

Sample
For Reference Only



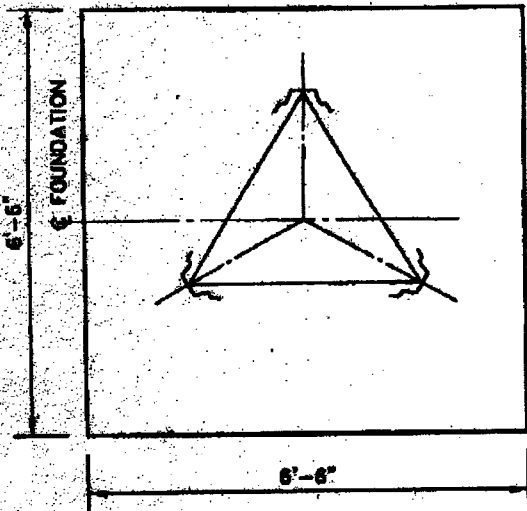
PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street, Suite 300 Columbus, Ohio 43215
(614) 221-0679 FAX (614) 221-0166

Page 2 Of 2
By JML Date 12-7-2000
Job No. TDD-178
Revision No. _____ Date _____

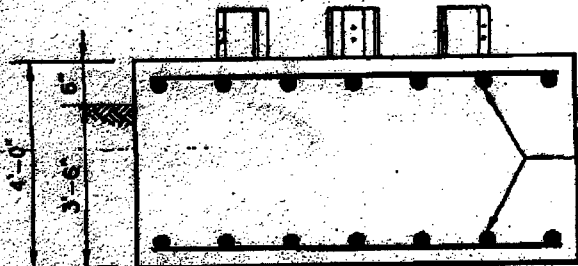
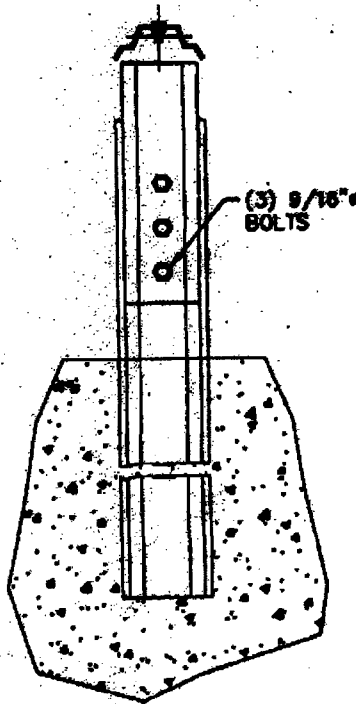
NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS.
2. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 (GRADE 60).
3. SEE PREVIOUS PAGE FOR ANCHOR BOLT SIZE.
4. TOTAL CONCRETE = CUBIC YARDS
5. FOUNDATION DESIGN BASED UPON THE FOLLOWING SOIL PARAMETERS:

ALLOW SOIL BEARING = 2000 PSF
SOIL WEIGHT = 100 PCF
WATER AT ROCK NOT ENCOUNTERED
IN EXCAVATION



PLAN



6'-6" SQUARE

#5 @ 5" EA WAY TOP & BOTTOM



Handwritten signature and date: 12-10-20

Sample
For Reference Only

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
 250 East Broad Street Suite 508 Columbus, Ohio 43260
 (614)-221-0879 FAX (614)-221-0188

Page 1 Of 1
 By JAL Date 12-7-2000
 Job No. 100-178
 Revision No. _____ Date _____

ANTENNA LIST

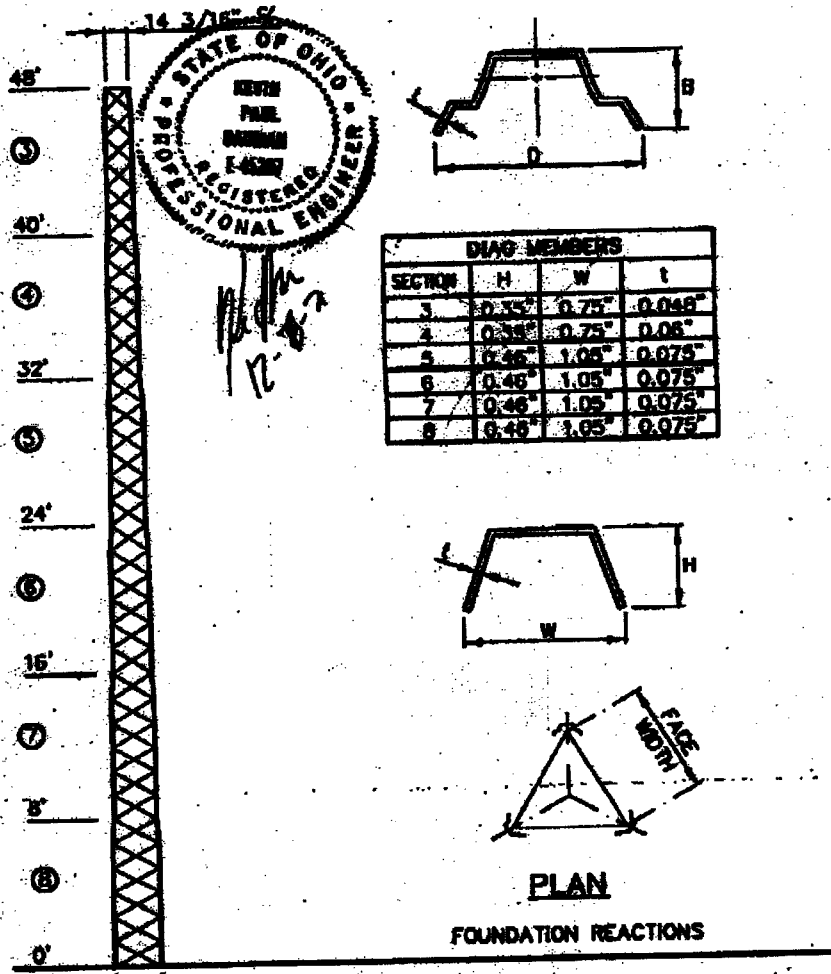
NO.	EL.	ANTENNA	COAX
1	TOP	AIR-ANT 1949	RG-8

LEG MEMBERS

SECTION	B	D	t
3	1.2151"	2.3544"	0.080"
4	1.2596"	2.5441"	0.085"
5	1.3058"	2.7881"	0.1008"
6	1.3428"	2.9881"	0.1008"
7	1.3848"	3.2382"	0.1158"
8	1.5780"	3.4916"	0.1158"

