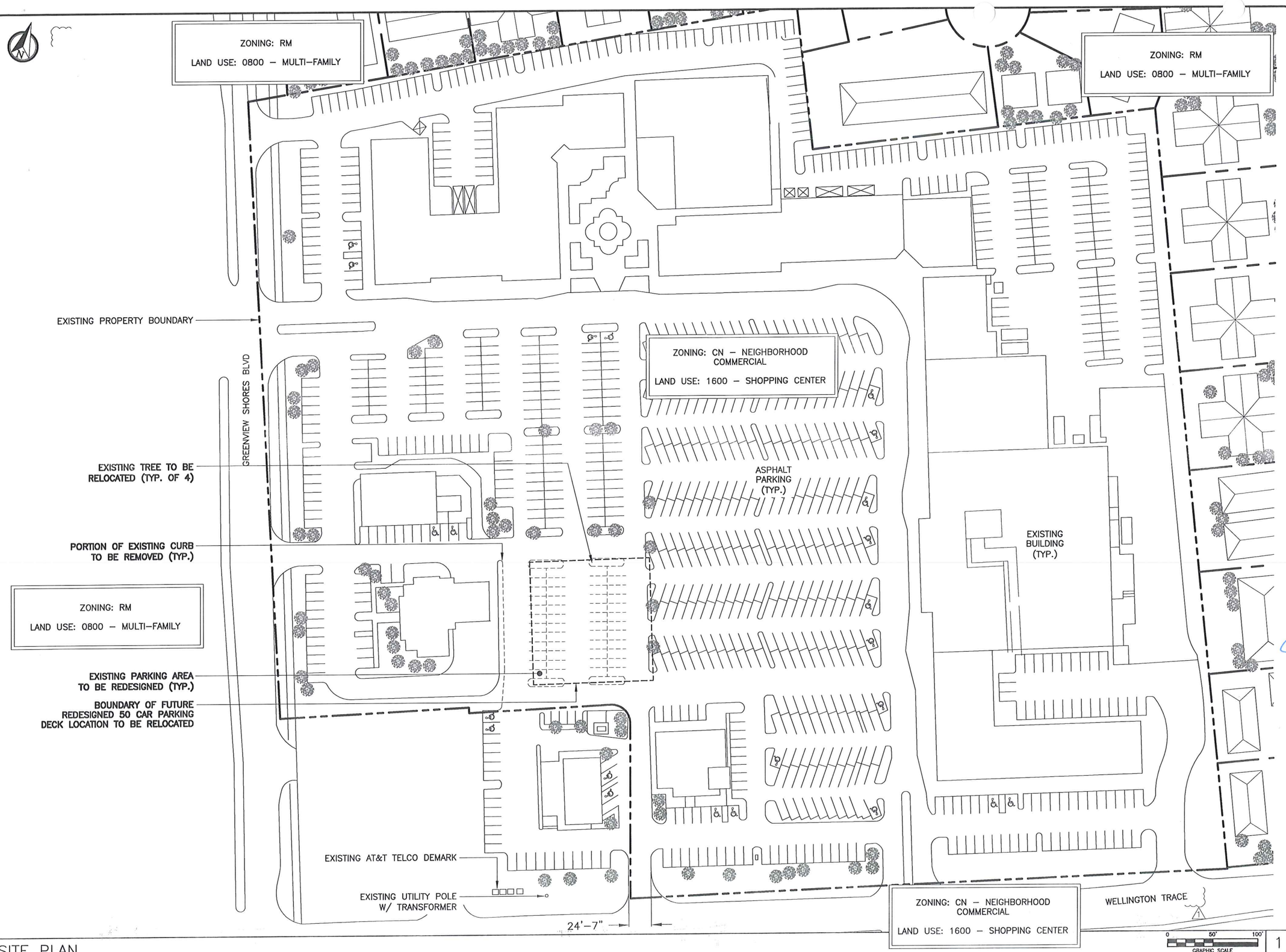
Clearview Communication Tower - CU

7-11-2013 Submittal



SITE PLAN

1

REV	DATE	DESCRIPTION
A	12/21/12	PRELIMINARY
B	1/11/13	REVISED
C	2/26/13	REVISED
0	4/1/13	FOR PERMIT
1	6/12/13	REVISED

PROJECT NO.:	12–517.26
DRAWN BY:	CHECKED BY:
A. M. ALVAREZ	M. ABBEY

CALTROP Telecom
3400 LAKESIDE DRIVE
SUITE 525
MIRAMAR, FL 33027
CERTIFICATE OF AUTHORIZATION 29214

CLEARVIEW Tower Company

DATE OF SIGNATURE: 7/9/13

FL312

13833 WELLINGTON TRACE
WELLINGTON, FL 33414

SHEET NAME
EXISTING SITE PLAN

SHEET NUMBER
SP1

PROPOSED TOWER SETBACKS		
	FROM PROPERTY LINE	FROM RESIDENTIAL ZONE
NORTHWEST	662'±	662'±
SOUTHWEST	369'±	482'±
SOUTHEAST	58'±	–
NORTHEAST	653'±	653'±

ZONING: RM
LAND USE: 0800 – MULTI–FAMILY

ZONING: RM
LAND USE: 0800 – MULTI–FAMILY

EXISTING PROPERTY BOUNDARY

PROPOSED RELOCATED BOUNDARY OF FUTURE REDESIGNED 50 CAR PARKING DECK LOCATION

RELOCATED TREE (TYP. OF 4)

PROPOSED CLEARVIEW TOWER COMPANY LLC 36'–6" x 47' FENCED COMPOUND

BOUNDARY OF PROPOSED TEMPORARY MAINTENANCE AREA

PROPOSED REDESIGNED PARKING AREA (TYP.)

PROPOSED 15' WIDE CLEARVIEW TOWER COMPANY LLC NON–EXCLUSIVE ACCESS EASEMENT

PROPOSED 5' WIDE CLEARVIEW TOWER COMPANY LLC NON–EXCLUSIVE UTILITY EASEMENT

GREENVIEW SHORES BLVD

669'±

ZONING: CN – NEIGHBORHOOD COMMERCIAL
LAND USE: 1600 – SHOPPING CENTER

ASPHALT PARKING (TYP.)

EXISTING BUILDING (TYP.)

15' 15'

369'±

58'±

482'±

653'±

1 C3

15'

5'

EXISTING AT&T TELCO DEMARK

EXISTING UTILITY POLE W/ TRANSFORMER

ZONING: RM
LAND USE: 0800 – MULTI–FAMILY

ZONING: CN – NEIGHBORHOOD COMMERCIAL
LAND USE: 1600 – SHOPPING CENTER

WELLINGTON TRACE

0 50' 100'
GRAPHIC SCALE

SITE PLAN

1

REV	DATE	DESCRIPTION
A	12/21/12	PRELIMINARY
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PROJECT NO.: 12–517.26

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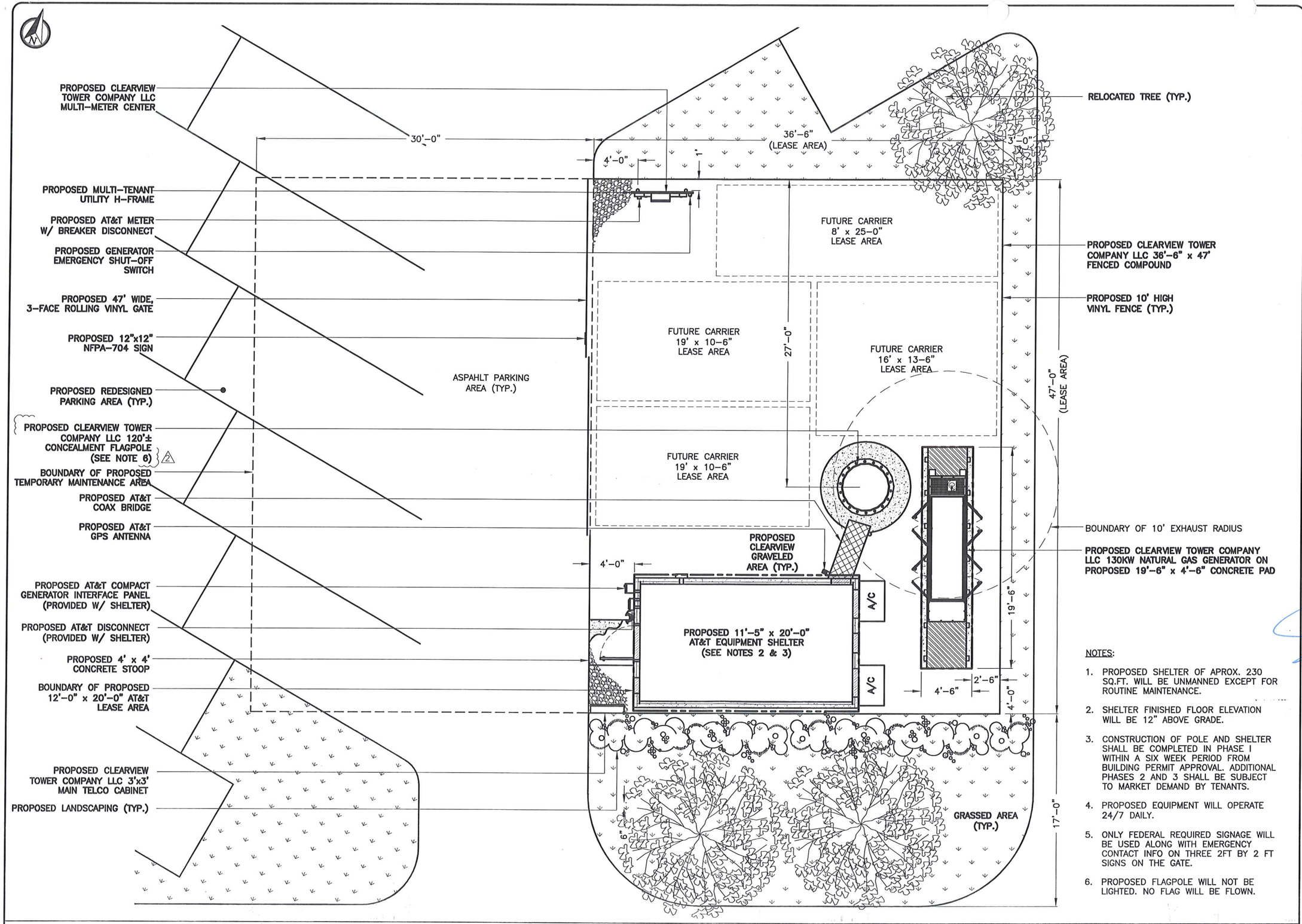
13833 WELLINGTON TRACE
WELLINGTON, FL 33414

SHEET NAME
PROPOSED SITE PLAN

SHEET NUMBER
SP2



NOTES:

1. PROPOSED SHELTER OF APROX. 230 SQ.FT. WILL BE UNMANNED EXCEPT FOR ROUTINE MAINTENANCE.
2. SHELTER FINISHED FLOOR ELEVATION WILL BE 12" ABOVE GRADE.
3. CONSTRUCTION OF POLE AND SHELTER SHALL BE COMPLETED IN PHASE I WITHIN A SIX WEEK PERIOD FROM BUILDING PERMIT APPROVAL. ADDITIONAL PHASES 2 AND 3 SHALL BE SUBJECT TO MARKET DEMAND BY TENANTS.
4. PROPOSED EQUIPMENT WILL OPERATE 24/7 DAILY.
5. ONLY FEDERAL REQUIRED SIGNAGE WILL BE USED ALONG WITH EMERGENCY CONTACT INFO ON THREE 2FT BY 2 FT SIGNS ON THE GATE.
6. PROPOSED FLAGPOLE WILL NOT BE LIGHTED. NO FLAG WILL BE FLOWN.

