

Structural Calculations with Foundation Design

For:

90FT MONOEUC

Location:

VINTAGE PARK – FLORIN (CVL05833)

7991 SUNNYSIDE WAY

SACRAMENTO, CA 95828

SACRAMENTO COUNTY

Prepared For:

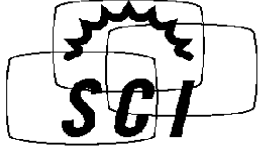
AT&T



04/03/2024

Dated: April 3, 2024

DESIGNED BY YCA; CHECKED BY EME
Project # U1085.2375.242



JOB NO.: U1085.2375.242

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PROJECT: VINTAGE PARK – FLORIN

Design Criteria:

Code: Structural design is based on the California Building Code, 2022 Edition (2021 IBC) and the TIA-222-H standard.

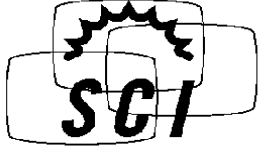
Wind: Basic wind speed = 94 mph (3-second gust) per the TIA-222-H standard
Risk Category: II
Wind exposure: C
Topographic category: 1
Crest height: 0 ft

Ice: None per the TIA-222-H standard

Seismic: Seismic importance factor, $I = 1$
Risk Category: II
Mapped spectral response accelerations: $S_S = 0.528g$ $S_1 = 0.241g$
Site class: D
Spectral response coefficients: $S_{DS} = 0.485g$ $S_{D1} = 0.34g$
Seismic design category: D
Basic seismic-force-resisting-system: Telecom: Steel Pole
Seismic base shear, $V = 7.2$ k
Seismic response coefficient, $C_s = 0.323$
Response modification factor, $R = 1.5$
Analysis procedure: Equivalent Lateral Force

General Notes:

- 1 The contractor shall verify dimensions, conditions and elevations before starting work. The engineer shall be notified immediately if any discrepancies are found.
- 2 The typical notes and details shall apply in all cases unless specifically detailed elsewhere. Where no detail is shown, the construction shall be as shown for other similar work and as required by the building code.
- 3 These calculations are limited to the structural members shown in these calculations only. The connection of the members shown in these calculations to the existing structure shall be by others, with the exception of those explicitly shown on the drawings.
- 4 The contractor shall be responsible for compliance with local construction safety orders. Approval of shop drawings by the architect or structural engineer shall not be construed as accepting this responsibility.
- 5 All structural framing members shall be adequately shored and braced during erection and until full lateral and vertical support is provided by adjoining members.



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PROJECT: VINTAGE PARK – FLORIN

Structural Steel:

- 1 All structural steel code checks based on the AISC, 15th Edition per the TIA-222-H standard
- 2 All 18-sided, tapered shaft steel to be per ASTM A572 GR. 65, U.N.O.
- 3 The design length of slip splices is equal to 1.67 times the inside width of the base of the upper section. Slip splice length tolerance is equal to $\pm 10\%$ of the design slip splice length.
- 4 All other structural steel shapes & plates shall be per ASTM A36, U.N.O.
- 6 All bolts for steel-to-steel connections shall be per ASTM F3125 GR. A325 U.N.O.
- 7 All bolted connections shall be tightened per the "turn-of-nut" method as defined by AISC.
- 8 All welding shall be performed by certified welders in accordance with the latest edition of the American Welding Society (AWS) D1.1. Utilize minimum E70XX low-hydrogen electrode U.N.O. or where higher strength electrode is required by AWS D1.1
- 9 All steel surfaces shall be galvanized in accordance with ASTM A123 and ASTM F2329 standards, thoroughly coated with a zinc-rich primer, or otherwise protected as noted on the structural drawings.

Foundation / Concrete:

- 1 All concrete mixing, placement, forming, and reinforcing installation shall be performed in accordance with the requirements of "Building Code Requirements for Reinforced Concrete", ACI 318-14. Foundation installation shall be in accordance with the requirements of "Standard Specifications for the Construction of Drilled Piers", ACI 336, latest edition
- 2 All concrete shall have a minimum compressive strength of 4000 psi at 28 days.
- 3 Cement for all concrete shall be Type II with 6% (+/- 1.5%) entrained air. Maximum aggregate size shall be 3/4".
- 4 Reinforcing steel shall be per ASTM A615 Gr. 60, U.N.O.
- 5 Foundation design is based upon the project soils report prepared by:

Geotech: MID PACIFIC ENGINEERING, INC.

Report No: 06926-01

Date: 13-Mar-24



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PROJECT: Vintage Park – Florin

Branch Layout

Eff. Area Factor:	0.85
C _A Factor:	0.6
Bott. Branch Elev. [ft]:	15
Top of Steel Elev. [ft]:	85

Branch Density	3	branch/ft
Adapters length	None	in

Branch Layout Along Pole:

Branch Length [ft]	Desired Percentage	Qty	Elevation		Branch Wt. [lbs]	Total Wt. [lbs]	Wind Area		
			Start [ft]	Stop [ft]			Gross [ft ²]	Eff. [ft ²]	C _A A _E [ft ²]
10	20%	42	71.0	85.0	50.5	2121.0	303.3	257.8	154.7
10	20%	42	57.0	71.0	50.5	2121.0	305.6	259.7	155.8
8	20%	42	43.0	57.0	38.38	1611.96	251.9	214.1	128.4
8	20%	42	29.0	43.0	38.38	1611.96	254.1	216.0	129.6
6	10%	21	22.0	29.0	27.13	569.73	99.6	84.7	50.8
6	10%	21	15.0	22.0	27.13	569.73	100.2	85.2	51.1
		100%			Total (lbs):	8605.38			

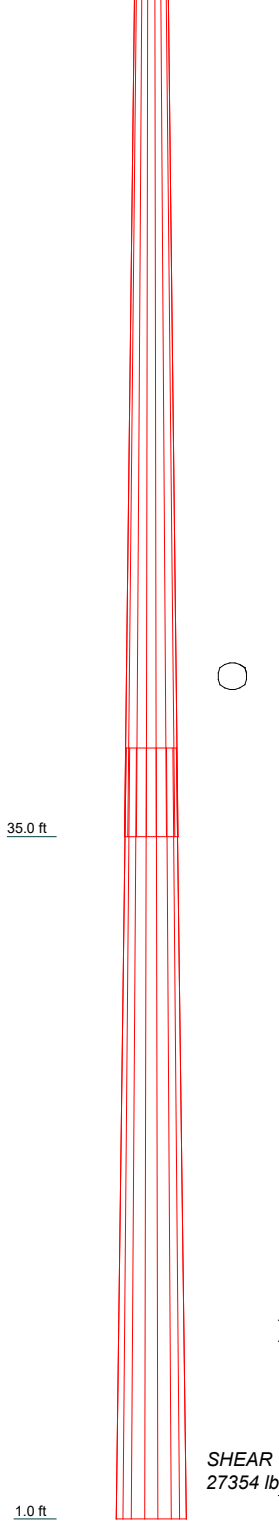
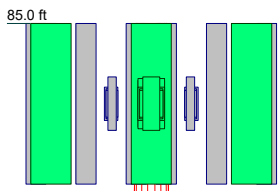
Antenna Branches:

Branch Length [ft]	Qty	Elev. [ft]	Weight	C _A A _E [ft ²]
2	54	81	513	41.1

Top Crown:

Branch Length [ft]	Qty	Weight	Total Wt.	Total C _A A _E
5	1	20.08	73.69	20.03
4	3	53.61		

Section	1	2
Length (ft)	50.00	38.42
Number of Sides	18	18
Thickness (in)	0.1875	0.2500
Socket Length (ft)	4.42	30.3874
Top Dia (in)	18.0000	41.1450
Bot Dia (in)	32.0000	41.1450
Grade	A572-65	A572-65
Weight (lb)	2512.4	3684.4
		6196.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Top crown with (1) 5 ft and (3) 4 ft branches	87.5	Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	81
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	81	(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	81
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	81	Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	81
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	81	Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	81
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	81	Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	81
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	81	Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	81
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	81	Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	81
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	81	Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	81
(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	81	Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	81
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	81	RMVD12-NPNH-3xx (EPA = 21.51 sqft front, 2081 lb), 3 Sectors	81
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	81	(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	81
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	81	(54) 2 ft antenna branches	81
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	81	(42) 10 ft branches	78
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	81	(42) 10 ft branches	64
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	81	(42) 8 ft branches	50
		(42) 8 ft branches	36
		(21) 6 ft branches	25.5
		(21) 6 ft branches	18.5

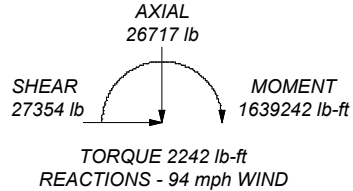
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Sacramento County, California.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 94 mph basic wind in accordance with the TIA-222-H 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: 99.1%

ALL REACTIONS ARE FACTORED



Vector Structural Engineering
VECTOR ENGINEERS
 651 W Galena Park Cir. Suite 101
 Draper, UT
 Phone: (801) 990-1775
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 Vector SE

Job: **U1085.2375.241**
 Project: **Vintage Park - Florin**
 Client: **SCI** Drawn by: **ycamposano** App'd:
 Code: **TIA-222-H** Date: **04/02/24** Scale: **NTS**
 Path: **Dwg No. E-1**

tnxTower Vector Structural Engineering 651 W Galena Park Cir. Suite 101 Draper, UT Phone: (801) 990-1775 FAX: (801) 990-1776	Job U1085.2375.241	Page 1 of 23
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	Client SCI	Designed by ycamposano

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Sacramento County, California.

Tower base elevation above sea level: 41.00 ft.

Basic wind speed of 94 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

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 pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification <input checked="" type="checkbox"/> Use Code Stress Ratios <input checked="" type="checkbox"/> Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile <input checked="" type="checkbox"/> Include Bolts In Member Capacity <input checked="" type="checkbox"/> Leg Bolts Are At Top Of Section <input checked="" type="checkbox"/> Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform	Assume Legs Pinned <input checked="" type="checkbox"/> Assume Rigid Index Plate <input checked="" type="checkbox"/> Use Clear Spans For Wind Area <input checked="" type="checkbox"/> Use Clear Spans For KL/r <input checked="" type="checkbox"/> Retension Guys To Initial Tension <input checked="" type="checkbox"/> Bypass Mast Stability Checks <input checked="" type="checkbox"/> Use Azimuth Dish Coefficients <input checked="" type="checkbox"/> Project Wind Area of Appurtenances Alternative Appurt. EPA Calculation <input checked="" type="checkbox"/> Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component <input checked="" type="checkbox"/> Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs Use ASCE 10 X-Brace Ly Rules	<input checked="" type="checkbox"/> Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression <input checked="" type="checkbox"/> All Leg Panels Have Same Allowable Offset Girt At Foundation Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="background-color: #cccccc; text-align: center; padding: 2px;">Poles</div> <input type="checkbox"/> Include Shear-Torsion Interaction <input type="checkbox"/> Always Use Sub-Critical Flow <input type="checkbox"/> Use Top Mounted Sockets <input type="checkbox"/> Pole Without Linear Attachments <input type="checkbox"/> Pole With Shroud Or No Appurtenances <input type="checkbox"/> Outside and Inside Corner Radii Are Known
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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	85.00-35.00	50.00	4.42	18	18.0000	32.0000	0.1875	0.7500	A572-65 (65 ksi)
L2	35.00-1.00	38.42		18	30.3874	41.1450	0.2500	1.0000	A572-65 (65 ksi)

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	Client SCI	Designed by ycamposano

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	Iu/Q in ²	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	32.4647	18.9324	2420.6893	11.2934	16.2560	148.9105	4844.5637	9.4680	5.3020	28.277
L2	32.0743	23.9140	2744.1113	10.6988	15.4368	177.7643	5491.8334	11.9593	4.9082	19.633
	41.7412	32.4502	6856.3822	14.5177	20.9017	328.0305	13721.7862	16.2282	6.8015	27.206

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 85.00-35.00				1	1	1			
L2 35.00-1.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _{AA} ft ² /ft	Weight plf
1 5/8 Coax (Enclosed)	C	No	Yes	Inside Pole	81.00 - 1.00	30	No Ice 0.00	0.72

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	85.00-35.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	993.60
L2	35.00-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	734.40

User Defined Loads

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	Weight lb	F _x lb	F _z lb	Wind Force lb	C _{AA} ft ²
(21) 6 ft branches	18.50	0.00	0.0000	No Ice	569.70	0.00	0.00	1070.11
				Service	569.70	0.00	0.00	390.09
(21) 6 ft branches	25.50	0.00	0.0000	No Ice	569.70	0.00	0.00	1138.18
				Service	569.70	0.00	0.00	414.91
(42) 8 ft branches	36.00	0.00	0.0000	No Ice	1612.00	0.00	0.00	3122.35
				Service	1612.00	0.00	0.00	1138.21

<p>tnxTower</p> <p>Vector Structural Engineering 651 W Galena Park Cir. Suite 101 Draper, UT Phone: (801) 990-1775 FAX: (801) 990-1776</p>	<p>Job</p> <p>U1085.2375.241</p>	<p>Page</p> <p>3 of 23</p>
	<p>Project</p> <p>Vintage Park - Florin</p>	<p>Date</p> <p>10:14:04 04/02/24</p>
	<p>Client</p> <p>SCI</p>	<p>Designed by</p> <p>ycamposano</p>

Description	Elevation	Offset From Centroid	Azimuth Angle		Weight	F _x	F _z	Wind Force	C _{AAc}
	ft	ft	°		lb	lb	lb	lb	ft ²
(42) 8 ft branches	50.00	0.00	0.0000	No Ice	1612.00	0.00	0.00	3314.94	128.40
				Service	1612.00	0.00	0.00	1208.42	128.40
(42) 10 ft branches	64.00	0.00	0.0000	No Ice	2121.00	0.00	0.00	4236.91	155.80
				Service	2121.00	0.00	0.00	1544.51	155.80
(42) 10 ft branches	78.00	0.00	0.0000	No Ice	2121.00	0.00	0.00	4385.91	154.70
				Service	2121.00	0.00	0.00	1598.83	154.70
Top crown with (1) 5 ft and (3) 4 ft branches	87.50	0.00	0.0000	No Ice	73.70	0.00	0.00	580.91	20.00
				Service	73.70	0.00	0.00	211.76	20.00
(54) 2 ft antenna branches	81.00	0.00	0.0000	No Ice	513.00	0.00	0.00	1174.52	41.10
				Service	513.00	0.00	0.00	428.16	41.10

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft		ft ²	ft ²	lb
(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	A	From Face	3.00 0.00 0.00	0.0000	81.00	No Ice	20.27	10.33	189.20
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	A	From Face	3.00 0.00 0.00	0.0000	81.00	No Ice	4.15	2.80	80.70
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	A	From Face	3.00 0.00 0.00	0.0000	81.00	No Ice	4.35	3.01	97.60
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	A	From Face	1.50 0.00 0.00	0.0000	81.00	No Ice	1.97	1.41	71.00
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	A	From Face	1.50 0.00 0.00	0.0000	81.00	No Ice	2.70	1.25	69.50
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	A	From Face	1.50 0.00 0.00	0.0000	81.00	No Ice	2.02	1.25	60.00
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	A	From Face	1.50 0.00 0.00	0.0000	81.00	No Ice	1.86	0.87	49.60
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb) ***	A	From Face	1.50 0.00 0.00	0.0000	81.00	No Ice	1.14	1.14	26.20
(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	B	From Face	3.00 0.00 0.00	0.0000	81.00	No Ice	20.27	10.33	189.20
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	B	From Face	3.00 0.00 0.00	0.0000	81.00	No Ice	4.15	2.80	80.70
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	B	From Face	3.00 0.00 0.00	0.0000	81.00	No Ice	4.35	3.01	97.60
Ericsson RRU 4490 B5/B12	B	From Face	1.50	0.0000	81.00	No Ice	1.97	1.41	71.00

<p style="text-align: center;">tnxTower</p> <p>Vector Structural Engineering 651 W Galena Park Cir. Suite 101 Draper, UT Phone: (801) 990-1775 FAX: (801) 990-1776</p>	Job	U1085.2375.241	Page	4 of 23
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	Client	SCI	Designed by	ycamposano

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
(17.9"x13.2"x9.4", 71lb)			0.00	0.00					
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	B	From Face	1.50	0.0000	81.00	No Ice	2.70	1.25	69.50
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	B	From Face	1.50	0.0000	81.00	No Ice	2.02	1.25	60.00
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	B	From Face	1.50	0.0000	81.00	No Ice	1.86	0.87	49.60
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb) ***	B	From Face	1.50	0.0000	81.00	No Ice	1.14	1.14	26.20
(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	C	From Face	3.00	0.0000	81.00	No Ice	20.27	10.33	189.20
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	C	From Face	3.00	0.0000	81.00	No Ice	4.15	2.80	80.70
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	C	From Face	3.00	0.0000	81.00	No Ice	4.35	3.01	97.60
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	C	From Face	1.50	0.0000	81.00	No Ice	1.97	1.41	71.00
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	C	From Face	1.50	0.0000	81.00	No Ice	2.70	1.25	69.50
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	C	From Face	1.50	0.0000	81.00	No Ice	2.02	1.25	60.00
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	C	From Face	1.50	0.0000	81.00	No Ice	1.86	0.87	49.60
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb) ***	C	From Face	1.50	0.0000	81.00	No Ice	1.14	1.14	26.20
RMVD12-NPNH-3xx (EPA = 21.51 sqft front, 2081 lb), 3 Sectors	C	None		0.0000	81.00	No Ice	21.51	20.57	2081.00

Tower Pressures - No Ice

$$G_H = 1.100$$

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Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{A A A} In Face	C _{A A A} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 85.00-35.00	58.21	1.129	24	105.653	A	0.000	105.653	105.653	100.00	0.000	0.000
					B	0.000	105.653		100.00	0.000	0.000
					C	0.000	105.653		100.00	0.000	0.000
L2 35.00-1.00	17.75	0.88	19	104.572	A	0.000	104.572	104.572	100.00	0.000	0.000
					B	0.000	104.572		100.00	0.000	0.000
					C	0.000	104.572		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{A A A} In Face	C _{A A A} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 85.00-35.00	58.21	1.129	9	105.653	A	0.000	105.653	105.653	100.00	0.000	0.000
					B	0.000	105.653		100.00	0.000	0.000
					C	0.000	105.653		100.00	0.000	0.000
L2 35.00-1.00	17.75	0.88	7	104.572	A	0.000	104.572	104.572	100.00	0.000	0.000
					B	0.000	104.572		100.00	0.000	0.000
					C	0.000	104.572		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	24	1	1	105.653	2044.27	40.89	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	19	1	1	104.572	1620.34	47.66	C
			B	1	0.73		1	1	104.572			
			C	1	0.73		1	1	104.572			
Sum Weight:	1728.00	6196.77						OTM	144100.34 lb-ft	3664.61		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	24	1	1	105.653	2044.27	40.89	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	19	1	1	104.572	1620.34	47.66	C
			B	1	0.73		1	1	104.572			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
Sum Weight:	1728.00	6196.77	C	1	0.73		1	1	104.572 144100.34 lb-ft	3664.61		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	24	1	1	105.653	2044.27	40.89	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	19	1	1	104.572	1620.34	47.66	C
			B	1	0.73		1	1	104.572			
			C	1	0.73		1	1	104.572			
Sum Weight:	1728.00	6196.77						OTM	144100.34 lb-ft	3664.61		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	24	1	1	105.653	2044.27	40.89	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	19	1	1	104.572	1620.34	47.66	C
			B	1	0.73		1	1	104.572			
			C	1	0.73		1	1	104.572			
Sum Weight:	1728.00	6196.77						OTM	144100.34 lb-ft	3664.61		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	9	1	1	105.653	745.21	14.90	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	7	1	1	104.572	590.67	17.37	C

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Section Elevation	Add Weight	Self Weight	Face	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
Sum Weight:	1728.00	6196.77	B	1	0.73		1	1	104.572	1335.89		
			C	1	0.73		1	1	104.572			
							OTM	52529.97	lb-ft			

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	Face	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	9	1	1	105.653	745.21	14.90	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	7	1	1	104.572	590.67	17.37	C
			B	1	0.73		1	1	104.572			
			C	1	0.73		1	1	104.572			
Sum Weight:	1728.00	6196.77						OTM	52529.97	1335.89		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	Face	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	9	1	1	105.653	745.21	14.90	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			
L2 35.00-1.00	734.40	3684.40	A	1	0.73	7	1	1	104.572	590.67	17.37	C
			B	1	0.73		1	1	104.572			
			C	1	0.73		1	1	104.572			
Sum Weight:	1728.00	6196.77						OTM	52529.97	1335.89		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	Face	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 85.00-35.00	993.60	2512.37	A	1	0.73	9	1	1	105.653	745.21	14.90	C
			B	1	0.73		1	1	105.653			
			C	1	0.73		1	1	105.653			

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	Client SCI	Designed by ycamposano

