Date: **November 4, 2016**

Ryan Shaffer
Crown Castle
12725 Morris Road Extension Suite 400
Alpharetta, GA 30004
(678) 366-1273

GPD GROUP, INC.
520 South Main Street Suite 2531
Akron, Ohio 44311
(216) 927-8663
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Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10070109
	Carrier Site Name:	FL01
Crown Castle Designation:	**Crown Castle BU Number:**	842800
	Crown Castle Site Name:	FL01
	Crown Castle JDE Job Number:	393421
	Crown Castle Work Order Number:	1322369
	Crown Castle Application Number:	359269 Rev. 1
Engineering Firm Designation:	**GPD Project Number:**	2017777.842800.10
Site Data:	**3601 Vinkemulder Road, Coconut Creek, Broward County, FL 33073** **Latitude *26° 17' 7.11"*, Longitude *-80° 10' 22.04"*** **192.333 Foot - Modified Self Support Tower**	

Dear Ryan Shaffer,

We are pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 967111, in accordance with application 359269, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

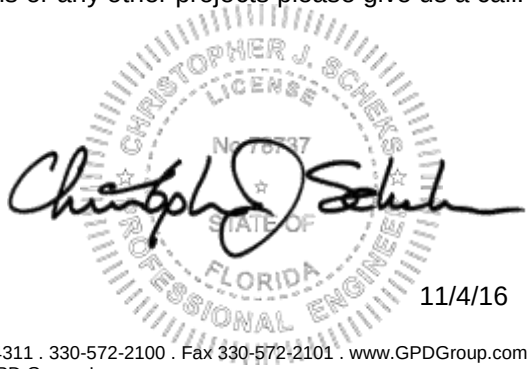
This structure has sufficient capacity once the loading changes described in the Recommendations section of this report are completed.

This analysis has been performed in accordance with the 2014 Florida Building Code, 5th Edition, based on an ultimate 3-second gust wind speed of 170 mph per Section 1620.2, as required by the Exception of Section 1601.1. Exposure Category C and Risk Category II were used in this analysis.

We appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Eric Schnaus

Respectfully submitted by:



Christopher J. Scheks, P.E.
Florida #: 78737

11/4/16

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1) INTRODUCTION

The existing 192'-4" modified self-support tower is supported on three legs and has ten major sections. It has a triangular cross section made of bolted connections, with a “k-down” frame configuration. The tower is fabricated with pipe legs, pipe main diagonals, and pipe main horizontals from 0'-0" to 192'-4", pipe inner bracing members, pipe redundant diagonals, and pipe redundant horizontals from 0'-0" to 20'-4", and angle inner bracing members, angle redundant diagonals, and angle redundant horizontals from 20'-4" to 192'-4". The structure is galvanized and does not have aviation lighting.

All geometry information has been obtained from a tower mapping, which was completed by FDH, Inc. of Raleigh, North Carolina in July of 2011. The tower’s original design structural code and analysis parameters are unknown. Based on experience with similar towers, the structure appears to be manufactured by Rohn of Peoria, Illinois.

Modifications designed by GPD Group (job #: 2012771.41, dated 06/27/2012), which consisted of the replacement of all main diagonals from 0'-0" to 20'-4" and 40'-8" to 101'-5", the replacement of all redundant diagonals from 0'-0" to 20'-4", and the installation of concrete collars around the original drilled pier foundations, have been considered in the structural analysis.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2014 Florida Building Code, 5th Edition, based on an ultimate 3-second gust wind speed of 170 mph per Section 1620.2, as required by the Exception of Section 1601.1. Exposure Category C and Risk Category II were used in this analysis.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	100.0	3	Commscope	SBNHH-1D85B	12 6 3 3	7/8 3/4 5/16 3/8	1
		6	KMW Communications	ET-X-UW-68-14-65-18-iR-AT			
		3	Ericsson	RRUS A2 MODULE			
		6	Ericsson	RRUS-11			
		3	Ericsson	RRUS-32 B30			
		3	Ericsson	RRUS 12			
		3	Raycap	DC6-48-60-18-8F			

Notes:
1) See Appendix B for the proposed coax layout.

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
190.0	200.0	1	Sinclair	SRL-235-2			
	197.0	1	Decibel	DB806-XC			
	195.0	1	Andrew	DB806E-XT			
	193.0	1	Telewave	ANT450Y5-WR			
	190.0	2		6' Sector Frame Mount			
172.0	172.0	-	-	-	1	1-5/8	2
170.0	170.0	1		Pipe Mount [PM 601-1]			1
165.0	165.0	3	Andrew	DBXNH-6565B-A2M	12 2	1-5/8 1-3/5	
		6	Commscope	HBXX-3319DS-A2M			
		4	Commscope	CBC1921-DF-DC-6X			
		3	Commscope	TMA-S-DB1921-DD-A			
		6	Nokia	4Tx RRH-FHFB			
		6	Nokia	FRIJ			
		2	Raycap	ASU9338TYP01			
		1		Sector Mount [SM 602-3]			
144.0	144.0	1		Pipe Mount [PM 601-1]			1
100.0	101.0	3	Commscope	SBNHH-1D85A	1 9 6 6	1-5/8 7/8 3/4 3/8	1
		6	KMW Communications	ET-X-UW-68-14-65-18-iR-AT			
	100.0	9	Ericsson	RRUS 11			
		3	Ericsson	RRUS A2 MODULE			
		3	Raycap	DC6-48-60-18-8F			
		3	Connect-It Wireless	VF 13-30-96 V-Frame Boom Gate			

Notes:
1) Equipment to be removed; Not considered in this analysis.
2) Abandoned coax cut at elevation; Considered in this analysis.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
Unavailable						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Tower Mapping Report	FDH Job #: 11-07013T T1, Dated 07/15/2011	4713032	CCIsites
Foundation Investigation Report	FDH Project #: 1107019EN1, Dated 07/15/2011	4528868	CCIsites
Geotechnical Report	GDE Job #: 11-4188, Dated 08/26/2011	4528867	CCIsites
Modification Drawings / Specifications	GPD Job #: 2012771.41, Dated 06/27/2012	4858925	CCIsites
Legacy Modification Inspection Report	TEP Project #: 64726-70451, Dated 11/30/2015	5994237	CCIsites

3.1) Analysis Method

tnxTower (version 7.0.7.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.

This analysis may be affected if any assumptions are not valid or have been made in error. GPD should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	192.333 - 182.167	Leg	ROHN 2.5 STD	2	-3.74	76.68	4.9	Pass
T2	182.167 - 162	Leg	ROHN 2.5 STD	29	-22.08	76.68	28.8	Pass
T3	162 - 148.583	Leg	ROHN 3 STD	68	-36.40	70.85	51.4	Pass
T4	148.583 - 141.833	Leg	ROHN 3 STD	95	-61.83	100.28	61.7	Pass
T5	141.833 - 121.625	Leg	ROHN 4 STD	122	-87.24	116.19	75.1	Pass
T6	121.625 - 101.417	Leg	ROHN 5 EH	161	-119.78	201.09	59.6	Pass
T7	101.417 - 81.2083	Leg	ROHN 6 STD	188	-162.61	203.60	79.9	Pass
T8	81.2083 - 61	Leg	ROHN 6 EH	215	-209.20	303.62	68.9	Pass
T9	61 - 40.6667	Leg	ROHN 6 EH	242	-254.03	303.62	83.7	Pass
T10	40.6667 - 20.3333	Leg	ROHN 8 STD	269	-297.31	334.34	88.9	Pass
T11	20.3333 - 0	Leg	ROHN 8 STD	296	-360.15	377.95	95.3	Pass
T1	192.333 - 182.167	Diagonal	ROHN 1.5 STD	8	-1.83	13.28	13.8	Pass
T2	182.167 - 162	Diagonal	ROHN 1.5 STD	32	-6.67	8.87	75.2	Pass
T3	162 - 148.583	Diagonal	ROHN 2 STD	87	-9.73	18.01	54.0	Pass
T4	148.583 - 141.833	Diagonal	ROHN 2 STD	100	-9.28	15.89	58.4	Pass
T5	141.833 - 121.625	Diagonal	ROHN 2 EH	125	-10.16	17.18	59.1	Pass
T6	121.625 - 101.417	Diagonal	ROHN 2.5 STD	164	-12.96	16.21	80.0	Pass
T7	101.417 - 81.2083	Diagonal	ROHN 2.5 EH	191	-17.69	18.01	98.2	Pass
T8	81.2083 - 61	Diagonal	ROHN 3 EH	218	-18.15	31.83	57.0	Pass
T9	61 - 40.6667	Diagonal	ROHN 3 EH	245	-18.71	27.84	67.2	Pass
T10	40.6667 - 20.3333	Diagonal	ROHN 3 STD	272	-19.42	19.17	101.3	Pass
T11	20.3333 - 0	Diagonal	Rohn 2.875" x 0.552"	299	-28.65	30.21	94.8	Pass
T1	192.333 - 182.167	Horizontal	ROHN 1.5 STD	7	-1.14	25.15	4.5 4.7 (b)	Pass
T2	182.167 - 162	Horizontal	ROHN 1.5 STD	31	-3.45	25.15	13.7 14.0 (b)	Pass
T3	162 - 148.583	Horizontal	ROHN 1.5 STD	85	-5.60	25.25	22.2 22.6 (b)	Pass
T5	141.833 - 121.625	Horizontal	ROHN 2 EH	124	-6.93	37.22	18.6 27.9 (b)	Pass
T6	121.625 - 101.417	Horizontal	ROHN 2 EH	163	-7.79	29.65	26.3 31.3 (b)	Pass
T7	101.417 - 81.2083	Horizontal	ROHN 2 STD	190	-11.67	16.54	70.6	Pass
T8	81.2083 - 61	Horizontal	ROHN 2.5 STD	217	-12.72	28.20	45.1	Pass
T9	61 - 40.6667	Horizontal	ROHN 2.5 STD	244	-13.83	21.73	63.6	Pass
T10	40.6667 - 20.3333	Horizontal	ROHN 2.5 STD	271	-15.00	17.50	85.7	Pass
T11	20.3333 - 0	Horizontal	ROHN 2.5 STD	298	-16.33	15.70	104.1	Pass
T1	192.333 - 182.167	Top Girt	ROHN 1.5 STD	4	-0.40	25.15	1.6	Pass
T4	148.583 - 141.833	Top Girt	ROHN 1.5 STD	97	-5.48	20.99	26.1	Pass
T4	148.583 - 141.833	Redund Horz 1 Bracing	L2x2x1/8	104	-0.83	9.81	8.5	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	303	-5.52	13.49	40.9	Pass
T4	148.583 - 141.833	Redund Diag 1	L2x2x1/8	105	-0.71	7.71	9.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
		Bracing						
T11	20.3333 - 0	Redund Diag 1 Bracing	ROHN 2 STD	304	-5.01	8.94	56.0	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	ROHN 2 STD	323	-0.09	24.31	0.4	Pass
T11	20.3333 - 0	Redund Hip Diagonal 1 Bracing	ROHN 2 STD	313	-0.06	4.54	1.3	Pass
T1	192.333 - 182.167	Inner Bracing	L2x2x1/8	27	-0.01	7.59	0.1	Pass
T2	182.167 - 162	Inner Bracing	L2x2x1/8	42	-0.01	7.59	0.1	Pass
T3	162 - 148.583	Inner Bracing	L2x2x1/8	92	-0.01	7.59	0.1	Pass
T4	148.583 - 141.833	Inner Bracing	L2x2x1/8	118	-0.09	5.68	1.7	Pass
T5	141.833 - 121.625	Inner Bracing	L2x2x1/8	133	-0.01	3.48	0.3	Pass
T6	121.625 - 101.417	Inner Bracing	L2x2x1/8	172	-0.01	2.49	0.3	Pass
T7	101.417 - 81.2083	Inner Bracing	L2x2x1/8	199	-0.01	1.78	0.6	Pass
T8	81.2083 - 61	Inner Bracing	L3x3x1/4	227	-0.01	8.77	0.2	Pass
T9	61 - 40.6667	Inner Bracing	L3x3x1/4	254	-0.01	6.81	0.2	Pass
T10	40.6667 - 20.3333	Inner Bracing	L3 1/2x3 1/2x1/4	282	-0.01	8.77	0.2	Pass
T11	20.3333 - 0	Inner Bracing	ROHN 2.5 EH	327	-0.01	18.65	0.2	Pass
						Summary	ELC:	LC5
						Leg (T11)	95.3	Pass
						Diagonal (T10)	101.3	Pass
						Horizontal (T11)	104.1	Pass
						Top Girt (T4)	26.1	Pass
						Redund Horz 1 Bracing (T11)	40.9	Pass
						Redund Diag 1 Bracing (T11)	56.0	Pass
						Redund Hip 1 Bracing (T11)	0.4	Pass
						Redund Hip Diagonal 1 Bracing (T11)	1.3	Pass
						Inner Bracing (T4)	1.7	Pass
						Bolt Checks	76.9	Pass
						Rating =	104.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	83.9	Pass
1	Base Foundation	0	65.4	Pass
1	Base Foundation Soil Interaction	0	86.6	Pass

Structure Rating (max from all components) =	104.1%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.
2) Capacities up to 105% are considered acceptable based on analysis methods used.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loading. In order for the results of this analysis to be considered valid the modifications listed below must be completed.

Changes:

1.) The empty mounts located at 144' and 170' are to be removed.
2.) The (12) 7/8" proposed coax to the 100' elevation shall be stacked in three rows of four coax as shown in Appendix B of this report.

No structural modifications are required at this time, provided that the above listed changes are implemented.

5) DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

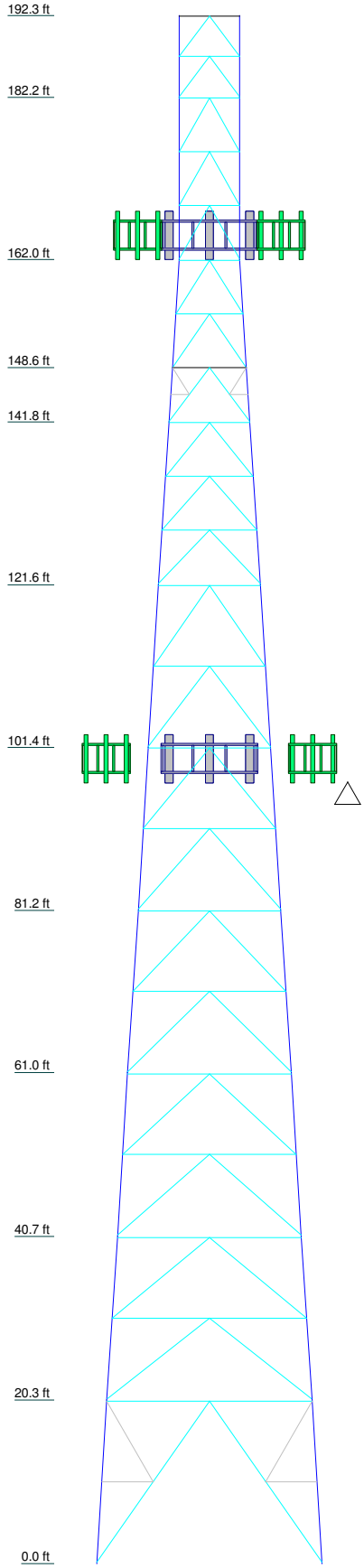
Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

TNXTOWER OUTPUT

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 STD		ROHN 6 EH		ROHN 6 STD	ROHN 5 EH	ROHN 4 STD	ROHN 3 STD	ROHN 2.5 STD		
Leg Grade					A572-50						
Diagonals	Rohn 2.875" x 0.552"	ROHN 3 STD		ROHN 3 EH		ROHN 2.5 STD	ROHN 2 EH	ROHN 2 STD	ROHN 1.5 STD		
Diagonal Grade	44 ksi	A572-50									
Top Girts					N.A.			A	N.A.		
Horizontals		ROHN 2.5 STD			ROHN 2 STD		ROHN 2 EH	N.A.	ROHN 1.5 STD		
Red. Horizontals	ROHN 1.5 STD			N.A.				B	N.A.		
Red. Diagonals	ROHN 2 STD			N.A.				B	N.A.		
Red. Hips	ROHN 2 STD			N.A.							
Inner Bracing	ROHN 2.5 EH	L3 1/2x3 1/2x1/4		L3x3x1/4		L2x2x1/8					
Face Width (ft) 28	25.427	22.8539	20.2809	17.7236	15.1664	12.6092	10.052	9.19779	9 @ 6.66667	2 @ 5	7.5
# Panels @ (ft)	1 @ 20			10 @ 10							
Weight (K) 28.7	5.1	4.4	4.6	4.4	2.8	2.6	2.0	0.5	0.8	1.0	0.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
SRL-235-2	190	Sector Mount [SM 602-3]	165
DB806E-XT	190	(3) SBNHH-1D85B w/ Mount Pipe	100
ANT450Y5-WR	190	(3) ET-X-UW-68-14-65-18-iR-AT w/ Mount Pipe	100
DB806-XC	190	(3) ET-X-UW-68-14-65-18-iR-AT w/ Mount Pipe	100
(2) 6' Sector Frame Mount	190	RRUS-32 B30	100
(2) 6' Sector Frame Mount	190	RRUS-32 B30	100
(2) Pipe Mount 6'x2.375"	190	RRUS-32 B30	100
(2) Pipe Mount 6'x2.375"	190	RRUS 12	100
DBXNH-6565B-A2M w/ Mount Pipe	165	RRUS 12	100
DBXNH-6565B-A2M w/ Mount Pipe	165	RRUS 12	100
DBXNH-6565B-A2M w/ Mount Pipe	165	DC6-48-60-18-8F Surge Suppression Unit	100
(2) HBXX-3319DS-A2M w/ Mount Pipe	165	DC6-48-60-18-8F Surge Suppression Unit	100
(2) HBXX-3319DS-A2M w/ Mount Pipe	165	DC6-48-60-18-8F Surge Suppression Unit	100
(2) HBXX-3319DS-A2M w/ Mount Pipe	165	RRUS A2 MODULE	100
(2) CBC1921-DF-DC-6X	165	RRUS A2 MODULE	100
(2) CBC1921-DF-DC-6X	165	RRUS A2 MODULE	100
(2) 4Tx RRH-FHFB	165	(2) RRUS-11	100
(2) 4Tx RRH-FHFB	165	(2) RRUS-11	100
(2) 4Tx RRH-FHFB	165	(2) RRUS-11	100
(4) FRIJ	165	(3) VF 13-30-96 V-Frame	100
(2) FRIJ	165		
ASU9338TYP01	165		
ASU9338TYP01	165		
TMA-S-DB1921-DD-A	165		
TMA-S-DB1921-DD-A	165		
TMA-S-DB1921-DD-A	165		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 1.5 STD	B	L2x2x1/8

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	44 ksi	44 ksi	60 ksi

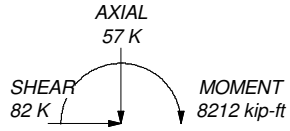
TOWER DESIGN NOTES

1. Tower is located in Broward County, Florida.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 170 mph basic wind in accordance with the TIA-222-G Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 104.1%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 358 K
SHEAR: 48 K

UPLIFT: -323 K
SHEAR: 46 K



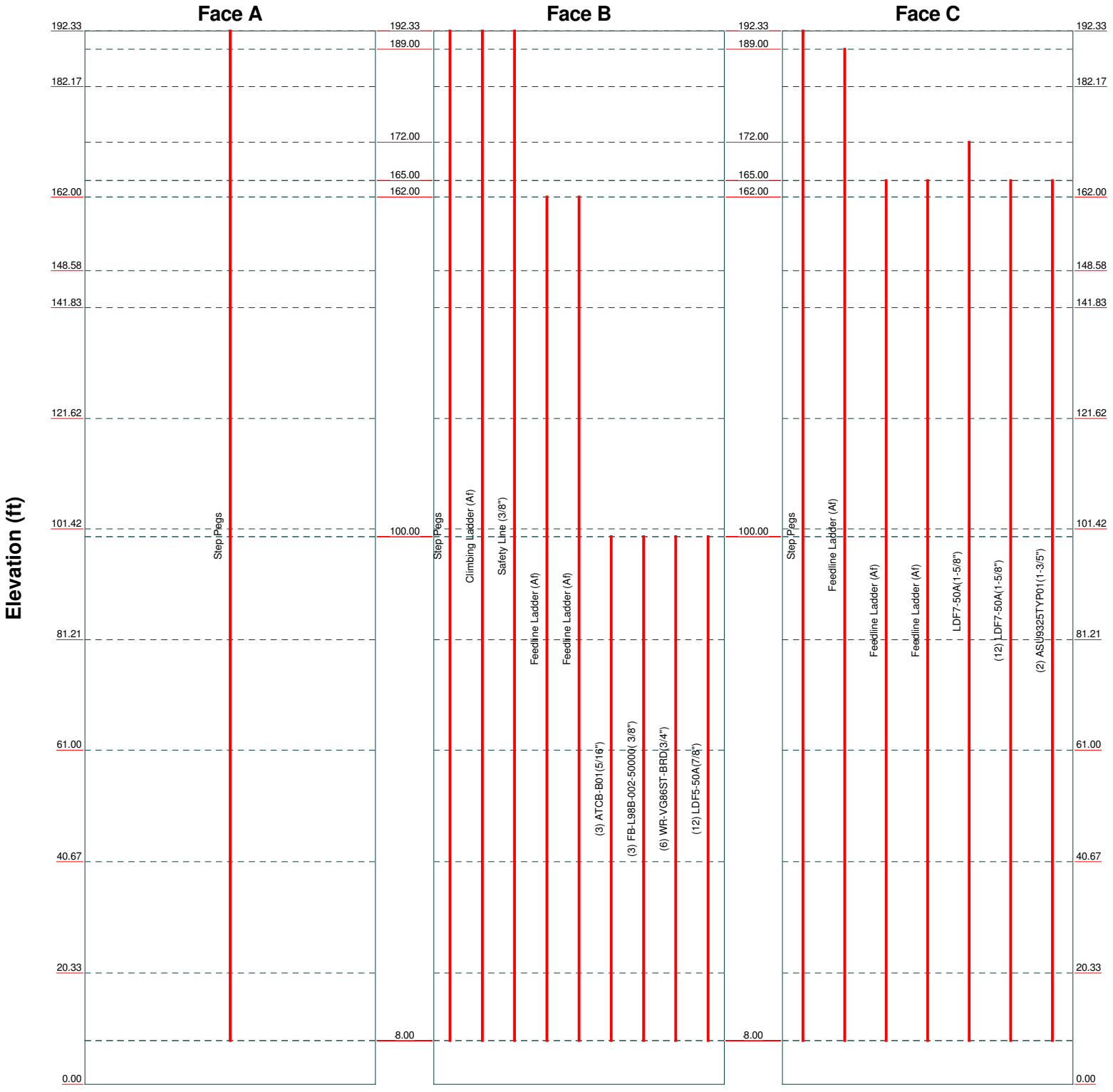
TORQUE 35 kip-ft
REACTIONS - 170 mph WIND

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: **FL01 - BU #: 842800**			
Project: ***2017777.842800.10***			
Client: Crown Castle USA, Inc.	Drawn by: ESchnaus	App'd:	
Code: TIA-222-G	Date: 11/04/16	Scale: NTS	
Path: \\AKRN05.gpdco.com\TELECOM\Crown\842800\10\tnx\842800 Rev 1.en		Dwg No. E-1	

Feed Line Distribution Chart
0' - 192'3-31/32"

Round | Flat | App In Face | App Out Face | Truss Leg



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FAX: (330) 572-2101

Job: FL01 - BU #: 842800			
Project: 2017777.842800.10			
Client: Crown Castle USA, Inc.	Drawn by: ESchnaus	App'd:	
Code: TIA-222-G	Date: 11/04/16	Scale: NTS	
Path: \\AKRN05.gpdco.com\TELECOM\Crown\842800\10\tnx\842800 Rev 1.en		Dwg No. E-7	

