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November 18, 2013

ORIGINAL

VIA OVERNIGHT AND ELECTRONIC MAIL

Melanie Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RECEIVED
NOV 19 2013

**CONNECTICUT
SITING COUNCIL**

RE: DOCKET NO. 393 - Bay Communications II, LLC Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 61-1 Buttonball Road, Old Lyme, Connecticut. Notification of Change to Foundation Design

Dear Melanie:

On behalf of Bay Communications II, LLC ("Bay Communications"), we are notifying the Connecticut Siting Council (the "Council") of a de minimis change to the approved Development and Management Plan ("D&M Plan") for the referenced facility. Specifically, the monopole foundation has been lowered six inches and resized. The overall height of the facility, including antennas, will continue to not exceed 100 feet above grade level.

The previous design consisted of a 6-foot diameter pier, 5 feet in height, sitting on an eighteen-inch thick mat that was 18'-6" feet square. One foot of the pier was to be exposed above grade. The current design by the tower manufacturer uses a 5'-6" diameter pier of the same length sitting on a 17 feet square mat of the same thickness. Only six inches of the pier will be exposed above grade level. The tower will be designed in accordance with EIA/TIA-222-G structural standards. Enclosed is the structural design report for the revised foundation design.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

BROWN RUDNICK LLP

By: 
Thomas J. Regan

Enclosure

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Structural Design Report

100' Monopole

Site: Old Lyme 1, CT

Site Number: CT0008

Prepared for: BAY COMMUNICATIONS, LLC

by: Sabre Towers & Poles™

Job Number: 92070

October 18, 2013

Monopole Profile..... 1

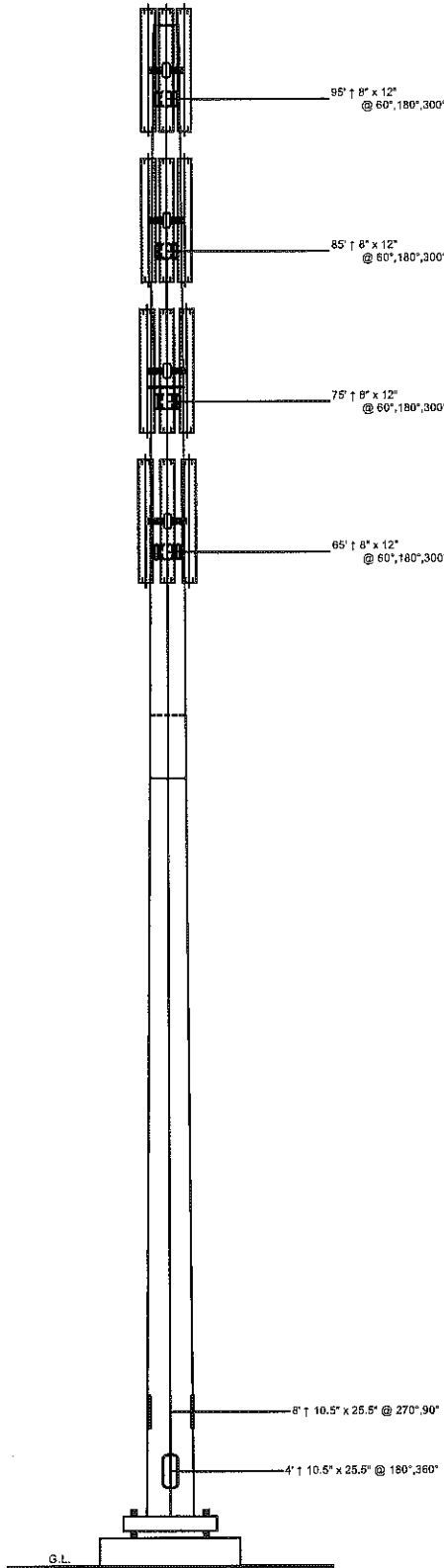
Foundation Design Summary..... 2

Pole Calculations..... 3-9

Foundation Calculations..... 10-11



Section	1	2	3
Length (ft)	24' - 0"	26' - 0"	53' - 3"
Number Of Sides			18
Thickness (in)	3/16"		1/4"
Lap Splice (ft)			4' - 3"
Top Diameter (in)	21"	25.06"	28.41"
Bottom Diameter (in)	25.08"	29.5"	37.46"
Taper (in/ft)			0.17
Grade		A572-65	
Weight (lbs)	1421	1756	5953



Designed Appurtenance Loading

Elev	Description	Tx-Line
97	Flush Mount (Monopole Only)	
97	(3) 24" x 12" x 12" RRHs	
97	(3) TMAs	
97	(3) 8' x 1' x 7in Panels	(12) 1 5/8"
87	Flush Mount (Monopole Only)	
87	(3) 24" x 12" x 12" RRHs	
87	(3) TMAs	
87	(3) 8' x 1' x 7in Panels	(12) 1 5/8"
77	Flush Mount (Monopole Only)	
77	(3) 24" x 12" x 12" RRHs	
77	(3) TMAs	
77	(3) 8' x 1' x 7in Panels	(12) 1 5/8"
67	Flush Mount (Monopole Only)	
67	(3) 24" x 12" x 12" RRHs	
67	(3) TMAs	
67	(3) 8' x 1' x 7in Panels	(12) 1 5/8"

