Sabre Industries™
INNOVATION DELIVERED

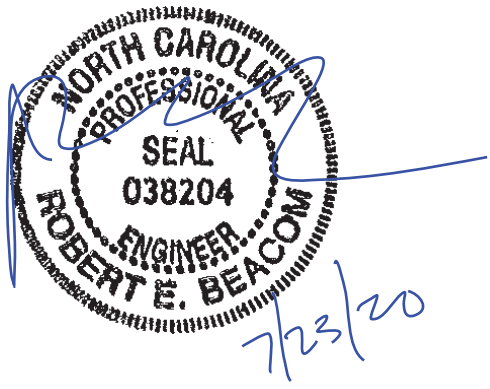
Structural Design Report

380' S3TL Series HD1 Self-Supporting Tower
Site: Oakridge River Road, NC

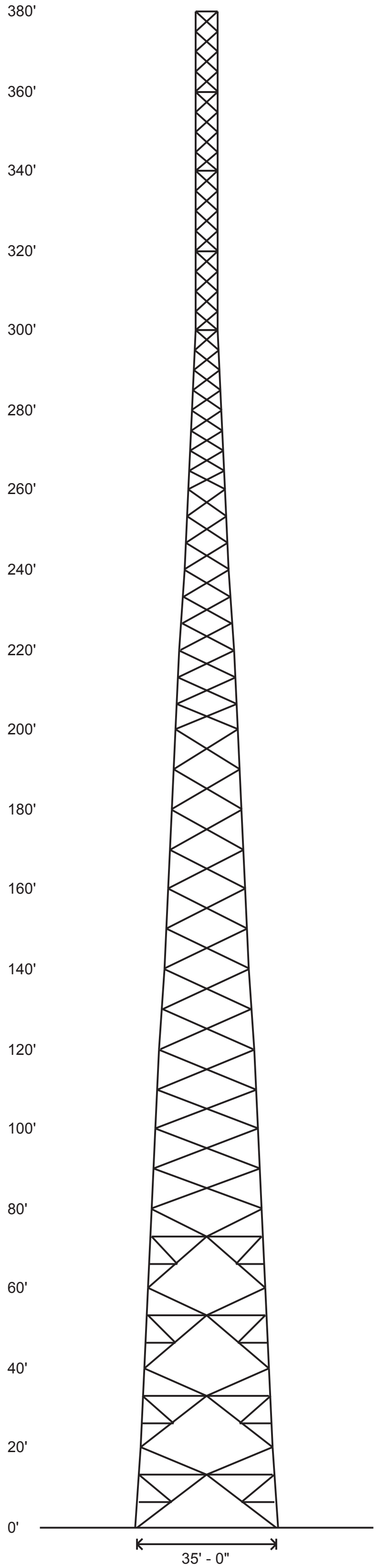
Prepared for: HARNETT COUNTY
by: Sabre Industries ™

Job Number: 21-1221-JDS

July 23, 2020



Legs	12.75 OD X .500		12.75 OD X .375			8.625 OD X .500					5.563 OD X .500			5.563 OD X .375		A	B	C	D
Diagonals	E / F	E / F	E / G	E / G	H	L 4 X 4 X 5/16		I	J	K	L	M	N	L 2 X 2 X 1/8		N	L 2 X 2 X 1/8		
Horizontals	H / O	P / O	P / O	I /	NONE											Q / NONE / N	NONE / Q	NONE / Q	NONE / Q
Internals	J / O	J / O	R / O	R /	NONE														
Sub-Diagonals	R / O	R / O	R / O	L /	NONE														
Sub-Horizontals	R / O	R / O	R / O	S /	NONE														
Brace Bolts	(2) 3/4"				(2) 5/8"		(1) 3/4"					(1) 5/8"							
Top Face Width	33'	31'	29'	27'	25'	23'	21'	19'	17'	15'	13'	11'	9'	7'	5'				
Panel Count/Height	T / U	T / U	T / U	T / U	12 @ 10'						9 @ 6.6667'			24 @ 5'					
Section Weight	10083	9579	8117	7685	7083	6051	5468	4864	4518	4459	3130	2684	2457	1910	1866	1574	1171	847	706



Design Criteria - ANSI/TIA-222-G

ASCE 7-16 Ultimate Wind Speed (No Ice)	129 mph
Wind Speed (Ice)	30 mph
Design Ice Thickness	1.50 in
Structure Class	III
Risk Category	IV
Exposure Category	C
Topographic Category	1

Base Reactions

Total Foundation		Individual Footing	
Shear (kips)	118.02	Shear (kips)	70.52
Axial (kips)	298.14	Compression (kips)	702
Moment (ft-kips)	20140	Uplift (kips)	592
Torsion (ft-kips)	156.66		

Material List

Display	Value
A	5.563 OD X .258
B	3.500 OD X .300
C	2.875 OD X .203
D	2.375 OD X .154
E	L 6 X 4 X 3/8
F	L 5 X 5 X 3/8
G	L 5 X 5 X 5/16
H	L 4 X 4 X 3/8
I	L 4 X 4 X 1/4
J	L 3 1/2 X 3 1/2 X 1/4
K	L 3 X 3 X 5/16
L	L 3 X 3 X 3/16
M	L 2 1/2 X 2 1/2 X 3/16
N	L 2 X 2 X 3/16
O	NONE
P	L 4 X 4 X 5/16
Q	L 2 X 2 X 1/8
R	L 3 X 3 X 1/4
S	L 2 1/2 X 2 1/2 X 1/4
T	1 @ 13.333'
U	1 @ 6.667'

Notes

1) All legs are A500 (50 ksi Min. Yield).
2) All braces are A572 Grade 50.
3) All brace bolts are A325-X.
4) The tower model is S3TL Series HD1.
5) Transmission lines are to be attached to standard 12 hole waveguide ladders with 3ft rung spacing.
6) Azimuths are relative (not based on true north).
7) Foundation loads shown are maximums.
8) All unequal angles are oriented with the short leg vertical.
9) Weights shown are estimates. Final weights may vary.
10) Tower Rating: 94.71%

Sabre Industries
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	**21-1221-JDS**
Customer:	HARNETT COUNTY
Site Name:	Oakridge River Road, NC
Description:	380' S3TL
Date:	7/23/2020 By: REB

Designed Appurtenance Loading

Elev	Description	Tx-Line
388.71	(1) CC807-11	
388.71	(1) CC807-11	
380	6ft Sidearm	
380	6ft Sidearm	
380	Lights, Lightning Rod & Extension	(1) 1"
380		(1) 7/8"
380		(1) 1 5/8"
358.71	(1) CC807-11	
358.71	(1) CC807-11	
350	6ft Sidearm	
350	6ft Sidearm	
350		(1) 1 5/8"
350		(1) 7/8"
350	(1) TTA (25" x 18" x 6.7")	(1) 1/2"
330.62	(1) DB224	
330.62	(1) DB224	
320	6ft Sidearm	
320	6ft Sidearm	
320		(1) 7/8"
320		(1) 7/8"
310.62	(1) DB224	
310.62	(1) DB224	
300	6ft Sidearm	
300	6ft Sidearm	
300		(1) 7/8"
300		(1) 7/8"
265	(1) 4' Ice Shield	

Elev	Description	Tx-Line
260.62	(1) DB224	
260	Leg Dish Mount	
260	(1) 4' H.P. Dish	(1) 3/8"
250	6ft Sidearm	
250		(1) 7/8"
230	(1) 8' Ice Shield	
225	Leg Dish Mount	
225	(1) 8' Solid Dish W/ Radome	(1) EW63
200	(1) 6' Ice Shield	
195	Leg Dish Mount	
195	(1) 6' H.P. Dish	(1) EW63
190	Adder for Mid-Lights & Ice Shields	
185	(1) 6' Ice Shield	
180	Leg Dish Mount	
180	(1) 6' H.P. Dish	(1) EW63
165	(1) 8' Ice Shield	
160	Leg Dish Mount	
160	(1) 8' Solid Dish W/ Radome	(1) EW63
155	(1) 6' Ice Shield	
150	Leg Dish Mount	
150	(1) 6' H.P. Dish	(1) EW63
135	(1) 6' Ice Shield	
130	Leg Dish Mount	
130	(1) 6' H.P. Dish	(1) EW63
125	(1) 8' Ice Shield	
120	Leg Dish Mount	
120	(1) 8' Solid Dish W/ Radome	(1) EW63

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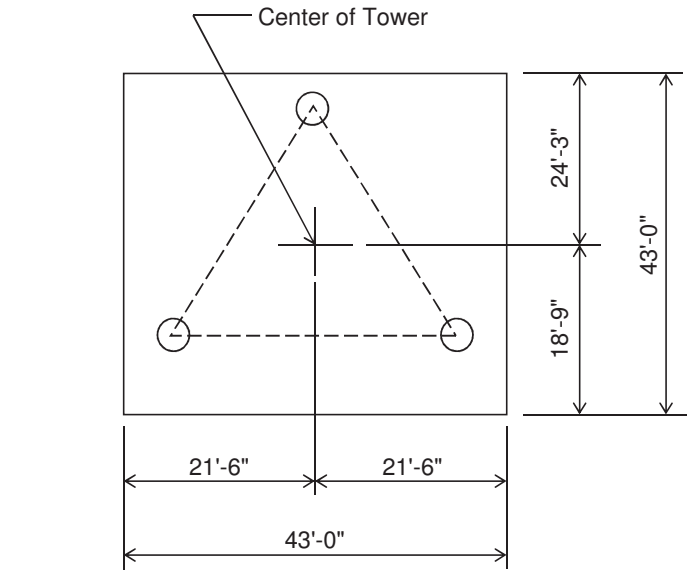
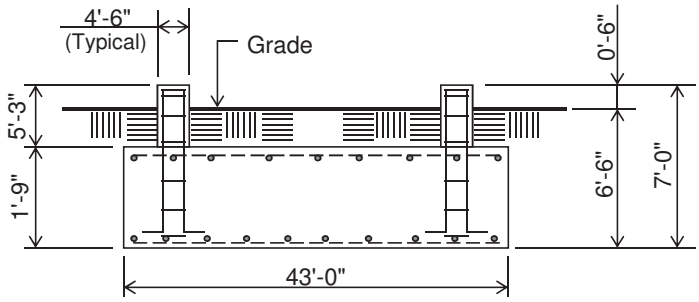
No.: 21-1221-JDS
Date: 07/23/20
By: REB

Customer: HARNETT COUNTY
Site: Oakridge River Road, NC

380 ft. Model S3TL Series HD1 Self Supporting Tower



PLAN VIEW



ELEVATION VIEW

(129.1 cu. yds.)
(1 REQD.; NOT TO SCALE)

CAUTION: Center of tower is not in center of slab.

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-11.
2) Rebar to conform to ASTM specification A615 Grade 60.
3) All rebar to have a minimum of 3" concrete cover.
4) All exposed concrete corners to be chamfered 3/4".
5) The foundation design is based on the geotechnical report by TEP project no. 153676.258205, dated: 4/2/20.
6) See the geotechnical report for compaction requirements, if specified.
7) The foundation is based on the following factored loads:
   Factored download (kips) = 112.13
   Factored overturn (kip-ft) = 20,140.45
   Factored shear (kips) = 118.02
8) 4.75' of soil cover is required over the entire area of the foundation slab.
9) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.
10) This foundation is designed for a max capacity ratio of 95%.

Rebar Schedule per Mat and per Pier	
Pier	(24) #8 vertical rebar w/ hooks at bottom w/ #4 rebar ties, two (2) within top 5" of pier then 8" C/C
Mat	(72) #10 horizontal rebar evenly spaced each way top and bottom. (288 total)
Anchor Bolts per Leg	
(6) 1.75" dia. x 87" F1554-105 on a 18" B.C. w/ 10.5" max. projection above concrete.	

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Customer: HARNETT COUNTY
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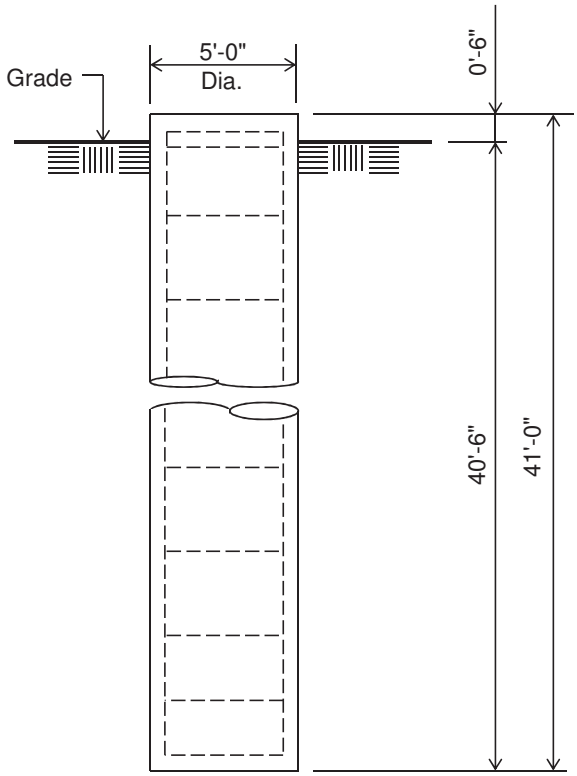
380 ft. Model S3TL Series HD1 Self Supporting Tower



ELEVATION VIEW
(29.8 cu. yds.)
(3 REQUIRED; NOT TO SCALE)

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-11.

2) Rebar to conform to ASTM specification A615 Grade 60.

3) All rebar to have a minimum of 3" concrete cover.

4) All exposed concrete corners to be chamfered 3/4".

