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0.00004188         3922.     93650546.    10.0784659     0.0004220     -0.001085
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0.00004313         4035.     93575540.    10.0823562     0.0004348     -0.001118
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0.00004438         4149.     93501560.    10.0863731     0.0004476     -0.001150
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0.00004563         4263.     93428502.    10.0905084     0.0004604     -0.001182
1.6878690    -28.803725 C
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3.9971986    -60.000000 CY
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3.9969940    -60.000000 CY
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3.9955528    -60.000000 CY
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  3.9994466    -60.000000 CY
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  3.9965160    -60.000000 CY
   0.0002494        11895.     47701101.     9.0745971     0.0022630     -0.006715
  3.9991770    -60.000000 CY
   0.0002544        11912.     46829816.     9.0405915     0.0022997     -0.006858
  3.9995775    -60.000000 CY
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  3.9954763    -60.000000 CY
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  3.9984997    -60.000000 CY
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  3.9998981    -60.000000 CY
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  3.9944635    -60.000000 CY
   0.0003044        12062.     39628140.     8.7757363     0.0026711     -0.008286
  3.9984635    -60.000000 CY
   0.0003344        12138.     36300180.     8.6628609     0.0028966     -0.009141
  3.9998209    -60.000000 CY
   0.0003644        12207.     33502446.     8.5793723     0.0031261     -0.009991
  3.9999551    -60.000000 CYT
   0.0003944        12272.     31117026.     8.5161103     0.0033585     -0.010839
  3.9996166    -60.000000 CYT
   0.0004244        12331.     29056485.     8.4674428     0.0035934     -0.011684
  3.9972132    -60.000000 CYT
   0.0004544        12377.     27238942.     8.4178614     0.0038249     -0.012533
  3.9873462    -60.000000 CYT


Axial Thrust Force =      4.200 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
    rad/in.       in-kip        kip-in2         in           in/in         in/in
     ksi           ksi
------------ ------------ ------------ ------------ ------------ ------------
------------ ------------ ---
  6.25000E-07   240.5049676    384807948.    19.4290859    0.00001214   -0.00001036
   0.0508615     0.2771147
   0.00000125   480.1459926    384116794.    18.7161837    0.00002340   -0.00002160
   0.0976654     0.5283867
   0.00000188   718.9162127    383421980.    18.4785558    0.00003465   -0.00003285
   0.1441903     0.7796589
   0.00000250   956.8156222    382726249.    18.3597458    0.00004590   -0.00004410
   0.1904363     1.0309315
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0.2820914     1.5334776
0.00000438         1665.    380637482.    18.2070035    0.00007966   -0.00007784
0.3275005     1.7847511
0.00000500         1900.    379941029.    18.1815504    0.00009091   -0.00008909
0.3726306     2.0360248
0.00000563         2133.    379244533.    18.1617553     0.0001022     -0.000100
0.4174818     2.2872988
0.00000625         2366.    378548006.    18.1459208     0.0001134     -0.000112
0.4620539     2.5385732
0.00000688         2366.    344134551.    10.2895004    0.00007074     -0.000177
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0.00000750         2366.    315456672.    10.2575513    0.00007693     -0.000193
0.3141325    -4.698533 C
0.00000813         2366.    291190774.    10.2300378    0.00008312     -0.000209
0.3388235    -5.096560 C
0.00000875         2366.    270391433.    10.2068278    0.00008931     -0.000226
0.3634446    -5.494492 C
0.00000938         2366.    252365338.    10.1870615    0.00009550     -0.000242
0.3879959    -5.892330 C
0.00001000         2366.    236592504.    10.1700940     0.0001017     -0.000258
0.4124772    -6.290073 C
0.00001063         2366.    222675298.    10.1554324     0.0001079     -0.000275
0.4368884    -6.687720 C
0.00001125         2366.    210304448.    10.1426931     0.0001141     -0.000291
0.4612294    -7.085271 C
0.00001188         2366.    199235793.    10.1315564     0.0001203     -0.000307
0.4855002    -7.482727 C
0.00001250         2366.    189274003.    10.1218127     0.0001265     -0.000323
0.5097005    -7.880086 C
0.00001313         2366.    180260955.    10.1132503     0.0001327     -0.000340
0.5338304    -8.277349 C
0.00001375         2366.    172067276.    10.1057088     0.0001390     -0.000356
0.5578898    -8.674515 C
0.00001438         2366.    164586090.    10.0990556     0.0001452     -0.000372
0.5818784    -9.071585 C
0.00001500         2366.    157728336.    10.0931803     0.0001514     -0.000389
0.6057963    -9.468556 C
0.00001563         2366.    151419203.    10.0879903     0.0001576     -0.000405
0.6296433    -9.865431 C
0.00001625         2366.    145595387.    10.0834069     0.0001639     -0.000421
0.6534193   -10.262207 C
0.00001688         2366.    140202965.    10.0793634     0.0001701     -0.000437
0.6771242   -10.658886 C
0.00001750         2366.    135195717.    10.0758025     0.0001763     -0.000454
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 0.0001294        10291.     79542859.    10.0787027     0.0013039     -0.003354
3.5876602    -60.000000 CY
 0.0001344        10423.     77564670.    10.0227059     0.0013468     -0.003491
3.6428308    -60.000000 CY
 0.0001394        10554.     75720878.     9.9720357     0.0013899     -0.003628
3.6942550    -60.000000 CY
 0.0001444        10683.     73997378.     9.9261646     0.0014331     -0.003764
3.7418850    -60.000000 CY
 0.0001494        10812.     72381005.     9.8838986     0.0014764     -0.003901
3.7855535    -60.000000 CY
 0.0001544        10929.     70796718.     9.8396771     0.0015190     -0.004038
3.8245440    -60.000000 CY
 0.0001594        11012.     69097838.     9.7838573     0.0015593     -0.004178
3.8578061    -60.000000 CY
 0.0001644        11075.     67376662.     9.7232508     0.0015983     -0.004319
3.8866026    -60.000000 CY
 0.0001694        11135.     65743511.     9.6663364     0.0016372     -0.004460
3.9121613    -60.000000 CY
 0.0001744        11195.     64200103.     9.6121495     0.0016761     -0.004601
3.9345463    -60.000000 CY
 0.0001794        11254.     62738857.     9.5628376     0.0017153     -0.004742
3.9537182    -60.000000 CY
 0.0001844        11312.     61351278.     9.5162917     0.0017546     -0.004883
3.9695496    -60.000000 CY
 0.0001894        11368.     60031354.     9.4717005     0.0017937     -0.005024
3.9820503    -60.000000 CY
 0.0001944        11425.     58775745.     9.4305957     0.0018331     -0.005164
3.9913005    -60.000000 CY
 0.0001994        11480.     57579537.     9.3922863     0.0018726     -0.005305
3.9972564    -60.000000 CY
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 0.0002044        11535.     56438298.     9.3556780     0.0019121     -0.005445
3.9998723    -60.000000 CY
 0.0002094        11588.     55347517.     9.3241700     0.0019522     -0.005585
3.9975077    -60.000000 CY
 0.0002144        11641.     54304067.     9.2934428     0.0019923     -0.005725
3.9998931    -60.000000 CY
 0.0002194        11694.     53304015.     9.2651074     0.0020325     -0.005865
3.9970558    -60.000000 CY
 0.0002244        11744.     52339157.     9.2380944     0.0020728     -0.006005
3.9997330    -60.000000 CY
 0.0002294        11790.     51401489.     9.2117130     0.0021129     -0.006145
3.9956300    -60.000000 CY
 0.0002344        11827.     50463153.     9.1821360     0.0021521     -0.006285
3.9990203    -60.000000 CY
 0.0002394        11859.     49542728.     9.1500193     0.0021903     -0.006427
3.9992468    -60.000000 CY
 0.0002444        11880.     48615611.     9.1135780     0.0022271     -0.006570
3.9965958    -60.000000 CY
 0.0002494        11900.     47718283.     9.0771076     0.0022636     -0.006714
3.9992162    -60.000000 CY
 0.0002544        11917.     46846598.     9.0431776     0.0023004     -0.006857
3.9993713    -60.000000 CY
 0.0002594        11933.     46006491.     9.0103157     0.0023371     -0.007000
3.9955701    -60.000000 CY
 0.0002644        11949.     45197204.     8.9791598     0.0023739     -0.007144
3.9985538    -60.000000 CY
 0.0002694        11965.     44417005.     8.9493437     0.0024107     -0.007287
3.9999119    -60.000000 CY
 0.0002744        11980.     43663657.     8.9215934     0.0024479     -0.007430
3.9942523    -60.000000 CY
 0.0003044        12066.     39641995.     8.7782176     0.0026719     -0.008286
3.9985257    -60.000000 CY
 0.0003344        12142.     36312646.     8.6652203     0.0028974     -0.009140
3.9998424    -60.000000 CY
 0.0003644        12212.     33513765.     8.5815911     0.0031269     -0.009991
3.9999658    -60.000000 CYT
 0.0003944        12276.     31127384.     8.5182268     0.0033594     -0.010838
3.9996505    -60.000000 CYT
 0.0004244        12335.     29066055.     8.4694819     0.0035942     -0.011683
3.9973093    -60.000000 CYT
 0.0004544        12381.     27248100.     8.4201387     0.0038259     -0.012532
3.9875919    -60.000000 CYT