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	e	C _F	q _z <i>psf</i>	D _F	D _R	A _E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
L2 35.00-1.00	734.40	3684.40	A	1	0.73	7	1	1	104.572	590.67	17.37	C
			B	1	0.73		1	1	104.572			
			C	1	0.73		1	1	104.572			
Sum Weight:	1728.00	6196.77						OTM	52529.97 lb-ft	1335.89		

Discrete Appurtenance Pressures - No Ice *G_H = 1.100*

Description	Aiming Azimuth <i>°</i>	Weight <i>lb</i>	Offset _x <i>ft</i>	Offset _z <i>ft</i>	z <i>ft</i>	K _z	q _z <i>psf</i>	C _{AAc} Front <i>ft²</i>	C _{AAc} Side <i>ft²</i>
CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	300.0000	567.60	-3.29	-1.90	81.00	1.211	26	60.80	31.00
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	300.0000	80.70	-3.29	-1.90	81.00	1.211	26	4.15	2.80
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	300.0000	97.60	-3.29	-1.90	81.00	1.211	26	4.35	3.01
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	300.0000	71.00	-1.99	-1.15	81.00	1.211	26	1.97	1.41
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	300.0000	69.50	-1.99	-1.15	81.00	1.211	26	2.70	1.25
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	300.0000	60.00	-1.99	-1.15	81.00	1.211	26	2.02	1.25
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	300.0000	49.60	-1.99	-1.15	81.00	1.211	26	1.86	0.87
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	300.0000	26.20	-1.99	-1.15	81.00	1.211	26	1.14	1.14
CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	60.0000	567.60	3.29	-1.90	81.00	1.211	26	60.80	31.00
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	60.0000	80.70	3.29	-1.90	81.00	1.211	26	4.15	2.80
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	60.0000	97.60	3.29	-1.90	81.00	1.211	26	4.35	3.01
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	60.0000	71.00	1.99	-1.15	81.00	1.211	26	1.97	1.41
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	60.0000	69.50	1.99	-1.15	81.00	1.211	26	2.70	1.25
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	60.0000	60.00	1.99	-1.15	81.00	1.211	26	2.02	1.25

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	60.0000	49.60	1.99	-1.15	81.00	1.211	26	1.86	0.87
Raycap	60.0000	26.20	1.99	-1.15	81.00	1.211	26	1.14	1.14
DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)									
CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	180.0000	567.60	0.00	3.80	81.00	1.211	26	60.80	31.00
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	180.0000	80.70	0.00	3.80	81.00	1.211	26	4.15	2.80
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	180.0000	97.60	0.00	3.80	81.00	1.211	26	4.35	3.01
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	180.0000	71.00	0.00	2.30	81.00	1.211	26	1.97	1.41
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	180.0000	69.50	0.00	2.30	81.00	1.211	26	2.70	1.25
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	180.0000	60.00	0.00	2.30	81.00	1.211	26	2.02	1.25
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	180.0000	49.60	0.00	2.30	81.00	1.211	26	1.86	0.87
Raycap	180.0000	26.20	0.00	2.30	81.00	1.211	26	1.14	1.14
DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)									
RMVD12-NPNH-3xx (EPA = 21.51 sqft front, 2081 lb), 3 Sectors	0.0000	2081.00	0.00	0.00	81.00	1.211	26	21.51	20.57
Sum Weight:		5147.60							

Discrete Appurtenance Pressures - Service G_H = 1.100

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	300.0000	567.60	-3.29	-1.90	81.00	1.211	9	60.80	31.00
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	300.0000	80.70	-3.29	-1.90	81.00	1.211	9	4.15	2.80
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	300.0000	97.60	-3.29	-1.90	81.00	1.211	9	4.35	3.01
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	300.0000	71.00	-1.99	-1.15	81.00	1.211	9	1.97	1.41
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5	300.0000	69.50	-1.99	-1.15	81.00	1.211	9	2.70	1.25

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	Client SCI	Designed by ycamposano

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
lbs)									
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	300.0000	60.00	-1.99	-1.15	81.00	1.211	9	2.02	1.25
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	300.0000	49.60	-1.99	-1.15	81.00	1.211	9	1.86	0.87
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	300.0000	26.20	-1.99	-1.15	81.00	1.211	9	1.34	1.34
CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	60.0000	567.60	3.29	-1.90	81.00	1.211	9	60.80	31.00
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	60.0000	80.70	3.29	-1.90	81.00	1.211	9	4.15	2.80
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	60.0000	97.60	3.29	-1.90	81.00	1.211	9	4.35	3.01
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	60.0000	71.00	1.99	-1.15	81.00	1.211	9	1.97	1.41
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	60.0000	69.50	1.99	-1.15	81.00	1.211	9	2.70	1.25
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	60.0000	60.00	1.99	-1.15	81.00	1.211	9	2.02	1.25
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	60.0000	49.60	1.99	-1.15	81.00	1.211	9	1.86	0.87
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	60.0000	26.20	1.99	-1.15	81.00	1.211	9	1.34	1.34
CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	180.0000	567.60	0.00	3.80	81.00	1.211	9	60.80	31.00
Ericsson Air 6419 B77G (28.3"x16.1"x7.9", 66.1lb) w/ MP	180.0000	80.70	0.00	3.80	81.00	1.211	9	4.15	2.80
Ericsson Air 6449 B77D (30.4"x15.9"x8.1", 83lb) w/ MP	180.0000	97.60	0.00	3.80	81.00	1.211	9	4.35	3.01
Ericsson RRU 4490 B5/B12 (17.9"x13.2"x9.4", 71lb)	180.0000	71.00	0.00	2.30	81.00	1.211	9	1.97	1.41
Ericsson RRU 4890 B2/B66 (20.6"x15.7"x7.2", 69.5 lbs)	180.0000	69.50	0.00	2.30	81.00	1.211	9	2.70	1.25
Ericsson RRU 4478 B14 (18.1"x13.4"x8.26", 60lb)	180.0000	60.00	0.00	2.30	81.00	1.211	9	2.02	1.25
Ericsson RRU 4415 B25 (16.5"x13.5"x6.3", 49.6lb)	180.0000	49.60	0.00	2.30	81.00	1.211	9	1.86	0.87
Raycap DC9-48-60-24-8C-EV (10.24" OD x 31.41", 26.2lb)	180.0000	26.20	0.00	2.30	81.00	1.211	9	1.34	1.34
RMVD12-NPNH-3xx	0.0000	2081.00	0.00	0.00	81.00	1.211	9	21.51	20.57

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{Ac} Front ft ²	C _{Ac} Side ft ²
(EPA = 21.51 sqft front, 2081 lb), 3 Sectors									
	Sum Weight:	5147.60							

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M _x lb-ft	Sum of Overturning Moments, M _z lb-ft	Sum of Torques lb-ft
Leg Weight	6196.77					
Bracing Weight	0.00					
Total Member Self-Weight	6196.77			0.00	0.00	
Total Weight	22264.47			0.00	0.00	
Wind 0 deg - No Ice		0.00	-27354.32	-1584548.20	0.00	0.00
Wind 30 deg - No Ice		13677.16	-23689.54	-1372259.00	-792274.10	2262.69
Wind 45 deg - No Ice		19342.42	-19342.42	-1120444.78	-1120444.78	1599.96
Wind 60 deg - No Ice		23689.54	-13677.16	-792274.10	-1372259.00	0.00
Wind 90 deg - No Ice		27354.32	0.00	0.00	-1584548.20	-2262.69
Wind 120 deg - No Ice		23689.54	13677.16	792274.10	-1372259.00	0.00
Wind 135 deg - No Ice		19342.42	19342.42	1120444.78	-1120444.78	1599.96
Wind 150 deg - No Ice		13677.16	23689.54	1372259.00	-792274.10	2262.69
Wind 180 deg - No Ice		0.00	27354.32	1584548.20	0.00	0.00
Wind 210 deg - No Ice		-13677.16	23689.54	1372259.00	792274.10	-2262.69
Wind 225 deg - No Ice		-19342.42	19342.42	1120444.78	1120444.78	-1599.96
Wind 240 deg - No Ice		-23689.54	13677.16	792274.10	1372259.00	0.00
Wind 270 deg - No Ice		-27354.32	0.00	0.00	1584548.20	2262.69
Wind 300 deg - No Ice		-23689.54	-13677.16	-792274.10	1372259.00	0.00
Wind 315 deg - No Ice		-19342.42	-19342.42	-1120444.78	1120444.78	-1599.96
Wind 330 deg - No Ice		-13677.16	-23689.54	-1372259.00	792274.10	-2262.69
Total Weight	22264.47			0.00	0.00	
Wind 0 deg - Service		0.00	-9976.51	-578014.26	0.00	0.00
Wind 30 deg - Service		4988.26	-8639.91	-500575.04	-289007.13	824.84
Wind 45 deg - Service		7054.46	-7054.46	-408717.80	-408717.80	583.25
Wind 60 deg - Service		8639.91	-4988.26	-289007.13	-500575.04	0.00
Wind 90 deg - Service		9976.51	0.00	0.00	-578014.26	-824.84
Wind 120 deg - Service		8639.91	4988.26	289007.13	-500575.04	0.00
Wind 135 deg - Service		7054.46	7054.46	408717.80	-408717.80	583.25
Wind 150 deg - Service		4988.26	8639.91	500575.04	-289007.13	824.84
Wind 180 deg - Service		0.00	9976.51	578014.26	0.00	0.00
Wind 210 deg - Service		-4988.26	8639.91	500575.04	289007.13	-824.84
Wind 225 deg - Service		-7054.46	7054.46	408717.80	408717.80	-583.25
Wind 240 deg - Service		-8639.91	4988.26	289007.13	500575.04	0.00
Wind 270 deg - Service		-9976.51	0.00	0.00	578014.26	824.84
Wind 300 deg - Service		-8639.91	-4988.26	-289007.13	500575.04	0.00
Wind 315 deg - Service		-7054.46	-7054.46	-408717.80	408717.80	-583.25
Wind 330 deg - Service		-4988.26	-8639.91	-500575.04	289007.13	-824.84

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice

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<i>Comb. No.</i>	<i>Description</i>
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 45 deg - No Ice
7	0.9 Dead+1.0 Wind 45 deg - No Ice
8	1.2 Dead+1.0 Wind 60 deg - No Ice
9	0.9 Dead+1.0 Wind 60 deg - No Ice
10	1.2 Dead+1.0 Wind 90 deg - No Ice
11	0.9 Dead+1.0 Wind 90 deg - No Ice
12	1.2 Dead+1.0 Wind 120 deg - No Ice
13	0.9 Dead+1.0 Wind 120 deg - No Ice
14	1.2 Dead+1.0 Wind 135 deg - No Ice
15	0.9 Dead+1.0 Wind 135 deg - No Ice
16	1.2 Dead+1.0 Wind 150 deg - No Ice
17	0.9 Dead+1.0 Wind 150 deg - No Ice
18	1.2 Dead+1.0 Wind 180 deg - No Ice
19	0.9 Dead+1.0 Wind 180 deg - No Ice
20	1.2 Dead+1.0 Wind 210 deg - No Ice
21	0.9 Dead+1.0 Wind 210 deg - No Ice
22	1.2 Dead+1.0 Wind 225 deg - No Ice
23	0.9 Dead+1.0 Wind 225 deg - No Ice
24	1.2 Dead+1.0 Wind 240 deg - No Ice
25	0.9 Dead+1.0 Wind 240 deg - No Ice
26	1.2 Dead+1.0 Wind 270 deg - No Ice
27	0.9 Dead+1.0 Wind 270 deg - No Ice
28	1.2 Dead+1.0 Wind 300 deg - No Ice
29	0.9 Dead+1.0 Wind 300 deg - No Ice
30	1.2 Dead+1.0 Wind 315 deg - No Ice
31	0.9 Dead+1.0 Wind 315 deg - No Ice
32	1.2 Dead+1.0 Wind 330 deg - No Ice
33	0.9 Dead+1.0 Wind 330 deg - No Ice
34	Dead+Wind 0 deg - Service
35	Dead+Wind 30 deg - Service
36	Dead+Wind 45 deg - Service
37	Dead+Wind 60 deg - Service
38	Dead+Wind 90 deg - Service
39	Dead+Wind 120 deg - Service
40	Dead+Wind 135 deg - Service
41	Dead+Wind 150 deg - Service
42	Dead+Wind 180 deg - Service
43	Dead+Wind 210 deg - Service
44	Dead+Wind 225 deg - Service
45	Dead+Wind 240 deg - Service
46	Dead+Wind 270 deg - Service
47	Dead+Wind 300 deg - Service
48	Dead+Wind 315 deg - Service
49	Dead+Wind 330 deg - Service

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial lb</i>	<i>Major Axis Moment lb-ft</i>	<i>Minor Axis Moment lb-ft</i>
L1	85 - 35	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-16718.16	0.00	-653652.43
			Max. Mx	10	-16718.03	-653675.95	-38.00
			Max. My	18	-16718.16	0.00	-653652.43
			Max. Vy	10	20984.56	-653675.95	-38.00
			Max. Vx	18	20983.97	0.00	-653652.43
			Max. Torque	27			
L2	35 - 1	Pole	Max Tension	1	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	6	-26688.05	-1159109.4 2	1159128.54
			Max. Mx	26	-26688.04	1639230.94	-19.04
			Max. My	2	-26688.01	0.00	1639178.17
			Max. Vy	10	27382.75	-1639230.9 4	-19.04
			Max. Vx	18	27382.06	0.00	-1639178.1 7
			Max. Torque	11			2245.51

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	6	26717.36	-19342.40	19342.40
	Max. H _x	26	26717.35	27354.15	0.00
	Max. H _z	3	20038.00	0.00	27353.75
	Max. M _x	2	1639178.17	0.00	27353.46
	Max. M _z	10	1639230.94	-27354.15	0.00
	Max. Torsion	11	2241.60	-27353.75	0.01
	Min. Vert	19	20038.00	0.00	-27353.75
	Min. H _x	10	26717.35	-27354.15	0.00
	Min. H _z	19	20038.00	0.00	-27353.75
	Min. M _x	18	-1639178.17	0.00	-27353.46
	Min. M _z	26	-1639230.94	27354.15	0.00
	Min. Torsion	27	-2241.60	27353.75	0.01

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	22264.47	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	26717.32	0.00	-27353.46	-1639178.17	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	20038.00	0.00	-27353.75	-1624610.26	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	26717.36	13677.15	-23689.51	-1419634.90	-819603.72	2240.92
0.9 Dead+1.0 Wind 30 deg - No Ice	20038.02	13677.15	-23689.52	-1406995.77	-812312.71	2241.55
1.2 Dead+1.0 Wind 45 deg - No Ice	26717.36	19342.40	-19342.40	-1159128.91	-1159109.05	1584.57
0.9 Dead+1.0 Wind 45 deg - No Ice	20038.02	19342.41	-19342.41	-1148808.59	-1148794.12	1585.01
1.2 Dead+1.0 Wind 60 deg - No Ice	26717.36	23689.51	-13677.15	-819620.92	-1419624.98	-0.01
0.9 Dead+1.0 Wind 60 deg - No Ice	20038.02	23689.52	-13677.15	-812325.25	-1406988.54	-0.01
1.2 Dead+1.0 Wind 90 deg - No Ice	26717.35	27354.15	-0.00	19.78	-1639230.94	-2240.93
0.9 Dead+1.0 Wind 90 deg - No Ice	20038.00	27353.75	-0.01	14.13	-1624610.25	-2241.60
1.2 Dead+1.0 Wind 120 deg -	26717.36	23689.51	13677.15	819620.92	-1419624.98	0.01

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
No Ice						
0.9 Dead+1.0 Wind 120 deg - No Ice	20038.02	23689.52	13677.15	812325.25	-1406988.54	0.01
1.2 Dead+1.0 Wind 135 deg - No Ice	26717.36	19342.40	19342.40	1159109.05	-1159128.91	1584.57
0.9 Dead+1.0 Wind 135 deg - No Ice	20038.02	19342.41	19342.41	1148794.12	-1148808.59	1585.01
1.2 Dead+1.0 Wind 150 deg - No Ice	26717.36	13677.14	23689.51	1419615.04	-819638.11	2240.91
0.9 Dead+1.0 Wind 150 deg - No Ice	20038.02	13677.11	23689.45	1406975.80	-812334.66	2241.53
1.2 Dead+1.0 Wind 180 deg - No Ice	26717.32	0.00	27353.46	1639178.17	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	20038.00	0.00	27353.75	1624610.26	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	26717.36	-13677.14	23689.51	1419615.04	819638.11	-2240.91
0.9 Dead+1.0 Wind 210 deg - No Ice	20038.02	-13677.11	23689.45	1406975.80	812334.66	-2241.53
1.2 Dead+1.0 Wind 225 deg - No Ice	26717.36	-19342.40	19342.40	1159109.05	1159128.91	-1584.57
0.9 Dead+1.0 Wind 225 deg - No Ice	20038.02	-19342.41	19342.41	1148794.12	1148808.59	-1585.01
1.2 Dead+1.0 Wind 240 deg - No Ice	26717.36	-23689.51	13677.15	819620.92	1419624.98	-0.01
0.9 Dead+1.0 Wind 240 deg - No Ice	20038.02	-23689.52	13677.15	812325.25	1406988.54	-0.01
1.2 Dead+1.0 Wind 270 deg - No Ice	26717.35	-27354.15	-0.00	19.78	1639230.94	2240.93
0.9 Dead+1.0 Wind 270 deg - No Ice	20038.00	-27353.75	-0.01	14.13	1624610.25	2241.60
1.2 Dead+1.0 Wind 300 deg - No Ice	26717.36	-23689.51	-13677.15	-819620.92	1419624.98	0.01
0.9 Dead+1.0 Wind 300 deg - No Ice	20038.02	-23689.52	-13677.15	-812325.25	1406988.54	0.01
1.2 Dead+1.0 Wind 315 deg - No Ice	26717.36	-19342.40	-19342.40	-1159128.91	1159109.05	-1584.57
0.9 Dead+1.0 Wind 315 deg - No Ice	20038.02	-19342.41	-19342.41	-1148808.59	1148794.12	-1585.01
1.2 Dead+1.0 Wind 330 deg - No Ice	26717.36	-13677.15	-23689.51	-1419634.90	819603.72	-2240.92
0.9 Dead+1.0 Wind 330 deg - No Ice	20038.02	-13677.15	-23689.52	-1406995.77	812312.71	-2241.55
Dead+Wind 0 deg - Service	22264.46	0.00	-9976.26	-594968.27	0.00	0.00
Dead+Wind 30 deg - Service	22264.46	4988.13	-8639.69	-515258.73	-297482.35	823.80
Dead+Wind 45 deg - Service	22264.46	7054.28	-7054.28	-420707.22	-420705.09	582.51
Dead+Wind 60 deg - Service	22264.46	8639.70	-4988.13	-297484.20	-515257.67	-0.00
Dead+Wind 90 deg - Service	22264.46	9976.26	-0.00	2.12	-594968.27	-823.79
Dead+Wind 120 deg - Service	22264.46	8639.70	4988.13	297484.20	-515257.67	0.00
Dead+Wind 135 deg - Service	22264.46	7054.28	7054.28	420705.09	-420707.22	582.51
Dead+Wind 150 deg - Service	22264.45	4987.65	8638.87	515196.38	-297451.17	823.80
Dead+Wind 180 deg - Service	22264.46	0.00	9976.26	594968.27	0.00	0.00
Dead+Wind 210 deg - Service	22264.45	-4987.65	8638.87	515196.38	297451.17	-823.80
Dead+Wind 225 deg - Service	22264.46	-7054.28	7054.28	420705.09	420707.22	-582.51
Dead+Wind 240 deg - Service	22264.46	-8639.70	4988.13	297484.20	515257.67	-0.00
Dead+Wind 270 deg - Service	22264.46	-9976.26	-0.00	2.12	594968.27	823.79
Dead+Wind 300 deg - Service	22264.46	-8639.70	-4988.13	-297484.20	515257.67	0.00
Dead+Wind 315 deg - Service	22264.46	-7054.28	-7054.28	-420707.22	420705.09	-582.51
Dead+Wind 330 deg - Service	22264.46	-4988.13	-8639.69	-515258.73	297482.35	-823.80