HOBX-48

ASTM	
FACE WIDTH	28 7/16" 25 1/2" 22 13/16" 20 1/8" 17 7/16" 15 1/16"
LEGS	SEE CHART -
DIAGS	SEE CHART -
DIAG RIVETS	1/4"
SPICE BOLTS	(3)-9/16"
ANCHOR BOLTS	- DIRECT EMBEDMENT -
SAE GRADES	(2)-3/8" SAE GRADES
NA	NA



DIAG MEMBERS

SECTION	H	W	t
3	0.75"	0.75"	0.048"
4	0.75"	0.75"	0.06"
5	0.46"	1.05"	0.075"
6	0.46"	1.05"	0.075"
7	0.46"	1.05"	0.075"
8	0.46"	1.05"	0.075"

PLAN

FOUNDATION REACTIONS

UPLIFT: 16.6 KIPS MAX ONE LEG
 COMP: 17.4 KIPS MAX ONE LEG
 HORIZ: 0.84 KIPS TOTAL
 MOMENT: 34.5 FT-KIPS TOTAL

MAT FOOTING FOR TOWERS PROGRAM BY PAUL J. FORD and COMPANY

JOB NO.

DATE 12-08-2000

PAGE 1

INPUT: MAT FOOTING FOR TOWERS

TOWER LOADS: TOWER WEIGHT = 17.40 kips (including ice, antenna etc)
 OVERTURNING MOMENT = 34.50 ft-k at base of tower
 TOTAL HORIZONTAL = 0.84 kips total for entire tower

DESIGN SAFETY FACTOR AGAINST OVERTURNING = 1.50

CONCRETE: CONCRETE STRENGTH = 3000 psi at 28 days
 REINFORCING STEEL STRENGTH = 60000 psi (ASTM A615)

SOIL: WATER TABLE BELOW BOTTOM OF FOOTING
 SOIL WT = 100 pcf (dry)
 ALLOWABLE SOIL BEARING = 2000 psf

FOOTING SIZE: WIDTH = 6.5 ft LENGTH = 6.5 ft
 THICKNESS = 4.00 ft DEPTH = 3.50 ft below grade
 CONCRETE WEIGHT = 150 pcf

OUTPUT: MAT FOOTING FOR TOWERS

VOLUME OF CONCRETE = 169 ft³ (6.26 cubic yards)

WEIGHT OF TOWER ==> 17.40 kips
 WEIGHT OF CONCRETE => 25.35 kips (169 x 0.150)

TOTAL WEIGHT = 42.75 kips

OVERTURNING MOMENT = 34.50 ft-k + (0.84 k x 4.00 ft) = 38 ft-kips
 RESISTING MOMENT = 42.75 k x 6.50 ft/2 = 139 ft-kips

SAFETY FACTOR = M_{resist} / O.T.M. = 139 / 38 = 3.67 > 1.50 O.K. ✓

GROSS SOIL BEARING = 2182 psf (includes soil overburden)
 NET SOIL BEARING = 1832 psf < 2000 psf O.K.

BENDING MOMENT IN FOOTING = 54 ft-kips
 FOOTING REINFORCING = 0.05 in²/ft = 2 no. 4 bars @ 44.54 in. o.c.
 (.18 % = 1.04 in²/ft)

BENDING SHEAR IN THE FOOTING = 30.11 kips
 ALLOWABLE BENDING SHEAR = 247.56 kips O.K.

45 FT SELF SUPPORT TOWER

DESIGN STANDARD - ANSI/EIA/TIA-222 Rev F 1996 (ELECTRONICS INDUSTRY ASSOC)

*** TRIANGULAR TOWER ***

ELEVATION OF TOWER BASE ABOVE GRADE = 0 FT.
 TOWER HEIGHT = 45.00 FT NO. OF LEGS = 3
 WIND VELOCITY = 80.00 MPH IMPORTANCE FACTOR = 1
 RADIAL ICE = 0.00 IN TOP GIRT WIDTH = 1.957292 FT

WIND EXPOSURE C. (per ASCE-7)

WIND LOAD ON EACH TOWER SECTION (tower structure only)

SEC. No.	ELEV. (ft) FROM	ELEV. TO	BASE WIDTH (ft)	Kz	Qz	WIND PRESSURE (psf)	e	Cf	Rr	As (ft ²)	TOTAL AREA (ft ²)	WIND FORCE (lb)
1	48	47	1.3	1.11	18.2	22.14	0.41	2.04	0.66	0.64	1.3	29
2	47	45	1.3	1.10	18.0	21.56	0.38	2.10	0.64	0.65	1.4	30
3	45	44	1.3	1.09	17.9	21.77	0.38	2.10	0.64	0.65	1.4	30
4	44	43	1.3	1.08	17.7	21.58	0.38	2.10	0.64	0.65	1.4	29
5	43	42	1.3	1.07	17.6	21.39	0.38	2.10	0.64	0.65	1.4	29
6	41	40	1.3	1.06	17.4	21.20	0.38	2.10	0.64	0.65	1.4	29
7	40	39	1.5	1.05	17.2	20.99	0.37	2.12	0.64	0.66	1.4	30
8	39	37	1.5	1.04	17.1	20.79	0.35	2.17	0.63	0.69	1.5	31
9	37	36	1.5	1.03	16.9	20.58	0.35	2.17	0.63	0.69	1.5	31
10	36	35	1.5	1.02	16.7	20.36	0.35	2.17	0.63	0.69	1.5	31
11	35	33	1.5	1.01	16.5	20.14	0.35	2.17	0.63	0.69	1.5	30
12	33	32	1.5	1.00	16.4	19.97	0.35	2.17	0.63	0.69	1.5	30
13	32	31	1.7	1.00	16.4	19.97	0.39	2.08	0.65	0.83	1.7	35
14	31	29	1.7	1.00	16.4	19.97	0.37	2.12	0.64	0.85	1.8	36
15	29	28	1.7	1.00	16.4	19.97	0.37	2.12	0.64	0.85	1.8	36
16	28	27	1.7	1.00	16.4	19.97	0.37	2.12	0.64	0.85	1.8	36
17	27	25	1.7	1.00	16.4	19.97	0.37	2.12	0.64	0.85	1.8	36
18	25	24	1.7	1.00	16.4	19.97	0.37	2.12	0.64	0.85	1.8	36
19	24	23	1.9	1.00	16.4	19.97	0.37	2.13	0.64	0.89	1.9	38
20	23	21	1.9	1.00	16.4	19.97	0.35	2.16	0.63	0.91	2.0	39
21	21	20	1.9	1.00	16.4	19.97	0.35	2.16	0.63	0.91	2.0	39
22	20	19	1.9	1.00	16.4	19.97	0.35	2.16	0.63	0.91	2.0	39
23	19	17	1.9	1.00	16.4	19.97	0.35	2.16	0.63	0.91	2.0	39
24	17	16	1.9	1.00	16.4	19.97	0.35	2.16	0.63	0.91	2.0	39
25	16	15	2.1	1.00	16.4	19.97	0.35	2.16	0.63	0.95	2.1	42
26	15	13	2.1	1.00	16.4	19.97	0.34	2.19	0.63	0.97	2.1	42
27	13	12	2.1	1.00	16.4	19.97	0.34	2.19	0.63	0.97	2.1	42
28	12	11	2.1	1.00	16.4	19.97	0.34	2.19	0.63	0.97	2.1	42
29	11	9	2.1	1.00	16.4	19.97	0.34	2.19	0.63	0.97	2.1	42
30	9	8	2.1	1.00	16.4	19.97	0.34	2.19	0.63	0.97	2.1	42
31	8	7	2.3	1.00	16.4	19.97	0.35	2.17	0.63	1.04	2.3	45
32	7	5	2.3	1.00	16.4	19.97	0.34	2.20	0.63	1.06	2.3	47
33	5	4	2.3	1.00	16.4	19.97	0.34	2.20	0.63	1.06	2.3	47
34	4	3	2.3	1.00	16.4	19.97	0.34	2.20	0.63	1.06	2.3	47
35	3	1	2.3	1.00	16.4	19.97	0.34	2.20	0.63	1.06	2.3	47
36	1	0	2.3	1.00	16.4	19.97	0.34	2.20	0.63	1.06	2.3	47