Axial Thrust Force =      4.600 kips

    Bending       Bending       Bending      Depth to      Max Comp      Max Tens
  Max Conc      Max Steel  Run
   Curvature      Moment       Stiffness      N Axis        Strain        Strain
   Stress        Stress    Msg
```

rad/in.	in-kip	kip-in2	in	in/in	in/in	ksi	ksi	
6.25000E-07	240.5035986	384805758.	19.5651901	0.00001223	-0.00001027	0.0512199	0.2795816	
0.00000125	480.1446137	384115691.	18.7843907	0.00002348	-0.00002152	0.0980225	0.5308592	
0.00000188	718.9148267	383421241.	18.5241312	0.00003473	-0.00003277	0.1445462	0.7821371	
0.00000250	956.8142298	382725692.	18.3940059	0.00004599	-0.00004401	0.1907908	1.0334154	
0.00000313	1194.	382029703.	18.3159341	0.00005724	-0.00005526	0.2367565	1.2846940	
0.00000375	1430.	381333494.	18.2638891	0.00006849	-0.00006651	0.2824433	1.5359729	
0.00000438	1665.	380637159.	18.2267166	0.00007974	-0.00007776	0.3278510	1.7872522	
0.00000500	1900.	379940746.	18.1988394	0.00009099	-0.00008901	0.3729798	2.0385317	
0.00000563	2133.	379244280.	18.1771590	0.0001022	-0.000100	0.4178295	2.2898116	
0.00000625	2366.	378547777.	18.1598165	0.0001135	-0.000112	0.4624003	2.5410917	
0.00000688	2366.	344134343.	10.3291778	0.00007101	-0.000176	0.2904571	-4.292706 C	
0.00000750	2366.	315456481.	10.2940289	0.00007721	-0.000193	0.3152465	-4.690597 C	
0.00000813	2366.	291190598.	10.2646762	0.00008340	-0.000209	0.3399656	-5.088396 C	
0.00000875	2366.	270391269.	10.2391817	0.00008959	-0.000225	0.3645893	-5.486283 C	
0.00000938	2366.	252365185.	10.2172859	0.00009579	-0.000242	0.3891378	-5.884113 C	
0.00001000	2366.	236592361.	10.1984552	0.0001020	-0.000258	0.4136162	-6.281848 C	
0.00001063	2366.	222675163.	10.1821496	0.0001082	-0.000274	0.4380246	-6.679488 C	
0.00001125	2366.	210304321.	10.1679490	0.0001144	-0.000291	0.4623628	-7.077032 C	
0.00001188	2366.	199235672.	10.1555219	0.0001206	-0.000307	0.4866307	-7.474480 C	
0.00001250	2366.	189273889.	10.1446030	0.0001268	-0.000323	0.5108282	-7.871831 C	
0.00001313	2366.	180260846.	10.1349589	0.0001330	-0.000339	0.5349552	-8.269087 C	
0.00001375	2366.	172067171.	10.1264498	0.0001392	-0.000356	0.5590117	-8.666245 C	
0.00001438	2366.	164585990.	10.1189132	0.0001455	-0.000372	0.5829974	-9.063307 C	

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0.00001500         2366.    157728241.    10.1122282     0.0001517     -0.000388
0.6069124     -9.460271 C
0.00001563         2366.    151419111.    10.1062933     0.0001579     -0.000405
0.6307565     -9.857138 C
0.00001625         2366.    145595299.    10.1010224     0.0001641     -0.000421
0.6545296    -10.253907 C
0.00001688         2366.    140202880.    10.0963423     0.0001704     -0.000437
0.6782316    -10.650577 C
0.00001750         2366.    135195635.    10.0921903     0.0001766     -0.000453
0.7018624    -11.047150 C
0.00001813         2366.    130533716.    10.0885122     0.0001829     -0.000470
0.7254219    -11.443623 C
0.00001875         2366.    126182592.    10.0852613     0.0001891     -0.000486
0.7489100    -11.839998 C
0.00001938         2366.    122112186.    10.0823966     0.0001953     -0.000502
0.7723266    -12.236274 C
0.00002000         2366.    118296180.    10.0798824     0.0002016     -0.000518
0.7956716    -12.632450 C
0.00002063         2366.    114711448.    10.0776874     0.0002079     -0.000535
0.8189449    -13.028526 C
0.00002125         2366.    111337582.    10.0757837     0.0002141     -0.000551
0.8421464    -13.424502 C
0.00002188         2366.    108156508.    10.0741470     0.0002204     -0.000567
0.8652759    -13.820378 C
0.00002250         2366.    105152160.    10.0727554     0.0002266     -0.000583
0.8883333    -14.216153 C
0.00002313         2366.    102310210.    10.0715894     0.0002329     -0.000600
0.9113187    -14.611828 C
0.00002375         2366.     99617836.    10.0706317     0.0002392     -0.000616
0.9342318    -15.007401 C
0.00002438         2366.     97063533.    10.0698667     0.0002455     -0.000632
0.9570725    -15.402873 C
0.00002563         2436.     95048091.    10.0688598     0.0002580     -0.000664
1.0025364    -16.193510 C
0.00002688         2551.     94928657.    10.0684718     0.0002706     -0.000697
1.0477096    -16.983738 C
0.00002813         2667.     94815115.    10.0686232     0.0002832     -0.000729
1.0925912    -17.773555 C
0.00002938         2782.     94706690.    10.0692479     0.0002958     -0.000762
1.1371802    -18.562957 C
0.00003063         2897.     94602733.    10.0703211     0.0003084     -0.000794
1.1814759    -19.351942 C
0.00003188         3012.     94502697.    10.0717368     0.0003210     -0.000826
1.2254772    -20.140508 C
0.00003313         3127.     94406117.    10.0734845     0.0003337     -0.000859
1.2691834    -20.928652 C
0.00003438         3242.     94312597.    10.0755306     0.0003463     -0.000891
1.3125933    -21.716373 C
0.00003563         3357.     94221794.    10.0778462     0.0003590     -0.000923
1.3557063    -22.503666 C
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0.00003688         3471.     94133413.     10.0804061     0.0003717     -0.000956
1.3985212    -23.290530 C
0.00003813         3586.     94047197.     10.0831888     0.0003844     -0.000988
1.4410372    -24.076963 C
0.00003938         3700.     93962921.     10.0861753     0.0003971     -0.001020
1.4832533    -24.862961 C
0.00004063         3814.     93880388.     10.0893491     0.0004099     -0.001053
1.5251686    -25.648521 C
0.00004188         3928.     93799425.     10.0926956     0.0004226     -0.001085
1.5667821    -26.433642 C
0.00004313         4042.     93719877.     10.0962019     0.0004354     -0.001117
1.6080927    -27.218321 C
0.00004438         4155.     93641609.     10.0998566     0.0004482     -0.001149
1.6490996    -28.002554 C
0.00004563         4269.     93564497.     10.1036497     0.0004610     -0.001182
1.6898018    -28.786339 C
0.00004688         4382.     93488434.     10.1075722     0.0004738     -0.001214
1.7301982    -29.569674 C
0.00004813         4496.     93413321.     10.1116159     0.0004866     -0.001246
1.7702878    -30.352554 C
0.00004938         4609.     93339070.     10.1157737     0.0004995     -0.001278
1.8100696    -31.134978 C
0.00005063         4722.     93265602.     10.1200391     0.0005123     -0.001310
1.8495425    -31.916943 C
0.00005188         4834.     93192845.     10.1244063     0.0005252     -0.001342
1.8887057    -32.698446 C
0.00005313         4947.     93120733.     10.1288700     0.0005381     -0.001374
1.9275579    -33.479483 C
0.00005438         5060.     93049206.     10.1334255     0.0005510     -0.001406
1.9660981    -34.260052 C
0.00005563         5172.     92978211.     10.1380684     0.0005639     -0.001439
2.0043253    -35.040149 C
0.00005688         5284.     92907697.     10.1427948     0.0005769     -0.001471
2.0422384    -35.819772 C
0.00005813         5396.     92837619.     10.1476012     0.0005898     -0.001503
2.0798362    -36.598918 C
0.00005938         5508.     92767935.     10.1524844     0.0006028     -0.001535
2.1171178    -37.377583 C
0.00006063         5620.     92698606.     10.1574414     0.0006158     -0.001567
2.1540819    -38.155764 C
0.00006188         5731.     92629597.     10.1624696     0.0006288     -0.001599
2.1907275    -38.933458 C
0.00006313         5843.     92560874.     10.1675664     0.0006418     -0.001631
2.2270535    -39.710662 C
0.00006438         5954.     92492407.     10.1727297     0.0006549     -0.001663
2.2630586    -40.487373 C
0.00006563         6065.     92424168.     10.1779574     0.0006679     -0.001695
2.2987417    -41.263586 C
0.00006688         6176.     92356130.     10.1832476     0.0006810     -0.001726