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Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-22264.47	0.00	0.00	22264.47	0.00	0.000%
2	0.00	-26717.36	-27354.32	0.00	26717.32	27353.46	0.002%
3	0.00	-20038.02	-27354.32	0.00	20038.00	27353.75	0.002%
4	13677.16	-26717.36	-23689.54	-13677.15	26717.36	23689.51	0.000%
5	13677.16	-20038.02	-23689.54	-13677.15	20038.02	23689.52	0.000%
6	19342.42	-26717.36	-19342.42	-19342.40	26717.36	19342.40	0.000%
7	19342.42	-20038.02	-19342.42	-19342.41	20038.02	19342.41	0.000%
8	23689.54	-26717.36	-13677.16	-23689.51	26717.36	13677.15	0.000%
9	23689.54	-20038.02	-13677.16	-23689.52	20038.02	13677.15	0.000%
10	27354.32	-26717.36	0.00	-27354.15	26717.35	0.00	0.000%
11	27354.32	-20038.02	0.00	-27353.75	20038.00	0.01	0.002%
12	23689.54	-26717.36	13677.16	-23689.51	26717.36	-13677.15	0.000%
13	23689.54	-20038.02	13677.16	-23689.52	20038.02	-13677.15	0.000%
14	19342.42	-26717.36	19342.42	-19342.40	26717.36	-19342.40	0.000%
15	19342.42	-20038.02	19342.42	-19342.41	20038.02	-19342.41	0.000%
16	13677.16	-26717.36	23689.54	-13677.14	26717.36	-23689.51	0.000%
17	13677.16	-20038.02	23689.54	-13677.11	20038.02	-23689.45	0.000%
18	0.00	-26717.36	27354.32	0.00	26717.32	-27353.46	0.002%
19	0.00	-20038.02	27354.32	0.00	20038.00	-27353.75	0.002%
20	-13677.16	-26717.36	23689.54	13677.14	26717.36	-23689.51	0.000%
21	-13677.16	-20038.02	23689.54	13677.11	20038.02	-23689.45	0.000%
22	-19342.42	-26717.36	19342.42	19342.40	26717.36	-19342.40	0.000%
23	-19342.42	-20038.02	19342.42	19342.41	20038.02	-19342.41	0.000%
24	-23689.54	-26717.36	13677.16	23689.51	26717.36	-13677.15	0.000%
25	-23689.54	-20038.02	13677.16	23689.52	20038.02	-13677.15	0.000%
26	-27354.32	-26717.36	0.00	27354.15	26717.35	0.00	0.000%
27	-27354.32	-20038.02	0.00	27353.75	20038.00	0.01	0.002%
28	-23689.54	-26717.36	-13677.16	23689.51	26717.36	13677.15	0.000%
29	-23689.54	-20038.02	-13677.16	23689.52	20038.02	13677.15	0.000%
30	-19342.42	-26717.36	-19342.42	19342.40	26717.36	19342.40	0.000%
31	-19342.42	-20038.02	-19342.42	19342.41	20038.02	19342.41	0.000%
32	-13677.16	-26717.36	-23689.54	13677.15	26717.36	23689.51	0.000%
33	-13677.16	-20038.02	-23689.54	13677.15	20038.02	23689.52	0.000%
34	0.00	-22264.47	-9976.51	0.00	22264.46	9976.26	0.001%
35	4988.26	-22264.47	-8639.91	-4988.13	22264.46	8639.69	0.001%
36	7054.46	-22264.47	-7054.46	-7054.28	22264.46	7054.28	0.001%
37	8639.91	-22264.47	-4988.26	-8639.70	22264.46	4988.13	0.001%
38	9976.51	-22264.47	0.00	-9976.26	22264.46	0.00	0.001%
39	8639.91	-22264.47	4988.26	-8639.70	22264.46	-4988.13	0.001%
40	7054.46	-22264.47	7054.46	-7054.28	22264.46	-7054.28	0.001%
41	4988.26	-22264.47	8639.91	-4987.65	22264.45	-8638.87	0.005%
42	0.00	-22264.47	9976.51	0.00	22264.46	-9976.26	0.001%
43	-4988.26	-22264.47	8639.91	4987.65	22264.45	-8638.87	0.005%
44	-7054.46	-22264.47	7054.46	7054.28	22264.46	-7054.28	0.001%
45	-8639.91	-22264.47	4988.26	8639.70	22264.46	-4988.13	0.001%
46	-9976.51	-22264.47	0.00	9976.26	22264.46	0.00	0.001%
47	-8639.91	-22264.47	-4988.26	8639.70	22264.46	4988.13	0.001%
48	-7054.46	-22264.47	-7054.46	7054.28	22264.46	7054.28	0.001%
49	-4988.26	-22264.47	-8639.91	4988.13	22264.46	8639.69	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.0000001	0.0000001

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2	Yes	10	0.0000001	0.00008454
3	Yes	10	0.0000001	0.00006717
4	Yes	12	0.0000001	0.00005301
5	Yes	12	0.0000001	0.00003654
6	Yes	12	0.0000001	0.00005537
7	Yes	12	0.0000001	0.00003799
8	Yes	12	0.0000001	0.00004818
9	Yes	12	0.0000001	0.00003308
10	Yes	11	0.0000001	0.00003958
11	Yes	10	0.0000001	0.00012259
12	Yes	12	0.0000001	0.00004818
13	Yes	12	0.0000001	0.00003308
14	Yes	12	0.0000001	0.00005537
15	Yes	12	0.0000001	0.00003799
16	Yes	12	0.0000001	0.00004450
17	Yes	11	0.0000001	0.00013835
18	Yes	10	0.0000001	0.00008454
19	Yes	10	0.0000001	0.00006717
20	Yes	12	0.0000001	0.00004450
21	Yes	11	0.0000001	0.00013835
22	Yes	12	0.0000001	0.00005537
23	Yes	12	0.0000001	0.00003799
24	Yes	12	0.0000001	0.00004818
25	Yes	12	0.0000001	0.00003308
26	Yes	11	0.0000001	0.00003958
27	Yes	10	0.0000001	0.00012259
28	Yes	12	0.0000001	0.00004818
29	Yes	12	0.0000001	0.00003308
30	Yes	12	0.0000001	0.00005537
31	Yes	12	0.0000001	0.00003799
32	Yes	12	0.0000001	0.00005301
33	Yes	12	0.0000001	0.00003654
34	Yes	10	0.0000001	0.00004100
35	Yes	10	0.0000001	0.00006043
36	Yes	10	0.0000001	0.00004678
37	Yes	10	0.0000001	0.00004308
38	Yes	10	0.0000001	0.00004722
39	Yes	10	0.0000001	0.00004308
40	Yes	10	0.0000001	0.00004678
41	Yes	9	0.0000001	0.00012735
42	Yes	10	0.0000001	0.00004100
43	Yes	9	0.0000001	0.00012735
44	Yes	10	0.0000001	0.00004678
45	Yes	10	0.0000001	0.00004308
46	Yes	10	0.0000001	0.00004722
47	Yes	10	0.0000001	0.00004308
48	Yes	10	0.0000001	0.00004678
49	Yes	10	0.0000001	0.00006043

Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt <i>°</i>	Twist <i>°</i>
L1	85 - 35	18.130	34	1.7980	0.0149
L2	39.42 - 1	3.897	34	0.9251	0.0025

Critical Deflections and Radius of Curvature - Service Wind

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Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt $^{\circ}$	Twist $^{\circ}$	Radius of Curvature <i>ft</i>
87.50	Top crown with (1) 5 ft and (3) 4 ft branches	34	18.130	1.7980	0.0149	14548
81.00	(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	34	16.654	1.7267	0.0136	14548
78.00	(42) 10 ft branches	34	15.553	1.6731	0.0126	10391
64.00	(42) 10 ft branches	34	10.626	1.4179	0.0083	3463
50.00	(42) 8 ft branches	34	6.379	1.1469	0.0046	2077
36.00	(42) 8 ft branches	38	3.263	0.8494	0.0020	1752
25.50	(21) 6 ft branches	48	1.784	0.6063	0.0009	2499
18.50	(21) 6 ft branches	44	1.106	0.4370	0.0005	3499

Maximum Tower Deflections - Design Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt $^{\circ}$	Twist $^{\circ}$
L1	85 - 35	50.008	26	4.9657	0.0407
L2	39.42 - 1	10.744	26	2.5521	0.0068

Critical Deflections and Radius of Curvature - Design Wind

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt $^{\circ}$	Twist $^{\circ}$	Radius of Curvature <i>ft</i>
87.50	Top crown with (1) 5 ft and (3) 4 ft branches	26	50.008	4.9657	0.0407	5321
81.00	(3) CellMax 120726 (96"x24"x8.1", 160 lbs) w/ MP	26	45.936	4.7684	0.0371	5321
78.00	(42) 10 ft branches	26	42.899	4.6200	0.0345	3800
64.00	(42) 10 ft branches	26	29.307	3.9141	0.0226	1265
50.00	(42) 8 ft branches	26	17.591	3.1649	0.0125	756
36.00	(42) 8 ft branches	26	8.996	2.3433	0.0055	636
25.50	(21) 6 ft branches	6	4.919	1.6723	0.0025	907
18.50	(21) 6 ft branches	14	3.050	1.2052	0.0013	1269

Compression Checks

Pole Design Data

Section No.	Elevation <i>ft</i>	Size	L <i>ft</i>	L _u <i>ft</i>	Kl/r	A <i>in</i> ²	P _u <i>lb</i>	φP _n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
L1	85 - 82.6011	TP32x18x0.1875	50.00	0.00	0.0	11.0004	-193.50	643524.00	0.000
	11.4002					-6615.28	666909.00	0.010	
	11.7999					-8937.67	690295.00	0.013	
	12.1997					-9111.60	713680.00	0.013	
	12.5994					-9294.70	737065.00	0.013	

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	73.0053								
	73.0053 - 70.6063					12.9992	-9486.41	760451.00	0.012
	70.6063 - 68.2074					13.3989	-9685.98	783836.00	0.012
	68.2074 - 65.8084					13.7987	-9892.76	807221.00	0.012
	65.8084 - 63.4095					14.1984	-12316.40	830606.00	0.015
	63.4095 - 61.0105					14.5982	-12547.20	853992.00	0.015
	61.0105 - 58.6116					14.9979	-12786.20	877377.00	0.015
	58.6116 - 56.2126					15.3976	-13032.80	900762.00	0.014
	56.2126 - 53.8137					15.7974	-13286.40	924148.00	0.014
	53.8137 - 51.4147					16.1971	-13546.60	947533.00	0.014
	51.4147 - 49.0158					16.5969	-15544.40	970918.00	0.016
	49.0158 - 46.6168					16.9966	-15828.20	994304.00	0.016
	46.6168 - 44.2179					17.3964	-16118.70	1017690.00	0.016
	44.2179 - 41.8189					17.7961	-16415.40	1041070.00	0.016
	41.8189 - 39.42					18.1959	-16718.00	1064460.00	0.016
	39.42 - 35					18.9324	-9215.54	1107550.00	0.008
L2	39.42 - 35	TP41.145x30.3874x0.25	38.42	0.00	0.0	24.8961	-10239.90	1456420.00	0.007
	35 - 33.2105					25.2936	-19744.50	1479680.00	0.013
	33.2105 - 31.4211					25.6912	-20026.80	1502940.00	0.013
	31.4211 - 29.6316					26.0888	-20312.70	1526200.00	0.013
	29.6316 - 27.8421					26.4864	-20602.00	1549450.00	0.013
	27.8421 - 26.0526					26.8840	-20894.70	1572710.00	0.013
	26.0526 - 24.2632					27.2816	-21840.50	1595970.00	0.014
	24.2632 - 22.4737					27.6792	-22142.30	1619230.00	0.014
	22.4737 - 20.6842					28.0767	-22447.40	1642490.00	0.014
	20.6842 - 18.8947					28.4743	-22755.70	1665750.00	0.014
	18.8947 - 17.1053					28.8719	-23728.40	1689010.00	0.014
	17.1053 - 15.3158					29.2695	-24045.40	1712270.00	0.014
	15.3158 - 13.5263					29.6671	-24365.40	1735520.00	0.014
	13.5263 - 11.7368					30.0647	-24688.40	1758780.00	0.014
	11.7368 - 9.94737					30.4623	-25014.50	1782040.00	0.014
	9.94737 - 8.15789					30.8598	-25343.50	1805300.00	0.014

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	8.15789 - 6.36842					31.2574	-25675.30	1828560.00	0.014
	6.36842 - 4.57895					31.6550	-26010.10	1851820.00	0.014
	4.57895 - 2.78947					32.0526	-26347.70	1875080.00	0.014
	2.78947 - 1					32.4502	-26688.00	1898340.00	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} lb-ft	φM _{ux} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} lb-ft	φM _{uy} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	85 - 82.6011	TP32x18x0.1875	2969.16	307205.00	0.010	0.00	307205.00	0.000
	82.6011 - 80.2021		9825.42	327062.50	0.030	0.00	327062.50	0.000
	80.2021 - 77.8032		28061.58	347310.83	0.081	0.00	347310.83	0.000
	77.8032 - 75.4042		56623.25	367927.50	0.154	0.00	367927.50	0.000
	75.4042 - 73.0053		85401.67	388890.00	0.220	0.00	388890.00	0.000
	73.0053 - 70.6063		114394.17	410176.67	0.279	0.00	410176.67	0.000
	70.6063 - 68.2074		143595.83	431764.17	0.333	0.00	431764.17	0.000
	68.2074 - 65.8084		173005.83	453630.83	0.381	0.00	453630.83	0.000
	65.8084 - 63.4095		205235.83	475755.00	0.431	0.00	475755.00	0.000
	63.4095 - 61.0105		245650.83	498113.33	0.493	0.00	498113.33	0.000
	61.0105 - 58.6116		286254.17	520683.33	0.550	0.00	520683.33	0.000
	58.6116 - 56.2126		327043.33	543444.17	0.602	0.00	543444.17	0.000
	56.2126 - 53.8137		368015.00	566372.50	0.650	0.00	566372.50	0.000
	53.8137 - 51.4147		409166.67	589445.83	0.694	0.00	589445.83	0.000
	51.4147 - 49.0158		453870.00	612642.50	0.741	0.00	612642.50	0.000
	49.0158 - 46.6168		503583.33	635940.83	0.792	0.00	635940.83	0.000
	46.6168 - 44.2179		553457.50	659316.67	0.839	0.00	659316.67	0.000
	44.2179 - 41.8189		603490.83	682749.17	0.884	0.00	682749.17	0.000
	41.8189 - 39.42		653680.83	706215.83	0.926	0.00	706215.83	0.000
	L2		39.42 - 35	TP41.145x30.3874x0.25	330286.67	749466.67	0.441	0.00
35 - 33.2105		419652.50	1102141.67		0.381	0.00	1102141.67	0.000
33.2105 - 31.4211		793584.17	1131575.00		0.701	0.00	1131575.00	0.000
31.4211 - 29.6316		837300.00	1161183.33		0.721	0.00	1161183.33	0.000
29.6316 -		881100.00	1190958.33		0.740	0.00	1190958.33	0.000
		924983.33	1220883.33		0.758	0.00	1220883.33	0.000

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Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{rx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} lb-ft	ϕM_{ry} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
	27.8421							
	27.8421 - 26.0526		968950.00	1250950.00	0.775	0.00	1250950.00	0.000
	26.0526 - 24.2632		1014425.00	1281150.00	0.792	0.00	1281150.00	0.000
	24.2632 - 22.4737		1060616.67	1311483.33	0.809	0.00	1311483.33	0.000
	22.4737 - 20.6842		1106891.67	1341933.33	0.825	0.00	1341933.33	0.000
	20.6842 - 18.8947		1153233.33	1372491.67	0.840	0.00	1372491.67	0.000
	18.8947 - 17.1053		1201158.33	1403150.00	0.856	0.00	1403150.00	0.000
	17.1053 - 15.3158		1249575.00	1433891.67	0.871	0.00	1433891.67	0.000
	15.3158 - 13.5263		1298066.67	1464725.00	0.886	0.00	1464725.00	0.000
	13.5263 - 11.7368		1346616.67	1495616.67	0.900	0.00	1495616.67	0.000
	11.7368 - 9.94737		1395233.33	1526575.00	0.914	0.00	1526575.00	0.000
	9.94737 - 8.15789		1443916.67	1557591.67	0.927	0.00	1557591.67	0.000
	8.15789 - 6.36842		1492658.33	1588641.67	0.940	0.00	1588641.67	0.000
	6.36842 - 4.57895		1541458.33	1619733.33	0.952	0.00	1619733.33	0.000
	4.57895 - 2.78947		1590316.67	1650850.00	0.963	0.00	1650850.00	0.000
	2.78947 - 1		1639241.67	1681975.00	0.975	0.00	1681975.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	85 - 82.6011	TP32x18x0.1875	678.64	193057.00	0.004	0.09	312512.50	0.000
	82.6011 - 80.2021		7178.54	200073.00	0.036	2254.42	335637.50	0.007
	80.2021 - 77.8032		11862.50	207088.00	0.057	2254.47	359589.17	0.006
	77.8032 - 75.4042		11956.00	214104.00	0.056	2254.39	384365.00	0.006
	75.4042 - 73.0053		12047.50	221120.00	0.054	2254.21	409967.50	0.005
	73.0053 - 70.6063		12137.40	228135.00	0.053	2253.94	436394.17	0.005
	70.6063 - 68.2074		12226.00	235151.00	0.052	2253.58	463646.67	0.005
	68.2074 - 65.8084		12313.70	242166.00	0.051	2253.17	491725.00	0.005
	65.8084 - 63.4095		16821.90	249182.00	0.068	2252.72	520628.33	0.004
	63.4095 - 61.0105		16903.00	256198.00	0.066	2252.20	550357.50	0.004
	61.0105 - 58.6116		16982.50	263213.00	0.065	2251.61	580910.83	0.004
	58.6116 -		17060.60	270229.00	0.063	2250.95	612290.83	0.004

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Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
	56.2126							
	56.2126 - 53.8137		17137.60	277244.00	0.062	2250.27	644495.83	0.003
	53.8137 - 51.4147		17213.70	284260.00	0.061	2249.56	677525.83	0.003
	51.4147 - 49.0158		20714.60	291275.00	0.071	2248.85	711381.67	0.003
	49.0158 - 46.6168		20783.70	298291.00	0.070	2248.13	746062.50	0.003
	46.6168 - 44.2179		20851.60	305307.00	0.068	2247.41	781569.17	0.003
	44.2179 - 41.8189		20918.60	312322.00	0.067	2246.70	817900.83	0.003
	41.8189 - 39.42		20984.90	319338.00	0.066	2246.01	855058.33	0.003
	39.42 - 35		12324.80	319338.00	0.039	0.00	925683.33	0.000
L2	39.42 - 35	TP41.145x30.3874x0.25	12061.50	436926.00	0.028	1259.74	1200525.00	0.001
	35 - 33.2105		24427.70	443904.00	0.055	2244.94	1239175.00	0.002
	33.2105 - 31.4211		24475.70	450881.00	0.054	2244.57	1278441.67	0.002
	31.4211 - 29.6316		24522.80	457859.00	0.054	2244.19	1318316.67	0.002
	29.6316 - 27.8421		24569.10	464836.00	0.053	2243.84	1358800.00	0.002
	27.8421 - 26.0526		24614.50	471814.00	0.052	2243.50	1399900.00	0.002
	26.0526 - 24.2632		25817.10	478792.00	0.054	2243.17	1441616.67	0.002
	24.2632 - 22.4737		25859.50	485769.00	0.053	2242.87	1483941.67	0.002
	22.4737 - 20.6842		25901.10	492747.00	0.053	2242.58	1526875.00	0.001
	20.6842 - 18.8947		25942.00	499724.00	0.052	2242.32	1570425.00	0.001
	18.8947 - 17.1053		27066.20	506702.00	0.053	2242.08	1614583.33	0.001
	17.1053 - 15.3158		27104.10	513680.00	0.053	2241.85	1659358.33	0.001
	15.3158 - 13.5263		27141.30	520657.00	0.052	2241.65	1704750.00	0.001
	13.5263 - 11.7368		27177.70	527635.00	0.052	2241.47	1750750.00	0.001
	11.7368 - 9.94737		27213.50	534613.00	0.051	2241.32	1797358.33	0.001
	9.94737 - 8.15789		27248.60	541590.00	0.050	2241.18	1844583.33	0.001
	8.15789 - 6.36842		27283.10	548568.00	0.050	2241.08	1892416.67	0.001
	6.36842 - 4.57895		27316.90	555545.00	0.049	2241.01	1940866.67	0.001
	4.57895 - 2.78947		27350.20	562523.00	0.049	2240.95	1989925.00	0.001
	2.78947 - 1		27382.90	569501.00	0.048	2240.92	2039600.00	0.001