GUST FACTOR + Gk = 1.219

WIND FORCE ON TOWER SECTION = 0.00256 * Kz * Gk * (Z + V)^2 * Cf * As

Importance Factor

48 FT SELF SUPPORT TOWER

-- CONCENTRATED AND UNIFORM TOWER LOADS -- 80 mph wind

ANTENNA LOADS (DISCRETE APPURTENANCE)						UNIFORM LOADS (LINEAR APPURT)			
ELEV (FT) (Z)	WIND PRESSURE (PSF)	PROJECTED AREA (FT ²) (C _d A _a)	WIND FORCE (LB)	WT. (LB)	TORQUE (FT-LB)	PROJECTED AREA (IN ² /FT) (A _a)	WT. (LB/FT)	ELEVATION (FT.) TOP BOT	
49.00	22.36	2.00	45	10	+0.0	0.630	0.24	48.0	0

WIND FORCE ON ANTENNA & COAX = $0.00256 \cdot K_t \cdot G_h \cdot (1 \cdot V)^2 \cdot C_d \cdot A_a$
 Equivalent Area for Microwave Antenna = $(C_d / 0.00256) \cdot Area$

46 FT SELF SUPPORT TOWER

-- OUTPUT --

TOTAL TOWER LOADS AT BASE OF EACH SECTION 80 mph wind no ice

SEC No.	ELEV (ft)	BASE SPREAD (ft)	TOTAL MOMENT (ft-k)	SECTION SHEAR (lbs)	TOTAL SHEAR (kips)	TOTAL TORQUE (ft-k)	SECTION STL WT (lbs)	TOTAL WEIGHT (kips)
1	46.67	1.10	0.12	75	0.00	0.00	5	0.02
2	45.33	1.10	0.25	32	0.11	0.00	5	0.02
3	44.00	1.10	0.41	31	0.14	0.00	5	0.03
4	42.67	1.10	0.62	31	0.17	0.00	5	0.03
5	41.33	1.10	0.86	31	0.20	0.00	5	0.04
6	40.00	1.10	1.15	31	0.23	0.00	5	0.04
7	38.67	1.29	1.48	32	0.26	0.00	7	0.05
8	37.33	1.29	1.85	33	0.30	0.00	7	0.06
9	36.00	1.29	2.27	33	0.33	0.00	7	0.07
10	34.67	1.29	2.73	32	0.36	0.00	7	0.07
11	33.33	1.29	3.23	32	0.39	0.00	7	0.08
12	32.00	1.29	3.78	32	0.42	0.00	7	0.09
13	30.67	1.47	4.37	36	0.46	0.00	11	0.10
14	29.33	1.47	5.01	36	0.50	0.00	11	0.11
15	28.00	1.47	5.70	38	0.54	0.00	11	0.12
16	26.67	1.47	6.44	38	0.57	0.00	11	0.13
17	25.33	1.47	7.23	38	0.61	0.00	11	0.14
18	24.00	1.47	8.07	38	0.65	0.00	11	0.16
19	22.67	1.66	8.96	40	0.69	0.00	11	0.17
20	21.33	1.66	9.90	41	0.73	0.00	12	0.18
21	20.00	1.66	10.90	42	0.77	0.00	12	0.19
22	18.67	1.66	11.96	41	0.81	0.00	12	0.20
23	17.33	1.66	13.07	42	0.85	0.00	12	0.22
24	16.00	1.66	14.23	41	0.89	0.00	12	0.23
25	14.67	1.84	15.45	43	0.94	0.00	13	0.24
26	13.33	1.84	16.72	44	0.98	0.00	13	0.26
27	12.00	1.84	18.06	44	1.02	0.00	13	0.27
28	10.67	1.84	19.45	44	1.07	0.00	13	0.28
29	9.33	1.84	20.91	44	1.11	0.00	13	0.30
30	8.00	1.84	22.42	44	1.16	0.00	13	0.31
31	6.67	2.03	23.99	47	1.20	0.00	15	0.33
32	5.33	2.03	25.63	48	1.25	0.00	15	0.34
33	4.00	2.03	27.33	48	1.30	0.00	15	0.36
34	2.67	2.03	29.09	48	1.35	0.00	15	0.37
35	1.33	2.03	30.92	48	1.40	0.00	15	0.39
36	0.00	2.03	32.81	48	1.44	0.00	15	0.40