2.3341018    -42.039299 C
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0.00006813        6287.     92288268.    10.1885986     0.0006941     -0.001758
2.3691375    -42.814509 C
0.00006938        6398.     92220560.    10.1940089     0.0007072     -0.001790
2.4038477    -43.589211 C
0.00007063        6508.     92152983.    10.1995039     0.0007203     -0.001822
2.4382312    -44.363403 C
0.00007188        6619.     92085519.    10.2050285     0.0007335     -0.001854
2.4722868    -45.137081 C
0.00007313        6729.     92018147.    10.2106084     0.0007467     -0.001886
2.5060133    -45.910241 C
0.00007438        6839.     91950850.    10.2162424     0.0007598     -0.001918
2.5394094    -46.682880 C
0.00007938        7277.     91682087.    10.2393011     0.0008127     -0.002045
2.6696649    -49.768146 C
0.00008438        7713.     91413389.    10.2630109     0.0008659     -0.002172
2.7945082    -52.845065 C
0.00008938        8146.     91144431.    10.2866786     0.0009194     -0.002298
2.9137126    -55.915279 C
0.00009438        8576.     90874234.    10.3110673     0.0009731     -0.002424
3.0273448    -58.976728 C
0.00009938        8985.     90417533.    10.3290580     0.0010265     -0.002551
3.1339327    -60.000000 CY
 0.0001044        9311.     89207952.    10.3175636     0.0010769     -0.002681
3.2289512    -60.000000 CY
 0.0001094        9552.     87336121.    10.2781631     0.0011242     -0.002813
3.3128936    -60.000000 CY
 0.0001144        9789.     85583430.    10.2421143     0.0011714     -0.002946
3.3919789    -60.000000 CY
 0.0001194       10011.     83861611.    10.2051482     0.0012182     -0.003079
3.4655044    -60.000000 CY
 0.0001244       10162.     81702300.    10.1438002     0.0012616     -0.003216
3.5293615    -60.000000 CY
 0.0001294       10295.     79572057.    10.0817619     0.0013043     -0.003353
3.5881988    -60.000000 CY
 0.0001344       10427.     77592674.    10.0256713     0.0013472     -0.003490
3.6433355    -60.000000 CY
 0.0001394       10557.     75747771.     9.9749147     0.0013903     -0.003627
3.6947252    -60.000000 CY
 0.0001444       10687.     74023236.     9.9289636     0.0014335     -0.003764
3.7423201    -60.000000 CY
 0.0001494       10816.     72406063.     9.8867661     0.0014768     -0.003901
3.7859739    -60.000000 CY
 0.0001544       10933.     70821400.     9.8425115     0.0015194     -0.004038
3.8249324    -60.000000 CY
 0.0001594       11017.     69123456.     9.7867573     0.0015598     -0.004178
3.8581753    -60.000000 CY
 0.0001644       11079.     67401534.     9.7260868     0.0015987     -0.004319
3.8869352    -60.000000 CY
 0.0001694       11139.     65767574.     9.6691048     0.0016377     -0.004460
3.9124557    -60.000000 CY
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 0.0001744        11199.     64223403.     9.6148605     0.0016766     -0.004601
3.9348020    -60.000000 CY
 0.0001794        11258.     62761436.     9.5654896     0.0017158     -0.004742
3.9539345    -60.000000 CY
 0.0001844        11316.     61373390.     9.5189681     0.0017551     -0.004882
3.9697370    -60.000000 CY
 0.0001894        11373.     60052811.     9.4743244     0.0017942     -0.005023
3.9821950    -60.000000 CY
 0.0001944        11429.     58796578.     9.4331695     0.0018336     -0.005164
3.9914019    -60.000000 CY
 0.0001994        11484.     57599778.     9.3948139     0.0018731     -0.005304
3.9973136    -60.000000 CY
 0.0002044        11539.     56457972.     9.3581635     0.0019126     -0.005445
3.9998845    -60.000000 CY
 0.0002094        11592.     55366642.     9.3266817     0.0019528     -0.005585
3.9975630    -60.000000 CY
 0.0002144        11645.     54322678.     9.2959142     0.0019928     -0.005725
3.9999044    -60.000000 CY
 0.0002194        11698.     53322120.     9.2675435     0.0020331     -0.005864
3.9971169    -60.000000 CY
 0.0002244        11748.     52356977.     9.2405172     0.0020733     -0.006004
3.9997515    -60.000000 CY
 0.0002294        11794.     51418840.     9.2141042     0.0021135     -0.006144
3.9957066    -60.000000 CY
 0.0002344        11831.     50480617.     9.1845645     0.0021526     -0.006285
3.9990577    -60.000000 CY
 0.0002394        11864.     49560513.     9.1526832     0.0021909     -0.006427
3.9990468    -60.000000 CY
 0.0002444        11885.     48632992.     9.1162023     0.0022278     -0.006570
3.9966747    -60.000000 CY
 0.0002494        11904.     47735462.     9.0796192     0.0022642     -0.006713
3.9992545    -60.000000 CY
 0.0002544        11921.     46863378.     9.0457647     0.0023010     -0.006856
3.9991650    -60.000000 CY
 0.0002594        11937.     46022914.     9.0128664     0.0023377     -0.007000
3.9956629    -60.000000 CY
 0.0002644        11953.     45213284.     8.9816750     0.0023745     -0.007143
3.9986069    -60.000000 CY
 0.0002694        11969.     44432753.     8.9518321     0.0024114     -0.007286
3.9999247    -60.000000 CY
 0.0002744        11984.     43679063.     8.9240509     0.0024485     -0.007429
3.9940409    -60.000000 CY
 0.0003044        12070.     39655848.     8.7807001     0.0026726     -0.008285
3.9985866    -60.000000 CY
 0.0003344        12146.     36325110.     8.6675807     0.0028982     -0.009139
3.9998625    -60.000000 CY
 0.0003644        12216.     33525083.     8.5838110     0.0031277     -0.009990
3.9999751    -60.000000 CYT
 0.0003944        12280.     31137740.     8.5203443     0.0033602     -0.010837
3.9996828    -60.000000 CYT
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    0.0004244        12339.     29075625.     8.4715220     0.0035951     -0.011682
   3.9974037    -60.000000 CYT
    0.0004544        12385.     27257253.     8.4224181     0.0038269     -0.012531
   3.9878351    -60.000000 CYT


---------------------------------------------------------------------------
   Summary of Results for Nominal Moment Capacity for Section 1
---------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.      Max.
Tens.
  No.              kips                 in-kip               Strain
Strain
 ----         ---------------     ------------------     ------------
------------
   1                3.800             12169.214           0.00300000
-0.00952396
   2                4.200             12173.120           0.00300000
-0.00952020
   3                4.600             12177.027           0.00300000
-0.00951645

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318,
or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal        Nominal     Ult. (Fac)    Ult. (Fac)   Bend.
Stiff.
Load      Factor       Ax. Thrust    Moment Cap    Ax. Thrust    Moment Cap    at
Ult Mom
 No.                      kips         in-kips        kips          in-kips
kip-in^2
-----  ------------   ------------  ------------  ------------  ------------
------------
   1       0.65           3.800000        12169.      2.470000         7910.
91219895.
```

```
   2       0.65           4.200000        12173.      2.730000         7913.
91253873.
   3       0.65           4.600000        12177.      2.990000         7915.
91287886.

   1       0.75           3.800000        12169.      2.850000         9127.
89806706.
   2       0.75           4.200000        12173.      3.150000         9130.
89838295.
   3       0.75           4.600000        12177.      3.450000         9133.
89869877.

   1       0.90           3.800000        12169.      3.420000        10952.
70221645.
   2       0.90           4.200000        12173.      3.780000        10956.
70254444.
   3       0.90           4.600000        12177.      4.140000        10959.
70287179.
```