Pole Interaction Design Data

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Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	85 - 82.6011	0.000	0.010	0.000	0.004	0.000	0.010	1.000	✓
	82.6011 - 80.2021	0.010	0.030	0.000	0.036	0.007	0.042	1.000	✓
	80.2021 - 77.8032	0.013	0.081	0.000	0.057	0.006	0.098	1.000	✓
	77.8032 - 75.4042	0.013	0.154	0.000	0.056	0.006	0.170	1.000	✓
	75.4042 - 73.0053	0.013	0.220	0.000	0.054	0.005	0.236	1.000	✓
	73.0053 - 70.6063	0.012	0.279	0.000	0.053	0.005	0.295	1.000	✓
	70.6063 - 68.2074	0.012	0.333	0.000	0.052	0.005	0.348	1.000	✓
	68.2074 - 65.8084	0.012	0.381	0.000	0.051	0.005	0.397	1.000	✓
	65.8084 - 63.4095	0.015	0.431	0.000	0.068	0.004	0.451	1.000	✓
	63.4095 - 61.0105	0.015	0.493	0.000	0.066	0.004	0.513	1.000	✓
	61.0105 - 58.6116	0.015	0.550	0.000	0.065	0.004	0.569	1.000	✓
	58.6116 - 56.2126	0.014	0.602	0.000	0.063	0.004	0.621	1.000	✓
	56.2126 - 53.8137	0.014	0.650	0.000	0.062	0.003	0.668	1.000	✓
	53.8137 - 51.4147	0.014	0.694	0.000	0.061	0.003	0.713	1.000	✓
	51.4147 - 49.0158	0.016	0.741	0.000	0.071	0.003	0.762	1.000	✓
	49.0158 - 46.6168	0.016	0.792	0.000	0.070	0.003	0.813	1.000	✓
	46.6168 - 44.2179	0.016	0.839	0.000	0.068	0.003	0.860	1.000	✓
	44.2179 - 41.8189	0.016	0.884	0.000	0.067	0.003	0.905	1.000	✓
	41.8189 - 39.42	0.016	0.926	0.000	0.066	0.003	0.946	1.000	✓
	39.42 - 35	0.008	0.441	0.000	0.039	0.000	0.451	1.000	✓
L2	39.42 - 35	0.007	0.381	0.000	0.028	0.001	0.389	1.000	✓
	35 - 33.2105	0.013	0.701	0.000	0.055	0.002	0.718	1.000	✓
	33.2105 - 31.4211	0.013	0.721	0.000	0.054	0.002	0.738	1.000	✓
	31.4211 - 29.6316	0.013	0.740	0.000	0.054	0.002	0.756	1.000	✓
	29.6316 - 27.8421	0.013	0.758	0.000	0.053	0.002	0.774	1.000	✓
	27.8421 - 26.0526	0.013	0.775	0.000	0.052	0.002	0.791	1.000	✓

tnxTower Vector Structural Engineering 651 W Galena Park Cir. Suite 101 Draper, UT Phone: (801) 990-1775 FAX: (801) 990-1776	Job U1085.2375.241	Page 23 of 23
	Project Vintage Park - Florin	Date 10:14:04 04/02/24
	Client SCI	Designed by ycamposano

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	26.0526 - 24.2632	0.014	0.792	0.000	0.054	0.002	0.809	1.000	✓
	24.2632 - 22.4737	0.014	0.809	0.000	0.053	0.002	0.825	1.000	✓
	22.4737 - 20.6842	0.014	0.825	0.000	0.053	0.001	0.841	1.000	✓
	20.6842 - 18.8947	0.014	0.840	0.000	0.052	0.001	0.857	1.000	✓
	18.8947 - 17.1053	0.014	0.856	0.000	0.053	0.001	0.873	1.000	✓
	17.1053 - 15.3158	0.014	0.871	0.000	0.053	0.001	0.888	1.000	✓
	15.3158 - 13.5263	0.014	0.886	0.000	0.052	0.001	0.903	1.000	✓
	13.5263 - 11.7368	0.014	0.900	0.000	0.052	0.001	0.917	1.000	✓
	11.7368 - 9.94737	0.014	0.914	0.000	0.051	0.001	0.931	1.000	✓
	9.94737 - 8.15789	0.014	0.927	0.000	0.050	0.001	0.944	1.000	✓
	8.15789 - 6.36842	0.014	0.940	0.000	0.050	0.001	0.956	1.000	✓
	6.36842 - 4.57895	0.014	0.952	0.000	0.049	0.001	0.968	1.000	✓
	4.57895 - 2.78947	0.014	0.963	0.000	0.049	0.001	0.980	1.000	✓
	2.78947 - 1	0.014	0.975	0.000	0.048	0.001	0.991	1.000	✓

Section Capacity Table

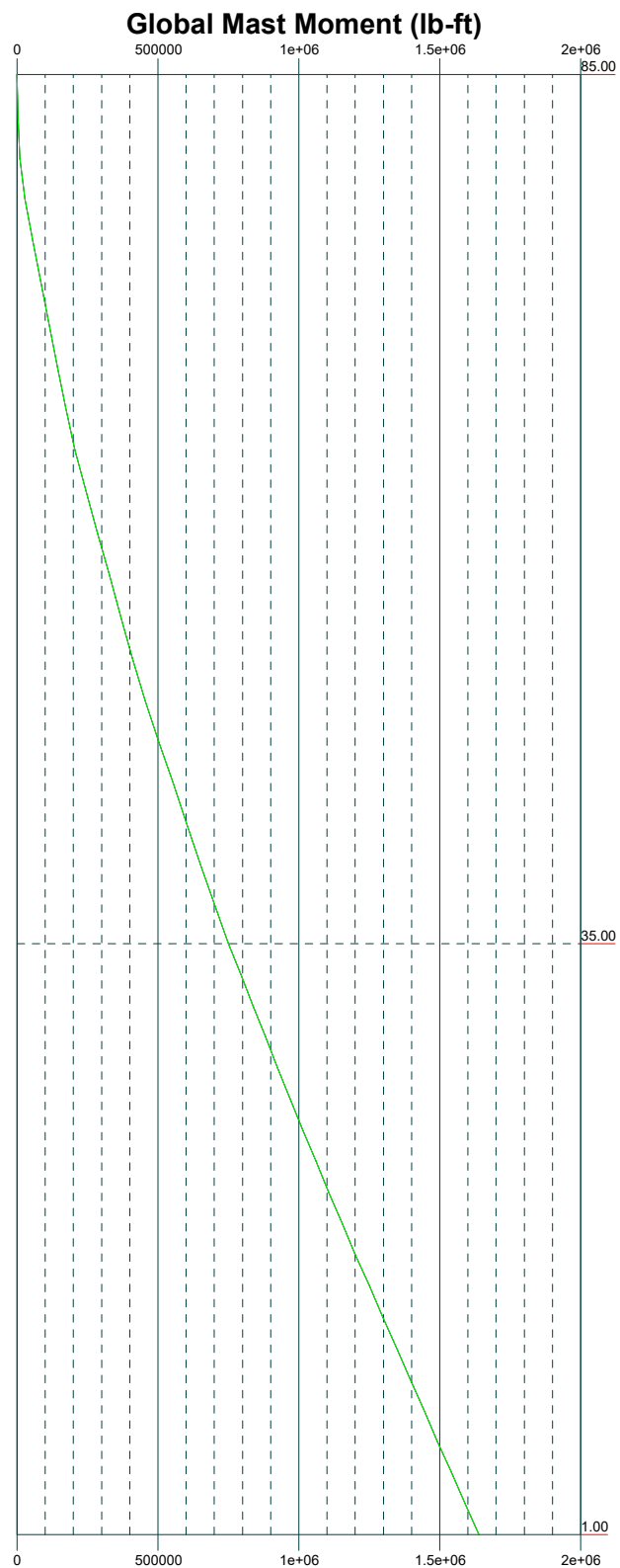
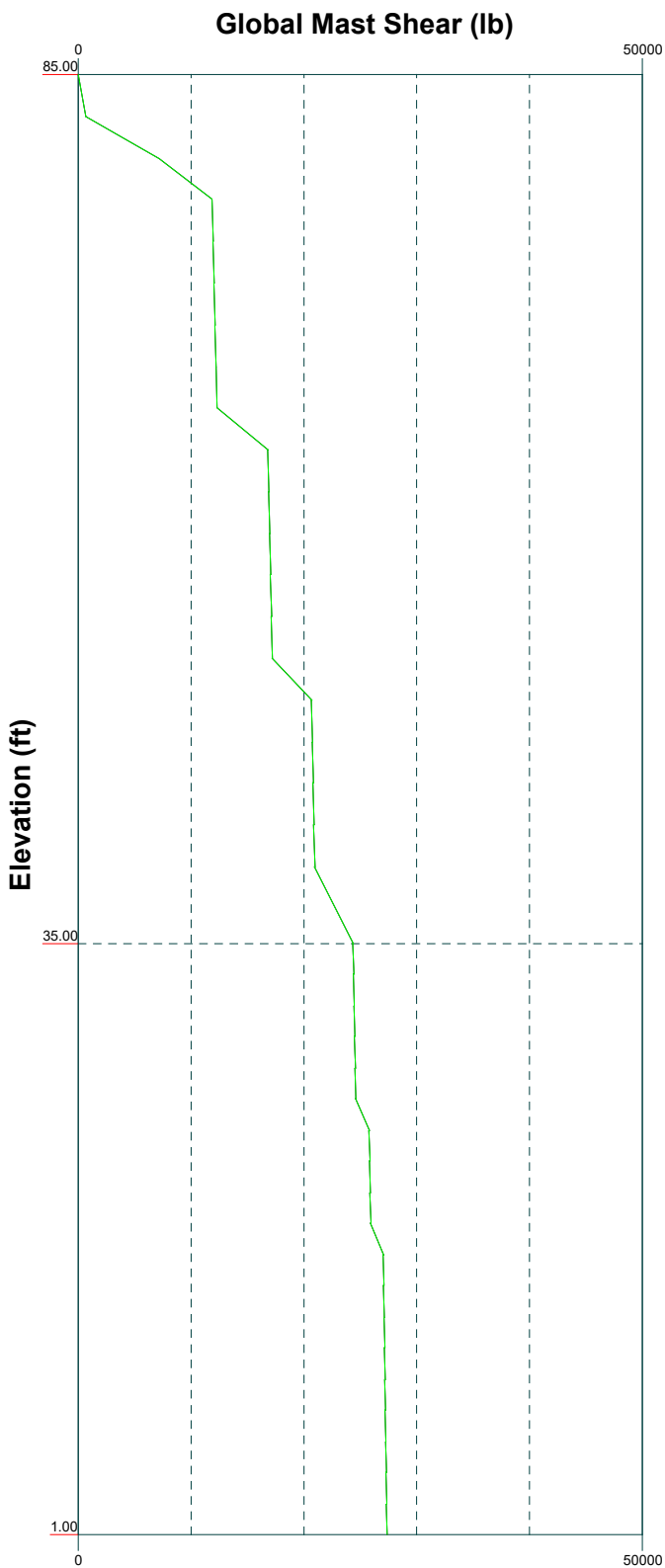
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	85 - 35	Pole	TP32x18x0.1875	1	-16718.00	1064460.00	94.6	Pass
L2	35 - 1	Pole	TP41.145x30.3874x0.25	2	-26688.00	1898340.00	99.1	Pass
Summary								
Pole (L2)							99.1	Pass
RATING =							99.1	Pass

Vx

Vz

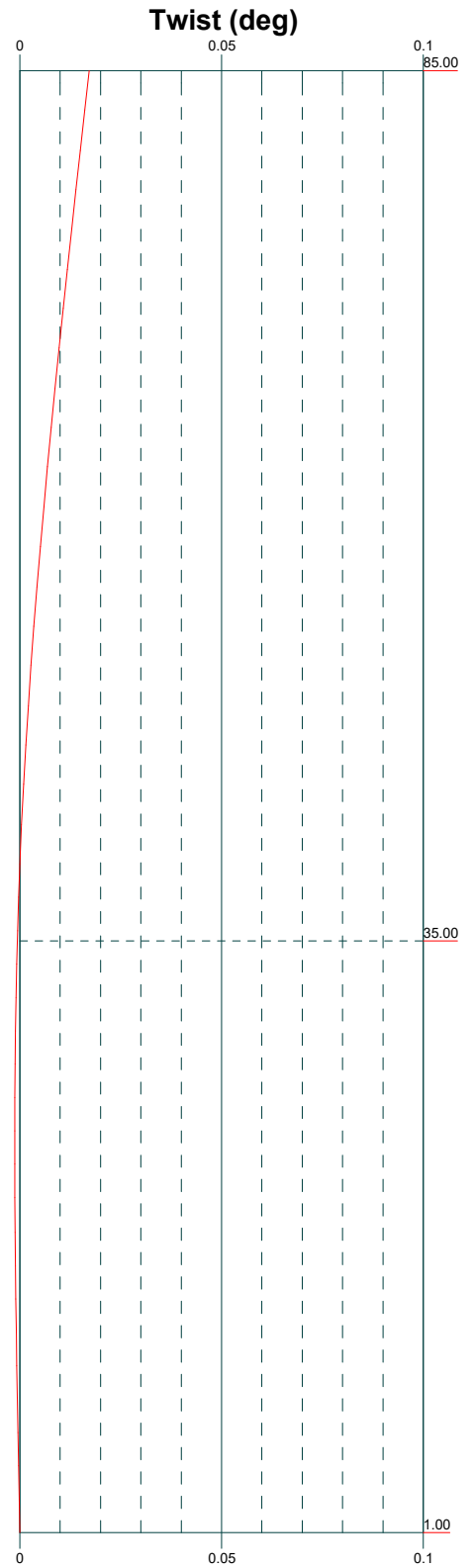
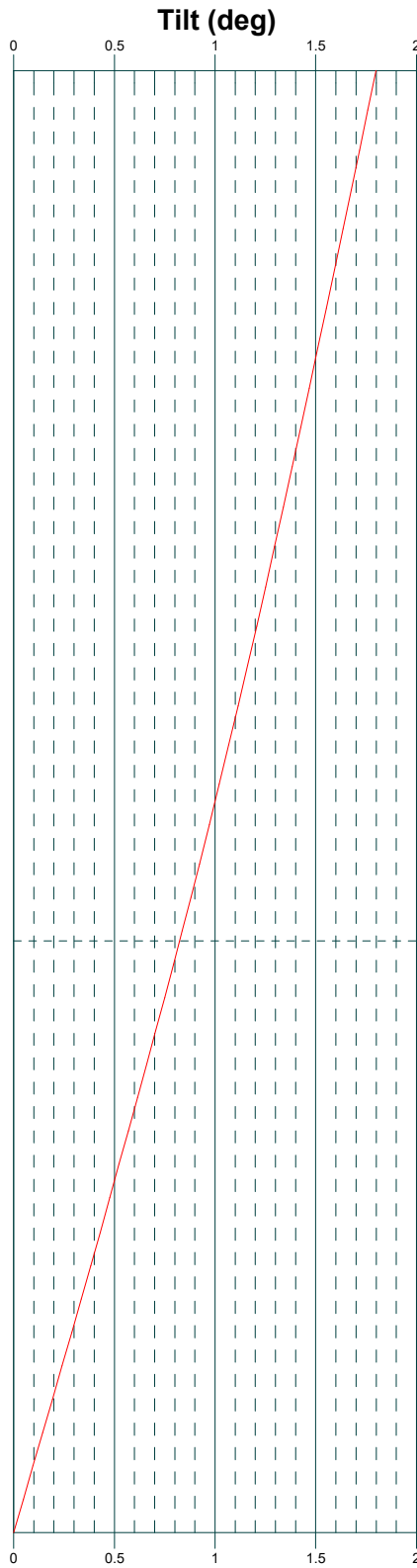
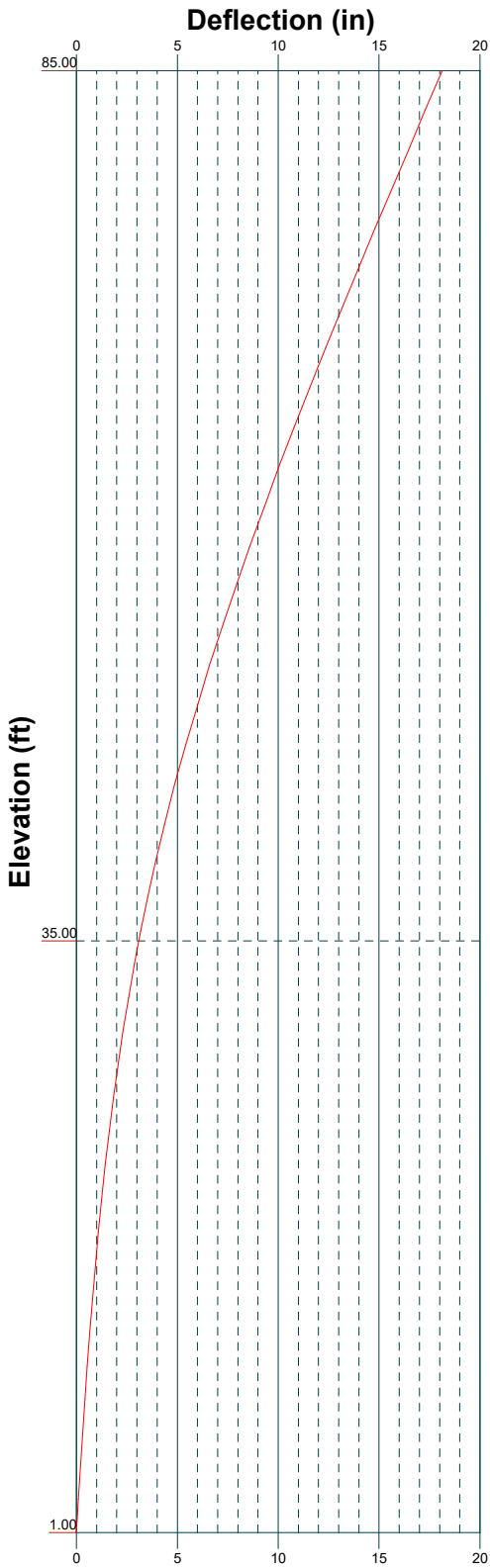
Mx


Mz



Vector Structural Engineering
VECTOR ENGINEERS
 651 W Galena Park Cir. Suite 101
 Draper, UT
 Phone: (801) 990-1775
 FAX: (801) 990-1776
 Vector SE

Job: U1085.2375.241		
Project: Vintage Park - Florin		
Client: SCI	Drawn by: ycomposano	App'd:
Code: TIA-222-H	Date: 04/02/24	Scale: NTS
Path:		Dwg No. E-4



 <p>VECTOR ENGINEERS</p> <p>Vector SE</p>	<p>Vector Structural Engineering</p> <p>651 W Galena Park Cir. Suite 101 Draper, UT</p> <p>Phone: (801) 990-1775 FAX: (801) 990-1776</p>		<p>Job: U1085.2375.241</p>
	<p>Project: Vintage Park - Florin</p>		
	<p>Client: SCI</p>	<p>Drawn by: ycomposano</p>	<p>App'd:</p>
	<p>Code: TIA-222-H</p>	<p>Date: 04/02/24</p>	<p>Scale: NTS</p>
	<p>Path:</p>	<p>Dwg No. E-5</p>	



Seismic Base Shear Calculations:

Seismic Parameters:

Risk Category=	II
Seismic Design Category=	D
Importance, I =	1.00
Site Class=	D
R =	1.5
T _L =	12

S _s =	0.528	g
S ₁ =	0.241	g
S _{MS} =	0.727	g
S _{M1} =	0.510	g

S _{DS} =	0.485	g
S _{D1} =	0.340	g
F _a =	1.38	
F _v =	2.12	

Seismic Base Shear:

Structure Type =	Telecom: Steel Pole
Period Type =	Worst Case Cs
h =	85.0 ft
E =	29000 ksi

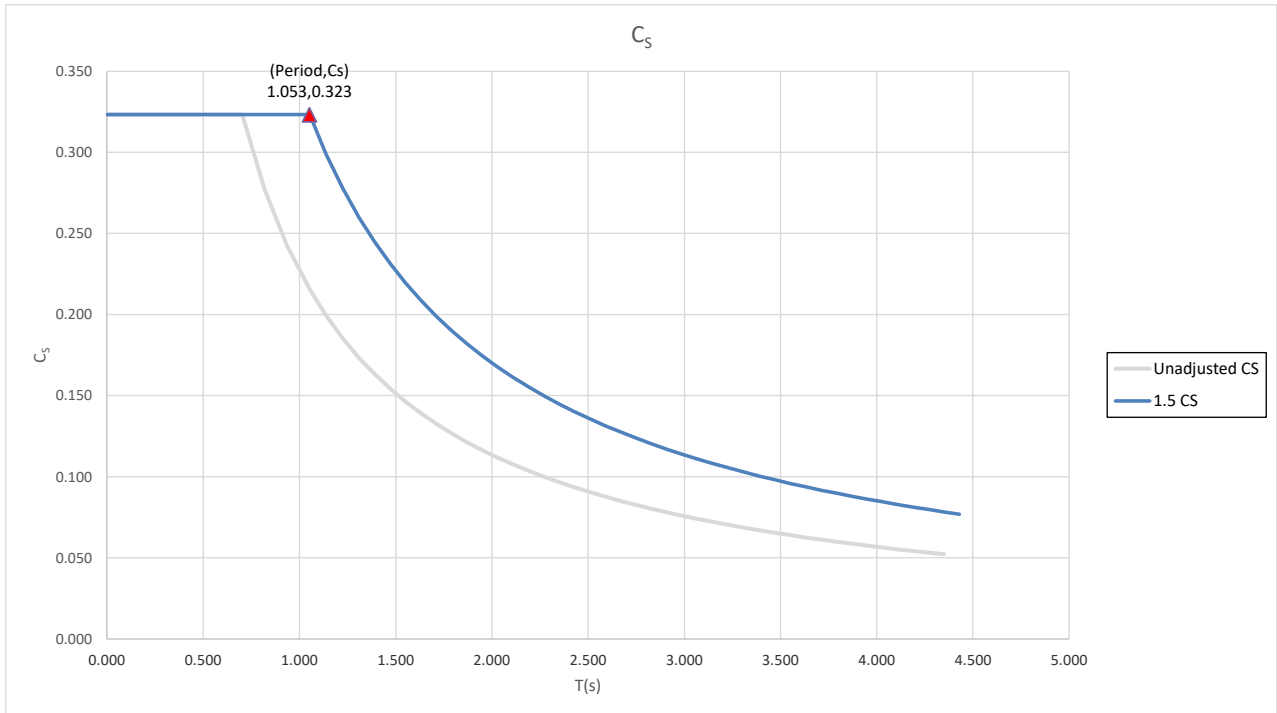
W _t =	22.26	k
W _L =	22.3	k

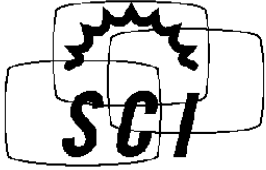
f ₁ =	0.95	Hz
T =	1.05	sec.
k _e =	1.28	

C _s =	0.323	
Seismic Shear, V _{s(final)} =	7.2	k
Wind Shear =	27.35	k

ratio = 0.26

Wind Controls, No Seismic Analysis Required





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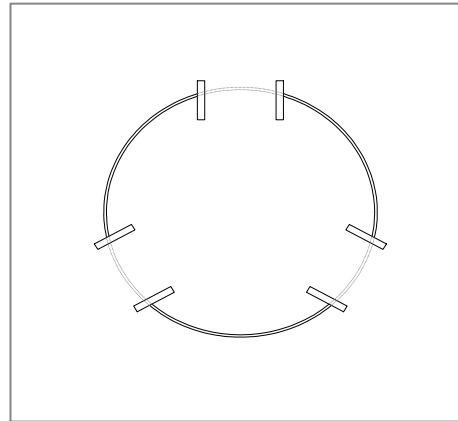
PROJECT: VINTAGE PARK – FLORIN

Port Design:

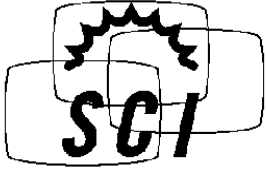
Label: Ports at 81' A.G.L.