ESTIMATED TOTAL WEIGHT OF TOWER STEEL = 0.39 KIPS

46 FT SELF SUPPORT TOWER

-- OUTPUT -- 60 mph wind

* MEANS ALLOWABLE STRESS INCREASED BY 1/3

SEC NO.	TOWER LEG CAPACITY (allowable load)			TOWER LEG LOAD		LEG BOLTS	
	LEG MEMBER SIZE	L/r (K-1)	*ALLOW. (kips)	COMP (kips)	TENSION (kips)	*ALLOW (kips)	BOLTS (size)
1	.060x1.2151x2.3544	41	6.96	0.12	0.11	0.00	NONE
2	.060x1.2181x2.3544	41	6.96	0.23	0.22	0.00	NONE
3	.060x1.2151x2.3544	41	6.96	0.38	0.36	0.00	NONE
4	.060x1.2151x2.3544	41	6.96	0.57	0.55	0.00	NONE
5	.060x1.2151x2.3544	41	6.96	0.80	0.77	0.00	NONE
6	.060x1.2151x2.3544	41	6.96	1.06	1.03	13.92	2-9/16
7	.085x1.2596x2.5441	39	10.37	1.17	1.13	0.00	NONE
8	.085x1.2596x2.5441	39	10.37	1.46	1.42	0.00	NONE
9	.085x1.2596x2.5441	39	10.37	1.79	1.74	0.00	NONE
10	.085x1.2596x2.5441	39	10.37	2.15	2.10	0.00	NONE
11	.085x1.2596x2.5441	39	10.37	2.54	2.48	0.00	NONE
12	.085x1.2596x2.5441	39	10.37	2.96	2.91	13.92	2-9/16
13	.1008x1.3058x2.7661	38	13.15	3.00	2.93	0.00	NONE
14	.1008x1.3058x2.7661	38	13.15	3.44	3.36	0.00	NONE
15	.1008x1.3058x2.7661	38	13.15	3.91	3.83	0.00	NONE
16	.1008x1.3058x2.7661	38	13.15	4.42	4.33	0.00	NONE
17	.1008x1.3058x2.7661	38	13.15	4.98	4.86	0.00	NONE
18	.1008x1.3058x2.7661	38	13.15	5.53	5.43	13.92	2-9/16
19	.1008x1.3428x2.9881	37	14.03	5.46	5.35	0.00	NONE
20	.1008x1.3428x2.9881	37	14.03	6.03	5.91	0.00	NONE
21	.1008x1.3428x2.9881	37	14.03	6.64	6.51	0.00	NONE
22	.1008x1.3428x2.9881	37	14.03	7.29	7.14	0.00	NONE
23	.1008x1.3428x2.9881	37	14.03	7.95	7.81	0.00	NONE
24	.1008x1.3428x2.9881	37	14.03	8.66	8.51	13.92	2-9/16
25	.1158x1.3946x3.2399	35	17.26	8.46	8.30	0.00	NONE
26	.1158x1.3946x3.2399	35	17.26	9.16	8.99	0.00	NONE
27	.1158x1.3946x3.2399	35	17.26	9.89	9.71	0.00	NONE
28	.1158x1.3946x3.2399	35	17.26	10.65	10.46	0.00	NONE
29	.1158x1.3946x3.2399	35	17.26	11.44	11.24	0.00	NONE
30	.1158x1.3946x3.2399	35	17.26	12.26	12.06	20.87	3-9/16
31	.1158x1.5780x3.4916	32	19.68	11.93	11.71	0.00	NONE
32	.1158x1.5780x3.4916	32	19.68	12.74	12.52	0.00	NONE
33	.1158x1.5780x3.4916	32	19.68	13.59	13.35	0.00	NONE
34	.1158x1.5780x3.4916	32	19.68	14.46	14.21	0.00	NONE
35	.1158x1.5780x3.4916	32	19.68	15.37	15.11	0.00	NONE
36	.1158x1.5780x3.4916	32	19.68	16.30	16.04	42.98	3-9/16

-- FOUNDATION REACTIONS --

UPLIFT- 16.04 KIPS COMPRESSION- 16.30 KIPS HORIZONTAL LOAD - 0.83 KIPS

46 FT SELF SUPPORT TOWER

-- OUTPUT -- 80 mph wind

* MEANS ALLOWABLE STRESS INCREASED BY 1/3

DIAG LOADS (KIPS) (Fy = 36.0 KSI)

SEC No.	TOWER DIAG CAPACITY (allowable load)			TOWER DIAG LOAD			DIAG BOLTS	
	DIAGONAL SIZE	L/r (K=1)	*ALLOW (kips)	COMP (kips)	TENSION (kips)	*ALLOW (kips)	BOLTS (size)	
1	PL 0.048X0.35X0.75	93.89	0.99	0.04	0.04	0.46	1-5/32	
2	PL 0.048X0.35X0.75	90.65	1.02	0.05	0.05	0.46	1-5/32	
3	PL 0.048X0.35X0.75	90.65	1.02	0.07	0.07	0.46	1-5/32	
4	PL 0.048X0.35X0.75	90.65	1.02	0.08	0.08	0.46	1-5/32	
5	PL 0.048X0.35X0.75	90.65	1.02	0.10	0.10	0.46	1-5/32	
6	PL 0.048X0.35X0.75	90.65	1.02	0.11	0.11	0.46	1-5/32	
7	PL 0.060x0.35x0.75	104.91	1.11	0.06	0.06	0.67	1-3/16	
8	PL 0.060x0.35x0.75	102.32	1.14	0.13	0.13	0.67	1-3/16	
9	PL 0.060x0.35x0.75	102.32	1.14	0.15	0.15	0.67	1-3/16	
10	PL 0.060x0.35x0.75	102.32	1.14	0.16	0.16	0.67	1-3/16	
11	PL 0.060x0.35x0.75	102.32	1.14	0.18	0.18	0.67	1-3/16	
12	PL 0.060x0.35x0.75	102.32	1.14	0.19	0.19	0.67	1-3/16	
13	PL 0.075x0.46x1.05	85.09	2.22	0.02	0.02	1.19	1-1/4	
14	PL 0.075x0.46x1.05	83.57	2.24	0.21	0.21	1.19	1-1/4	
15	PL 0.075x0.46x1.05	83.57	2.24	0.23	0.23	1.19	1-1/4	
16	PL 0.075x0.46x1.05	83.57	2.24	0.24	0.24	1.19	1-1/4	
17	PL 0.075x0.46x1.05	83.57	2.24	0.26	0.26	1.19	1-1/4	
18	PL 0.075x0.46x1.05	83.57	2.24	0.27	0.27	1.19	1-1/4	
19	PL 0.075x0.46x1.05	92.09	2.09	-0.03	-0.03	1.19	1-1/4	
20	PL 0.075x0.46x1.05	90.89	2.11	0.30	0.30	1.19	1-1/4	
21	PL 0.075x0.46x1.05	90.89	2.11	0.31	0.31	1.19	1-1/4	
22	PL 0.075x0.46x1.05	90.89	2.11	0.33	0.33	1.19	1-1/4	
23	PL 0.075x0.46x1.05	90.89	2.11	0.38	0.38	1.19	1-1/4	
24	PL 0.075x0.46x1.05	90.89	2.11	0.36	0.36	1.19	1-1/4	
25	PL 0.075x0.46x1.05	99.23	1.96	-0.10	-0.10	1.19	1-1/4	
26	PL 0.075x0.46x1.05	98.28	1.98	0.39	0.39	1.19	1-1/4	
27	PL 0.075x0.46x1.05	98.28	1.98	0.40	0.40	1.19	1-1/4	
28	PL 0.075x0.46x1.05	98.28	1.98	0.42	0.42	1.19	1-1/4	
29	PL 0.075x0.46x1.05	98.28	1.98	0.44	0.44	1.19	1-1/4	
30	PL 0.075x0.46x1.05	98.28	1.98	0.45	0.45	1.19	1-1/4	
31	PL 0.075x0.46x1.05	106.12	1.87	-0.19	-0.19	1.19	1-1/4	
32	PL 0.075x0.46x1.05	105.40	1.84	0.48	0.48	1.19	1-1/4	
33	PL 0.075x0.46x1.05	105.40	1.84	0.50	0.50	1.19	1-1/4	
34	PL 0.075x0.46x1.05	105.40	1.84	0.52	0.52	1.19	1-1/4	
35	PL 0.075x0.46x1.05	105.40	1.84	0.54	0.54	1.19	1-1/4	
36	PL 0.075x0.46x1.05	105.40	1.84	0.55	0.55	1.19	1-1/4	