5) The foundation design is based on the geotechnical report by TEP project no. 153676.258205, dated: 4/2/20.

6) See the geotechnical report for drilled pier installation requirements, if specified.

7) The foundation is based on the following factored loads:
   Factored uplift (kips) = 592.00
   Factored download (kips) = 702.00
   Factored shear (kips) = 71.00

8) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.

9) This foundation is designed for a max capacity ratio of 95%.

Rebar Schedule per Pier	
Pier	(18) #10 vertical rebar w/ #4 rebar ties, two (2) within top 5" of pier then 12" C/C
Anchor Bolts per Leg	
(6) 1.75" dia. x 87" F1554-105 on a 18" B.C. w/ 10.5" max. projection above concrete.	

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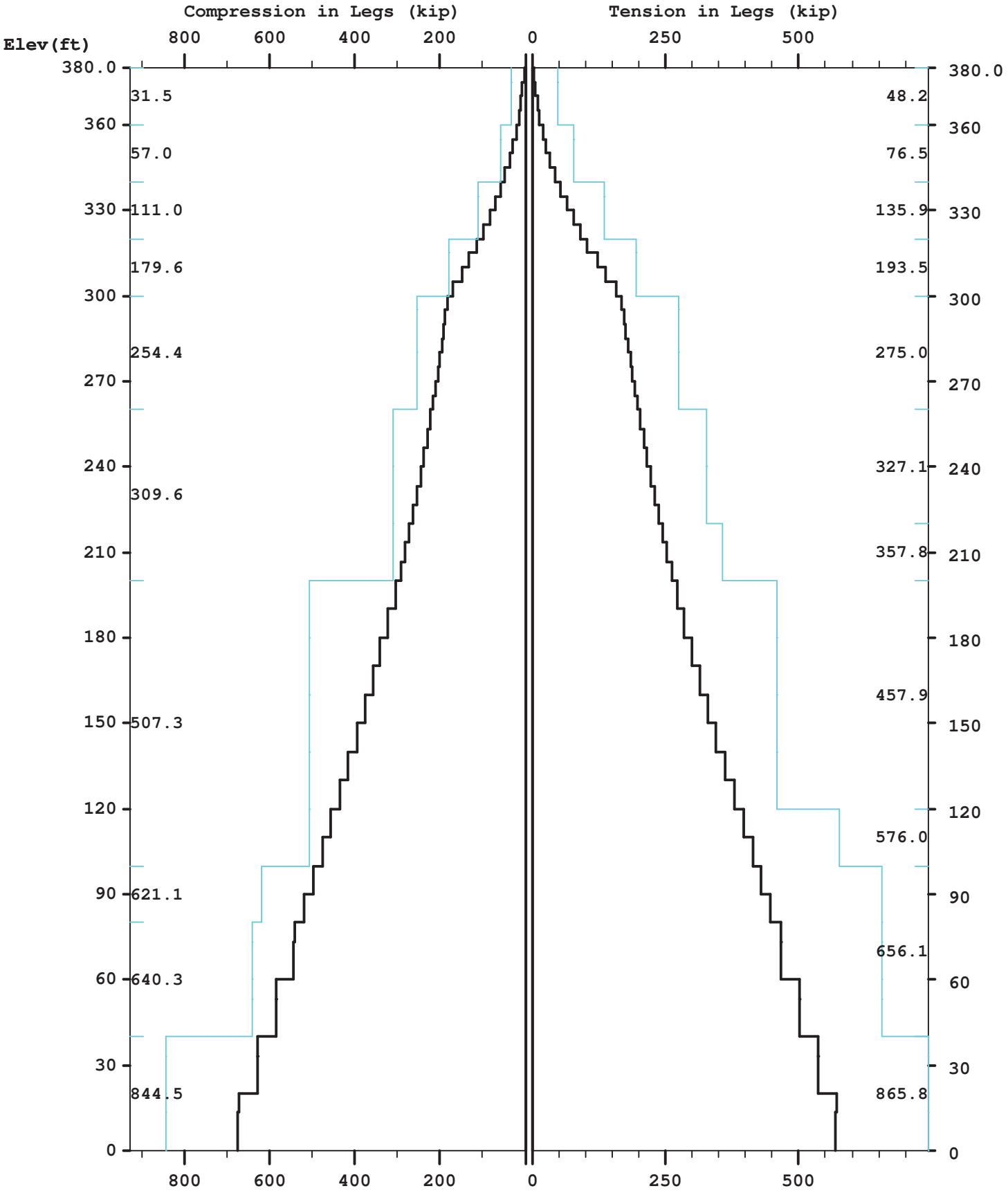
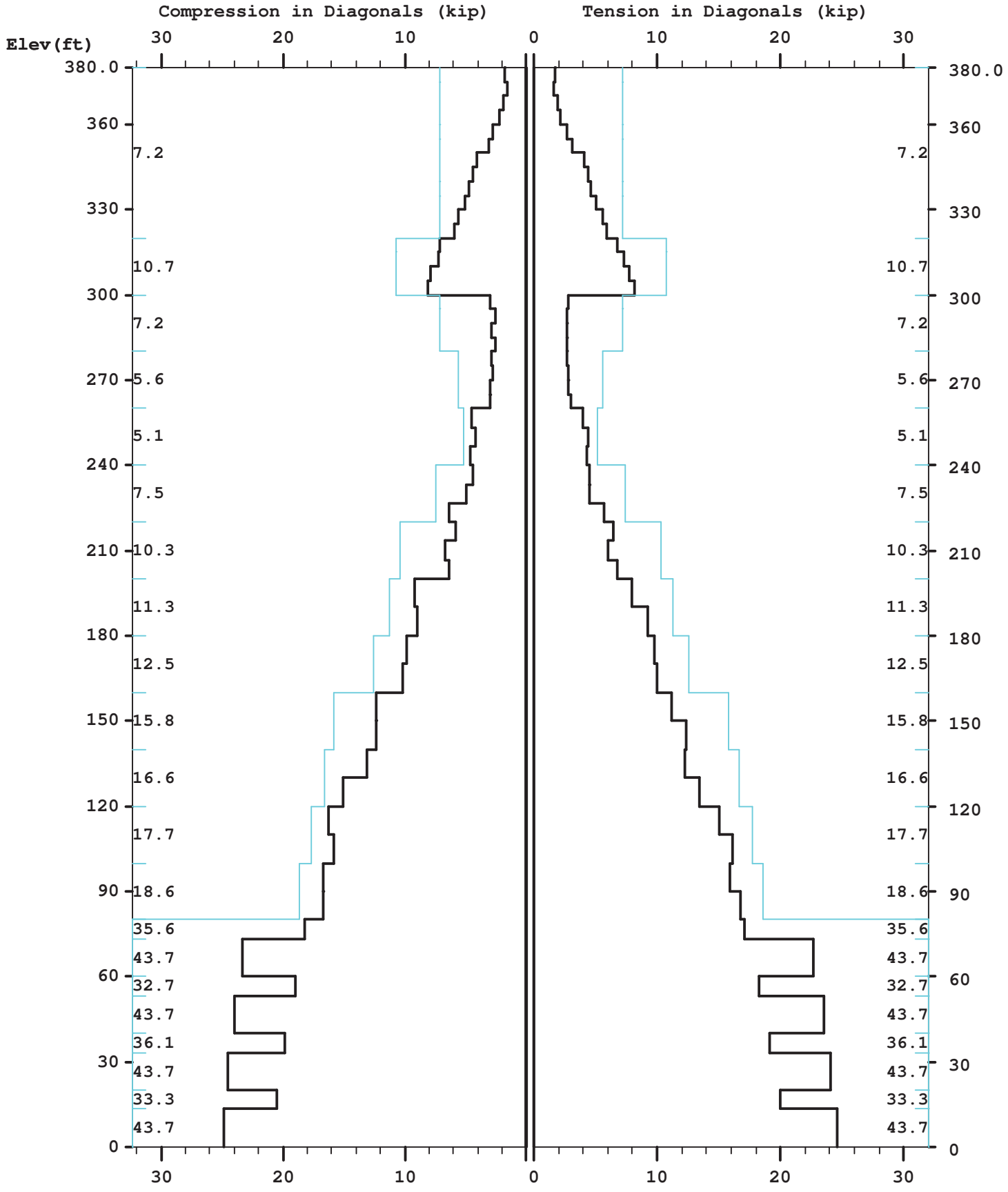
Maximum

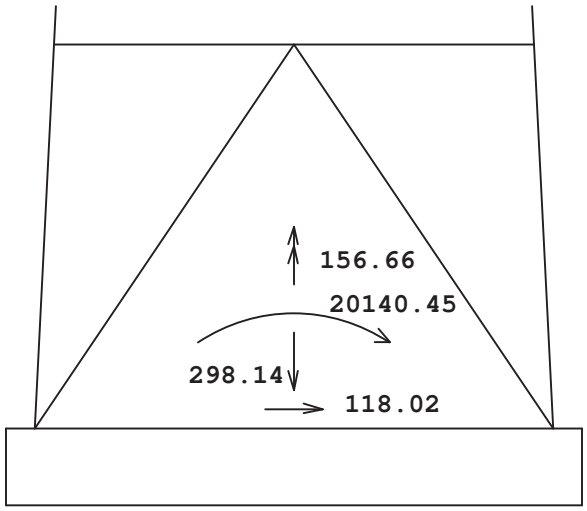

Compression in Legs (kip)
Tension in Legs (kip)
Elev(ft)
800
600
400
200
0
250
500
380.0
360
330
300
270
240
210
180
150
120
90
60
30
0
31.5
57.0
111.0
179.6
254.4
309.6
507.3
621.1
640.3
844.5
48.2
76.5
135.9
193.5
275.0
327.1
357.8
457.9
576.0
656.1
865.8

Maximum

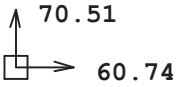

Compression in Diagonals (kip)
Tension in Diagonals (kip)
Elev(ft)
30 20 10 0 10 20 30
380.0
360
330
300
270
240
210
180
150
120
90
60
30
0
7.2
10.7
7.2
5.6
5.1
7.5
10.3
11.3
12.5
15.8
16.6
17.7
18.6
35.6
43.7
32.7
43.7
36.1
43.7
33.3
43.7

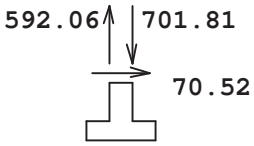
Maximum

TOTAL FOUNDATION LOADS (kip, ft-kip)



INDIVIDUAL FOOTING LOADS (kip)





Latticed Tower Analysis (Unguyed) (c)2015 Guymast Inc. 416-736-7453
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Sabre Towers and Poles on: 23 jul 2020 at: 15:28:13

MAST GEOMETRY (ft)

PANEL TYPE	NO.OF LEGS	ELEV.AT BOTTOM	ELEV.AT TOP	F.W..AT BOTTOM	F.W..AT TOP	TYPICAL PANEL HEIGHT
X	3	375.00	380.00	5.00	5.00	5.00
X	3	360.00	375.00	5.00	5.00	5.00
X	3	355.00	360.00	5.00	5.00	5.00
X	3	340.00	355.00	5.00	5.00	5.00
X	3	335.00	340.00	5.00	5.00	5.00
X	3	320.00	335.00	5.00	5.00	5.00
X	3	315.00	320.00	5.00	5.00	5.00
X	3	300.00	315.00	5.00	5.00	5.00
X	3	295.00	300.00	5.50	5.00	5.00
X	3	280.00	295.00	7.00	5.50	5.00
X	3	260.00	280.00	9.00	7.00	5.00
X	3	240.00	260.00	11.00	9.00	6.67
X	3	220.00	240.00	13.00	11.00	6.67
X	3	200.00	220.00	15.00	13.00	6.67
X	3	180.00	200.00	17.00	15.00	10.00
X	3	160.00	180.00	19.00	17.00	10.00
X	3	140.00	160.00	21.00	19.00	10.00
X	3	120.00	140.00	23.00	21.00	10.00
X	3	100.00	120.00	25.00	23.00	10.00
X	3	80.00	100.00	27.00	25.00	10.00
V	3	73.33	80.00	27.67	27.00	6.67
A	3	60.00	73.33	29.00	27.67	13.33
V	3	53.33	60.00	29.67	29.00	6.67
A	3	40.00	53.33	31.00	29.67	13.33
V	3	33.33	40.00	31.67	31.00	6.67
A	3	20.00	33.33	33.00	31.67	13.33
V	3	13.33	20.00	33.67	33.00	6.67
A	3	0.00	13.33	35.00	33.67	13.33

MEMBER PROPERTIES

MEMBER TYPE	BOTTOM ELEV ft	TOP ELEV ft	X-SECTN AREA in.sq	RADIUS OF GYRAT in	ELASTIC MODULUS ksi	THERMAL EXPANSN /deg
LE	360.00	380.00	1.075	0.787	29000.	0.0000117
LE	340.00	360.00	1.704	0.787	29000.	0.0000117
LE	320.00	340.00	3.016	0.787	29000.	0.0000117
LE	300.00	320.00	4.299	0.787	29000.	0.0000117
LE	260.00	300.00	6.111	0.787	29000.	0.0000117
LE	200.00	260.00	7.952	0.787	29000.	0.0000117
LE	100.00	200.00	12.763	0.787	29000.	0.0000117
LE	40.00	100.00	14.579	0.787	29000.	0.0000117
LE	0.00	40.00	19.242	0.787	29000.	0.0000117
DI	320.00	380.00	0.484	0.626	29000.	0.0000117
DI	300.00	320.00	0.715	0.626	29000.	0.0000117
DI	260.00	300.00	0.484	0.626	29000.	0.0000117
DI	240.00	260.00	0.715	0.626	29000.	0.0000117
DI	220.00	240.00	0.902	0.626	29000.	0.0000117
DI	200.00	220.00	1.090	0.626	29000.	0.0000117
DI	180.00	200.00	1.777	0.626	29000.	0.0000117
DI	160.00	180.00	1.688	0.626	29000.	0.0000117
DI	140.00	160.00	1.938	0.626	29000.	0.0000117
DI	100.00	140.00	2.402	0.626	29000.	0.0000117
DI	80.00	100.00	2.859	0.626	29000.	0.0000117
DI	73.33	80.00	3.027	0.626	29000.	0.0000117
DI	60.00	73.33	3.609	0.626	29000.	0.0000117
DI	53.33	60.00	3.027	0.626	29000.	0.0000117
DI	40.00	53.33	3.609	0.626	29000.	0.0000117
DI	33.33	40.00	3.609	0.626	29000.	0.0000117
DI	20.00	33.33	3.609	0.626	29000.	0.0000117