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	1.0000	0.00	N.A.	No	0.00	8636.
2	4.0000	2.1572	No	No	8636.	22352.
3	5.9000	4.2315	Yes	No	30988.	26665.
4	7.4000	1.3662	No	No	57653.	68594.
5	8.9000	3.6013	Yes	No	126247.	3873.
6	13.9000	12.9000	No	No	130120.	0.00
7	17.6000	16.6000	No	No	0.00	0.00
8	18.9000	17.9000	No	No	0.00	0.00
9	20.2000	19.2000	No	No	0.00	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 = 1000.0 lbs
Applied moment at pile head = 315600.0 in-lbs
Axial thrust load on pile head = 4200.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*H	Soil Spr. p	Distrib. Lat. Load
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/inch	lb/inch	lb/inch
0.00	0.2075	315600.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.09000	0.2051	316690.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.1800	0.2027	317780.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.2700	0.2003	318870.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.3600	0.1979	319961.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.4500	0.1954	321051.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.5400	0.1930	322141.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.6300	0.1906	323231.	1000.	-0.00224	0.00	3.84E+11	0.00	0.00	0.00
0.7200	0.1882	324321.	1000.	-0.00223	0.00	3.84E+11	0.00	0.00	0.00
0.8100	0.1858	325411.	1000.	-0.00223	0.00	3.84E+11	0.00	0.00	0.00
0.9000	0.1834	326501.	1000.	-0.00223	0.00	3.84E+11	0.00	0.00	0.00
0.9900	0.1810	327592.	1000.	-0.00223	0.00	3.84E+11	0.00	0.00	0.00
1.0800	0.1786	328682.	976.2156	-0.00223	0.00	3.84E+11	-44.045	266.4156	0.00
1.1700	0.1761	329720.	928.3630	-0.00223	0.00	3.84E+11	-44.570	273.2790	0.00
1.2600	0.1737	330707.	879.9479	-0.00223	0.00	3.84E+11	-45.087	280.2791	0.00
1.3500	0.1713	331641.	830.9794	-0.00223	0.00	3.84E+11			

```
-45.595   287.4207       0.00
    1.4400     0.1689    332522.   781.4667   -0.00223       0.00   3.84E+11
-46.095   294.7089       0.00
    1.5300     0.1665    333350.   731.4191   -0.00223       0.00   3.84E+11
-46.586   302.1491       0.00
    1.6200     0.1641    334122.   680.8463   -0.00223       0.00   3.84E+11
-47.068   309.7469       0.00
    1.7100     0.1617    334840.   629.7579   -0.00222       0.00   3.84E+11
-47.540   317.5081       0.00
    1.8000     0.1593    335503.   578.1638   -0.00222       0.00   3.84E+11
-48.004   325.4390       0.00
    1.8900     0.1569    336109.   526.0740   -0.00222       0.00   3.84E+11
-48.458   333.5462       0.00
    1.9800     0.1545    336659.   473.4987   -0.00222       0.00   3.84E+11
-48.903   341.8365       0.00
    2.0700     0.1521    337152.   420.4483   -0.00222       0.00   3.84E+11
-49.338   350.3173       0.00
    2.1600     0.1497    337588.   366.9334   -0.00222       0.00   3.84E+11
-49.763   358.9963       0.00
    2.2500     0.1473    337965.   312.9647   -0.00222       0.00   3.84E+11
-50.179   367.8817       0.00
    2.3400     0.1449    338284.   258.5531   -0.00222       0.00   3.84E+11
-50.584   376.9820       0.00
    2.4300     0.1425    338544.   203.7098   -0.00222       0.00   3.84E+11
-50.978   386.3065       0.00
    2.5200     0.1401    338744.   148.4462   -0.00222       0.00   3.84E+11
-51.362   395.8650       0.00
    2.6100     0.1377    338884.    92.7739   -0.00222       0.00   3.84E+11
-51.735   405.6676       0.00
    2.7000     0.1353    338964.    36.7047   -0.00221       0.00   3.84E+11
-52.097   415.7254       0.00
    2.7900     0.1330    338984.   -19.749    -0.00221       0.00   3.84E+11
-52.448   426.0500       0.00
    2.8800     0.1306    338942.   -76.576    -0.00221       0.00   3.84E+11
-52.787   436.6539       0.00
    2.9700     0.1282    338838.  -133.762    -0.00221       0.00   3.84E+11
-53.114   447.5504       0.00
    3.0600     0.1258    338673.  -191.296    -0.00221       0.00   3.84E+11
-53.429   458.7535       0.00
    3.1500     0.1234    338445.  -249.163    -0.00221       0.00   3.84E+11
-53.732   470.2785       0.00
    3.2400     0.1210    338155.  -307.350    -0.00221       0.00   3.84E+11
-54.023   482.1415       0.00
    3.3300     0.1186    337801.  -365.845    -0.00221       0.00   3.84E+11
-54.300   494.3598       0.00
    3.4200     0.1162    337385.  -424.631    -0.00221       0.00   3.84E+11
-54.564   506.9521       0.00
    3.5100     0.1139    336904.  -483.696    -0.00221       0.00   3.84E+11
-54.815   519.9385       0.00
    3.6000     0.1115    336360.  -543.024    -0.00220       0.00   3.84E+11
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-55.052   533.3404       0.00
    3.6900     0.1091    335751.   -602.600   -0.00220       0.00   3.84E+11
-55.274   547.1810       0.00
    3.7800     0.1067    335078.   -662.409   -0.00220       0.00   3.84E+11
-55.482   561.4856       0.00
    3.8700     0.1043    334340.   -722.433   -0.00220       0.00   3.84E+11
-55.675   576.2811       0.00
    3.9600     0.1020    333538.   -782.658   -0.00220       0.00   3.84E+11
-55.852   591.5969       0.00
    4.0500    0.09959    332670.   -930.910   -0.00220       0.00   3.84E+11
-218.689      2372.       0.00
    4.1400    0.09721    331547.     -1168.   -0.00220       0.00   3.84E+11
-219.772      2442.       0.00
    4.2300    0.09484    330168.     -1405.   -0.00220       0.00   3.84E+11
-220.549      2512.       0.00
    4.3200    0.09246    328531.     -1644.   -0.00220       0.00   3.84E+11
-221.020      2582.       0.00
    4.4100    0.09009    326637.     -1883.   -0.00220       0.00   3.84E+11
-221.187      2652.       0.00
    4.5000    0.08772    324484.     -2121.   -0.00220       0.00   3.84E+11
-221.048      2722.       0.00
    4.5900    0.08535    322074.     -2360.   -0.00219       0.00   3.84E+11
-220.605      2792.       0.00
    4.6800    0.08298    319407.     -2598.   -0.00219       0.00   3.84E+11
-219.857      2862.       0.00
    4.7700    0.08061    316483.     -2835.   -0.00219       0.00   3.84E+11
-218.804      2932.       0.00
    4.8600    0.07824    313304.     -3070.   -0.00219       0.00   3.84E+11
-217.448      3002.       0.00
    4.9500    0.07587    309871.     -3304.   -0.00219       0.00   3.84E+11
-215.787      3072.       0.00
    5.0400    0.07351    306186.     -3536.   -0.00219       0.00   3.85E+11
-213.822      3142.       0.00
    5.1300    0.07114    302253.     -3766.   -0.00219       0.00   3.85E+11
-211.553      3211.       0.00
    5.2200    0.06878    298072.     -3993.   -0.00219       0.00   3.85E+11
-208.981      3281.       0.00
    5.3100    0.06642    293647.     -4217.   -0.00219       0.00   3.85E+11
-206.105      3351.       0.00
    5.4000    0.06405    288983.     -4438.   -0.00219       0.00   3.85E+11
-202.925      3421.       0.00
    5.4900    0.06169    284081.     -4655.   -0.00219       0.00   3.85E+11
-199.442      3491.       0.00
    5.5800    0.05933    278947.     -4869.   -0.00219       0.00   3.85E+11
-195.656      3561.       0.00
    5.6700    0.05697    273585.     -5078.   -0.00218       0.00   3.85E+11
-191.567      3631.       0.00
    5.7600    0.05461    267999.     -5282.   -0.00218       0.00   3.85E+11
-187.175      3701.       0.00
    5.8500    0.05226    262195.     -5482.   -0.00218       0.00   3.85E+11
```