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 192.33 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 7.50 ft at the top and 28.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Broward County, Florida.
ASCE 7-10 Wind Data is used.
Basic wind speed of 170 mph.
Risk Category II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.	√	Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	192.33-182.17			7.50	1	10.17
T2	182.17-162.00			7.50	1	20.17
T3	162.00-148.58			7.50	1	13.42
T4	148.58-141.83			9.20	1	6.75
T5	141.83-121.62			10.05	1	20.21
T6	121.62-101.42			12.61	1	20.21
T7	101.42-81.21			15.17	1	20.21
T8	81.21-61.00			17.72	1	20.21
T9	61.00-40.67			20.28	1	20.33
T10	40.67-20.33			22.85	1	20.33
T11	20.33-0.00			25.43	1	20.33

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	192.33-182.17	5.00	K Brace Down	No	Yes	1.0000	1.0000
T2	182.17-162.00	6.67	K Brace Down	No	Yes	1.0000	1.0000
T3	162.00-148.58	6.67	K Brace Down	No	Yes	1.0000	0.0000
T4	148.58-141.83	6.67	K1 Down	No	Yes	0.0000	1.0000
T5	141.83-121.62	6.67	K Brace Down	No	Yes	1.2500	1.2500
T6	121.62-101.42	10.00	K Brace Down	No	Yes	1.2500	1.2500
T7	101.42-81.21	10.00	K Brace Down	No	Yes	1.2500	1.2500
T8	81.21-61.00	10.00	K Brace Down	No	Yes	1.2500	1.2500
T9	61.00-40.67	10.00	K Brace Down	No	Yes	2.0000	2.0000
T10	40.67-20.33	10.00	K Brace Down	No	Yes	2.0000	2.0000
T11	20.33-0.00	20.00	K1 Down	No	Yes	2.0000	2.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 192.33-182.17	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 182.17-162.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 162.00-148.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 148.58-141.83	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 141.83-121.62	Pipe	ROHN 4 STD	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T6 121.62-101.42	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 101.42-81.21	Pipe	ROHN 6 STD	A572-50 (50 ksi)	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)
T8 81.21-61.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 EH	A572-50 (50 ksi)
T9 61.00-40.67	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 EH	A572-50 (50 ksi)
T10 40.67-20.33	Pipe	ROHN 8 STD	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20.33-0.00	Pipe	ROHN 8 STD	A572-50 (50 ksi)	Pipe	Rohn 2.875" x 0.552"	44 ksi (44 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 192.33-182.17	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T4 148.58-141.83	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 192.33-182.17	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 182.17-162.00	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 162.00-148.58	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T4 148.58-141.83	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T5 141.83-121.62	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T6 121.62-101.42	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T7 101.42-81.21	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T8 81.21-61.00	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 61.00-40.67	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T10 40.67-20.33	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T11 20.33-0.00	None	Solid Round		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 192.33-182.17	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T2 182.17-162.00	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T3 162.00-148.58	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T4 148.58-141.83	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T5 141.83-121.62	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T6 121.62-101.42	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T7 101.42-81.21	Solid Round		A36 (36 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T8 81.21-61.00	Solid Round		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T9 61.00-40.67	Solid Round		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T10 40.67-20.33	Solid Round		A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T11 20.33-0.00	Solid Round		A36 (36 ksi)	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T4	A36	Horizontal (1)	Equal Angle	L2x2x1/8	1
148.58-141.83	(36 ksi)	Diagonal (1)	Equal Angle	L2x2x1/8	1
T11	A572-50	Horizontal (1)	Pipe	ROHN 1.5 STD	1
20.33-0.00	(50 ksi)	Diagonal (1)	Pipe	ROHN 2 STD	1
		Hip (1)	Pipe	ROHN 2 STD	1
		Hip Diagonal (1)	Pipe	ROHN 2 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
192.33-182.17			(36 ksi)						
T2	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
182.17-162.00			(36 ksi)						
T3	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
162.00-148.58			(36 ksi)						
T4	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
148.58-141.83			(36 ksi)						
T5	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
141.83-121.62			(36 ksi)						
T6	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
121.62-101.42			(36 ksi)						
T7	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
101.42-81.21			(36 ksi)						
T8 81.21-61.00	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
			(36 ksi)						
T9 61.00-40.67	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
			(36 ksi)						
T10	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
40.67-20.33			(36 ksi)						
T11 20.33-0.00	0.00	0.0000	A36	1	1	1	0.0000	0.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	No	1	1	1	1	1	1	1	1
192.33-182.17				1	1	1	1	1	1	1
T2	Yes	No	1	1	1	1	1	1	1	1
182.17-162.00				1	1	1	1	1	1	1
T3	Yes	No	1	1	1	1	1	1	1	1
162.00-148.58				1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	1	1
148.58-141.83				1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T5	Yes	No	1	1	1	1	1	1	1	1
141.83-121.62				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
121.62-101.42				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
101.42-81.21				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
81.21-61.00				1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1
61.00-40.67				1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1
40.67-20.33				1	1	1	1	1	1	1
T11	No	No	1	1	1	1	1	1	1	1
20.33-0.00				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
192.33-182.17														
T2	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
182.17-162.00														
T3	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
162.00-148.58														
T4	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
148.58-141.83														
T5	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
141.83-121.62														
T6	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
121.62-101.42														
T7	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
101.42-81.21														
T8 81.21-61.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T9 61.00-40.67	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T10	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
40.67-20.33														
T11 20.33-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 192.33-182.17	Flange	0.7500 A325N	4	0.5000 A325N	3	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	2	0.0000 A325N	0
T2 182.17-162.00	Flange	0.7500 A325N	4	0.5000 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	2	0.0000 A325N	0
T3 162.00-148.58	Flange	0.8750 A325N	4	0.5000 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	2	0.0000 A325N	0
T4 148.58-141.83	Flange	0.0000 A325N	0	0.5000 A325N	3	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	2	0.0000 A325N	0
T5 141.83-121.62	Flange	1.0000 A325N	4	0.5000 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	2	0.0000 A325N	0
T6 121.62-101.42	Flange	1.0000 A325N	6	0.5000 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	2	0.0000 A325N	0
T7 101.42-81.21	Flange	1.0000 A325N	6	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.7500 A325N	2	0.0000 A325N	0
T8 81.21-61.00	Flange	1.0000 A325N	6	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.7500 A325N	2	0.0000 A325N	0
T9 61.00-40.67	Flange	1.0000 A325N	8	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.7500 A325N	2	0.0000 A325N	0
T10 40.67-20.33	Flange	1.0000 A325N	8	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.7500 A325N	2	0.0000 A325N	0
T11 20.33-0.00	Flange	1.0000 A354-BC	0	0.6250 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.7500 A325N	2	0.0000 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Step Pegs	A	No	Ar (CaAa)	192.33 - 8.00	0.0000	0.5	1	1	0.0000	0.8000		2.72
Step Pegs	B	No	Ar (CaAa)	192.33 - 8.00	0.0000	0.5	1	1	0.0000	0.8000		2.72
Step Pegs	C	No	Ar (CaAa)	192.33 - 8.00	0.0000	0.5	1	1	0.0000	0.8000		2.72
Climbing Ladder (Af)	B	No	Af (CaAa)	192.33 - 8.00	-8.0000	0.45	1	1	0.0000	3.0000		4.81
Safety Line (3/8")	B	No	Ar (CaAa)	192.33 - 8.00	-8.0000	0.45	1	1	0.0000	0.3750		0.22
Feedline Ladder (Af)	B	No	Af (CaAa)	162.00 - 8.00	0.0000	0.45	1	1	0.0000	1.6667		8.40
Feedline Ladder (Af)	B	No	Af (CaAa)	162.00 - 8.00	0.0000	0.25	1	1	0.0000	2.0833		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	189.00 - 8.00	0.0000	-0.45	1	1	0.0000	2.0833		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	165.00 - 8.00	0.0000	0.4	1	1	0.0000	1.8750		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	165.00 - 8.00	-2.0000	0.38	1	1	0.0000	2.0833		8.40
LDF7-50A(1-5/8")	C	No	Ar (CaAa)	172.00 - 8.00	0.0000	-0.4	1	1	1.0000	1.9800		0.82
LDF7-50A(1-5/8")	C	No	Ar (CaAa)	165.00 - 8.00	-1.0000	0.45	12	7	1.0000	1.9800		0.82
ASU9325TYP01(1-3/5")	C	No	Ar (CaAa)	165.00 - 8.00	-2.0000	0.4	2	2	1.0000	1.5840		1.61
ATCB-B01(5/16")	B	No	Ar (CaAa)	100.00 - 8.00	0.8750	0.25	3	3	0.3150	0.0000		0.07
FB-L98B-002-50000(3/8")	B	No	Ar (CaAa)	100.00 - 8.00	0.8750	0.25	3	3	0.3937	0.0000		0.06
WR-VG86ST-BRD(3/4")	B	No	Ar (CaAa)	100.00 - 8.00	0.0000	0.25	6	6	0.7950	0.7950		0.58
LDF5-50A(7/8")	B	No	Ar (CaAa)	100.00 - 8.00	0.0000	0.45	12	4	1.0000	1.0900		0.33

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SRL-235-2	B	From Leg	1.00 0.00 10.00	0.0000	190.00	No Ice	3.75	3.75	0.08
DB806E-XT	B	From Leg	1.00 0.00 5.00	0.0000	190.00	No Ice	1.50	1.50	0.02
ANT450Y5-WR	C	From Leg	1.00 0.00 3.00	0.0000	190.00	No Ice	2.80	0.81	0.01
DB806-XC	C	From Leg	1.00 0.00 7.00	0.0000	190.00	No Ice	1.07	1.07	0.02
(2) 6' Sector Frame Mount	B	From Leg	0.50 0.00 0.00	0.0000	190.00	No Ice	1.80	0.07	0.05
(2) 6' Sector Frame Mount	C	From Leg	0.50 0.00 0.00	0.0000	190.00	No Ice	1.80	0.07	0.05
(2) Pipe Mount 6'x2.375"	B	From Leg	1.00 0.00 0.00	0.0000	190.00	No Ice	1.13	1.13	0.03
(2) Pipe Mount 6'x2.375"	C	From Leg	1.00 0.00 0.00	0.0000	190.00	No Ice	1.13	1.13	0.03
DBXNH-6565B-A2M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	8.36	6.75	0.07
DBXNH-6565B-A2M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	8.36	6.75	0.07
DBXNH-6565B-A2M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	8.36	6.75	0.07
(2) HBXX-3319DS-A2M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	10.76	4.11	0.06
(2) HBXX-3319DS-A2M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	10.76	4.11	0.06
(2) HBXX-3319DS-A2M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	10.76	4.11	0.06
(2) CBC1921-DF-DC-6X	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.82	0.61	0.06
(2) CBC1921-DF-DC-6X	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.82	0.61	0.06
(2) 4Tx RRH-FHFB	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.42	1.52	0.07
(2) 4Tx RRH-FHFB	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.42	1.52	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) 4Tx RRH-FHFB	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.42	1.52	0.07
(4) FRIJ	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.42	1.52	0.07
(2) FRIJ	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	2.42	1.52	0.07
ASU9338TYP01	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	3.20	1.03	0.02
ASU9338TYP01	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	3.20	1.03	0.02
TMA-S-DB1921-DD-A	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	0.72	0.39	0.02
TMA-S-DB1921-DD-A	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	0.72	0.39	0.02
TMA-S-DB1921-DD-A	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice	0.72	0.39	0.02
Sector Mount [SM 602-3]	C	None		0.0000	165.00	No Ice	33.11	33.11	1.54
(3) SBNHH-1D85B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	8.28	6.75	0.07
(3) ET-X-UW-68-14-65-18-iR-AT w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	8.33	6.28	0.07
(3) ET-X-UW-68-14-65-18-iR-AT w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	8.33	6.28	0.07
RRUS-32 B30	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	3.31	2.42	0.08
RRUS-32 B30	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	3.31	2.42	0.08
RRUS-32 B30	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	3.31	2.42	0.08
RRUS 12	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	3.15	1.29	0.06
RRUS 12	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	3.15	1.29	0.06
RRUS 12	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	3.15	1.29	0.06
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice	0.92	0.92	0.02
DC6-48-60-18-8F Surge Suppression Unit	B	From Leg	4.00 0.00	0.0000	100.00	No Ice	0.92	0.92	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC6-48-60-18-8F Surge Suppression Unit	C	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	0.92	0.92	0.02
RRUS A2 MODULE	A	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	1.60	0.38	0.02
RRUS A2 MODULE	B	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	1.60	0.38	0.02
RRUS A2 MODULE	C	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	1.60	0.38	0.02
(2) RRUS-11	A	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	2.78	1.19	0.05
(2) RRUS-11	B	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	2.78	1.19	0.05
(2) RRUS-11	C	From Leg	0.00 4.00 0.00	0.0000	100.00	No Ice	2.78	1.19	0.05
(3) VF 13-30-96 V-Frame	C	None	0.00	0.0000	100.00	No Ice	34.80	34.80	1.25

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	192.333 - 182.167	2.375	30	0.1083	0.0130
T2	182.167 - 162	2.144	30	0.1076	0.0120
T3	162 - 148.583	1.695	32	0.1017	0.0078
T4	148.583 - 141.833	1.411	32	0.0934	0.0071
T5	141.833 - 121.625	1.280	32	0.0871	0.0067
T6	121.625 - 101.417	0.941	32	0.0699	0.0056
T7	101.417 - 81.2083	0.659	32	0.0592	0.0042
T8	81.2083 - 61	0.427	32	0.0455	0.0032
T9	61 - 40.6667	0.249	32	0.0352	0.0025
T10	40.6667 - 20.3333	0.114	32	0.0240	0.0017
T11	20.3333 - 0	0.023	26	0.0122	0.0007

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	SRL-235-2	30	2.322	0.1082	0.0129	672446
165.00	DBXNH-6565B-A2M w/ Mount Pipe	32	1.761	0.1030	0.0084	190047
100.00	(3) SBNHH-1D85B w/ Mount Pipe	32	0.641	0.0584	0.0041	101857

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	192.333 - 182.167	18.363	10	0.8173	0.1048
T2	182.167 - 162	16.617	10	0.8146	0.0966
T3	162 - 148.583	13.156	10	0.7777	0.0631
T4	148.583 - 141.833	10.956	10	0.7183	0.0572
T5	141.833 - 121.625	9.944	10	0.6712	0.0537
T6	121.625 - 101.417	7.324	10	0.5382	0.0448
T7	101.417 - 81.2083	5.145	10	0.4559	0.0337
T8	81.2083 - 61	3.345	10	0.3509	0.0257
T9	61 - 40.6667	1.956	10	0.2715	0.0197
T10	40.6667 - 20.3333	0.904	10	0.1848	0.0134
T11	20.3333 - 0	0.178	22	0.0945	0.0056

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	SRL-235-2	10	17.962	0.8171	0.1034	153200
165.00	DBXNH-6565B-A2M w/ Mount Pipe	10	13.665	0.7864	0.0674	33437
100.00	(3) SBNHH-1D85B w/ Mount Pipe	10	5.006	0.4493	0.0331	13402

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	192.333	Leg	A325N	0.7500	4	0.72	29.82	0.024 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	3	0.61	7.95	0.077 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	0.59	12.43	0.047 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	3	0.14	12.43	0.011 ✔	1	Bolt Shear
T2	182.167	Leg	A325N	0.7500	4	4.63	29.82	0.155 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	3	2.22	7.95	0.279 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	1.74	12.43	0.140 ✔	1	Bolt Shear
T3	162	Leg	A325N	0.8750	4	7.93	40.59	0.195 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	3	3.24	7.95	0.408 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	2.80	12.43	0.226 ✔	1	Bolt Shear
T4	148.583	Diagonal	A325N	0.5000	3	3.09	7.95	0.389 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	3	1.83	12.43	0.147 ✔	1	Bolt Shear
T5	141.833	Leg	A325N	1.0000	4	22.93	53.01	0.432 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	3	3.39	7.95	0.426 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	3.46	12.43	0.279 ✔	1	Bolt Shear
T6	121.625	Leg	A325N	1.0000	6	21.10	53.01	0.398 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.5000	3	4.38	7.95	0.551 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	2	3.89	12.43	0.313 ✔	1	Bolt Shear
T7	101.417	Leg	A325N	1.0000	6	28.31	53.01	0.534 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	5.90	12.43	0.475 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	5.84	17.89	0.326 ✔	1	Bolt Shear
T8	81.2083	Leg	A325N	1.0000	6	35.21	53.01	0.664 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6.05	12.43	0.487 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	6.36	17.89	0.355 ✔	1	Bolt Shear
T9	61	Leg	A325N	1.0000	8	31.37	53.01	0.592 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6.24	12.43	0.502 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	6.92	17.89	0.386 ✔	1	Bolt Shear
T10	40.6667	Leg	A325N	1.0000	8	36.18	53.01	0.682 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	3	6.47	12.43	0.521 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	7.51	17.89	0.420 ✔	1	Bolt Shear
T11	20.3333	Diagonal	A325N	0.6250	3	9.55	12.43	0.769 ✔	1	Bolt Shear
		Horizontal	A325N	0.7500	2	8.17	17.89	0.456 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 2.5 STD	10.17	0.08	1.1 K=1.00	1.7040	-3.74	76.68	0.049 [1] ✔
T2	182.167 - 162	ROHN 2.5 STD	20.17	0.08	1.1 K=1.00	1.7040	-22.08	76.68	0.288 [1] ✔
T3	162 - 148.583	ROHN 3 STD	13.45	6.68	68.9 K=1.00	2.2285	-36.40	70.85	0.514 [1] ✔
T4	148.583 - 141.833	ROHN 3 STD	6.77	0.08	0.9 K=1.00	2.2285	-61.83	100.28	0.617 [1] ✔
T5	141.833 - 121.625	ROHN 4 STD	20.26	6.68	53.1 K=1.00	3.1741	-87.24	116.19	0.751 [1] ✔
T6	121.625 - 101.417	ROHN 5 EH	20.26	10.03	65.4 K=1.00	6.1114	-119.78	201.09	0.596 [1] ✔
T7	101.417 - 81.2083	ROHN 6 STD	20.26	10.03	53.6 K=1.00	5.5813	-162.61	203.60	0.799 [1] ✔
T8	81.2083 - 61	ROHN 6 EH	20.26	10.03	54.8 K=1.00	8.4049	-209.20	303.62	0.689 [1] ✔
T9	61 - 40.6667	ROHN 6 EH	20.39	10.03	54.8 K=1.00	8.4049	-254.03	303.62	0.837 [1] ✔
T10	40.6667 - 20.3333	ROHN 8 STD	20.39	10.03	41.0 K=1.00	8.3993	-297.31	334.34	0.889 [1] ✔
T11	20.3333 - 0	ROHN 8 STD	20.39	0.17	0.7	8.3993	-360.15	377.95	0.953 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 1.5 STD	6.25	6.05	116.6 K=1.00	0.7995	-1.83	13.28	0.138 [1] ✔
T2	182.167 - 162	ROHN 1.5 STD	7.65	7.40	142.7 K=1.00	0.7995	-6.67	8.87	0.752 [1] ✔
T3	162 - 148.583	ROHN 2 STD	7.87	7.61	116.1 K=1.00	1.0745	-9.73	18.01	0.540 [1] ✔
T4	148.583 - 141.833	ROHN 2 STD	8.35	8.11	123.6 K=1.00	1.0745	-9.28	15.89	0.584 [1] ✔
T5	141.833 - 121.625	ROHN 2 EH	9.17	8.90	139.4 K=1.00	1.4773	-10.16	17.18	0.591 [1] ✔
T6	121.625 - 101.417	ROHN 2.5 STD	12.55	12.17	154.1 K=1.00	1.7040	-12.96	16.21	0.800 [1] ✔
T7	101.417 - 81.2083	ROHN 2.5 EH	13.36	12.95	168.1 K=1.00	2.2535	-17.69	18.01	0.982 [1] ✔
T8	81.2083 - 61	ROHN 3 EH	14.24	13.85	146.3 K=1.00	3.0159	-18.15	31.83	0.570 [1] ✔
T9	61 - 40.6667	ROHN 3 EH	15.18	14.81	156.4 K=1.00	3.0159	-18.71	27.84	0.672 [1] ✔
T10	40.6667 - 20.3333	ROHN 3 STD	16.17	15.71	162.1 K=1.00	2.2285	-19.42	19.17	1.013 [1] ✔
T11	20.3333 - 0	Rohn 2.875" x 0.552"	24.42	12.21	173.6 K=1.00	4.0285	-28.65	30.21	0.948 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 1.5 STD	7.50	3.63	70.0 K=1.00	0.7995	-1.14	25.15	0.045 [1] ✔
T2	182.167 - 162	ROHN 1.5 STD	7.50	3.63	70.0 K=1.00	0.7995	-3.45	25.15	0.137 [1] ✔
T3	162 - 148.583	ROHN 1.5 STD	7.51	3.61	69.6 K=1.00	0.7995	-5.60	25.25	0.222 [1] ✔
T5	141.833 - 121.625	ROHN 2 EH	11.75	5.69	89.1 K=1.00	1.4773	-6.93	37.22	0.186 [1] ✔
T6	121.625 - 101.417	ROHN 2 EH	13.89	6.71	105.1 K=1.00	1.4773	-7.79	29.65	0.263 [1] ✔
T7	101.417 - 81.2083	ROHN 2 STD	16.44	7.95	121.1 K=1.00	1.0745	-11.67	16.54	0.706 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T8	81.2083 - 61	ROHN 2.5 STD	19.00	9.23	116.8 K=1.00	1.7040	-12.72	28.20	0.451 [1] ✔
T9	61 - 40.6667	ROHN 2.5 STD	21.57	10.51	133.1 K=1.00	1.7040	-13.83	21.73	0.636 [1] ✔
T10	40.6667 - 20.3333	ROHN 2.5 STD	24.14	11.71	148.3 K=1.00	1.7040	-15.00	17.50	0.857 [1] ✔
T11	20.3333 - 0	ROHN 2.5 STD	25.45	12.36	156.6 K=1.00	1.7040	-16.33	15.70	1.041 [1] ✔
		4.8.1 (1.04 CR) - 298							