DI	13.33	20.00	3.609	0.626	29000.	0.0000117
DI	0.00	13.33	3.609	0.626	29000.	0.0000117
HO	375.00	380.00	0.484	0.626	29000.	0.0000117
HO	355.00	360.00	0.484	0.626	29000.	0.0000117
HO	335.00	340.00	0.484	0.626	29000.	0.0000117
HO	315.00	320.00	0.715	0.626	29000.	0.0000117
HO	295.00	300.00	0.484	0.626	29000.	0.0000117
HO	60.00	73.33	1.938	0.626	29000.	0.0000117
HO	40.00	53.33	2.402	0.626	29000.	0.0000117
HO	20.00	33.33	2.402	0.626	29000.	0.0000117
HO	0.00	13.33	2.859	0.626	29000.	0.0000117
BR	60.00	73.33	1.438	0.000	29000.	0.0000117
BR	40.00	53.33	1.438	0.000	29000.	0.0000117
BR	20.00	33.33	1.688	0.000	29000.	0.0000117
BR	0.00	13.33	1.688	0.000	29000.	0.0000117

FACTORED MEMBER RESISTANCES
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BOTTOM ELEV ft	TOP ELEV ft	LEGS COMP kip	LEGS TENS kip	DIAGONALS COMP kip	DIAGONALS TENS kip	HORIZONTALS COMP kip	HORIZONTALS TENS kip	INT BRACING COMP kip	INT BRACING TENS kip
375.0	380.0	31.48	48.15	7.16	7.16	5.82	5.82	0.00	0.00
360.0	375.0	31.48	48.15	7.16	7.16	0.00	0.00	0.00	0.00
355.0	360.0	57.04	76.50	7.16	7.16	5.82	5.82	0.00	0.00
340.0	355.0	57.04	76.50	7.16	7.16	0.00	0.00	0.00	0.00
335.0	340.0	110.98	135.90	7.16	7.16	5.82	5.82	0.00	0.00
320.0	335.0	110.98	135.90	7.16	7.16	0.00	0.00	0.00	0.00
315.0	320.0	179.61	193.50	10.74	10.74	8.46	8.46	0.00	0.00
300.0	315.0	179.61	193.50	10.74	10.74	0.00	0.00	0.00	0.00
295.0	300.0	254.38	274.95	7.16	7.16	5.82	5.82	0.00	0.00
280.0	295.0	254.38	274.95	7.16	7.16	0.00	0.00	0.00	0.00
260.0	280.0	254.38	274.95	5.63	5.63	0.00	0.00	0.00	0.00
240.0	260.0	309.64	327.10	5.14	5.14	0.00	0.00	0.00	0.00
220.0	240.0	309.64	327.10	7.46	7.46	0.00	0.00	0.00	0.00
200.0	220.0	309.64	357.75	10.34	10.34	0.00	0.00	0.00	0.00
180.0	200.0	507.33	457.90	11.28	11.28	0.00	0.00	0.00	0.00
160.0	180.0	507.33	457.90	12.53	12.53	0.00	0.00	0.00	0.00
140.0	160.0	507.33	457.90	15.77	15.77	0.00	0.00	0.00	0.00
120.0	140.0	507.33	457.90	16.62	16.62	0.00	0.00	0.00	0.00
100.0	120.0	507.33	576.00	17.72	17.72	0.00	0.00	0.00	0.00
80.0	100.0	621.06	656.10	18.63	18.63	0.00	0.00	0.00	0.00
73.3	80.0	640.29	656.10	35.60	35.60	0.00	0.00	0.00	0.00
60.0	73.3	640.29	656.10	43.74	43.74	15.60	15.60	7.41	7.41
53.3	60.0	640.29	656.10	32.65	32.65	0.00	0.00	0.00	0.00
40.0	53.3	640.29	656.10	43.74	43.74	17.32	17.32	6.59	6.59
33.3	40.0	844.46	865.80	36.10	36.10	0.00	0.00	0.00	0.00
20.0	33.3	844.46	865.80	43.74	43.74	15.58	15.58	9.00	9.00
13.3	20.0	844.46	865.80	33.26	33.26	0.00	0.00	0.00	0.00
0.0	13.3	844.46	865.80	43.74	43.74	16.75	16.75	8.14	8.14

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* Only 3 condition(s) shown in full

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LOADING CONDITION A ==========

129 mph Ultimate wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
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LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	......FORCES...... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	388.7	0.00	0.0	0.0	0.26	0.06	0.00	0.00
C	388.7	0.00	0.0	0.0	0.26	0.06	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.36	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.36	0.00	0.00
C	380.0	0.00	0.0	0.0	0.45	0.36	0.00	0.00
C	377.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.25	0.06	0.00	0.00

C	358.7	0.00	0.0	0.0	0.25	0.06	0.00	0.00
C	352.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.72	0.40	0.00	0.00
C	350.0	0.00	0.0	0.0	0.55	0.36	0.00	0.00
C	342.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.04	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.04	0.00	0.00
C	322.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	312.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.04	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.04	0.00	0.00
C	302.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	292.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.18	0.48	0.00	0.00
C	262.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.22	0.04	0.00	0.00
C	260.0	0.00	0.0	0.0	0.08	0.01	0.00	0.00
C	256.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.51	0.36	0.00	0.00
C	243.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.36	0.96	0.00	0.00
C	225.0	0.00	0.0	0.0	0.32	0.01	0.00	0.00
C	223.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.26	0.72	0.00	0.00
C	195.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	195.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.32	0.54	0.00	0.00
C	185.0	0.00	0.0	0.0	0.25	0.72	0.00	0.00
C	185.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	175.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.33	0.96	0.00	0.00
C	165.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.30	0.01	0.00	0.00
C	155.0	0.00	0.0	0.0	0.25	0.72	0.00	0.00
C	155.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	145.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.24	0.72	0.00	0.00
C	135.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.11	0.01	0.00	0.00
C	125.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.31	0.96	0.00	0.00
C	120.0	0.00	0.0	0.0	0.28	0.01	0.00	0.00
C	115.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.33	0.11	0.00	0.00
C	53.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.33	0.12	0.00	0.00
C	33.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.38	0.20	0.00	0.00
C	13.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.37	0.22	0.00	0.00
D	380.0	0.00	3.8	0.0	0.13	0.05	0.02	-0.02
D	375.0	0.00	3.8	0.0	0.13	0.05	0.02	-0.02
D	375.0	0.00	3.8	0.0	0.12	0.04	0.02	-0.02
D	360.0	0.00	3.8	0.0	0.12	0.04	0.02	-0.02
D	360.0	0.00	3.8	0.0	0.13	0.06	0.02	-0.02
D	355.0	0.00	3.8	0.0	0.13	0.06	0.02	-0.02

D	355.0	0.00	3.8	0.0	0.12	0.05	0.02	-0.02
D	350.0	0.00	3.8	0.0	0.12	0.05	0.02	-0.02
D	350.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.15	0.08	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.15	0.08	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.13	0.07	0.02	-0.03
D	320.0	0.00	358.9	0.0	0.13	0.07	0.02	-0.02
D	320.0	0.00	356.8	0.0	0.16	0.10	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.16	0.10	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.15	0.10	0.02	-0.03
D	300.0	0.00	356.8	0.0	0.15	0.10	0.02	-0.03
D	300.0	0.00	355.4	0.0	0.16	0.12	0.03	-0.03
D	260.0	0.00	357.1	0.0	0.17	0.12	0.04	-0.03
D	260.0	0.00	357.2	0.0	0.17	0.15	0.05	-0.03
D	240.0	0.00	357.1	0.0	0.17	0.15	0.06	-0.03
D	240.0	0.00	357.4	0.0	0.19	0.16	0.06	-0.03
D	226.7	0.00	357.5	0.0	0.19	0.16	0.06	-0.03
D	226.7	0.00	10.1	0.0	0.21	0.17	0.06	0.02
D	220.0	0.00	10.1	0.0	0.21	0.17	0.06	0.02
D	220.0	0.00	14.7	0.0	0.24	0.18	0.06	0.04
D	200.0	0.00	14.9	0.0	0.24	0.19	0.07	0.05
D	200.0	0.00	16.1	0.0	0.24	0.26	0.07	0.06
D	190.0	0.00	16.1	0.0	0.24	0.26	0.07	0.06
D	190.0	0.00	17.3	0.0	0.24	0.27	0.08	0.07
D	180.0	0.00	17.3	0.0	0.24	0.27	0.08	0.07
D	180.0	0.00	19.7	0.0	0.26	0.27	0.08	0.08
D	160.0	0.00	19.7	0.0	0.26	0.27	0.08	0.09
D	160.0	0.00	22.1	0.0	0.28	0.29	0.09	0.10
D	150.0	0.00	22.1	0.0	0.28	0.29	0.09	0.10
D	150.0	0.00	24.4	0.0	0.28	0.29	0.09	0.11
D	140.0	0.00	24.4	0.0	0.28	0.29	0.09	0.11
D	140.0	0.00	24.5	0.0	0.28	0.32	0.10	0.12
D	130.0	0.00	24.5	0.0	0.28	0.32	0.10	0.12
D	130.0	0.00	26.9	0.0	0.29	0.33	0.10	0.13
D	120.0	0.00	26.9	0.0	0.29	0.33	0.10	0.13
D	120.0	0.00	29.2	0.0	0.29	0.34	0.11	0.15
D	100.0	0.00	29.2	0.0	0.29	0.34	0.11	0.15
D	100.0	0.00	29.3	0.0	0.31	0.40	0.11	0.16
D	80.0	0.00	29.3	0.0	0.31	0.41	0.12	0.16
D	80.0	0.00	29.4	0.0	0.31	0.38	0.12	0.16
D	73.3	0.00	29.4	0.0	0.31	0.38	0.12	0.16
D	73.3	0.00	29.4	0.0	0.34	0.46	0.13	0.16
D	60.0	0.00	29.4	0.0	0.34	0.46	0.13	0.16
D	60.0	0.00	29.4	0.0	0.30	0.39	0.13	0.17
D	53.3	0.00	29.4	0.0	0.30	0.39	0.13	0.17
D	53.3	0.00	29.5	0.0	0.33	0.49	0.14	0.16
D	40.0	0.00	29.5	0.0	0.33	0.49	0.14	0.16
D	40.0	0.00	29.5	0.0	0.28	0.49	0.14	0.16
D	33.3	0.00	29.5	0.0	0.28	0.49	0.14	0.16
D	33.3	0.00	29.5	0.0	0.30	0.57	0.14	0.16
D	20.0	0.00	29.5	0.0	0.30	0.57	0.14	0.16
D	20.0	0.00	29.6	0.0	0.24	0.50	0.15	0.15
D	13.3	0.00	29.6	0.0	0.24	0.50	0.15	0.15
D	13.3	0.00	29.6	0.0	0.28	0.60	0.15	0.15
D	0.0	0.00	29.6	0.0	0.28	0.60	0.15	0.15

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		..........ANTENNA FORCES.....			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	260.0	291.0	6.7	240.0	0.40	0.27	0.20	0.05
STD+R	225.0	181.0	8.7	240.0	-1.53	0.03	0.40	0.01
HP	195.0	181.0	10.4	240.0	-1.23	0.01	0.34	0.02
HP	180.0	333.0	11.3	0.0	1.46	0.26	0.34	-0.36
STD+R	160.0	291.0	12.5	240.0	0.67	0.96	0.40	0.75
HP	150.0	291.0	13.1	240.0	0.80	0.53	0.34	0.13
HP	130.0	291.0	14.2	240.0	0.78	0.52	0.34	0.13
STD+R	120.0	291.0	14.8	240.0	0.63	0.90	0.40	0.71

LOADING CONDITION k

129 mph Ultimate wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
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LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	......FORCES...... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	388.7	0.00	0.0	0.0	0.26	0.04	0.00	0.00
C	388.7	0.00	0.0	0.0	0.26	0.04	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.27	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.27	0.00	0.00
C	380.0	0.00	0.0	0.0	0.45	0.27	0.00	0.00
C	377.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.25	0.04	0.00	0.00
C	358.7	0.00	0.0	0.0	0.25	0.04	0.00	0.00
C	352.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.72	0.30	0.00	0.00
C	350.0	0.00	0.0	0.0	0.55	0.27	0.00	0.00
C	342.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.03	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.03	0.00	0.00
C	322.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	312.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.03	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.03	0.00	0.00
C	302.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	292.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.18	0.36	0.00	0.00
C	262.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.22	0.03	0.00	0.00
C	260.0	0.00	0.0	0.0	0.08	0.01	0.00	0.00
C	256.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.51	0.27	0.00	0.00
C	243.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.36	0.72	0.00	0.00
C	225.0	0.00	0.0	0.0	0.32	0.01	0.00	0.00
C	223.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.26	0.54	0.00	0.00
C	195.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	195.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.32	0.41	0.00	0.00
C	185.0	0.00	0.0	0.0	0.25	0.54	0.00	0.00
C	185.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	175.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.33	0.72	0.00	0.00
C	165.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.30	0.01	0.00	0.00
C	155.0	0.00	0.0	0.0	0.25	0.54	0.00	0.00
C	155.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	145.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.24	0.54	0.00	0.00
C	135.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.11	0.01	0.00	0.00
C	125.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.31	0.72	0.00	0.00
C	120.0	0.00	0.0	0.0	0.28	0.01	0.00	0.00
C	115.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.33	0.08	0.00	0.00