COMPOUND PLAN

GRAPHIC SCALE 0 2' 4' 8'

1

REV	DATE	DESCRIPTION
A	12/21/12	PRELIMINARY
B	1/11/13	REVISED
C	2/26/13	REVISED
0	4/1/13	FOR PERMIT
1	6/12/13	REVISED
2	7/9/13	REVISED

PROJECT NO.:	12-517.26
DRAWN BY:	CHECKED BY:
A. M. ALVAREZ	M. ABBEY

CALTROP Telecom
3400 LAKESIDE DRIVE
SUITE 525
MIRAMAR, FL 33027
CERTIFICATE OF AUTHORIZATION 29214

CLEARVIEW Tower Company

DATE OF SIGNATURE: 7/9/13

FL312

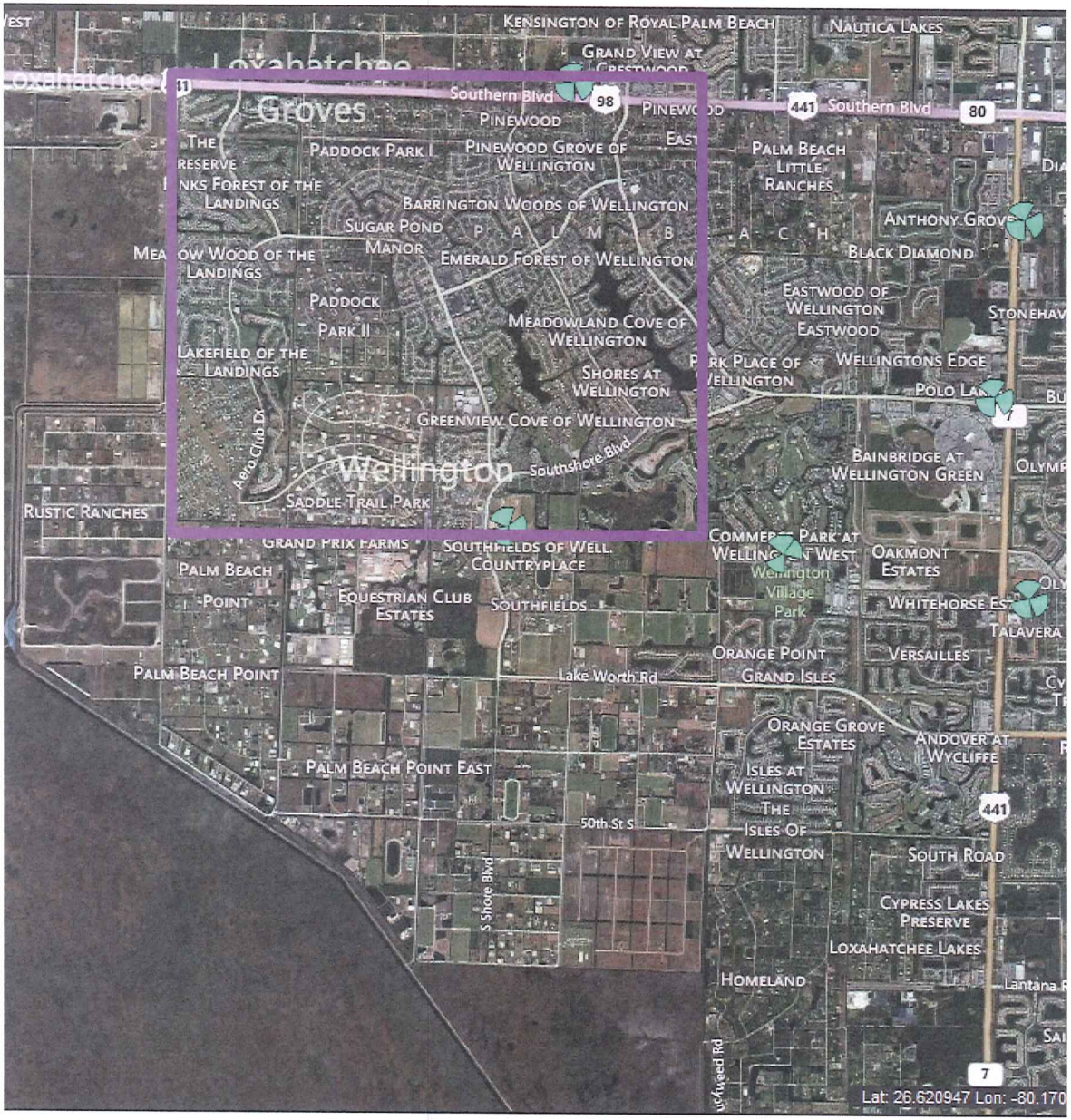
13833 WELLINGTON TRACE
WELLINGTON, FL 33414