48 FT SELF SUPPORT TOWER

-- OUTPUT -- 88 mph wind

* MEANS ALLOWABLE STRESS INCREASED BY 1/3

GIRT LOADS (KIPS) (Fy = 36.0 KSI)

Loads Shown for Zero Force Girts represent 1-1/2% of the Leg Load

SEC No.	TOWER GIRT CAPACITY (allowable load)			TOWER GIRT LOAD			GIRT BOLTS		
	GIRT	SIZE	L/r (K-1)	*ALLOW. (kips)	COMP (kips)	TENSION (kips)	*ALLOW (kips)	BOLTS (size)	
1	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
2	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
3	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
4	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
5	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
6	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
7	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
8	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
9	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
10	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
11	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
12	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
13	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
14	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
15	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
16	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
17	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
18	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
19	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
20	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
21	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
22	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
23	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
24	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
25	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
26	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
27	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
28	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
29	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
30	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
31	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
32	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
33	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
34	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
35	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE
36	---	NONE	---	0.00	0.00	0.00	0.00	0.00	NONE

60 FT SELF SUPPORT TOWER

-- OUTPUT -- 60 mph wind

-- Deflection, Sway & twist --

SECTION NO.	ELEV (ft)	AVG MOMENT OF INERTIA (ft ⁴ -in ⁴)	MOMENT AREA (ft ² -in ²)	DEFLECTION (inches)	SWAY (deg)	TWIST (deg)
1	48.00	0.15	0.1	6.886	1.021	0.000
2	46.67	0.18	0.2	6.400	1.020	0.000
3	45.33	0.18	0.4	5.115	1.018	0.000
4	44.00	0.18	0.7	5.831	1.013	0.000
5	42.67	0.18	1.0	5.548	1.005	0.000
6	41.33	0.18	1.3	5.268	0.995	0.000
7	40.00	0.31	1.8	4.990	0.980	0.000
8	38.67	0.36	2.2	4.716	0.969	0.000
9	37.33	0.36	2.7	4.446	0.957	0.000
10	36.00	0.36	3.3	4.178	0.942	0.000
11	34.67	0.36	4.0	3.915	0.924	0.000
12	33.33	0.36	4.7	3.657	0.902	0.000
13	32.00	0.53	5.4	3.405	0.877	0.000
14	30.67	0.60	6.3	3.161	0.856	0.000
15	29.33	0.60	7.1	2.921	0.836	0.000
16	28.00	0.60	8.1	2.688	0.812	0.000
17	26.67	0.60	9.1	2.461	0.785	0.000
18	25.33	0.60	10.2	2.242	0.755	0.000
19	24.00	0.72	11.4	2.031	0.722	0.000
20	22.67	0.81	12.6	1.829	0.691	0.000
21	21.33	0.81	13.9	1.636	0.660	0.000
22	20.00	0.81	15.2	1.452	0.626	0.000
23	18.67	0.81	16.7	1.277	0.589	0.000
24	17.33	0.81	18.2	1.112	0.548	0.000
25	16.00	1.10	19.8	0.959	0.504	0.000
26	14.67	1.22	21.4	0.818	0.460	0.000
27	13.33	1.22	23.2	0.688	0.413	0.000
28	12.00	1.22	25.0	0.567	0.396	0.000
29	10.67	1.22	26.9	0.456	0.355	0.000
30	9.33	1.22	28.9	0.357	0.312	0.000
31	8.00	1.51	30.9	0.270	0.265	0.000
32	6.67	1.66	33.1	0.196	0.225	0.000
33	5.33	1.66	35.3	0.133	0.185	0.000
34	4.00	1.66	37.6	0.082	0.143	0.000
35	2.67	1.66	40.0	0.042	0.098	0.000
36	1.33	1.66	42.5	0.014	0.051	0.000