C	53.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.33	0.09	0.00	0.00
C	33.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.38	0.15	0.00	0.00
C	13.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.37	0.16	0.00	0.00
D	380.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	375.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	375.0	0.00	3.8	0.0	0.12	0.03	0.01	-0.02
D	360.0	0.00	3.8	0.0	0.12	0.03	0.01	-0.02
D	360.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	355.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	355.0	0.00	3.8	0.0	0.12	0.04	0.01	-0.02
D	350.0	0.00	3.8	0.0	0.12	0.04	0.01	-0.02
D	350.0	0.00	358.9	0.0	0.13	0.04	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.13	0.04	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.15	0.06	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.15	0.06	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.03
D	320.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.02
D	320.0	0.00	356.8	0.0	0.16	0.08	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.16	0.08	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.15	0.07	0.02	-0.03
D	300.0	0.00	356.8	0.0	0.15	0.07	0.02	-0.03
D	300.0	0.00	355.4	0.0	0.16	0.09	0.02	-0.03
D	260.0	0.00	357.1	0.0	0.17	0.09	0.03	-0.03
D	260.0	0.00	357.2	0.0	0.17	0.11	0.04	-0.03
D	240.0	0.00	357.1	0.0	0.17	0.11	0.04	-0.03
D	240.0	0.00	357.4	0.0	0.19	0.12	0.05	-0.03
D	226.7	0.00	357.5	0.0	0.19	0.12	0.05	-0.03
D	226.7	0.00	10.1	0.0	0.21	0.13	0.04	0.02
D	220.0	0.00	10.1	0.0	0.21	0.13	0.04	0.02
D	220.0	0.00	14.7	0.0	0.24	0.14	0.05	0.04
D	200.0	0.00	14.9	0.0	0.24	0.14	0.05	0.05
D	200.0	0.00	16.1	0.0	0.24	0.20	0.05	0.06
D	190.0	0.00	16.1	0.0	0.24	0.20	0.05	0.06
D	190.0	0.00	17.3	0.0	0.24	0.20	0.06	0.07
D	180.0	0.00	17.3	0.0	0.24	0.20	0.06	0.07
D	180.0	0.00	19.7	0.0	0.26	0.20	0.06	0.08
D	160.0	0.00	19.7	0.0	0.26	0.20	0.06	0.09
D	160.0	0.00	22.1	0.0	0.28	0.22	0.07	0.10
D	150.0	0.00	22.1	0.0	0.28	0.22	0.07	0.10
D	150.0	0.00	24.4	0.0	0.28	0.22	0.07	0.11
D	140.0	0.00	24.4	0.0	0.28	0.22	0.07	0.11
D	140.0	0.00	24.5	0.0	0.28	0.24	0.07	0.12
D	130.0	0.00	24.5	0.0	0.28	0.24	0.07	0.12
D	130.0	0.00	26.9	0.0	0.29	0.25	0.08	0.13
D	120.0	0.00	26.9	0.0	0.29	0.25	0.08	0.13
D	120.0	0.00	29.2	0.0	0.29	0.25	0.08	0.15
D	100.0	0.00	29.2	0.0	0.29	0.26	0.08	0.15
D	100.0	0.00	29.3	0.0	0.31	0.30	0.09	0.16
D	80.0	0.00	29.3	0.0	0.31	0.30	0.09	0.16
D	80.0	0.00	29.4	0.0	0.31	0.28	0.09	0.16
D	73.3	0.00	29.4	0.0	0.31	0.28	0.09	0.16
D	73.3	0.00	29.4	0.0	0.34	0.34	0.09	0.16
D	60.0	0.00	29.4	0.0	0.34	0.34	0.09	0.16
D	60.0	0.00	29.4	0.0	0.30	0.29	0.10	0.17
D	53.3	0.00	29.4	0.0	0.30	0.29	0.10	0.17
D	53.3	0.00	29.5	0.0	0.33	0.37	0.10	0.16
D	40.0	0.00	29.5	0.0	0.33	0.37	0.10	0.16
D	40.0	0.00	29.5	0.0	0.28	0.37	0.10	0.16
D	33.3	0.00	29.5	0.0	0.28	0.37	0.10	0.16
D	33.3	0.00	29.5	0.0	0.30	0.43	0.11	0.16
D	20.0	0.00	29.5	0.0	0.30	0.43	0.11	0.16
D	20.0	0.00	29.6	0.0	0.24	0.38	0.11	0.15
D	13.3	0.00	29.6	0.0	0.24	0.38	0.11	0.15
D	13.3	0.00	29.6	0.0	0.28	0.45	0.12	0.15
D	0.0	0.00	29.6	0.0	0.28	0.45	0.12	0.15

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip

HP	260.0	291.0	6.7	240.0	0.40	0.27	0.15	0.05
STD+R	225.0	181.0	8.7	240.0	-1.53	0.03	0.30	0.01
HP	195.0	181.0	10.4	240.0	-1.23	0.01	0.25	0.02
HP	180.0	333.0	11.3	0.0	1.46	0.26	0.25	-0.36
STD+R	160.0	291.0	12.5	240.0	0.67	0.96	0.30	0.75
HP	150.0	291.0	13.1	240.0	0.80	0.53	0.25	0.13
HP	130.0	291.0	14.2	240.0	0.78	0.52	0.25	0.13
STD+R	120.0	291.0	14.8	240.0	0.63	0.90	0.30	0.71

LOADING CONDITION AU

30 mph wind with 1.5 ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING

LOAD TYPE	ELEV	APPLY..LOAD..AT RADIUS	AZI	LOAD AZI	.....FORCES..... HORIZ	DOWN	.....MOMENTS..... VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip
C	388.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	388.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	380.0	0.00	0.0	0.0	0.08	0.84	0.00	0.00
C	380.0	0.00	0.0	0.0	0.08	0.84	0.00	0.00
C	380.0	0.00	0.0	0.0	0.06	1.56	0.00	0.00
C	377.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	358.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	352.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.09	0.96	0.00	0.00
C	350.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	342.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	330.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	322.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	320.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	312.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	310.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	302.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	300.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	292.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.02	0.94	0.00	0.00
C	262.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	260.0	0.00	0.0	0.0	0.00	0.06	0.00	0.00
C	256.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.07	0.82	0.00	0.00
C	243.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.03	1.42	0.00	0.00
C	225.0	0.00	0.0	0.0	0.02	0.06	0.00	0.00
C	223.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.03	1.17	0.00	0.00
C	195.0	0.00	0.0	0.0	0.01	0.06	0.00	0.00
C	195.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.03	1.88	0.00	0.00
C	185.0	0.00	0.0	0.0	0.03	1.17	0.00	0.00
C	185.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.01	0.06	0.00	0.00
C	175.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.03	1.40	0.00	0.00
C	165.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.02	0.06	0.00	0.00
C	155.0	0.00	0.0	0.0	0.02	1.16	0.00	0.00

C	155.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.01	0.06	0.00	0.00
C	145.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.02	1.15	0.00	0.00
C	135.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.01	0.05	0.00	0.00
C	125.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.03	1.39	0.00	0.00
C	120.0	0.00	0.0	0.0	0.02	0.05	0.00	0.00
C	115.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.03	0.11	0.00	0.00
C	53.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.03	0.12	0.00	0.00
C	33.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.04	0.20	0.00	0.00
C	13.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.03	0.22	0.00	0.00
D	380.0	0.00	358.6	0.0	0.02	0.31	0.11	0.00
D	375.0	0.00	358.6	0.0	0.02	0.31	0.11	0.00
D	375.0	0.00	358.6	0.0	0.02	0.26	0.11	0.00
D	360.0	0.00	358.6	0.0	0.02	0.26	0.11	0.00
D	360.0	0.00	358.6	0.0	0.02	0.32	0.11	0.00
D	355.0	0.00	358.6	0.0	0.02	0.32	0.11	0.00
D	355.0	0.00	358.6	0.0	0.02	0.27	0.11	0.00
D	350.0	0.00	358.6	0.0	0.02	0.27	0.11	0.00
D	350.0	0.00	354.0	0.0	0.02	0.29	0.13	0.00
D	340.0	0.00	354.0	0.0	0.02	0.29	0.13	0.00
D	340.0	0.00	354.0	0.0	0.02	0.36	0.13	0.00
D	335.0	0.00	354.0	0.0	0.02	0.36	0.13	0.00
D	335.0	0.00	354.0	0.0	0.02	0.31	0.13	0.00
D	320.0	0.00	354.0	0.0	0.02	0.31	0.13	0.00
D	320.0	0.00	351.9	0.0	0.02	0.40	0.15	0.00
D	315.0	0.00	351.9	0.0	0.02	0.40	0.15	0.00
D	315.0	0.00	351.9	0.0	0.02	0.35	0.15	0.00
D	300.0	0.00	351.9	0.0	0.02	0.35	0.15	0.00
D	300.0	0.00	351.0	0.0	0.02	0.43	0.18	0.00
D	295.0	0.00	351.0	0.0	0.02	0.43	0.18	0.00
D	295.0	0.00	351.5	0.0	0.02	0.39	0.19	0.00
D	290.0	0.00	351.5	0.0	0.02	0.39	0.19	0.00
D	290.0	0.00	352.0	0.0	0.02	0.40	0.20	0.00
D	280.0	0.00	352.2	0.0	0.02	0.40	0.21	0.00
D	280.0	0.00	353.3	0.0	0.02	0.41	0.24	0.00
D	265.0	0.00	353.7	0.0	0.02	0.43	0.26	0.00
D	265.0	0.00	354.3	0.0	0.02	0.43	0.28	0.00
D	260.0	0.00	354.3	0.0	0.02	0.43	0.28	0.00
D	260.0	0.00	354.4	0.0	0.02	0.44	0.31	0.00
D	253.3	0.00	354.4	0.0	0.02	0.44	0.31	0.00
D	253.3	0.00	354.5	0.0	0.02	0.45	0.34	0.00
D	246.7	0.00	354.5	0.0	0.02	0.45	0.34	0.00
D	246.7	0.00	354.5	0.0	0.02	0.47	0.36	0.00
D	240.0	0.00	354.5	0.0	0.02	0.47	0.36	0.00
D	240.0	0.00	355.0	0.0	0.02	0.50	0.40	0.00
D	226.7	0.00	355.2	0.0	0.02	0.51	0.41	0.00
D	226.7	0.00	9.2	0.0	0.02	0.55	0.38	0.00
D	220.0	0.00	9.2	0.0	0.02	0.55	0.38	0.00
D	220.0	0.00	14.6	0.0	0.02	0.60	0.39	0.01
D	200.0	0.00	14.9	0.0	0.02	0.62	0.42	0.01
D	200.0	0.00	16.6	0.0	0.02	0.67	0.45	0.01
D	190.0	0.00	16.6	0.0	0.02	0.67	0.45	0.01
D	190.0	0.00	18.2	0.0	0.02	0.68	0.47	0.01
D	180.0	0.00	18.2	0.0	0.02	0.68	0.47	0.01
D	180.0	0.00	21.4	0.0	0.03	0.71	0.50	0.01
D	160.0	0.00	21.5	0.0	0.03	0.72	0.51	0.01
D	160.0	0.00	24.6	0.0	0.03	0.77	0.54	0.01
D	150.0	0.00	24.6	0.0	0.03	0.77	0.54	0.01
D	150.0	0.00	27.7	0.0	0.03	0.79	0.56	0.01
D	130.0	0.00	27.9	0.0	0.03	0.83	0.59	0.01
D	130.0	0.00	30.9	0.0	0.03	0.84	0.61	0.01
D	120.0	0.00	30.9	0.0	0.03	0.84	0.61	0.01
D	120.0	0.00	34.0	0.0	0.03	0.86	0.64	0.01
D	100.0	0.00	34.1	0.0	0.03	0.87	0.65	0.01

D	100.0	0.00	34.2	0.0	0.03	0.96	0.69	0.01
D	80.0	0.00	34.2	0.0	0.03	0.97	0.70	0.01
D	80.0	0.00	34.2	0.0	0.03	0.92	0.72	0.01
D	73.3	0.00	34.2	0.0	0.03	0.92	0.72	0.01
D	73.3	0.00	34.3	0.0	0.03	1.20	0.74	0.01
D	60.0	0.00	34.3	0.0	0.03	1.20	0.74	0.01
D	60.0	0.00	34.3	0.0	0.03	0.93	0.75	0.01
D	53.3	0.00	34.3	0.0	0.03	0.93	0.75	0.01
D	53.3	0.00	34.3	0.0	0.03	1.24	0.77	0.01
D	40.0	0.00	34.3	0.0	0.03	1.24	0.77	0.01
D	40.0	0.00	34.3	0.0	0.02	1.02	0.78	0.01
D	33.3	0.00	34.3	0.0	0.02	1.02	0.78	0.01
D	33.3	0.00	34.2	0.0	0.03	1.31	0.78	0.01
D	20.0	0.00	34.2	0.0	0.03	1.31	0.78	0.01
D	20.0	0.00	34.2	0.0	0.02	1.01	0.78	0.01
D	13.3	0.00	34.2	0.0	0.02	1.01	0.78	0.01
D	13.3	0.00	33.8	0.0	0.02	1.22	0.61	0.01
D	0.0	0.00	33.8	0.0	0.02	1.22	0.61	0.01