SHEET NAME
COMPOUND PLAN

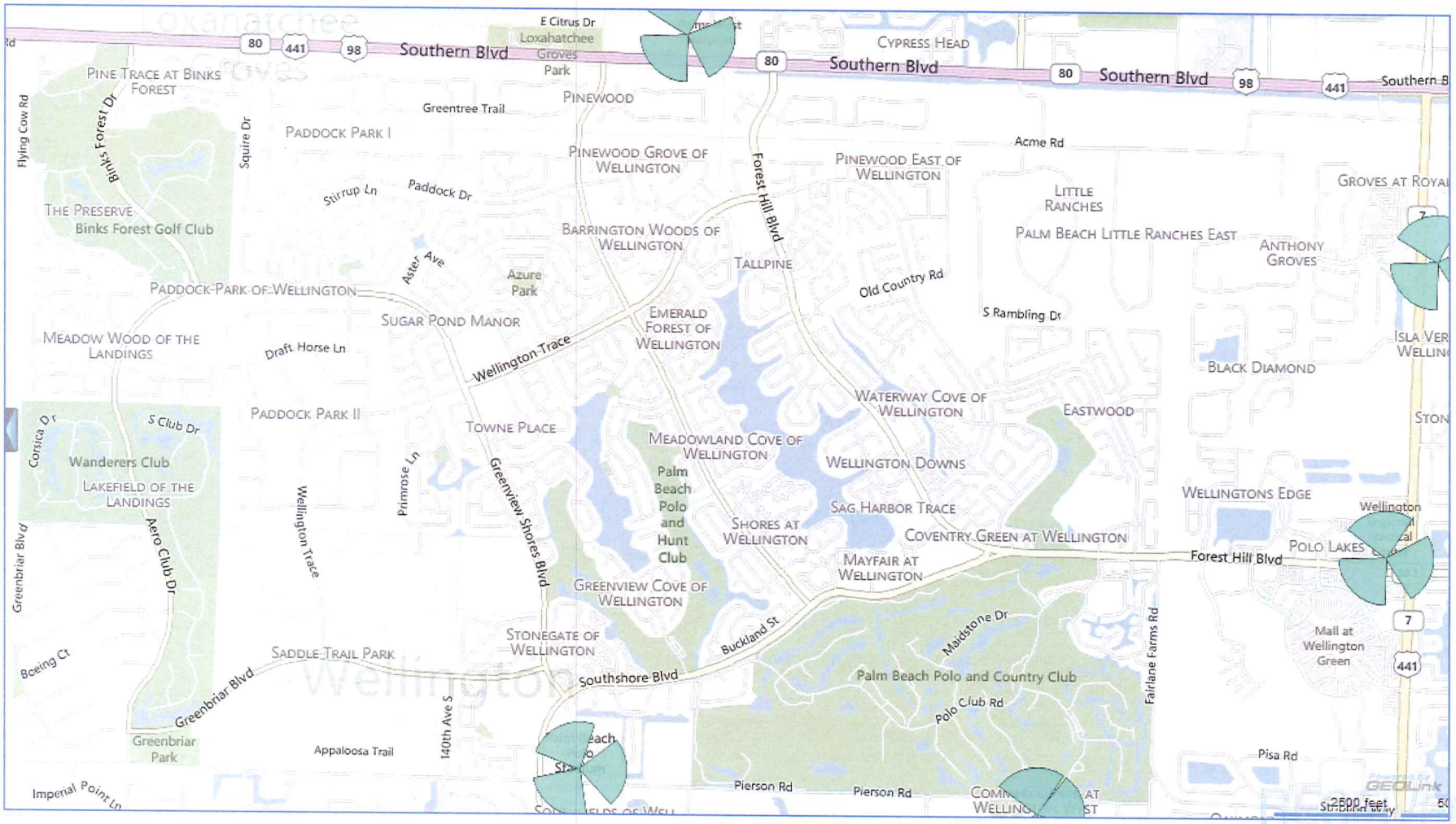
SHEET NUMBER
SP3

AT&T

7-1-13 Actual coverage report from RF Engineer George Brosseau

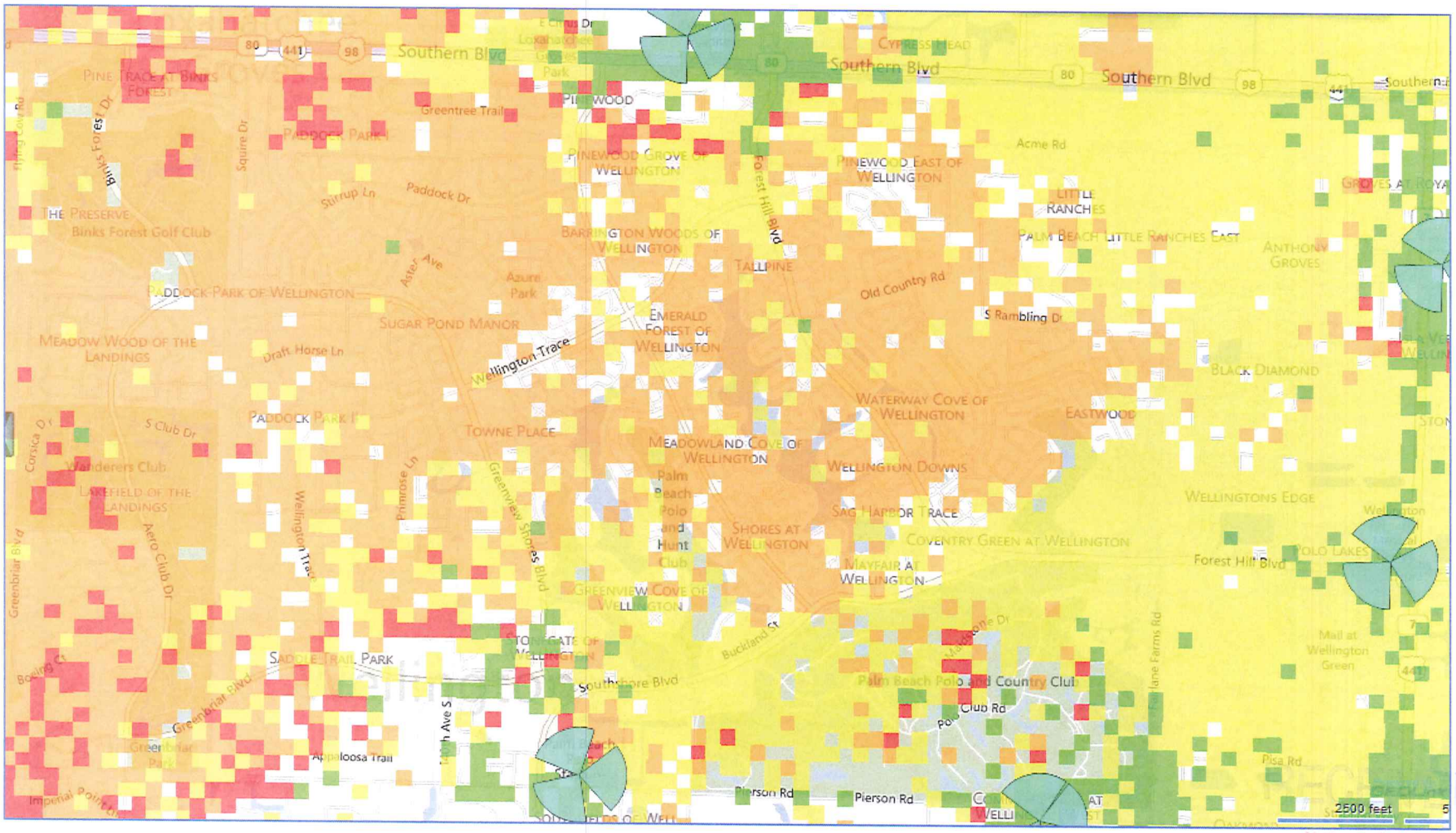


Area Map



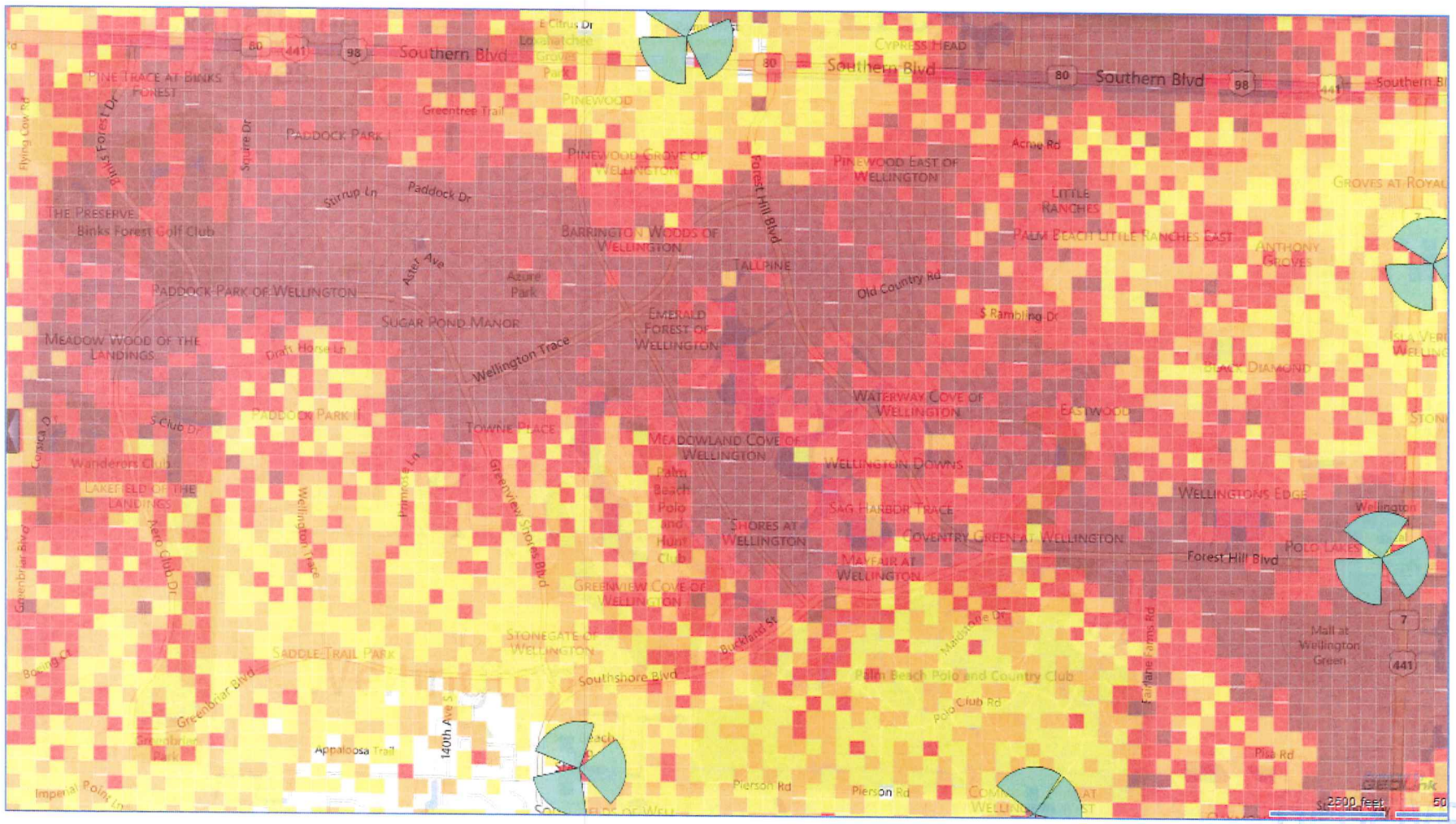
Signal Strength

Reported by Mobiles



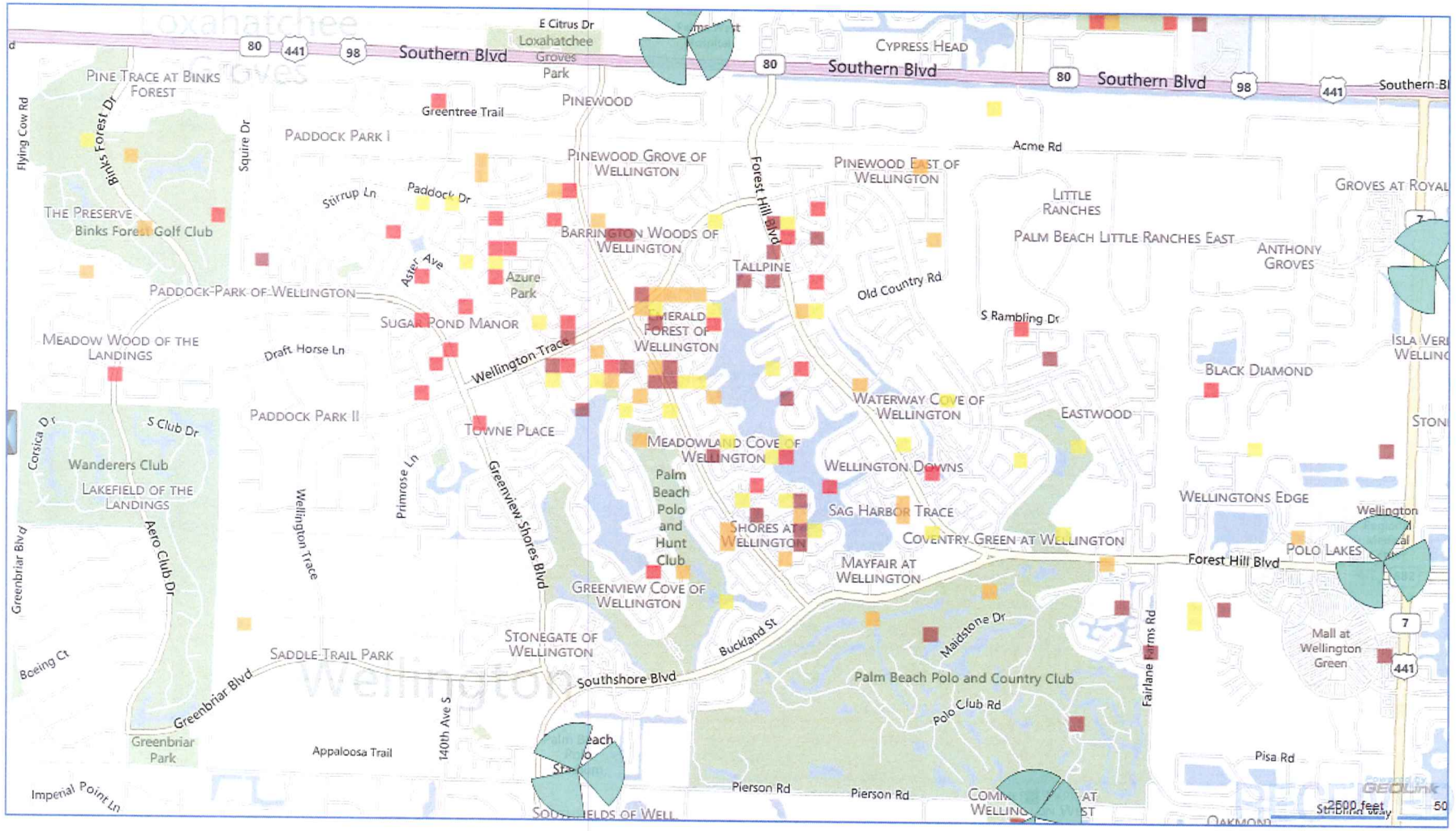
Radio Interface Failures (Drop Calls)

Reported by Mobiles



Radio Access Failure (Blocked Calls)

Reported by Mobiles



Sabre Industries™
Towers and Poles

July 11, 2013

Mr. Jack Rupert
Clearview Tower Company, LLC
26 Yolanda Drive
Edison, NJ 08817

RE: Proposed 120' Flagpole at Palm Beach, FL (Explanation of Fall Radius Calculations)

Dear Mr. Rupert,

We propose to design and supply a 120' flagpole and foundation for the above referenced site. The flagpole and foundation are to be designed in accordance with the Telecommunications Industry Association Standard ANSI/TIA-222-G, for a basic wind speed of 140 mph (no ice), Structure Class II, Exposure Category C, Topographic Category 1.

When designed according to these standards, the wind pressures and steel strength capacities include several safety factors, resulting in an overall minimum safety factor of 25%. Therefore, it is highly unlikely that the flagpole will fail structurally in a wind event where the design wind speed is exceeded within the range of the built-in safety factors. As an additional precaution and assuming a worst case scenario, we have also designed a "break point" or "yield point" to control localized failure should the wind speed increase beyond the capacity of all built-in safety factors. This location is determined by calculating the point in which the highest combined stress ratio (CSR) exists. For this particular design, the highest CSR is located at the 80' elevation where the base monopole sections and upper canister sections are connected. The remaining 40' of canister is the portion that would likely "fold over" onto the portion below. In the unlikely event of total separation, this would result in collapse of that section to the ground within a radius of 40 feet.

Unfortunately, the flanged connection and 40' canister section is to be provided by one of Sabre's partner vendors, so the highest CSR calculation is not shown within our Structural Design Report #13-7586-RAM-R1, dated July 11, 2013. However, the canister design and calculations would be available for review after an order has been processed for this structure.

The fall radius is measured from the location where the CSR is highest to the top of the structure. In this case, the highest stress ratio is to be where the pole and canister are connected. This connection is to be designed by Stealth, so our calculations will not show this value anywhere.

Sincerely,

Robert E. Beacom, P.E.
Engineer

ROBERT E. BEACOM LICENSE No. 73225 STATE OF FLORIDA PROFESSIONAL ENGINEER
7/11/13

RECEIVED
JUL 11 2013
VILLAGE OF WELLINGTON
PZ & CODE DEPARTMENT

2101 Murray Street P.O. Box 658 Sioux City, IA 51102-0658 Phone 712-258-6690 Fax 712-279-0814 www.SabreTowersandPoles.com

Sabre Industries™
Towers and Poles

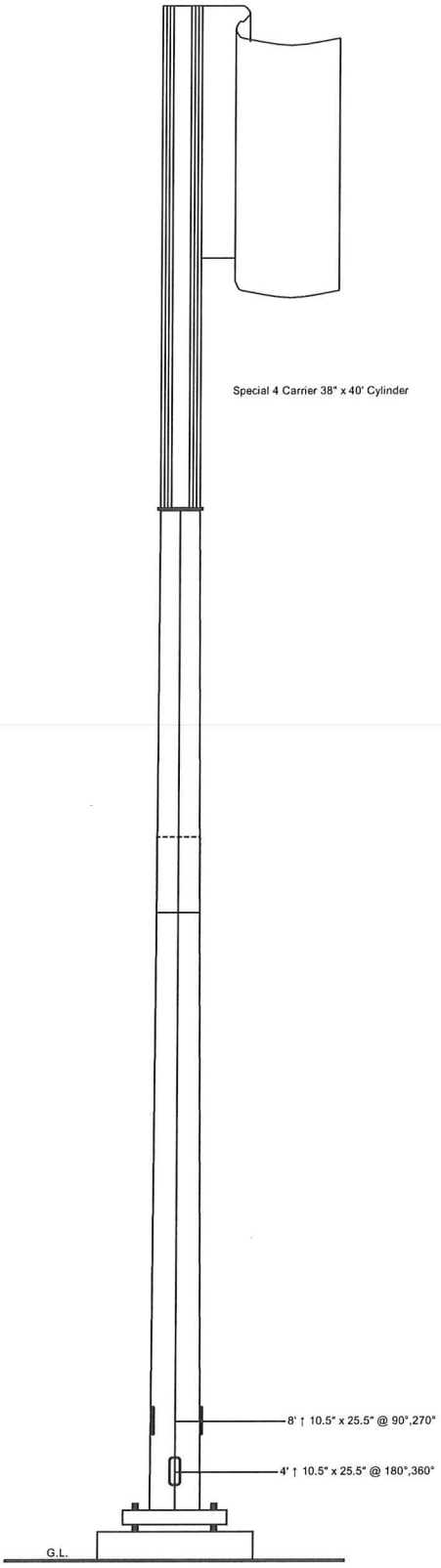
Structural Design Report

120' Flagpole
Site: Palm Beach, FL

Prepared for: CLEARVIEW TOWER COMPANY LLC
by: Sabre Towers & Poles ™

Job Number: 13-7586-RAM-R1

July 11, 2013



Section	1	2
Length (ft)	31' - 9"	53' - 3"
Number Of Sides	18	
Thickness (in)	1/4"	5/16"
Lap Splice (ft)	6' - 0"	
Top Diameter (in)	38"	41.36"
Bottom Diameter (in)	42.76"	49.35"
Taper (in/ft)	0.15	
Grade	A572-65	
Weight (lbs)	3657	9967

Designed Appurtenance Loading

Elev	Description	Tx-Line
116	(3) Twin Dual Duplex TMA Panel Antennas	
116	(3) 6' x 1' x 6in Panel Antennas	(6) 1 5/8"
116	(3) RRUS 11 Panel Antennas	
110	(1) FLAG 20x30	
106	(3) Twin Dual Duplex TMA Panel Antennas	
106	(3) 6' x 1' x 6in Panel Antennas	(6) 1 5/8"
106	(3) RRUS 11 Panel Antennas	
96	(3) Twin Dual Duplex TMA Panel Antennas	
96	(3) RRUS 11 Panel Antennas	
96	(3) 6' x 1' x 6in Panel Antennas	(6) 1 5/8"
86	(3) RRUS 11 Panel Antennas	
86	(3) 6' x 1' x 6in Panel Antennas	(6) 1 5/8"
86	(3) Twin Dual Duplex TMA Panel Antennas	
80	Special 4 Carrier 38" x 40' Cylinder	

Load Case Reactions

Description	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
3s Gusted Wind	24.6	32.1	2268	2	2.64
3s Gusted Wind 0.9 Dead	18.6	32.1	2260	2	2.63
3s Gusted Wind&Ice	24.2	0.9	65	0.1	0.08
Service Loads	20.2	3.3	232	0.2	0.27

Base Plate Dimensions

Shape	Width	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Square	53.25"	2.5"	55.5"	12	2.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	1743	A615-75	Galv-18"

Notes

1) Antenna Feed Lines Run Inside Pole
2) All dimensions are above ground level, unless otherwise specified.
3) Weights shown are estimates. Final weights may vary.
4) The Monopole was designed for a basic wind speed of 140 mph with 0" of radial ice, in accordance with ANSI/TIA-222-G-2 (2009), Structure Class II, Exposure Category C, Topographic Category 1.