48 FT SELF SUPPORT TOWER

-- OUTPUT -- 50 mph wind

-- Deflection, Sway & twist based upon 50 MPH Wind--

SECTION NO.	ELEV (ft)	AVG MOMENT OF INERTIA (ft ² -in ²)	MOMENT AREA (ft ² -in)	DEFLECTION (inches)	SWAY (deg)	TWIST (deg)
1	48.00	0.15	0.0	2.612	0.399	0.000
2	46.67	0.18	0.1	2.500	0.399	0.000
3	45.33	0.18	0.2	2.389	0.398	0.000
4	44.00	0.18	0.3	2.278	0.396	0.000
5	42.67	0.18	0.4	2.167	0.393	0.000
6	41.33	0.18	0.5	2.056	0.389	0.000
7	40.00	0.31	0.7	1.944	0.383	0.000
8	38.67	0.36	0.9	1.842	0.376	0.000
9	37.33	0.36	1.1	1.737	0.374	0.000
10	36.00	0.36	1.3	1.632	0.368	0.000
11	34.67	0.36	1.6	1.529	0.361	0.000
12	33.33	0.36	1.8	1.428	0.352	0.000
13	32.00	0.53	2.1	1.330	0.343	0.000
14	30.67	0.60	2.4	1.235	0.335	0.000
15	29.33	0.60	2.8	1.141	0.327	0.000
16	28.00	0.60	3.2	1.050	0.317	0.000
17	26.67	0.60	3.6	0.961	0.307	0.000
18	25.33	0.60	4.0	0.876	0.295	0.000
19	24.00	0.72	4.4	0.793	0.282	0.000
20	22.67	0.81	4.9	0.714	0.270	0.000
21	21.33	0.81	5.4	0.639	0.258	0.000
22	20.00	0.81	6.0	0.567	0.245	0.000
23	18.67	0.81	6.5	0.499	0.230	0.000
24	17.33	0.81	7.1	0.434	0.214	0.000
25	16.00	1.10	7.7	0.375	0.197	0.000
26	14.67	1.22	8.4	0.320	0.183	0.000
27	13.33	1.22	9.1	0.269	0.169	0.000
28	12.00	1.22	9.8	0.221	0.155	0.000
29	10.67	1.22	10.5	0.178	0.139	0.000
30	9.33	1.22	11.3	0.139	0.122	0.000
31	8.00	1.51	12.1	0.105	0.104	0.000
32	6.67	1.66	12.9	0.077	0.088	0.000
33	5.33	1.66	13.8	0.052	0.072	0.000
34	4.00	1.66	14.7	0.032	0.056	0.000
35	2.67	1.66	15.6	0.016	0.038	0.000
36	1.33	1.66	16.6	0.006	0.020	0.000

48 FT SELF SUPPORT TOWER

DESIGN STANDARD - ANSI/SIA/TIA-222 Rev F 1996 (ELECTRONICS INDUSTRY ASSOC)

*** TRIANGULAR TOWER ***

ELEVATION OF TOWER BASE ABOVE GRADE - 0 FT.
 TOWER HEIGHT = 48.00 FT NO. OF LEGS = 3
 WIND VELOCITY = 69.28 MPH IMPORTANCE FACTOR = 1
 RADIAL ICE = 0.50 IN TOP GIRT WIDTH = 1.057292 FT

WIND EXPOSURE C (per ASCE-7)

WIND LOAD ON EACH TOWER SECTION (tower structure only)

SEC. No.	ELEV FROM TO (ft)	BASE WIDTH (ft)	Kz	Qz	WIND PRESSURE (psf)	e	CF	Rr	Ae (ft ²)	TOTAL AREA (ft ²)	WIND FORCE (lb)	
1	48	47	1.3	1.11	13.6	16.60	0.74	1.78	0.85	1.08	1.9	32
2	47	45	1.3	1.10	13.5	16.47	0.69	1.78	0.82	1.08	1.9	31
3	45	44	1.3	1.09	13.4	16.33	0.69	1.78	0.82	1.08	1.9	31
4	44	43	1.3	1.08	13.3	16.19	0.69	1.78	0.82	1.08	1.9	31
5	43	41	1.3	1.07	13.2	16.04	0.69	1.78	0.82	1.08	1.9	31
6	41	40	1.3	1.06	13.0	15.90	0.69	1.78	0.82	1.08	1.9	30
7	40	39	1.5	1.05	12.9	15.75	0.67	1.78	0.80	1.11	2.0	31
8	39	37	1.5	1.04	12.8	15.59	0.63	1.79	0.77	1.12	2.0	31
9	37	36	1.5	1.03	12.7	15.43	0.63	1.79	0.77	1.12	2.0	31
10	36	35	1.5	1.02	12.5	15.27	0.63	1.79	0.77	1.12	2.0	31
11	35	33	1.5	1.01	12.4	15.10	0.63	1.79	0.77	1.12	2.0	30
12	33	32	1.5	1.00	12.3	14.96	0.63	1.79	0.77	1.12	2.0	30
13	32	31	1.7	1.00	12.3	14.96	0.66	1.78	0.78	1.29	2.3	34
14	31	29	1.7	1.00	12.3	14.96	0.63	1.79	0.77	1.30	2.3	35
15	29	28	1.7	1.00	12.3	14.96	0.63	1.79	0.77	1.30	2.3	35
16	28	27	1.7	1.00	12.3	14.96	0.63	1.79	0.77	1.30	2.3	35
17	27	25	1.7	1.00	12.3	14.96	0.63	1.79	0.77	1.30	2.3	35
18	25	24	1.7	1.00	12.3	14.96	0.63	1.79	0.77	1.30	2.3	35
19	24	23	1.9	1.00	12.3	14.96	0.69	1.79	0.76	1.35	2.4	36
20	23	21	1.9	1.00	12.3	14.96	0.59	1.81	0.75	1.36	2.5	37
21	21	20	1.9	1.00	12.3	14.96	0.59	1.81	0.75	1.36	2.5	37
22	20	19	1.9	1.00	12.3	14.96	0.59	1.81	0.75	1.36	2.5	37
23	19	17	1.9	1.00	12.3	14.96	0.59	1.81	0.75	1.36	2.5	37
24	17	16	1.9	1.00	12.3	14.96	0.59	1.81	0.75	1.36	2.5	37
25	16	15	2.1	1.00	12.3	14.96	0.59	1.81	0.75	1.42	2.6	39
26	15	13	2.1	1.00	12.3	14.96	0.57	1.83	0.73	1.44	2.6	39
27	13	12	2.1	1.00	12.3	14.96	0.57	1.83	0.73	1.44	2.6	39
28	12	11	2.1	1.00	12.3	14.96	0.57	1.83	0.73	1.44	2.6	39
29	11	9	2.1	1.00	12.3	14.96	0.57	1.83	0.73	1.44	2.6	39
30	9	8	2.1	1.00	12.3	14.96	0.57	1.83	0.73	1.44	2.6	39
31	8	7	2.3	1.00	12.3	14.96	0.57	1.83	0.74	1.53	2.6	42
32	7	5	2.3	1.00	12.3	14.96	0.55	1.84	0.73	1.55	2.6	43
33	5	4	2.3	1.00	12.3	14.96	0.55	1.84	0.73	1.55	2.6	43
34	4	3	2.3	1.00	12.3	14.96	0.55	1.84	0.73	1.55	2.6	43
35	3	1	2.3	1.00	12.3	14.96	0.55	1.84	0.73	1.55	2.6	43
36	1	0	2.3	1.00	12.3	14.96	0.55	1.84	0.73	1.55	2.6	43