-182.481	3771.	0.00				
5.9400	0.04990	256178.	-5676.	-0.00218	0.00	3.85E+11
-177.483	3841.	0.00				
6.0300	0.04754	249954.	-5865.	-0.00218	0.00	3.85E+11
-172.183	3911.	0.00				
6.1200	0.04519	243529.	-6048.	-0.00218	0.00	3.85E+11
-166.580	3981.	0.00				
6.2100	0.04283	236910.	-6225.	-0.00218	0.00	3.85E+11
-160.675	4051.	0.00				
6.3000	0.04048	230103.	-6395.	-0.00218	0.00	3.85E+11
-154.467	4121.	0.00				
6.3900	0.03813	223116.	-6558.	-0.00218	0.00	3.85E+11
-147.957	4191.	0.00				
6.4800	0.03577	215957.	-6714.	-0.00218	0.00	3.85E+11
-141.144	4261.	0.00				
6.5700	0.03342	208633.	-6863.	-0.00218	0.00	3.85E+11
-134.029	4331.	0.00				
6.6600	0.03107	201153.	-7004.	-0.00218	0.00	3.85E+11
-126.612	4401.	0.00				
6.7500	0.02872	193525.	-7136.	-0.00218	0.00	3.85E+11
-118.893	4471.	0.00				
6.8400	0.02637	185758.	-7260.	-0.00218	0.00	3.85E+11
-110.872	4541.	0.00				
6.9300	0.02402	177862.	-7376.	-0.00218	0.00	3.85E+11
-102.548	4611.	0.00				
7.0200	0.02167	169847.	-7482.	-0.00217	0.00	3.85E+11
-93.922	4681.	0.00				
7.1100	0.01932	161722.	-7578.	-0.00217	0.00	3.85E+11
-84.994	4751.	0.00				
7.2000	0.01697	153497.	-7665.	-0.00217	0.00	3.85E+11
-75.764	4821.	0.00				
7.2900	0.01462	145185.	-7742.	-0.00217	0.00	3.85E+11
-66.231	4891.	0.00				
7.3800	0.01228	136795.	-7808.	-0.00217	0.00	3.85E+11
-56.397	4961.	0.00				
7.4700	0.00993	128339.	-8243.	-0.00217	0.00	3.85E+11
-748.259	81378.	0.00				
7.5600	0.00758	119011.	-9026.	-0.00217	0.00	3.85E+11
-703.001	100112.	0.00				
7.6500	0.00524	108862.	-9754.	-0.00217	0.00	3.85E+11
-644.046	132797.	0.00				
7.7400	0.00289	97963.	-10403.	-0.00217	0.00	3.85E+11
-557.852	208320.	0.00				
7.8300	5.47E-04	86412.	-10866.	-0.00217	0.00	3.85E+11
-300.752	594221.	0.00				
7.9200	-0.00180	74511.	-10758.	-0.00217	0.00	3.85E+11
500.8203	300728.	0.00				
8.0100	-0.00414	63194.	-10153.	-0.00217	0.00	3.85E+11
619.8230	161554.	0.00				
8.1000	-0.00649	52600.	-9442.	-0.00217	0.00	3.85E+11

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696.6793    115964.       0.00
    8.1900   -0.00883     42819.     -8658.   -0.00217       0.00   3.85E+11
756.1584     92455.       0.00
    8.2800   -0.01118     33919.     -7814.   -0.00217       0.00   3.85E+11
805.8536     77864.       0.00
    8.3700   -0.01352     25960.     -6920.   -0.00217       0.00   3.85E+11
849.1938     67826.       0.00
    8.4600   -0.01587     18991.     -5982.   -0.00217       0.00   3.85E+11
888.0447     60449.       0.00
    8.5500   -0.01821     13058.     -5004.   -0.00217       0.00   3.85E+11
923.5422     54772.       0.00
    8.6400   -0.02055      8202.     -3989.   -0.00217       0.00   3.85E+11
956.4331     50254.       0.00
    8.7300   -0.02290      4461.     -2939.   -0.00217       0.00   3.85E+11
987.2366     46562.       0.00
    8.8200   -0.02524      1872.     -1857.   -0.00217       0.00   3.85E+11
1016.     43483.       0.00
    8.9100   -0.02759   469.0952   -876.012   -0.00217       0.00   3.85E+11
801.0158     31359.       0.00
    9.0000   -0.02993       0.00       0.00   -0.00217       0.00   3.85E+11
821.2290     14816.       0.00

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


Output Summary for Load Case No. 1:

Pile-head deflection             =     0.20753922 inches
Computed slope at pile head      =     -0.0022421 radians
Maximum bending moment           =        338984. inch-lbs
Maximum shear force              =        -10866. lbs
Depth of maximum bending moment  =     2.79000000 feet below pile head
Depth of maximum shear force     =     7.83000000 feet below pile head
Number of iterations             =             21
Number of zero deflection points =              1
Pile deflection at ground        =     0.18069421 inches



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

Boundary Condition Type 1, Shear and Moment
```

```
Shear      =           1000. lbs
Moment     =         315600. in-lbs
Axial Load =           4200. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
-----------  ------------  ------------  ------------
    9.00000    0.20753922       338984.       -10866.
    8.55000    0.27235009       337654.       -10002.
    8.10000    0.40884826       337067.        -9749.
    7.65000    0.83404249       336253.       -10531.
    7.20000    1.95413374       335387.       -12493.
    6.75000    4.76845647       337818.       -14363.