Geometry Input

Elevation of Port, AGL	81	ft
Pole Diameter	19.12	in
Pole Thickness	0.1875	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	11.0	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	3/8	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	3	



	Port 1	Port 2	Port 3
Azimuth (°)	0	120	240
Height (in)	12	12	12
Width (in)	6	6	6
Depth (in)	3	3	3
Thickness (in)	0.5	0.5	0.5
Projection (in)	0.5	0.5	0.5
Reinforcing Area (in ²)	3	3	3
Pole Area Removed (in ²)	1.14	1.14	1.14
Dist. From Center to Reinf. (in)	8.56	8.56	8.56
Area Check	49.6%	49.6%	49.6%
MOI Check	54.9%	54.9%	54.9%
Individual Port Weights (lbs)	15	15	15
Reduction in Pole Weight (lbs)	12		
Total Port Weight (lbs)	34		



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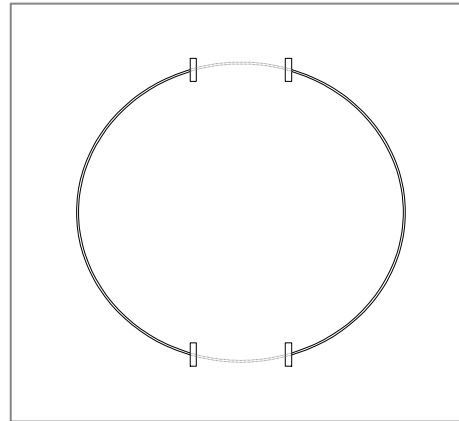
PROJECT: VINTAGE PARK – FLORIN

Port Design:

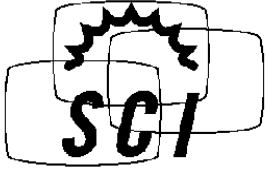
Label: Ports at 9' A.G.L.

Geometry Input

Elevation of Port, AGL	9	ft
Pole Diameter	38.905	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	14.6	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	1/2	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	2	



	<u>Port 1</u>	<u>Port 2</u>
Azimuth (°)	0	180
Height (in)	25	25
Width (in)	12	12
Depth (in)	3	3
Thickness (in)	0.75	0.75
Projection (in)	0.5	0.5
Reinforcing Area (in ²)	4.5	4.5
Pole Area Removed (in ²)	3.05	3.05
Dist. From Center to Reinf. (in)	18.4525	18.4525
Area Check	88.1%	88.1%
MOI Check	92.3%	92.3%
Individual Port Weights (lbs)	47	47
Reduction in Pole Weight (lbs)	44	
Total Port Weight (lbs)	51	



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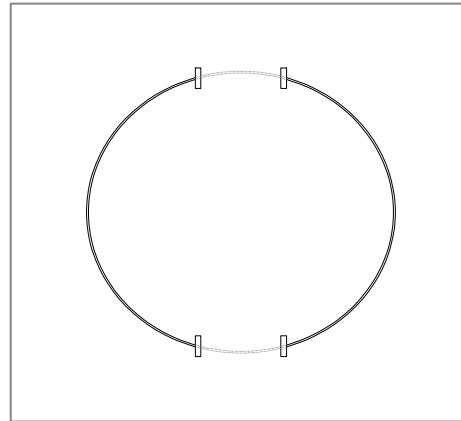
PROJECT: VINTAGE PARK – FLORIN

Port Design:

Label: Ports at 3' A.G.L.

Geometry Input

Elevation of Port, AGL	3	ft
Pole Diameter	40.585	in
Pole Thickness	0.25	in
Pole Yield Strength	65	ksi
Pole Unit Tensile Strength	14.6	k/in
Weld Filler Strength:	70	ksi
Required Fillet Weld:	1/2	in
Reinforcing Rim Yield Strength	50	ksi
# of Ports	2	



	<u>Port 1</u>	<u>Port 2</u>
Azimuth (°)	0	180
Height (in)	25	25
Width (in)	12	12
Depth (in)	3	3
Thickness (in)	0.75	0.75
Projection (in)	0.5	0.5
Reinforcing Area (in ²)	4.5	4.5
Pole Area Removed (in ²)	3.05	3.05
Dist. From Center to Reinf. (in)	19.2925	19.2925
Area Check	88.0%	88.0%
MOI Check	92.0%	92.0%
Individual Port Weights (lbs)	47	47
Reduction in Pole Weight (lbs)	44	
Total Port Weight (lbs)	51	



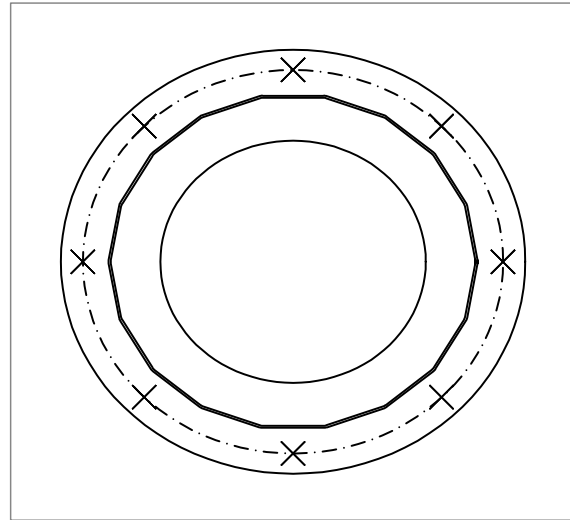
PROJECT: VINTAGE PARK – FLORIN

Monopole Baseplate & Anchorage Design per TIA-222-H Annex Q & TIA-222-H Section 4.9.9

Quantity	Symbol	Value	Units
Number of sides		18	
Flat O.D.	D_T	41.15	in
Pole wall thickness	t_T	0.25	in
Pole yield strength	F_{yp}	65	ksi
Bend Radius		1	in
Base plate fillet weld size		0.25	in
Anchor diameter	d	2	in
Number of anchors	n	8	
Anchor grade		F1554-105	
Base plate thickness	t_{TP}	2.25	in
Base plate yield strength	F_{yf}	50	ksi
Anchor hole diameter		2.3125	in
Slotted to outside edge?		Yes	
Flat washer diameter		3.75	
Zinc drain hole diameter		2.3125	
Zinc drain circle		36.75	in
Bolt circle diameter	D_{BC}	47.5	in
Plate O.D.	D_{OD}	52.5	in
Plate I.D.		30	in

Basic Input & Geometry

Base Plate Illustration



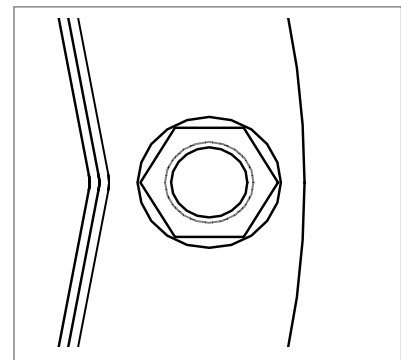
LRFD Loads	Symbol	Wind		Seismic	
		Value	Units	Value	Units
Axial down	$R_{u,c}$	26.717	k		k
Axial up	$R_{u,t}$	0	k		k
Shear	V_u	27.354	k		k
Moment	M_u	1639.242	k-ft		k-ft
Member mom. capacity	ΦM_n	1707	k-ft		

LRFD Loads

Checks	Value	Status	Requirement
Anchor unity check	86.2%	OK	
Min. number of sides	18	OK	6 minimum
Min. number of anchors	8	OK	8 minimum
Max. anchor rod to pole distance	3.05"	OK	13.5" maximum
Min. anchor diameter	2"	OK	0.75" minimum
Max. anchor rod spacing	18.65"	NG	13.5" maximum
Min. anchor rod spacing	18.18"	OK	6" minimum
Min. base plate thickness	2.25"	OK	2" minimum
Min. inside diameter	30"	OK	12.34" minimum
Max. inside diameter	30"	OK	35.625" maximum

Note: when number of anchors is less than minimum and when maximum anchor rod spacing is exceeded, adjustments are made to the effective plate width calculations as if requirements of TIA-222-H Annex Q were met.

Fit Check



Check:	Dist.	Result
Washer vs weld	0.5982	OK
Washer vs OD	0.4688	OK
Washer covers hole	0.5625	OK



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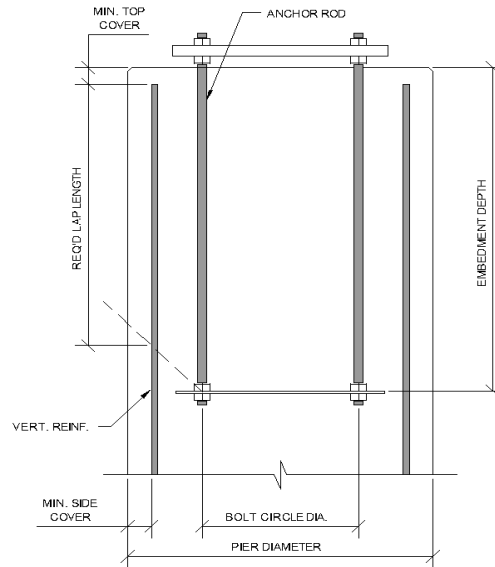
PROJECT: VINTAGE PARK – FLORIN

Anchorage Embedment Design

(per ACI 318-14)

Vertical Bar Size:	#8
# of Vertical Bars:	31
Concrete Compressive Strength [psi]:	4000
Pier Diameter [ft]:	6.5
Pier Depth [ft]:	22
Top of Pier Elevation [in]:	6
Concrete Volume [yd ³]:	27.7
Side Concrete Cover [in]:	4
Top Concrete Cover [in]:	2
Horizontal Tie Size:	#5
Bolt Circle Diameter [in]:	47.5
# of Anchor Rods:	8
Anchor Rod Diameter [in]:	2.00

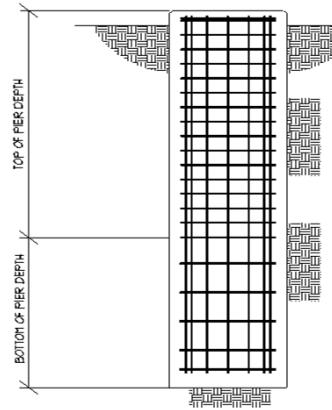
ψ_t (bar location factor):	1.0	Table 25.4.2.4
ψ_e (epoxy coating factor):	1.0	Table 25.4.2.4
ψ_s (bar size factor):	1.0	Table 25.4.2.4
λ (concrete type factor):	1.0	Table 25.4.2.4
Vertical Bar Diameter [in]:	1.0	
Horizontal Tie Diameter [in]:	0.625	
Buffer [in]:	2.17	
Req'd Lap Length [in]:	37.0	in (Section 25.4.2.2)
Min. Req'd Embedment Depth [in]:	49.1	

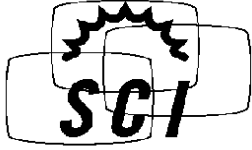


Transverse Reinforcement Design

See IBC Sections 1810.3.9.4.1 and 1810.3.9.4.2

Seismic Design Category:	D
Apply Seismic Detailing?	Yes
Site Class:	D
Type of Transverse Reinforcement:	Spiral
Transverse f_{yt} [ksi]:	60
Seismic Hooks Required?	Yes
Tie Size OK?	Yes
Spacing at Top of Pier [in]:	4
Spacing at Bottom of Pier [in]:	12
Total Pier Length [ft]:	22.5
Top Pier Length [ft]:	19.5
Bottom Pier Length [ft]:	3





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Project: VINTAGE PARK – FLORIN

Drilled Pier Design:

Applied Loads:

Max. shear, V: 36.5 k
 Max. moment, M: 2,185.7 k-ft
 Max. down, P_{down}: 35.6 k
 Max. uplift, P_{uplift}: 0.0 k

Design methodology: LRFD
 Maximum foundation rating: 100%

Pier Properties:

Pier shape: Round
 Pier diameter, b: 6.5 ft
 Min. pier diameter, b_{min} (opt'l): 3.0 ft
 b: 6.5
 Top of pier elevation: 0.5 ft
 Pier depth, d: 22 ft
 Min. pier depth, d_{min} (opt'l): 20.0 ft
 Max. pier depth, d_{max} (opt'l): 41.0 ft

Volume of concrete: 747 ft³
 Volume of concrete: 27.7 yd³
 Weight of concrete: 112.0 k

Soil Properties & Analysis:

Allow. bearing pressure: 4,000 psf F.S.: 3
 Gross or net? Net
 1/3 increase for short term loads? No
 Skin friction (down): 80 psf F.S.: 2
 Skin friction (uplift): 80 psf F.S.: 2
 Top length to ignore: 2 ft
 1/3 increase for short term loads? No
 Combine skin friction w/ end bearing? No
 Bearing capacity: 398.2 k
 Uplift capacity: 166.1 k

Results:

**Bearing capacity OK.
 Uplift capacity OK.**

Lateral analysis in LPile

=====
LFile for Windows, Version 2018-10.006

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

Path to file locations:
\\VSEFILES.vector.local\Projects\2024 Projects\U1085 SCI\U1085-2375-242 Vintage Park
Florin (CA, MonoEuc)\ENG\

Name of input data file:
lpileInputFile.lp10

Name of output report file:
lpileInputFile.lp10

Name of plot output file:
lpileInputFile.lp10

Name of runtime message file:
lpileInputFile.lp10

Date and Time of Analysis

Date: April 2, 2024

Time: 10:44:22

Problem Title

Project Name: Vintage Park - Florin

Job Number: U1085.2375.242

Client: Solar Communications International, Inc.

Engineer: YCA

Description: 90ft MonoEuc

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

Loading Type and Number of Cycles of Loading:

- Static loading specified

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

Output Options:

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

Pile Structural Properties and Geometry

Number of pile sections defined = 1
 Total length of pile = 22.500 ft
 Depth of ground surface below top of pile = 2.5000 ft

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

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

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	78.0000
2	22.500	78.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a round drilled shaft, bored pile, or CIDH pile
 Length of section = 22.500000 ft
 Shaft Diameter = 78.000000 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 8 layers

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

Distance from top of pile to top of layer = 2.500000 ft
 Distance from top of pile to bottom of layer = 5.500000 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 = 31.000000 deg.
 Friction angle at bottom of layer = 31.000000 deg.
 Subgrade k at top of layer = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

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

Distance from top of pile to top of layer = 5.500000 ft
 Distance from top of pile to bottom of layer = 12.000000 ft
 Effective unit weight at top of layer = 120.000000 pcf
 Effective unit weight at bottom of layer = 120.000000 pcf
 Friction angle at top of layer = 31.000000 deg.
 Friction angle at bottom of layer = 31.000000 deg.
 Subgrade k at top of layer = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 12.000000 ft

Distance from top of pile to bottom of layer = 13.000000 ft
 Effective unit weight at top of layer = 125.000000 pcf
 Effective unit weight at bottom of layer = 125.000000 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 = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 4 is stiff clay without free water

Distance from top of pile to top of layer = 13.000000 ft
 Distance from top of pile to bottom of layer = 15.000000 ft
 Effective unit weight at top of layer = 130.000000 pcf
 Effective unit weight at bottom of layer = 130.000000 pcf
 Undrained cohesion at top of layer = 2750. psf
 Undrained cohesion at bottom of layer = 2750. psf
 Epsilon-50 at top of layer = 0.0000
 Epsilon-50 at bottom of layer = 0.0000

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 5 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 15.000000 ft
 Distance from top of pile to bottom of layer = 21.000000 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 = 31.000000 deg.
 Friction angle at bottom of layer = 31.000000 deg.
 Subgrade k at top of layer = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 6 is stiff clay without free water

Distance from top of pile to top of layer = 21.000000 ft
 Distance from top of pile to bottom of layer = 27.000000 ft
 Effective unit weight at top of layer = 130.000000 pcf
 Effective unit weight at bottom of layer = 130.000000 pcf
 Undrained cohesion at top of layer = 2750. psf
 Undrained cohesion at bottom of layer = 2750. psf
 Epsilon-50 at top of layer = 0.0000
 Epsilon-50 at bottom of layer = 0.0000

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 7 is stiff clay without free water

Distance from top of pile to top of layer = 27.000000 ft
 Distance from top of pile to bottom of layer = 32.000000 ft
 Effective unit weight at top of layer = 130.000000 pcf
 Effective unit weight at bottom of layer = 130.000000 pcf
 Undrained cohesion at top of layer = 3980. psf
 Undrained cohesion at bottom of layer = 3980. psf
 Epsilon-50 at top of layer = 0.0000
 Epsilon-50 at bottom of layer = 0.0000

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 8 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 32.000000 ft
 Distance from top of pile to bottom of layer = 32.500000 ft
 Effective unit weight at top of layer = 125.000000 pcf
 Effective unit weight at bottom of layer = 125.000000 pcf
 Friction angle at top of layer = 32.000000 deg.
 Friction angle at bottom of layer = 32.000000 deg.
 Subgrade k at top of layer = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 10.000 ft below the pile tip)

 Summary of Input Soil Properties

Layer E50	Soil Type	Layer	Effective	Undrained	Angle of
Layer or Num. krm	Name (p-y Curve Type)	Depth ft	Unit Wt. pcf	Cohesion psf	Friction deg.
1	Sand	2.5000	115.0000	--	31.0000
--	default (Reese, et al.)	5.5000	115.0000	--	31.0000
2	Sand	5.5000	120.0000	--	31.0000
--	default (Reese, et al.)	12.0000	120.0000	--	31.0000
--	default				
3	Sand	12.0000	125.0000	--	33.0000

--	default (Reese, et al.)	13.0000	125.0000	--	33.0000
--	default				
4	Stiff Clay	13.0000	130.0000	2750.	--
default	--				
	w/o Free Water	15.0000	130.0000	2750.	--
default	--				
5	Sand	15.0000	115.0000	--	31.0000
--	default				
--	(Reese, et al.)	21.0000	115.0000	--	31.0000
--	default				
6	Stiff Clay	21.0000	130.0000	2750.	--
default	--				
	w/o Free Water	27.0000	130.0000	2750.	--
default	--				
7	Stiff Clay	27.0000	130.0000	3980.	--
default	--				
	w/o Free Water	32.0000	130.0000	3980.	--
default	--				
8	Sand	32.0000	125.0000	--	32.0000
--	default				
--	(Reese, et al.)	32.5000	125.0000	--	32.0000
--	default				

 Static Loading Type

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

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 3

Load Compute No.	Load Top y vs. Pile Length	Condition 1	Condition 2	Axial Thrust Force, lbs
1	1	V = 36472. lbs	M = 26227872. in-lbs	35623.
No				
2	1	V = 16412. lbs	M = 11802542. in-lbs	22264.
No				
3	1	V = 19953. lbs	M = 14279238. in-lbs	44529.