Load Case Reactions

Description	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
3s Gusted Wind	17.6	21.1	1400	5.6	5.12
3s Gusted Wind 0.9 Dead	13.3	21.1	1388	5.5	5.05
3s Gusted Wind&Ice	29.3	3.8	243	0.9	0.87
Service Loads	14.2	3	195	0.8	0.71

Base Plate Dimensions

Shape	Width	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Square	41"	2.25"	43.25"	8	2.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	1207	A615-75	Galv-18"

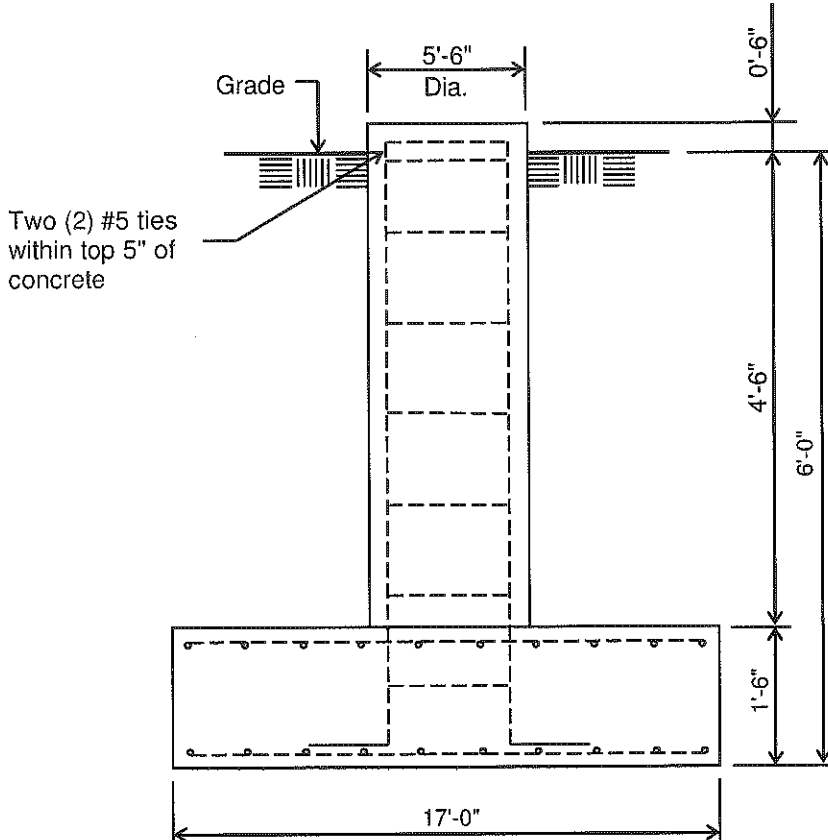
Notes

- 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 120 mph with 0" of radial ice, and 50 mph with 3/4" of radial ice, in accordance with ANSI/TIA-222-G-2 (2009), Structure Class II, Exposure Category C, Topographic Category 1.
- 5) Full Height Step Bolts

	Sabre Communications Corporation 2101 Murray Street P.O. Box 658 Sioux City, IA 51102-0658 Phone: (712) 268-6990 Fax: (712) 268-8250	Job: 92070 Customer: BAY COMMUNICATIONS, LLC Site Name: Old Lyme 1, CT CT0008 Description: 100' Monopole Date: 10/18/2013	By: TTW
	<small>Information contained herein is the sole property of Sabre Communications Corporation, constitutes a trade secret as defined by Iowa Code Ch. 560 and shall not be reproduced, copied or used in whole or part for any purpose whatsoever without the prior written consent of Sabre Communications Corporation.</small>		

Customer: BAY COMMUNICATIONS, LLC
Site: Old Lyme 1, CT CT0008

100' Monopole at
120 mph Wind with no ice and 50 mph Wind with 0.75 in. Ice per ANSI/TIA-222-G.
Antenna Loading per Page 1



ELEVATION VIEW
(20.46 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 the geotechnical report by Terracon, Project No. J2105223, Dated November 11, 2010.
- 6). See the geotechnical report for compaction requirements, if specified.
- 7). The foundation is based on the following factored loads:
Moment (kip-ft) = 1400
Axial (kips) = 17.6
Shear (kips) = 21.1

Rebar Schedule per Pad and Pier	
Pier	(30) #7 vertical rebar w/hooks at bottom w/#5 ties, two within top 5" of top of pier then 12" C/C
Pad	(18) #8 horizontal rebar evenly spaced each way top and bottom (72 Total)

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

Information contained herein is the sole property of Sabre Towers & Poles, constitutes a trade secret as defined by Iowa Code Ch. 550 and shall not be reproduced, copied or used in whole or part for any purpose whatsoever without the prior written consent of Sabre Towers & Poles.