--------------------------------------------------------------------------------
                Computed Values of Pile Loading and Deflection
                  for Lateral Loading for Load Case Number 2
--------------------------------------------------------------------------------

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

Shear force at pile head                              =       2250.0 lbs
Applied moment at pile head                           =     724800.0 in-lbs
Axial thrust load on pile head                        =       4600.0 lbs

   Depth    Deflect.    Bending     Shear      Slope      Total     Bending   Soil
Res.  Soil Spr.  Distrib.
     X          y       Moment      Force        S       Stress    Stiffness      p
      Es*H     Lat. Load
   feet      inches     in-lbs       lbs      radians     psi*      lb-in^2
lb/inch    lb/inch    lb/inch
---------- ---------- ---------- ---------- ---------- ---------- ----------
---------- ---------- ----------
      0.00     1.0376    724800.      2250.   -0.01162       0.00   3.83E+11
0.00       0.00       0.00
   0.09000     1.0250    727288.      2250.   -0.01162       0.00   3.83E+11
0.00       0.00       0.00
    0.1800     1.0125    729775.      2250.   -0.01162       0.00   3.83E+11
0.00       0.00       0.00
    0.2700     0.9999    732263.      2250.   -0.01161       0.00   3.83E+11
0.00       0.00       0.00
    0.3600     0.9874    734751.      2250.   -0.01161       0.00   3.83E+11
0.00       0.00       0.00
    0.4500     0.9748    737239.      2250.   -0.01161       0.00   3.83E+11
0.00       0.00       0.00
    0.5400     0.9623    739726.      2250.   -0.01161       0.00   3.83E+11
0.00       0.00       0.00
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    0.6300     0.9498    742214.      2250.   -0.01161       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.9372    744701.      2250.   -0.01160       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.9247    747189.      2250.   -0.01160       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.9122    749677.      2250.   -0.01160       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.8996    752164.      2250.   -0.01160       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.8871    754652.      2209.   -0.01159       0.00   3.83E+11
-75.156    91.4973       0.00
    1.1700     0.8746    757052.      2128.   -0.01159       0.00   3.83E+11
-76.036    93.8939       0.00
    1.2600     0.8621    759363.      2045.   -0.01159       0.00   3.83E+11
-76.901    96.3408       0.00
    1.3500     0.8496    761585.      1962.   -0.01159       0.00   3.83E+11
-77.751    98.8400       0.00
    1.4400     0.8370    763716.      1877.   -0.01159       0.00   3.83E+11
-78.584   101.3933       0.00
    1.5300     0.8245    765755.      1792.   -0.01158       0.00   3.83E+11
-79.402   104.0030       0.00
    1.6200     0.8120    767701.      1706.   -0.01158       0.00   3.83E+11
-80.203   106.6712       0.00
    1.7100     0.7995    769554.      1619.   -0.01158       0.00   3.83E+11
-80.988   109.4002       0.00
    1.8000     0.7870    771313.      1531.   -0.01158       0.00   3.83E+11
-81.756   112.1926       0.00
    1.8900     0.7745    772976.      1442.   -0.01158       0.00   3.83E+11
-82.507   115.0508       0.00
    1.9800     0.7620    774543.      1353.   -0.01157       0.00   3.83E+11
-83.241   117.9778       0.00
    2.0700     0.7495    776012.      1262.   -0.01157       0.00   3.83E+11
-83.957   120.9764       0.00
    2.1600     0.7370    777384.      1171.   -0.01157       0.00   3.83E+11
-84.654   124.0497       0.00
    2.2500     0.7245    778657.      1079.   -0.01157       0.00   3.83E+11
-85.333   127.2010       0.00
    2.3400     0.7120    779831.    986.9747  -0.01156       0.00   3.83E+11
-85.993   130.4338       0.00
    2.4300     0.6995    780904.    893.7557  -0.01156       0.00   3.83E+11
-86.634   133.7518       0.00
    2.5200     0.6871    781876.    799.8551  -0.01156       0.00   3.83E+11
-87.256   137.1591       0.00
    2.6100     0.6746    782747.    705.2943  -0.01156       0.00   3.83E+11
-87.857   140.6598       0.00
    2.7000     0.6621    783515.    610.0953  -0.01156       0.00   3.83E+11
-88.437   144.2584       0.00
    2.7900     0.6496    784179.    514.2808  -0.01155       0.00   3.83E+11
-88.997   147.9599       0.00
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    2.8800     0.6371    784740.   417.8737   -0.01155       0.00   3.83E+11
-89.535   151.7693       0.00
    2.9700     0.6247    785197.   320.8974   -0.01155       0.00   3.83E+11
-90.051   155.6922       0.00
    3.0600     0.6122    785548.   223.3761   -0.01155       0.00   3.83E+11
-90.544   159.7345       0.00
    3.1500     0.5997    785794.   125.3343   -0.01154       0.00   3.83E+11
-91.015   163.9026       0.00
    3.2400     0.5873    785934.    26.7975   -0.01154       0.00   3.83E+11
-91.461   168.2035       0.00
    3.3300     0.5748    785966.    -72.209   -0.01154       0.00   3.83E+11
-91.883   172.6445       0.00
    3.4200     0.5623    785892.   -171.657   -0.01154       0.00   3.83E+11
-92.281   177.2335       0.00
    3.5100     0.5499    785710.   -271.521   -0.01154       0.00   3.83E+11
-92.652   181.9794       0.00
    3.6000     0.5374    785420.   -371.772   -0.01153       0.00   3.83E+11
-92.997   186.8913       0.00
    3.6900     0.5250    785022.   -472.380   -0.01153       0.00   3.83E+11
-93.315   191.9796       0.00
    3.7800     0.5125    784515.   -573.317   -0.01153       0.00   3.83E+11
-93.605   197.2552       0.00
    3.8700     0.5001    783898.   -674.552   -0.01153       0.00   3.83E+11
-93.866   202.7303       0.00
    3.9600     0.4876    783172.   -776.052   -0.01152       0.00   3.83E+11
-94.097   208.4179       0.00
    4.0500     0.4752    782336.     -1101.   -0.01152       0.00   3.83E+11
-508.467      1156.       0.00
    4.1400     0.4627    780908.     -1658.   -0.01152       0.00   3.83E+11
-522.309      1219.       0.00
    4.2300     0.4503    778869.     -2229.   -0.01152       0.00   3.83E+11
-535.644      1285.       0.00
    4.3200     0.4378    776207.     -2815.   -0.01152       0.00   3.83E+11
-548.454      1353.       0.00
    4.4100     0.4254    772904.     -3414.   -0.01151       0.00   3.83E+11
-560.718      1424.       0.00
    4.5000     0.4130    768947.     -4026.   -0.01151       0.00   3.83E+11
-572.416      1497.       0.00
    4.5900     0.4005    764323.     -4650.   -0.01151       0.00   3.83E+11
-583.526      1573.       0.00
    4.6800     0.3881    759018.     -5286.   -0.01151       0.00   3.83E+11
-594.024      1653.       0.00
    4.7700     0.3757    753020.     -5933.   -0.01151       0.00   3.83E+11
-603.885      1736.       0.00
    4.8600     0.3633    746318.     -6590.   -0.01150       0.00   3.83E+11
-613.189      1823.       0.00
    4.9500     0.3508    738901.     -7257.   -0.01150       0.00   3.83E+11
-622.272      1916.       0.00
    5.0400     0.3384    730757.     -7934.   -0.01150       0.00   3.83E+11
-630.676      2013.       0.00
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    5.1300     0.3260    721878.     -8619.   -0.01150       0.00   3.83E+11
-638.371      2115.       0.00
    5.2200     0.3136    712255.     -9312.   -0.01149       0.00   3.83E+11
-645.325      2223.       0.00
    5.3100     0.3012    701879.    -10012.   -0.01149       0.00   3.83E+11
-651.506      2336.       0.00
    5.4000     0.2888    690743.    -10719.   -0.01149       0.00   3.83E+11
-656.876      2457.       0.00
    5.4900     0.2763    678840.    -11431.   -0.01149       0.00   3.84E+11
-661.398      2585.       0.00
    5.5800     0.2639    666166.    -12147.   -0.01149       0.00   3.84E+11
-665.028      2721.       0.00
    5.6700     0.2515    652717.    -12867.   -0.01149       0.00   3.84E+11
-667.723      2867.       0.00
    5.7600     0.2391    638489.    -13589.   -0.01148       0.00   3.84E+11
-669.431      3023.       0.00
    5.8500     0.2267    623479.    -14312.   -0.01148       0.00   3.84E+11
-670.099      3192.       0.00
    5.9400     0.2143    607689.    -15050.   -0.01148       0.00   3.84E+11
-696.905      3512.       0.00
    6.0300     0.2019    591085.    -15802.   -0.01148       0.00   3.84E+11
-694.581      3715.       0.00
    6.1200     0.1895    573671.    -16550.   -0.01148       0.00   3.84E+11
-690.969      3937.       0.00
    6.2100     0.1771    555451.    -17282.   -0.01147       0.00   3.84E+11
-664.498      4051.       0.00
    6.3000     0.1648    536457.    -17980.   -0.01147       0.00   3.84E+11
-628.688      4121.       0.00
    6.3900     0.1524    516728.    -18639.   -0.01147       0.00   3.84E+11
-591.279      4191.       0.00
    6.4800     0.1400    496311.    -19256.   -0.01147       0.00   3.84E+11
-552.271      4261.       0.00
    6.5700     0.1276    475248.    -19831.   -0.01147       0.00   3.84E+11
-511.662      4331.       0.00
    6.6600     0.1152    453590.    -20361.   -0.01147       0.00   3.84E+11
-469.454      4401.       0.00
    6.7500     0.1028    431383.    -20844.   -0.01147       0.00   3.84E+11
-425.647      4471.       0.00
    6.8400    0.09043    408680.    -21279.   -0.01147       0.00   3.84E+11
-380.240      4541.       0.00
    6.9300    0.07805    385534.    -21665.   -0.01146       0.00   3.84E+11
-333.234      4611.       0.00
    7.0200    0.06567    361999.    -21998.   -0.01146       0.00   3.84E+11
-284.628      4681.       0.00
    7.1100    0.05329    338132.    -22278.   -0.01146       0.00   3.84E+11
-234.422      4751.       0.00
    7.2000    0.04091    313991.    -22504.   -0.01146       0.00   3.84E+11
-182.616      4821.       0.00
    7.2900    0.02853    289638.    -22672.   -0.01146       0.00   3.85E+11
-129.211      4891.       0.00
```

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    7.3800    0.01615    265133.    -22782.   -0.01146       0.00   3.85E+11
-74.205      4961.       0.00
    7.4700    0.00378    240543.    -23139.   -0.01146       0.00   3.85E+11
-587.538    167964.       0.00
    7.5600   -0.00860    215267.    -23065.   -0.01146       0.00   3.85E+11
725.5800     91146.       0.00
    7.6500   -0.02097    190837.    -22181.   -0.01146       0.00   3.85E+11
911.2675     46927.       0.00
    7.7400   -0.03335    167470.    -21133.   -0.01146       0.00   3.85E+11
1028.     33306.       0.00
    7.8300   -0.04572    145302.    -19974.   -0.01146       0.00   3.85E+11
1118.     26417.       0.00
    7.9200   -0.05809    124439.    -18726.   -0.01146       0.00   3.85E+11
1193.     22182.       0.00
    8.0100   -0.07047    104968.    -17402.   -0.01146       0.00   3.85E+11
1258.     19286.       0.00
    8.1000   -0.08284     86965.    -16012.   -0.01146       0.00   3.85E+11
1317.     17166.       0.00
    8.1900   -0.09521     70497.    -14561.   -0.01146       0.00   3.85E+11
1370.     15539.       0.00
    8.2800     -0.108     55627.    -13055.   -0.01146       0.00   3.85E+11
1419.     14247.       0.00
    8.3700     -0.120     42412.    -11497.   -0.01146       0.00   3.85E+11
1465.     13194.       0.00
    8.4600     -0.132     30907.     -9891.   -0.01146       0.00   3.85E+11
1509.     12316.       0.00
    8.5500     -0.145     21162.     -8239.   -0.01146       0.00   3.85E+11
1550.     11572.       0.00
    8.6400     -0.157     13225.     -6543.   -0.01146       0.00   3.85E+11
1590.     10933.       0.00
    8.7300     -0.169      7143.     -4805.   -0.01146       0.00   3.85E+11
1628.     10378.       0.00
    8.8200     -0.182      2960.     -3027.   -0.01146       0.00   3.85E+11
1665.      9890.       0.00
    8.9100     -0.194   719.3122     -1423.   -0.01146       0.00   3.85E+11
1305.      7256.       0.00
    9.0000     -0.207       0.00       0.00   -0.01146       0.00   3.85E+11
1331.      3480.       0.00

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


Output Summary for Load Case No. 2:

Pile-head deflection             =     1.03755086 inches
```

```
Computed slope at pile head      =     -0.0116199 radians
Maximum bending moment           =        785966. inch-lbs
Maximum shear force              =        -23139. lbs
Depth of maximum bending moment  =     3.33000000 feet below pile head
Depth of maximum shear force     =     7.47000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.89825010 inches
```