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 1.5 STD	7.50	3.63	70.0 K=1.00	0.7995	-0.40	25.15	0.016 [1] ✔
T4	148.583 - 141.833	ROHN 1.5 STD	9.20	4.45	85.8 K=1.00	0.7995	-5.48	20.99	0.261 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	148.583 - 141.833	L2x2x1/8	2.30	2.15	92.5 K=1.42	0.4844	-0.83	9.81	0.085 [1] ✔
T11	20.3333 - 0	ROHN 1.5 STD	6.36	6.00	115.7 K=1.00	0.7995	-5.52	13.49	0.409 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	148.583 - 141.833	L2x2x1/8	3.94	3.66	115.3 K=1.04	0.4844	-0.71	7.71	0.093 [1] ✔
T11	20.3333 - 0	ROHN 2 STD	11.53	10.81	164.8 K=1.00	1.0745	-5.01	8.94	0.560 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	20.3333 - 0	ROHN 2 STD	6.36	6.36	97.0 K=1.00	1.0745	-0.09	24.31	0.004 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	20.3333 - 0	ROHN 2 STD	15.17	15.17	231.2 K=1.00	1.0745	-0.06	4.54	0.013 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	L2x2x1/8	3.75	3.75	116.6 K=1.03	0.4844	-0.01	7.59	0.001 [1] ✔
T2	182.167 - 162	L2x2x1/8	3.75	3.75	116.6 K=1.03	0.4844	-0.01	7.59	0.001 [1] ✔
T3	162 - 148.583	L2x2x1/8	3.76	3.76	116.7 K=1.03	0.4844	-0.01	7.59	0.001 [1] ✔
T4	148.583 - 141.833	L2x2x1/8	4.60	4.60	138.8 K=1.00	0.4844	-0.09	5.68	0.017 [1] ✔
T5	141.833 - 121.625	L2x2x1/8	5.88	5.88	177.4 K=1.00	0.4844	-0.01	3.48	0.003 [1] ✔
T6	121.625 - 101.417	L2x2x1/8	6.94	6.94	209.6 K=1.00	0.4844	-0.01	2.49	0.003 [1] ✔
T7	101.417 - 81.2083	L2x2x1/8	8.22	8.22	248.2 K=1.00	0.4844	-0.01	1.78	0.006 [1] ✔
T8	81.2083 - 61	L3x3x1/4	9.50	9.50	192.5 K=1.00	1.4375	-0.02	8.77	0.002 [1] ✔
T9	61 - 40.6667	L3x3x1/4	10.78	10.78	218.4 K=1.00	1.4375	-0.01	6.81	0.002 [1] ✔
T10	40.6667 - 20.3333	L3 1/2x3 1/2x1/4	12.07	12.07	208.7 K=1.00	1.6900	-0.01	8.77	0.001 [1] ✔
T11	20.3333 - 0	ROHN 2.5 EH	12.72	12.72	165.2 K=1.00	2.2535	-0.01	18.65	0.001 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 2.5 STD	10.17	0.08	1.1	1.7040	2.89	76.68	0.038 [1] ✔
T2	182.167 - 162	ROHN 2.5 STD	20.17	0.08	1.1	1.7040	18.54	76.68	0.242 [1] ✔
T3	162 - 148.583	ROHN 3 STD	13.45	6.68	68.9	2.2285	31.71	100.28	0.316 [1] ✔
T4	148.583 - 141.833	ROHN 3 STD	6.77	0.08	0.9	2.2285	55.65	100.28	0.555 [1] ✔
T5	141.833 - 121.625	ROHN 4 STD	20.26	0.10	0.8	3.1741	91.71	142.83	0.642 [1] ✔
T6	庁J楸　忪脈 - 101.417	ROHN 5 EH	20.26	0.10	0.7	6.1114	126.59	275.01	0.460 [1] ✔
T7	101.417 - 81.2083	ROHN 6 STD	20.26	0.10	0.6	5.5813	169.83	251.16	0.676 [1] ✔
T8	81.2083 - 61	ROHN 6 EH	20.26	0.10	0.6	8.4049	211.28	378.22	0.559 [1] ✔
T9	61 - 40.6667	ROHN 6 EH	20.39	0.17	0.9	8.4049	250.95	378.22	0.663 [1] ✔
T10	40.6667 - 20.3333	ROHN 8 STD	20.39	0.17	0.7	8.3993	289.45	377.97	0.766 [1] ✔
T11	20.3333 - 0	ROHN 8 STD	20.39	0.17	0.7	8.3993	325.63	377.97	0.862 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 1.5 STD	6.25	6.05	116.6	0.7995	1.78	35.98	0.049 [1] ✔
T2	182.167 - 162	ROHN 1.5 STD	7.65	7.40	142.7	0.7995	6.61	35.98	0.184 [1] ✔
T3	162 - 148.583	ROHN 2 STD	7.87	7.61	116.1	1.0745	9.66	48.35	0.200 [1] ✔
T4	148.583 - 141.833	ROHN 2 STD	8.35	8.11	123.6	1.0745	9.17	48.35	0.190 [1] ✔
T5	141.833 - 121.625	ROHN 2 EH	9.17	8.90	139.4	1.4773	10.00	66.48	0.150 [1] ✔
T6	121.625 - 101.417	ROHN 2.5 STD	12.18	11.80	149.4	1.7040	12.97	76.68	0.169 [1] ✔
T7	101.417 - 81.2083	ROHN 2.5 EH	13.36	12.95	168.1	2.2535	17.42	101.41	0.172 [1] ✔
T8	81.2083 - 61	ROHN 3 EH	14.24	13.85	146.3	3.0159	17.71	135.72	0.130 [1] ✔
T9	61 - 40.6667	ROHN 3 EH	15.18	14.81	156.4	3.0159	18.20	135.72	0.134 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	40.6667 - 20.3333	ROHN 3 STD	16.17	15.71	162.1	2.2285	18.90	100.28	0.188 [1]
T11	20.3333 - 0	4.8.1 (1.01 CR) - 273 Rohn 2.875" x 0.552"	24.42	12.21	173.6	4.0285	28.56	159.53	0.179 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 1.5 STD	7.50	3.63	70.0	0.7995	1.18	35.98	0.033 [1]
T2	182.167 - 162	ROHN 1.5 STD	7.50	3.63	70.0	0.7995	3.48	35.98	0.097 [1]
T3	162 - 148.583	ROHN 1.5 STD	7.51	3.61	69.6	0.7995	5.41	35.98	0.150 [1]
T5	141.833 - 121.625	ROHN 2 EH	11.75	5.69	89.1	1.4773	6.88	66.48	0.104 [1]
T6	121.625 - 101.417	ROHN 2 EH	13.89	6.71	105.1	1.4773	7.69	66.48	0.116 [1]
T7	101.417 - 81.2083	ROHN 2 STD	16.44	7.95	121.1	1.0745	11.53	48.35	0.238 [1]
T8	81.2083 - 61	ROHN 2.5 STD	19.00	9.23	116.8	1.7040	12.70	76.68	0.166 [1]
T9	61 - 40.6667	ROHN 2.5 STD	21.57	10.51	133.1	1.7040	13.82	76.68	0.180 [1]
T10	40.6667 - 20.3333	ROHN 2.5 STD	24.14	11.71	148.3	1.7040	15.02	76.68	0.196 [1]
T11	20.3333 - 0	ROHN 2.5 STD 4.8.1 (1.04 CR) - 298	25.45	12.36	156.6	1.7040	15.32	76.68	0.200 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	ROHN 1.5 STD	7.50	3.63	70.0	0.7995	0.41	35.98	0.011 [1]
T4	148.583 - 141.833	ROHN 1.5 STD	9.20	4.45	85.8	0.7995	5.41	35.98	0.150 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	148.583 - 141.833	L2x2x1/8	2.30	2.15	41.3	0.4844	0.83	15.69	0.053 [1] ✔
T11	20.3333 - 0	ROHN 1.5 STD	6.36	6.00	115.7	0.7995	5.52	35.98	0.154 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	148.583 - 141.833	L2x2x1/8	3.94	3.66	70.2	0.4844	0.71	15.69	0.046 [1] ✔
T11	20.3333 - 0	ROHN 2 STD	11.53	10.81	164.8	1.0745	5.01	48.35	0.104 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	20.3333 - 0	ROHN 2 STD	15.17	15.17	231.2	1.0745	0.10	48.35	0.002 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	192.333 - 182.167	L2x2x1/8	3.75	3.75	71.9	0.4844	0.01	15.69	0.000 [1] ✔
T2	182.167 - 162	L2x2x1/8	3.75	3.75	71.9	0.4844	0.01	15.69	0.000 [1] ✔
T3	162 - 148.583	L2x2x1/8	3.76	3.76	72.0	0.4844	0.01	15.69	0.000 [1] ✔
T4	148.583 - 141.833	L2x2x1/8	4.60	4.60	88.1	0.4844	0.09	15.69	0.006 [1] ✔
T5	141.833 - 121.625	L2x2x1/8	5.03	5.03	96.4	0.4844	0.01	15.69	0.000 [1] ✔
T6	121.625 - 101.417	L2x2x1/8	6.31	6.31	120.9	0.4844	0.00	15.69	0.000 [1] ✔
T7	101.417 - 81.2083	L2x2x1/8	7.59	7.59	145.4	0.4844	0.00	15.69	0.000 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T8	81.2083 - 61	L3x3x1/4	8.87	8.87	114.4	1.4375	0.00	46.58	0.000 [1]
T9	61 - 40.6667	L3x3x1/4	10.15	10.15	130.9	1.4375	0.00	46.58	0.000 [1]
T11	20.3333 - 0	ROHN 2.5 EH	12.72	12.72	165.2	2.2535	0.01	101.41	0.000 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	192.333 - 182.167	Leg	ROHN 2.5 STD	2	-3.74	76.68	4.9	Pass
T2	182.167 - 162	Leg	ROHN 2.5 STD	29	-22.08	76.68	28.8	Pass
T3	162 - 148.583	Leg	ROHN 3 STD	68	-36.40	70.85	51.4	Pass
T4	148.583 - 141.833	Leg	ROHN 3 STD	95	-61.83	100.28	61.7	Pass
T5	141.833 - 121.625	Leg	ROHN 4 STD	122	-87.24	116.19	75.1	Pass
T6	121.625 - 101.417	Leg	ROHN 5 EH	161	-119.78	201.09	59.6	Pass
T7	101.417 - 81.2083	Leg	ROHN 6 STD	188	-162.61	203.60	79.9	Pass
T8	81.2083 - 61	Leg	ROHN 6 EH	215	-209.20	303.62	68.9	Pass
T9	61 - 40.6667	Leg	ROHN 6 EH	242	-254.03	303.62	83.7	Pass
T10	40.6667 - 20.3333	Leg	ROHN 8 STD	269	-297.31	334.34	88.9	Pass
T11	20.3333 - 0	Leg	ROHN 8 STD	296	-360.15	377.95	95.3	Pass
T1	192.333 - 182.167	Diagonal	ROHN 1.5 STD	8	-1.83	13.28	13.8	Pass
T2	182.167 - 162	Diagonal	ROHN 1.5 STD	32	-6.67	8.87	75.2	Pass
T3	162 - 148.583	Diagonal	ROHN 2 STD	87	-9.73	18.01	54.0	Pass
T4	148.583 - 141.833	Diagonal	ROHN 2 STD	100	-9.28	15.89	58.4	Pass
T5	141.833 - 121.625	Diagonal	ROHN 2 EH	125	-10.16	17.18	59.1	Pass
T6	121.625 - 101.417	Diagonal	ROHN 2.5 STD	164	-12.96	16.21	80.0	Pass
T7	101.417 - 81.2083	Diagonal	ROHN 2.5 EH	191	-17.69	18.01	98.2	Pass
T8	81.2083 - 61	Diagonal	ROHN 3 EH	218	-18.15	31.83	57.0	Pass
T9	61 - 40.6667	Diagonal	ROHN 3 EH	245	-18.71	27.84	67.2	Pass
T10	40.6667 - 20.3333	Diagonal	ROHN 3 STD	272	-19.42	19.17	101.3	Pass
T11	20.3333 - 0	Diagonal	Rohn 2.875" x 0.552"	299	-28.65	30.21	94.8	Pass
T1	192.333 - 182.167	Horizontal	ROHN 1.5 STD	7	-1.14	25.15	4.5 4.7 (b)	Pass
T2	182.167 - 162	Horizontal	ROHN 1.5 STD	31	-3.45	25.15	13.7 14.0 (b)	Pass
T3	162 - 148.583	Horizontal	ROHN 1.5 STD	85	-5.60	25.25	22.2 22.6 (b)	Pass
T5	141.833 - 121.625	Horizontal	ROHN 2 EH	124	-6.93	37.22	18.6 27.9 (b)	Pass
T6	121.625 -	Horizontal	ROHN 2 EH	163	-7.79	29.65	26.3	Pass

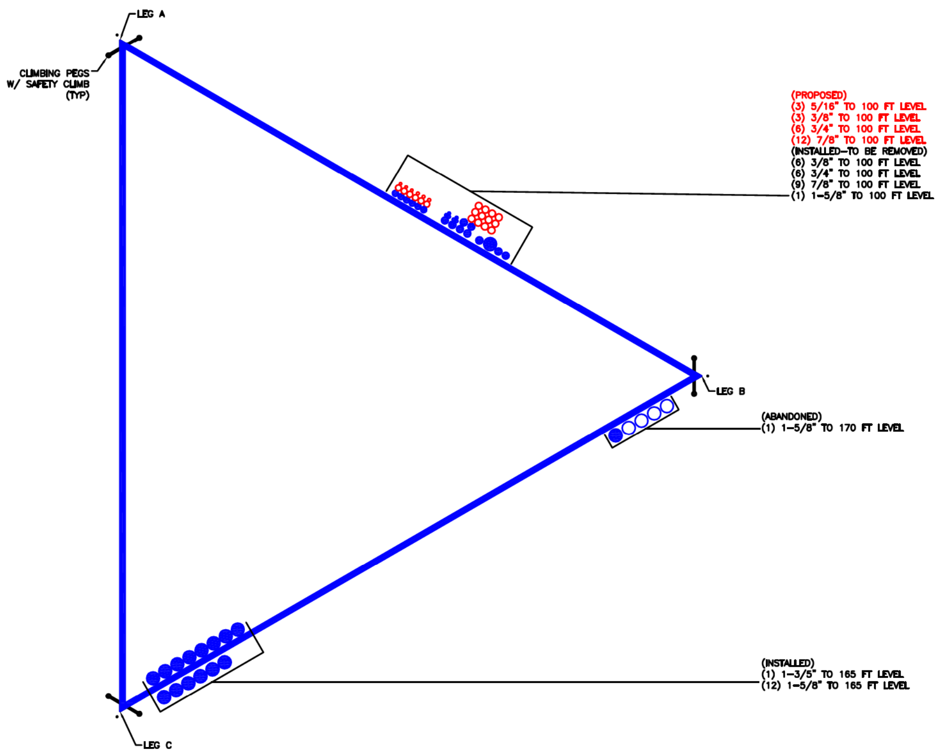
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	101.417						31.3 (b)	
T7	101.417 - 81.2083	Horizontal	ROHN 2 STD	190	-11.67	16.54	70.6	Pass
T8	81.2083 - 61	Horizontal	ROHN 2.5 STD	217	-12.72	28.20	45.1	Pass
T9	61 - 40.6667	Horizontal	ROHN 2.5 STD	244	-13.83	21.73	63.6	Pass
T10	40.6667 - 20.3333	Horizontal	ROHN 2.5 STD	271	-15.00	17.50	85.7	Pass
T11	20.3333 - 0	Horizontal	ROHN 2.5 STD	298	-16.33	15.70	104.1	Pass
T1	192.333 - 182.167	Top Girt	ROHN 1.5 STD	4	-0.40	25.15	1.6	Pass
T4	148.583 - 141.833	Top Girt	ROHN 1.5 STD	97	-5.48	20.99	26.1	Pass
T4	148.583 - 141.833	Redund Horz 1 Bracing	L2x2x1/8	104	-0.83	9.81	8.5	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	303	-5.52	13.49	40.9	Pass
T4	148.583 - 141.833	Redund Diag 1 Bracing	L2x2x1/8	105	-0.71	7.71	9.3	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	ROHN 2 STD	304	-5.01	8.94	56.0	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	ROHN 2 STD	323	-0.09	24.31	0.4	Pass
T11	20.3333 - 0	Redund Hip Diagonal 1 Bracing	ROHN 2 STD	313	-0.06	4.54	1.3	Pass
T1	192.333 - 182.167	Inner Bracing	L2x2x1/8	25	-0.01	7.59	0.1	Pass
T2	182.167 - 162	Inner Bracing	L2x2x1/8	42	-0.01	7.59	0.1	Pass
T3	162 - 148.583	Inner Bracing	L2x2x1/8	92	-0.01	7.59	0.1	Pass
T4	148.583 - 141.833	Inner Bracing	L2x2x1/8	118	-0.09	5.68	1.7	Pass
T5	141.833 - 121.625	Inner Bracing	L2x2x1/8	133	-0.01	3.48	0.3	Pass
T6	121.625 - 101.417	Inner Bracing	L2x2x1/8	172	-0.01	2.49	0.3	Pass
T7	101.417 - 81.2083	Inner Bracing	L2x2x1/8	199	-0.01	1.78	0.6	Pass
T8	81.2083 - 61	Inner Bracing	L3x3x1/4	227	-0.01	8.77	0.2	Pass
T9	61 - 40.6667	Inner Bracing	L3x3x1/4	254	-0.01	6.81	0.2	Pass
T10	40.6667 - 20.3333	Inner Bracing	L3 1/2x3 1/2x1/4	282	-0.01	8.77	0.2	Pass
T11	20.3333 - 0	Inner Bracing	ROHN 2.5 EH	327	-0.01	18.65	0.2	Pass

Summary	ELC:	LC5
Leg (T11)	95.3	Pass
Diagonal (T10)	101.3	Pass
Horizontal (T11)	104.1	Pass
Top Girt (T4)	26.1	Pass
Redund Horz 1 Bracing (T11)	40.9	Pass
Redund Diag 1 Bracing (T11)	56.0	Pass
Redund Hip 1 Bracing	0.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						(T11) Redund Hip Diagonal 1 Bracing	1.3	Pass
						(T11) Inner Bracing (T4)	1.7	Pass
						Bolt Checks	76.9	Pass
						Rating =	104.1	Pass

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842800 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

1	13/05/14	NEW BUILD PER WORK ORDER # 763488		NJH
2	13/05/14	UPDATED PER WORK ORDER # 764202		NJH
3	08/04/15	UPDATED PER WORK ORDER # 1030654	1025688	AR
4	10/10/2015	UPDATED PER WORK ORDER 1130456		ADE
5	29/04/16	UPDATED PER WORK ORDER 1215807		WJT
6	22/08/16	UPDATED PER WORK ORDER 1288646		AT
7	18/10/16	UPDATED PER WORK ORDER 1310464	1315186	AST
8	27/10/16	UPDATED PER WORK ORDER 1319346		NJH

DRAWN BY: VJL
CHECKED BY: NJH
DRAWING DATE: 12/05/14

SITE NUMBER:
SITE NAME:

SITE NAME

FL01

BUSINESS UNIT NUMBER

842800

SITE ADDRESS

3601 Vinkemulder Road
Coconut Creek, FL 33073-3428
BROWARD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING

SCALE: N.T.S.

1

PLOT DATE: 10/27/2016 FILE NAME: 842800_BASELEVEL.dwg

Xref R:\TEMPLATES\TYPICAL BLOCKS FOR TEMPLATES\TITLE BLOCK STD-VER 5.1.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

Anchor Rod Check for Self Supporting Towers

TIA-222-G, Section 4.9.9 Rev. 6.1

Site Data	
BU#:	842800
Site Name:	FL01
App #:	359269 Rev. 1

Anchor Rod Data		
Qty:	8	
Diam:	1	in
Rod Material:	A354 Gr. BC (1/4 to 2-1/2 incl.)	
Strength (Fu):	125	ksi
Yield (Fy):	109	ksi

* Rod Circle:		in
* e:		in
* # of Rods		1 or 2

Mu= Pu x e:		ft-kips

** Only enter rod circle, offset (e) and number of anchor rods at the extreme fiber to consider if eccentric load due to leg reinforcement exist.*

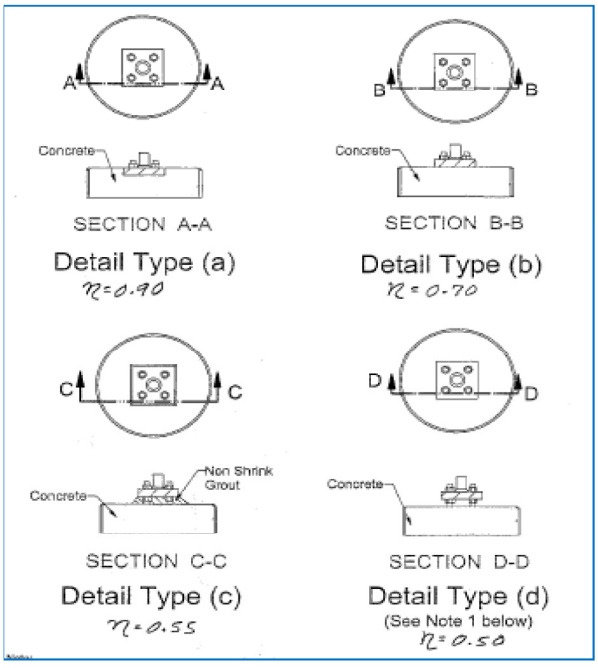


Figure 4-4 of TIA-222-G

Reactions		
Eta Factor, η	0.55	Detail Type
Uplift, Pu:	323	kips
Shear, Vu:	46	kips

l_{ar}:		in
$Mu = 0.65*l_{ar}*V_u$		ft-kips

Anchor Rod Results:

Max Rod (Cu+ Vu/ŋ):	50.8	Kips
Design Axial, Φ*Fu*Anet:	60.6	Kips
Anchor Rod Stress Ratio:	83.9%	

If Applicable;

Anchor Rod Results with Bending Considered:

When the clear distance from the top of concrete to the bottom of level nut excceeds 1.0 times the diameter of the anchor rod, the following interaction equation shall also be satisfied (see Figure 4-4 of Rev. G):

$$(V_u/\phi R_{nv})^2 + [(P_u/\phi R_{nt}) + (M_u/\phi R_{nm})]^2 <= 1$$

$\phi R_{nv}=\phi*0.45*F_{ub}*A_b=$		kips
$\phi R_{nt}=\phi*F_u*A_{net}=$		kips
$\phi R_{nm}=\phi*F_y*Z=$		ft-kips

Maximum Acceptable Ratio:	105	%
Governing Stress Ratio:	83.9%	Pass

GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job FL01 (BU #: 842800); 2017777.842800.10
Sheet No. 1 of 1
Calculated by ES Date 11/4/16
Checked by IM Date 11/4/16

CAISSON FOUNDATION (W/ COLLAR) CALCULATIONS

tnxTower Reactions

Uplift = 323 kips
Compression = 358 kips

Weight Calculations

$$\text{Caisson Weight} = \left[\left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(2.25')\cdot(0.150\text{ kcf}) + \left[\left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(48.75')\cdot(0.0876\text{ kcf}) = 57.9058\text{ kips}$$

$$\text{Collar Weight} = \left[(12')\cdot(12') - \left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(2.25')\cdot(0.150\text{ kcf}) + \left[(12')\cdot(12') - \left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(5.75')\cdot(0.0876\text{ kcf})$$
$$= 110.5620\text{ kips}$$

Effective Soil Weight Removed; Caisson (from Spreadsheet) = 33.8569 kips

$$\text{Effective Soil Weight Removed; Collar} = \left[(12')\cdot(12') - \left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(2')\cdot(0.105\text{ kcf}) + \left[(12')\cdot(12') - \left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(3')\cdot(0.0426\text{ kcf}) + \left[(12')\cdot(12') - \left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(2.75')\cdot(0.0526\text{ kcf}) = 63.4102\text{ kips}$$

Uplift Check

Caisson Weight Resistance = (0.9) · (57.9058 kips) = 52.1152 kips
Collar Weight Resistance = (0.9) · (110.5620 kips) = 99.5058 kips
Caisson Uplift Skin Friction Resistance (from Spreadsheet) = 148.4214 kips
Collar Uplift Skin Friction Resistance =(0.75) · (48′) · [(3′) · (0.198 ksf) + (2.75′) · (0.520 ksf)] = 72.8640 kips
Total Uplift Resistance = 52.1152 kips + 99.5058 kips + 148.4214 kips + 72.8640 kips = 372.9064 kips

$$\text{Uplift Capacity} = \left(\frac{323\text{ kips}}{372.9064\text{ kips}}\right)\cdot(100\%) = 86.6\%$$