GUST FACTOR = Gf = 1.219

WIND FORCE ON TOWER SECTION = 0.00256 * Kz * Gf * (I + V)² * Cf * Ae

48 FT SELF SUPPORT TOWER

-- LOADS -- 69.28 mph wind with 0.50 inch radial ice

ANTENNA LOADS (DISCRETE APERTURANCE)					UNIFORM LOADS (LINEAR APERTURE)				
ELEV (FT) (Z)	WIND PRESSURE (PSF)	PROJECTED AREA (FT ²) (Ca Aa)	WIND FORCE (LB)	WT. TORQUE (LB) (FT-K)	PROJECTED AREA (IN ² /FT) (Aa)	WT. (LB/FT)	ELEVATION (FT.) TOP BOT		
48.00	16.67	3.20	53	55 +0.0	1.630	0.93	48.0	0	

WIND FORCE ON ANTENNA & COAX = $0.00256 \cdot K_z \cdot G_h \cdot (I \cdot V)^2 \cdot C_d \cdot A_a$
Equivalent Area for Microwave Antenna = $(C_d/0.00256) \cdot Area$

46 FT SELF SUPPORT TOWER

-- OUTPUT --

TOTAL TOWER LOADS AT BASE OF EACH SECTION
62.28 mph wind with 0.50 inch radial ice accumulation

SEC No.	ELEV (ft)	BASE SPREAD (ft)	TOTAL MOMENT (ft-k)	SECTION SHEAR (lbs)	TOTAL SHEAR (kips)	TOTAL TORQUE (ft-k)	SECTION STL WT (lbs)	TOTAL WEIGHT (kips)
1	46.67	1.10	0.09	69	0.09	0.00	5	0.08
2	45.33	1.10	0.24	35	0.12	0.00	5	0.10
3	44.00	1.10	0.43	35	0.16	0.00	5	0.13
4	42.67	1.10	0.66	34	0.19	0.00	5	0.15
5	41.33	1.10	0.94	34	0.23	0.00	5	0.18
6	40.00	1.10	1.27	34	0.26	0.00	5	0.20
7	38.67	1.29	1.64	35	0.30	0.00	7	0.23
8	37.33	1.29	2.05	35	0.33	0.00	7	0.25
9	36.00	1.29	2.52	34	0.36	0.00	7	0.29
10	34.67	1.29	3.03	34	0.40	0.00	7	0.31
11	33.33	1.29	3.58	34	0.43	0.00	7	0.34
12	32.00	1.29	4.18	33	0.47	0.00	7	0.37
13	30.67	1.47	4.83	37	0.50	0.00	11	0.41
14	29.33	1.47	5.52	38	0.54	0.00	11	0.44
15	28.00	1.47	6.27	38	0.58	0.00	11	0.48
16	26.67	1.47	7.07	38	0.62	0.00	11	0.51
17	25.33	1.47	7.91	38	0.66	0.00	11	0.55
18	24.00	1.47	8.81	38	0.69	0.00	11	0.59
19	22.67	1.66	9.76	39	0.73	0.00	11	0.62
20	21.33	1.66	10.77	40	0.77	0.00	12	0.66
21	20.00	1.66	11.82	40	0.81	0.00	12	0.70
22	18.67	1.66	12.94	40	0.85	0.00	12	0.74
23	17.33	1.66	14.10	40	0.89	0.00	12	0.78
24	16.00	1.66	15.32	40	0.93	0.00	12	0.81
25	14.67	1.84	16.59	42	0.98	0.00	13	0.85
26	13.33	1.84	17.92	43	1.02	0.00	13	0.90
27	12.00	1.84	19.31	43	1.06	0.00	13	0.94
28	10.67	1.84	20.75	43	1.10	0.00	13	0.98
29	9.33	1.84	22.25	43	1.15	0.00	13	1.02
30	8.00	1.84	23.81	43	1.19	0.00	13	1.06
31	6.67	2.03	25.42	45	1.23	0.00	15	1.11
32	5.33	2.03	27.10	46	1.28	0.00	15	1.15
33	4.00	2.03	28.83	46	1.33	0.00	15	1.20
34	2.67	2.03	30.63	46	1.37	0.00	15	1.24
35	1.33	2.03	32.49	46	1.42	0.00	15	1.29
36	0.00	2.03	34.41	46	1.46	0.00	15	1.34