Sabre Industries
Towers and Poles
Sabre Communications Corporation
2101 Murray Street
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 258-8250

Job:	**13-7586-RAM-R1**
Customer:	CLEARVIEW TOWER COMPANY LLC
Site Name:	Palm Beach, FL
Description:	120' Flagpole
Date:	7/11/2013 By: REB

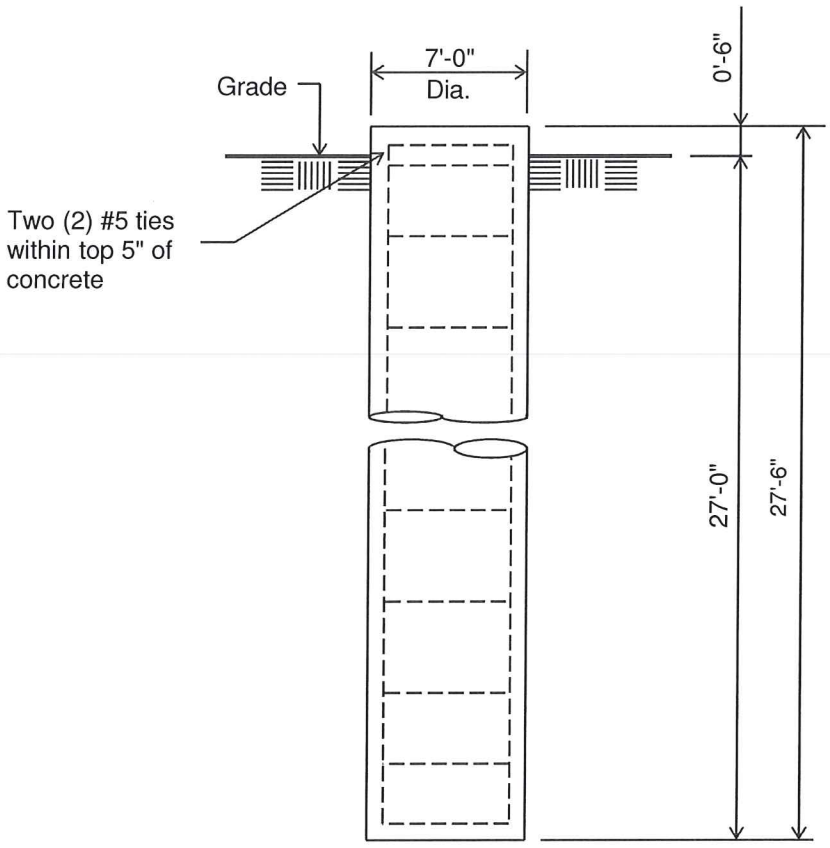
Sabre Industries™
Towers and Poles

No.: 13-7586-RAM

Date: 7/11/13
By: REB

Customer: CLEARVIEW TOWER COMPANY LLC
Site: Palm Beach, FL

120' Flag Pole at
140 mph Wind with no ice per ANSI/TIA-222-G.
Antenna Loading per Page 1
PRELIMINARY - NOT FOR CONSTRUCTION



ELEVATION VIEW
(39.2 Cu. Yds. each)
(1 REQUIRED; NOT TO SCALE)

Notes:

1). Concrete shall have a minimum 28-day compressive strength of 4000 PSI, in accordance with ACI 318-05.

2). Rebars 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 presumptive clay soil as defined in ANSI/TIA-222-G-2005. It is recommended that a soil analysis of the site be performed to verify the soil parameters used in the design.

6). The foundation is based on the following factored loads:
Moment (kip-ft) = 2267.5
Axial (kips) = 24.6
Shear (kips) = 32.14

Rebar Schedule per Pier	
Pier	(36) #8 vertical rebar w/#5 ties, two within top 5" of pier then 12" C/C

7). This is a design drawing only. Please see final construction drawings for all installation details.

2101 Murray St - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.258.8250

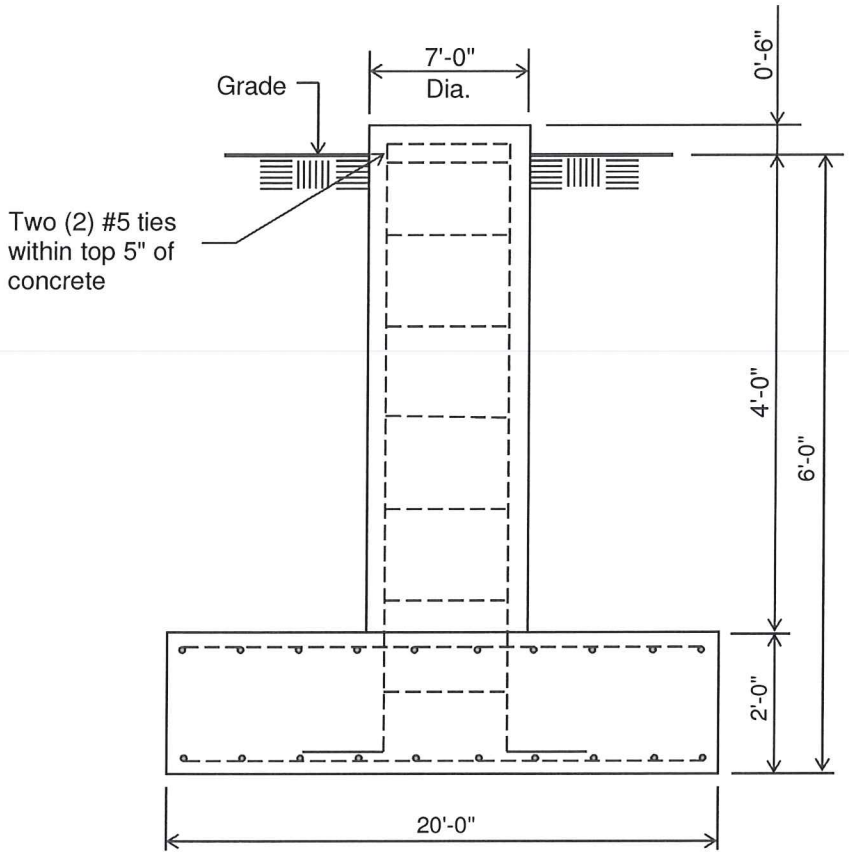
Sabre Industries™
Towers and Poles

No.: 13-7586-RAM

Date: 7/11/13
By: REB

Customer: CLEARVIEW TOWER COMPANY LLC
Site: Palm Beach, FL

120' Flag Pole at
140 mph Wind with no ice per ANSI/TIA-222-G.
Antenna Loading per Page 1
PRELIMINARY - NOT FOR CONSTRUCTION



ELEVATION VIEW
(36.04 Cu. Yds. each)
(1 REQUIRED; NOT TO SCALE)

Notes:

1). Concrete shall have a minimum 28-day compressive strength of 4000 PSI, in accordance with ACI 318-05

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 presumptive clay soil as defined in ANSI/TIA-222-G-2005. It is recommended that a soil analysis of the site be performed to verify the soil parameters used in the design.

6). The foundation is based on the following factored loads:
Moment (kip-ft) = 2267.5
Axial (kips) = 24.6
Shear (kips) = 32.14

Rebar Schedule per Pad and Pier	
Pier	(36) #8 vertical rebar w/hooks at bottom w/#5 ties, two within top 5" of top of pier then 12" C/C
Pad	(22) #8 horizontal rebar evenly spaced each way top and bottom (88 Total)

7). This is a design drawing only. Please see final construction drawings for all installation details.

2101 Murray St - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.258.8250

TOP	DIAMETER	38.00 in.	[38.59 in. Point-Point]
BOTTOM	DIAMETER	49.35 in.	[50.11 in. Point-Point]
POLE	HEIGHT	79.00 ft.	18 SIDED FLAT ORIENTATION
BASE	HEIGHT	1.00 ft.	ABOVE GROUND
E-MODULUS		29000 ksi	[12000 ksi SHEAR MODULUS]

APPURTENANCES

ATTACH POINTS:	NO.	X,ft	Qty	Description	Status
	1	79.00	1	Standard 4 Carrier (2P) 100mph w	Initial Appurt
	2	78.90	1	User Defined Loading	Future Appurt

Some wind forces may have been derived from full-scale wind tunnel tests.

Pole Section	Bottom X,ft.	Thick in.	Connect Type	LAP in.	Taper in/ft	Length ft.	Weight lbs	Steel Spec	Pole Finish
1	31.75	.25000	SLIP-JNT	72.	.1500	31.75	3440	A572-65	GALV/PAINT
2	79.00	.31250	C-WELD		.1500	53.25	8095	A572-65	GALV/PAINT

SECTION PROPERTIES

X,ft	UP,ft	D,in	T,in	Area in^2	Iz in^4	IxIy in^4	SxSy in^3	w/t	d/t	F_y(ksi)		
79.00	.00	38.00	.2500	29.95	10782	5391	279.4	25.04	152.0	65.00	TOP	P04
78.90	.10	38.01	.2500	29.97	10796	5398	279.7	25.05	152.1	65.00		P05
73.90	5.10	38.76	.2500	30.56	11452	5726	290.9	25.58	155.1	65.00		
68.90	10.10	39.51	.2500	31.16	12134	6067	302.4	26.11	158.1	65.00		
63.90	15.10	40.26	.2500	31.75	12842	6421	314.1	26.64	161.1	65.00		
58.90	20.10	41.01	.2500	32.35	13578	6789	326.0	27.16	164.1	65.00		
53.90	25.10	41.76	.2500	32.94	14340	7170	338.1	27.69	167.1	65.00		
53.25	25.75	41.86	.2500	33.02	14442	7221	339.7	27.76	167.4	65.00	Slip-B01	
48.25	30.75	42.11	.3125	41.46	18298	9149	427.9	22.00	134.8	65.00		
47.25	31.75	42.26	.3125	41.61	18496	9248	431.0	22.08	135.2	65.00	Slip-T02	
42.25	36.75	43.01	.3125	42.35	19506	9753	446.6	22.51	137.6	65.00		
37.25	41.75	43.76	.3125	43.10	20552	10276	462.5	22.93	140.0	65.00		
32.25	46.75	44.51	.3125	43.84	21634	10817	478.6	23.35	142.4	65.00		
27.25	51.75	45.26	.3125	44.58	22754	11377	495.1	23.78	144.8	65.00		
22.25	56.75	46.01	.3125	45.33	23912	11956	511.8	24.20	147.2	65.00		
17.25	61.75	46.76	.3125	46.07	25110	12555	528.8	24.62	149.6	65.00		
12.25	66.75	47.51	.3125	46.81	26344	13172	546.0	25.05	152.0	65.00		
7.25	71.75	48.26	.3125	47.56	27622	13811	563.6	25.47	154.4	65.00		
2.25	76.75	49.01	.3125	48.30	28938	14469	581.5	25.89	156.8	65.00		
.00	79.00	49.35	.3125	48.64	29544	14772	589.6	26.08	157.9	65.00	BASE	

SABRE COMMUNICATIONS CORP	JOB: 13-07586	11-Jul-13 09:35
2101 Murray Street	**CLEARVIEW TOWER COMPANY LLC**	Ph 712.258.6690
Sioux City, IA 51101	**Palm Beach, FL**	Fx 712.258.8250

CASE - 1: 3s Gusted Wind — ANSI-TIA-222-G

WIND OLF		1.60	GUSTED WIND (3sec)	140.0 mph	225.3 kph
VERTICAL OLF		1.20	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE		.00 in	EXP-POWER COEFF.	.2105	
GUST FACTOR	(Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF	(Cf)	.65	PRESSURE @ 32.7 ft	83.9 psf	4014.4 Pa
IMPORTANCE FAC	(I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC	(Kd)	.95	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT		1			

APPURTENANCES — Sabre Areas

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Standard 4 Carrier (2P) 100mph w	79.0	4930	82.3				106.2	8.74	-5.9	*****
	3	6' X 1' X 6IN PANEL	115.0	60	.0	1 5/8"	6	1.04	109.5	.00	-.8	
	3	RRUS 11	115.0	55	.0	None	1	.00	109.5	.00	-.2	
	1	FLAG 20X30	109.0	200	60.0	None	1	.00	108.3	6.50	-.2	*****
	3	TWIN DUAL DUPLEX TMA	115.0	14	.0	None	1	.00	109.5	.00	-.1	
	3	6' X 1' X 6IN PANEL	105.0	60	.0	1 5/8"	6	1.04	107.5	.00	-.8	
	3	RRUS 11	105.0	55	.0	None	1	.00	107.5	.00	-.2	
	3	TWIN DUAL DUPLEX TMA	105.0	14	.0	None	1	.00	107.5	.00	-.1	
	3	6' X 1' X 6IN PANEL	95.0	60	.0	1 5/8"	6	1.04	105.3	.00	-.8	
	3	TWIN DUAL DUPLEX TMA	95.0	14	.0	None	1	.00	105.3	.00	-.1	
	3	RRUS 11	95.0	55	.0	None	1	.00	105.3	.00	-.2	
	3	6' X 1' X 6IN PANEL	85.0	60	.0	1 5/8"	6	1.04	102.9	.00	-.8	
	3	RRUS 11	85.0	55	.0	None	1	.00	102.9	.00	-.2	
2	1	User Defined Loading	78.9	5	.1				101.3	.01	.0	.0
	3	TWIN DUAL DUPLEX TMA	85.0	14	.0	None	1	.00	102.9	.00	-.1	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
79.00	1.00	65.85	.00	.0	15.70	-9.6	-369.8	.0	.0	71.92	.251
78.90	1.00	65.83	.00	.0	16.26	-10.0	-371.4	.0	.0	71.91	.252
73.90	1.00	64.94	.00	.0	17.34	-10.7	-452.8	.0	.0	71.29	.297
68.90	1.00	64.00	.00	.0	18.41	-11.4	-539.5	.0	.0	70.67	.343
63.90	1.00	63.01	.00	.0	19.48	-12.0	-631.5	.0	.0	70.04	.389
58.90	1.00	61.96	.00	.0	20.55	-12.8	-728.9	.0	.0	69.42	.436
53.90	1.00	60.83	.00	.0	21.15	-13.2	-831.7	.0	.0	68.80	.484
53.25	1.00	60.68	.00	.0	21.75	-13.8	-845.0	.0	.0	68.72	.490
48.25	1.00	59.46	.00	.0	22.39	-14.6	-954.2	.0	.0	75.50	.399
47.25	1.00	59.20	.00	.0	23.02	-15.4	-976.7	.0	.0	75.40	.406
42.25	1.00	57.85	.00	.0	24.06	-16.5	-1091.7	.0	.0	74.91	.441
37.25	1.00	56.37	.00	.0	25.07	-17.4	-1211.7	.0	.0	74.41	.476
32.25	1.00	54.74	.00	.0	26.07	-18.4	-1337.5	.0	.0	73.91	.511
27.25	1.00	52.89	.00	.0	27.08	-19.4	-1467.5	.0	.0	73.41	.545
22.25	1.00	50.76	.00	.0	28.09	-20.4	-1603.3	.0	.0	72.91	.580
17.25	1.00	48.24	.00	.0	29.10	-21.5	-1743.3	.0	.0	72.41	.615
12.25	1.00	46.35	.00	.0	30.13	-22.5	-1889.2	.0	.0	71.92	.649
7.25	1.00	46.35	.00	.0	31.16	-23.6	-2040.0	.0	.0	71.42	.684
2.25	1.00	46.35	.00	.0	31.92	-24.4	-2195.8	.0	.0	70.92	.718
.00	1.00	46.35	.00	.0	32.14	-24.6	2267.5	.0	.0	70.70	.734