ANTENNA LOADING

.....ANTENNA.....			ATTACHMENT		...ANTENNA FORCES...			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	260.0	291.0	6.7	240.0	0.03	0.02	0.94	0.00
STD+R	225.0	181.0	8.7	240.0	-0.09	0.00	1.84	0.00
HP	195.0	181.0	10.4	240.0	-0.08	0.00	1.32	0.00
HP	180.0	333.0	11.3	0.0	0.09	0.02	1.32	-0.02
STD+R	160.0	291.0	12.5	240.0	0.04	0.06	1.79	0.05
HP	150.0	291.0	13.1	240.0	0.05	0.03	1.30	0.01
HP	130.0	291.0	14.2	240.0	0.05	0.03	1.28	0.01
STD+R	120.0	291.0	14.8	240.0	0.04	0.06	1.75	0.05

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS:

ELEV ft	AZI deg	TYPE *	.....BEAM DEFLECTIONS (deg)..... ROLL	YAW	PITCH	TOTAL
260.0	291.0	HP	1.294 G	0.206 AO	-1.323 h	1.333 P
225.0	181.0	STD+R	1.079 S	0.169 M	0.895 b	0.901 b
195.0	181.0	HP	0.848 S	0.129 R	0.702 b	0.706 b
180.0	333.0	HP	-0.727 V	0.117 R	-0.733 e	0.741 e
160.0	291.0	STD+R	0.620 G	0.106 AT	-0.644 h	0.652 h
150.0	291.0	HP	0.575 G	0.098 AT	-0.599 h	0.606 h
130.0	291.0	HP	0.487 G	0.082 AT	-0.508 h	0.514 h
120.0	291.0	STD+R	0.443 G	0.074 AT	-0.463 h	0.468 h

MAXIMUM TENSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE
380.0	----------		0.57 e	0.00 A
	1.54 k	1.73 z		
375.0	----------		0.11 A	0.00 A
	5.30 k	1.65 h		
370.0	----------		0.03 AC	0.00 A
	9.02 k	1.90 z		
365.0	----------		0.13 A	0.00 A
	13.59 k	2.18 h		
360.0	----------		0.36 B	0.00 A
	18.78 k	2.66 AA		
355.0	----------		0.25 B	0.00 A
	25.63 l	3.09 i		
350.0	----------		0.07 AC	0.00 A
	33.21 k	4.05 z		
345.0	----------		0.27 B	0.00 A
	42.98 k	4.36 P		
340.0	----------		0.58 A	0.00 A
	52.78 k	4.66 AR		
335.0	----------		0.32 A	0.00 A
	64.66 k	5.07 P		
330.0	----------		0.04 AC	0.00 A
	76.41 k	5.58 z		

```
325.0  ----------------------          0.31 A       0.00 A
         89.88 k       5.90 P
320.0  ----------------------          0.96 A       0.00 A
        103.35 k       6.80 z
315.0  ----------------------          0.46 A       0.00 A
        121.19 k       7.27 P
310.0  ----------------------          0.13 AC      0.00 A
        137.34 k       7.78 AR
305.0  ----------------------          0.45 A       0.00 A
        156.50 k       8.15 P
300.0  ----------------------          2.15 AC      0.00 A
        166.83 k       2.81 AK
295.0  ----------------------          0.33 A       0.00 A
        172.15 k       2.71 I
290.0  ----------------------          0.03 A       0.00 A
        175.15 k       2.66 AK
285.0  ----------------------          0.22 A       0.00 A
        179.95 k       2.67 I
280.0  ----------------------          0.05 A       0.00 A
        183.60 k       2.67 AK
275.0  ----------------------          0.15 A       0.00 A
        188.22 k       2.76 I
270.0  ----------------------          0.08 Y       0.00 A
        192.22 k       2.82 AB
265.0  ----------------------          0.13 A       0.00 A
        196.73 k       3.02 R
260.0  ----------------------          0.08 Y       0.00 A
        201.83 k       4.02 y
253.3  ----------------------          0.14 A       0.00 A
        208.86 k       4.38 d
246.7  ----------------------          0.07 Y       0.00 A
        215.26 k       4.26 v
240.0  ----------------------          0.10 A       0.00 A
        222.44 k       4.53 d
233.3  ----------------------          0.09 P       0.00 A
        228.95 k       4.53 v
226.7  ----------------------          0.08 Y       0.00 A
        236.23 k       5.70 y
220.0  ----------------------          0.08 P       0.00 A
        244.65 k       6.42 X
213.3  ----------------------          0.09 Y       0.00 A
        252.81 k       6.03 y
206.7  ----------------------          0.07 P       0.00 A
        261.32 k       6.76 X
200.0  ----------------------          0.08 V       0.00 A
        271.45 k       7.96 m
190.0  ----------------------          0.08 M       0.00 A
        285.17 k       9.27 X
180.0  ----------------------          0.08 V       0.00 A
        299.66 k       9.82 AH
170.0  ----------------------          0.08 M       0.00 A
        313.82 k       9.97 X
160.0  ----------------------          0.06 V       0.00 A
        329.41 k      11.16 y
150.0  ----------------------          0.07 D       0.00 A
        345.41 k      12.31 g
140.0  ----------------------          0.07 A       0.00 A
        362.09 k      12.28 AQ
130.0  ----------------------          0.07 D       0.00 A
        378.02 k      13.47 y
120.0  ----------------------          0.05 A       0.00 A
        395.48 k      15.09 g
110.0  ----------------------          0.06 M       0.00 A
        412.88 k      16.09 g
100.0  ----------------------          0.22 AT      0.00 A
        430.24 k      15.92 AQ
 90.0  ----------------------          0.08 AC      0.00 A
        447.36 k      16.73 g
 80.0  ----------------------          0.35 A       0.00 A
        467.63 k      17.13 AQ
 73.3  ----------------------          1.36 k       0.00 AR
        466.55 k      22.67 g
 60.0  ----------------------          0.30 M       0.00 A
        502.03 k      18.21 AQ
 53.3  ----------------------          1.32 m       0.00 J
        500.89 k      23.47 g
 40.0  ----------------------          0.27 A       0.00 A
        536.66 k      19.08 AQ
 33.3  ----------------------          1.24 m       0.00 h
        535.30 k      24.06 g
```

20.0	----------		0.08	A	0.00	h
	570.91 k	19.97 AQ				
13.3	----------		1.12	m	0.00	F
	569.49 k	24.58 g				
0.0	----------		0.00	A	0.00	A

MAXIMUM COMPRESSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE
380.0	----------		-0.53 w	0.00 A
	-2.25 S	-1.79 h		
375.0	----------		-0.09 AC	0.00 A
	-6.35 S	-1.63 z		
370.0	----------		-0.03 A	0.00 A
	-10.31 S	-1.92 h		
365.0	----------		-0.12 AC	0.00 A
	-15.25 S	-2.19 i		
360.0	----------		-0.32 AD	0.00 A
	-20.85 S	-2.75 H		
355.0	----------		-0.24 AD	0.00 A
	-28.44 T	-3.05 AR		
350.0	----------		-0.07 A	0.00 A
	-36.96 S	-4.08 h		
345.0	----------		-0.25 AD	0.00 A
	-47.46 S	-4.37 P		
340.0	----------		-0.56 AC	0.00 A
	-57.94 S	-4.76 G		
335.0	----------		-0.31 AC	0.00 A
	-70.88 S	-5.04 z		
330.0	----------		-0.04 A	0.00 A
	-83.51 S	-5.61 P		
325.0	----------		-0.30 AC	0.00 A
	-98.03 S	-5.91 P		
320.0	----------		-0.95 AC	0.00 A
	-112.85 S	-7.15 G		
315.0	----------		-0.45 AC	0.00 A
	-132.25 S	-7.21 z		
310.0	----------		-0.13 A	0.00 A
	-149.49 S	-7.84 P		
305.0	----------		-0.44 AC	0.00 A
	-170.11 S	-8.14 P		
300.0	----------		-2.16 A	0.00 A
	-181.62 S	-3.03 I		
295.0	----------		-0.33 AC	0.00 A
	-187.76 S	-2.56 AK		
290.0	----------		-0.03 AC	0.00 A
	-191.14 S	-2.85 I		
285.0	----------		-0.21 AC	0.00 A
	-196.63 S	-2.55 AB		
280.0	----------		-0.05 AC	0.00 A
	-200.77 S	-2.85 I		
275.0	----------		-0.15 AC	0.00 A
	-206.05 S	-2.73 AB		
270.0	----------		-0.08 q	0.00 A
	-210.61 S	-3.01 I		
265.0	----------		-0.13 AC	0.00 A
	-216.08 S	-3.03 j		
260.0	----------		-0.08 q	0.00 A
	-222.01 S	-4.50 g		
253.3	----------		-0.13 AC	0.00 A
	-230.27 S	-4.18 s		
246.7	----------		-0.07 q	0.00 A
	-237.76 S	-4.65 g		
240.0	----------		-0.09 AO	0.00 A
	-246.09 S	-4.44 s		
233.3	----------		-0.08 AC	0.00 A
	-253.96 S	-4.94 g		
226.7	----------		-0.07 q	0.00 A
	-262.77 S	-6.33 U		
220.0	----------		-0.07 AC	0.00 A
	-272.83 S	-5.82 AQ		
213.3	----------		-0.08 q	0.00 A

	-282.41 S	-6.70 U					
206.7	----------		-0.06	AC	0.00	A	
	-292.59 S	-6.32 AE					
200.0	----------		-0.07	AC	0.00	A	
	-305.17 S	-9.15 U					
190.0	----------		-0.07	q	0.00	A	
	-322.64 S	-9.00 AE					
180.0	----------		-0.07	n	0.00	A	
	-340.58 S	-9.82 U					
170.0	----------		-0.07	AO	0.00	A	
	-358.20 S	-10.18 AH					
160.0	----------		-0.06	AC	0.00	A	
	-376.85 S	-12.33 g					
150.0	----------		-0.06	q	0.00	A	
	-396.14 S	-12.31 g					
140.0	----------		-0.07	AC	0.00	A	
	-415.93 S	-13.07 g					
130.0	----------		-0.05	AO	0.00	A	
	-435.68 S	-15.08 g					
120.0	----------		-0.05	AC	0.00	A	
	-456.70 S	-16.22 g					
110.0	----------		-0.06	AR	0.00	A	
	-477.30 S	-15.79 g					
100.0	----------		-0.21	F	0.00	A	
	-498.21 S	-16.69 g					
90.0	----------		-0.08	A	0.00	A	
	-519.04 S	-16.70 g					
80.0	----------		-0.39	AC	0.00	A	
	-542.86 S	-18.17 g					
73.3	----------		-1.60	S	0.00	AT	
	-544.30 S	-23.36 g					
60.0	----------		-0.28	AO	0.00	A	
	-585.33 S	-18.96 g					
53.3	----------		-1.56	U	0.00	AO	
	-586.86 S	-23.95 g					
40.0	----------		-0.26	AC	0.00	A	
	-628.77 S	-19.87 g					
33.3	----------		-1.49	U	0.00	AB	
	-630.58 S	-24.56 g					
20.0	----------		-0.07	AC	0.00	AB	
	-672.81 S	-20.47 g					
13.3	----------		-1.36	S	0.00	AI	
	-674.70 S	-24.88 g					
0.0	----------		0.00	A	0.00	A	

FORCE/RESISTANCE RATIO IN LEGS
==========

MAST ELEV ft	-- LEG COMPRESSION - MAX COMP	COMP RESIST	FORCE/ RESIST RATIO	---- LEG TENSION --- MAX TENS	TENS RESIST	FORCE/ RESIST RATIO
380.00						
	2.25	31.48	0.07	1.54	48.15	0.03
375.00						
	6.35	31.48	0.20	5.30	48.15	0.11
370.00						
	10.31	31.48	0.33	9.02	48.15	0.19
365.00						
	15.25	31.48	0.48	13.59	48.15	0.28
360.00						
	20.85	57.04	0.37	18.78	76.50	0.25
355.00						
	28.44	57.04	0.50	25.63	76.50	0.34
350.00						
	36.96	57.04	0.65	33.21	76.50	0.43
345.00						
	47.46	57.04	0.83	42.98	76.50	0.56
340.00						
	57.94	110.98	0.52	52.78	135.90	0.39
335.00						
	70.88	110.98	0.64	64.66	135.90	0.48
330.00						
	83.51	110.98	0.75	76.41	135.90	0.56
325.00						
	98.03	110.98	0.88	89.88	135.90	0.66
320.00						
	112.85	179.61	0.63	103.35	193.50	0.53