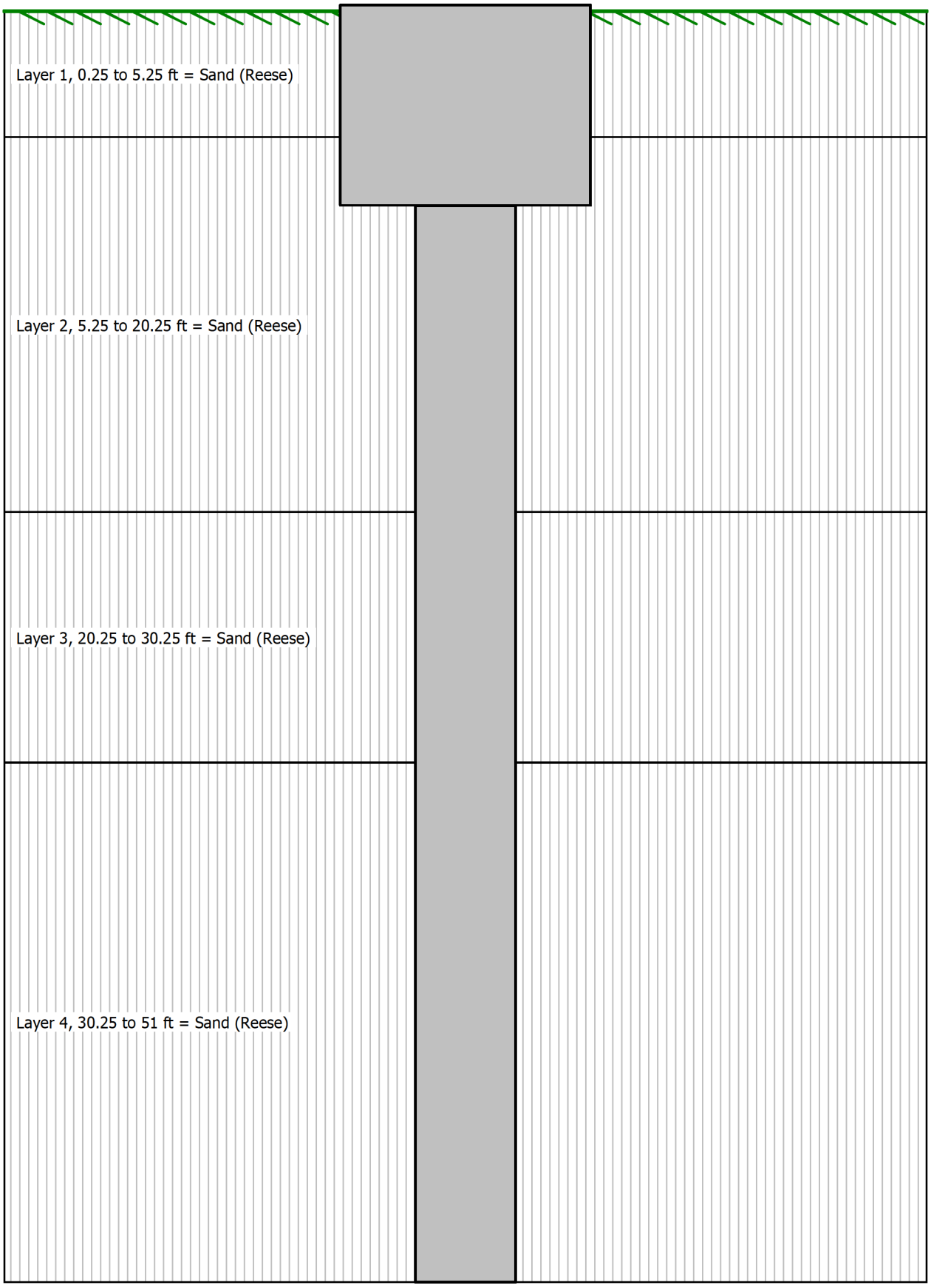
Compression Check

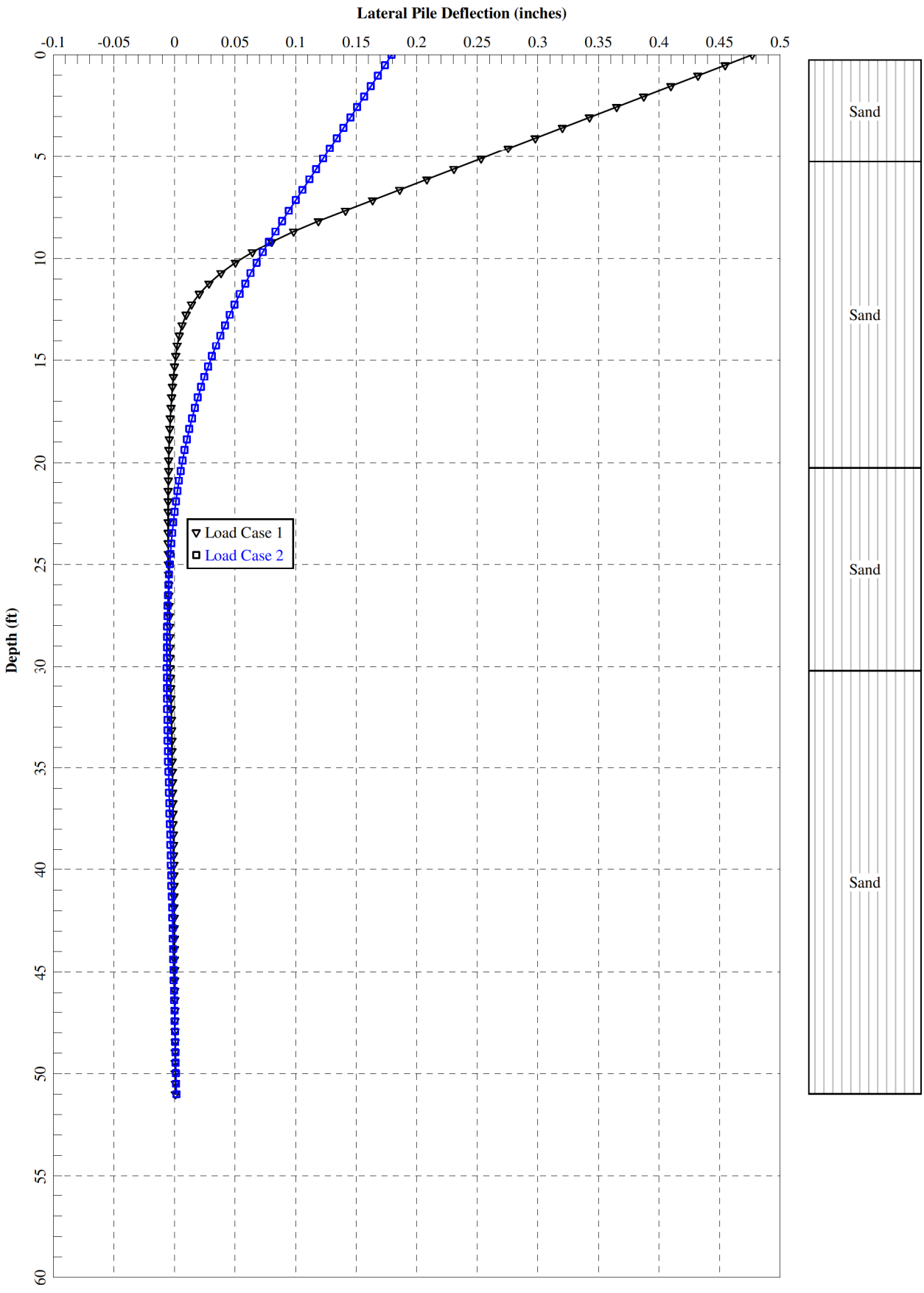
Caisson End Bearing Resistance (from Spreadsheet) = 37.6991 kips

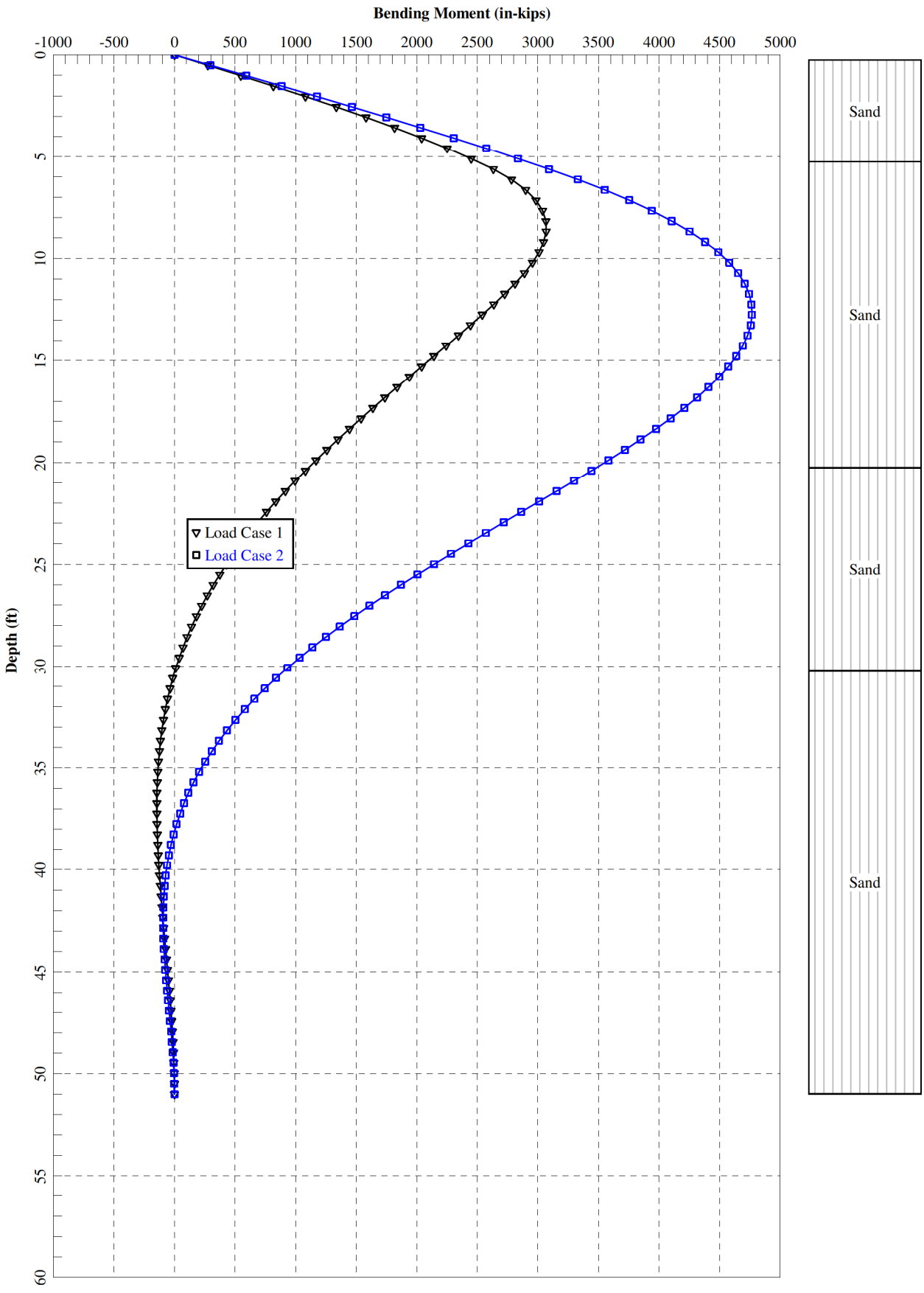
$$\text{Collar End Bearing Resistance} = (0.75)\cdot\left[(12')\cdot(12') - \left(\frac{\pi}{4}\right)\cdot(4')^2\right]\cdot(4\text{ ksf}) = 394.3009\text{ kips}$$

Caisson Compresion Skin Friction Resistance (from Spreadsheet) = 202.5243 kips
Collar Compression Skin Friction Resistance = (0.75) · (48′) · [(3′) · (0.282 ksf) + (2.75′) · (0.748 ksf)] = 104.5080 kips
Total Compression Resistance = 37.6991 kips + 394.3009 kips + 202.5243 kips + 104.5080 kips = 739.0323 kips

$$\text{Compression Capacity} = \left[\frac{358\text{ kips} + (1.2)\cdot(57.9058\text{ kips} - 33.8569\text{ kips}) + (1.2)\cdot(110.5620\text{ kips} - 63.4102\text{ kips})}{739.0323\text{ kips}}\right]\cdot(100\%) = 60.0\%$$




Lateral Pile Deflection (inches)
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
Depth (ft)
0
5
10
15
20
25
30
35
40
45
50
55
60
Load Case 1
Load Case 2
Sand
Sand
Sand
Sand


Bending Moment (in-kips)
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
Depth (ft)
0
5
10
15
20
25
30
35
40
45
50
55
60
Load Case 1
Load Case 2
Sand
Sand
Sand
Sand

LPile for Windows, Version 2016-09.007

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

This copy of LPile is being used by:

GPD
Indianapolis

Serial Number of Security Device: 154178656

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GDP GROUP, Akron,

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is a violation of the software license agreement.

Files Used for Analysis

Path to file locations:
\Crown\842800\10\SA Report\CALCS\lpile\

Name of input data file:
842800.lp9d

Name of output report file:
842800.lp9o

Name of plot output file:
842800.lp9p

Name of runtime message file:
842800.lp9r

Date and Time of Analysis

Date: November 4, 2016 Time: 11:22:01

Problem Title

Project Name: FL01 - BU#: 842800

Job Number: 2017777.842800.10

Client: Crown Castle USA, Inc.

Engineer: EWS

Description:

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (conventional analysis)

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

Analysis Control Options:

- Maximum number of iterations allowed	=	1000
- Deflection tolerance for convergence	=	5.0000E-04 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
- No distributed lateral loads are entered
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.

- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

Number of pile sections defined = 2
Total length of pile = 51.000 ft
Depth of ground surface below top of pile = 0.2500 ft

Pile diameters used for p-y curve computations are defined using 4 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	120.0000
2	8.000	120.0000
3	8.000	48.0000
4	51.000	48.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a rectangular concrete pile
Length of section = 8.000000 ft
Shear capacity of section = 0.0000 lbs

Pile Section No. 2:

Section 2 is a round drilled shaft, bored pile, or CIDH pile
Length of section = 43.000000 ft
Shaft Diameter = 48.000000 in
Shear capacity of section = 0.0000 lbs

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

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

Distance from top of pile to top of layer = 0.250000 ft
Distance from top of pile to bottom of layer = 5.250000 ft
Effective unit weight at top of layer = 105.000000 pcf
Effective unit weight at bottom of layer = 105.000000 pcf
Friction angle at top of layer = 29.000000 deg.
Friction angle at bottom of layer = 29.000000 deg.
Subgrade k at top of layer = 25.000000 pci
Subgrade k at bottom of layer = 25.000000 pci

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

Distance from top of pile to top of layer = 5.250000 ft
Distance from top of pile to bottom of layer = 20.250000 ft
Effective unit weight at top of layer = 115.000000 pcf
Effective unit weight at bottom of layer = 115.000000 pcf
Friction angle at top of layer = 34.000000 deg.
Friction angle at bottom of layer = 34.000000 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 = 20.250000 ft
Distance from top of pile to bottom of layer = 30.250000 ft
Effective unit weight at top of layer = 110.000000 pcf
Effective unit weight at bottom of layer = 110.000000 pcf
Friction angle at top of layer = 33.000000 deg.
Friction angle at bottom of layer = 33.000000 deg.
Subgrade k at top of layer = 60.000000 pci
Subgrade k at bottom of layer = 60.000000 pci

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

Distance from top of pile to top of layer	=	30.250000 ft
Distance from top of pile to bottom of layer	=	51.000000 ft
Effective unit weight at top of layer	=	115.000000 pcf
Effective unit weight at bottom of layer	=	115.000000 pcf
Friction angle at top of layer	=	34.000000 deg.
Friction angle at bottom of layer	=	34.000000 deg.
Subgrade k at top of layer	=	60.000000 pci
Subgrade k at bottom of layer	=	60.000000 pci

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

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand	0.2500	105.0000	29.0000	25.0000
	(Reese, et al.)	5.2500	105.0000	29.0000	25.0000
2	Sand	5.2500	115.0000	34.0000	60.0000
	(Reese, et al.)	20.2500	115.0000	34.0000	60.0000
3	Sand	20.2500	110.0000	33.0000	60.0000
	(Reese, et al.)	30.2500	110.0000	33.0000	60.0000
4	Sand	30.2500	115.0000	34.0000	60.0000
	(Reese, et al.)	51.0000	115.0000	34.0000	60.0000

Static Loading Type

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

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load No.	Load Type	Condition 1		Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 46000. lbs	M =	0.0000 in-lbs	-323000.	Yes
2	1	V = 48000. lbs	M =	0.0000 in-lbs	358000.	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 = 2

Pile Section No. 1:

Dimensions and Properties of Rectangular Concrete Pile:

Length of Section	=	8.000000 ft
Depth of Section	=	168.000000 in
Width of Section	=	120.000000 in
Number of Reinforcing Bars	=	12 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Compressive Strength of Concrete	=	4000. psi
Modulus of Rupture of Concrete	=	-474.341649 psi
Gross Area of Pile	=	20160. sq. in.
Total Area of Reinforcing Steel	=	9.480000 sq. in.
Area Ratio of Steel Reinforcement	=	0.047024 percent

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	69080.568 kips
Tensile Load for Cracking of Concrete	=	-8412.512 kips
Nominal Axial Tensile Capacity	=	-568.800 kips

Concrete Properties:

Compressive Strength of Concrete	=	4000. psi
Modulus of Elasticity of Concrete	=	3604997. psi
Modulus of Rupture of Concrete	=	-474.341649 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 = 2

Number	Axial Thrust Force kips
1	-323.000
2	358.000

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, Section 10.3.4.
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 = -323.000 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
1.78571E-07	35787.	2.00406E+11	62.8171085	0.00001122	-0.00001878	0.0468008	-0.5403471	
3.57143E-07	71373.	1.99843E+11	73.3666702	0.00002620	-0.00003380	0.1091022	-0.9714309	
5.35714E-07	106744.	1.99256E+11	76.8827688	0.00004119	-0.00004881	0.1709078	-1.4025213	
7.14286E-07	141902.	1.98663E+11	78.6406096	0.00005617	-0.00006383	0.2322180	-1.8336159	
8.92857E-07	176846.	1.98067E+11	79.6951634	0.00007116	-0.00007884	0.2930328	-2.2647145	
0.00000107	211575.	1.97470E+11	80.3980765	0.00008614	-0.00009386	0.3533523	-2.6958169	
0.00000125	246090.	1.96872E+11	80.9000537	0.0001011	-0.0001089	0.4131765	-3.1269230	
0.00000143	246090.	1.72263E+11	-738.4179484	-0.0010549	-0.0012949	0.00000	-37.5168007	C
0.00000161	246090.	1.53123E+11	-647.0378297	-0.0010399	-0.0013099	0.00000	-37.9474346	C
0.00000179	246090.	1.37811E+11	-573.9337348	-0.0010249	-0.0013249	0.00000	-38.3780684	C
0.00000196	246090.	1.25282E+11	-514.1212935	-0.0010099	-0.0013399	0.00000	-38.8087022	C
0.00000214	246090.	1.14842E+11	-464.2775924	-0.0009949	-0.0013549	0.00000	-39.2393361	C
0.00000232	246090.	1.06008E+11	-422.1021530	-0.0009799	-0.0013699	0.00000	-39.6699699	C
0.00000250	246090.	9.84362E+10	-385.9517764	-0.0009649	-0.0013849	0.00000	-40.1006038	C
0.00000268	246090.	9.18738E+10	-354.6214500	-0.0009499	-0.0013999	0.00000	-40.5312376	C
0.00000286	246090.	8.61317E+10	-327.2074144	-0.0009349	-0.0014149	0.00000	-40.9618715	C
0.00000304	246090.	8.10651E+10	-303.0185594	-0.0009199	-0.0014299	0.00000	-41.3925053	C
0.00000321	246090.	7.65615E+10	-281.5173551	-0.0009049	-0.0014449	0.00000	-41.8231392	C
0.00000339	246090.	7.25319E+10	-262.2794353	-0.0008899	-0.0014599	0.00000	-42.2537730	C
0.00000357	246090.	6.89053E+10	-244.9653076	-0.0008749	-0.0014749	0.00000	-42.6844068	C
0.00000375	246090.	6.56241E+10	-229.3001444	-0.0008599	-0.0014899	0.00000	-43.1150407	C
0.00000393	246090.	6.26412E+10	-215.0590869	-0.0008449	-0.0015049	0.00000	-43.5456745	C
0.00000411	246090.	5.99177E+10	-202.0563823	-0.0008299	-0.0015199	0.00000	-43.9763084	C
0.00000429	246090.	5.74211E+10	-190.1372364	-0.0008149	-0.0015349	0.00000	-44.4069422	C
0.00000446	246090.	5.51243E+10	-179.1716222	-0.0007999	-0.0015499	0.00000	-44.8375761	C
0.00000464	246090.	5.30041E+10	-169.0495167	-0.0007849	-0.0015649	0.00000	-45.2682099	C
0.00000482	246090.	5.10410E+10	-159.6771968	-0.0007699	-0.0015799	0.00000	-45.6988438	C
0.00000500	246090.	4.92181E+10	-150.9743284	-0.0007549	-0.0015949	0.00000	-46.1294777	C
0.00000518	246090.	4.75209E+10	-142.8716578	-0.0007399	-0.0016099	0.00000	-46.5601115	C
0.00000536	246090.	4.59369E+10	-135.3091652	-0.0007249	-0.0016249	0.00000	-46.9907453	C
0.00000554	246090.	4.44551E+10	-128.2345754	-0.0007099	-0.0016399	0.00000	-47.4213791	C
0.00000571	246090.	4.30658E+10	-121.6021474	-0.0006949	-0.0016549	0.00000	-47.8520129	C
0.00000589	246090.	4.17608E+10	-115.3716848	-0.0006799	-0.0016699	0.00000	-48.2826467	C
0.00000607	246090.	4.05325E+10	-109.5077199	-0.0006649	-0.0016849	0.00000	-48.7132806	C
0.00000625	246090.	3.93745E+10	-103.9788388	-0.0006499	-0.0016999	0.00000	-49.1439146	C
0.00000643	246090.	3.82807E+10	-98.7571177	-0.0006349	-0.0017149	0.00000	-49.5745482	C
0.00000661	246090.	3.72461E+10	-93.8176519	-0.0006199	-0.0017299	0.00000	-50.0051821	C
0.00000679	246090.	3.62660E+10	-89.1381579	-0.0006049	-0.0017449	0.00000	-50.4358160	C
0.00000696	246090.	3.53361E+10	-84.6986379	-0.0005899	-0.0017599	0.00000	-50.8664499	C
0.00000732	246090.	3.36124E+10	-76.4692839	-0.0005599	-0.0017899	0.00000	-51.7277177	C
0.00000768	246090.	3.20490E+10	-69.0054512	-0.0005299	-0.0018199	0.00000	-52.5889853	C
0.00000804	246090.	3.06246E+10	-62.2050703	-0.0004999	-0.0018499	0.00000	-53.4502529	C
0.00000839	246090.	2.93214E+10	-55.9834452	-0.0004699	-0.0018799	0.00000	-54.3115206	C
0.00000875	246090.	2.81246E+10	-50.2697078	-0.0004399	-0.0019099	0.00000	-55.1727882	C
0.00000911	246090.	2.70217E+10	-45.0041068	-0.0004099	-0.0019399	0.00000	-56.0340560	C
0.00000946	246090.	2.60020E+10	-40.1359095	-0.0003799	-0.0019699	0.00000	-56.8953238	C
0.00000982	246090.	2.50565E+10	-35.6217630	-0.0003499	-0.0019999	0.00000	-57.7565913	C
0.00001018	246090.	2.41773E+10	-31.4243987	-0.0003199	-0.0020299	0.00000	-58.6178590	C
0.00001054	246090.	2.33577E+10	-27.5116015	-0.0002899	-0.0020599	0.00000	-59.4791268	CY
0.00001089	246090.	2.25919E+10	-23.8553811	-0.0002599	-0.0020899	0.00000	-60.0000000	CY
0.00001125	246090.	2.18747E+10	-20.4313017	-0.0002299	-0.0021199	0.00000	-60.0000000	CY
0.00001161	246090.	2.12016E+10	-17.2179349	-0.0001999	-0.0021499	0.00000	-60.0000000	CY
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0.00001304	246090.	1.88782E+10	-6.1252166	-0.00007985	-0.0022698	0.00000	-60.0000000	CY
0.00001339	246090.	1.83748E+10	-3.7217943	-0.00004985	-0.0022998	0.00000	-60.0000000	CY
0.00001375	246090.	1.78975E+10	-1.4432251	-0.00001984	-0.0023298	0.00000	-60.0000000	CY