Pile-head Deflection vs. Pile Length for Load Case 2

Boundary Condition Type 1, Shear and Moment

```
Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           4600. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
9.00000	1.03755086	785966.	-23139.
8.55000	1.80124350	781276.	-24156.
8.10000	3.93155531	780051.	-25981.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 3

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

```
Shear force at pile head                          =       2250.0 lbs
Applied moment at pile head                       =     724800.0 in-lbs
Axial thrust load on pile head                    =       3800.0 lbs
```

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

```
      0.00     1.0342    724800.      2250.   -0.01158       0.00   3.83E+11
0.00       0.00       0.00
   0.09000     1.0217    727278.      2250.   -0.01158       0.00   3.83E+11
0.00       0.00       0.00
    0.1800     1.0092    729755.      2250.   -0.01158       0.00   3.83E+11
0.00       0.00       0.00
    0.2700     0.9967    732233.      2250.   -0.01158       0.00   3.83E+11
0.00       0.00       0.00
    0.3600     0.9842    734710.      2250.   -0.01157       0.00   3.83E+11
0.00       0.00       0.00
    0.4500     0.9717    737188.      2250.   -0.01157       0.00   3.83E+11
0.00       0.00       0.00
    0.5400     0.9592    739665.      2250.   -0.01157       0.00   3.83E+11
0.00       0.00       0.00
    0.6300     0.9467    742142.      2250.   -0.01157       0.00   3.83E+11
0.00       0.00       0.00
    0.7200     0.9342    744620.      2250.   -0.01156       0.00   3.83E+11
0.00       0.00       0.00
    0.8100     0.9217    747097.      2250.   -0.01156       0.00   3.83E+11
0.00       0.00       0.00
    0.9000     0.9092    749575.      2250.   -0.01156       0.00   3.83E+11
0.00       0.00       0.00
    0.9900     0.8967    752052.      2250.   -0.01156       0.00   3.83E+11
0.00       0.00       0.00
    1.0800     0.8842    754530.      2209.   -0.01156       0.00   3.83E+11
-75.075    91.6950       0.00
    1.1700     0.8718    756920.      2128.   -0.01155       0.00   3.83E+11
-75.954    94.0967       0.00
    1.2600     0.8593    759221.      2045.   -0.01155       0.00   3.83E+11
-76.818    96.5489       0.00
    1.3500     0.8468    761432.      1962.   -0.01155       0.00   3.83E+11
-77.667    99.0533       0.00
    1.4400     0.8343    763554.      1878.   -0.01155       0.00   3.83E+11
-78.500   101.6121       0.00
    1.5300     0.8219    765583.      1792.   -0.01155       0.00   3.83E+11
-79.316   104.2273       0.00
    1.6200     0.8094    767520.      1706.   -0.01154       0.00   3.83E+11
-80.117   106.9011       0.00
    1.7100     0.7969    769363.      1619.   -0.01154       0.00   3.83E+11
-80.901   109.6360       0.00
    1.8000     0.7845    771113.      1532.   -0.01154       0.00   3.83E+11
-81.668   112.4342       0.00
    1.8900     0.7720    772766.      1443.   -0.01154       0.00   3.83E+11
-82.419   115.2985       0.00
    1.9800     0.7596    774324.      1354.   -0.01153       0.00   3.83E+11
-83.151   118.2316       0.00
    2.0700     0.7471    775785.      1263.   -0.01153       0.00   3.83E+11
-83.866   121.2365       0.00
    2.1600     0.7346    777148.      1172.   -0.01153       0.00   3.83E+11
-84.563   124.3162       0.00
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    2.2500     0.7222    778412.      1081.   -0.01153       0.00   3.83E+11
-85.242   127.4741       0.00
    2.3400     0.7097    779577.   988.3326   -0.01153       0.00   3.83E+11
-85.901   130.7137       0.00
    2.4300     0.6973    780641.   895.2134   -0.01152       0.00   3.83E+11
-86.542   134.0387       0.00
    2.5200     0.6849    781605.   801.4134   -0.01152       0.00   3.83E+11
-87.162   137.4531       0.00
    2.6100     0.6724    782467.   706.9539   -0.01152       0.00   3.83E+11
-87.763   140.9611       0.00
    2.7000     0.6600    783227.   611.8568   -0.01152       0.00   3.83E+11
-88.343   144.5672       0.00
    2.7900     0.6475    783883.   516.1447   -0.01152       0.00   3.83E+11
-88.902   148.2763       0.00
    2.8800     0.6351    784436.   419.8404   -0.01151       0.00   3.83E+11
-89.439   152.0936       0.00
    2.9700     0.6227    784884.   322.9675   -0.01151       0.00   3.83E+11
-89.955   156.0246       0.00
    3.0600     0.6102    785228.   225.5500   -0.01151       0.00   3.83E+11
-90.448   160.0752       0.00
    3.1500     0.5978    785466.   127.6125   -0.01151       0.00   3.83E+11
-90.918   164.2520       0.00
    3.2400     0.5854    785598.    29.1804   -0.01150       0.00   3.83E+11
-91.364   168.5616       0.00
    3.3300     0.5730    785624.    -69.720   -0.01150       0.00   3.83E+11
-91.786   173.0117       0.00
    3.4200     0.5605    785542.   -169.063   -0.01150       0.00   3.83E+11
-92.183   177.6101       0.00
    3.5100     0.5481    785353.   -268.821   -0.01150       0.00   3.83E+11
-92.554   182.3656       0.00
    3.6000     0.5357    785056.   -368.966   -0.01150       0.00   3.83E+11
-92.899   187.2875       0.00
    3.6900     0.5233    784650.   -469.468   -0.01149       0.00   3.83E+11
-93.217   192.3861       0.00
    3.7800     0.5109    784136.   -570.298   -0.01149       0.00   3.83E+11
-93.506   197.6723       0.00
    3.8700     0.4985    783513.   -671.426   -0.01149       0.00   3.83E+11
-93.767   203.1584       0.00
    3.9600     0.4861    782780.   -772.819   -0.01149       0.00   3.83E+11
-93.998   208.8574       0.00
    4.0500     0.4737    781938.     -1098.   -0.01148       0.00   3.83E+11
-508.003      1158.       0.00
    4.1400     0.4613    780503.     -1654.   -0.01148       0.00   3.83E+11
-521.832      1222.       0.00
    4.2300     0.4489    778459.     -2225.   -0.01148       0.00   3.83E+11
-535.154      1288.       0.00
    4.3200     0.4365    775791.     -2810.   -0.01148       0.00   3.83E+11
-547.952      1356.       0.00
    4.4100     0.4241    772485.     -3408.   -0.01148       0.00   3.83E+11
-560.205      1427.       0.00
```

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    4.5000     0.4117    768524.     -4019.   -0.01147       0.00   3.83E+11
-571.892      1500.       0.00
    4.5900     0.3993    763897.     -4643.   -0.01147       0.00   3.83E+11
-582.991      1577.       0.00
    4.6800     0.3869    758589.     -5278.   -0.01147       0.00   3.83E+11
-593.479      1657.       0.00
    4.7700     0.3745    752590.     -5925.   -0.01147       0.00   3.83E+11
-603.331      1740.       0.00
    4.8600     0.3621    745886.     -6581.   -0.01146       0.00   3.83E+11
-612.627      1827.       0.00
    4.9500     0.3498    738468.     -7248.   -0.01146       0.00   3.83E+11
-621.702      1920.       0.00
    5.0400     0.3374    730325.     -7924.   -0.01146       0.00   3.83E+11
-630.099      2017.       0.00
    5.1300     0.3250    721447.     -8608.   -0.01146       0.00   3.83E+11
-637.787      2119.       0.00
    5.2200     0.3126    711825.     -9301.   -0.01146       0.00   3.83E+11
-644.736      2227.       0.00
    5.3100     0.3002    701451.    -10001.   -0.01145       0.00   3.83E+11
-650.912      2341.       0.00
    5.4000     0.2879    690318.    -10706.   -0.01145       0.00   3.83E+11
-656.279      2462.       0.00
    5.4900     0.2755    678419.    -11418.   -0.01145       0.00   3.84E+11
-660.798      2590.       0.00
    5.5800     0.2631    665750.    -12133.   -0.01145       0.00   3.84E+11
-664.427      2727.       0.00
    5.6700     0.2508    652305.    -12852.   -0.01145       0.00   3.84E+11
-667.121      2873.       0.00
    5.7600     0.2384    638083.    -13574.   -0.01144       0.00   3.84E+11
-668.830      3030.       0.00
    5.8500     0.2261    623080.    -14296.   -0.01144       0.00   3.84E+11
-669.500      3198.       0.00
    5.9400     0.2137    607296.    -15034.   -0.01144       0.00   3.84E+11
-696.282      3519.       0.00
    6.0300     0.2013    590700.    -15785.   -0.01144       0.00   3.84E+11
-693.964      3722.       0.00
    6.1200     0.1890    573295.    -16532.   -0.01144       0.00   3.84E+11
-690.360      3945.       0.00
    6.2100     0.1766    555084.    -17263.   -0.01144       0.00   3.84E+11
-662.623      4051.       0.00
    6.3000     0.1643    536101.    -17959.   -0.01143       0.00   3.84E+11
-626.940      4121.       0.00
    6.3900     0.1519    516386.    -18616.   -0.01143       0.00   3.84E+11
-589.662      4191.       0.00
    6.4800     0.1396    495984.    -19232.   -0.01143       0.00   3.84E+11
-550.790      4261.       0.00
    6.5700     0.1273    474939.    -19805.   -0.01143       0.00   3.84E+11
-510.324      4331.       0.00
    6.6600     0.1149    453299.    -20333.   -0.01143       0.00   3.84E+11
-468.264      4401.       0.00
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    6.7500     0.1026    431112.    -20816.   -0.01143       0.00   3.84E+11
-424.609      4471.       0.00
    6.8400    0.09022    408431.    -21250.   -0.01143       0.00   3.84E+11
-379.361      4541.       0.00
    6.9300    0.07788    385307.    -21634.   -0.01143       0.00   3.84E+11
-332.518      4611.       0.00
    7.0200    0.06554    361795.    -21967.   -0.01142       0.00   3.84E+11
-284.081      4681.       0.00
    7.1100    0.05320    337951.    -22247.   -0.01142       0.00   3.84E+11
-234.050      4751.       0.00
    7.2000    0.04087    313835.    -22472.   -0.01142       0.00   3.84E+11
-182.424      4821.       0.00
    7.2900    0.02853    289506.    -22640.   -0.01142       0.00   3.85E+11
-129.203      4891.       0.00
    7.3800    0.01619    265026.    -22750.   -0.01142       0.00   3.85E+11
-74.388      4961.       0.00
    7.4700    0.00386    240459.    -23109.   -0.01142       0.00   3.85E+11
-590.686    165299.       0.00
    7.5600   -0.00847    215204.    -23038.   -0.01142       0.00   3.85E+11
722.9710     92136.       0.00
    7.6500   -0.02081    190792.    -22156.   -0.01142       0.00   3.85E+11
909.4747     47205.       0.00
    7.7400   -0.03314    167440.    -21111.   -0.01142       0.00   3.85E+11
1027.     33461.       0.00
    7.8300   -0.04547    145286.    -19953.   -0.01142       0.00   3.85E+11
1117.     26525.       0.00
    7.9200   -0.05780    124435.    -18707.   -0.01142       0.00   3.85E+11
1192.     22265.       0.00
    8.0100   -0.07014    104974.    -17384.   -0.01142       0.00   3.85E+11
1257.     19354.       0.00
    8.1000   -0.08247     86979.    -15995.   -0.01142       0.00   3.85E+11
1315.     17224.       0.00
    8.1900   -0.09480     70517.    -14546.   -0.01142       0.00   3.85E+11
1368.     15590.       0.00
    8.2800     -0.107     55652.    -13042.   -0.01142       0.00   3.85E+11
1418.     14293.       0.00
    8.3700     -0.119     42441.    -11486.   -0.01142       0.00   3.85E+11
1464.     13235.       0.00
    8.4600     -0.132     30937.     -9881.   -0.01142       0.00   3.85E+11
1507.     12354.       0.00
    8.5500     -0.144     21192.     -8231.   -0.01142       0.00   3.85E+11
1549.     11607.       0.00
    8.6400     -0.156     13253.     -6536.   -0.01142       0.00   3.85E+11
1589.     10966.       0.00
    8.7300     -0.169      7166.     -4800.   -0.01142       0.00   3.85E+11
1627.     10408.       0.00
    8.8200     -0.181      2978.     -3024.   -0.01142       0.00   3.85E+11
1663.      9918.       0.00
    8.9100     -0.193   728.6263     -1422.   -0.01142       0.00   3.85E+11
1303.      7277.       0.00
```

```
    9.0000     -0.206       0.00       0.00   -0.01142       0.00   3.85E+11
1330.      3490.       0.00

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


Output Summary for Load Case No. 3:

Pile-head deflection             =     1.03418323 inches
Computed slope at pile head      =     -0.0115814 radians
Maximum bending moment           =        785624. inch-lbs
Maximum shear force              =        -23109. lbs
Depth of maximum bending moment  =     3.33000000 feet below pile head
Depth of maximum shear force     =     7.47000000 feet below pile head
Number of iterations             =             35
Number of zero deflection points =              1
Pile deflection at ground        =     0.89534452 inches



--------------------------------------------------------------------------------
            Pile-head Deflection vs. Pile Length for Load Case 3
--------------------------------------------------------------------------------

Boundary Condition Type 1, Shear and Moment

Shear      =           2250. lbs
Moment     =         724800. in-lbs
Axial Load =           3800. lbs


    Pile       Pile Head       Maximum       Maximum
   Length      Deflection      Moment         Shear
    feet         inches        ln-lbs          lbs
------------  ------------  ------------  ------------
    9.00000    1.03418323       785624.       -23109.
    8.55000    1.79008242       780701.       -24101.
    8.10000    3.87445576       778797.       -25849.
    7.65000   17.38009982       788619.       -30204.

--------------------------------------------------------------------------------
            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 Load                Load                  Axial    Pile-head  Pile-head  Max
Shear Max Moment
Case Type   Pile-head    Type     Pile-head   Loading  Deflection  Rotation    in
Pile    in Pile
 No.  1      Load 1       2        Load 2       lbs      inches     radians      lbs
     in-lbs
---- ----- ---------- ---------- ---------- ---------- ---------- ----------
---------- ----------
  1  V, lb  1000.0000  M, in-lb     315600.      4200.     0.2075   -0.00224
-10866.    338984.
  2  V, lb      2250.  M, in-lb     724800.      4600.     1.0376   -0.01162
-23139.    785966.
  3  V, lb      2250.  M, in-lb     724800.      3800.     1.0342   -0.01158
-23109.    785624.


Maximum pile-head deflection = 1.0375508571 inches
Maximum pile-head rotation   = -0.0116198928 radians = -0.665771 deg.

The analysis ended normally.
```

Appendix IV – OGE Geotechnical Checklists

I. Geotechnical Design Checklists	
Project: ATB-90 Vacant Rest Areas	**PDP Path:**
PID: 122876	**Review Stage: Final**

Checklist	Included in This Submission
II. Reconnaissance and Planning	✓
III. A. Centerline Cuts III. B. Embankments III. C. Subgrade	✓
IV. A. Foundations of Structures IV. B. Retaining Wall	
V. A. Landslide Remediation V. B. Rockfall Remediation V. C. Wetland or Peat Remediation V. D. Underground Mine Remediation V. E. Surface Mine Remediation V. F. Karst Remediation	
VI. A. Geotechnical Profile VI. D. Geotechnical Reports	✓

II. Reconnaissance and Planning Checklist

C-R-S: ATB-90 Vacant Rest Areas	PID: 122876	Reviewer: BKS	Date: 6/9/2026

Reconnaissance		(Y/N/X)	Notes:
1	Based on Section 302.1 in the SGE, have the necessary plans been developed in the following areas prior to the commencement of the subsurface exploration reconnaissance:	Y	
	Roadway plans	✓	
	Structures plans		
	Geohazards plans		
2	Have the resources listed in Section 302.2.1 of the SGE been reviewed as part of the office reconnaissance?	Y	
3	Have all the features listed in Section 302.3 of the SGE been observed and evaluated during the field reconnaissance?	Y	
4	If notable features were discovered in the field reconnaissance, were the GPS coordinates of these features recorded?	Y	Existing fill mounds. Boundaries not captured with GPS due to their size.