315.00						
	132.25	179.61	0.74	121.19	193.50	0.63
310.00						
	149.49	179.61	0.83	137.34	193.50	0.71
305.00						
	170.11	179.61	0.95	156.50	193.50	0.81
300.00						
	181.62	254.38	0.71	166.83	274.95	0.61
295.00						
	187.76	254.38	0.74	172.15	274.95	0.63
290.00						
	191.14	254.38	0.75	175.15	274.95	0.64
285.00						
	196.63	254.38	0.77	179.95	274.95	0.65
280.00						
	200.77	254.38	0.79	183.60	274.95	0.67
275.00						
	206.05	254.38	0.81	188.22	274.95	0.68
270.00						
	210.61	254.38	0.83	192.22	274.95	0.70
265.00						
	216.08	254.38	0.85	196.73	274.95	0.72
260.00						
	222.01	309.64	0.72	201.83	327.10	0.62
253.33						
	230.27	309.64	0.74	208.86	327.10	0.64
246.67						
	237.76	309.64	0.77	215.26	327.10	0.66
240.00						
	246.09	309.64	0.79	222.44	327.10	0.68
233.33						
	253.96	309.64	0.82	228.95	327.10	0.70
226.67						
	262.77	309.64	0.85	236.23	327.10	0.72
220.00						
	272.83	309.64	0.88	244.65	357.75	0.68
213.33						
	282.41	309.64	0.91	252.81	357.75	0.71
206.67						
	292.59	309.64	0.94	261.32	357.75	0.73
200.00						
	305.17	507.33	0.60	271.45	457.90	0.59
190.00						
	322.64	507.33	0.64	285.17	457.90	0.62
180.00						
	340.58	507.33	0.67	299.66	457.90	0.65
170.00						
	358.20	507.33	0.71	313.82	457.90	0.69
160.00						
	376.85	507.33	0.74	329.41	457.90	0.72
150.00						
	396.14	507.33	0.78	345.41	457.90	0.75
140.00						
	415.93	507.33	0.82	362.09	457.90	0.79
130.00						
	435.68	507.33	0.86	378.02	457.90	0.83
120.00						
	456.70	507.33	0.90	395.48	576.00	0.69
110.00						
	477.30	507.33	0.94	412.88	576.00	0.72
100.00						
	498.21	621.06	0.80	430.24	656.10	0.66
90.00						
	519.04	621.06	0.84	447.36	656.10	0.68
80.00						
	542.86	640.29	0.85	467.63	656.10	0.71
73.33						
	544.30	640.29	0.85	466.55	656.10	0.71
60.00						
	585.33	640.29	0.91	502.03	656.10	0.77
53.33						
	586.86	640.29	0.92	500.89	656.10	0.76
40.00						
	628.77	844.46	0.74	536.66	865.80	0.62
33.33						
	630.58	844.46	0.75	535.30	865.80	0.62
20.00						
	672.81	844.46	0.80	570.91	865.80	0.66
13.33						
	674.70	844.46	0.80	569.49	865.80	0.66

FORCE/RESISTANCE RATIO IN DIAGONALS

MAST ELEV ft	- DIAG COMPRESSION - MAX COMP	COMP RESIST	FORCE/ RESIST RATIO	--- DIAG TENSION -- MAX TENS	TENS RESIST	FORCE/ RESIST RATIO
380.00						
	1.79	7.16	0.25	1.73	7.16	0.24
375.00						
	1.63	7.16	0.23	1.65	7.16	0.23
370.00						
	1.92	7.16	0.27	1.90	7.16	0.27
365.00						
	2.19	7.16	0.31	2.18	7.16	0.30
360.00						
	2.75	7.16	0.38	2.66	7.16	0.37
355.00						
	3.05	7.16	0.43	3.09	7.16	0.43
350.00						
	4.08	7.16	0.57	4.05	7.16	0.57
345.00						
	4.37	7.16	0.61	4.36	7.16	0.61
340.00						
	4.76	7.16	0.66	4.66	7.16	0.65
335.00						
	5.04	7.16	0.70	5.07	7.16	0.71
330.00						
	5.61	7.16	0.78	5.58	7.16	0.78
325.00						
	5.91	7.16	0.82	5.90	7.16	0.82
320.00						
	7.15	10.74	0.67	6.80	10.74	0.63
315.00						
	7.21	10.74	0.67	7.27	10.74	0.68
310.00						
	7.84	10.74	0.73	7.78	10.74	0.72
305.00						
	8.14	10.74	0.76	8.15	10.74	0.76
300.00						
	3.03	7.16	0.42	2.81	7.16	0.39
295.00						
	2.56	7.16	0.36	2.71	7.16	0.38
290.00						
	2.85	7.16	0.40	2.66	7.16	0.37
285.00						
	2.55	7.16	0.36	2.67	7.16	0.37
280.00						
	2.85	5.63	0.51	2.67	5.63	0.48
275.00						
	2.73	5.63	0.48	2.76	5.63	0.49
270.00						
	3.01	5.63	0.53	2.82	5.63	0.50
265.00						
	3.03	5.63	0.54	3.02	5.63	0.54
260.00						
	4.50	5.14	0.88	4.02	5.14	0.78
253.33						
	4.18	5.14	0.81	4.38	5.14	0.85
246.67						
	4.65	5.14	0.90	4.26	5.14	0.83
240.00						
	4.44	7.46	0.60	4.53	7.46	0.61
233.33						
	4.94	7.46	0.66	4.53	7.46	0.61
226.67						
	6.33	7.46	0.85	5.70	7.46	0.76
220.00						
	5.82	10.34	0.56	6.42	10.34	0.62
213.33						
	6.70	10.34	0.65	6.03	10.34	0.58
206.67						
	6.32	10.34	0.61	6.76	10.34	0.65
200.00						
	9.15	11.28	0.81	7.96	11.28	0.71
190.00						
	9.00	11.28	0.80	9.27	11.28	0.82

180.00						
	9.82	12.53	0.78	9.82	12.53	0.78
170.00						
	10.18	12.53	0.81	9.97	12.53	0.80
160.00						
	12.33	15.77	0.78	11.16	15.77	0.71
150.00						
	12.31	15.77	0.78	12.31	15.77	0.78
140.00						
	13.07	16.62	0.79	12.28	16.62	0.74
130.00						
	15.08	16.62	0.91	13.47	16.62	0.81
120.00						
	16.22	17.72	0.92	15.09	17.72	0.85
110.00						
	15.79	17.72	0.89	16.09	17.72	0.91
100.00						
	16.69	18.63	0.90	15.92	18.63	0.85
90.00						
	16.70	18.63	0.90	16.73	18.63	0.90
80.00						
	18.17	35.60	0.51	17.13	35.60	0.48
73.33						
	23.36	43.74	0.53	22.67	43.74	0.52
60.00						
	18.96	32.65	0.58	18.21	32.65	0.56
53.33						
	23.95	43.74	0.55	23.47	43.74	0.54
40.00						
	19.87	36.10	0.55	19.08	36.10	0.53
33.33						
	24.56	43.74	0.56	24.06	43.74	0.55
20.00						
	20.47	33.26	0.62	19.97	33.26	0.60
13.33						
	24.88	43.74	0.57	24.58	43.74	0.56
0.00						

MAXIMUM INDIVIDUAL FOUNDATION LOADS: (kip)

LOAD---COMPONENTS				TOTAL
NORTH	EAST	DOWN	UPLIFT	SHEAR
70.51 S	60.74 e	701.81 S	-592.06 k	70.52 S

MAXIMUM TOTAL LOADS ON FOUNDATION : (kip & kip-ft)

HORIZONTAL			DOWN	OVERTURNING			TORSION
NORTH	EAST	TOTAL @ 359.5		NORTH	EAST	TOTAL @ 359.4	
118.0 S	100.9 b	118.0 S	298.1 BI	20139.5 S	16972.0 b	20140.4 S	156.7 j

Latticed Tower Analysis (Unguyed) (c)2015 Guymast Inc. 416-736-7453
Processed under license at:

Sabre Towers and Poles on: 23 jul 2020 at: 15:29:18

********** Service Load Condition **********

* Only 1 condition(s) shown in full

LOADING CONDITION A

60 mph wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	....FORCES.... HORIZ kip	DOWN kip	....MOMENTS.... VERTICAL ft-kip	TORSNAL ft-kip
C	388.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	388.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	380.0	0.00	0.0	0.0	0.13	0.30	0.00	0.00
C	380.0	0.00	0.0	0.0	0.13	0.30	0.00	0.00
C	380.0	0.00	0.0	0.0	0.10	0.30	0.00	0.00
C	377.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	358.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	352.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.16	0.34	0.00	0.00
C	350.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	342.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	330.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	322.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	320.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	312.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	310.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	302.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	300.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	292.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.04	0.40	0.00	0.00
C	262.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	260.0	0.00	0.0	0.0	0.02	0.01	0.00	0.00
C	256.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	243.4	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.08	0.80	0.00	0.00
C	225.0	0.00	0.0	0.0	0.07	0.01	0.00	0.00
C	223.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.06	0.60	0.00	0.00
C	195.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	195.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.07	0.45	0.00	0.00
C	185.0	0.00	0.0	0.0	0.06	0.60	0.00	0.00
C	185.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	175.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.07	0.80	0.00	0.00
C	165.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.07	0.01	0.00	0.00
C	155.0	0.00	0.0	0.0	0.06	0.60	0.00	0.00
C	155.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	145.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.05	0.60	0.00	0.00
C	135.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	125.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.07	0.80	0.00	0.00
C	120.0	0.00	0.0	0.0	0.06	0.01	0.00	0.00

C	115.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.08	0.09	0.00	0.00
C	53.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.08	0.10	0.00	0.00
C	33.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.10	0.17	0.00	0.00
C	13.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.10	0.18	0.00	0.00
D	380.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	365.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	365.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	360.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	360.0	0.00	3.8	0.0	0.03	0.05	0.02	0.00
D	340.0	0.00	358.9	0.0	0.03	0.04	0.02	-0.01
D	340.0	0.00	358.9	0.0	0.03	0.06	0.02	-0.01
D	320.0	0.00	358.9	0.0	0.03	0.06	0.02	-0.01
D	320.0	0.00	356.8	0.0	0.04	0.09	0.02	-0.01
D	300.0	0.00	356.8	0.0	0.03	0.08	0.02	-0.01
D	300.0	0.00	355.4	0.0	0.04	0.10	0.02	-0.01
D	260.0	0.00	357.1	0.0	0.04	0.10	0.04	-0.01
D	260.0	0.00	357.1	0.0	0.04	0.12	0.04	-0.01
D	226.7	0.00	357.4	0.0	0.05	0.14	0.05	-0.01
D	226.7	0.00	10.1	0.0	0.05	0.14	0.05	0.00
D	220.0	0.00	10.1	0.0	0.05	0.14	0.05	0.00
D	220.0	0.00	14.7	0.0	0.06	0.15	0.05	0.01
D	200.0	0.00	14.9	0.0	0.06	0.16	0.06	0.01
D	200.0	0.00	16.4	0.0	0.06	0.22	0.06	0.01
D	160.0	0.00	20.0	0.0	0.06	0.22	0.07	0.02
D	160.0	0.00	22.1	0.0	0.06	0.24	0.07	0.02
D	140.0	0.00	24.4	0.0	0.07	0.24	0.08	0.03
D	140.0	0.00	25.0	0.0	0.07	0.27	0.08	0.03
D	100.0	0.00	29.8	0.0	0.07	0.28	0.09	0.04
D	100.0	0.00	29.3	0.0	0.07	0.33	0.10	0.04
D	80.0	0.00	29.3	0.0	0.07	0.34	0.10	0.04
D	80.0	0.00	29.4	0.0	0.07	0.31	0.10	0.04
D	73.3	0.00	29.4	0.0	0.07	0.31	0.10	0.04
D	73.3	0.00	29.4	0.0	0.08	0.38	0.11	0.04
D	60.0	0.00	29.4	0.0	0.08	0.38	0.11	0.04
D	60.0	0.00	29.4	0.0	0.07	0.32	0.11	0.04
D	53.3	0.00	29.4	0.0	0.07	0.32	0.11	0.04
D	53.3	0.00	29.5	0.0	0.07	0.41	0.11	0.04
D	40.0	0.00	29.5	0.0	0.07	0.41	0.11	0.04
D	40.0	0.00	29.5	0.0	0.06	0.41	0.12	0.04
D	33.3	0.00	29.5	0.0	0.06	0.41	0.12	0.04
D	33.3	0.00	29.5	0.0	0.07	0.48	0.12	0.04
D	20.0	0.00	29.5	0.0	0.07	0.48	0.12	0.04
D	20.0	0.00	29.6	0.0	0.06	0.42	0.12	0.03
D	13.3	0.00	29.6	0.0	0.06	0.42	0.12	0.03
D	13.3	0.00	29.6	0.0	0.06	0.50	0.13	0.03
D	0.0	0.00	29.6	0.0	0.06	0.50	0.13	0.03

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	260.0	291.0	6.7	240.0	0.09	0.06	0.17	0.01
STD+R	225.0	181.0	8.7	240.0	-0.35	0.01	0.34	0.00
HP	195.0	181.0	10.4	240.0	-0.28	0.00	0.28	0.00
HP	180.0	333.0	11.3	0.0	0.33	0.06	0.28	-0.08
STD+R	160.0	291.0	12.5	240.0	0.15	0.22	0.34	0.17
HP	150.0	291.0	13.1	240.0	0.18	0.12	0.28	0.03
HP	130.0	291.0	14.2	240.0	0.18	0.12	0.28	0.03
STD+R	120.0	291.0	14.8	240.0	0.14	0.20	0.34	0.16