DISPLACEMENTS

ELEV	DEFLECTION feet				ROTATION, degrees			
X, ft	X	Y	Z	XY-Result	X	Y	Z	XY-Result
79.00	.00	2.02	-.03	2.02< 2.56%>	-2.64	.00	.00	2.64

CASE - 2: 3s Gusted Wind 0.9 Dead — ANSI-TIA-222-G

WIND OLF		1.60	GUSTED WIND (3sec)	140.0 mph	225.3 kph
VERTICAL OLF		.90	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE		.00 in	EXP-POWER COEFF.	.2105	
GUST FACTOR	(Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF	(Cf)	.65	PRESSURE @ 32.7 ft	83.9 psf	4014.4 Pa
IMPORTANCE FAC	(I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC	(Kd)	.95	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT		1			

APPURTENANCES — Sabre Areas

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Tx-CABLE Qty	Tx-CABLE #/Ft	WIND Psf	FORCES Tra-Y Kips	FORCES Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Standard 4 Carrier (2P) 100mph w	79.0	4930	82.3				106.2	8.74	-4.4	*****
	3	6' X 1' X 6IN PANEL	115.0	60	.0	1 5/8"	6	1.04	109.5	.00	-.6	
	3	RRUS 11	115.0	55	.0	None	1	.00	109.5	.00	-.1	
	1	FLAG 20X30	109.0	200	60.0	None	1	.00	108.3	6.50	-.2	*****
	3	TWIN DUAL DUPLEX TMA	115.0	14	.0	None	1	.00	109.5	.00	.0	
	3	6' X 1' X 6IN PANEL	105.0	60	.0	1 5/8"	6	1.04	107.5	.00	-.6	
	3	RRUS 11	105.0	55	.0	None	1	.00	107.5	.00	-.1	
	3	TWIN DUAL DUPLEX TMA	105.0	14	.0	None	1	.00	107.5	.00	.0	
	3	6' X 1' X 6IN PANEL	95.0	60	.0	1 5/8"	6	1.04	105.3	.00	-.6	
	3	TWIN DUAL DUPLEX TMA	95.0	14	.0	None	1	.00	105.3	.00	.0	
	3	RRUS 11	95.0	55	.0	None	1	.00	105.3	.00	-.1	
	3	6' X 1' X 6IN PANEL	85.0	60	.0	1 5/8"	6	1.04	102.9	.00	-.6	
	3	RRUS 11	85.0	55	.0	None	1	.00	102.9	.00	-.1	
2	1	User Defined Loading	78.9	5	.1				101.3	.01	.0	.0
	3	TWIN DUAL DUPLEX TMA	85.0	14	.0	None	1	.00	102.9	.00	.0	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
79.00	1.00	65.85	.00	.0	15.58	-7.0	-369.8	.0	.0	71.92	.249
78.90	1.00	65.83	.00	.0	16.14	-7.3	-371.4	.0	.0	71.91	.250
73.90	1.00	64.94	.00	.0	17.22	-7.8	-452.2	.0	.0	71.29	.295
68.90	1.00	64.00	.00	.0	18.29	-8.4	-538.3	.0	.0	70.67	.340
63.90	1.00	63.01	.00	.0	19.36	-8.9	-629.7	.0	.0	70.04	.386
58.90	1.00	61.96	.00	.0	20.43	-9.4	-726.5	.0	.0	69.42	.433
53.90	1.00	60.83	.00	.0	21.03	-9.8	-828.6	.0	.0	68.80	.480
53.25	1.00	60.68	.00	.0	21.63	-10.3	-842.5	.0	.0	68.72	.487
48.25	1.00	59.46	.00	.0	22.27	-10.8	-950.0	.0	.0	75.50	.396
47.25	1.00	59.20	.00	.0	22.90	-11.4	-972.5	.0	.0	75.40	.403
42.25	1.00	57.85	.00	.0	23.94	-12.3	-1087.5	.0	.0	74.91	.438
37.25	1.00	56.37	.00	.0	24.97	-13.0	-1206.7	.0	.0	74.41	.472
32.25	1.00	54.74	.00	.0	25.98	-13.8	-1331.7	.0	.0	73.91	.507
27.25	1.00	52.89	.00	.0	26.99	-14.5	-1461.7	.0	.0	73.41	.542
22.25	1.00	50.76	.00	.0	28.01	-15.3	-1596.7	.0	.0	72.91	.576
17.25	1.00	48.24	.00	.0	29.05	-16.1	-1736.7	.0	.0	72.41	.610
12.25	1.00	46.35	.00	.0	30.09	-17.0	-1881.7	.0	.0	71.92	.645
7.25	1.00	46.35	.00	.0	31.14	-17.8	-2032.5	.0	.0	71.42	.679
2.25	1.00	46.35	.00	.0	31.91	-18.4	-2188.3	.0	.0	70.92	.714
.00	1.00	46.35	.00	.0	32.13	-18.6	2260.0	.0	.0	70.70	.729

DISPLACEMENTS

ELEV X, ft	DEFLECTION feet X	Y	Z	XY-Result	ROTATION, degrees X	Y	Z	XY-Result
79.00	.00	2.01	-.03	2.01< 2.55%>	-2.63	.00	.00	2.63

CASE - 3: 3s Gusted Wind&Ice — ANSI-TIA-222-G

WIND OLF	1.00	GUSTED WIND (3sec)	30.0 mph	48.3 kph
VERTICAL OLF	1.20	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE	.00 in	EXP-POWER COEFF.	.2105	
GUST FACTOR (Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF (Cf)	.65	PRESSURE @ 32.7 ft	2.4 psf	115.2 Pa
IMPORTANCE FAC (I)	1.00	BASE ABOVE Grd	1.0	
DIRECTION FAC (Kd)	.95	CREST HEIGHT	.0 ft	
TOPOGRAPHIC CAT	1			

APPURTENANCES — Sabre Areas

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Standard 4 Carrier (2P) 100mph w	79.0	4930	82.3				3.0	.25	-5.9	-5.0
	3	6' X 1' X 6IN PANEL	115.0	60	.0	1 5/8"	6	1.04	3.1	.00	-.8	
	3	RRUS 11	115.0	55	.0	None	1	.00	3.1	.00	-.2	
	1	FLAG 20X30	109.0	200	60.0	None	1	.00	3.1	.19	-.2	-5.6
	3	TWIN DUAL DUPLEX TMA	115.0	14	.0	None	1	.00	3.1	.00	-.1	
	3	6' X 1' X 6IN PANEL	105.0	60	.0	1 5/8"	6	1.04	3.1	.00	-.8	
	3	RRUS 11	105.0	55	.0	None	1	.00	3.1	.00	-.2	
	3	TWIN DUAL DUPLEX TMA	105.0	14	.0	None	1	.00	3.1	.00	-.1	
	3	6' X 1' X 6IN PANEL	95.0	60	.0	1 5/8"	6	1.04	3.0	.00	-.8	
	3	TWIN DUAL DUPLEX TMA	95.0	14	.0	None	1	.00	3.0	.00	-.1	
	3	RRUS 11	95.0	55	.0	None	1	.00	3.0	.00	-.2	
	3	6' X 1' X 6IN PANEL	85.0	60	.0	1 5/8"	6	1.04	3.0	.00	-.8	
	3	RRUS 11	85.0	55	.0	None	1	.00	3.0	.00	-.2	
2	1	User Defined Loading	78.9	5	.1				2.9	.00	.0	.0
	3	TWIN DUAL DUPLEX TMA	85.0	14	.0	None	1	.00	3.0	.00	-.1	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
79.00	1.00	1.89	.00	.0	.45	-10.3	-10.6	.0	.0	71.92	.012
78.90	1.00	1.89	.00	.0	.47	-10.7	-10.7	.0	.0	71.91	.013
73.90	1.00	1.86	.00	.0	.50	-11.3	-13.0	.0	.0	71.29	.014
68.90	1.00	1.84	.00	.0	.53	-12.0	-15.5	.0	.0	70.67	.016
63.90	1.00	1.81	.00	.0	.56	-12.6	-18.1	.0	.0	70.04	.017
58.90	1.00	1.78	.00	.0	.59	-13.3	-20.9	.0	.0	69.42	.019
53.90	1.00	1.75	.00	.0	.61	-13.7	-23.9	.0	.0	68.80	.020
53.25	1.00	1.74	.00	.0	.62	-14.3	-24.3	.0	.0	68.72	.021
48.25	1.00	1.71	.00	.0	.64	-15.0	-27.4	.0	.0	75.50	.017
47.25	1.00	1.70	.00	.0	.66	-15.7	-28.0	.0	.0	75.40	.017
42.25	1.00	1.66	.00	.0	.69	-16.8	-31.3	.0	.0	74.91	.018
37.25	1.00	1.62	.00	.0	.72	-17.7	-34.8	.0	.0	74.41	.020
32.25	1.00	1.57	.00	.0	.75	-18.6	-38.3	.0	.0	73.91	.021
27.25	1.00	1.52	.00	.0	.78	-19.5	-42.1	.0	.0	73.41	.022
22.25	1.00	1.46	.00	.0	.80	-20.4	-46.0	.0	.0	72.91	.023
17.25	1.00	1.38	.00	.0	.83	-21.4	-50.0	.0	.0	72.41	.025
12.25	1.00	1.33	.00	.0	.86	-22.3	-54.2	.0	.0	71.92	.026
7.25	1.00	1.33	.00	.0	.89	-23.3	-58.5	.0	.0	71.42	.027
2.25	1.00	1.33	.00	.0	.91	-24.0	-62.9	.0	.0	70.92	.028
.00	1.00	1.33	.00	.0	.92	-24.2	65.0	.0	.0	70.70	.029

DISPLACEMENTS

ELEV X, ft	DEFLECTION feet X	Y	Z	XY-Result	ROTATION, degrees X	Y	Z	XY-Result
79.00	.00	.06	.00	.06< .07%>	-.08	.00	.00	.08

CASE - 4: Service Loads — ANSI-TIA-222-G

WIND OLF	1.00	GUSTED WIND (3sec)	60.0 mph	96.6 kph	
VERTICAL OLF	1.00	EXP-CAT/STRUC_CLASS	C-II		
DESIGN ICE	.00 in	EXP-POWER COEFF.	.2105		
GUST FACTOR (Gh)	1.10	REFERENCE HEIGHT	900.0 ft		
FORCE COEFF (Cf)	.65	PRESSURE @ 32.7 ft	8.6 psf	412.3 Pa	
IMPORTANCE FAC (I)	1.00	BASE ABOVE Grd	1.0		
DIRECTION FAC (Kd)	.85	CREST HEIGHT	.0 ft		
TOPOGRAPHIC CAT	1				