TOP DIAMETER 21.00 in. [21.32 in. Point-Point]
 BOTTOM DIAMETER 37.46 in. [38.03 in. Point-Point]
 POLE HEIGHT 99.00 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	96.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
	2	86.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
	3	76.00	1	Tri-Collar Mount 12"-18" Pole Di	Future Appurt
	4	66.00	1	Tri-Collar Mount 12"-18" Pole Di	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	24.00	.18750	FLANGE-X		.1700	24.00	1110	A572-65	GALV/PAINT
2	50.00	.18750	SLIP-JNT	51.	.1700	26.00	1426	A572-65	GALV/PAINT
3	99.00	.25000	C-WELD		.1700	53.25	4698	A572-65	Special

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)	
99.00	.00	21.00	.1875	12.39	1354	677	63.5	17.99	112.0	65.00	TOP
96.00	3.00	21.51	.1875	12.69	1458	729	66.8	18.46	114.7	65.00	P01
91.00	8.00	22.36	.1875	13.19	1638	819	72.1	19.26	119.3	65.00	
86.00	13.00	23.21	.1875	13.70	1834	917	77.8	20.06	123.8	65.00	P02
81.00	18.00	24.06	.1875	14.21	2044	1022	83.7	20.86	128.3	65.00	
76.00	23.00	24.91	.1875	14.71	2272	1136	89.8	21.66	132.9	65.00	P03
75.00	24.00	25.08	.1875	14.81	2318	1159	91.0	21.82	133.8	65.00	Flng-T02
70.00	29.00	25.93	.1875	15.32	2564	1282	97.4	22.62	138.3	65.00	
66.00	33.00	26.61	.1875	15.72	2772	1386	102.6	23.26	141.9	65.00	P04
61.00	38.00	27.46	.1875	16.23	3048	1524	109.3	24.06	146.5	65.00	
56.00	43.00	28.31	.1875	16.74	3344	1672	116.3	24.86	151.0	65.00	
53.25	45.75	28.78	.1875	17.01	3512	1756	120.2	25.30	153.5	65.00	Slip-B02
49.00	50.00	29.13	.2500	22.91	4824	2412	163.1	18.78	116.5	65.00	Slip-T03
44.00	55.00	29.98	.2500	23.59	5264	2632	172.9	19.38	119.9	65.00	
39.00	60.00	30.83	.2500	24.26	5728	2864	183.0	19.98	123.3	65.00	
34.00	65.00	31.68	.2500	24.93	6220	3110	193.4	20.58	126.7	65.00	
29.00	70.00	32.53	.2500	25.61	6738	3369	204.0	21.18	130.1	65.00	
24.00	75.00	33.38	.2500	26.28	7286	3643	215.0	21.78	133.5	65.00	
19.00	80.00	34.23	.2500	26.96	7860	3930	226.2	22.38	136.9	65.00	
14.00	85.00	35.08	.2500	27.63	8464	4232	237.6	22.98	140.3	65.00	
9.00	90.00	35.92	.2500	28.31	9100	4550	249.5	23.57	143.7	65.00	
4.00	95.00	36.77	.2500	28.98	9768	4884	261.6	24.17	147.1	65.00	
.00	99.00	37.45	.2500	29.52	10322	5161	271.4	24.65	149.8	65.00	BASE

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

WIND OLF	1.60	GUSTED WIND (3sec)	120.0 mph	193.1 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	61.6 psf 2949.4 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			WIND Psf	FORCES		MOM. Lg-X Ft-K
						Type	Qty	#/Ft		Tra-Y Kips	Ax-Z Kips	
- 1	1	Tri-Collar Mount 12"-18" Pole Di	96.0	193	35.0				77.6	2.71	-.2	-.9
	3	8' X 1' X 7IN PANEL	96.0	51		1 5/8"	12	1.04	77.5		-1.6	
	3	TMA	96.0	8		None	1	.00	77.5		.0	
	3	24" X 12" X 12" RRH	96.0	100		None	1	.00	77.5		-.4	
- 2	1	Tri-Collar Mount 12"-18" Pole Di	86.0	193	35.0				75.8	2.65	-.2	-.9
	3	8' X 1' X 7IN PANEL	86.0	51		1 5/8"	12	1.04	75.8		-1.5	
	3	TMA	86.0	8		None	1	.00	75.8		.0	
	3	24" X 12" X 12" RRH	86.0	100		None	1	.00	75.8		-.4	
- 3	1	Tri-Collar Mount 12"-18" Pole Di	76.0	193	35.0				73.9	2.58	-.2	-.9
	3	8' X 1' X 7IN PANEL	76.0	51		1 5/8"	12	1.04	73.8		-1.3	
	3	TMA	76.0	8		None	1	.00	73.8		.0	
	3	24" X 12" X 12" RRH	76.0	100		None	1	.00	73.8		-.4	
- 4	1	Tri-Collar Mount 12"-18" Pole Di	66.0	193	35.0				71.8	2.51	-.2	-.8
	3	8' X 1' X 7IN PANEL	66.0	51		1 5/8"	12	1.04	71.7		-1.2	
	3	TMA	66.0	8		None	1	.00	71.7		.0	
	3	24" X 12" X 12" RRH	66.0	100		None	1	.00	71.7		-.4	