No

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

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	22.500000 ft
Shaft Diameter	=	78.000000 in
Concrete Cover Thickness (to edge of long. rebar)	=	4.625000 in
Number of Reinforcing Bars	=	31 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	4778. sq. in.
Total Area of Reinforcing Steel	=	24.490000 sq. in.
Area Ratio of Steel Reinforcement	=	0.51 percent
Edge-to-Edge Bar Spacing	=	5.854154 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	7.81
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$	=	17632.566 kips
Tensile Load for Cracking of Concrete	=	-2059.118 kips
Nominal Axial Tensile Capacity	=	-1469.400 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	33.875000	0.000000
2	1.000000	0.790000	33.181577	6.818987
3	1.000000	0.790000	31.129696	13.358805
4	1.000000	0.790000	27.803362	19.351711
5	1.000000	0.790000	23.338754	24.552356
6	1.000000	0.790000	17.918656	28.747824
7	1.000000	0.790000	11.764965	31.766353
8	1.000000	0.790000	5.129616	33.484364
9	1.000000	0.790000	-1.715741	33.831522
10	1.000000	0.790000	-8.490855	32.793612
11	1.000000	0.790000	-14.918352	30.413129
12	1.000000	0.790000	-20.735090	26.787528
13	1.000000	0.790000	-25.702931	22.065243
14	1.000000	0.790000	-29.618492	16.439604
15	1.000000	0.790000	-32.321467	10.140926
16	1.000000	0.790000	-33.701198	3.427077
17	1.000000	0.790000	-33.701198	-3.427077
18	1.000000	0.790000	-32.321467	-10.140926
19	1.000000	0.790000	-29.618492	-16.439604
20	1.000000	0.790000	-25.702931	-22.065243
21	1.000000	0.790000	-20.735090	-26.787528
22	1.000000	0.790000	-14.918352	-30.413129
23	1.000000	0.790000	-8.490855	-32.793612
24	1.000000	0.790000	-1.715741	-33.831522
25	1.000000	0.790000	5.129616	-33.484364
26	1.000000	0.790000	11.764965	-31.766353
27	1.000000	0.790000	17.918656	-28.747824
28	1.000000	0.790000	23.338754	-24.552356
29	1.000000	0.790000	27.803362	-19.351711
30	1.000000	0.790000	31.129696	-13.358805
31	1.000000	0.790000	33.181577	-6.818987

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

Minimum spacing between any two bars not equal to zero = 5.854 inches between bars 11 and 12.

Ratio of bar spacing to maximum aggregate size = 7.81

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 = 3

Number	Axial Thrust Force kips
1	22.264
2	35.623
3	44.529

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 = 22.264 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Run Stiffness Msg kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
4.16667E-07	3347.	8032303347.	41.5691582	0.00001732	-0.00001518
0.0724390	0.4975815				
8.33333E-07	6675.	8010068734.	40.2891574	0.00003357	-0.00003143
0.1397732	0.9642296				
0.00000125	9985.	7987753188.	39.8625146	0.00004983	-0.00004767
0.2065253	1.4308787				
0.00000167	13276.	7965417370.	39.6492100	0.00006608	-0.00006392

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	22.264	49465.790	0.00300000
2	35.623	49864.095	0.00300000
3	44.529	50129.496	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	49466.	14.471600	32153.	960398997.
2	0.65	49864.	23.154950	32412.	969625962.
3	0.65	50129.	28.943850	32584.	975790840.
1	0.70	49466.	15.584800	34626.	957862720.
2	0.70	49864.	24.936100	34905.	966445008.
3	0.70	50129.	31.170300	35091.	972110530.
1	0.75	49466.	16.698000	37099.	928904442.
2	0.75	49864.	26.717250	37398.	938050729.
3	0.75	50129.	33.396750	37597.	944149517.

Layering Correction Equivalent Depths of Soil & Rock Layers

Top of Equivalent

Layer No.	Layer Below Pile Head ft	Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	2.5000	0.00	N.A.	No	0.00	30127.
2	5.5000	2.9999	Yes	No	30127.	314002.
3	12.0000	8.8847	Yes	No	344128.	86177.
4	13.0000	7.0332	No	No	430305.	141874.
5	15.0000	12.0038	No	No	572180.	698056.
6	21.0000	17.5317	No	No	1270236.	139417.
7	27.0000	24.5000	No	No	1409653.	0.00
8	32.0000	29.5000	No	No	0.00	N.A.

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

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

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

Shear force at pile head = 36472.0 lbs
 Applied moment at pile head = 26227872.0 in-lbs
 Axial thrust load on pile head = 35623.0 lbs

Depth Res. X lb/inch	Soil Spr. Es*h lb/inch	Deflect. y lb/inch	Bending Distrib. Lat. Load in-lbs lb/inch	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil p
0.00	1.9008	0.00	2.62E+07	36472.	-0.01258	0.00	9.79E+11	
0.2250	1.8670	0.00	2.63E+07	36472.	-0.01251	0.00	9.79E+11	
0.4500	1.8333	0.00	2.64E+07	36472.	-0.01243	0.00	9.79E+11	
0.6750	1.7998	0.00	2.65E+07	36472.	-0.01236	0.00	9.78E+11	
0.00	0.00	0.00	0.00					

0.9000	1.7665	2.66E+07	36472.	-0.01229	0.00	9.78E+11
0.00	0.00	0.00				
1.1250	1.7334	2.67E+07	36472.	-0.01221	0.00	9.78E+11
0.00	0.00	0.00				
1.3500	1.7006	2.68E+07	36472.	-0.01214	0.00	9.78E+11
0.00	0.00	0.00				
1.5750	1.6679	2.69E+07	36472.	-0.01207	0.00	9.78E+11
0.00	0.00	0.00				
1.8000	1.6354	2.70E+07	36472.	-0.01199	0.00	9.78E+11
0.00	0.00	0.00				
2.0250	1.6031	2.71E+07	36472.	-0.01192	0.00	9.77E+11
0.00	0.00	0.00				
2.2500	1.5711	2.72E+07	36472.	-0.01184	0.00	9.77E+11
0.00	0.00	0.00				
2.4750	1.5392	2.73E+07	36472.	-0.01177	0.00	9.77E+11
0.00	0.00	0.00				
2.7000	1.5075	2.74E+07	36365.	-0.01169	0.00	9.77E+11
-78.9247	141.3556	0.00				
2.9250	1.4761	2.75E+07	36030.	-0.01162	0.00	9.77E+11
-169.2122	309.5223	0.00				
3.1500	1.4448	2.76E+07	35450.	-0.01154	0.00	9.77E+11
-260.9033	487.5683	0.00				
3.3750	1.4137	2.77E+07	34620.	-0.01146	0.00	9.76E+11
-353.8114	675.7147	0.00				
3.6000	1.3829	2.78E+07	33538.	-0.01139	0.00	9.76E+11
-447.7522	874.1972	0.00				
3.8250	1.3523	2.79E+07	32201.	-0.01131	0.00	9.76E+11
-542.5434	1083.	0.00				
4.0500	1.3218	2.80E+07	30607.	-0.01123	0.00	9.76E+11
-638.0051	1303.	0.00				
4.2750	1.2916	2.81E+07	28755.	-0.01115	0.00	9.76E+11
-733.9563	1534.	0.00				
4.5000	1.2616	2.81E+07	26643.	-0.01108	0.00	9.76E+11
-830.1568	1777.	0.00				
4.7250	1.2318	2.82E+07	24272.	-0.01100	0.00	9.76E+11
-926.3790	2031.	0.00				
4.9500	1.2022	2.83E+07	21641.	-0.01092	0.00	9.76E+11
-1022.	2296.	0.00				
5.1750	1.1728	2.83E+07	18752.	-0.01084	0.00	9.76E+11
-1118.	2574.	0.00				
5.4000	1.1437	2.84E+07	15605.	-0.01076	0.00	9.75E+11
-1213.	2864.	0.00				
5.6250	1.1147	2.84E+07	12199.	-0.01068	0.00	9.75E+11
-1310.	3172.	0.00				
5.8500	1.0860	2.84E+07	8531.	-0.01061	0.00	9.75E+11
-1407.	3499.	0.00				
6.0750	1.0575	2.85E+07	4600.	-0.01053	0.00	9.75E+11
-1505.	3843.	0.00				
6.3000	1.0291	2.85E+07	405.4505	-0.01045	0.00	9.75E+11
-1602.	4202.	0.00				

6.5250	1.0010	2.85E+07	-4048.	-0.01037	0.00	9.75E+11
-1697.	4577.	0.00				
6.7500	0.9731	2.85E+07	-8756.	-0.01029	0.00	9.75E+11
-1791.	4968.	0.00				
6.9750	0.9455	2.84E+07	-13715.	-0.01021	0.00	9.75E+11
-1883.	5377.	0.00				
7.2000	0.9180	2.84E+07	-18920.	-0.01013	0.00	9.75E+11
-1973.	5803.	0.00				
7.4250	0.8907	2.83E+07	-24367.	-0.01005	0.00	9.76E+11
-2061.	6248.	0.00				
7.6500	0.8637	2.83E+07	-30048.	-0.00998	0.00	9.76E+11
-2147.	6712.	0.00				
7.8750	0.8369	2.82E+07	-35959.	-0.00990	0.00	9.76E+11
-2231.	7197.	0.00				
8.1000	0.8103	2.81E+07	-42091.	-0.00982	0.00	9.76E+11
-2312.	7703.	0.00				
8.3250	0.7838	2.79E+07	-48438.	-0.00974	0.00	9.76E+11
-2390.	8232.	0.00				
8.5500	0.7576	2.78E+07	-54993.	-0.00967	0.00	9.76E+11
-2465.	8785.	0.00				
8.7750	0.7316	2.76E+07	-61745.	-0.00959	0.00	9.77E+11
-2537.	9362.	0.00				
9.0000	0.7059	2.75E+07	-68688.	-0.00951	0.00	9.77E+11
-2606.	9967.	0.00				
9.2250	0.6803	2.73E+07	-75815.	-0.00944	0.00	9.77E+11
-2674.	10611.	0.00				
9.4500	0.6549	2.71E+07	-83121.	-0.00936	0.00	9.78E+11
-2738.	11288.	0.00				
9.6750	0.6297	2.68E+07	-90595.	-0.00929	0.00	9.78E+11
-2799.	12000.	0.00				
9.9000	0.6047	2.66E+07	-98229.	-0.00921	0.00	9.78E+11
-2856.	12750.	0.00				
10.1250	0.5800	2.63E+07	-106011.	-0.00914	0.00	9.79E+11
-2908.	13540.	0.00				
10.3500	0.5554	2.60E+07	-113929.	-0.00907	0.00	9.79E+11
-2957.	14375.	0.00				
10.5750	0.5310	2.57E+07	-121972.	-0.00900	0.00	9.80E+11
-3001.	15259.	0.00				
10.8000	0.5068	2.53E+07	-130127.	-0.00893	0.00	9.81E+11
-3040.	16196.	0.00				
11.0250	0.4828	2.50E+07	-138382.	-0.00886	0.00	9.81E+11
-3074.	17193.	0.00				
11.2500	0.4590	2.46E+07	-146721.	-0.00879	0.00	9.82E+11
-3103.	18256.	0.00				
11.4750	0.4353	2.42E+07	-155024.	-0.00872	0.00	9.83E+11
-3047.	18899.	0.00				
11.7000	0.4118	2.38E+07	-163127.	-0.00866	0.00	9.84E+11
-2955.	19373.	0.00				
11.9250	0.3886	2.33E+07	-170972.	-0.00859	0.00	9.90E+11
-2856.	19847.	0.00				

12.1500	0.3654	2.28E+07	-179463.	-0.00856	0.00	7.90E+12
-3433.	25364.	0.00				
12.3750	0.3424	2.23E+07	-188748.	-0.00855	0.00	7.90E+12
-3445.	27170.	0.00				
12.6000	0.3193	2.18E+07	-198055.	-0.00854	0.00	7.91E+12
-3448.	29161.	0.00				
12.8250	0.2962	2.13E+07	-207356.	-0.00853	0.00	7.91E+12
-3442.	31373.	0.00				
13.0500	0.2732	2.07E+07	-214821.	-0.00853	0.00	7.91E+12
-2087.	20627.	0.00				
13.2750	0.2502	2.01E+07	-220414.	-0.00852	0.00	7.92E+12
-2056.	22193.	0.00				
13.5000	0.2272	1.95E+07	-225920.	-0.00851	0.00	7.92E+12
-2022.	24027.	0.00				
13.7250	0.2042	1.89E+07	-231325.	-0.00851	0.00	7.93E+12
-1982.	26212.	0.00				
13.9500	0.1812	1.83E+07	-236618.	-0.00850	0.00	7.93E+12
-1938.	28867.	0.00				
14.1750	0.1583	1.76E+07	-241780.	-0.00849	0.00	7.93E+12
-1886.	32175.	0.00				
14.4000	0.1354	1.70E+07	-246793.	-0.00849	0.00	7.94E+12
-1827.	36432.	0.00				
14.6250	0.1125	1.63E+07	-251629.	-0.00848	0.00	7.94E+12
-1756.	42157.	0.00				
14.8500	0.08956	1.56E+07	-256254.	-0.00848	0.00	7.95E+12
-1670.	50348.	0.00				
15.0750	0.06668	1.49E+07	-259392.	-0.00847	0.00	7.95E+12
-653.9653	26480.	0.00				
15.3000	0.04381	1.42E+07	-260865.	-0.00847	0.00	7.96E+12
-437.3643	26954.	0.00				
15.5250	0.02095	1.35E+07	-261743.	-0.00846	0.00	7.96E+12
-212.8692	27428.	0.00				
15.7500	-0.00189	1.28E+07	-262004.	-0.00846	0.00	7.97E+12
19.5198	27902.	0.00				
15.9750	-0.02472	1.21E+07	-261627.	-0.00845	0.00	7.97E+12
259.8030	28375.	0.00				
16.2000	-0.04754	1.14E+07	-260590.	-0.00845	0.00	7.98E+12
507.9813	28849.	0.00				
16.4250	-0.07035	1.07E+07	-258873.	-0.00845	0.00	7.98E+12
764.0559	29323.	0.00				
16.6500	-0.09315	9992674.	-256454.	-0.00844	0.00	7.99E+12
1028.	29797.	0.00				
16.8750	-0.1159	9304808.	-253311.	-0.00844	0.00	7.99E+12
1300.	30271.	0.00				
17.1000	-0.1387	8626417.	-249424.	-0.00844	0.00	7.99E+12
1580.	30744.	0.00				
17.3250	-0.1615	7959542.	-244770.	-0.00843	0.00	8.00E+12
1867.	31218.	0.00				
17.5500	-0.1843	7306280.	-239329.	-0.00843	0.00	8.00E+12
2163.	31692.	0.00				

17.7750	-0.2070	6668785.	-233080.	-0.00843	0.00	8.01E+12
2466.	32166.	0.00				
18.0000	-0.2298	6049271.	-226000.	-0.00843	0.00	8.01E+12
2778.	32640.	0.00				
18.2250	-0.2525	5450007.	-218069.	-0.00842	0.00	8.01E+12
3097.	33113.	0.00				
18.4500	-0.2753	4873321.	-209264.	-0.00842	0.00	8.02E+12
3424.	33587.	0.00				
18.6750	-0.2980	4321600.	-199566.	-0.00842	0.00	8.02E+12
3760.	34061.	0.00				
18.9000	-0.3208	3797286.	-188952.	-0.00842	0.00	8.03E+12
4103.	34535.	0.00				
19.1250	-0.3435	3302881.	-177400.	-0.00842	0.00	8.03E+12
4454.	35009.	0.00				
19.3500	-0.3662	2840944.	-165040.	-0.00842	0.00	8.03E+12
4702.	34663.	0.00				
19.5750	-0.3890	2413282.	-152171.	-0.00842	0.00	8.03E+12
4831.	33536.	0.00				
19.8000	-0.4117	2020838.	-138957.	-0.00842	0.00	8.03E+12
4957.	32514.	0.00				
20.0250	-0.4344	1664535.	-125405.	-0.00842	0.00	8.03E+12
5081.	31581.	0.00				
20.2500	-0.4571	1345272.	-111523.	-0.00842	0.00	8.03E+12
5202.	30724.	0.00				
20.4750	-0.4798	1063928.	-97319.	-0.00841	0.00	8.03E+12
5320.	29933.	0.00				
20.7000	-0.5026	821365.	-82801.	-0.00841	0.00	8.03E+12
5435.	29199.	0.00				
20.9250	-0.5253	618422.	-67975.	-0.00841	0.00	8.03E+12
5548.	28515.	0.00				
21.1500	-0.5480	455921.	-56023.	-0.00841	0.00	8.03E+12
3305.	16285.	0.00				
21.3750	-0.5707	317515.	-47029.	-0.00841	0.00	8.03E+12
3357.	15882.	0.00				
21.6000	-0.5934	203583.	-37896.	-0.00841	0.00	8.03E+12
3408.	15507.	0.00				
21.8250	-0.6162	114497.	-28625.	-0.00841	0.00	8.03E+12
3459.	15158.	0.00				
22.0500	-0.6389	50629.	-19217.	-0.00841	0.00	8.03E+12
3509.	14831.	0.00				
22.2750	-0.6616	12342.	-9675.	-0.00841	0.00	8.03E+12
3559.	14524.	0.00				
22.5000	-0.6843	0.00	0.00	-0.00841	0.00	8.03E+12
3608.	7118.	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 = 1.90081855 inches
 Computed slope at pile head = -0.01257965 radians
 Maximum bending moment = 28474333. inch-lbs
 Maximum shear force = -262004. lbs
 Depth of maximum bending moment = 6.30000000 feet below pile head
 Depth of maximum shear force = 15.75000000 feet below pile head
 Number of iterations = 155
 Number of zero deflection points = 1

 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 = 16412.0 lbs
 Applied moment at pile head = 11802542.0 in-lbs
 Axial thrust load on pile head = 22264.0 lbs

Depth Res. Soil	Deflect. Spr. y	Bending Distrib. Lat. Load	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil p
X	Y	Moment					
Es*h	Lat. Load	in-lbs	lbs	radians	psi*	in-lb^2	
feet	inches	lb/inch					
lb/inch	lb/inch	lb/inch					
0.00	0.4680	1.18E+07	16412.	-0.00265	0.00	7.97E+12	
0.00	0.00	0.00					
0.2250	0.4608	1.18E+07	16412.	-0.00265	0.00	7.97E+12	
0.00	0.00	0.00					
0.4500	0.4537	1.19E+07	16412.	-0.00264	0.00	7.97E+12	
0.00	0.00	0.00					
0.6750	0.4465	1.19E+07	16412.	-0.00264	0.00	7.97E+12	
0.00	0.00	0.00					
0.9000	0.4394	1.20E+07	16412.	-0.00263	0.00	7.97E+12	
0.00	0.00	0.00					
1.1250	0.4323	1.20E+07	16412.	-0.00263	0.00	7.97E+12	
0.00	0.00	0.00					
1.3500	0.4252	1.21E+07	16412.	-0.00263	0.00	7.97E+12	
0.00	0.00	0.00					
1.5750	0.4181	1.21E+07	16412.	-0.00262	0.00	7.97E+12	