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MAXIMUM MAST DISPLACEMENTS:
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ELEV ft	------DEFLECTIONS (ft)----- NORTH	EAST	DOWN	--TILTS (DEG)--- NORTH	EAST	TWIST DEG
380.0	1.788 S	-1.515 J	0.018 S	0.729 S	-0.628 J	0.111 b
375.0	1.724 S	-1.460 J	0.018 S	0.728 S	-0.627 J	0.110 b
370.0	1.661 S	-1.405 J	0.017 S	0.724 S	-0.623 J	0.109 b
365.0	1.597 S	-1.351 J	0.017 S	0.716 S	-0.616 J	0.107 b
360.0	1.535 S	-1.297 J	0.016 S	0.706 S	-0.606 J	0.106 b
355.0	1.474 S	-1.244 J	0.016 S	0.697 S	-0.598 J	0.103 b
350.0	1.413 S	-1.192 J	0.016 S	0.684 S	-0.586 J	0.101 b
345.0	1.353 S	-1.141 J	0.015 S	0.667 S	-0.571 J	0.098 b
340.0	1.296 S	-1.092 J	0.015 S	0.646 S	-0.552 J	0.095 b
335.0	1.239 S	-1.043 J	0.014 S	0.632 S	-0.539 J	0.091 b
330.0	1.184 S	-0.997 J	0.014 S	0.614 S	-0.523 J	0.088 b
325.0	1.130 S	-0.951 J	0.014 S	0.592 S	-0.505 J	0.084 b
320.0	1.079 S	-0.907 J	0.013 S	0.568 S	-0.483 J	0.079 b
315.0	1.030 S	-0.865 J	0.013 S	0.547 S	-0.465 J	0.076 b
310.0	0.983 S	-0.825 J	0.013 S	0.524 S	-0.444 J	0.073 b
305.0	0.937 S	-0.786 J	0.012 S	0.497 S	-0.421 J	0.069 b
300.0	0.894 S	-0.750 J	0.012 S	0.467 S	-0.395 J	0.065 b
295.0	0.854 S	-0.716 J	0.012 S	0.445 S	-0.376 J	0.061 e
290.0	0.816 S	-0.684 J	0.012 S	0.425 S	-0.358 J	0.058 e
285.0	0.779 S	-0.654 J	0.012 S	0.406 S	-0.342 J	0.056 e
280.0	0.745 S	-0.624 J	0.011 S	0.388 S	-0.327 J	0.054 e
275.0	0.711 S	-0.596 J	0.011 S	0.371 S	-0.312 J	0.052 e
270.0	0.679 S	-0.570 J	0.011 S	0.355 S	-0.298 J	0.050 e
265.0	0.649 S	-0.544 J	0.011 S	0.339 S	-0.284 J	0.048 e
260.0	0.620 S	-0.519 J	0.011 S	0.324 S	-0.272 J	0.046 e
253.3	0.582 S	-0.488 J	0.010 S	0.309 S	-0.259 J	-0.044 M
246.7	0.547 S	-0.459 J	0.010 D	0.295 S	-0.247 J	-0.042 M
240.0	0.513 S	-0.430 J	0.010 D	0.281 S	-0.235 J	-0.040 M
233.3	0.480 S	-0.403 J	0.010 D	0.267 S	-0.223 J	-0.039 M
226.7	0.450 S	-0.378 J	0.010 D	0.254 S	-0.212 J	-0.037 M
220.0	0.420 S	-0.353 J	0.009 D	0.241 S	-0.201 J	-0.035 M
213.3	0.393 S	-0.330 J	0.009 D	0.228 S	-0.190 J	0.033 j
206.7	0.366 S	-0.308 J	0.009 D	0.215 S	-0.179 J	0.031 j
200.0	0.341 S	-0.287 J	0.009 D	0.203 S	-0.169 J	0.030 j
190.0	0.306 S	-0.258 J	0.008 D	0.191 S	-0.159 J	0.028 j
180.0	0.273 S	-0.231 J	0.008 D	0.180 S	-0.150 J	0.027 j
170.0	0.242 S	-0.205 J	0.008 D	0.168 S	-0.141 J	0.025 j
160.0	0.213 S	-0.181 J	0.008 D	0.157 S	-0.131 J	0.024 j
150.0	0.185 S	-0.158 J	0.007 D	0.146 S	-0.122 J	0.023 j
140.0	0.160 S	-0.136 J	0.007 D	0.135 S	-0.113 J	0.020 j
130.0	0.137 S	-0.117 J	0.006 D	0.124 S	-0.104 J	0.019 j
120.0	0.115 S	-0.099 J	0.006 b	0.112 S	-0.094 J	0.017 j
110.0	0.095 S	-0.082 J	0.006 b	0.101 S	-0.085 J	0.014 j
100.0	0.077 S	-0.067 J	0.005 b	0.090 S	-0.076 J	0.012 j
90.0	0.061 S	0.052 b	0.005 D	0.080 S	0.067 b	0.010 j
80.0	0.046 S	0.039 b	0.004 D	0.070 S	0.059 b	0.009 j
73.3	0.039 S	0.033 b	0.004 A	0.064 S	0.053 b	0.008 j
60.0	0.025 S	0.022 b	0.003 A	0.050 S	0.042 b	0.006 j
53.3	0.021 S	0.018 b	0.003 D	0.044 S	0.037 b	0.005 j
40.0	0.012 S	0.010 b	0.002 D	0.030 S	0.025 b	0.004 j
33.3	0.009 S	0.008 b	0.002 C	0.025 S	0.021 b	0.003 j
20.0	0.004 S	0.003 b	0.001 C	0.015 S	0.013 b	0.002 j
13.3	0.002 U	0.001 d	0.001 d	0.010 S	0.009 b	0.001 j
0.0	0.000 A	0.000 A	0.000 A	0.000 A	0.000 A	0.000 A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS:

ELEV ft	AZI deg	TYPE *	.....BEAM DEFLECTIONS (deg)..... ROLL	YAW	PITCH	TOTAL
260.0	291.0	HP	0.302 G	0.046 e	-0.307 h	0.309 h
225.0	181.0	STD+R	0.250 S	0.037 M	-0.209 J	0.210 J
195.0	181.0	HP	0.197 S	0.029 j	-0.164 J	0.165 J
180.0	333.0	HP	0.169 D	0.027 j	-0.170 e	0.172 e
160.0	291.0	STD+R	0.145 G	0.024 j	-0.150 h	0.152 h
150.0	291.0	HP	0.135 G	0.022 j	-0.139 h	0.141 h
130.0	291.0	HP	0.114 G	0.019 j	-0.118 h	0.120 h
120.0	291.0	STD+R	0.104 G	0.017 j	-0.108 h	0.109 h

MAXIMUM TENSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE

```
380.0  ---------------------          0.14 e       0.00 A
          0.09 A       0.38 P
375.0  ---------------------          0.03 A       0.00 A
          0.87 A       0.38 P
370.0  ---------------------          0.01 T       0.00 A
          1.69 A       0.43 P
365.0  ---------------------          0.04 A       0.00 A
          2.69 B       0.49 Q
360.0  ---------------------          0.10 B       0.00 A
          3.84 A       0.58 P
355.0  ---------------------          0.07 B       0.00 A
          5.28 B       0.72 P
350.0  ---------------------          0.01 S       0.00 A
          6.82 A       0.91 h
345.0  ---------------------          0.07 B       0.00 A
          8.98 A       0.99 P
340.0  ---------------------          0.15 A       0.00 A
         11.17 A       1.03 P
335.0  ---------------------          0.08 A       0.00 A
         13.74 A       1.16 h
330.0  ---------------------          0.01 S       0.00 A
         16.35 A       1.26 P
325.0  ---------------------          0.08 A       0.00 A
         19.34 A       1.34 P
320.0  ---------------------          0.24 A       0.00 A
         22.21 A       1.51 P
315.0  ---------------------          0.11 A       0.00 A
         26.08 A       1.68 P
310.0  ---------------------          0.03 S       0.00 A
         29.72 A       1.76 P
305.0  ---------------------          0.11 A       0.00 A
         33.97 A       1.87 P
300.0  ---------------------          0.44 S       0.00 A
         36.14 A       0.62 a
295.0  ---------------------          0.08 A       0.00 A
         37.18 A       0.65 I
290.0  ---------------------          0.01 A       0.00 A
         37.82 A       0.60 a
285.0  ---------------------          0.05 A       0.00 A
         38.79 A       0.64 I
280.0  ---------------------          0.01 A       0.00 A
         39.56 A       0.62 a
275.0  ---------------------          0.04 A       0.00 A
         40.51 A       0.66 I
270.0  ---------------------          0.02 Y       0.00 A
         41.36 A       0.66 a
265.0  ---------------------          0.03 A       0.00 A
         42.20 A       0.72 R
260.0  ---------------------          0.02 Y       0.00 A
         43.25 A       0.92 L
253.3  ---------------------          0.04 A       0.00 A
         44.64 A       1.05 d
246.7  ---------------------          0.02 Y       0.00 A
         45.94 A       0.99 L
240.0  ---------------------          0.03 A       0.00 A
         47.42 A       1.09 d
233.3  ---------------------          0.02 P       0.00 A
         48.67 A       1.06 L
226.7  ---------------------          0.02 Y       0.00 A
         50.04 A       1.30 O
220.0  ---------------------          0.02 P       0.00 A
         51.76 A       1.53 X
213.3  ---------------------          0.02 Y       0.00 A
         53.44 A       1.39 O
206.7  ---------------------          0.02 P       0.00 A
         55.16 A       1.61 X
200.0  ---------------------          0.02 V       0.00 A
         57.01 A       1.80 F
190.0  ---------------------          0.02 M       0.00 A
         59.42 A       2.20 X
180.0  ---------------------          0.02 V       0.00 A
         62.00 A       2.23 X
170.0  ---------------------          0.02 M       0.00 A
         64.59 A       2.37 X
160.0  ---------------------          0.02 V       0.00 A
         67.51 A       2.51 O
150.0  ---------------------          0.02 M       0.00 A
         70.45 A       2.90 g
140.0  ---------------------          0.02 A       0.00 A
```

	73.64	A	2.82	g			
130.0	----------				0.02	D	0.00 A
	76.41	A	3.09	O			
120.0	----------				0.01	A	0.00 A
	79.66	A	3.50	g			
110.0	----------				0.02	M	0.00 A
	82.93	A	3.75	g			
100.0	----------				0.04	j	0.00 A
	86.19	A	3.68	g			
90.0	----------				0.01	S	0.00 A
	89.27	A	3.88	g			
80.0	----------				0.09	A	0.00 A
	93.29	A	3.93	g			
73.3	----------				0.28	C	0.00 R
	92.09	A	5.22	g			
60.0	----------				0.09	A	0.00 A
	99.34	A	4.18	g			
53.3	----------				0.27	A	0.00 J
	98.07	A	5.40	g			
40.0	----------				0.08	A	0.00 A
	105.25	A	4.36	g			
33.3	----------				0.24	A	0.00 R
	103.74	A	5.52	g			
20.0	----------				0.02	A	0.00 R
	110.73	A	4.57	g			
13.3	----------				0.22	C	0.00 I
	109.15	A	5.64	g			
0.0	----------				0.00	A	0.00 A

MAXIMUM COMPRESSION IN MAST MEMBERS (kip)
==========

ELEV ft	LEGS		DIAG		HORIZ		BRACE
380.0	----------				-0.11	M	0.00 A
	-0.76	S	-0.43	P			
375.0	----------				-0.01	S	0.00 A
	-1.78	S	-0.36	P			
370.0	----------				-0.01	B	0.00 A
	-2.72	S	-0.45	i			
365.0	----------				-0.02	S	0.00 A
	-3.90	T	-0.50	Q			
360.0	----------				-0.05	T	0.00 A
	-5.21	S	-0.65	H			
355.0	----------				-0.04	T	0.00 A
	-7.06	T	-0.68	h			
350.0	----------				-0.02	A	0.00 A
	-9.19	S	-0.94	P			
345.0	----------				-0.05	T	0.00 A
	-11.65	S	-1.00	h			
340.0	----------				-0.11	S	0.00 A
	-14.07	S	-1.10	G			
335.0	----------				-0.06	S	0.00 A
	-17.14	S	-1.13	P			
330.0	----------				-0.01	A	0.00 A
	-20.07	S	-1.29	P			
325.0	----------				-0.06	S	0.00 A
	-23.47	S	-1.34	P			
320.0	----------				-0.19	S	0.00 A
	-27.02	S	-1.66	G			
315.0	----------				-0.09	S	0.00 A
	-31.63	S	-1.62	P			
310.0	----------				-0.03	A	0.00 A
	-35.63	S	-1.81	P			
305.0	----------				-0.09	S	0.00 A
	-40.49	S	-1.86	P			
300.0	----------				-0.54	A	0.00 A
	-43.34	S	-0.73	I			
295.0	----------				-0.07	S	0.00 A
	-44.96	S	-0.58	a			
290.0	----------				-0.01	S	0.00 A
	-45.84	S	-0.69	I			
285.0	----------				-0.04	S	0.00 A
	-47.28	S	-0.59	R			