RESULTS

X, ft	Kzt	WIND psf	ICE in	--- FORCES, kips ---				--- MOMENTS, ft-kips ---			F'y ksi	Inter 4.8.2
				ShearX	ShearY	Axiaz	BendX	BendY	TorqZ			
99.00	1.00	50.71	.00	.0	.01	-.1	.0	.0	.0	80.23	.000	
96.00	1.00	50.38	.00	.0	3.29	-2.3	-1.3	.0	.0	79.66	.006	
91.00	1.00	49.82	.00	.0	3.92	-2.5	-18.5	.0	.0	78.72	.046	
86.00	1.00	49.24	.00	.0	7.24	-4.7	-39.0	.0	.0	77.78	.091	
81.00	1.00	48.63	.00	.0	7.75	-5.0	-75.2	.0	.0	76.84	.161	
76.00	1.00	47.99	.00	.0	10.80	-6.9	-114.8	.0	.0	75.90	.232	
75.00	1.00	47.86	.00	.0	11.11	-7.1	-125.6	.0	.0	75.71	.250	
70.00	1.00	47.18	.00	.0	11.57	-7.4	-181.1	.0	.0	74.77	.339	
66.00	1.00	46.61	.00	.0	14.67	-9.3	-228.3	.0	.0	74.02	.410	
61.00	1.00	45.85	.00	.0	15.18	-9.7	-301.6	.0	.0	73.08	.513	
56.00	1.00	45.05	.00	.0	15.57	-10.1	-377.4	.0	.0	72.13	.610	
53.25	1.00	44.58	.00	.0	15.94	-10.7	-420.3	.0	.0	71.62	.662	
49.00	1.00	43.82	.00	.0	16.43	-11.4	-488.0	.0	.0	79.29	.510	
44.00	1.00	42.86	.00	.0	16.94	-12.1	-570.2	.0	.0	78.59	.567	
39.00	1.00	41.81	.00	.0	17.44	-12.7	-654.8	.0	.0	77.88	.621	
34.00	1.00	40.65	.00	.0	17.93	-13.3	-742.0	.0	.0	77.18	.671	
29.00	1.00	39.35	.00	.0	18.41	-14.0	-831.7	.0	.0	76.47	.719	
24.00	1.00	37.87	.00	.0	18.90	-14.6	-923.3	.0	.0	75.76	.764	
19.00	1.00	36.13	.00	.0	19.40	-15.3	-1018.3	.0	.0	75.06	.809	
14.00	1.00	34.05	.00	.0	19.90	-16.0	-1115.0	.0	.0	74.35	.850	
9.00	1.00	34.05	.00	.0	20.41	-16.7	-1215.0	.0	.0	73.65	.891	
4.00	1.00	34.05	.00	.0	20.87	-17.4	-1316.7	.0	.0	72.94	.930	
.00	1.00	34.05	.00	.0	21.08	-17.6	1400.0	.0	.0	72.38	.960	

DISPLACEMENTS

ELEV X, ft	-----DEFLECTION feet-----				-----ROTATION, degrees-----			
	X	Y	Z	XY-Result	X	Y	Z	XY-Result
99.00	.00	5.56	-.20	5.56< 5.62%>	-5.12	.00	.00	5.12

SABRE COMMUNICATIONS CORP
 2101 Murray Street
 Sioux City, IA 51101

JOB: 00-92070
 BAY COMMUNICATIONS, LLC
 Old Lyme 1, CT

18-Oct-13 10:11
 Ph 712.258.6690
 Fx 712.258.8250

CASE - 2: 3s Gusted Wind 0.9 Dead

ANSI-TIA-222-G

WIND OLF	1.60	GUSTED WIND (3sec)	120.0 mph	193.1 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	61.6 psf	2949.4 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			WIND Psf	FORCES		MOM. Lg-X Ft-K
						Type	Qty	#/Ft		Tra-Y Kips	Ax-Z Kips	
- 1	1	Tri-Collar Mount 12"-18" Pole Di	96.0	193	35.0				77.6	2.71	-.2	-.9
	3	8' X 1' X 7IN PANEL	96.0	51		1 5/8"	12	1.04	77.5		-1.2	
	3	TMA	96.0	8		None	1	.00	77.5		.0	
	3	24" X 12" X 12" RRH	96.0	100		None	1	.00	77.5		-.3	
- 2	1	Tri-Collar Mount 12"-18" Pole Di	86.0	193	35.0				75.8	2.65	-.2	-.9
	3	8' X 1' X 7IN PANEL	86.0	51		1 5/8"	12	1.04	75.8		-1.1	
	3	TMA	86.0	8		None	1	.00	75.8		.0	
	3	24" X 12" X 12" RRH	86.0	100		None	1	.00	75.8		-.3	
- 3	1	Tri-Collar Mount 12"-18" Pole Di	76.0	193	35.0				73.9	2.58	-.2	-.9
	3	8' X 1' X 7IN PANEL	76.0	51		1 5/8"	12	1.04	73.8		-1.0	
	3	TMA	76.0	8		None	1	.00	73.8		.0	
	3	24" X 12" X 12" RRH	76.0	100		None	1	.00	73.8		-.3	
- 4	1	Tri-Collar Mount 12"-18" Pole Di	66.0	193	35.0				71.8	2.51	-.2	-.8
	3	8' X 1' X 7IN PANEL	66.0	51		1 5/8"	12	1.04	71.7		-.9	
	3	TMA	66.0	8		None	1	.00	71.7		.0	
	3	24" X 12" X 12" RRH	66.0	100		None	1	.00	71.7		-.3	