0.00	0.00	0.00					
1.8000	0.4110	1.22E+07	16412.	-0.00262	0.00	7.97E+12	
0.00	0.00	0.00					
2.0250	0.4040	1.22E+07	16412.	-0.00261	0.00	7.97E+12	
0.00	0.00	0.00					
2.2500	0.3969	1.22E+07	16412.	-0.00261	0.00	7.97E+12	
0.00	0.00	0.00					
2.4750	0.3899	1.23E+07	16412.	-0.00261	0.00	7.97E+12	
0.00	0.00	0.00					
2.7000	0.3828	1.23E+07	16337.	-0.00260	0.00	7.97E+12	
-55.1963	389.2653	0.00					
2.9250	0.3758	1.24E+07	16103.	-0.00260	0.00	7.97E+12	
-118.2277	849.3597	0.00					
3.1500	0.3688	1.24E+07	15698.	-0.00259	0.00	7.97E+12	
-182.0984	1333.	0.00					
3.3750	0.3618	1.25E+07	15119.	-0.00259	0.00	7.97E+12	
-246.6513	1841.	0.00					
3.6000	0.3548	1.25E+07	14375.	-0.00259	0.00	7.97E+12	
-304.4215	2316.	0.00					
3.8250	0.3479	1.25E+07	13479.	-0.00258	0.00	7.97E+12	
-359.4827	2790.	0.00					
4.0500	0.3409	1.26E+07	12437.	-0.00258	0.00	7.97E+12	
-412.1102	3264.	0.00					
4.2750	0.3340	1.26E+07	11257.	-0.00257	0.00	7.97E+12	
-462.3100	3738.	0.00					
4.5000	0.3270	1.26E+07	9944.	-0.00257	0.00	7.97E+12	
-510.0884	4212.	0.00					
4.7250	0.3201	1.27E+07	8506.	-0.00256	0.00	7.97E+12	
-555.4513	4685.	0.00					
4.9500	0.3132	1.27E+07	6948.	-0.00256	0.00	7.97E+12	
-598.4049	5159.	0.00					
5.1750	0.3063	1.27E+07	5277.	-0.00256	0.00	7.97E+12	
-638.9554	5633.	0.00					
5.4000	0.2994	1.27E+07	3501.	-0.00255	0.00	7.97E+12	
-677.1089	6107.	0.00					
5.6250	0.2925	1.27E+07	1624.	-0.00255	0.00	7.97E+12	
-712.8715	6581.	0.00					
5.8500	0.2856	1.27E+07	-345.5578	-0.00254	0.00	7.97E+12	
-746.2494	7054.	0.00					
6.0750	0.2788	1.27E+07	-2402.	-0.00254	0.00	7.97E+12	
-777.2488	7528.	0.00					
6.3000	0.2719	1.27E+07	-4539.	-0.00253	0.00	7.97E+12	
-805.8756	8002.	0.00					
6.5250	0.2651	1.27E+07	-6751.	-0.00253	0.00	7.97E+12	
-832.1361	8476.	0.00					
6.7500	0.2583	1.27E+07	-9030.	-0.00252	0.00	7.97E+12	
-856.0364	8950.	0.00					
6.9750	0.2514	1.26E+07	-11370.	-0.00252	0.00	7.97E+12	
-877.5824	9423.	0.00					
7.2000	0.2446	1.26E+07	-13766.	-0.00252	0.00	7.97E+12	

-896.7801	9897.	0.00					
7.4250	0.2379	1.26E+07	-16210.	-0.00251	0.00	7.97E+12	
-913.6356	10371.	0.00					
7.6500	0.2311	1.25E+07	-18696.	-0.00251	0.00	7.97E+12	
-928.1548	10845.	0.00					
7.8750	0.2243	1.25E+07	-21219.	-0.00250	0.00	7.97E+12	
-940.3435	11319.	0.00					
8.1000	0.2176	1.24E+07	-23771.	-0.00250	0.00	7.97E+12	
-950.2076	11792.	0.00					
8.3250	0.2108	1.23E+07	-26347.	-0.00250	0.00	7.97E+12	
-957.7528	12266.	0.00					
8.5500	0.2041	1.23E+07	-28940.	-0.00249	0.00	7.97E+12	
-962.9848	12740.	0.00					
8.7750	0.1974	1.22E+07	-31544.	-0.00249	0.00	7.97E+12	
-965.9091	13214.	0.00					
9.0000	0.1907	1.21E+07	-34152.	-0.00248	0.00	7.97E+12	
-966.5314	13688.	0.00					
9.2250	0.1840	1.20E+07	-36760.	-0.00248	0.00	7.97E+12	
-964.8571	14161.	0.00					
9.4500	0.1773	1.19E+07	-39359.	-0.00247	0.00	7.97E+12	
-960.8915	14635.	0.00					
9.6750	0.1706	1.18E+07	-41945.	-0.00247	0.00	7.97E+12	
-954.6399	15109.	0.00					
9.9000	0.1639	1.17E+07	-44511.	-0.00247	0.00	7.97E+12	
-946.1073	15583.	0.00					
10.1250	0.1573	1.16E+07	-47051.	-0.00246	0.00	7.98E+12	
-935.2989	16057.	0.00					
10.3500	0.1506	1.14E+07	-49559.	-0.00246	0.00	7.98E+12	
-922.2196	16530.	0.00					
10.5750	0.1440	1.13E+07	-52028.	-0.00246	0.00	7.98E+12	
-906.8741	17004.	0.00					
10.8000	0.1374	1.11E+07	-54453.	-0.00245	0.00	7.98E+12	
-889.2672	17478.	0.00					
11.0250	0.1308	1.10E+07	-56827.	-0.00245	0.00	7.98E+12	
-869.4034	17952.	0.00					
11.2500	0.1242	1.08E+07	-59145.	-0.00244	0.00	7.98E+12	
-847.2871	18426.	0.00					
11.4750	0.1176	1.07E+07	-61400.	-0.00244	0.00	7.98E+12	
-822.9225	18899.	0.00					
11.7000	0.1110	1.05E+07	-63586.	-0.00244	0.00	7.98E+12	
-796.3139	19373.	0.00					
11.9250	0.1044	1.03E+07	-65697.	-0.00243	0.00	7.98E+12	
-767.4652	19847.	0.00					
12.1500	0.09784	1.01E+07	-68294.	-0.00243	0.00	7.99E+12	
-1157.	31920.	0.00					
12.3750	0.09129	9960668.	-71347.	-0.00243	0.00	7.99E+12	
-1104.	32665.	0.00					
12.6000	0.08474	9764152.	-74253.	-0.00242	0.00	7.99E+12	
-1049.	33409.	0.00					
12.8250	0.07820	9559992.	-77004.	-0.00242	0.00	7.99E+12	

-989.2145	34153.	0.00					
13.0500	0.07167	9348620.	-80356.	-0.00242	0.00	7.99E+12	
-1494.	56268.	0.00					
13.2750	0.06515	9126359.	-84356.	-0.00241	0.00	7.99E+12	
-1469.	60874.	0.00					
13.5000	0.05864	8893389.	-88284.	-0.00241	0.00	7.99E+12	
-1441.	66346.	0.00					
13.7250	0.05214	8649914.	-92132.	-0.00241	0.00	7.99E+12	
-1409.	72974.	0.00					
13.9500	0.04564	8396165.	-95887.	-0.00240	0.00	8.00E+12	
-1373.	81199.	0.00					
14.1750	0.03916	8132410.	-99536.	-0.00240	0.00	8.00E+12	
-1330.	91730.	0.00					
14.4000	0.03267	7858957.	-103061.	-0.00240	0.00	8.00E+12	
-1280.	105791.	0.00					
14.6250	0.02620	7576171.	-106436.	-0.00240	0.00	8.00E+12	
-1220.	125704.	0.00					
14.8500	0.01973	7284492.	-109627.	-0.00239	0.00	8.00E+12	
-1144.	156540.	0.00					
15.0750	0.01327	6984472.	-111348.	-0.00239	0.00	8.01E+12	
-130.1900	26480.	0.00					
15.3000	0.00682	6683503.	-111615.	-0.00239	0.00	8.01E+12	
-68.0933	26954.	0.00					
15.5250	3.73E-04	6382037.	-111712.	-0.00239	0.00	8.01E+12	
-3.7933	27428.	0.00					
15.7500	-0.00607	6080544.	-111633.	-0.00238	0.00	8.01E+12	
62.7094	27902.	0.00					
15.9750	-0.01250	5779507.	-111371.	-0.00238	0.00	8.01E+12	
131.4149	28375.	0.00					
16.2000	-0.01894	5479429.	-110920.	-0.00238	0.00	8.01E+12	
202.3230	28849.	0.00					
16.4250	-0.02536	5180825.	-110275.	-0.00238	0.00	8.02E+12	
275.4340	29323.	0.00					
16.6500	-0.03178	4884229.	-109430.	-0.00238	0.00	8.02E+12	
350.7483	29797.	0.00					
16.8750	-0.03820	4590190.	-108378.	-0.00238	0.00	8.02E+12	
428.2664	30271.	0.00					
17.1000	-0.04461	4299273.	-107114.	-0.00237	0.00	8.02E+12	
507.9891	30744.	0.00					
17.3250	-0.05102	4012059.	-105632.	-0.00237	0.00	8.02E+12	
589.9172	31218.	0.00					
17.5500	-0.05743	3729145.	-103926.	-0.00237	0.00	8.03E+12	
674.0518	31692.	0.00					
17.7750	-0.06383	3451145.	-101989.	-0.00237	0.00	8.03E+12	
760.3939	32166.	0.00					
18.0000	-0.07023	3178689.	-99817.	-0.00237	0.00	8.03E+12	
848.9450	32640.	0.00					
18.2250	-0.07662	2912421.	-97402.	-0.00237	0.00	8.03E+12	
939.7063	33113.	0.00					
18.4500	-0.08301	2653003.	-94739.	-0.00237	0.00	8.03E+12	

1033.	33587.	0.00					
18.6750	-0.08941	2401114.	-91822.	-0.00237	0.00	8.03E+12	
1128.	34061.	0.00					
18.9000	-0.09579	2157447.	-88646.	-0.00237	0.00	8.03E+12	
1225.	34535.	0.00					
19.1250	-0.1022	1922712.	-85203.	-0.00237	0.00	8.03E+12	
1325.	35009.	0.00					
19.3500	-0.1086	1697635.	-81488.	-0.00236	0.00	8.03E+12	
1427.	35482.	0.00					
19.5750	-0.1149	1482959.	-77496.	-0.00236	0.00	8.03E+12	
1531.	35956.	0.00					
19.8000	-0.1213	1279443.	-73219.	-0.00236	0.00	8.03E+12	
1637.	36430.	0.00					
20.0250	-0.1277	1087860.	-68653.	-0.00236	0.00	8.03E+12	
1746.	36904.	0.00					
20.2500	-0.1341	909003.	-63790.	-0.00236	0.00	8.03E+12	
1856.	37378.	0.00					
20.4750	-0.1405	743678.	-58626.	-0.00236	0.00	8.03E+12	
1969.	37852.	0.00					
20.7000	-0.1468	592709.	-53153.	-0.00236	0.00	8.03E+12	
2084.	38325.	0.00					
20.9250	-0.1532	456935.	-47367.	-0.00236	0.00	8.03E+12	
2202.	38799.	0.00					
21.1500	-0.1596	337213.	-41116.	-0.00236	0.00	8.03E+12	
2428.	41077.	0.00					
21.3750	-0.1660	235191.	-34510.	-0.00236	0.00	8.03E+12	
2465.	40104.	0.00					
21.6000	-0.1724	151143.	-27804.	-0.00236	0.00	8.03E+12	
2502.	39197.	0.00					
21.8250	-0.1787	85335.	-20999.	-0.00236	0.00	8.03E+12	
2539.	38349.	0.00					
22.0500	-0.1851	38034.	-14096.	-0.00236	0.00	8.03E+12	
2575.	37554.	0.00					
22.2750	-0.1915	9502.	-7096.	-0.00236	0.00	8.03E+12	
2610.	36807.	0.00					
22.5000	-0.1979	0.00	0.00	-0.00236	0.00	8.03E+12	
2646.	18052.	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 = 0.46795086 inches
 Computed slope at pile head = -0.00265093 radians

Maximum bending moment = 12723723. inch-lbs
 Maximum shear force = -111712. lbs
 Depth of maximum bending moment = 5.85000000 feet below pile head
 Depth of maximum shear force = 15.52500000 feet below pile head
 Number of iterations = 12
 Number of zero deflection points = 1

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

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

Shear force at pile head	=	19953.0 lbs					
Applied moment at pile head	=	14279238.0 in-lbs					
Axial thrust load on pile head	=	44529.0 lbs					
Depth Res.	Deflect. X	Bending Soil	Shear	Slope	Total	Bending	Soil
	Soil Spr. y	Distrib. Moment	Force	S	Stress	Stiffness	p
	Es*h	Lat. Load					
	feet	inches	lb-in	lbs	radians	psi*	in-lb^2
	lb/inch	lb/inch	lb/inch				
	0.00	0.5972	1.43E+07	19953.	-0.00338	0.00	7.96E+12
0.00	0.00	0.00	0.00				
	0.2250	0.5881	1.43E+07	19953.	-0.00338	0.00	7.96E+12
0.00	0.00	0.00	0.00				
	0.4500	0.5790	1.44E+07	19953.	-0.00337	0.00	7.96E+12
0.00	0.00	0.00	0.00				
	0.6750	0.5699	1.44E+07	19953.	-0.00337	0.00	7.96E+12
0.00	0.00	0.00	0.00				
	0.9000	0.5608	1.45E+07	19953.	-0.00336	0.00	7.96E+12
0.00	0.00	0.00	0.00				
	1.1250	0.5517	1.46E+07	19953.	-0.00336	0.00	7.96E+12
0.00	0.00	0.00	0.00				
	1.3500	0.5427	1.46E+07	19953.	-0.00335	0.00	7.95E+12
0.00	0.00	0.00	0.00				
	1.5750	0.5336	1.47E+07	19953.	-0.00335	0.00	7.95E+12
0.00	0.00	0.00	0.00				
	1.8000	0.5246	1.47E+07	19953.	-0.00334	0.00	7.95E+12
0.00	0.00	0.00	0.00				
	2.0250	0.5156	1.48E+07	19953.	-0.00334	0.00	7.95E+12
0.00	0.00	0.00	0.00				
	2.2500	0.5066	1.48E+07	19953.	-0.00333	0.00	7.95E+12
0.00	0.00	0.00	0.00				

2.4750	0.4976	1.49E+07	19953.	-0.00333	0.00	7.95E+12
0.00	0.00	0.00				
2.7000	0.4886	1.49E+07	19874.	-0.00332	0.00	7.95E+12
-58.8004	324.9341	0.00				
2.9250	0.4796	1.50E+07	19624.	-0.00332	0.00	7.95E+12
-125.9962	709.2726	0.00				
3.1500	0.4707	1.50E+07	19192.	-0.00331	0.00	7.95E+12
-194.1403	1114.	0.00				
3.3750	0.4617	1.51E+07	18575.	-0.00331	0.00	7.95E+12
-263.0677	1538.	0.00				
3.6000	0.4528	1.51E+07	17771.	-0.00330	0.00	7.95E+12
-332.6136	1983.	0.00				
3.8250	0.4439	1.52E+07	16778.	-0.00330	0.00	7.95E+12
-402.6131	2449.	0.00				
4.0500	0.4350	1.52E+07	15596.	-0.00329	0.00	7.95E+12
-472.9011	2935.	0.00				
4.2750	0.4261	1.53E+07	14224.	-0.00329	0.00	7.95E+12
-543.3125	3442.	0.00				
4.5000	0.4173	1.53E+07	12662.	-0.00328	0.00	7.95E+12
-613.6822	3971.	0.00				
4.7250	0.4084	1.53E+07	10911.	-0.00328	0.00	7.95E+12
-683.8449	4521.	0.00				
4.9500	0.3996	1.54E+07	8970.	-0.00327	0.00	7.95E+12
-753.6353	5092.	0.00				
5.1750	0.3908	1.54E+07	6852.	-0.00327	0.00	7.95E+12
-815.2576	5633.	0.00				
5.4000	0.3820	1.54E+07	4585.	-0.00326	0.00	7.95E+12
-863.9065	6107.	0.00				
5.6250	0.3732	1.54E+07	2191.	-0.00325	0.00	7.95E+12
-909.4981	6581.	0.00				
5.8500	0.3644	1.54E+07	-322.0812	-0.00325	0.00	7.95E+12
-952.0399	7054.	0.00				
6.0750	0.3556	1.54E+07	-2946.	-0.00324	0.00	7.95E+12
-991.5394	7528.	0.00				
6.3000	0.3469	1.54E+07	-5672.	-0.00324	0.00	7.95E+12
-1028.	8002.	0.00				
6.5250	0.3381	1.54E+07	-8493.	-0.00323	0.00	7.95E+12
-1061.	8476.	0.00				
6.7500	0.3294	1.54E+07	-11400.	-0.00323	0.00	7.95E+12
-1092.	8950.	0.00				
6.9750	0.3207	1.53E+07	-14385.	-0.00322	0.00	7.95E+12
-1119.	9423.	0.00				
7.2000	0.3120	1.53E+07	-17440.	-0.00322	0.00	7.95E+12
-1144.	9897.	0.00				
7.4250	0.3033	1.52E+07	-20557.	-0.00321	0.00	7.95E+12
-1165.	10371.	0.00				
7.6500	0.2946	1.52E+07	-23727.	-0.00321	0.00	7.95E+12
-1183.	10845.	0.00				
7.8750	0.2860	1.51E+07	-26943.	-0.00320	0.00	7.95E+12
-1199.	11319.	0.00				

8.1000	0.2774	1.50E+07	-30197.	-0.00320	0.00	7.95E+12
-1211.	11792.	0.00				
8.3250	0.2687	1.49E+07	-33481.	-0.00319	0.00	7.95E+12
-1221.	12266.	0.00				
8.5500	0.2601	1.48E+07	-36786.	-0.00319	0.00	7.95E+12
-1227.	12740.	0.00				
8.7750	0.2515	1.47E+07	-40104.	-0.00318	0.00	7.95E+12
-1231.	13214.	0.00				
9.0000	0.2429	1.46E+07	-43429.	-0.00318	0.00	7.95E+12
-1232.	13688.	0.00				
9.2250	0.2344	1.45E+07	-46751.	-0.00317	0.00	7.96E+12
-1229.	14161.	0.00				
9.4500	0.2258	1.44E+07	-50062.	-0.00317	0.00	7.96E+12
-1224.	14635.	0.00				
9.6750	0.2172	1.42E+07	-53356.	-0.00316	0.00	7.96E+12
-1216.	15109.	0.00				
9.9000	0.2087	1.41E+07	-56623.	-0.00316	0.00	7.96E+12
-1205.	15583.	0.00				
10.1250	0.2002	1.39E+07	-59856.	-0.00315	0.00	7.96E+12
-1191.	16057.	0.00				
10.3500	0.1917	1.38E+07	-63048.	-0.00315	0.00	7.96E+12
-1174.	16530.	0.00				
10.5750	0.1832	1.36E+07	-66190.	-0.00314	0.00	7.96E+12
-1154.	17004.	0.00				
10.8000	0.1747	1.34E+07	-69274.	-0.00314	0.00	7.96E+12
-1131.	17478.	0.00				
11.0250	0.1662	1.32E+07	-72293.	-0.00313	0.00	7.97E+12
-1105.	17952.	0.00				
11.2500	0.1578	1.30E+07	-75239.	-0.00313	0.00	7.97E+12
-1077.	18426.	0.00				
11.4750	0.1493	1.28E+07	-78104.	-0.00313	0.00	7.97E+12
-1045.	18899.	0.00				
11.7000	0.1409	1.26E+07	-80880.	-0.00312	0.00	7.97E+12
-1011.	19373.	0.00				
11.9250	0.1325	1.24E+07	-83559.	-0.00312	0.00	7.97E+12
-973.8271	19847.	0.00				
12.1500	0.1241	1.22E+07	-86854.	-0.00311	0.00	7.97E+12
-1467.	31920.	0.00				
12.3750	0.1157	1.19E+07	-90723.	-0.00311	0.00	7.97E+12
-1399.	32665.	0.00				
12.6000	0.1073	1.17E+07	-94405.	-0.00311	0.00	7.97E+12
-1327.	33409.	0.00				
12.8250	0.09890	1.14E+07	-97886.	-0.00310	0.00	7.98E+12
-1251.	34153.	0.00				
13.0500	0.09053	1.11E+07	-101712.	-0.00310	0.00	7.98E+12
-1584.	47226.	0.00				
13.2750	0.08217	1.09E+07	-105951.	-0.00309	0.00	7.98E+12
-1557.	51149.	0.00				
13.5000	0.07383	1.06E+07	-110114.	-0.00309	0.00	7.98E+12
-1526.	55824.	0.00				