APPURTENANCES — Sabre Areas

#	Qty	Description	Center Line Elev-Ft	WEIGHT each Lbs	AREA each Ft^2	Tx-CABLE Type	Qty	#/Ft	WIND Psf	FORCES Tra-Y Kips	FORCES Ax-Z Kips	MOM. Lg-X Ft-K
1	1	Standard 4 Carrier (2P) 100mph w	79.0	4930	82.3				10.9	.90	-4.9	-18.0
	3	6' X 1' X 6IN PANEL	115.0	60	.0	1 5/8"	6	1.04	11.3	.00	-.7	
	3	RRUS 11	115.0	55	.0	None	1	.00	11.3	.00	-.2	
	1	FLAG 20X30	109.0	200	60.0	None	1	.00	11.1	.67	-.2	-20.0
	3	TWIN DUAL DUPLEX TMA	115.0	14	.0	None	1	.00	11.3	.00	.0	
	3	6' X 1' X 6IN PANEL	105.0	60	.0	1 5/8"	6	1.04	11.0	.00	-.7	
	3	RRUS 11	105.0	55	.0	None	1	.00	11.0	.00	-.2	
	3	TWIN DUAL DUPLEX TMA	105.0	14	.0	None	1	.00	11.0	.00	.0	
	3	6' X 1' X 6IN PANEL	95.0	60	.0	1 5/8"	6	1.04	10.8	.00	-.7	
	3	TWIN DUAL DUPLEX TMA	95.0	14	.0	None	1	.00	10.8	.00	.0	
	3	RRUS 11	95.0	55	.0	None	1	.00	10.8	.00	-.2	
	3	6' X 1' X 6IN PANEL	85.0	60	.0	1 5/8"	6	1.04	10.6	.00	-.7	
	3	RRUS 11	85.0	55	.0	None	1	.00	10.6	.00	-.2	
2	1	User Defined Loading	78.9	5	.1				10.4	.00	.0	.0
	3	TWIN DUAL DUPLEX TMA	85.0	14	.0	None	1	.00	10.6	.00	.0	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES,kips ShearX	ShearY	AxiaZ	MOMENTS,ft-kips BendX	BendY	TorqZ	F'y ksi	Inter 4.8.2
79.00	1.00	6.76	.00	.0	1.61	-8.6	-38.0	.0	.0	71.92	.030
78.90	1.00	6.76	.00	.0	1.66	-8.9	-38.1	.0	.0	71.91	.030
73.90	1.00	6.67	.00	.0	1.77	-9.4	-46.5	.0	.0	71.29	.035
68.90	1.00	6.57	.00	.0	1.88	-10.0	-55.3	.0	.0	70.67	.040
63.90	1.00	6.47	.00	.0	1.99	-10.5	-64.8	.0	.0	70.04	.044
58.90	1.00	6.36	.00	.0	2.10	-11.1	-74.7	.0	.0	69.42	.049
53.90	1.00	6.25	.00	.0	2.16	-11.4	-85.3	.0	.0	68.80	.054
53.25	1.00	6.23	.00	.0	2.23	-11.9	-86.7	.0	.0	68.72	.055
48.25	1.00	6.11	.00	.0	2.29	-12.5	-97.8	.0	.0	75.50	.045
47.25	1.00	6.08	.00	.0	2.36	-13.1	-100.1	.0	.0	75.40	.046
42.25	1.00	5.94	.00	.0	2.46	-14.0	-111.8	.0	.0	74.91	.049
37.25	1.00	5.79	.00	.0	2.57	-14.8	-124.2	.0	.0	74.41	.053
32.25	1.00	5.62	.00	.0	2.67	-15.5	-137.0	.0	.0	73.91	.057
27.25	1.00	5.43	.00	.0	2.78	-16.3	-150.3	.0	.0	73.41	.061
22.25	1.00	5.21	.00	.0	2.88	-17.0	-164.3	.0	.0	72.91	.064
17.25	1.00	4.96	.00	.0	2.99	-17.8	-178.6	.0	.0	72.41	.068
12.25	1.00	4.76	.00	.0	3.09	-18.6	-193.6	.0	.0	71.92	.072
7.25	1.00	4.76	.00	.0	3.20	-19.4	-209.0	.0	.0	71.42	.076
2.25	1.00	4.76	.00	.0	3.28	-20.0	-225.0	.0	.0	70.92	.079
.00	1.00	4.76	.00	.0	3.30	-20.2	232.4	.0	.0	70.70	.081

DISPLACEMENTS

ELEV X, ft	DEFLECTION feet X	Y	Z	XY-Result	ROTATION, degrees X	Y	Z	XY-Result	MicroW AlloW
79.00	.00	.21	.00	.21< .26%>	-.27	.00	.00	.27	

SHAPE: 18 SIDED POLYGON with FLAT-FLAT ORIENTATION
BOLTS: QUADRANT SPACED BOLTS 6.00 in. ON CENTER
LOCATE:

POLE DATA

DIAMETER	= 49.35 in.	BASE	AXIAL FORCE=	-24.6 kips	Vert
PLATE	= .3125 in.	ACTIONS	SHEAR X =	22.7 kips	Long
TAPER	= .1500 in/ft		SHEAR Y =	22.7 kips	Tran
POLE Fy	= 65.00 ksi		X-AXIS MOM =	1603.1 ft-kips	Tran
			Y-Axis MOM =	1603.1 ft-kips	Long
			Z-Axis MOM =	.0 ft-kips	Vert

DESIGN CASE = 1 3s Gusted Wind

Design: ANY Orientation Reactions at 45.00 deg to X-AXIS

BOLT LOADS

	AXIAL - COMPRESSION	= 165.48 kips		
	AXIAL - TENSION	= 161.37 kips		
	SHEAR	= 3.79 kips		
AXIAL	STRESS	= 50.92 ksi		
SHEAR	STRESS	= 1.23 ksi		
YIELD	STRENGTH Fy	= 75.00 ksi		
ULT.	STRENGTH Fu	= 100.00 ksi		Interaction
ALLOW	STRESS Fa [.80 x 1.00]	= 80.00 ksi	.667	TIA-G
	SHEAR Fv [.80 x .40]	= 32.00 ksi		
	TENSION AREA REQUIRED	= 2.07 in^2		
	TENSION AREA FURNISHED	= 3.25 in^2		
	ROOT AREA FURNISHED	= 3.07 in^2		

A615 ::: ANCHOR BOLT DESIGN USED

12	Bolts on a	55.500 in.	Bolt Circle	SHIP
2.250 in.	Diameter	67.13 in.	Embedded	(lbs)
12.00 in.	Exposed	84.00 in.	Total Length	1667

CONCRETE - Fc= 4000 psi

ANCHOR BOLTS are STRAIGHT w\ UPLIFT NUT

BASE PLATE

[Bend Model: Flat- 17]

YIELD STRENGTH	=	50.0 ksi
BEND LINE WIDTH	=	26.1 in.
PLATE MOMENT	=	1242.5 in-k
THICKNESS REQD	=	2.058 in.
BENDING STRESS	=	30.5 ksi
ALLOWABLE STRESS	=	45.0 ksi
[Fy x .90 x 1.00]		

BASE PLATE USED

2.50	in.	THICK	SHIP
53.25	in.	SQUARE	(lbs)
37.25	in.	CENTER HOLE	1069
9.00	in.	CORNER CLIP	

LOAD CASE SUMMARY

	___FORCES-(kips)___			___MOMENTS-(ft-k)__			ABolt-Str	Allow	Plate-Str _Actual	Allow	_Design
LC	Axial	ShearX	ShearY	X-axis	Y-axis	TorQ	CSR	ksi	ksi	ksi	Code
1	24.6	22.7	22.7	1603	1603	0	.667	75.00	30.51	45.00	TIA-G
2	18.6	22.7	22.7	1598	1598	0	.663	75.00	30.31	45.00	TIA-G
3	24.2	.7	.7	45	45	0	.027	75.00	1.24	45.00	TIA-G
4	20.2	2.3	2.3	164	164	0	.074	75.00	3.40	45.00	TIA-G

LPile Plus for Windows, Version 2012-06.037

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

This copy of LPile is licensed to:

Robert Beacom
Sabre

Serial Number of Security Device: 160777296
Company Name Stored in Security Device: Sabre Communications Corporation

Files Used for Analysis

Path to file locations: C:\Progra~1\Ensoft\Lpile2012\
Name of input data file: 13-7586-RAM.lp6d
Name of output report file: 13-7586-RAM.lp6o
Name of plot output file: 13-7586-RAM.lp6p
Name of runtime messeage file: 13-7586-RAM.lp6r

Date and Time of Analysis

Date: July 11, 2013 Time: 9:31:56

Problem Title

120' Flag Pole CLEARVIEW TOWER COMPANY LLC Palm Beach, FL (13-7586-RAM) 7-11-13 REB

Job Number:

Client:

Engineer:

Description:

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear
moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis does not use p-y multipliers (individual pile or shaft only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

- Number of pile increments	=	100	
- Maximum number of iterations allowed	=	300	
- Deflection tolerance for convergence	=	1.0000E-05	in
- Maximum allowable deflection	=	100.0000	in

Pile Response Output Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 3

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 27.50 ft

Depth of ground surface below top of pile = 0.50 ft

Pile diameter values 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.

Point	Depth X ft	Pile Diameter in
1	0.00000	84.0000000
2	27.500000	84.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type = Drilled Shaft (Bored Pile)
Section Length = 27.50000000 ft
Section Diameter = 84.00000000 in

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 1 layers

Layer 1 is stiff clay without free water

Distance from top of pile to top of layer = 0.50000 ft
Distance from top of pile to bottom of layer = 50.50000 ft
Effective unit weight at top of layer = 110.07360 pcf
Effective unit weight at bottom of layer = 110.07360 pcf
Undrained cohesion at top of layer = 999.36000 psf
Undrained cohesion at bottom of layer = 999.36000 psf
Epsilon-50 at top of layer = 0.01000
Epsilon-50 at bottom of layer = 0.01000

(Depth of lowest soil layer extends 23.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Layer Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Strain Factor Epsilon 50
1	Stiff Clay w/o Free Water	0.500	110.074	999.360	0.01000
		50.500	110.074	999.360	0.01000

Loading Type

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

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 42853. lbs	M = 36280000. in-lbs	32800.	No

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	27.50000000 ft
Shaft Diameter	=	84.00000000 in
Concrete Cover Thickness	=	3.62353733 in
Number of Reinforcing Bars	=	36 bars
Yield Stress of Reinforcing Bars	=	60.00000000 ksi
Modulus of Elasticity of Reinforcing Bars	=	29000. ksi
Gross Area of Shaft	=	5541.76944093 sq. in.
Total Area of Reinforcing Steel	=	28.44000000 sq. in.
Area Ratio of Steel Reinforcement	=	0.51 percent
Edge-to-Edge Bar Spacing	=	5.60230247 in
Maximum Concrete Aggregate Size	=	0.75000000 in
Ratio of Bar Spacing to Aggregate Size	=	7.47
Offset of Rebar Cage Center from Center of Pile	=	0.0000000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	20451.721 kips
Tensile Load for Cracking of Concrete	=	-2388.199 kips
Nominal Axial Tensile Capacity	=	-1706.400 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.00000	0.79000	37.87646	0.00000
2	1.00000	0.79000	37.30103	6.57718
3	1.00000	0.79000	35.59223	12.95451
4	1.00000	0.79000	32.80198	18.93823
5	1.00000	0.79000	29.01505	24.34652
6	1.00000	0.79000	24.34652	29.01505
7	1.00000	0.79000	18.93823	32.80198
8	1.00000	0.79000	12.95451	35.59223
9	1.00000	0.79000	6.57718	37.30103
10	1.00000	0.79000	0.00000	37.87646
11	1.00000	0.79000	-6.57718	37.30103
12	1.00000	0.79000	-12.95451	35.59223
13	1.00000	0.79000	-18.93823	32.80198
14	1.00000	0.79000	-24.34652	29.01505

15	1.00000	0.79000	-29.01505	24.34652
16	1.00000	0.79000	-32.80198	18.93823
17	1.00000	0.79000	-35.59223	12.95451
18	1.00000	0.79000	-37.30103	6.57718
19	1.00000	0.79000	-37.87646	0.00000
20	1.00000	0.79000	-37.30103	-6.57718
21	1.00000	0.79000	-35.59223	-12.95451
22	1.00000	0.79000	-32.80198	-18.93823
23	1.00000	0.79000	-29.01505	-24.34652
24	1.00000	0.79000	-24.34652	-29.01505
25	1.00000	0.79000	-18.93823	-32.80198
26	1.00000	0.79000	-12.95451	-35.59223
27	1.00000	0.79000	-6.57718	-37.30103
28	1.00000	0.79000	0.00000	-37.87646
29	1.00000	0.79000	6.57718	-37.30103
30	1.00000	0.79000	12.95451	-35.59223
31	1.00000	0.79000	18.93823	-32.80198
32	1.00000	0.79000	24.34652	-29.01505
33	1.00000	0.79000	29.01505	-24.34652
34	1.00000	0.79000	32.80198	-18.93823
35	1.00000	0.79000	35.59223	-12.95451
36	1.00000	0.79000	37.30103	-6.57718

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

Minimum spacing between any two bars not equal to zero = 5.60230 inches between Bars 24 and 25

Spacing to aggregate size ratio = 7.46974

Concrete Properties:

Compressive Strength of Concrete	=	4.00000000 ksi
Modulus of Elasticity of Concrete	=	3604.99653259 ksi
Modulus of Rupture of Concrete	=	-0.47434164 ksi
Compression Strain at Peak Stress	=	0.00188627
Tensile Strain at Fracture of Concrete	=	-0.00011537
Maximum Coarse Aggregate Size	=	0.75000000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	32.800