RESULTS

X, ft	Kzt	WIND psf	ICE in	--- FORCES, kips ---			--- MOMENTS, ft-kips ---			F'y ksi	Inter 4.8.2
				ShearX	ShearY	AxialZ	BendX	BendY	TorqZ		
99.00	1.00	50.71	.00	.0	.00	-.1	.0	.0	.0	80.23	.000
96.00	1.00	50.38	.00	.0	3.23	-1.7	-1.3	.0	.0	79.66	.005
91.00	1.00	49.82	.00	.0	3.85	-1.9	-18.2	.0	.0	78.72	.045
86.00	1.00	49.24	.00	.0	7.13	-3.4	-38.3	.0	.0	77.78	.088
81.00	1.00	48.63	.00	.0	7.63	-3.6	-74.0	.0	.0	76.84	.157
76.00	1.00	47.99	.00	.0	10.63	-5.0	-113.0	.0	.0	75.90	.226
75.00	1.00	47.86	.00	.0	10.94	-5.2	-123.6	.0	.0	75.71	.245
70.00	1.00	47.18	.00	.0	11.40	-5.4	-178.3	.0	.0	74.77	.332
66.00	1.00	46.61	.00	.0	14.47	-6.8	-224.8	.0	.0	74.02	.402
61.00	1.00	45.85	.00	.0	14.99	-7.1	-297.1	.0	.0	73.08	.503
56.00	1.00	45.05	.00	.0	15.39	-7.4	-372.1	.0	.0	72.13	.599
53.25	1.00	44.58	.00	.0	15.76	-7.9	-414.3	.0	.0	71.62	.650
49.00	1.00	43.82	.00	.0	16.25	-8.5	-481.3	.0	.0	79.29	.502
44.00	1.00	42.86	.00	.0	16.77	-9.0	-562.6	.0	.0	78.59	.558
39.00	1.00	41.81	.00	.0	17.28	-9.5	-646.4	.0	.0	77.88	.611
34.00	1.00	40.65	.00	.0	17.78	-10.0	-732.8	.0	.0	77.18	.661
29.00	1.00	39.35	.00	.0	18.29	-10.5	-821.8	.0	.0	76.47	.709
24.00	1.00	37.87	.00	.0	18.80	-11.0	-913.3	.0	.0	75.76	.754
19.00	1.00	36.13	.00	.0	19.32	-11.5	-1007.5	.0	.0	75.06	.798
14.00	1.00	34.05	.00	.0	19.84	-12.1	-1104.2	.0	.0	74.35	.840
9.00	1.00	34.05	.00	.0	20.38	-12.6	-1203.3	.0	.0	73.65	.881
4.00	1.00	34.05	.00	.0	20.86	-13.1	-1305.0	.0	.0	72.94	.919
.00	1.00	34.05	.00	.0	21.07	-13.3	1388.3	.0	.0	72.38	.950

DISPLACEMENTS

ELEV X, ft	DEFLECTION feet			ROTATION, degrees		
	X	Y	Z	X XY-Result	Y	Z XY-Result
99.00	.00	5.50	-.19	5.50 < 5.55% >	-5.05	.00

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

WIND OLF	1.00	GUSTED WIND (3sec)	50.0 mph	80.5 kph
VERTICAL OLF	1.20	EXP-CAT/STRUC_CLASS	C-II	
DESIGN ICE	.75 in	EXP-POWER COEFF.	.2105	
GUST FACTOR (Gh)	1.10	REFERENCE HEIGHT	900.0 ft	
FORCE COEFF (Cf)	1.20	PRESSURE @ 32.7 ft	6.7 psf	320.0 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		WIND Psf	FORCES		MOM. Lg-X Ft-K
						Type	Qty #/Ft		Tra-Y Kips	Ax-Z Kips	
- 1	1	Tri-Collar Mount 12"-18" Pole Di	96.0	212	43.6			8.4	.37	-.3	-.1
	3	8' X 1' X 7IN PANEL	96.0	116		1 5/8"	12 1.04	8.4		-2.8	
	3	TMA	96.0	11		None	1 .00	8.4		-.1	
	3	24" X 12" X 12" RRH	96.0	124		None	1 .00	8.4		-.8	
- 2	1	Tri-Collar Mount 12"-18" Pole Di	86.0	212	43.5			8.2	.36	-.3	-.1
	3	8' X 1' X 7IN PANEL	86.0	116		1 5/8"	12 1.04	8.2		-2.6	
	3	TMA	86.0	11		None	1 .00	8.2		-.1	
	3	24" X 12" X 12" RRH	86.0	124		None	1 .00	8.2		-.8	
- 3	1	Tri-Collar Mount 12"-18" Pole Di	76.0	212	43.4			8.0	.35	-.3	-.1
	3	8' X 1' X 7IN PANEL	76.0	116		1 5/8"	12 1.04	8.0		-2.4	
	3	TMA	76.0	11		None	1 .00	8.0		-.1	
	3	24" X 12" X 12" RRH	76.0	124		None	1 .00	8.0		-.8	
- 4	1	Tri-Collar Mount 12"-18" Pole Di	66.0	212	43.2			7.8	.34	-.3	-.1
	3	8' X 1' X 7IN PANEL	66.0	116		1 5/8"	12 1.04	7.8		-2.3	
	3	TMA	66.0	11		None	1 .00	7.8		-.1	
	3	24" X 12" X 12" RRH	66.0	124		None	1 .00	7.8		-.8	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES, kips			MOMENTS, ft-kips			F'y ksi	Inter 4.8.2
				ShearX	ShearY	Axiaz	BendX	BendY	TorqZ		
99.00	1.00	10.16	1.68	.0	.01	-.1	.0	.0	.0	80.23	.000
96.00	1.00	10.09	1.67	.0	.52	-4.5	-.2	.0	.0	79.66	.005
91.00	1.00	9.98	1.66	.0	.67	-5.0	-3.0	.0	.0	78.72	.012
86.00	1.00	9.86	1.65	.0	1.20	-9.3	-6.4	.0	.0	77.78	.024
81.00	1.00	9.74	1.64	.0	1.32	-9.8	-12.4	.0	.0	76.84	.036
76.00	1.00	9.61	1.63	.0	1.79	-13.8	-19.1	.0	.0	75.90	.051
75.00	1.00	9.59	1.63	.0	1.86	-14.1	-20.9	.0	.0	75.71	.054
70.00	1.00	9.45	1.62	.0	1.96	-14.6	-30.2	.0	.0	74.77	.069
66.00	1.00	9.34	1.61	.0	2.44	-18.6	-38.1	.0	.0	74.02	.085
61.00	1.00	9.18	1.60	.0	2.56	-19.2	-50.4	.0	.0	73.08	.102
56.00	1.00	9.02	1.58	.0	2.64	-19.7	-63.1	.0	.0	72.13	.119
53.25	1.00	8.93	1.58	.0	2.72	-20.4	-70.4	.0	.0	71.62	.128
49.00	1.00	8.78	1.56	.0	2.82	-21.4	-82.0	.0	.0	79.29	.098
44.00	1.00	8.59	1.55	.0	2.93	-22.3	-96.1	.0	.0	78.59	.108
39.00	1.00	8.38	1.53	.0	3.04	-23.1	-110.8	.0	.0	77.88	.117
34.00	1.00	8.14	1.51	.0	3.14	-23.9	-125.9	.0	.0	77.18	.126
29.00	1.00	7.88	1.49	.0	3.24	-24.8	-141.6	.0	.0	76.47	.135
24.00	1.00	7.59	1.46	.0	3.34	-25.6	-157.8	.0	.0	75.76	.144
19.00	1.00	7.24	1.43	.0	3.44	-26.5	-174.5	.0	.0	75.06	.152
14.00	1.00	6.82	1.39	.0	3.54	-27.4	-191.7	.0	.0	74.35	.159
9.00	1.00	6.82	1.33	.0	3.64	-28.3	-209.4	.0	.0	73.65	.167
4.00	1.00	6.82	1.24	.0	3.73	-29.1	-227.7	.0	.0	72.94	.174
.00	1.00	6.82	1.06	.0	3.78	-29.3	242.6	.0	.0	72.38	.180