Planning - General		(Y/N/X)	Notes:
5	In planning the geotechnical exploration program for the project, have the specific geologic conditions, the proposed work, and historic subsurface exploration work been considered?	Y	
6	Has the ODOT Transportation Information Mapping System (TIMS) been accessed to find all available historic boring information and inventoried geohazards?	Y	TIMS was accessed and historic information was available at each site but was not able to be reused.
7	Have the borings been located to develop the maximum subsurface information while using a minimum number of borings, utilizing historic geotechnical explorations to the fullest extent possible?	Y	
8	Have the topography, geologic origin of materials, surface manifestation of soil conditions, and any other special design considerations been utilized in determining the spacing and depth of borings?	Y	
9	Have the borings been located so as to provide adequate overhead clearance for the equipment, clearance of underground utilities, minimize damage to private property, and minimize disruption of traffic, without compromising the quality of the exploration?	Y	

II. Reconnaissance and Planning Checklist

Planning - General	(Y/N/X)	Notes:
10 Have the scaled boring plans, showing all project and historic borings, and a schedule of borings in tabular format, been submitted to the District Geotechnical Engineer?	Y	
The schedule of borings should present the following information for each boring:		
a. exploration identification number	Y	
b. location by station and offset	Y	
c. estimated amount of rock and soil, including the total for each for the entire program.	Y	
Planning – Exploration Number	(Y/N/X)	Notes:
11 Have the coordinates, stations and offsets of all explorations (borings, soundings, test pits, etc.) been identified?	Y	
12 Has each exploration been assigned a unique identification number, in the following format X-ZZZ-W-YY, as per Section 303.2 of the SGE?	Y	
13 When referring to historic explorations that did not use the identification scheme in 12 above, have the historic explorations been assigned identification numbers according to Section 303.2 of the SGE?	X	

II. Reconnaissance and Planning Checklist

Planning – Boring Types		(Y/N/X)	Notes:
14	Based on Sections 303.3 to 303.7.6 of the SGE, have the location, depth, and sampling requirements for the following boring types been determined for the project?	Y	
	Check all boring types utilized for this project:		
	Existing Subgrades (Type A)	✓	
	Roadway Borings (Type B)	✓	
	Embankment Foundations (Type B1)		
	Cut Sections (Type B2)		
	Sidehill Cut Sections (Type B3)		
	Sidehill Cut-Fill Sections (Type B4)		
	Sidehill Fill Sections on Unstable Slopes (Type B5)		
	Geohazard Borings (Type C)		
	Lakes, Ponds, and Low-Lying Areas (Type C1)		
	Peat Deposits, Compressible Soils, and Low Strength Soils (Type C2)		
	Uncontrolled Fills, Waste Pits, and Reclaimed Surface Mines (Type C3)		
	Underground Mines (C4)		
	Landslides (Type C5)		
	Rock Slope (Type C6)		
	Karst (Type C7)		
	Proposed Underground Utilities (Type D)		
	Structure Borings (Type E)		
	Bridges (Type E1)		
	Culverts (Type E2 a,b,c)		
	Retaining Walls (Type E3 a and b)		
	Noise Barrier (Type E4)		
	CCTV & High Mast Lighting Towers (Type E5)	✓	
	Buildings and Salt Domes (Type E6)		

III.C. Subgrade Checklist

C-R-S: ATB-90 Vacant Rest Areas	PID: 122876	Reviewer: BKS	Date: 6/9/2026

Use this Checklist in conjunction with the Subgrade design guidance in GDM Section 600
If you do not have any subgrade work on the project, you do not have to fill out this checklist.

Subgrade	(Y/N/X)	Notes:
1 Has the subsurface exploration adequately characterized the soil or rock according to GDM Section 600?	Y	
a. Has each sample been visually classified and inspected for the presence of gypsum? Has a moisture content been performed on each sample?	Y	
b. Has mechanical classification (Plastic Limit (PL), Liquid Limit (LL), and gradation testing) been done on at least two samples from each boring within six feet of the proposed subgrade?	Y	
c. Has the sulfate content of at least one sample from each boring within 3 feet of the proposed subgrade been determined, per Supplement 1122, Determining Sulfate Content in Soils?	Y	
d. Has the sulfate content of all samples that exhibit gypsum crystals been determined?	X	
e. Have A-2-5, A-4b, A-5, A-7-5, A-8a, or A-8b soils within the top 3 feet of the proposed subgrade been mechanically classified?	X	
2 If soils classified as A-2-5, A-4b, A-5, A-7-5, A-8a, or A-8b, or having a LL>65, are present at the proposed subgrade (geotechnical profile), do the plans specify that these materials need to be removed and replaced or chemically stabilized?	Y	Silt was encountered at B-008-0-25. Subgrade soils in this area will be removed to 3 feet below proposed subgrade to address uncontrolled fill within/beneath fill mounds. Thus, any silt would also be removed from within 3 feet of subgrade.
a. If these materials are to be removed and replaced, have the station limits, depth, and lateral limits for the planned removal been provided?	Y	Recommended subgrade remediation limits have been provided in the report. Plans by others.
3 If there is any rock, shale, or coal present at the proposed subgrade (C&MS 204.05), do the plans specify the removal of the material?	X	
a. If removal of any rock, shale, or coal is required, have the station limits, depth, and lateral limits for the planned removal of the material at proposed subgrade been provided?	X	

III.C. Subgrade Checklist

Subgrade	(Y/N/X)	Notes:
4 In accordance with GDM Section 600, do the SPT (N_{60})/HP values and existing moisture contents for the proposed subgrade soils indicate the need for subgrade stabilization?	Y	
a. If removal and replacement is applicable, has the detail of subgrade removal been shown on the plans, including depth of removal, station limits, lateral extent, replacement material, and plan notes (Item 204 - Subgrade Compaction and Proof Rolling)?	Y	Recommended subgrade remediation limits have been provided in the report. Plans by others.
b. If chemical stabilization is applicable, has the detail of this treatment been shown on the plans, including depth, percentage of chemical, station limits, lateral extent, and plan notes?	X	
Indicate type of chemcial stabilization specified:		
cement stabilization		
lime stabilization		
5 If removal and replacement has been specified, do the plans include Plan Note G121 from L&D3?	Y	Inclusion of this note has been recommended in our report as well as an APP version of the note.
6 If drainage or groundwater is an issue with the proposed subgrade, has an appropriate drainage system (e.g., pipe, underdrains) been provided?	Y	
7 Has an appropriate quantity of Proof Rolling (C&MS 204.06) and has Plan Note G111 from L&D3 been included in the plans?	X	To be determined by others.
8 Has a design CBR value been provided?	Y	

VI.B. Geotechnical Reports

C-R-S: ATB-90 Vacant Rest Areas	PID: 122876	Reviewer: BKS	Date: 6/9/2026

General		(Y/N/X)	Notes:
1	Has an electronic copy of all geotechnical submissions been provided to the District Geotechnical Engineer (DGE)?	Y	
2	Has the first complete version of a geotechnical report being submitted been labeled as 'Draft'?	Y	
3	Subsequent to ODOT's review and approval, has the complete version of the revised geotechnical report being submitted been labeled 'Final'?	Y	
4	Has the boring data been submitted in a native format that is DIGGS (Data Interchange for Geotechnical and Geoenvironmental) compatable? gINT files meet this demand?	Y	
5	Does the report cover format follow ODOT's Brand and Identity Guidelines Report Standards found at http://www.dot.state.oh.us/brand/Pages/default.aspx ?	Y	
6	Have all geotechnical reports being submitted been titled correctly as prescribed in Section 706.1 of the SGE?	Y	
Report Body		(Y/N/X)	Notes:
7	Do all geotechnical reports being submitted contain the following:	Y	
a.	an Executive Summary as described in Section 706.2 of the SGE?	Y	
b.	an Introduction as described in Section 706.3 of the SGE?	Y	
c.	a section titled "Geology and Observations of the Project," as described in Section 706.4 of the SGE?	Y	
d.	a section titled "Exploration," as described in Section 706.5 of the SGE?	Y	
e.	a section titled "Findings," as described in Section 706.6 of the SGE?	Y	
f.	a section titled "Analyses and Recommendations," as described in Section 706.7 of the SGE?	Y	
Appendices		(Y/N/X)	Notes:
8	Do all geotechnical reports being submitted contain all applicable Appendices as described in Section 706.8 of the SGE?	Y	
9	Do the Appendices present a site Boring Plan showing all boring locations as described in Section 706.8.1 of the SGE?	Y	

VI.B. Geotechnical Reports

Appendices		(Y/N/X)	Notes:
10	Do the Appendices include boring logs and color pictures of rock, if applicable, as described in Section 706.8.2 of the SGE?	Y	
11	Do the Appendices include reports of undisturbed test data as described in Section 706.8.3 of the SGE?	X	
12	Do the Appendices include calculations in a logical format to support recommendations as described in Section 706.8.4 of the SGE?	Y	