280.0	----------		-0.01	S	0.00	A
	-48.37	S -0.69 I				
275.0	----------		-0.03	S	0.00	A
	-49.77	S -0.64 R				
270.0	----------		-0.02	G	0.00	A
	-50.96	S -0.72 I				
265.0	----------		-0.02	S	0.00	A
	-52.49	S -0.72 j				
260.0	----------		-0.02	V	0.00	A
	-54.06	S -1.09 g				
253.3	----------		-0.03	S	0.00	A
	-56.29	S -0.98 I				
246.7	----------		-0.01	G	0.00	A
	-58.31	S -1.13 g				
240.0	----------		-0.02	e	0.00	A
	-60.53	S -1.05 I				
233.3	----------		-0.01	S	0.00	A
	-62.70	S -1.19 g				
226.7	----------		-0.01	e	0.00	A
	-65.14	S -1.52 U				
220.0	----------		-0.01	S	0.00	A
	-67.77	S -1.36 g				
213.3	----------		-0.02	S	0.00	A
	-70.27	S -1.60 U				
206.7	----------		-0.01	S	0.00	A
	-72.93	S -1.48 U				
200.0	----------		-0.02	S	0.00	A
	-76.41	S -2.20 U				
190.0	----------		-0.01	G	0.00	A
	-81.28	S -2.10 U				
180.0	----------		-0.01	D	0.00	A
	-86.25	S -2.34 U				
170.0	----------		-0.01	G	0.00	A
	-91.06	S -2.35 X				
160.0	----------		-0.01	S	0.00	A
	-96.09	S -2.94 g				
150.0	----------		-0.01	G	0.00	A
	-101.33	S -2.86 g				
140.0	----------		-0.01	S	0.00	A
	-106.59	S -3.09 g				
130.0	----------		-0.01	G	0.00	A
	-112.08	S -3.53 g				
120.0	----------		-0.01	S	0.00	A
	-117.73	S -3.81 g				
110.0	----------		-0.01	h	0.00	A
	-123.25	S -3.67 g				
100.0	----------		-0.06	F	0.00	A
	-128.84	S -3.91 g				
90.0	----------		-0.02	A	0.00	A
	-134.52	S -3.87 g				
80.0	----------		-0.07	S	0.00	A
	-140.68	S -4.25 g				
73.3	----------		-0.39	S	0.00	M
	-141.87	S -5.43 g				
60.0	----------		-0.04	e	0.00	A
	-152.26	S -4.41 g				
53.3	----------		-0.39	U	0.00	b
	-153.53	S -5.55 g				
40.0	----------		-0.04	S	0.00	A
	-164.21	S -4.62 g				
33.3	----------		-0.38	U	0.00	P
	-165.72	S -5.68 g				
20.0	----------		-0.01	S	0.00	P
	-176.58	S -4.74 g				
13.3	----------		-0.35	U	0.00	X
	-178.16	S -5.75 g				
0.0	----------		0.00	A	0.00	A

MAXIMUM INDIVIDUAL FOUNDATION LOADS: (kip)
==========

LOAD---COMPONENTS				TOTAL
NORTH	EAST	DOWN	UPLIFT	SHEAR
17.56 S	15.12 e	185.20 S	-113.49 A	17.56 S

MAXIMUM TOTAL LOADS ON FOUNDATION : (kip & kip-ft)
==========

21-1221-JDS

------HORIZONTAL-----			DOWN	---------OVERTURNING---------			TORSION
NORTH	EAST	TOTAL @ 359.5		NORTH	EAST	TOTAL @ 359.3	
27.2	23.3	27.2	93.4	4669.5	3947.6	4669.9	35.7
S	b	S	I	S	b	S	j

==========

Leg Connection Details												
Bottom Elevation (ft)	Top Elevation (ft)	Pipe Dimensions	Top Splice					Bottom Splice/Base				
			Bolt Qty.	Bolt Dia. (in)	Bolt Circle (in)	Plate Thickness (in)	Plate Dia. (in)	Bolt Qty.	Bolt Dia. (in)	Bolt Circle (in)	Plate Thickness (in)	Plate Dia. (in)
360	380	2.375 OD X .154						6	0.75	6.50	0.75	8.50
340	360	2.875 OD X .203	6	0.75	6.50	1.00	8.50	6	0.75	6.50	1.00	8.50
320	340	3.500 OD X .300	6	0.75	6.50	1.00	8.50	6	1.00	9.00	1.25	11.50
300	320	5.563 OD X .258	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
280	300	5.563 OD X .375	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
260	280	5.563 OD X .375	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
240	260	5.563 OD X .500	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
220	240	5.563 OD X .500	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
200	220	5.563 OD X .500	6	1.00	9.00	1.25	11.50	6	1.25	12.50	1.75	15.75
180	200	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
160	180	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
140	160	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
120	140	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
100	120	8.625 OD X .500	6	1.25	12.50	1.50	15.75	8	1.50	17.25	2.00	21.00
80	100	12.75 OD X .375	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
60	80	12.75 OD X .375	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
40	60	12.75 OD X .375	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
20	40	12.75 OD X .500	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
0	20	12.75 OD X .500	8	1.50	17.25	1.75	21.00	6	1.75	18.00	2.00	22.50

Diagonal Bracing Connection Details								
Bottom Elevation (ft)	Top Elevation (ft)	Angle Shape	Bolt Qty.	Bolt Dia. (in)	Bolt End Distance (in)	Bolt Spacing (in)	Gage Distance From Heel (in)	Gusset Plate Thickness (in)
360	380	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
340	360	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
320	340	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
300	320	L 2 X 2 X 3/16	1	0.625	1.500		1.125	0.375
280	300	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
260	280	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
240	260	L 2 X 2 X 3/16	1	0.625	1.500		1.125	0.375
220	240	L 2 1/2 X 2 1/2 X 3/16	1	0.625	1.500		1.375	0.375
200	220	L 3 X 3 X 3/16	1	0.750	1.500		1.750	0.375
180	200	L 3 X 3 X 5/16	1	0.750	1.625		1.750	0.375
160	180	L 3 1/2 X 3 1/2 X 1/4	1	0.750	1.625		1.750	0.375
140	160	L 4 X 4 X 1/4	1	0.750	1.625		2.000	0.375
120	140	L 4 X 4 X 5/16	1	0.750	1.625		2.000	0.375
100	120	L 4 X 4 X 5/16	2	0.625	1.625	2.1250	2.000	0.500
80	100	L 4 X 4 X 3/8	2	0.625	1.625	2.1250	2.000	0.500
73.33	80	L 5 X 5 X 5/16	2	0.750	1.625	2.5000	2.500	0.500
60	73.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500
53.33	60	L 5 X 5 X 5/16	2	0.750	1.625	2.5000	2.500	0.500
40	53.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500
33.33	40	L 5 X 5 X 3/8	2	0.750	1.625	2.5000	2.500	0.500
20	33.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500
13.33	20	L 5 X 5 X 3/8	2	0.750	1.625	2.5000	2.500	0.500
0	13.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES

380' S3TL Series HD1 HARNETT COUNTY Oakridge River Road, NC (21-1221-JDS) 07/23/20 REB

Overall Loads:			
Factored Moment (ft-kips)	21200.47		
Factored Axial (kips)	313.83		
Factored Shear (kips)	124.23		
Individual Leg Loads:		Tower eccentric from mat (ft)=	2.75
Factored Uplift (kips)	623.16		
Factored Download (kips)	738.95		
Factored Shear (kips)	74.74		
Width of Tower (ft)	35	Allowable Bearing Pressure (ksf)	**4.25**
Ultimate Bearing Pressure	8.50	Safety Factor	**2.00**
Bearing Φs	0.75		
Bearing Design Strength (ksf)	6.375	Max. Factored Net Bearing Pressure (ksf)	3.00
Water Table Below Grade (ft)	**16**		
Width of Mat (ft)	43	Minimum Mat Width (ft)	42.17
Thickness of Mat (ft)	1.75		
Depth to Bottom of Slab (ft)	6.5		
Bolt Circle Diameter (in)	18		
Top of Concrete to Top of Bottom Threads (in)	72.625		
Diameter of Pier (ft)	4.5	Minimum Pier Diameter (ft)	2.83
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	3.99
Ht. of Pier Below Ground (ft)	4.75		
Quantity of Bars in Mat	72		
Bar Diameter in Mat (in)	1.27		
Area of Bars in Mat (in^2)	91.21		
Spacing of Bars in Mat (in)	7.17	Recommended Spacing (in)	6 to 12
Quantity of Bars Pier	24		
Bar Diameter in Pier (in)	1		
Tie Bar Diameter in Pier (in)	0.5		
Spacing of Ties (in)	8		
Area of Bars in Pier (in^2)	18.85	Minimum Pier A_s (in^2)	11.45
Spacing of Bars in Pier (in)	6.00	Recommended Spacing (in)	5 to 12
f'c (ksi)	4.5		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.11		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	129.12		

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES (CONTINUED)

Two-Way Shear:

Average d (in)	16.73		
ϕv_c (ksi)	0.228	v_u (ksi)	0.224
$\phi v_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}$	0.342		
$\phi v_c = \phi(\alpha_s d/b_o+2)f'_c{}^{1/2}$	0.298		
$\phi v_c = \phi 4f'_c{}^{1/2}$	0.228		
Shear perimeter, b_o (in)	207.10		
β_c	1		

Stability:

Overturning Design Strength (ft-k)	29745.7	Factored Overturning Moment (ft-k)	22070.1

One-Way Shear:

ϕV_c (kips)	984.5	V_u (kips)	686.3

Pier Design:

Design Tensile Strength (kips)	1017.9	Tu (kips)	623.2
ϕV_n (kips)	229.4	V_u (kips)	74.7
$\phi V_c = \phi 2(1+N_u/(500A_g))f'_c{}^{1/2}b_w d$	121.3		
V_s (kips)	127.2	*** V_s max = 4 $f'_c{}^{1/2}b_w d$ (kips)	626.0
Maximum Spacing (in)	8.67	(Only if Shear Ties are Required)	
Actual Hook Development (in)	15.46	Req'd Hook Development l_{dh} (in)	12.52
		*** Ref. ACI 11.5.5 & 11.5.6.3	

Anchor Bolt Pull-Out:

$\phi P_c = \phi\lambda(2/3)f'_c{}^{1/2}(2.8A_{SLOPE} + 4A_{FLAT})$	345.1	P_u (kips)	623.2
Pier Rebar Development Length (in)	55.63	Required Length of Development (in)	27.38

Flexure in Slab:

ϕM_n (ft-kips)	6297.5	M_u (ft-kips)	6291.8
a (in)	2.77		
Steel Ratio	0.01057		
β_1	0.825		
Maximum Steel Ratio (ρ_t)	0.0197		
Minimum Steel Ratio	0.0018		

Condition	1 is OK, 0 Fails
Minimum Mat Width	1
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Two-Way Shear	1
Overturning	1
Anchor Bolt Pull-Out	1
Flexure	1
Steel Ratio	1
Interaction Diagram	1
One-Way Shear	1
Hook Development	1
Minimum Mat Depth	1

DRILLED STRAIGHT PIER DESIGN BY SABRE INDUSTRIES

380' S3TL Series HD1 HARNETT COUNTY Oakridge River Road, NC (21-1221-JDS) 07/23/20 REB

Factored Uplift (kips)	623.16
Factored Download (kips)	738.95
Factored Shear (kips)	74.74
Ultimate Bearing Pressure	101.1
Bearing Φs	0.75
Bearing Design Strength (ksf)	75.825
Water Table Below Grade (ft)	16
Bolt Circle Diameter (in)	18
Top of Concrete to Top of Bottom Threads (in)	72.625
Pier Diameter (ft)	5
Ht. Above Ground (ft)	0.5
Pier Length Below Ground (ft)	40.5
Rebar Quantity	18
Rebar Diameter (in)	1.27
Rebar Area (in²)	22.80
Rebar Spacing (in)	8.98
Tie Diameter (in)	0.5
Tie Spacing (in)	12
f'c (ksi)	4.5
fy (ksi)	60
Unit Wt. of Concrete (kcf)	0.15
Volume of Concrete (yd³)	29.82

Minimum Pier Diameter (ft)	2.83
Minimum Area of Steel (in²)	14.14

Depth at Bottom of Layer (ft)	Ult. Skin Friction (ksf)	Ult. Skin Friction (Uplift)	γ (kcf)
3.5	0.00	0.00	0.11
6	1.65	1.65	0.11
8.5	0.71	0.71	0.11
13.5	0.93	0.93	0.11
16	0.78	0.78	0.11
18.5	0.88	0.88	0.11
23.5	0.93	0.93	0.11
28.5	1.08	1.08	0.11
33.5	1.70	1.70	0.11
38.5	1.88	1.88	0.11
42	1.92	1.92	0.11

Length to Ignore Download (ft) 0

DRILLED STRAIGHT PIER DESIGN BY SABRE INDUSTRIES (CONTINUED)

Download:			
Φ_s, Download Friction	0.75		
Q_f, Skin Friction (kips)	730.3	W_s (kips)	87.5
Q_b, End Bearing Strength (kips)	1985.1	W_c (kips)	120.8
Download Design Strength (kips)	2036.5	Factored Net Download (kips)	778.9
Uplift (skin friction):			
Φ_s, Uplift	0.75		
Q_f, Skin Friction (kips)	730.3		
W_c (kips)	120.8		
W_w (kips)	30.0		
Uplift Design Strength (kips)	629.4	Factored Uplift (kips)	623.2
Uplift (cone):			
$W_{s,cone}$ (kips)	3368.9		
$W_{w,cone}$ (kips)	490.2		
W_c (kips)	120.8		
$W_{w,cyl}$ (kips)	30.0		
Uplift Design Strength (kips)	2672.5	Factored Uplift (kips)	623.2
Tension:			
Design Tensile Strength (kips)	1231.3	Tu (kips)	623.2
Shear:			
ϕV_n (kips)	183.7	V_u (kips)	74.7
$\phi V_c=\phi 2(1+N_u/(500A_g))f'_c{}^{1/2}b_w d$ (kips)	183.7		
V_s (kips)	0.0	*** V_s max = 4 $f'_c{}^{1/2}b_w d$ (kips)	772.8
Maximum Spacing (in)	7.81	(Only if Shear Ties are Required)	
		*** Ref. ACI 11.5.5 & 11.5.6.3	
Anchor Bolt Pull-Out:			
$\phi P_c=\phi\lambda(2/3)f'_c{}^{1/2}(2.8A_{SLOPE}+4A_{FLAT})$	426.0	P_u (kips)	623.2
Rebar Development Length (in)	52.76	Required Development Length (in)	28.74

Condition	1 is OK, 0 Fails
Download	1
Uplift	1
Area of Steel	1
Shear	1
Anchor Bolt Pull-Out	1
Interaction Diagram	1