DISPLACEMENTS

ELEV X, ft	DEFLECTION feet			ROTATION, degrees					
	X	Y	Z	XY-Result	X	Y	Z	XY-Result	
99.00	.00	.95	-.01	.95<	.96%>	-.87	.00	.00	.87

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		WIND Psf	FORCES		MOM. Lg-X Ft-K
						Type	Qty #/Ft		Tra-Y Kips	Ax-Z Kips	
- 1	1	Tri-Collar Mount 12"-18" Pole Di	96.0	193	35.0			10.8	.38	-.2	-.1
	3	8' X 1' X 7IN PANEL	96.0	51		1 5/8"	12 1.04	10.8		-1.4	
	3	TMA	96.0	8		None	1 .00	10.8		.0	
	3	24" X 12" X 12" RRH	96.0	100		None	1 .00	10.8		-.3	
- 2	1	Tri-Collar Mount 12"-18" Pole Di	86.0	193	35.0			10.6	.37	-.2	-.1
	3	8' X 1' X 7IN PANEL	86.0	51		1 5/8"	12 1.04	10.6		-1.2	
	3	TMA	86.0	8		None	1 .00	10.6		.0	
	3	24" X 12" X 12" RRH	86.0	100		None	1 .00	10.6		-.3	
- 3	1	Tri-Collar Mount 12"-18" Pole Di	76.0	193	35.0			10.3	.36	-.2	-.1
	3	8' X 1' X 7IN PANEL	76.0	51		1 5/8"	12 1.04	10.3		-1.1	
	3	TMA	76.0	8		None	1 .00	10.3		.0	
	3	24" X 12" X 12" RRH	76.0	100		None	1 .00	10.3		-.3	
- 4	1	Tri-Collar Mount 12"-18" Pole Di	66.0	193	35.0			10.0	.35	-.2	-.1
	3	8' X 1' X 7IN PANEL	66.0	51		1 5/8"	12 1.04	10.0		-1.0	
	3	TMA	66.0	8		None	1 .00	10.0		.0	
	3	24" X 12" X 12" RRH	66.0	100		None	1 .00	10.0		-.3	