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 318-08 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than than 0.003. See ACI 318-08, 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 = 32.800 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Concrete Stress ksi	Max Steel Stress ksi	Run Msg
0.000000313	3389.5503702	10846561185.	46.3482951	0.0000145	-0.0000118	0.0606402	0.4162252	
0.000000625	6764.1396142	10822623383.	44.1803792	0.0000276	-0.0000249	0.1151561	0.7931569	
0.000000938	10124.	10798469450.	43.4577718	0.0000407	-0.0000380	0.1692923	1.1700894	
0.000001250	13468.	10774261263.	43.0964878	0.0000539	-0.0000511	0.2230487	1.5470227	
0.000001563	16797.	10750031344.	42.8797323	0.0000670	-0.0000643	0.2764253		

1.9239566						
0.000001875	20111.	10725790556.	42.7352410	0.0000801	-0.0000774	0.3294222
2.3008912						
0.000002188	23410.	10701543557.	42.6320437	0.0000933	-0.0000905	0.3820393
2.6778265						
0.000002500	26693.	10677292676.	42.5546552	0.0001064	-0.0001036	0.4342767
3.0547625						
0.000002813	26693.	9490926823.	19.0498160	0.0000536	-0.0001827	0.2191356
-5.2632432 C						
0.000003125	26693.	8541834140.	18.8090534	0.0000588	-0.0002037	0.2400098
-5.8698670 C						
0.000003438	26693.	7765303764.	18.6060644	0.0000640	-0.0002248	0.2607416
-6.4770892 C						
0.000003750	26693.	7118195117.	18.4375434	0.0000691	-0.0002459	0.2814259
-7.0842421 C						
0.000004063	26693.	6570641646.	18.2955377	0.0000743	-0.0002669	0.3020626
-7.6913257 C						
0.000004375	26693.	6101310100.	18.1743665	0.0000795	-0.0002880	0.3226516
-8.2983397 C						
0.000004688	26693.	5694556094.	18.0698643	0.0000847	-0.0003090	0.3431929
-8.9052841 C						
0.000005000	26693.	5338646338.	17.9743439	0.0000899	-0.0003301	0.3635941
-9.5128201 C						
0.000005313	26693.	5024608318.	17.8900429	0.0000950	-0.0003512	0.3839379
-10.1203590 C						
0.000005625	26693.	4745463411.	17.8155547	0.0001002	-0.0003723	0.4042347
-10.7278251 C						
0.000005938	26693.	4495702179.	17.7493308	0.0001054	-0.0003934	0.4244844
-11.3352183 C						
0.000006250	26693.	4270917070.	17.6901328	0.0001106	-0.0004144	0.4446871
-11.9425384 C						
0.000006563	26693.	4067540067.	17.6369577	0.0001157	-0.0004355	0.4648426
-12.5497852 C						
0.000006875	26693.	3882651882.	17.5889854	0.0001209	-0.0004566	0.4849509
-13.1569585 C						
0.000007188	26693.	3713840931.	17.5455379	0.0001261	-0.0004776	0.5050119
-13.7640582 C						
0.000007500	26693.	3559097559.	17.5060507	0.0001313	-0.0004987	0.5250255
-14.3710840 C						
0.000007813	26693.	3416733656.	17.4700492	0.0001365	-0.0005198	0.5449918
-14.9780357 C						
0.000008125	26693.	3285320823.	17.4371321	0.0001417	-0.0005408	0.5649106
-15.5849132 C						
0.000008438	26693.	3163642274.	17.4069574	0.0001469	-0.0005619	0.5847818
-16.1917163 C						
0.000008750	26693.	3050655050.	17.3792321	0.0001521	-0.0005829	0.6046055
-16.7984448 C						
0.000009063	26693.	2945460048.	17.3537035	0.0001573	-0.0006040	0.6243815
-17.4050985 C						
0.000009375	26693.	2847278047.	17.3301527	0.0001625	-0.0006250	0.6441098
-18.0116772 C						
0.000009688	26693.	2755430368.	17.3083889	0.0001677	-0.0006461	0.6637903
-18.6181807 C						
0.0000100	26693.	2669323169.	17.2882452	0.0001729	-0.0006671	0.6834230
-19.2246091 C						
0.0000103	26693.	2588434588.	17.2695751	0.0001781	-0.0006882	0.7030078
-19.8309617 C						
0.0000106	26693.	2512304159.	17.2522491	0.0001833	-0.0007092	0.7225446
-20.4372384 C						
0.0000109	26693.	2440524040.	17.2361527	0.0001885	-0.0007302	0.7420334
-21.0434392 C						
0.0000113	26693.	2372731706.	17.2211840	0.0001937	-0.0007513	0.7614741
-21.6495639 C						
0.0000116	26693.	2308603822.	17.2064912	0.0001990	-0.0007723	0.7808331
-22.2558671 C						
0.0000119	26693.	2247851090.	17.1927389	0.0002042	-0.0007933	0.8001417
-22.8621132 C						
0.0000122	26693.	2190213882.	17.1799204	0.0002094	-0.0008144	0.8194027
-23.4682782 C						
0.0000128	26693.	2083374181.	17.1568144	0.0002198	-0.0008564	0.8577818
-24.6803649 C						
0.0000134	26693.	1986473056.	17.1366944	0.0002303	-0.0008985	0.8959700
-25.8921256 C						
0.0000141	26693.	1898185365.	17.1191667	0.0002407	-0.0009405	0.9339666
-27.1035589 C						
0.0000147	26693.	1817411519.	17.1039047	0.0002512	-0.0009825	0.9717713
-28.3146621 C						
0.0000153	26693.	1743231457.	17.0906353	0.0002617	-0.0010245	1.0093833
-29.5254337 C						
0.0000159	26693.	1674869439.	17.0791281	0.0002722	-0.0010666	1.0468023
-30.7358719 C						
0.0000166	26693.	1611666819.	17.0691875	0.0002827	-0.0011085	1.0840275
-31.9459748 C						
0.0000172	26693.	1553060753.	17.0606466	0.0002932	-0.0011505	1.1210584
-33.1557403 C						

0.0000178	26693.	1498567393.	17.0533617	0.0003038	-0.0011925	1.1578946
-34.3651666 C						
0.0000184	26693.	1447768498.	17.0472089	0.0003143	-0.0012344	1.1945353
-35.5742518 C						
0.0000191	26693.	1400300679.	17.0420804	0.0003249	-0.0012764	1.2309801
-36.7829937 C						
0.0000197	26859.	1364251092.	17.0378821	0.0003354	-0.0013183	1.2672283
-37.9913904 C						
0.0000203	27676.	1362532590.	17.0345316	0.0003460	-0.0013602	1.3032795
-39.1994399 C						
0.0000209	28494.	1360891233.	17.0319565	0.0003566	-0.0014021	1.3391329
-40.4071401 C						
0.0000216	29310.	1359320186.	17.0300925	0.0003672	-0.0014440	1.3747880
-41.6144890 C						
0.0000222	30126.	1357813384.	17.0288829	0.0003778	-0.0014859	1.4102442
-42.8214844 C						
0.0000228	30942.	1356365424.	17.0282771	0.0003885	-0.0015278	1.4455008
-44.0281241 C						
0.0000234	31757.	1354971480.	17.0282299	0.0003991	-0.0015697	1.4805574
-45.2344062 C						
0.0000241	32572.	1353627226.	17.0287009	0.0004098	-0.0016115	1.5154132
-46.4403284 C						
0.0000247	33386.	1352328770.	17.0296538	0.0004204	-0.0016533	1.5500677
-47.6458884 C						
0.0000253	34199.	1351072607.	17.0310560	0.0004311	-0.0016952	1.5845202
-48.8510842 C						
0.0000259	35012.	1349855567.	17.0328778	0.0004418	-0.0017370	1.6187702
-50.0559134 C						
0.0000266	35824.	1348674777.	17.0350928	0.0004525	-0.0017788	1.6528168
-51.2603738 C						
0.0000272	36636.	1347527627.	17.0376766	0.0004632	-0.0018205	1.6866596
-52.4644631 C						
0.0000278	37447.	1346411742.	17.0406072	0.0004739	-0.0018623	1.7202979
-53.6681790 C						
0.0000284	38258.	1345324952.	17.0438647	0.0004847	-0.0019041	1.7537310
-54.8715191 C						
0.0000291	39068.	1344265276.	17.0474307	0.0004954	-0.0019458	1.7869582
-56.0744811 C						
0.0000297	39877.	1343230896.	17.0512885	0.0005062	-0.0019875	1.8199789
-57.2770625 C						
0.0000303	40686.	1342220144.	17.0554229	0.0005170	-0.0020293	1.8527925
-58.4792611 C						
0.0000309	41494.	1341231484.	17.0598198	0.0005278	-0.0020710	1.8853982
-59.6810742 C						
0.0000316	42302.	1340263504.	17.0644664	0.0005386	-0.0021127	1.9177954
-60.0000000 CY						
0.0000322	43109.	1339314898.	17.0693507	0.0005494	-0.0021543	1.9499834
-60.0000000 CY						
0.0000328	43913.	1338305304.	17.0741243	0.0005602	-0.0021960	1.9819281
-60.0000000 CY						
0.0000334	44639.	1335012308.	17.0692032	0.0005708	-0.0022380	2.0126708
-60.0000000 CY						
0.0000341	45280.	1329320424.	17.0539417	0.0005809	-0.0022804	2.0421143
-60.0000000 CY						
0.0000347	45826.	1321123421.	17.0275001	0.0005906	-0.0023231	2.0701396
-60.0000000 CY						
0.0000353	46353.	1312652397.	16.9997720	0.0006003	-0.0023659	2.0977334
-60.0000000 CY						
0.0000359	46844.	1303494334.	16.9687313	0.0006098	-0.0024089	2.1246821
-60.0000000 CY						
0.0000366	47277.	1293042623.	16.9314532	0.0006191	-0.0024522	2.1506691
-60.0000000 CY						
0.0000372	47700.	1282699694.	16.8945357	0.0006283	-0.0024955	2.1763797
-60.0000000 CY						
0.0000397	49171.	1238949918.	16.7323852	0.0006641	-0.0026697	2.2745375
-60.0000000 CY						
0.0000422	50416.	1195045868.	16.5648302	0.0006988	-0.0028449	2.3671664
-60.0000000 CY						
0.0000447	51416.	1150567633.	16.3883022	0.0007324	-0.0030214	2.4539755
-60.0000000 CY						
0.0000472	52316.	1108677996.	16.2084294	0.0007648	-0.0031989	2.5357447
-60.0000000 CY						
0.0000497	53040.	1067479232.	16.0247439	0.0007962	-0.0033775	2.6125742
-60.0000000 CY						
0.0000522	53763.	1030182248.	15.8603717	0.0008277	-0.0035560	2.6875507
-60.0000000 CY						
0.0000547	54332.	993496212.	15.6913470	0.0008581	-0.0037356	2.7579024
-60.0000000 CY						
0.0000572	54842.	958977120.	15.5300071	0.0008881	-0.0039156	2.8253840
-60.0000000 CY						
0.0000597	55342.	927199136.	15.3719298	0.0009175	-0.0040962	2.8896140
-60.0000000 CY						
0.0000622	55819.	897592810.	15.2243799	0.0009468	-0.0042770	2.9517435
-60.0000000 CY						
0.0000647	56173.	868375413.	15.0707669	0.0009749	-0.0044589	3.0097014