0.00001411	246090.	1.74444E+10	0.7199735	0.00001016	-0.0023598	0.00000	-60.0000000 CY
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0.00001482	246090.	1.66037E+10	1.7900196	0.00002653	-0.0024635	0.0594956	-60.0000000 CY
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0.00001625	246090.	1.51440E+10	3.0779833	0.00005002	-0.0026800	0.1527528	-60.0000000 CY
0.00001661	246090.	1.48184E+10	3.2960425	0.00005474	-0.0027353	0.1711180	-60.0000000 CY
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0.00001804	246090.	1.36446E+10	4.0863289	0.00007370	-0.0029563	0.2444661	-60.0000000 CY
0.00001839	246090.	1.33797E+10	4.2456974	0.00007809	-0.0030119	0.2612579	-60.0000000 CY
0.00001875	246090.	1.31248E+10	4.3658207	0.00008186	-0.0030681	0.2754669	-60.0000000 CY
0.00001911	246090.	1.28795E+10	4.4816695	0.00008563	-0.0031244	0.2896658	-60.0000000 CY
0.00001946	246090.	1.26432E+10	4.5934801	0.00008941	-0.0031806	0.3038544	-60.0000000 CY
0.00001982	246090.	1.24154E+10	4.7014715	0.00009319	-0.0032368	0.3180328	-60.0000000 CY
0.00002018	246090.	1.21956E+10	4.8058475	0.00009698	-0.0032930	0.3322009	-60.0000000 CY
0.00002054	246090.	1.19835E+10	4.9067974	0.0001008	-0.0033492	0.3463587	-60.0000000 CY
0.00002089	246090.	1.17787E+10	5.0044980	0.0001046	-0.0034054	0.3605062	-60.0000000 CY
0.00002125	246090.	1.15807E+10	5.0991138	0.0001084	-0.0034616	0.3746434	-60.0000000 CY
0.00002268	246090.	1.08512E+10	5.4496605	0.0001236	-0.0036864	0.4310881	-60.0000000 CY
0.00002411	246090.	1.02082E+10	5.7615332	0.0001389	-0.0039111	0.4873651	-60.0000000 CY
0.00002554	246090.	9637109062.	6.0027068	0.0001533	-0.0041367	0.5395892	-60.0000000 CY
0.00002696	246090.	9126533748.	6.1044140	0.0001646	-0.0043654	0.5793862	-60.0000000 CY
0.00002839	246090.	8667337081.	5.9690414	0.0001695	-0.0046005	0.5937921	-60.0000000 CY
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0.00003125	246090.	7874894834.	5.6850022	0.0001777	-0.0050723	0.6163688	-60.0000000 CY
0.00003268	246090.	7530637136.	5.5481125	0.0001813	-0.0053087	0.6259114	-60.0000000 CY
0.00003411	246090.	7215217780.	5.4227530	0.0001850	-0.0055450	0.6354488	-60.0000000 CY
0.00003554	246090.	6925158773.	5.3075332	0.0001886	-0.0057814	0.6449811	-60.0000000 CY
0.00003696	246090.	6657519787.	5.2012774	0.0001923	-0.0060177	0.6545082	-60.0000000 CY
0.00003839	246090.	6409798120.	5.1029851	0.0001959	-0.0062541	0.6640301	-60.0000000 CY
0.00003982	246090.	6179850206.	5.0117991	0.0001996	-0.0064904	0.6735468	-60.0000000 CY
0.00004125	246090.	5965829419.	4.9269812	0.0002032	-0.0067268	0.6830582	-60.0000000 CY
0.00004268	246090.	5766136384.	4.8478918	0.0002069	-0.0069631	0.6925642	-60.0000000 CY
0.00004411	246090.	5579378931.	4.7739744	0.0002106	-0.0071994	0.7020649	-60.0000000 CY
0.00004554	246090.	5404339592.	4.7047423	0.0002142	-0.0074358	0.7115602	-60.0000000 CY
0.00004696	246090.	5239949034.	4.6397677	0.0002179	-0.0076721	0.7210500	-60.0000000 CY
0.00004839	246090.	5085264191.	4.5786738	0.0002216	-0.0079084	0.7305344	-60.0000000 CY
0.00004982	246090.	4939450164.	4.5211267	0.0002252	-0.0081448	0.7400134	-60.0000000 CY
0.00005125	246090.	4801765142.	4.4668298	0.0002289	-0.0083811	0.7494867	-60.0000000 CY
0.00005268	246090.	4671547783.	4.4155187	0.0002326	-0.0086174	0.7589545	-60.0000000 CY
0.00005411	246090.	4548206587.	4.3669568	0.0002363	-0.0088537	0.7684168	-60.0000000 CY
0.00005554	246090.	4431210919.	4.3209321	0.0002400	-0.0090900	0.7778733	-60.0000000 CY
0.00005696	246090.	4320083373.	4.2772537	0.0002437	-0.0093263	0.7873242	-60.0000000 CY
0.00005839	246090.	4214393260.	4.2357493	0.0002473	-0.0095627	0.7967694	-60.0000000 CY
0.00005982	246090.	4113751033.	4.1942327	0.0002509	-0.0097991	0.8057485	-60.0000000 CY
0.00006125	246090.	4017803487.	4.1361656	0.0002533	-0.0100367	0.8104281	-60.0000000 CY
0.00006268	246090.	3926229618.	4.0807587	0.0002558	-0.0102742	0.8151073	-60.0000000 CY
0.00006411	246090.	3838737036.	4.0278342	0.0002582	-0.0105118	0.8197863	-60.0000000 CY
0.00006554	246090.	3755058844.	3.9772297	0.0002607	-0.0107493	0.8244649	-60.0000000 CY
0.00006696	246090.	3674950922.	3.9287966	0.0002631	-0.0109869	0.8291432	-60.0000000 CY
0.00006839	246090.	3598189545.	3.8823991	0.0002655	-0.0112245	0.8338213	-60.0000000 CY
0.00006982	246090.	3524569299.	3.8379120	0.0002680	-0.0114620	0.8384990	-60.0000000 CY
0.00007125	246090.	3453901243.	3.7952206	0.0002704	-0.0116996	0.8431763	-60.0000000 CY
0.00007268	246090.	3386011292.	3.7542189	0.0002729	-0.0119371	0.8478534	-60.0000000 CY
0.00007411	246090.	3320738785.	3.7148091	0.0002753	-0.0121747	0.8525301	-60.0000000 CY
0.00007554	246090.	3257935215.	3.6769011	0.0002777	-0.0124123	0.8572064	-60.0000000 CY
0.00007696	246090.	3197463100.	3.6404111	0.0002802	-0.0126498	0.8618824	-60.0000000 CY
0.00007839	246090.	3139194979.	3.6052616	0.0002826	-0.0128874	0.8665580	-60.0000000 CY
0.00008696	246090.	2829787671.	3.4188165	0.0002973	-0.0143127	0.8946038	-60.0000000 CY
0.00009554	246090.	2575900179.	3.2661402	0.0003120	-0.0157380	0.9226349	-60.0000000 CY
0.0001041	246090.	2363819204.	3.1388921	0.0003268	-0.0171632	0.9506498	-60.0000000 CY
0.0001127	246090.	2184004114.	3.0312694	0.0003416	-0.0185884	0.9786470	-60.0000000 CY
0.0001212	246090.	2029612071.	2.9391102	0.0003564	-0.0200136	1.0066251	-60.0000000 CY
0.0001298	246090.	1895607422.	2.8593517	0.0003712	-0.0214388	1.0345827	-60.0000000 CY
0.0001384	246090.	1778202059.	2.7896900	0.0003861	-0.0228639	1.0625182	-60.0000000 CY
0.0001470	246090.	1674491611.	2.7283585	0.0004010	-0.0242890	1.0904302	-60.0000000 CY
0.0001555	246090.	1582211936.	2.6739802	0.0004159	-0.0257141	1.1183173	-60.0000000 CY
0.0001641	246090.	1499571922.	2.6254659	0.0004309	-0.0271391	1.1461779	-60.0000000 CY
0.0001727	246090.	1425136087.	2.5819424	0.0004458	-0.0285642	1.1740106	-60.0000000 CY
0.0001812	246090.	1357740489.	2.5427018	0.0004609	-0.0299891	1.2018140	-60.0000000 CY
0.0001898	246090.	1296431417.	2.4917451	0.0004730	-0.0314170	1.2192461	-60.0000000 CY
0.0001984	246090.	1240419978.	2.4203826	0.0004802	-0.0328498	1.2192461	-60.0000000 CY
0.0002070	246090.	1189047969.	2.3549310	0.0004874	-0.0342826	1.2192461	-60.0000000 CY
0.0002155	246090.	1141761886.	2.2946852	0.0004946	-0.0357154	1.2192461	-60.0000000 CY
0.0002241	246090.	1098092905.	2.2390479	0.0005018	-0.0371482	1.2192461	-60.0000000 CY
0.0002327	246090.	1057641286.	2.1875097	0.0005090	-0.0385810	1.2192461	-60.0000000 CY
0.0002413	246090.	1020064098.	2.1396337	0.0005162	-0.0400138	1.2192461	-60.0000000 CY
0.0002498	246090.	985065472.	2.0950429	0.0005234	-0.0414466	1.2192461	-60.0000000 CY
0.0002584	246090.	952388802.	2.0534106	0.0005306	-0.0428794	1.2192461	-60.0000000 CY
0.0002670	246090.	921810432.	2.0144516	0.0005378	-0.0443122	1.2192461	-60.0000000 CY
0.0002755	246090.	893134540.	1.9779164	0.0005450	-0.0457450	1.2192461	-60.0000000 CY
0.0002841	246090.	866188935.	1.9435858	0.0005522	-0.0471778	1.2192461	-60.0000000 CY
0.0002927	246090.	840821596.	1.9112661	0.0005594	-0.0486106	1.2192461	-60.0000000 CY
0.0003013	246090.	816897804.	1.8807855	0.0005666	-0.0500434	1.2192461	-60.0000000 CY
0.0003098	246090.	794297750.	1.8519914	0.0005738	-0.0514762	1.2192461	-60.0000000 CY
0.0003184	246090.	772914524.	1.8247477	0.0005810	-0.0529090	1.2192461	-60.0000000 CY
0.0003270	246090.	752652428.	1.7989323	0.0005882	-0.0543418	1.2192461	-60.0000000 CY
0.0003355	246090.	733425543.	1.7744359	0.0005954	-0.0557746	1.2192461	-60.0000000 CY
0.0003441	246090.	715156511.	1.7511599	0.0006026	-0.0572074	1.2192462	-60.0000000 CY

Axial Thrust Force = 358.000 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
1.78571E-07	35784.	2.00389E+11	107.4787210	0.00001919	-0.00001081	0.0803554	0.5522362	

3.57143E-07	71370.	1.99835E+11	95.7856807	0.00003421	-0.00002579	0.1425220	0.9833660	
5.35714E-07	106741.	1.99250E+11	91.8885177	0.00004923	-0.00004077	0.2041928	1.4145038	
7.14286E-07	141899.	1.98659E+11	89.9401768	0.00006424	-0.00005576	0.2653673	1.8456465	
8.92857E-07	176843.	1.98064E+11	88.7713424	0.00007926	-0.00007074	0.3260455	2.2767937	
0.00000107	211572.	1.97467E+11	87.9922567	0.00009428	-0.00008572	0.3862273	2.7079451	
0.00000125	246087.	1.96870E+11	87.4358826	0.0001093	-0.0001007	0.4459126	3.1391007	
0.00000143	246087.	1.72261E+11	32.3936331	0.00004628	-0.0001937	0.1888934	-5.5831781	C
0.00000161	246087.	1.53121E+11	30.6817170	0.00004931	-0.0002207	0.2008203	-6.3608628	C
0.00000179	246087.	1.37809E+11	29.2463377	0.00005223	-0.0002478	0.2122433	-7.1419575	C
0.00000196	246087.	1.25281E+11	28.0111808	0.00005502	-0.0002750	0.2231573	-7.9265131	C
0.00000214	246087.	1.14841E+11	26.9365304	0.00005772	-0.0003023	0.2336555	-8.7138870	C
0.00000232	246087.	1.06007E+11	26.0105050	0.00006038	-0.0003296	0.2439798	-9.5023856	C
0.00000250	246087.	9.84349E+10	25.1661968	0.00006292	-0.0003571	0.2537710	-10.2945507	C
0.00000268	246087.	9.18726E+10	24.4348098	0.00006545	-0.0003845	0.2635533	-11.0866889	C
0.00000286	246087.	8.61305E+10	23.7550010	0.00006787	-0.0004121	0.2728566	-11.8821285	C
0.00000304	246087.	8.10640E+10	23.1507488	0.00007028	-0.0004397	0.2820936	-12.6779573	C
0.00000321	246087.	7.65605E+10	22.6088303	0.00007267	-0.0004673	0.2912559	-13.4742340	C
0.00000339	246087.	7.25310E+10	22.0919434	0.00007495	-0.0004950	0.2999640	-14.2736606	C
0.00000357	246087.	6.89044E+10	21.6269478	0.00007724	-0.0005228	0.3086647	-15.0730661	C
0.00000375	246087.	6.56233E+10	21.2064306	0.00007952	-0.0005505	0.3173582	-15.8724507	C
0.00000393	246087.	6.26404E+10	20.8097492	0.00008175	-0.0005782	0.3258116	-16.6734750	C
0.00000411	246087.	5.99169E+10	20.4320860	0.00008392	-0.0006061	0.3339972	-17.4763426	C
0.00000429	246087.	5.74203E+10	20.0860434	0.00008608	-0.0006339	0.3421762	-18.2791917	C
0.00000446	246087.	5.51235E+10	19.7678268	0.00008825	-0.0006618	0.3503487	-19.0820224	C
0.00000464	246087.	5.30034E+10	19.4742257	0.00009042	-0.0006896	0.3585146	-19.8848346	C
0.00000482	246087.	5.10403E+10	19.1918623	0.00009253	-0.0007175	0.3664666	-20.6891164	C
0.00000500	246087.	4.92174E+10	18.9168154	0.00009458	-0.0007454	0.3741504	-21.4952617	C
0.00000518	246087.	4.75203E+10	18.6608456	0.00009664	-0.0007734	0.3818283	-22.3013908	C
0.00000536	246087.	4.59363E+10	18.4220452	0.00009869	-0.0008013	0.3895003	-23.1075037	C
0.00000554	246087.	4.44545E+10	18.1987527	0.0001007	-0.0008293	0.3971665	-23.9136002	C
0.00000571	246087.	4.30653E+10	17.9895144	0.0001028	-0.0008572	0.4048267	-24.7196805	C
0.00000589	246087.	4.17603E+10	17.7930526	0.0001049	-0.0008851	0.4124811	-25.5257444	C
0.00000607	246087.	4.05320E+10	17.6050718	0.0001069	-0.0009131	0.4200524	-26.3323498	C
0.00000625	246087.	3.93740E+10	17.4135254	0.0001088	-0.0009412	0.4272572	-27.1415485	C
0.00000643	246087.	3.82802E+10	17.2326979	0.0001108	-0.0009692	0.4344569	-27.9507327	C
0.00000661	246087.	3.72456E+10	17.0617204	0.0001127	-0.0009973	0.4416512	-28.7599025	C
0.00000679	246087.	3.62655E+10	16.8998152	0.0001147	-0.0010253	0.4488403	-29.5690578	C
0.00000696	246087.	3.53356E+10	16.7462846	0.0001166	-0.0010534	0.4560241	-30.3781986	C
0.00000732	246087.	3.36119E+10	16.4618960	0.0001205	-0.0011095	0.4703758	-31.9964367	C
0.00000768	246087.	3.20486E+10	16.2042230	0.0001244	-0.0011656	0.4847064	-33.6146168	C
0.00000804	246087.	3.06242E+10	15.9697037	0.0001283	-0.0012217	0.4990158	-35.2327387	C
0.00000839	246087.	2.93210E+10	15.7326214	0.0001320	-0.0012780	0.5125475	-36.8563423	C
0.00000875	246087.	2.81243E+10	15.5141094	0.0001357	-0.0013343	0.5260259	-38.4801447	C
0.00000911	246087.	2.70213E+10	15.3129346	0.0001395	-0.0013905	0.5394853	-40.1038946	C
0.00000946	246087.	2.60017E+10	15.1271347	0.0001432	-0.0014468	0.5529258	-41.7275918	C
0.00000982	246087.	2.50562E+10	14.9550327	0.0001469	-0.0015031	0.5663473	-43.3512362	C
0.00001018	246087.	2.41770E+10	14.7951869	0.0001506	-0.0015594	0.5797497	-44.9748278	C
0.00001054	246087.	2.33574E+10	14.6463514	0.0001543	-0.0016157	0.5931331	-46.5983665	C
0.00001089	246087.	2.25916E+10	14.5074433	0.0001580	-0.0016720	0.6064974	-48.2218522	C
0.00001125	246087.	2.18744E+10	14.3775175	0.0001617	-0.0017283	0.6198425	-49.8452849	C
0.00001161	246087.	2.12014E+10	14.2526942	0.0001654	-0.0017846	0.6330307	-51.4696913	C
0.00001196	246087.	2.05685E+10	14.1239440	0.0001690	-0.0018410	0.6456644	-53.0980458	C
0.00001232	246087.	1.99723E+10	14.0027969	0.0001725	-0.0018975	0.6582810	-54.7263506	C
0.00001268	246087.	1.94097E+10	13.8886104	0.0001761	-0.0019539	0.6708804	-56.3546055	C
0.00001304	246087.	1.88779E+10	13.7808129	0.0001796	-0.0020104	0.6834628	-57.9828105	C
0.00001339	246087.	1.83745E+10	13.6788934	0.0001832	-0.0020668	0.6960279	-59.6109655	C
0.00001375	246087.	1.78973E+10	13.5823940	0.0001868	-0.0021232	0.7085758	-60.0000000	CY
0.00001411	246087.	1.74442E+10	13.4909035	0.0001903	-0.0021797	0.7211066	-60.0000000	CY
0.00001446	246087.	1.70134E+10	13.4040509	0.0001939	-0.0022361	0.7336200	-60.0000000	CY
0.00001482	246087.	1.66035E+10	13.3215013	0.0001974	-0.0022926	0.7461162	-60.0000000	CY
0.00001518	246087.	1.62128E+10	13.2429511	0.0002010	-0.0023490	0.7585951	-60.0000000	CY
0.00001554	246087.	1.58401E+10	13.1681247	0.0002046	-0.0024054	0.7710567	-60.0000000	CY
0.00001589	246087.	1.54841E+10	13.0967712	0.0002081	-0.0024619	0.7835009	-60.0000000	CY
0.00001625	246087.	1.51438E+10	13.0286619	0.0002117	-0.0025183	0.7959278	-60.0000000	CY
0.00001661	246087.	1.48182E+10	12.9635877	0.0002153	-0.0025747	0.8083372	-60.0000000	CY
0.00001696	246087.	1.45062E+10	12.9013571	0.0002189	-0.0026311	0.8207292	-60.0000000	CY
0.00001732	246087.	1.42071E+10	12.8417943	0.0002224	-0.0026876	0.8331037	-60.0000000	CY
0.00001768	246087.	1.39201E+10	12.7847380	0.0002260	-0.0027440	0.8454608	-60.0000000	CY
0.00001804	246087.	1.36444E+10	12.7300393	0.0002296	-0.0028004	0.8578004	-60.0000000	CY
0.00001839	246087.	1.33795E+10	12.6775611	0.0002332	-0.0028568	0.8701224	-60.0000000	CY
0.00001875	246087.	1.31247E+10	12.6271768	0.0002368	-0.0029132	0.8824268	-60.0000000	CY
0.00001911	246087.	1.28793E+10	12.5756677	0.0002403	-0.0029697	0.8944922	-60.0000000	CY
0.00001946	246087.	1.26430E+10	12.5223197	0.0002437	-0.0030263	0.9062635	-60.0000000	CY
0.00001982	246087.	1.24152E+10	12.4709836	0.0002472	-0.0030828	0.9180191	-60.0000000	CY
0.00002018	246087.	1.21955E+10	12.4215530	0.0002506	-0.0031394	0.9297589	-60.0000000	CY
0.00002054	246087.	1.19834E+10	12.3739285	0.0002541	-0.0031959	0.9414829	-60.0000000	CY
0.00002089	246087.	1.17785E+10	12.3280177	0.0002576	-0.0032524	0.9531910	-60.0000000	CY
0.00002125	246087.	1.15806E+10	12.2837344	0.0002610	-0.0033090	0.9648834	-60.0000000	CY
0.00002268	246087.	1.08511E+10	12.1213421	0.0002749	-0.0035351	1.0114940	-60.0000000	CY
0.00002411	246087.	1.02081E+10	11.9793982	0.0002888	-0.0037612	1.0578492	-60.0000000	CY
0.00002554	246087.	9636981016.	11.8544813	0.0003027	-0.0039873	1.1039477	-60.0000000	CY
0.00002696	246087.	9126412485.	11.7438949	0.0003167	-0.0042133	1.1497878	-60.0000000	CY
0.00002839	246087.	8667221920.	11.6374755	0.0003304	-0.0044396	1.1945603	-60.0000000	CY
0.00002982	246087.	8252025660.	11.4029427	0.0003401	-0.0046699	1.2244256	-60.0000000	CY
0.00003125	246087.	7874790201.	11.1596201	0.0003487	-0.0049013	1.2508103	-60.0000000	CY
0.00003268	246087.	7530537078.	10.9379828	0.0003574	-0.0051326	1.2771160	-60.0000000	CY
0.00003411	246087.	7215121912.	10.7009444	0.0003650	-0.0053650	1.2992593	-60.0000000	CY
0.00003554	246087.	6925066760.	10.4801751	0.0003724	-0.0055976	1.3209681	-60.0000000	CY
0.00003696	246087.	6657431330.	10.2767395	0.0003799	-0.0058301	1.3426238	-60.0000000	CY
0.00003839	246087.	6409712955.	10.0887029	0.0003873	-0.0060627	1.3642258	-60.0000000	CY
0.00003982	246087.	6179768095.	9.9144080	0.0003948	-0.0062952	1.3857740	-60.0000000	CY
0.00004125	246087.	5965750153.	9.7524272	0.0004023	-0.0065277	1.4072677	-60.0000000	CY
0.00004268	246087.	5766059771.	9.6015241	0.0004098	-0.0067602	1.4287066	-60.0000000	CY
0.00004411	246087.	5579304799.	9.4606225	0.0004173	-0.0069927	1.4500903	-60.0000000	CY
0.00004554	246087.	5404267785.	9.3287812	0.0004248	-0.0072252	1.4714184	-60.0000000	CY
0.00004696	246087.	5239879412.	9.1972139	0.0004319	-0.0074581	1.4914351	-60.0000000	CY
0.00004839	246087.	5085196625.	9.0545056	0.0004382	-0.0076918	1.5083103	-60.0000000	CY
0.00004982	246087.	4939384535.	8.9201219	0.0004444	-0.0079256	1.5251519	-60.0000000	CY
0.00005125	246087.	4801701342.	8.7933668	0.0004507	-0.0081593	1.5419597	-60.0000000	CY
0.00005268	246087.	4671485713.	8.6736198	0.0004569	-0.0083931	1.5587334	-60.0000000	CY
0.00005411	246087.	4548146156.	8.5603258	0.0004632	-0.0086268	1.5754729	-60.0000000	CY