RESULTS

X, ft	Kzt	WIND psf	ICE in	FORCES, kips			MOMENTS, ft-kips			F'y ksi	Inter 4.8.2
				ShearX	ShearY	AxialZ	BendX	BendY	TorqZ		
99.00	1.00	7.09	.00	.0	.00	-.1	.0	.0	.0	80.23	.000
96.00	1.00	7.04	.00	.0	.46	-2.1	-.2	.0	.0	79.66	.003
91.00	1.00	6.97	.00	.0	.54	-2.3	-2.6	.0	.0	78.72	.009
86.00	1.00	6.88	.00	.0	1.00	-4.3	-5.4	.0	.0	77.78	.016
81.00	1.00	6.80	.00	.0	1.08	-4.5	-10.4	.0	.0	76.84	.026
76.00	1.00	6.71	.00	.0	1.50	-6.3	-15.9	.0	.0	75.90	.037
75.00	1.00	6.69	.00	.0	1.54	-6.5	-17.4	.0	.0	75.71	.040
70.00	1.00	6.60	.00	.0	1.61	-6.7	-25.1	.0	.0	74.77	.053
66.00	1.00	6.52	.00	.0	2.04	-8.4	-31.7	.0	.0	74.02	.064
61.00	1.00	6.41	.00	.0	2.11	-8.7	-41.9	.0	.0	73.08	.078
56.00	1.00	6.30	.00	.0	2.17	-9.0	-52.4	.0	.0	72.13	.092
53.25	1.00	6.23	.00	.0	2.22	-9.4	-58.4	.0	.0	71.62	.099
49.00	1.00	6.13	.00	.0	2.29	-10.0	-67.8	.0	.0	79.29	.076
44.00	1.00	5.99	.00	.0	2.36	-10.5	-79.2	.0	.0	78.59	.084
39.00	1.00	5.85	.00	.0	2.43	-10.9	-91.0	.0	.0	77.88	.092
34.00	1.00	5.68	.00	.0	2.50	-11.3	-103.2	.0	.0	77.18	.099
29.00	1.00	5.50	.00	.0	2.57	-11.7	-115.7	.0	.0	76.47	.106
24.00	1.00	5.29	.00	.0	2.64	-12.2	-128.5	.0	.0	75.76	.112
19.00	1.00	5.05	.00	.0	2.71	-12.6	-141.7	.0	.0	75.06	.118
14.00	1.00	4.76	.00	.0	2.78	-13.1	-155.3	.0	.0	74.35	.124
9.00	1.00	4.76	.00	.0	2.86	-13.6	-169.2	.0	.0	73.65	.130
4.00	1.00	4.76	.00	.0	2.92	-14.1	-183.4	.0	.0	72.94	.136
.00	1.00	4.76	.00	.0	2.95	-14.2	195.1	.0	.0	72.38	.140

DISPLACEMENTS

ELEV X, ft	DEFLECTION feet			ROTATION, degrees			MicroW Allow		
	X	Y	Z	X	Y	Z			
99.00	.00	.77	-.01	.77	<.78%	-.71	.00	.00	.71

FLANGE DESIGN at: 75.0 ft from BASE of POLE [24.0 ft from TOP]
SHAPE: 18 SIDED POLYGON
POLE ORIENTATION: FLAT-FLAT
LOAD ORIENTATION: ANY LOAD DIRECTION

DESIGN CASE = 1 3s Gusted Wind

DIAMETER #1=	25.08 in.	AXIAL FORCE=	-7.1 kips
PLATE #1=	.1875 in.	SHEAR X =	.0 kips
DIAMETER #2=	25.08 in.	SHEAR Y =	11.1 kips
PLATE #2=	.1875 in.	X-AXIS MOM =	-125.6 ft-kips
		Y-AXIS MOM =	.0 ft-kips
		Z-AXIS MOM =	.0 ft-kips

FLANGE BOLTS: EXTERNAL BC MODEL

AXIAL Stress	=	63.21 ksi
SHEAR Stress	=	2.51 ksi
BOLT AREA (Tension)	=	.33 in ²
MOMENT of INERTIA	=	318 in ⁴
CSR	=	.968
ALLOW TENSION Stress	=	69.00 ksi [.75 x Fy]
SHEAR Stress	=	48.30 ksi [.75 x Fy x 0.70]

A-325 ::: BOLT DESIGN USED

10 Bolts	.75 in.	BOLT DIAMETER	
	92.00 ksi	Fy YIELD STRENGTH	
	120.00 ksi	Fu ULTIMATE STRENGTH	
	27.625 in.	BOLT CIRCLE	SHIP WEIGHT
	8.54 in.	CHORD LENGTH	WEIGHT
	36.00°	ARC ANGLE	0 lbs

PLATE DESIGN

			Upper-PL	Lower-PL	
THICKNESS	Reqd	=	.65	.65 in.	
BENDING	Stress	=	32.65	32.65 ksi	
TENSION	Stress	=	.95	.95 ksi	
COMBINED	Ratio	=	.74	.74	
ALLOWABLE	Stress (Fa)	=	45.00	45.00 ksi	[Fy x .90]

::: FLANGE PLATE DESIGN USED

.750 in.	THICK
29.875 in.	OUTSIDE ROUND
50.00 ksi	YIELD STRENGTH
20.000 in.	CENTER HOLE
160 lbs.	SHIP WEIGHT (both)

LOAD CASE SUMMARY

Case	RESULTANTS				BOLT STRESS		Flange-UP Stress		Flange-DW Stress	
	Axial kips	Shear kips	Moment ft-kips	Torq-Z ft-kips	Actual CSR	Allow ksi	Actual ksi	Allow ksi	Actual ksi	Allow ksi
1	-7.09	11.11	125.6	.0	.968	69.00	33.60	45.00	33.60	45.00
2	-5.17	10.94	123.6	.0	.961	69.00	33.08	45.00	33.08	45.00
3	-14.10	1.86	20.9	.0	.105	69.00	6.39	45.00	6.39	45.00
4	-6.46	1.54	17.4	.0	.111	69.00	5.49	45.00	5.49	45.00

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

POLE DATA

DIAMETER =	37.46 in.	BASE	AXIAL FORCE=	-17.6 kips	Vert
PLATE =	.2500 in.	ACTIONS	SHEAR X =	12.7 kips	Long
TAPER =	.1700 in/ft		SHEAR Y =	16.8 kips	Tran
POLE Fy =	65.00 ksi		X-AXIS MOM =	989.8 ft-kips	Tran
			Y-Axis MOM =	989.8 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	=	196.42 kips	
AXIAL - TENSION	=	192.02 kips	
SHEAR	=	3.69 kips	
AXIAL STRESS	=	60.44 ksi	
SHEAR STRESS	=	1.20 ksi	
YIELD STRENGTH Fy	=	75.00 ksi	
ULT. STRENGTH Fu	=	100.00 ksi	
ALLOW STRESS Fa [.80 x 1.00]	=	80.00 ksi	Interaction .786 TIA-G
SHEAR Fv [.80 x .40]	=	32.00 ksi	
TENSION AREA REQUIRED	=	2.46 in ²	
TENSION AREA FURNISHED	=	3.25 in ²	
ROOT AREA FURNISHED	=	3.07 in ²	