13.7250	0.06549	1.03E+07	-114188.	-0.00309	0.00	7.99E+12
-1492.	61507.	0.00				
13.9500	0.05716	9946058.	-118162.	-0.00308	0.00	7.99E+12
-1452.	68592.	0.00				
14.1750	0.04884	9622098.	-122020.	-0.00308	0.00	7.99E+12
-1406.	77721.	0.00				
14.4000	0.04053	9287888.	-125742.	-0.00308	0.00	7.99E+12
-1351.	90012.	0.00				
14.6250	0.03222	8943829.	-129300.	-0.00307	0.00	7.99E+12
-1285.	107635.	0.00				
14.8500	0.02393	8590405.	-132655.	-0.00307	0.00	7.99E+12
-1201.	135470.	0.00				
15.0750	0.01564	8228229.	-134483.	-0.00307	0.00	8.00E+12
-153.4066	26480.	0.00				
15.3000	0.00736	7864934.	-134790.	-0.00307	0.00	8.00E+12
-73.4985	26954.	0.00				
15.5250	-9.10E-04	7501102.	-134876.	-0.00306	0.00	8.00E+12
9.2426	27428.	0.00				
15.7500	-0.00918	7137338.	-134736.	-0.00306	0.00	8.01E+12
94.8163	27902.	0.00				
15.9750	-0.01743	6774265.	-134360.	-0.00306	0.00	8.01E+12
183.2225	28375.	0.00				
16.2000	-0.02569	6412527.	-133743.	-0.00306	0.00	8.01E+12
274.4615	28849.	0.00				
16.4250	-0.03393	6052789.	-132875.	-0.00305	0.00	8.01E+12
368.5334	29323.	0.00				
16.6500	-0.04218	5695738.	-131749.	-0.00305	0.00	8.01E+12
465.4390	29797.	0.00				
16.8750	-0.05041	5342080.	-130357.	-0.00305	0.00	8.02E+12
565.1789	30271.	0.00				
17.1000	-0.05864	4992542.	-128693.	-0.00305	0.00	8.02E+12
667.7540	30744.	0.00				
17.3250	-0.06687	4647871.	-126748.	-0.00305	0.00	8.02E+12
773.1656	31218.	0.00				
17.5500	-0.07509	4308837.	-124514.	-0.00304	0.00	8.02E+12
881.4149	31692.	0.00				
17.7750	-0.08331	3976228.	-121984.	-0.00304	0.00	8.02E+12
992.5034	32166.	0.00				
18.0000	-0.09153	3650854.	-119151.	-0.00304	0.00	8.03E+12
1106.	32640.	0.00				
18.2250	-0.09974	3333546.	-116006.	-0.00304	0.00	8.03E+12
1223.	33113.	0.00				
18.4500	-0.1079	3025155.	-112541.	-0.00304	0.00	8.03E+12
1343.	33587.	0.00				
18.6750	-0.1162	2726553.	-108751.	-0.00304	0.00	8.03E+12
1465.	34061.	0.00				
18.9000	-0.1244	2438633.	-104625.	-0.00304	0.00	8.03E+12
1591.	34535.	0.00				
19.1250	-0.1326	2162308.	-100157.	-0.00304	0.00	8.03E+12
1719.	35009.	0.00				

19.3500	-0.1408	1898513.	-95340.	-0.00304	0.00	8.03E+12
1850.	35482.	0.00				
19.5750	-0.1490	1648202.	-90165.	-0.00304	0.00	8.03E+12
1984.	35956.	0.00				
19.8000	-0.1571	1412353.	-84624.	-0.00304	0.00	8.03E+12
2120.	36430.	0.00				
20.0250	-0.1653	1191960.	-78711.	-0.00303	0.00	8.03E+12
2260.	36904.	0.00				
20.2500	-0.1735	988043.	-72417.	-0.00303	0.00	8.03E+12
2402.	37378.	0.00				
20.4750	-0.1817	801639.	-65734.	-0.00303	0.00	8.03E+12
2548.	37852.	0.00				
20.7000	-0.1899	633807.	-58655.	-0.00303	0.00	8.03E+12
2696.	38325.	0.00				
20.9250	-0.1981	485629.	-51173.	-0.00303	0.00	8.03E+12
2847.	38799.	0.00				
21.1500	-0.2063	358204.	-43834.	-0.00303	0.00	8.03E+12
2589.	33884.	0.00				
21.3750	-0.2145	249654.	-36790.	-0.00303	0.00	8.03E+12
2629.	33088.	0.00				
21.6000	-0.2227	160267.	-29640.	-0.00303	0.00	8.03E+12
2668.	32345.	0.00				
21.8250	-0.2309	90327.	-22385.	-0.00303	0.00	8.03E+12
2706.	31650.	0.00				
22.0500	-0.2391	40116.	-15026.	-0.00303	0.00	8.03E+12
2745.	30999.	0.00				
22.2750	-0.2473	9915.	-7564.	-0.00303	0.00	8.03E+12
2783.	30386.	0.00				
22.5000	-0.2554	0.00	0.00	-0.00303	0.00	8.03E+12
2820.	14905.	0.00				

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

Output Summary for Load Case No. 3:

Pile-head deflection	=	0.59719801 inches
Computed slope at pile head	=	-0.00338148 radians
Maximum bending moment	=	15417517. inch-lbs
Maximum shear force	=	-134876. lbs
Depth of maximum bending moment	=	5.85000000 feet below pile head
Depth of maximum shear force	=	15.52500000 feet below pile head
Number of iterations	=	11
Number of zero deflection points	=	1

 Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

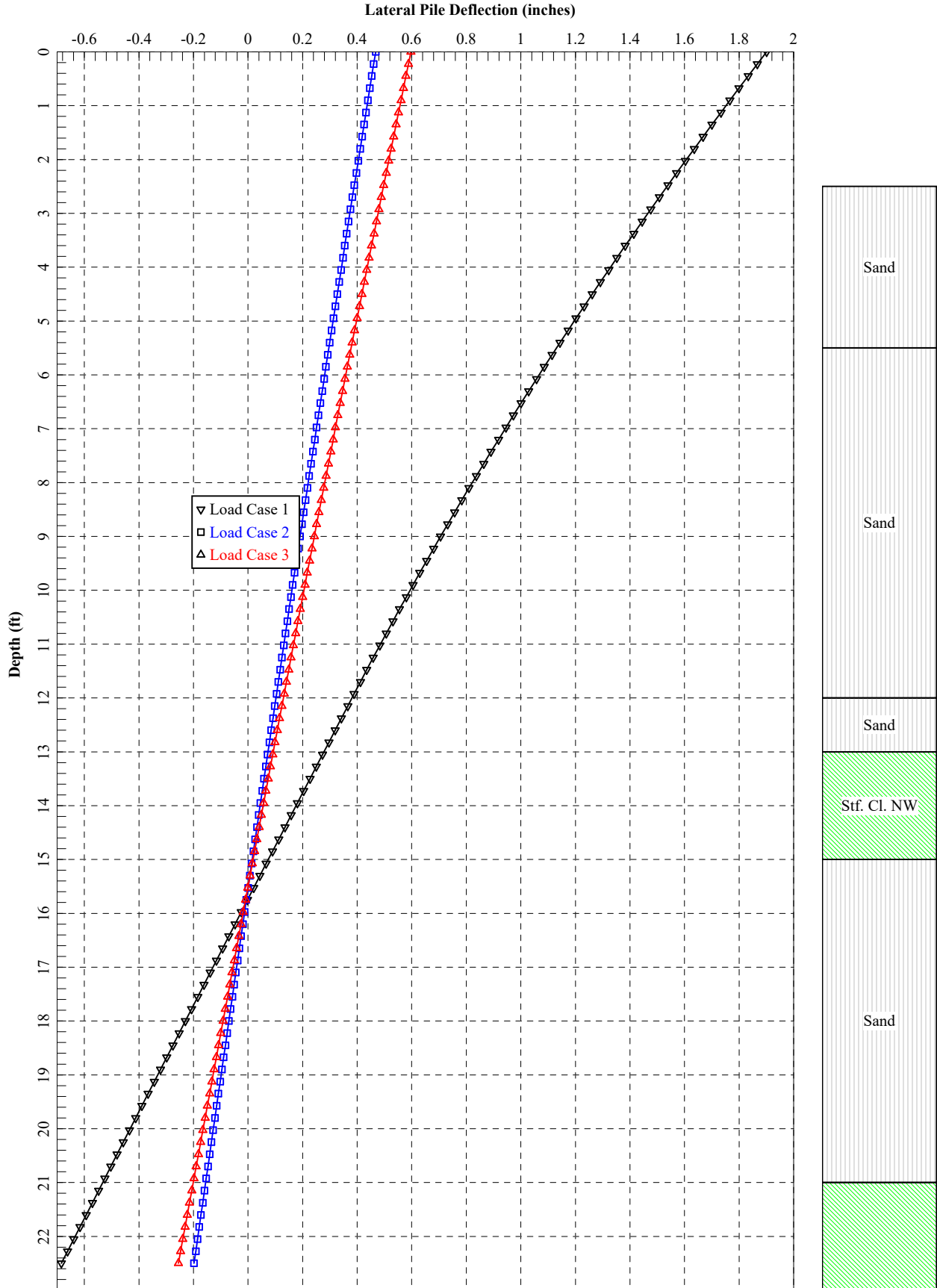
Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
 Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
 Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
 Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
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

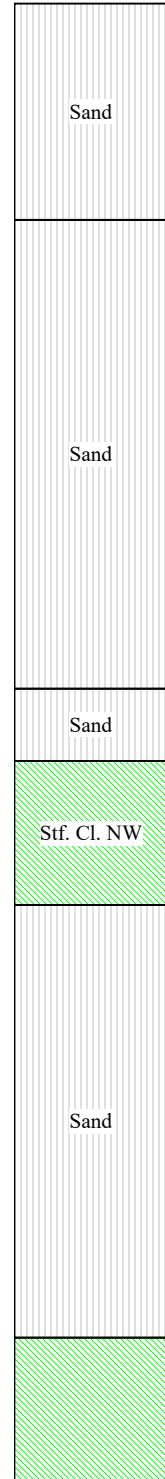
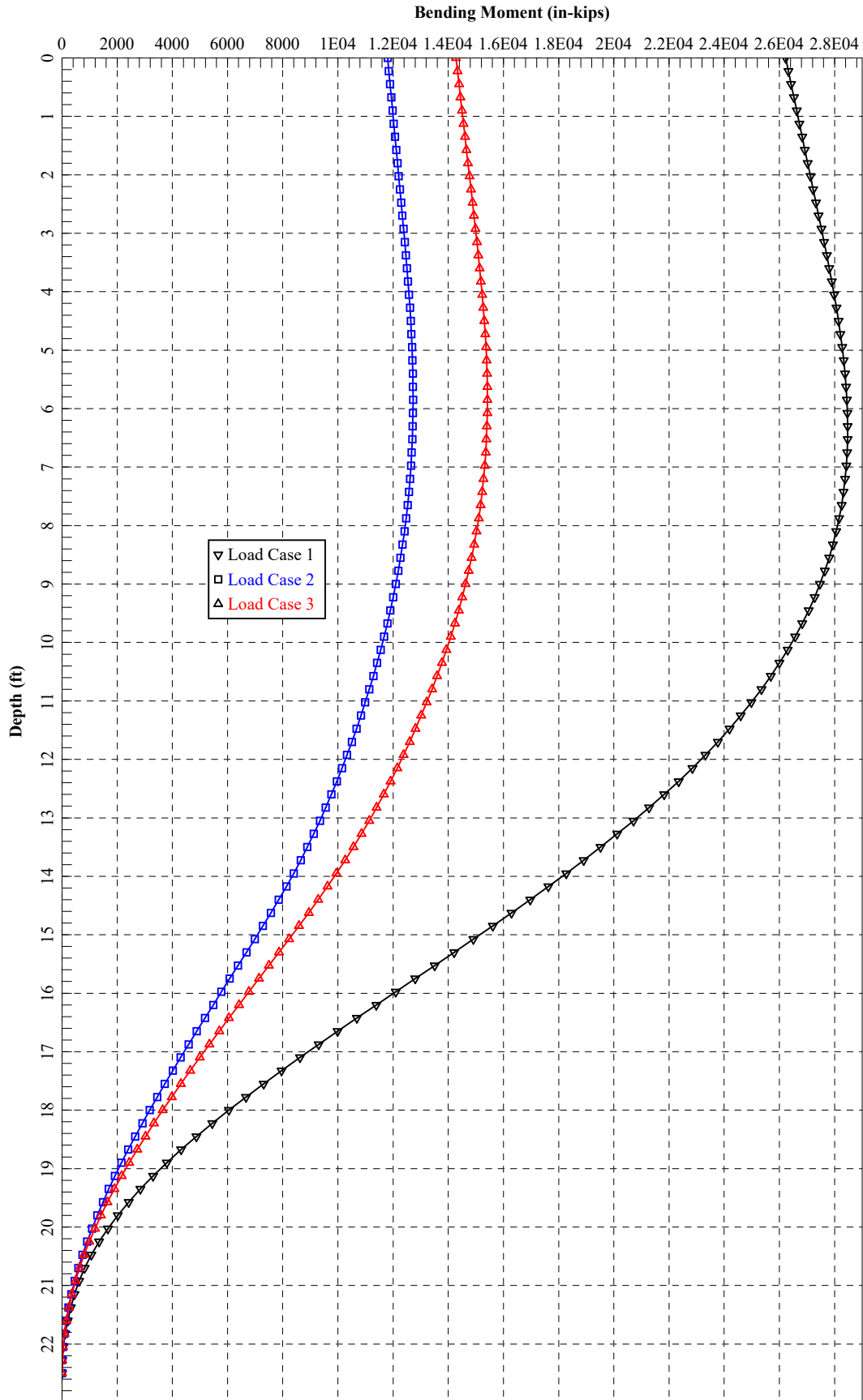
Load Case No.	Load Type	Load 1	Load 2	Axial Loading	Pile-head Deflection	Pile-head Rotation	Max
		in-lbs	in-lb	lbs	inches	radians	in lbs
1	V, lb	36472.	M, in-lb	2.62E+07	35623.	1.9008	-0.01258
		-262004.					
2	V, lb	16412.	M, in-lb	1.18E+07	22264.	0.4680	-0.00265
		-111712.					
3	V, lb	19953.	M, in-lb	1.43E+07	44529.	0.5972	-0.00338
		-134876.					

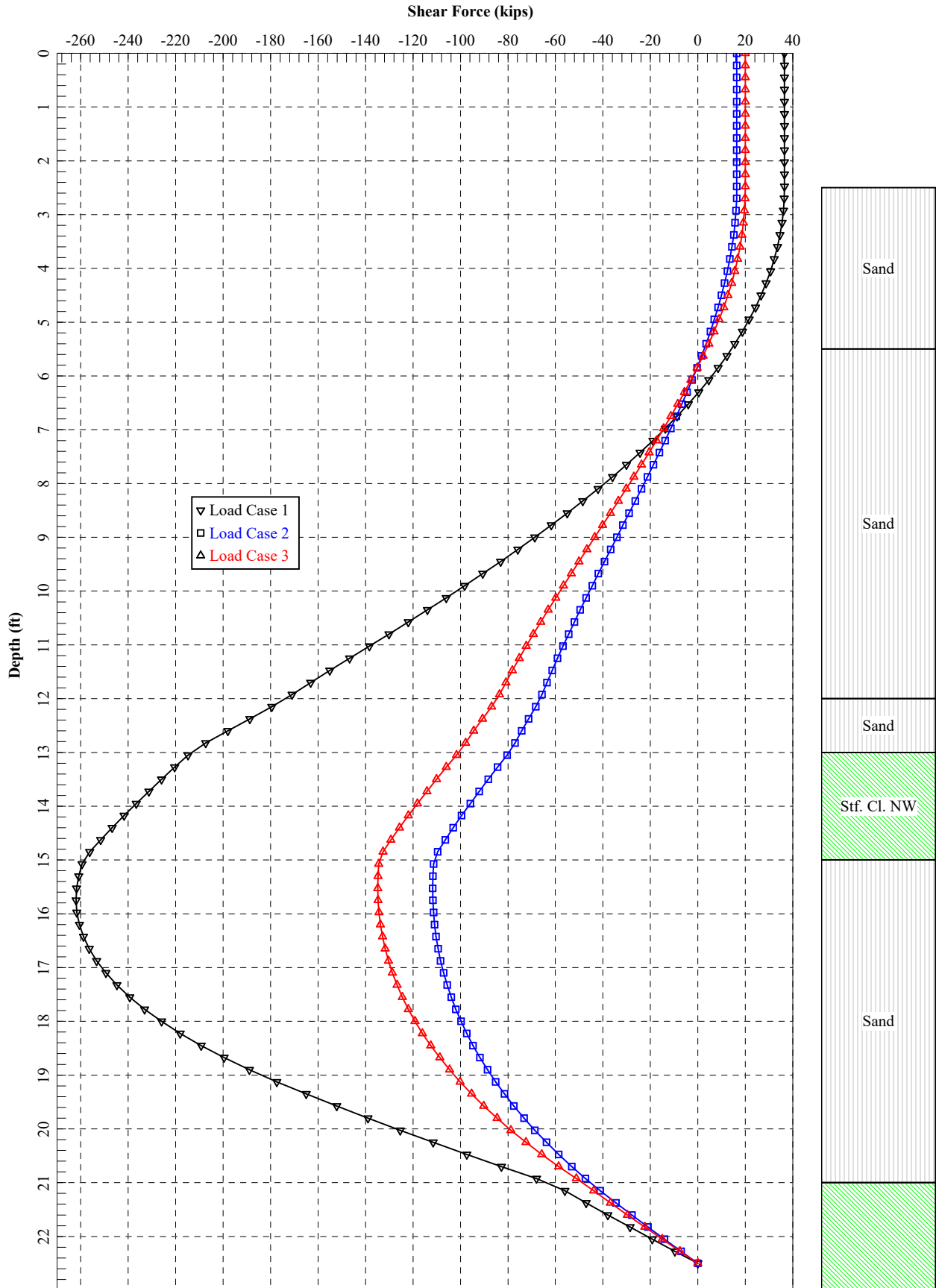
Maximum pile-head deflection = 1.9008185456 inches
 Maximum pile-head rotation = -0.0125796539 radians = -0.720761 deg.

The analysis ended normally.

LOAD CASE 1: LRFD LOADS/0.75; MAX. ALLOWABLE DEFLECTION = 6"
 LOAD CASE 2: ASD LOADS; MAX. ALLOWABLE DEFLECTION = 1"
 LOAD CASE 3: SERVICE LOADS*2; MAX. ALLOWABLE DEFLECTION = 0.75"





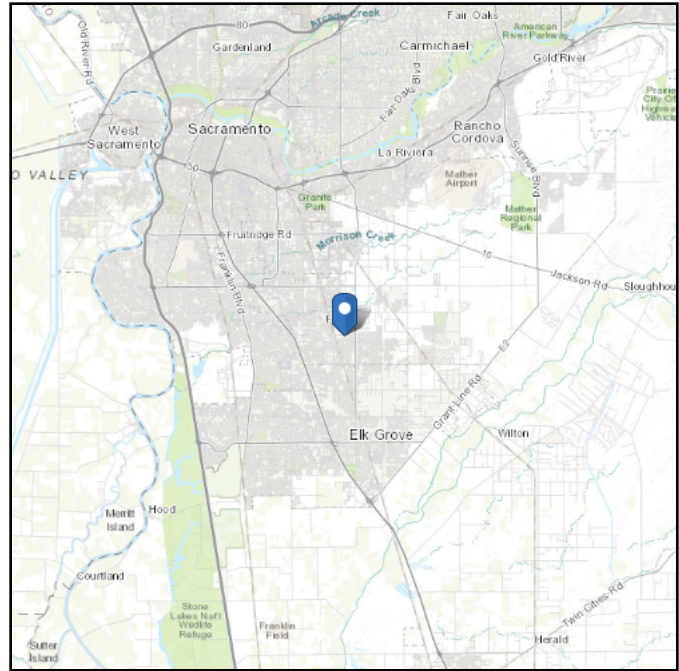
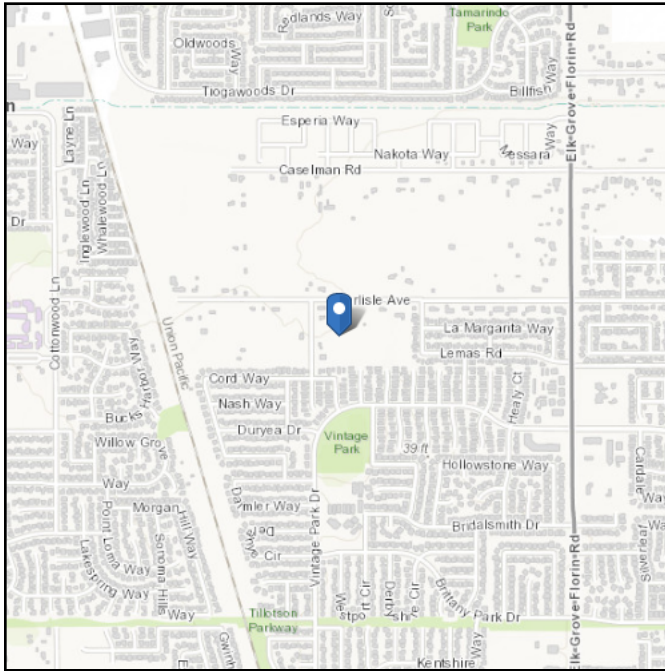


ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 38.46795
Longitude: -121.380164
Elevation: 42.811129782029596 ft (NAVD 88)



Wind

Results:

Wind Speed	94 Vmph
10-year MRI	65 Vmph
25-year MRI	71 Vmph
50-year MRI	76 Vmph
100-year MRI	80 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Wed Mar 20 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.528	S_{D1} :	N/A
S_1 :	0.241	T_L :	12
F_a :	1.377	PGA :	0.222
F_v :	N/A	PGA _M :	0.306
S_{MS} :	0.728	F_{PGA} :	1.378
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.485	C_v :	1.052

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed Mar 20 2024

Date Source: [USGS Seismic Design Maps](#)

Ice

Results:

Ice Thickness: 0 in.
Concurrent Temperature: 25 F
Gust Speed 30 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Wed Mar 20 2024

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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