0.00005554	246087.	4431152043.	8.4529869	0.0004694	-0.0088606	1.5921779	-60.0000000 CY
0.00005696	246087.	4320025973.	8.3511551	0.0004757	-0.0090943	1.6088482	-60.0000000 CY
0.00005839	246087.	4214337264.	8.2544262	0.0004820	-0.0093280	1.6254836	-60.0000000 CY
0.00005982	246087.	4113696374.	8.1624349	0.0004883	-0.0095617	1.6420838	-60.0000000 CY
0.00006125	246087.	4017750103.	8.0748495	0.0004946	-0.0097954	1.6586486	-60.0000000 CY
0.00006268	246087.	3926177451.	7.9913690	0.0005009	-0.0100291	1.6751778	-60.0000000 CY
0.00006411	246087.	3838686031.	7.9117189	0.0005072	-0.0102628	1.6916711	-60.0000000 CY
0.00006554	246087.	3755008952.	7.8356489	0.0005135	-0.0104965	1.7081284	-60.0000000 CY
0.00006696	246087.	3674902094.	7.7629299	0.0005198	-0.0107302	1.7245493	-60.0000000 CY
0.00006839	246087.	3598141737.	7.6933519	0.0005262	-0.0109638	1.7409337	-60.0000000 CY
0.00006982	246087.	3524522469.	7.6267222	0.0005325	-0.0111975	1.7572813	-60.0000000 CY
0.00007125	246087.	3453855351.	7.5628636	0.0005389	-0.0114311	1.7735919	-60.0000000 CY
0.00007268	246087.	3385966303.	7.4842315	0.0005439	-0.0116661	1.7858810	-60.0000000 CY
0.00007411	246087.	3320694663.	7.4078746	0.0005490	-0.0119010	1.7979597	-60.0000000 CY
0.00007554	246087.	3257891927.	7.3344665	0.0005540	-0.0121360	1.8100197	-60.0000000 CY
0.00007696	246087.	3197420615.	7.2638429	0.0005591	-0.0123709	1.8220610	-60.0000000 CY
0.00007839	246087.	3139153269.	7.1958518	0.0005641	-0.0126059	1.8340833	-60.0000000 CY
0.00008696	246087.	2829750072.	6.8359213	0.0005945	-0.0140155	1.9058138	-60.0000000 CY
0.00009554	246087.	2575865954.	6.5423076	0.0006250	-0.0154250	1.9768355	-60.0000000 CY
0.0001041	246087.	2363787796.	6.2986358	0.0006557	-0.0168343	2.0471237	-60.0000000 CY
0.0001127	246087.	2183975095.	6.0935140	0.0006866	-0.0182434	2.1166540	-60.0000000 CY
0.0001212	246087.	2029585103.	5.9187721	0.0007177	-0.0196523	2.1854015	-60.0000000 CY
0.0001298	246087.	1895582236.	5.7204039	0.0007426	-0.0210674	2.2358358	-60.0000000 CY
0.0001384	246087.	1778178433.	5.5328166	0.0007657	-0.0224843	2.2802557	-60.0000000 CY
0.0001470	246087.	1674469362.	5.3677616	0.0007889	-0.0239011	2.3243718	-60.0000000 CY
0.0001555	246087.	1582190913.	5.2215156	0.0008121	-0.0253179	2.3681747	-60.0000000 CY
0.0001641	246087.	1499551997.	5.0911334	0.0008355	-0.0267345	2.4116548	-60.0000000 CY
0.0001727	246087.	1425117151.	4.9742547	0.0008589	-0.0281511	2.4548025	-60.0000000 CY
0.0001812	246087.	1357722449.	4.8689658	0.0008825	-0.0295675	2.4976083	-60.0000000 CY
0.0001898	246087.	1296414191.	4.7736986	0.0009062	-0.0309838	2.5400623	-60.0000000 CY
0.0001984	246087.	1240403497.	4.6871563	0.0009299	-0.0324001	2.5821548	-60.0000000 CY
0.0002070	246087.	1189032170.	4.6082570	0.0009537	-0.0338163	2.6238761	-60.0000000 CY
0.0002155	246087.	1141746715.	4.5360910	0.0009777	-0.0352323	2.6652161	-60.0000000 CY
0.0002241	246087.	1098078315.	4.4698878	0.0010017	-0.0366483	2.7061649	-60.0000000 CY
0.0002327	246087.	1057627233.	4.4089905	0.0010259	-0.0380641	2.7467123	-60.0000000 CY
0.0002413	246087.	1020050544.	4.3528359	0.0010501	-0.0394799	2.7868484	-60.0000000 CY
0.0002498	246087.	985052384.	4.3009380	0.0010745	-0.0408955	2.8265627	-60.0000000 CY
0.0002584	246087.	952376147.	4.2528753	0.0010989	-0.0423111	2.8658450	-60.0000000 CY
0.0002670	246087.	921798184.	4.2082808	0.0011235	-0.0437265	2.9046847	-60.0000000 CY
0.0002755	246087.	893122674.	4.1408032	0.0011409	-0.0451491	2.9273775	-60.0000000 CY
0.0002841	246087.	866177426.	4.0714945	0.0011567	-0.0465733	2.9461853	-60.0000000 CY
0.0002927	246087.	840810424.	4.0063979	0.0011726	-0.0479974	2.9649230	-60.0000000 CY
0.0003013	246087.	816886950.	3.9451543	0.0011885	-0.0494215	2.9835884	-60.0000000 CY
0.0003098	246087.	794287196.	3.8874446	0.0012044	-0.0508456	3.0021792	-60.0000000 CY
0.0003184	246087.	772904254.	3.8329838	0.0012204	-0.0522696	3.0206932	-60.0000000 CY
0.0003270	246087.	752642428.	3.7815171	0.0012364	-0.0536936	3.0391280	-60.0000000 CY
0.0003355	246087.	733415798.	3.7328154	0.0012525	-0.0551175	3.0574813	-60.0000000 CY
0.0003441	246087.	715147008.	3.6866727	0.0012686	-0.0565414	3.0757508	-60.0000000 CY

Warning: 150 values were calculated for moment-curvature for axial thrust 2.

This usually indicates that the pile is too weak or is under-reinforced,
where all reinforcing steel has yielded.
The input data should be examined and the amount of steel reinforcement
should be increased if necessary.

Summary of Results for Nominal (Unfactored) 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 No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	-323.000	246090.464	0.00059539
2	358.000	246087.194	0.00125249

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 (0.70).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318, Section
9.3.2.2 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 for Moment	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	246090.	-209.950000	159959.	1.9836E+11
2	0.65	246087.	232.700000	159957.	1.9835E+11
1	0.70	246090.	-226.100000	172263.	1.9815E+11
2	0.70	246087.	250.600000	172261.	1.9814E+11
1	0.75	246090.	-242.250000	184568.	1.9793E+11
2	0.75	246087.	268.500000	184565.	1.9793E+11

Pile Section No. 2:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	43.000000 ft
Shaft Diameter	=	48.000000 in
Concrete Cover Thickness	=	3.000000 in
Number of Reinforcing Bars	=	12 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	1810. sq. in.
Total Area of Reinforcing Steel	=	9.480000 sq. in.
Area Ratio of Steel Reinforcement	=	0.52 percent
Edge-to-Edge Bar Spacing	=	9.611581 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	12.82
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	5158.997 kips
Tensile Load for Cracking of Concrete	=	-683.547 kips
Nominal Axial Tensile Capacity	=	-568.800 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.000000	0.790000	20.500000	0.00000
2	1.000000	0.790000	17.753521	10.250000
3	1.000000	0.790000	10.250000	17.753521
4	1.000000	0.790000	0.00000	20.500000
5	1.000000	0.790000	-10.250000	17.753521
6	1.000000	0.790000	-17.753521	10.250000
7	1.000000	0.790000	-20.500000	0.00000
8	1.000000	0.790000	-17.753521	-10.250000
9	1.000000	0.790000	-10.250000	-17.753521
10	1.000000	0.790000	0.00000	-20.500000
11	1.000000	0.790000	10.250000	-17.753521
12	1.000000	0.790000	17.753521	-10.250000

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

Minimum spacing between any two bars not equal to zero = 9.612 inches
between bars 7 and 8.

Ratio of bar spacing to maximum aggregate size = 12.82

Concrete Properties:

Compressive Strength of Concrete	=	3000. psi
Modulus of Elasticity of Concrete	=	3122019. psi
Modulus of Rupture of Concrete	=	-410.791918 psi
Compression Strain at Peak Stress	=	0.001634
Tensile Strain at Fracture of Concrete	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 2

Number	Axial Thrust Force kips
1	-323.000
2	358.000

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, Section 10.3.4.
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 = -323.000 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	612.5191744	980030679.	-52.1359409	-0.00003258	-0.00006258	-0.1190296	-1.8106139	
0.00000125	1225.	979987691.	-14.1086634	-0.00001764	-0.00007764	-0.0655160	-2.2427390	
0.00000188	1225.	653325128.	-602.6050616	-0.0011299	-0.0012199	0.00000	-35.3636002	C
0.00000250	2449.	979796949.	4.8646923	0.00001216	-0.0001078	0.0423155	-3.1099098	
0.00000313	2449.	783837559.	-351.9624505	-0.0010999	-0.0012499	0.00000	-36.2248471	C

0.00000375	2449.	653197966.	-289.3017977	-0.0010849	-0.0012649	0.00000	-36.6554705 C
0.00000438	2449.	559883971.	-244.5441885	-0.0010699	-0.0012799	0.00000	-37.0860939 C
0.00000500	2449.	489898474.	-210.9759817	-0.0010549	-0.0012949	0.00000	-37.5167173 C
0.00000563	2449.	435465311.	-184.8673763	-0.0010399	-0.0013099	0.00000	-37.9473407 C
0.00000625	2449.	391918780.	-163.9804921	-0.0010249	-0.0013249	0.00000	-38.3779642 C
0.00000688	2449.	356289800.	-146.8912231	-0.0010099	-0.0013399	0.00000	-38.8085877 C
0.00000750	2449.	326598983.	-132.6501657	-0.0009949	-0.0013549	0.00000	-39.2392110 C
0.00000813	2449.	301475984.	-120.6000401	-0.0009799	-0.0013699	0.00000	-39.6698344 C
0.00000875	2449.	279941985.	-110.2713611	-0.0009649	-0.0013849	0.00000	-40.1004579 C
0.00000938	2449.	261279186.	-101.3198393	-0.0009499	-0.0013999	0.00000	-40.5310814 C
0.00001000	2449.	244949237.	-93.4872577	-0.0009349	-0.0014149	0.00000	-40.9617047 C
0.00001063	2449.	230540459.	-86.5761563	-0.0009199	-0.0014299	0.00000	-41.3923281 C
0.00001125	2449.	217732655.	-80.4329550	-0.0009049	-0.0014449	0.00000	-41.8229515 C
0.00001188	2449.	206273042.	-74.9364065	-0.0008899	-0.0014599	0.00000	-42.2535750 C
0.00001250	2449.	195959390.	-69.9895129	-0.0008749	-0.0014749	0.00000	-42.6841984 C
0.00001313	2449.	186627990.	-65.5137520	-0.0008599	-0.0014899	0.00000	-43.1148218 C
0.00001375	2449.	178144900.	-61.4448784	-0.0008449	-0.0015049	0.00000	-43.5454452 C
0.00001438	2449.	170399469.	-57.7298199	-0.0008299	-0.0015199	0.00000	-43.9760685 C
0.00001500	2449.	163299491.	-54.3243497	-0.0008149	-0.0015349	0.00000	-44.4066921 C
0.00001563	2449.	156767512.	-51.1913170	-0.0007999	-0.0015499	0.00000	-44.8373155 C
0.00001625	2449.	150737992.	-48.2992869	-0.0007849	-0.0015649	0.00000	-45.2679393 C
0.00001688	2449.	145155104.	-45.6214812	-0.0007699	-0.0015799	0.00000	-45.6985621 C
0.00001750	2449.	139970993.	-43.1349474	-0.0007549	-0.0015949	0.00000	-46.1291860 C
0.00001813	2449.	135144407.	-40.8198986	-0.0007399	-0.0016099	0.00000	-46.5598092 C
0.00001875	2449.	130639593.	-38.6591865	-0.0007249	-0.0016249	0.00000	-46.9904325 C
0.00001938	2449.	126425413.	-36.6378751	-0.0007099	-0.0016399	0.00000	-47.4210560 C
0.00002000	2449.	122474619.	-34.7428957	-0.0006949	-0.0016549	0.00000	-47.8516795 C
0.00002063	2449.	118763267.	-32.9627635	-0.0006799	-0.0016699	0.00000	-48.2823029 C
0.00002125	2449.	115270229.	-31.2873450	-0.0006649	-0.0016849	0.00000	-48.7129263 C
0.00002188	2449.	111976794.	-29.7076647	-0.0006499	-0.0016999	0.00000	-49.1435497 C
0.00002250	2449.	108866328.	-28.2157443	-0.0006349	-0.0017149	0.00000	-49.5741732 C
0.00002313	2449.	105923994.	-26.8044684	-0.0006199	-0.0017299	0.00000	-50.0047965 C
0.00002375	2449.	103136521.	-25.4674701	-0.0006049	-0.0017449	0.00000	-50.4354200 C
0.00002438	2449.	100491995.	-24.1990358	-0.0005899	-0.0017599	0.00000	-50.8660434 C
0.00002563	2449.	95589946.	-21.8477918	-0.0005598	-0.0017898	0.00000	-51.7272902 C
0.00002688	2449.	91143902.	-19.7152682	-0.0005298	-0.0018198	0.00000	-52.5885372 C
0.00002813	2449.	87093062.	-17.7723022	-0.0004998	-0.0018498	0.00000	-53.4497840 C
0.00002938	2449.	83386974.	-15.9946950	-0.0004698	-0.0018798	0.00000	-54.3110307 C
0.00003063	2449.	79983424.	-14.3621987	-0.0004398	-0.0019098	0.00000	-55.1722776 C
0.00003188	2449.	76846820.	-12.8577412	-0.0004098	-0.0019398	0.00000	-56.0335244 C
0.00003313	2449.	73946940.	-11.4668277	-0.0003798	-0.0019698	0.00000	-56.8947713 C
0.00003438	2449.	71257960.	-10.1770716	-0.0003498	-0.0019998	0.00000	-57.7560181 C
0.00003563	2449.	68757681.	-8.9778246	-0.0003198	-0.0020298	0.00000	-58.6172650 C
0.00003688	2449.	66426912.	-7.8598826	-0.0002898	-0.0020598	0.00000	-59.4785118 CY
0.00003813	2449.	64248980.	-6.8152482	-0.0002598	-0.0020898	0.00000	-60.0000000 CY
0.00003938	2449.	62209330.	-5.8369398	-0.0002298	-0.0021198	0.00000	-60.0000000 CY
0.00004063	2449.	60295197.	-4.9188350	-0.0001998	-0.0021498	0.00000	-60.0000000 CY
0.00004188	2449.	58495340.	-4.0555424	-0.0001698	-0.0021798	0.00000	-60.0000000 CY
0.00004313	2492.	57779353.	-3.2463858	-0.0001400	-0.0022100	0.00000	-60.0000000 CY
0.00004438	2556.	57607226.	-2.5092009	-0.0001113	-0.0022413	0.00000	-60.0000000 CY
0.00004563	2616.	57334059.	-1.8321778	-0.00008359	-0.0022736	0.00000	-60.0000000 CY
0.00004688	2675.	57065969.	-1.1929917	-0.00005592	-0.0023059	0.00000	-60.0000000 CY
0.00004813	2734.	56811555.	-0.5870589	-0.00002825	-0.0023383	0.00000	-60.0000000 CY
0.00004938	2790.	56515155.	-0.0227605	-0.00000112	-0.0023711	0.00000	-60.0000000 CY
0.00005063	2835.	55990336.	0.4454440	0.00002255	-0.0024074	0.0380794	-60.0000000 CY
0.00005188	2873.	55378098.	0.8314166	0.00004313	-0.0024469	0.1116274	-60.0000000 CY
0.00005313	2915.	54869923.	1.1767989	0.00006252	-0.0024875	0.1800095	-60.0000000 CY
0.00005438	2963.	54487264.	1.4762173	0.00008027	-0.0025297	0.2418144	-60.0000000 CY
0.00005563	3012.	54154897.	1.7521044	0.00009746	-0.0025725	0.3009824	-60.0000000 CY
0.00005688	3066.	53902266.	1.9959243	0.0001135	-0.0026165	0.3555996	-60.0000000 CY
0.00005813	3120.	53681600.	2.2224536	0.0001292	-0.0026608	0.4083085	-60.0000000 CY
0.00005938	3178.	53520801.	2.4232447	0.0001439	-0.0027061	0.4572354	-60.0000000 CY
0.00006063	3235.	53364433.	2.6164025	0.0001586	-0.0027514	0.5058273	-60.0000000 CY
0.00006188	3296.	53263567.	2.7851614	0.0001723	-0.0027977	0.5505438	-60.0000000 CY
0.00006313	3356.	53171933.	2.9454051	0.0001859	-0.0028441	0.5944755	-60.0000000 CY
0.00006438	3417.	53081948.	3.0999937	0.0001996	-0.0028904	0.6381289	-60.0000000 CY
0.00006563	3480.	53024797.	3.2355224	0.0002123	-0.0029377	0.6785908	-60.0000000 CY
0.00006688	3537.	52891200.	3.3560712	0.0002244	-0.0029856	0.7165791	-60.0000000 CY
0.00006813	3573.	52454302.	3.4406104	0.0002344	-0.0030356	0.7474108	-60.0000000 CY
0.00006938	3599.	51878816.	3.5060148	0.0002432	-0.0030868	0.7745034	-60.0000000 CY
0.00007063	3625.	51323306.	3.5693129	0.0002521	-0.0031379	0.8014785	-60.0000000 CY
0.00007188	3651.	50790819.	3.6272684	0.0002607	-0.0031893	0.8275836	-60.0000000 CY
0.00007313	3677.	50280167.	3.6801752	0.0002691	-0.0032409	0.8528359	-60.0000000 CY
0.00007438	3703.	49786354.	3.7314725	0.0002775	-0.0032925	0.8779793	-60.0000000 CY
0.00007938	3807.	47963566.	3.9221069	0.0003113	-0.0034987	0.9774556	-60.0000000 CY
0.00008438	3911.	46353547.	4.0912346	0.0003452	-0.0037048	1.0748139	-60.0000000 CY
0.00008938	4016.	44935642.	4.2282193	0.0003779	-0.0039121	1.1663796	-60.0000000 CY
0.00009438	4121.	43664191.	4.3526103	0.0004108	-0.0041192	1.2562222	-60.0000000 CY
0.00009938	4225.	42517000.	4.4663555	0.0004438	-0.0043262	1.3443157	-60.0000000 CY
0.0001044	4329.	41475559.	4.5696687	0.0004770	-0.0045330	1.4302551	-60.0000000 CY
0.0001094	4392.	40151082.	4.6090924	0.0005041	-0.0047459	1.4984706	-60.0000000 CY
0.0001144	4418.	38626642.	4.6066661	0.0005269	-0.0049631	1.5539919	-60.0000000 CY
0.0001194	4444.	37228384.	4.6048017	0.0005497	-0.0051803	1.6085745	-60.0000000 CY
0.0001244	4470.	35941962.	4.6035500	0.0005726	-0.0053974	1.6622482	-60.0000000 CY
0.0001294	4496.	34754403.	4.6028459	0.0005955	-0.0056145	1.7150064	-60.0000000 CY
0.0001344	4522.	33654665.	4.6026341	0.0006185	-0.0058315	1.7668424	-60.0000000 CY
0.0001394	4548.	32633290.	4.6028672	0.0006415	-0.0060485	1.8177494	-60.0000000 CY
0.0001444	4574.	31682130.	4.6035049	0.0006646	-0.0062654	1.8677204	-60.0000000 CY
0.0001494	4600.	30794128.	4.6045120	0.0006878	-0.0064822	1.9167483	-60.0000000 CY
0.0001544	4626.	29963142.	4.6058582	0.0007110	-0.0066990	1.9648257	-60.0000000 CY
0.0001594	4651.	29183799.	4.6075173	0.0007343	-0.0069157	2.0119454	-60.0000000 CY
0.0001644	4677.	28451380.	4.6094661	0.0007577	-0.0071323	2.0580997	-60.0000000 CY
0.0001694	4702.	27761725.	4.6116845	0.0007811	-0.0073489	2.1032810	-60.0000000 CY
0.0001744	4728.	27111148.	4.6141549	0.0008046	-0.0075654	2.1474812	-60.0000000 CY
0.0001794	4753.	26496376.	4.6168615	0.0008281	-0.0077819	2.1906924	-60.0000000 CY
0.0001844	4778.	25914490.	4.6197907	0.0008518	-0.0079982	2.2329063	-60.0000000 CY
0.0001894	4803.	25362879.	4.6229304	0.0008755	-0.0082145	2.2741145	-60.0000000 CY
0.0001944	4828.	24839202.	4.6262697	0.0008992	-0.0084308	2.3143084	-60.0000000 CY
0.0001994	4853.	24341351.	4.6297992	0.0009231	-0.0086469	2.3534791	-60.0000000 CY
0.0002044	4878.	23867424.	4.6335104	0.0009470	-0.0088630	2.3916177	-60.0000000 CY
0.0002094	4903.	23415702.	4.6373959	0.0009710	-0.0090790	2.4287148	-60.0000000 CY

0.0002144	4927.	22984626.	4.6414489	0.0009950	-0.0092950	2.4647611	-60.0000000 CY
0.0002194	4950.	22562095.	4.6426075	0.0010185	-0.0095115	2.4987411	-60.0000000 CY
0.0002244	4968.	22141777.	4.6393587	0.0010410	-0.0097290	2.5301869	-60.0000000 CY
0.0002294	4985.	21733344.	4.6346532	0.0010631	-0.0099469	2.5600990	-60.0000000 CY
0.0002344	4991.	21296893.	4.6165867	0.0010820	-0.0101680	2.5846947	-60.0000000 CY
0.0002394	4998.	20878545.	4.5994389	0.0011010	-0.0103890	2.6086349	-60.0000000 CY
0.0002444	5002.	20468494.	4.5803421	0.0011193	-0.0106107	2.6310306	-60.0000000 CY
0.0002494	5006.	20072418.	4.5613916	0.0011375	-0.0108325	2.6525734	-60.0000000 CY
0.0002544	5009.	19690912.	4.5402787	0.0011549	-0.0110551	2.6725712	-60.0000000 CY
0.0002594	5012.	19323968.	4.5198714	0.0011723	-0.0112777	2.6919436	-60.0000000 CY
0.0002644	5015.	18970817.	4.5003697	0.0011898	-0.0115002	2.7107655	-60.0000000 CY
0.0002694	5019.	18630696.	4.4817244	0.0012073	-0.0117227	2.7290334	-60.0000000 CY
0.0002744	5022.	18302891.	4.4638899	0.0012248	-0.0119452	2.7467439	-60.0000000 CY
0.0003044	5041.	16560665.	4.3717360	0.0013306	-0.0132794	2.8410947	-60.0000000 CY
0.0003344	5059.	15128525.	4.3002709	0.0014379	-0.0146121	2.9144200	-60.0000000 CY
0.0003644	5076.	13929732.	4.2446318	0.0015466	-0.0159434	2.9658179	-60.0000000 CY
0.0003944	5092.	12910884.	4.2014686	0.0016570	-0.0172730	2.9942921	-60.0000000 CY
0.0004244	5107.	12033514.	4.1685876	0.0017690	-0.0186010	2.9930134	-60.0000000 CY
0.0004544	5121.	11269670.	4.1439769	0.0018829	-0.0199271	2.9931972	-60.0000000 CY
0.0004844	5134.	10598476.	4.1259721	0.0019985	-0.0212515	2.9966331	-60.0000000 CY
0.0005144	5146.	10003584.	4.1136973	0.0021160	-0.0225740	2.9795640	-60.0000000 CY
0.0005444	5157.	9473039.	4.1053680	0.0022349	-0.0238951	2.9969661	60.0000000 CY
0.0005744	5167.	8996478.	4.1008943	0.0023555	-0.0252145	2.9932196	60.0000000 CY
0.0006044	5177.	8566035.	4.0994824	0.0024776	-0.0265324	2.9753203	60.0000000 CY
0.0006344	5186.	8175569.	4.1000878	0.0026010	-0.0278490	2.9891334	60.0000000 CY
0.0006644	5195.	7819613.	4.1025724	0.0027256	-0.0291644	2.9993491	60.0000000 CY
0.0006944	5203.	7493405.	4.1073418	0.0028520	-0.0304780	2.9892140	60.0000000 CY
0.0007244	5211.	7193639.	4.1133519	0.0029796	-0.0317904	2.9731840	60.0000000 CY
0.0007544	5218.	6917199.	4.1199972	0.0031080	-0.0331020	2.9729956	60.0000000 CYT
0.0007844	5225.	6661475.	4.1274701	0.0032375	-0.0344125	2.9908281	60.0000000 CYT
0.0008144	5232.	6424159.	4.1357940	0.0033681	-0.0357219	2.9993240	60.0000000 CYT
0.0008444	5238.	6203086.	4.1454505	0.0035003	-0.0370297	2.9910878	60.0000000 CYT
0.0008744	5243.	5996827.	4.1556936	0.0036336	-0.0383364	2.9768552	60.0000000 CYT
0.0009044	5248.	5802633.	4.1617346	0.0037638	-0.0396462	2.9632844	60.0000000 CYT
0.0009344	5250.	5618677.	4.1615035	0.0038884	-0.0409616	2.9508556	60.0000000 CYT