A615 ::: ANCHOR BOLT DESIGN USED

8 Bolts on a 43.250 in. Bolt Circle SHIP
 2.250 in. Diameter 67.13 in. Embedded (lbs)
 12.00 in. Exposed 84.00 in. Total Length 1132

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 = 20.6 in.
 PLATE MOMENT = 1002.7 in-k
 THICKNESS REQD = 2.079 in.
 BENDING STRESS = 38.4 ksi
 ALLOWABLE STRESS = 45.0 ksi
 [Fy x .90 x 1.00]

BASE PLATE USED

2.25 in. THICK SHIP
 41.00 in. SQUARE (lbs)
 25.50 in. CENTER HOLE 680
 5.00 in. CORNER CLIP

LOAD CASE SUMMARY

LC	FORCES- (kips)			MOMENTS- (ft-k)			ABolt-Str		Plate-Str		Design Code
	Axial	ShearX	ShearY	X-axis	Y-axis	TorQ	CSR	Allow ksi	Actual ksi	Allow ksi	
1	17.6	12.7	16.8	843	1117	0	.786	75.00	38.42	45.00	TIA-G
2	13.3	12.7	16.8	836	1108	0	.777	75.00	38.00	45.00	TIA-G
3	29.3	2.3	3.0	146	193	0	.149	75.00	7.31	45.00	TIA-G
4	14.2	1.8	2.4	117	155	0	.115	75.00	5.65	45.00	TIA-G

MAT FOUNDATION DESIGN BY SABRE TOWERS & POLES

100' Monopole BAY COMMUNICATIONS, LLC Old Lyme 1, CT (92070) 10-18-13 TTW

Overall Loads:

Factored Moment (ft-kips)	1400
Factored Axial (kips)	17.6
Factored Shear (kips)	21.1
Bearing Design Strength (ksf)	6
Water Table Below Grade (ft)	999
Width of Mat (ft)	17
Thickness of Mat (ft)	1.5
Depth to Bottom of Slab (ft)	6
Quantity of Bolts in Bolt Circle	8
Bolt Circle Diameter (in)	43.25
Top of Concrete to Top of Bottom Threads (in)	60
Diameter of Pier (ft)	5.5
Ht. of Pier Above Ground (ft)	0.5
Ht. of Pier Below Ground (ft)	4.5
Quantity of Bars in Mat	18
Bar Diameter in Mat (in)	1
Area of Bars in Mat (in ²)	14.14
Spacing of Bars in Mat (in)	11.59
Quantity of Bars Pier	30
Bar Diameter in Pier (in)	0.875
Tie Bar Diameter in Pier (in)	0.625
Spacing of Ties (in)	12
Area of Bars in Pier (in ²)	18.04
Spacing of Bars in Pier (in)	6.06
f'c (ksi)	4
fy (ksi)	60
Unit Wt. of Soil (kcf)	0.1
Unit Wt. of Concrete (kcf)	0.15

Volume of Concrete (yd³) 20.46

Two-Way Shear Action:

Average d (in)	14
ϕV_c (kips)	667.6
$\phi V_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}b_o d$	1001.4
$\phi V_c = \phi(\alpha_s d/b_o + 2)f'_c{}^{1/2}b_o d$	705.7
$\phi V_c = \phi 4f'_c{}^{1/2}b_o d$	667.6
Shear perimeter, b _o (in)	251.33
β_c	1

One-Way Shear:

ϕV_c (kips) 307.1

Stability:

Overturning Design Strength (ft-k) 1659.0

Max. Net Bearing Press. (ksf) 4.00

Ultimate Bearing Pressure (ksf) 8.00
Bearing Φ s 0.75

Minimum Pier Diameter (ft) 5.10
Equivalent Square b (ft) 4.87

Recommended Spacing (in) 6 to 12

Minimum Pier A_s (in²) 17.11
Recommended Spacing (in) 6 to 12

V_u (kips) 39.0

V_u (kips) 157.1

Total Applied M (ft-k) 1537.2

Pier Design:

ϕV_n (kips)	375.6	V_u (kips)	21.1
$\phi V_c = \phi 2(1 + N_u / (2000 A_g)) f'_c{}^{1/2} b_w d$	375.6		
V_s (kips)	0.0	*** V_s max = $4 f'_c{}^{1/2} b_w d$ (kips)	881.6
Maximum Spacing (in)	11.16	(Only if Shear Ties are Required)	
Actual Hook Development (in)	13.00	Req'd Hook Development l_{dh} (in)	11.62
		*** Ref. To Spacing Requirements ACI 11.5.4.3	

Flexure in Slab:

ϕM_n (ft-kips)	851.7	M_u (ft-kips)	657.1
a (in)	1.22		
Steel Ratio	0.00495		
β_1	0.85		
Maximum Steel Ratio (.75 p_b)	0.0214		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	99.00	Required Development in Pad (in)	36.20

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
Overturing	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1