-60.0000000 CY 0.0000672	56512.	841106048.	14.9276049	0.0010029	-0.0046408	3.0658761
-60.0000000 CY 0.0000697	56849.	815774358.	14.7957734	0.0010311	-0.0048227	3.1205574
-60.0000000 CY 0.0000722	57184.	792156853.	14.6716843	0.0010591	-0.0050046	3.1733964
-60.0000000 CY 0.0000747	57502.	769904423.	14.5469450	0.0010865	-0.0051873	3.2233487
-60.0000000 CY 0.0000772	57752.	748206053.	14.4196429	0.0011130	-0.0053707	3.2702569
-60.0000000 CY 0.0000797	57966.	727411619.	14.2951406	0.0011391	-0.0055546	3.3149786
-60.0000000 CY 0.0000822	58178.	707870715.	14.1790188	0.0011653	-0.0057384	3.3583989
-60.0000000 CY 0.0000847	58390.	689472180.	14.0705424	0.0011916	-0.0059222	3.4005074
-60.0000000 CY 0.0000872	58600.	672117598.	13.9690605	0.0012179	-0.0061058	3.4412938
-60.0000000 CY 0.0000897	58810.	655719526.	13.8739952	0.0012443	-0.0062894	3.4807474
-60.0000000 CY 0.0000922	59013.	640139719.	13.7768955	0.0012701	-0.0064737	3.5177809
-60.0000000 CY 0.0000947	59201.	625229553.	13.6817434	0.0012955	-0.0066583	3.5530177
-60.0000000 CY 0.0000972	59351.	610681615.	13.5847160	0.0013203	-0.0068435	3.5860204
-60.0000000 CY 0.0000997	59477.	596630980.	13.4887962	0.0013447	-0.0070291	3.6172662
-60.0000000 CY 0.0001022	59602.	583256474.	13.3980776	0.0013691	-0.0072146	3.6473515
-60.0000000 CY 0.0001047	59726.	570514043.	13.3122793	0.0013936	-0.0074001	3.6762796
-60.0000000 CY 0.0001072	59849.	558359373.	13.2310621	0.0014182	-0.0075855	3.7040415
-60.0000000 CY 0.0001097	59972.	546752190.	13.1541177	0.0014428	-0.0077709	3.7306279
-60.0000000 CY 0.0001122	60094.	535655806.	13.0811653	0.0014675	-0.0079562	3.7560294
-60.0000000 CY 0.0001147	60214.	525030860.	13.0110058	0.0014922	-0.0081416	3.7801291
-60.0000000 CY 0.0001172	60329.	514810827.	12.9375439	0.0015161	-0.0083276	3.8022807
-60.0000000 CY 0.0001197	60444.	505012289.	12.8676701	0.0015401	-0.0085137	3.8233117
-60.0000000 CY 0.0001222	60556.	495601941.	12.8009641	0.0015641	-0.0086996	3.8431922
-60.0000000 CY 0.0001247	60665.	486536254.	12.7366752	0.0015881	-0.0088856	3.8618612
-60.0000000 CY 0.0001272	60769.	477790920.	12.6745077	0.0016120	-0.0090717	3.8793092
-60.0000000 CY 0.0001297	60837.	469102073.	12.6071061	0.0016350	-0.0092588	3.8949005
-60.0000000 CY 0.0001322	60904.	460737881.	12.5426973	0.0016580	-0.0094458	3.9094513
-60.0000000 CY 0.0001347	60970.	452679457.	12.4810950	0.0016810	-0.0096327	3.9229513
-60.0000000 CY 0.0001372	61036.	444910645.	12.4221685	0.0017042	-0.0098196	3.9353940
-60.0000000 CY 0.0001522	61414.	403538421.	12.1086887	0.0018428	-0.0109410	3.9870327
-60.0000000 CY 0.0001672	61749.	369342416.	11.8371303	0.0019790	-0.0120647	3.9929361
-60.0000000 CY 0.0001822	62050.	340584317.	11.6193308	0.0021169	-0.0131869	3.9996646
-60.0000000 CY 0.0001972	62219.	315531401.	11.4166761	0.0022512	-0.0143125	3.9972854
60.0000000 CY 0.0002122	62359.	293886613.	11.2338251	0.0023837	-0.0154401	3.9837555
60.0000000 CY 0.0002272	62482.	275024752.	11.0705058	0.0025151	-0.0165687	3.9982794
60.0000000 CY 0.0002422	62597.	258464094.	10.9347671	0.0026483	-0.0176955	3.9843358
60.0000000 CY 0.0002572	62705.	243809929.	10.8205696	0.0027829	-0.0188208	3.9935875
60.0000000 CY 0.0002722	62808.	230753318.	10.7234234	0.0029188	-0.0199450	3.9988581
60.0000000 CY 0.0002872	62891.	218988645.	10.6371210	0.0030548	-0.0210689	3.9739748
60.0000000 CYT 0.0003022	62955.	208332041.	10.5562791	0.0031900	-0.0221938	3.9904013
60.0000000 CYT 0.0003172	62999.	198617424.	10.4786575	0.0033237	-0.0233201	3.9991200
60.0000000 CYT 0.0003322	63021.	189715415.	10.3935055	0.0034526	-0.0244512	3.9900878
60.0000000 CYT						

0.0003472	63041.	181576823.	10.3184493	0.0035824	-0.0255813	3.9711058
60.0000000 CYT						
0.0003622	63060.	174109918.	10.2511019	0.0037128	-0.0267109	3.9743688
60.0000000 CYT						
0.0003772	63072.	167215245.	10.1977243	0.0038465	-0.0278373	3.9889234
60.0000000 CYT						

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	32.800	62857.492	0.00300000

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

In ACI 318-08, 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 318-08, 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.

Load No.	Resistance Factor for Moment	Nominal Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate (Factored) Moment Capacity in-kip	Bending Stiffness at Ult. Mom. Cap. kip-in^2
1	0.65	62857.492	21.320	40857.368	1342010596.088
1	0.70	62857.492	22.960	44000.244	1337910410.379
1	0.75	62857.492	24.600	47143.119	1296274516.518

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 = 42853.333 lbs
Applied moment at pile head = 36280000.000 in-lbs
Axial thrust load on pile head = 32800.000 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	7.6780	36280000.	42853.	-0.0394	0.000	1.348E+12	0.000	0.000	0.000
0.825	7.2889	36703919.	36877.	-0.0392	0.000	1.347E+12	-1217.0258	551.0039	0.000
1.650	6.9023	37021418.	24618.	-0.0389	0.000	1.347E+12	-1259.3506	602.0952	0.000
2.475	6.5185	37215417.	11950.	-0.0386	0.000	1.347E+12	-1299.4209	657.8344	0.000
3.300	6.1374	37281988.	-1102.6309	-0.0384	0.000	1.347E+12	-1337.0851	718.9370	0.000
4.125	5.7590	37217441.	-14515.	-0.0381	0.000	1.347E+12	-1372.1686	786.2808	0.000

4.950	5.3833	37018339.	-28262.	-0.0378	0.000	1.347E+12	-1404.4681	860.9564
0.000								
5.775	5.0102	36681518.	-42313.	-0.0375	0.000	1.347E+12	-1433.7452	944.3379
0.000								
6.600	4.6399	36204113.	-56639.	-0.0373	0.000	1.348E+12	-1459.7163	1038.1837
0.000								
7.425	4.2722	35583581.	-71203.	-0.0370	0.000	1.349E+12	-1482.0400	1144.7854
0.000								
8.250	3.9071	34817740.	-85969.	-0.0368	0.000	1.350E+12	-1500.2993	1267.1921
0.000								
9.075	3.5445	33904804.	-100893.	-0.0365	0.000	1.352E+12	-1513.9756	1409.5606
0.000								
9.900	3.1843	32843441.	-115927.	-0.0363	0.000	1.353E+12	-1522.4109	1577.7232
0.000								
10.725	2.8265	31632832.	-131016.	-0.0360	0.000	1.355E+12	-1524.7491	1780.1514
0.000								
11.550	2.4711	30272760.	-146092.	-0.0358	0.000	1.358E+12	-1519.8422	2029.6853
0.000								
12.375	2.1178	28763721.	-161078.	-0.0356	0.000	1.360E+12	-1506.0910	2346.8576
0.000								
13.200	1.7665	27107082.	-175874.	-0.0354	0.000	1.364E+12	-1481.1538	2766.8733
0.000								
14.025	1.4167	25305337.	-190353.	-0.0353	0.000	1.069E+13	-1441.2226	3357.0727
0.000								
14.850	1.0671	23362486.	-204335.	-0.0353	0.000	1.070E+13	-1379.5189	4266.0415
0.000								
15.675	0.7177	21284670.	-217546.	-0.0353	0.000	1.072E+13	-1282.6849	5897.4085
0.000								
16.500	0.3686	19081617.	-229490.	-0.0353	0.000	1.073E+13	-1114.0745	9975.0297
0.000								
17.325	0.0196	16771046.	-238518.	-0.0352	0.000	1.075E+13	-548.2491	92520.
0.000								
18.150	-0.3293	14441184.	-231483.	-0.0352	0.000	1.077E+13	1138.0923	11405.
0.000								
18.975	-0.6780	12220871.	-218857.	-0.0352	0.000	1.078E+13	1396.2108	6795.4361
0.000								
19.800	-1.0266	10136937.	-204069.	-0.0352	0.000	1.080E+13	1585.3050	5095.7434
0.000								
20.625	-1.3752	8208169.	-187569.	-0.0352	0.000	1.081E+13	1744.7580	4186.9176
0.000								
21.450	-1.7236	6450284.	-169580.	-0.0352	0.000	1.082E+13	1887.6644	3614.0911
0.000								
22.275	-2.0720	4877332.	-150230.	-0.0352	0.000	1.083E+13	2020.0877	3217.3183
0.000								
23.100	-2.4203	3502316.	-129607.	-0.0352	0.000	1.085E+13	2145.3507	2925.0591
0.000								
23.925	-2.7687	2337527.	-107770.	-0.0352	0.000	1.085E+13	2265.4754	2700.2482
0.000								
24.750	-3.1170	1394750.	-84764.	-0.0352	0.000	1.085E+13	2381.7834	2521.6575
0.000								
25.575	-3.4652	685390.	-60621.	-0.0352	0.000	1.085E+13	2495.1848	2376.2080
0.000								
26.400	-3.8135	220566.	-35367.	-0.0352	0.000	1.085E+13	2606.3322	2255.3790
0.000								
27.225	-4.1618	11176.	-9021.4543	-0.0352	0.000	1.085E+13	2715.7085	2153.3694
0.000								

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial and bending stress in elastic
  sections and do not equal actual stresses in concrete and steel in the range of nonlinear bending.

Output Summary for Load Case No. 1:

Pile-head deflection	=	7.6780456 inches
Computed slope at pile head	=	-0.0394463 radians
Maximum bending moment	=	37281988. inch-lbs
Maximum shear force	=	-238518. lbs
Depth of maximum bending moment	=	39.6000000 inches below pile head
Depth of maximum shear force	=	207.9000000 inches below pile head
Number of iterations	=	134
Number of zero deflection points	=	1

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians

Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Load Case No.	Load Type No.	Pile-head Condition 1 V(lbs) or y(inches)	Pile-head Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Maximum Moment in Pile in-lbs	Maximum Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 42853.	M = 36280000.	32800.	7.67804558	37281988.	-238518.	-0.03944630

The analysis ended normally.

1805.7.2.1 (2006 IBC) & 1807.3.2.1 (2009 IBC & 2012 IBC)

d = A/2*(1+(1+(4.36*h/A))^0.5)

Monopole

Moment (ft-k)	2267.5
Shear (k)	32.1
Caisson Diameter, b (ft)	7
Caisson Height Above Ground (ft)	0.5
Caisson Height Below Ground (ft)	23
Lateral soil pressure per foot (lb/ft^3)	267
Applied lateral force, P (lbs)	32140
Dist. from ground to application of P, h (ft)	71.05
A = 2.34*P/(S1*b)	5.25
Min. Depth of Embedment Required, d (ft)	22.96

MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES

120' Flag Pole CLEARVIEW TOWER COMPANY LLC Palm Beach, FL (13-7586-RAM) 7-11-13 REB

Overall Loads:			
Factored Moment (ft-kips)	2267.5		
Factored Axial (kips)	24.6		
Factored Shear (kips)	32.14		
Bearing Design Strength (ksf)	3.75	Max. Net Bearing Press. (ksf)	3.48
Water Table Below Grade (ft)	999		
Width of Mat (ft)	20	Ultimate Bearing Pressure (ksf)	5.00
Thickness of Mat (ft)	2	Bearing Φs	0.75
Depth to Bottom of Slab (ft)	6		
Quantity of Bolts in Bolt Circle	12		
Bolt Circle Diameter (in)	55.5		
Top of Concrete to Top of Bottom Threads (in)	60		
Diameter of Pier (ft)	7	Minimum Pier Diameter (ft)	6.13
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	6.20
Ht. of Pier Below Ground (ft)	4		
Quantity of Bars in Mat	22		
Bar Diameter in Mat (in)	1		
Area of Bars in Mat (in^2)	17.28		
Spacing of Bars in Mat (in)	11.10	Recommended Spacing (in)	6 to 12
Quantity of Bars Pier	36		
Bar Diameter in Pier (in)	1		
Tie Bar Diameter in Pier (in)	0.625		
Spacing of Ties (in)	12		
Area of Bars in Pier (in^2)	28.27	Minimum Pier A_s (in^2)	27.71
Spacing of Bars in Pier (in)	6.61	Recommended Spacing (in)	6 to 12
f'c (ksi)	4		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.11		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	36.04		
Two-Way Shear Action:			
Average d (in)	20		
ϕV_c (kips)	1239.8	V_u (kips)	55.8
$\phi V_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}b_o d$	1859.8		
$\phi V_c = \phi(\alpha_s d/b_o + 2)f'_c{}^{1/2}b_o d$	1378.9		
$\phi V_c = \phi 4 f'_c{}^{1/2}b_o d$	1239.8		
Shear perimeter, b_o (in)	326.73		
β_c	1		
One-Way Shear:			
ϕV_c (kips)	516.1	V_u (kips)	190.6
Stability:			
Overturning Design Strength (ft-k)	2929.9	Total Applied M (ft-k)	2476.4

Pier Design:

ϕV_n (kips)	608.3	V_u (kips)	32.1
$\phi V_c=\phi 2(1+N_u/(2000A_g))f'_c{}^{1/2}b_wd$	608.3		
V_s (kips)	0.0	*** V_s max = 4 $f'_c{}^{1/2}b_wd$ (kips)	1428.0
Maximum Spacing (in)	8.77	(Only if Shear Ties are Required)	
Actual Hook Development (in)	19.00	Req'd Hook Development l_{dh} (in)	13.28
		*** Ref. To Spacing Requirements ACI 11.5.4.3	

Flexure in Slab:

ϕM_n (ft-kips)	1505.7	M_u (ft-kips)	915.7
a (in)	1.27		
Steel Ratio	0.00360		
β_1	0.85		
Maximum Steel Ratio (.75p_b)	0.0214		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	117.00	Required Development in Pad (in)	28.47

Condition	1 is OK, 0 Fails
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Interaction Diagram Visual Check	1
Two-Way Shear Action	1
One-Way Shear Action	1
Overturning	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1

RF Propagation maps with 102 ft Rad Center