Axial Thrust Force = 358.000 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	610.5804944	976928791.	108.5150836	0.00006782	0.00003782	0.2434081	1.9624859	
0.00000125	1221.	976913972.	66.2984170	0.00008287	0.00002287	0.2956224	2.3946176	
0.00000188	1832.	976869420.	52.2443517	0.00009796	0.00000796	0.3474549	2.8277366	
0.00000250	2442.	976793014.	45.2308760	0.0001131	-0.00000692	0.3989019	3.2618385	
0.00000313	3051.	976439070.	41.0318602	0.0001282	-0.00002178	0.4499410	3.6967623	
0.00000375	3658.	975591965.	38.2373424	0.0001434	-0.00003661	0.5005351	4.1322110	
0.00000438	4263.	974305801.	36.2439322	0.0001586	-0.00005143	0.5506611	4.5679989	
0.00000500	4863.	972680325.	34.7504975	0.0001738	-0.00006625	0.6003059	5.0040222	
0.00000563	5461.	970799620.	33.5900096	0.0001889	-0.00008106	0.6494621	5.4402203	
0.00000625	6055.	968726330.	32.6623836	0.0002041	-0.00009586	0.6981250	5.8765571	
0.00000688	6645.	966505511.	31.9039920	0.0002193	-0.0001107	0.7462915	6.3130084	
0.00000750	6645.	885963385.	28.0555978	0.0002104	-0.0001496	0.7173152	6.0498925	C
0.00000813	6645.	817812355.	27.1715540	0.0002208	-0.0001692	0.7498840	6.3457474	C
0.00000875	6645.	759397187.	26.3858850	0.0002309	-0.0001891	0.7814473	6.6345183	C
0.00000938	6645.	708770708.	25.6843411	0.0002408	-0.0002092	0.8121811	6.9176802	C
0.00001000	6645.	664472539.	25.0491848	0.0002505	-0.0002295	0.8420368	7.1946634	C
0.00001063	6645.	625385919.	24.4734740	0.0002600	-0.0002500	0.8711852	7.4669392	C
0.00001125	6645.	590642256.	23.9484852	0.0002694	-0.0002706	0.8996775	-7.7685067	C
0.00001188	6645.	559555822.	23.4673383	0.0002787	-0.0002913	0.9275638	-8.3657854	C
0.00001250	6645.	531578031.	23.0241902	0.0002878	-0.0003122	0.9548803	-8.9667311	C
0.00001313	6645.	506264791.	22.6145049	0.0002968	-0.0003332	0.9816699	-9.5710041	C
0.00001375	6645.	483252755.	22.2348176	0.0003057	-0.0003543	1.0079848	-10.1781664	C
0.00001438	6645.	462241766.	21.8812033	0.0003145	-0.0003755	1.0338301	-10.7882233	C
0.00001500	6645.	442981692.	21.5494645	0.0003232	-0.0003968	1.0591703	-11.4015830	C
0.00001563	6645.	425262425.	21.2402420	0.0003319	-0.0004181	1.0841617	-12.0167653	C
0.00001625	6645.	408906178.	20.9501094	0.0003404	-0.0004396	1.1087685	-12.6341609	C
0.00001688	6690.	396464031.	20.6758822	0.0003489	-0.0004611	1.1329431	-13.2542902	C
0.00001750	6793.	388143154.	20.4196898	0.0003573	-0.0004827	1.1568841	-13.8752074	C
0.00001813	6892.	380259800.	20.1747118	0.0003657	-0.0005043	1.1803359	-14.4995172	C
0.00001875	6992.	372885112.	19.9458777	0.0003740	-0.0005260	1.2036276	-15.1239289	C
0.00001938	7089.	365873651.	19.7260972	0.0003822	-0.0005478	1.2264568	-15.7515492	C
0.00002000	7186.	359281257.	19.5196205	0.0003904	-0.0005696	1.2491157	-16.3794201	C
0.00002063	7281.	353021410.	19.3221925	0.0003985	-0.0005915	1.2714298	-17.0093636	C
0.00002125	7376.	347084351.	19.1342004	0.0004066	-0.0006134	1.2934725	-17.6406489	C
0.00002188	7470.	341480420.	18.9571683	0.0004147	-0.0006353	1.3153869	-18.2717963	C
0.00002250	7562.	336098740.	18.7846110	0.0004227	-0.0006573	1.3368299	-18.9064412	C
0.00002313	7654.	331003695.	18.6216665	0.0004306	-0.0006794	1.3581534	-19.5408948	C
0.00002375	7746.	326166586.	18.4671345	0.0004386	-0.0007014	1.3793289	-20.1754610	C
0.00002438	7837.	321508191.	18.3160189	0.0004465	-0.0007235	1.4000722	-20.8132141	C
0.00002563	8017.	312862019.	18.0366521	0.0004622	-0.0007678	1.4412089	-22.0881628	C
0.00002688	8194.	304907101.	17.7762719	0.0004777	-0.0008123	1.4813181	-23.3685683	C
0.00002813	8371.	297631038.	17.5386968	0.0004933	-0.0008567	1.5208799	-24.6492504	C
0.00002938	8545.	290876862.	17.3146389	0.0005086	-0.0009014	1.5594186	-25.9356423	C
0.00003063	8718.	284655253.	17.1090141	0.0005240	-0.0009460	1.5974595	-27.2219068	C
0.00003188	8889.	278862742.	16.9155479	0.0005392	-0.0009908	1.6346780	-28.5118405	C
0.00003313	9059.	273471732.	16.7348885	0.0005543	-0.0010357	1.6712507	-29.8034976	C
0.00003438	9228.	268462917.	16.5680668	0.0005695	-0.0010805	1.7073848	-31.0944584	C
0.00003563	9396.	263742140.	16.4076041	0.0005845	-0.0011255	1.7425678	-32.3909442	C
0.00003688	9563.	259329816.	16.2583529	0.0005995	-0.0011705	1.7772941	-33.6870737	C
0.00003813	9729.	255198196.	16.1195122	0.0006146	-0.0012154	1.8115892	-34.9825142	C
0.00003938	9895.	251290281.	15.9862419	0.0006295	-0.0012605	1.8451052	-36.2816601	C
0.00004063	10059.	247602593.	15.8601686	0.0006443	-0.0013057	1.8780502	-37.5819887	C
0.00004188	10223.	244127461.	15.7421870	0.0006592	-0.0013508	1.9105709	-38.8816316	C
0.00004313	10386.	240846345.	15.6315967	0.0006741	-0.0013959	1.9426651	-40.1805843	C
0.00004438	10549.	237720968.	15.5245422	0.0006889	-0.0014411	1.9740227	-41.4830048	C
0.00004563	10711.	234751029.	15.4225404	0.0007037	-0.0014863	2.0048298	-42.7865011	C
0.00004688	10872.	231932849.	15.3264874	0.0007184	-0.0015316	2.0352170	-44.0893061	C
0.00004813	11033.	229254555.	15.2359228	0.0007332	-0.0015768	2.0651822	-45.3914151	C

0.00004938	11194.	226705473.	15.1504332	0.0007481	-0.0016219	2.0947234	-46.6928233 C
0.00005063	11353.	224262574.	15.0672787	0.0007628	-0.0016672	2.1236008	-47.9970015 C
0.00005188	11512.	221923792.	14.9872422	0.0007775	-0.0017125	2.1519200	-49.3025174 C
0.00005313	11671.	219689290.	14.9114317	0.0007922	-0.0017578	2.1798210	-50.6073253 C
0.00005438	11829.	217551836.	14.8395592	0.0008069	-0.0018031	2.2073017	-51.9114199 C
0.00005563	11987.	215504843.	14.7713623	0.0008217	-0.0018483	2.2343602	-53.2147960 C
0.00005688	12145.	213542302.	14.7066020	0.0008364	-0.0018936	2.2609944	-54.5174482 C
0.00005813	12303.	211658723.	14.6450597	0.0008512	-0.0019388	2.2872020	-55.8193711 C
0.00005938	12459.	209836970.	14.5838743	0.0008659	-0.0019841	2.3127033	-57.1251415 C
0.00006063	12615.	208084185.	14.5253921	0.0008806	-0.0020294	2.3377589	-58.4305949 C
0.00006188	12771.	206397223.	14.4696882	0.0008953	-0.0020747	2.3623929	-59.7353031 C
0.00006313	12926.	204772137.	14.4166009	0.0009100	-0.0021200	2.3866029	-60.0000000 CY
0.00006438	13081.	203205284.	14.3659810	0.0009248	-0.0021652	2.4103870	-60.0000000 CY
0.00006563	13236.	201693297.	14.3176910	0.0009396	-0.0022104	2.4337428	-60.0000000 CY
0.00006688	13391.	200233060.	14.2716034	0.0009544	-0.0022556	2.4566681	-60.0000000 CY
0.00006813	13540.	198751704.	14.2262206	0.0009692	-0.0023008	2.4790169	-60.0000000 CY
0.00006938	13672.	197070091.	14.1778795	0.0009836	-0.0023464	2.5004188	-60.0000000 CY
0.00007063	13794.	195317905.	14.1275645	0.0009978	-0.0023922	2.5209899	-60.0000000 CY
0.00007188	13916.	193613321.	14.0783040	0.0010119	-0.0024381	2.5410568	-60.0000000 CY
0.00007313	14037.	191962680.	14.0310466	0.0010260	-0.0024840	2.5607270	-60.0000000 CY
0.00007438	14148.	190224812.	13.9825143	0.0010399	-0.0025301	2.5796737	-60.0000000 CY
0.00007938	14427.	181757720.	13.7590503	0.0010921	-0.0027179	2.6468346	-60.0000000 CY
0.00008438	14685.	174048424.	13.5548822	0.0011437	-0.0029063	2.7074577	-60.0000000 CY
0.00008938	14939.	167154126.	13.3732586	0.0011952	-0.0030948	2.7623489	-60.0000000 CY
0.00009438	15191.	160961174.	13.2144441	0.0012471	-0.0032829	2.8118514	-60.0000000 CY
0.00009938	15394.	154909934.	13.0520392	0.0012970	-0.0034730	2.8540077	-60.0000000 CY
0.0001044	15502.	148520657.	12.8752613	0.0013439	-0.0036661	2.8886239	-60.0000000 CY
0.0001094	15607.	142689681.	12.7167347	0.0013909	-0.0038591	2.9187012	-60.0000000 CY
0.0001144	15706.	137316879.	12.5644864	0.0014371	-0.0040529	2.9436186	-60.0000000 CY
0.0001194	15803.	132380287.	12.4274451	0.0014835	-0.0042465	2.9641066	-60.0000000 CY
0.0001244	15898.	127826863.	12.3038329	0.0015303	-0.0044397	2.9800780	-60.0000000 CY
0.0001294	15991.	123601067.	12.1883460	0.0015769	-0.0046331	2.9913451	-60.0000000 CY
0.0001344	16080.	119664098.	12.0791223	0.0016231	-0.0048269	2.9979525	-60.0000000 CY
0.0001394	16167.	115997259.	11.9800305	0.0016697	-0.0050203	2.9994375	-60.0000000 CY
0.0001444	16252.	112570969.	11.8902180	0.0017167	-0.0052133	2.9995109	-60.0000000 CY
0.0001494	16336.	109361374.	11.8087448	0.0017639	-0.0054061	2.9973143	-60.0000000 CY
0.0001544	16417.	106343734.	11.7324527	0.0018112	-0.0055988	2.9999349	-60.0000000 CY
0.0001594	16495.	103495728.	11.6591681	0.0018582	-0.0057918	2.9979089	-60.0000000 CY
0.0001644	16567.	100789933.	11.5902764	0.0019052	-0.0059848	2.9999767	-60.0000000 CY
0.0001694	16615.	98095349.	11.5155075	0.0019504	-0.0061796	2.9973041	-60.0000000 CY
0.0001744	16638.	95416677.	11.4343965	0.0019939	-0.0063761	2.9997000	-60.0000000 CY
0.0001794	16661.	92881292.	11.3591378	0.0020375	-0.0065725	2.9965651	-60.0000000 CY
0.0001844	16682.	90479175.	11.2892588	0.0020815	-0.0067685	2.9983031	-60.0000000 CY
0.0001894	16701.	88190050.	11.2178868	0.0021244	-0.0069656	2.9999065	60.0000000 CY
0.0001944	16719.	86013249.	11.1505241	0.0021674	-0.0071626	2.9957056	60.0000000 CY
0.0001994	16736.	83943116.	11.0875243	0.0022106	-0.0073594	2.9977201	60.0000000 CY
0.0002044	16753.	81972381.	11.0284239	0.0022539	-0.0075561	2.9996645	60.0000000 CY
0.0002094	16770.	80093247.	10.9731350	0.0022975	-0.0077525	2.9977792	60.0000000 CY
0.0002144	16785.	78299214.	10.9214187	0.0023413	-0.0079487	2.9953910	60.0000000 CY
0.0002194	16801.	76585536.	10.8727270	0.0023852	-0.0081448	2.9983677	60.0000000 CY
0.0002244	16816.	74946807.	10.8268696	0.0024293	-0.0083407	2.9998373	60.0000000 CY
0.0002294	16830.	73374875.	10.7817888	0.0024731	-0.0085369	2.9971410	60.0000000 CY
0.0002344	16843.	71864507.	10.7360438	0.0025163	-0.0087337	2.9939187	60.0000000 CY
0.0002394	16856.	70416370.	10.6927186	0.0025596	-0.0089304	2.9971172	60.0000000 CY
0.0002444	16868.	69026629.	10.6516736	0.0026030	-0.0091270	2.9991433	60.0000000 CY
0.0002494	16881.	67691751.	10.6127806	0.0026466	-0.0093234	2.9999778	60.0000000 CY
0.0002544	16892.	66407654.	10.5762600	0.0026903	-0.0095197	2.9960685	60.0000000 CY
0.0002594	16904.	65172243.	10.5416316	0.0027342	-0.0097158	2.9924273	60.0000000 CY
0.0002644	16915.	63982959.	10.5087069	0.0027782	-0.0099118	2.9958347	60.0000000 CY
0.0002694	16927.	62837218.	10.4773974	0.0028223	-0.0101077	2.9982406	60.0000000 CY
0.0002744	16938.	61732629.	10.4476213	0.0028666	-0.0103034	2.9996300	60.0000000 CY
0.0003044	16995.	55834812.	10.3012265	0.0031354	-0.0114746	2.9988363	60.0000000 CYT
0.0003344	17031.	50933403.	10.1925299	0.0034081	-0.0126419	2.9943038	60.0000000 CYT
0.0003644	17059.	46816557.	10.1174460	0.0036865	-0.0138035	2.9913517	60.0000000 CYT
0.0003944	17059.	43255234.	10.1203890	0.0039912	-0.0149388	2.9999172	60.0000000 CYT

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 2

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
1	-323.000	5212.047	0.00300000
2	358.000	16966.094	0.00300000

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 (0.70).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318, Section
9.3.2.2 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 for Moment	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	5212.	-209.950000	3388.	53125433.
2	0.65	16966.	232.700000	11028.	229336298.

					Untitled
1	0.70	5212.	-226.100000	3648.	50835204.
2	0.70	16966.	250.600000	11876.	216944707.
1	0.75	5212.	-242.250000	3909.	46385221.
2	0.75	16966.	268.500000	12725.	206898333.

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	0.2500	0.00	N.A.	No	0.00	105592.
2	5.2500	5.0000	Yes	No	105592.	1187630.
3	20.2500	20.0000	Yes	No	1293222.	1860554.
4	30.2500	30.0000	Yes	No	3153776.	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 = 46000.0 lbs
Applied moment at pile head = 0.0 in-lbs
Axial thrust load on pile head = -323000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.4768	-0.8706	46000.	-0.00366	0.00	2.00E+14	0.00	0.00	0.00
0.5100	0.4544	274288.	45891.	-0.00366	0.00	2.00E+14	-35.4435	477.3600	0.00
1.0200	0.4320	547250.	45478.	-0.00366	0.00	2.00E+14	-99.7964	1414.	0.00
1.5300	0.4096	816474.	44691.	-0.00366	0.00	2.00E+14	-157.2995	2350.	0.00
2.0400	0.3872	1079807.	43573.	-0.00366	0.00	2.00E+14	-207.9528	3286.	0.00
2.5500	0.3649	1335351.	42167.	-0.00366	0.00	2.00E+14	-251.7564	4223.	0.00
3.0600	0.3425	1581466.	40513.	-0.00366	0.00	2.00E+14	-288.7105	5159.	0.00
3.5700	0.3201	1816767.	38654.	-0.00366	0.00	2.00E+14	-318.8153	6096.	0.00
4.0800	0.2977	2040128.	36631.	-0.00366	0.00	2.00E+14	-342.0708	7032.	0.00
4.5900	0.2753	2250676.	34488.	-0.00366	0.00	2.00E+14	-358.4774	7968.	0.00
5.1000	0.2529	2447799.	32265.	-0.00366	0.00	2.00E+14	-368.0353	8905.	0.00
5.6100	0.2306	2631136.	28416.	-0.00366	0.00	2.00E+14	-889.7872	23618.	0.00
6.1200	0.2082	2781148.	23001.	-0.00366	0.00	2.00E+14	-879.8540	25866.	0.00
6.6300	0.1858	2898205.	17697.	-0.00366	0.00	2.00E+14	-853.4858	28113.	0.00
7.1400	0.1634	2983295.	12604.	-0.00366	0.00	2.00E+14	-810.6832	30360.	0.00
7.6500	0.1410	3038023.	7824.	-0.00366	0.00	2.00E+14	-751.4469	32607.	0.00
8.1600	0.1187	3064605.	3457.	-0.00348	0.00	5.40E+10	-675.7776	34855.	0.00
8.6700	0.09840	3066563.	-436.5369	-0.00314	0.00	5.39E+10	-596.5536	37102.	0.00
9.1800	0.08028	3046865.	-3841.	-0.00279	0.00	5.40E+10	-516.1463	39349.	0.00
9.6900	0.06426	3008517.	-6757.	-0.00245	0.00	5.42E+10	-436.7873	41596.	0.00
10.2000	0.05033	2954482.	-9197.	-0.00211	0.00	5.46E+10	-360.5611	43844.	0.00
10.7100	0.03842	2887596.	-11186.	-0.00179	0.00	5.53E+10	-289.3691	46091.	0.00
11.2200	0.02847	2810504.	-12760.	-0.00147	0.00	5.63E+10	-224.8853	48338.	0.00
11.7300	0.02039	2725593.	-13964.	-0.00117	0.00	5.69E+10	-168.5352	50585.	0.00
12.2400	0.01410	2634949.	-14852.	-8.87E-04	0.00	5.75E+10	-121.7461	52833.	0.00
12.7500	0.00953	2540300.	-15487.	-6.39E-04	0.00	7.20E+10	-85.7966	55080.	0.00
13.2600	0.00628	2442865.	-15930.	-4.55E-04	0.00	9.88E+10	-58.8659	57327.	0.00
13.7700	0.00396	2343523.	-16228.	-3.28E-04	0.00	1.40E+11	-38.5644	59575.	0.00
14.2800	0.00227	2242940.	-16416.	-2.44E-04	0.00	2.05E+11	-22.8872	61822.	0.00
14.7900	9.80E-04	2141632.	-16517.	-1.89E-04	0.00	3.09E+11	-10.2552	64069.	0.00
15.3000	-4.71E-05	2040023.	-16547.	-1.55E-04	0.00	4.81E+11	0.5103	66316.	0.00
15.8100	-9.15E-04	1938485.	-16514.	-1.34E-04	0.00	7.69E+11	10.2485	68564.	0.00
16.3200	-0.00169	1837361.	-16423.	-1.18E-04	0.00	6.92E+11	19.5318	70811.	0.00
16.8300	-0.00236	1737001.	-16277.	-1.04E-04	0.00	9.33E+11	28.1954	73058.	0.00
17.3400	-0.00297	1637720.	-16079.	-9.13E-05	0.00	6.77E+11	36.4961	75305.	0.00
17.8500	-0.00348	1539834.	-15832.	-7.73E-05	0.00	7.11E+11	44.0930	77553.	0.00
18.3600	-0.00391	1443627.	-15541.	-6.42E-05	0.00	6.87E+11	51.0092	79800.	0.00
18.8700	-0.00427	1349355.	-15210.	-5.15E-05	0.00	6.56E+11	57.1871	82047.	0.00
19.3800	-0.00454	1257250.	-14844.	-4.01E-05	0.00	7.47E+11	62.5644	84294.	0.00
19.8900	-0.00476	1167509.	-14447.	-3.13E-05	0.00	9.80E+11	67.2533	86542.	0.00
20.4000	-0.00492	1080301.	-14022.	-2.42E-05	0.00	9.80E+11	71.4518	88789.	0.00
20.9100	-0.00505	995783.	-13573.	-1.78E-05	0.00	9.80E+11	75.1603	91036.	0.00
21.4200	-0.00514	914092.	-13104.	-1.18E-05	0.00	9.80E+11	78.3824	93283.	0.00
21.9300	-0.00520	835348.	-12616.	-6.34E-06	0.00	9.80E+11	81.1251	95531.	0.00
22.4400	-0.00522	759653.	-12112.	-1.36E-06	0.00	9.80E+11	83.3979	97778.	0.00
22.9500	-0.00521	687091.	-11596.	3.16E-06	0.00	9.80E+11	85.2130	100025.	0.00
23.4600	-0.00518	617729.	-11070.	7.24E-06	0.00	9.80E+11	86.5847	102273.	0.00
23.9700	-0.00513	551617.	-10538.	1.09E-05	0.00	9.80E+11	87.5293	104520.	0.00
24.4800	-0.00505	488791.	-10000.	1.41E-05	0.00	9.80E+11	88.0649	106767.	0.00
24.9900	-0.00495	429269.	-9461.	1.70E-05	0.00	9.80E+11	88.2112	109014.	0.00
25.5000	-0.00484	373056.	-8922.	1.95E-05	0.00	9.80E+11	87.9887	111262.	0.00
26.0100	-0.00471	320144.	-8385.	2.17E-05	0.00	9.80E+11	87.4194	113509.	0.00
26.5200	-0.00457	270510.	-7853.	2.35E-05	0.00	9.80E+11	86.5258	115756.	0.00
27.0300	-0.00443	224120.	-7327.	2.51E-05	0.00	9.80E+11	85.3309	118003.	0.00

27.5400	-0.00427	180928.	-6809.	2.63E-05	0.00	9.80E+11	83.8583	120251.	0.00
28.0500	-0.00410	140880.	-6301.	2.73E-05	0.00	9.80E+11	82.1314	122498.	0.00
28.5600	-0.00393	103910.	-5805.	2.81E-05	0.00	9.80E+11	80.1740	124745.	0.00
29.0700	-0.00376	69943.	-5321.	2.86E-05	0.00	9.80E+11	78.0093	126992.	0.00
29.5800	-0.00358	38900.	-4850.	2.90E-05	0.00	9.80E+11	75.6605	129240.	0.00
30.0900	-0.00340	10691.	-4395.	2.91E-05	0.00	9.80E+11	73.1500	131487.	0.00
30.6000	-0.00323	-14779.	-3955.	2.91E-05	0.00	9.80E+11	70.4998	133734.	0.00
31.1100	-0.00305	-37608.	-3532.	2.90E-05	0.00	9.80E+11	67.7311	135982.	0.00
31.6200	-0.00287	-57900.	-3127.	2.87E-05	0.00	9.80E+11	64.8642	138229.	0.00
32.1300	-0.00270	-75764.	-2739.	2.82E-05	0.00	9.80E+11	61.9184	140476.	0.00
32.6400	-0.00253	-91310.	-2369.	2.77E-05	0.00	9.80E+11	58.9122	142723.	0.00
33.1500	-0.00236	-104650.	-2018.	2.71E-05	0.00	9.80E+11	55.8628	144971.	0.00
33.6600	-0.00219	-115899.	-1685.	2.64E-05	0.00	9.80E+11	52.7863	147218.	0.00
34.1700	-0.00203	-125173.	-1372.	2.57E-05	0.00	9.80E+11	49.6976	149465.	0.00
34.6800	-0.00188	-132587.	-1077.	2.49E-05	0.00	9.80E+11	46.6104	151712.	0.00
35.1900	-0.00173	-138256.	-801.0854	2.40E-05	0.00	9.80E+11	43.5371	153960.	0.00
35.7000	-0.00159	-142297.	-543.9664	2.31E-05	0.00	9.80E+11	40.4887	156207.	0.00
36.2100	-0.00145	-144823.	-305.3967	2.22E-05	0.00	9.80E+11	37.4752	158454.	0.00
36.7200	-0.00131	-145947.	-85.1372	2.13E-05	0.00	9.80E+11	34.5050	160701.	0.00
37.2300	-0.00119	-145781.	117.0993	2.04E-05	0.00	9.80E+11	31.5854	162949.	0.00
37.7400	-0.00106	-144433.	301.6408	1.95E-05	0.00	9.80E+11	28.7223	165196.	0.00
38.2500	-9.47E-04	-142012.	468.8477	1.86E-05	0.00	9.80E+11	25.9205	167443.	0.00
38.7600	-8.36E-04	-138621.	619.1059	1.77E-05	0.00	9.80E+11	23.1835	169690.	0.00
39.2700	-7.30E-04	-134363.	752.8190	1.69E-05	0.00	9.80E+11	20.5136	171938.	0.00
39.7800	-6.29E-04	-129340.	870.4015	1.61E-05	0.00	9.80E+11	17.9120	174185.	0.00
40.2900	-5.33E-04	-123646.	972.2719	1.53E-05	0.00	9.80E+11	15.3790	176432.	0.00
40.8000	-4.42E-04	-117378.	1059.	1.45E-05	0.00	9.80E+11	12.9134	178680.	0.00
41.3100	-3.56E-04	-110629.	1131.	1.38E-05	0.00	9.80E+11	10.5135	180927.	0.00
41.8200	-2.73E-04	-103486.	1188.	1.31E-05	0.00	9.80E+11	8.1766	183174.	0.00
42.3300	-1.95E-04	-96039.	1231.	1.25E-05	0.00	9.80E+11	5.8989	185421.	0.00
42.8400	-1.20E-04	-88372.	1260.	1.19E-05	0.00	9.80E+11	3.6761	187669.	0.00
43.3500	-4.84E-05	-80568.	1276.	1.14E-05	0.00	9.80E+11	1.5031	189916.	0.00
43.8600	1.99E-05	-72709.	1279.	1.09E-05	0.00	9.80E+11	-0.6256	192163.	0.00
44.3700	8.55E-05	-64874.	1268.	1.05E-05	0.00	9.80E+11	-2.7162	194410.	0.00
44.8800	1.49E-04	-57142.	1245.	1.01E-05	0.00	9.80E+11	-4.7754	196658.	0.00
45.3900	2.10E-04	-49590.	1210.	9.80E-06	0.00	9.80E+11	-6.8099	198905.	0.00
45.9000	2.69E-04	-42293.	1162.	9.51E-06	0.00	9.80E+11	-8.8269	201152.	0.00
46.4100	3.26E-04	-35327.	1102.	9.27E-06	0.00	9.80E+11	-10.8334	203399.	0.00
46.9200	3.82E-04	-28767.	1030.	9.07E-06	0.00	9.80E+11	-12.8368	205647.	0.00
47.4300	4.37E-04	-22689.	944.8835	8.91E-06	0.00	9.80E+11	-14.8440	207894.	0.00
47.9400	4.91E-04	-17167.	847.8635	8.78E-06	0.00	9.80E+11	-16.8618	210141.	0.00
48.4500	5.45E-04	-12276.	738.4429	8.69E-06	0.00	9.80E+11	-18.8966	212388.	0.00
48.9600	5.97E-04	-8094.	616.4998	8.63E-06	0.00	9.80E+11	-20.9541	214636.	0.00
49.4700	6.50E-04	-4696.	481.8791	8.59E-06	0.00	9.80E+11	-23.0396	216883.	0.00
49.9800	7.03E-04	-2162.	334.3967	8.57E-06	0.00	9.80E+11	-25.1573	219130.	0.00
50.4900	7.55E-04	-569.3974	173.8450	8.56E-06	0.00	9.80E+11	-27.3106	221378.	0.00
51.0000	8.07E-04	0.00	0.00	8.56E-06	0.00	9.80E+11	-29.5015	111812.	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             =     0.47678965 inches
Computed slope at pile head      =    -0.00365772 radians
Maximum bending moment           =       3066563. inch-lbs
Maximum shear force              =         46000. lbs
Depth of maximum bending moment  =     8.67000000 feet below pile head
Depth of maximum shear force     =       0.000000 feet below pile head
Number of iterations             =             12
Number of zero deflection points =              2
```

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

Boundary Condition Type 1, Shear and Moment

```
Shear      =          46000. lbs
Moment     =              0. in-lbs
Axial Load =       -323000. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
51.00000	0.47678965	3066563.	46000.
48.45000	0.46165469	3052468.	46000.
45.90000	0.46855315	3069814.	46000.
43.35000	0.47485454	3080719.	46000.
40.80000	0.46400025	3050397.	46000.
38.25000	0.47117030	3049024.	46000.
35.70000	0.46419033	3062986.	46000.
33.15000	0.45889445	3066380.	46000.
30.60000	0.46776220	3084663.	46000.
28.05000	0.46354646	3065464.	46000.
25.50000	0.46059561	3074100.	46000.
22.95000	0.45932588	3054477.	46000.
20.40000	0.46016377	3027141.	46000.
17.85000	0.49981864	2907696.	46009.
15.30000	0.60937582	2664720.	46000.
12.75000	0.95112339	2204048.	46000.
10.20000	1.61111068	1603376.	46000.

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 = 48000.0 lbs
Applied moment at pile head = 0.0 in-lbs
Axial thrust load on pile head = 358000.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. p lb/inch	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.1792	0.09207	48000.	-9.24E-04	0.00	2.00E+14	0.00	0.00	0.00
0.5100	0.1735	295785.	47959.	-9.24E-04	0.00	2.00E+14	-13.5367	477.3600	0.00
1.0200	0.1679	591063.	47798.	-9.24E-04	0.00	2.00E+14	-38.7830	1414.	0.00
1.5300	0.1622	884888.	47489.	-9.24E-04	0.00	2.00E+14	-62.2986	2350.	0.00
2.0400	0.1566	1176380.	47041.	-9.24E-04	0.00	2.00E+14	-84.0835	3286.	0.00
2.5500	0.1509	1464722.	46465.	-9.24E-04	0.00	2.00E+14	-104.1379	4223.	0.00
3.0600	0.1453	1749164.	45772.	-9.24E-04	0.00	2.00E+14	-122.4619	5159.	0.00
3.5700	0.1396	2029019.	44972.	-9.24E-04	0.00	2.00E+14	-139.0557	6096.	0.00
4.0800	0.1340	2303666.	44075.	-9.24E-04	0.00	2.00E+14	-153.9195	7032.	0.00
4.5900	0.1283	2572548.	43093.	-9.24E-04	0.00	2.00E+14	-167.0535	7968.	0.00
5.1000	0.1227	2835172.	42036.	-9.24E-04	0.00	2.00E+14	-178.4581	8905.	0.00
5.6100	0.1170	3091113.	40108.	-9.24E-04	0.00	2.00E+14	-451.5204	23618.	0.00
6.1200	0.1113	3330141.	37286.	-9.24E-04	0.00	2.00E+14	-470.5921	25866.	0.00
6.6300	0.1057	3551544.	34361.	-9.23E-04	0.00	2.00E+14	-485.5154	28113.	0.00
7.1400	0.1000	3754762.	31356.	-9.23E-04	0.00	2.00E+14	-496.2912	30360.	0.00
7.6500	0.09439	3939391.	28299.	-9.23E-04	0.00	2.00E+14	-502.9204	32607.	0.00
8.1600	0.08874	4105183.	25213.	-9.10E-04	0.00	9.75E+11	-505.4040	34855.	0.00
8.6700	0.08325	4251989.	22122.	-8.84E-04	0.00	9.74E+11	-504.6947	37102.	0.00
9.1800	0.07792	4379834.	19045.	-8.57E-04	0.00	9.74E+11	-501.0030	39349.	0.00
9.6900	0.07276	4488854.	15999.	-8.29E-04	0.00	9.74E+11	-494.5427	41596.	0.00
10.2000	0.06777	4579289.	12999.	-8.01E-04	0.00	9.73E+11	-485.5298	43844.	0.00
10.7100	0.06296	4651476.	10063.	-7.72E-04	0.00	9.73E+11	-474.1811	46091.	0.00
11.2200	0.05833	4705838.	7202.	-7.42E-04	0.00	9.73E+11	-460.7128	48338.	0.00
11.7300	0.05388	4742880.	4429.	-7.12E-04	0.00	9.73E+11	-445.3398	50585.	0.00
12.2400	0.04961	4763177.	1756.	-6.83E-04	0.00	9.73E+11	-428.2739	52833.	0.00
12.7500	0.04552	4767367.	-808.0506	-6.53E-04	0.00	9.73E+11	-409.7234	55080.	0.00
13.2600	0.04162	4756145.	-3255.	-6.23E-04	0.00	9.73E+11	-389.8920	57327.	0.00
13.7700	0.03790	4730255.	-5577.	-5.93E-04	0.00	9.73E+11	-368.9773	59575.	0.00
14.2800	0.03437	4690480.	-7768.	-5.63E-04	0.00	9.73E+11	-347.1711	61822.	0.00
14.7900	0.03101	4637637.	-9824.	-5.34E-04	0.00	9.73E+11	-324.6576	64069.	0.00
15.3000	0.02783	4572571.	-11741.	-5.05E-04	0.00	9.73E+11	-301.6134	66316.	0.00
15.8100	0.02483	4496144.	-13515.	-4.76E-04	0.00	9.74E+11	-278.2068	68564.	0.00
16.3200	0.02200	4409236.	-15145.	-4.48E-04	0.00	9.74E+11	-254.5970	70811.	0.00
16.8300	0.01935	4312731.	-16631.	-4.21E-04	0.00	9.74E+11	-230.9342	73058.	0.00
17.3400	0.01685	4207517.	-17972.	-3.94E-04	0.00	9.74E+11	-207.3589	75305.	0.00
17.8500	0.01452	4094479.	-19170.	-3.68E-04	0.00	9.75E+11	-184.0021	77553.	0.00
18.3600	0.01235	3974493.	-20225.	-3.43E-04	0.00	9.75E+11	-160.9846	79800.	0.00
18.8700	0.01032	3848423.	-21142.	-3.18E-04	0.00	9.75E+11	-138.4177	82047.	0.00
19.3800	0.00845	3717115.	-21921.	-2.94E-04	0.00	9.75E+11	-116.4021	84294.	0.00
19.8900	0.00672	3581397.	-22568.	-2.72E-04	0.00	9.76E+11	-95.0287	86542.	0.00
20.4000	0.00513	3442070.	-23087.	-2.50E-04	0.00	9.76E+11	-74.3788	88789.	0.00
20.9100	0.00367	3299910.	-23481.	-2.28E-04	0.00	9.76E+11	-54.5238	91036.	0.00
21.4200	0.00233	3155662.	-23757.	-2.08E-04	0.00	9.76E+11	-35.5258	93283.	0.00
21.9300	0.00112	3010041.	-23919.	-1.89E-04	0.00	9.76E+11	-17.4373	95531.	0.00
22.4400	1.89E-05	2863725.	-23973.	-1.70E-04	0.00	9.77E+11	-0.3022	97778.	0.00
22.9500	-9.69E-04	2717358.	-23925.	-1.53E-04	0.00	9.77E+11	15.8443	100025.	0.00
23.4600	-0.00185	2571548.	-23782.	-1.36E-04	0.00	9.77E+11	30.9750	102273.	0.00
23.9700	-0.00264	2426862.	-23549.	-1.21E-04	0.00	9.77E+11	45.0709	104520.	0.00
24.4800	-0.00333	2283831.	-23234.	-1.06E-04	0.00	9.77E+11	58.1203	106767.	0.00
24.9900	-0.00394	2142946.	-22841.	-9.21E-05	0.00	9.77E+11	70.1183	109014.	0.00
25.5000	-0.00446	2004657.	-22379.	-7.91E-05	0.00	9.77E+11	81.0667	111262.	0.00
26.0100	-0.00490	1869378.	-21852.	-6.70E-05	0.00	9.77E+11	90.9734	113509.	0.00
26.5200	-0.00528	1737480.	-21268.	-5.57E-05	0.00	9.77E+11	99.8519	115756.	0.00
27.0300	-0.00559	1609298.	-20633.	-4.52E-05	0.00	9.77E+11	107.7207	118003.	0.00
27.5400	-0.00583	1485128.	-19953.	-3.55E-05	0.00	9.77E+11	114.6030	120251.	0.00
28.0500	-0.00602	1365231.	-19233.	-2.66E-05	0.00	9.77E+11	120.5262	122498.	0.00
28.5600	-0.00616	1249829.	-18480.	-1.84E-05	0.00	9.77E+11	125.5212	124745.	0.00
29.0700	-0.00625	1139111.	-17700.	-1.09E-05	0.00	9.77E+11	129.6221	126992.	0.00
29.5800	-0.00629	1033233.	-16896.	-4.11E-06	0.00	9.77E+11	132.8659	129240.	0.00
30.0900	-0.00630	932317.	-16076.	2.04E-06	0.00	9.77E+11	135.2917	131487.	0.00
30.6000	-0.00627	836455.	-15243.	7.58E-06	0.00	9.77E+11	136.9403	133734.	0.00
31.1100	-0.00620	745711.	-14402.	1.25E-05	0.00	9.77E+11	137.8541	135982.	0.00
31.6200	-0.00611	660119.	-13558.	1.69E-05	0.00	9.77E+11	138.0762	138229.	0.00
32.1300	-0.00600	579691.	-12714.	2.08E-05	0.00	9.77E+11	137.6506	140476.	0.00
32.6400	-0.00586	504410.	-11875.	2.42E-05	0.00	9.77E+11	136.6213	142723.	0.00
33.1500	-0.00570	434239.	-11043.	2.72E-05	0.00	9.77E+11	135.0321	144971.	0.00
33.6600	-0.00553	369119.	-10223.	2.97E-05	0.00	9.77E+11	132.9264	147218.	0.00
34.1700	-0.00534	308974.	-9418.	3.18E-05	0.00	9.77E+11	130.3470	149465.	0.00
34.6800	-0.00514	253706.	-8629.	3.36E-05	0.00	9.77E+11	127.3353	151712.	0.00
35.1900	-0.00493	203204.	-7860.	3.50E-05	0.00	9.77E+11	123.9317	153960.	0.00
35.7000	-0.00471	157340.	-7113.	3.61E-05	0.00	9.77E+11	120.1747	156207.	0.00
36.2100	-0.00448	115976.	-6390.	3.70E-05	0.00	9.77E+11	116.1015	158454.	0.00
36.7200	-0.00426	78959.	-5693.	3.76E-05	0.00	9.77E+11	111.7469	160701.	0.00
37.2300	-0.00402	46126.	-5023.	3.80E-05	0.00	9.77E+11	107.1438	162949.	0.00
37.7400	-0.00379	17305.	-4382.	3.82E-05	0.00	9.77E+11	102.3230	165196.	0.00
38.2500	-0.00356	-7683.	-3772.	3.82E-05	0.00	9.77E+11	97.3127	167443.	0.00
38.7600	-0.00332	-29026.	-3192.	3.81E-05	0.00	9.77E+11	92.1386	169690.	0.00
39.2700	-0.00309	-46918.	-2644.	3.79E-05	0.00	9.77E+11	86.8242	171938.	0.00
39.7800	-0.00286	-61558.	-2130.	3.75E-05	0.00	9.77E+11	81.3902	174185.	0.00
40.2900	-0.00263	-73148.	-1648.	3.71E-05	0.00	9.77E+11	75.8547	176432.	0.00
40.8000	-0.00241	-81896.	-1201.	3.66E-05	0.00	9.77E+11	70.2333	178680.	0.00
41.3100	-0.00218	-88013.	-788.9148	3.61E-05	0.00	9.77E+11	64.5391	180927.	0.00
41.8200	-0.00196	-91711.	-411.5510	3.55E-05	0.00	9.77E+11	58.7824	183174.	0.00
42.3300	-0.00175	-93206.	-69.5844	3.49E-05	0.00	9.77E+11	52.9714	185421.	0.00

42.8400	-0.00154	-92715.	236.6695	3.44E-05	0.00	9.77E+11	47.1116	187669.	0.00
43.3500	-0.00133	-90459.	506.9223	3.38E-05	0.00	9.77E+11	41.2064	189916.	0.00
43.8600	-0.00112	-86659.	740.9000	3.32E-05	0.00	9.77E+11	35.2569	192163.	0.00
44.3700	-9.21E-04	-81536.	938.3294	3.27E-05	0.00	9.77E+11	29.2625	194410.	0.00
44.8800	-7.23E-04	-75317.	1099.	3.22E-05	0.00	9.77E+11	23.2204	196658.	0.00
45.3900	-5.27E-04	-68227.	1222.	3.18E-05	0.00	9.77E+11	17.1263	198905.	0.00
45.9000	-3.34E-04	-60494.	1308.	3.14E-05	0.00	9.77E+11	10.9745	201152.	0.00
46.4100	-1.43E-04	-52350.	1357.	3.10E-05	0.00	9.77E+11	4.7580	203399.	0.00
46.9200	4.56E-05	-44026.	1366.	3.07E-05	0.00	9.77E+11	-1.5311	205647.	0.00
47.4300	2.33E-04	-35759.	1338.	3.05E-05	0.00	9.77E+11	-7.9015	207894.	0.00
47.9400	4.18E-04	-27788.	1269.	3.03E-05	0.00	9.77E+11	-14.3622	210141.	0.00
48.4500	6.03E-04	-20355.	1161.	3.01E-05	0.00	9.77E+11	-20.9223	212388.	0.00
48.9600	7.87E-04	-13704.	1013.	3.00E-05	0.00	9.77E+11	-27.5905	214636.	0.00
49.4700	9.70E-04	-8087.	823.3670	2.99E-05	0.00	9.77E+11	-34.3752	216883.	0.00
49.9800	0.00115	-3757.	591.8519	2.99E-05	0.00	9.77E+11	-41.2833	219130.	0.00
50.4900	0.00134	-973.7453	317.6636	2.99E-05	0.00	9.77E+11	-48.3207	221378.	0.00
51.0000	0.00152	0.00	0.00	2.99E-05	0.00	9.77E+11	-55.4909	111812.	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. 2:

Pile-head deflection = 0.17920408 inches
Computed slope at pile head = -0.00092421 radians
Maximum bending moment = 4767367. inch-lbs
Maximum shear force = 48000. lbs
Depth of maximum bending moment = 12.75000000 feet below pile head
Depth of maximum shear force = 0.000000 feet below pile head
Number of iterations = 6
Number of zero deflection points = 2

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

Boundary Condition Type 1, Shear and Moment

Shear = 48000. lbs
Moment = 0. in-lbs
Axial Load = 358000. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
51.00000	0.17920408	4767367.	48000.
48.45000	0.17684567	4727825.	48000.
45.90000	0.17816285	4755768.	48000.
43.35000	0.17930089	4778430.	48000.
40.80000	0.17718072	4727416.	48000.
38.25000	0.17847933	4726671.	48000.
35.70000	0.17903588	4704923.	48000.
33.15000	0.18162660	4643998.	48000.
30.60000	0.19070326	4574287.	48000.
28.05000	0.20347167	4393372.	48000.
25.50000	0.22833415	4186775.	48000.
22.95000	0.26961466	3916115.	48000.
20.40000	0.34029871	3622970.	48000.
17.85000	0.46512442	3303450.	48000.
15.30000	0.69387610	2955444.	48009.
12.75000	1.19259573	2572646.	-53502.
10.20000	3.67569583	2396897.	-81011.

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

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

Load Case No.	Load Type	Pile-head Load 1	Load Type 2	Pile-head Load 2	Axial Loading lbs	Pile-head Deflection inches	Pile-head Rotation radians	Max Shear in Pile lbs	Max Moment in Pile in-lbs
1	V, lb	46000.	M, in-lb	0.00	-323000.	0.4768	-0.00366	46000.	3066563.
2	V, lb	48000.	M, in-lb	0.00	358000.	0.1792	-9.24E-04	48000.	4767367.

Maximum pile-head deflection = 0.4767896539 inches
Maximum pile-head rotation = -0.0036577227 radians = -0.209572 deg.

No error or warning messages were generated by this analysis.

The analysis ended normally.

Caisson Foundation LPile Summary

FL01 - BU# 842800

2017777.842800.10

Reinforcement Check			
Allowable Stress Ratio =	1.05		
Case 1 - Uplift			
Nominal Moment Capacity (Mn) =	5212.0	k-in	
=	434.3	k-ft	
ϕ =	0.9		
Factored Moment Capacity (ϕMn) =	390.90	k-ft	
Maximum Bending Moment (Mu) =	3066563	in-lbs	
=	255.5	k-ft	
Mu/ϕMn =	**65.4%**		**OK**
Case 2 - Compression			
Nominal Moment Capacity (Mn) =	16966.1	k-in	
=	1413.8	k-ft	
ϕ =	0.9		
Factored Moment Capacity (ϕMn) =	1272.46	k-ft	
Maximum Bending Moment (Mu) =	4767367	in-lbs	
=	397.3	k-ft	
Mu/ϕMn =	**31.2%**		**OK**

Deflection Check		
Load Type	Design	
Allowable Deflection	1.5	in
Max Deflection from LPILE	0.4768	in
Deflections are Acceptable		