ESTIMATED TOTAL WEIGHT OF TOWER STEEL = 0.38 KIPS

40 FT SELF SUPPORT TOWER

-- OUTPUT -- 69.28 mph wind with 0.50 inch ice

* MEANS ALLOWABLE STRESS INCREASED BY 1/3

SEC NO.	TOWER LEG CAPACITY (allowable load)			TOWER LEG LOAD			LEG BOLTS	
	LEG MEMBER SIZE	L/r (K=1)	*ALLOW (kips)	COMP (kips)	TENSION (kips)	*ALLOW (kips)	BOLTS (size)	
1	.060x1.2151x2.3544	41	6.96	0.11	0.06	0.00	NONE	
2	.060x1.2151x2.3544	41	6.96	0.25	0.18	0.00	NONE	
3	.060x1.2151x2.3544	41	6.96	0.43	0.34	0.00	NONE	
4	.060x1.2151x2.3544	41	6.96	0.65	0.55	0.00	NONE	
5	.060x1.2151x2.3544	41	6.96	0.91	0.79	0.00	NONE	
6	.060x1.2151x2.3544	41	6.96	1.22	1.08	13.92	2-9/16	
7	.085x1.2596x2.5441	39	10.37	1.35	1.20	0.00	NONE	
8	.085x1.2596x2.5441	39	10.37	1.68	1.51	0.00	NONE	
9	.085x1.2596x2.5441	39	10.37	2.05	1.86	0.00	NONE	
10	.085x1.2596x2.5441	39	10.37	2.46	2.25	0.00	NONE	
11	.085x1.2596x2.5441	39	10.37	2.90	2.67	0.00	NONE	
12	.085x1.2596x2.5441	39	10.37	3.37	3.12	13.92	2-9/16	
13	.100x1.3058x2.7661	38	13.15	3.41	3.14	0.00	NONE	
14	.100x1.3058x2.7661	38	13.15	3.90	3.60	0.00	NONE	
15	.100x1.3058x2.7661	38	13.15	4.42	4.10	0.00	NONE	
16	.100x1.3058x2.7661	38	13.15	4.97	4.63	0.00	NONE	
17	.100x1.3058x2.7661	38	13.15	5.56	5.19	0.00	NONE	
18	.100x1.3058x2.7661	38	13.15	6.18	5.79	13.92	2-9/16	
19	.100x1.3428x2.9881	37	14.03	6.10	5.68	0.00	NONE	
20	.100x1.3428x2.9881	37	14.03	6.71	6.27	0.00	NONE	
21	.100x1.3428x2.9881	37	14.03	7.36	6.90	0.00	NONE	
22	.100x1.3428x2.9881	37	14.03	8.05	7.56	0.00	NONE	
23	.100x1.3428x2.9881	37	14.03	8.76	8.25	0.00	NONE	
24	.100x1.3428x2.9881	37	14.03	9.51	8.97	13.92	2-9/16	
25	.115x1.3946x3.2399	35	17.26	9.28	8.71	0.00	NONE	
26	.115x1.3946x3.2399	35	17.26	10.02	9.42	0.00	NONE	
27	.115x1.3946x3.2399	35	17.26	10.78	10.16	0.00	NONE	
28	.115x1.3946x3.2399	35	17.26	11.58	10.93	0.00	NONE	
29	.115x1.3946x3.2399	35	17.26	12.41	11.73	0.00	NONE	
30	.115x1.3946x3.2399	35	17.26	13.27	12.56	20.87	3-9/16	
31	.115x1.5780x3.4916	32	19.68	12.80	12.16	0.00	NONE	
32	.115x1.5780x3.4916	32	19.68	13.74	12.97	0.00	NONE	
33	.115x1.5780x3.4916	32	19.68	14.61	13.81	0.00	NONE	
34	.115x1.5780x3.4916	32	19.68	15.51	14.68	0.00	NONE	
35	.115x1.5780x3.4916	32	19.68	16.44	15.58	0.00	NONE	
36	.115x1.5780x3.4916	32	19.68	17.40	16.51	42.96	3-9/16	

-- FOUNDATION REACTIONS --

UPLIFT= 16.51 KIPS COMPRESSION= 17.40 KIPS HORIZONTAL LOAD = 0.84 KIPS

48 FT SELF SUPPORT TOWER

-- OUTPUT -- 69.28 mph wind with 0.50 inch ice

* MEANS ALLOWABLE STRESS INCREASED BY 1/3

DIAG LOADS (KIPS) (Fy = 36.0 KSI)

SEC No.	TOWER DIAG CAPACITY (allowable load)			TOWER DIAG LOAD		DIAG BOLTS	
	DIAGONAL SIZE	L/r (K-1)	*ALLOW. (kips)	COMP (kips)	TENSION (kips)	*ALLOW (kips)	BOLTS (size)
1	PL 0.048X0.35X0.75	93.89	0.99	0.05	0.05	0.46	1-5/32
2	PL 0.048X0.35X0.75	90.65	1.02	0.06	0.06	0.46	1-5/32
3	PL 0.048X0.35X0.75	90.65	1.02	0.08	0.08	0.46	1-5/32
4	PL 0.048X0.35X0.75	90.65	1.02	0.09	0.09	0.46	1-5/32
5	PL 0.048X0.35X0.75	90.65	1.02	0.11	0.11	0.46	1-5/32
6	PL 0.048X0.35X0.75	90.65	1.02	0.13	0.13	0.46	1-5/32
7	PL 0.060x0.38x0.75	104.91	1.11	0.06	0.06	0.67	1-3/16
8	PL 0.060x0.38x0.75	102.32	1.14	0.15	0.15	0.67	1-3/16
9	PL 0.060x0.38x0.75	102.32	1.14	0.16	0.16	0.67	1-3/16
10	PL 0.060x0.38x0.75	102.32	1.14	0.18	0.18	0.67	1-3/16
11	PL 0.060x0.38x0.75	102.32	1.14	0.19	0.19	0.67	1-3/16
12	PL 0.060x0.38x0.75	102.32	1.14	0.21	0.21	0.67	1-3/16
13	PL 0.075x0.46x1.05	83.57	2.22	0.02	0.02	1.19	1-1/4
14	PL 0.075x0.46x1.05	83.57	2.24	0.23	0.23	1.19	1-1/4
15	PL 0.075x0.46x1.05	83.57	2.24	0.25	0.25	1.19	1-1/4
16	PL 0.075x0.46x1.05	83.57	2.24	0.26	0.26	1.19	1-1/4
17	PL 0.075x0.46x1.05	83.57	2.24	0.28	0.28	1.19	1-1/4
18	PL 0.075x0.46x1.05	83.57	2.24	0.29	0.29	1.19	1-1/4
19	PL 0.075x0.46x1.05	92.09	2.05	-0.04	-0.04	1.19	1-1/4
20	PL 0.075x0.46x1.05	90.89	2.11	0.31	0.31	1.19	1-1/4
21	PL 0.075x0.46x1.05	90.89	2.11	0.33	0.33	1.19	1-1/4
22	PL 0.075x0.46x1.05	90.89	2.11	0.35	0.35	1.19	1-1/4
23	PL 0.075x0.46x1.05	90.89	2.11	0.36	0.36	1.19	1-1/4
24	PL 0.075x0.46x1.05	90.89	2.11	0.38	0.38	1.19	1-1/4
25	PL 0.075x0.46x1.05	99.23	1.96	-0.12	-0.12	1.19	1-1/4
26	PL 0.075x0.46x1.05	98.28	1.98	0.40	0.40	1.19	1-1/4
27	PL 0.075x0.46x1.05	98.28	1.98	0.42	0.42	1.19	1-1/4
28	PL 0.075x0.46x1.05	98.28	1.98	0.43	0.43	1.19	1-1/4
29	PL 0.075x0.46x1.05	98.28	1.98	0.45	0.45	1.19	1-1/4
30	PL 0.075x0.46x1.05	98.28	1.98	0.47	0.47	1.19	1-1/4
31	PL 0.075x0.46x1.05	106.12	1.83	-0.22	-0.22	1.19	1-1/4
32	PL 0.075x0.46x1.05	105.40	1.84	0.49	0.49	1.19	1-1/4
33	PL 0.075x0.46x1.05	105.40	1.84	0.51	0.51	1.19	1-1/4
34	PL 0.075x0.46x1.05	105.40	1.84	0.53	0.53	1.19	1-1/4
35	PL 0.075x0.46x1.05	105.40	1.84	0.54	0.54	1.19	1-1/4
36	PL 0.075x0.46x1.05	105.40	1.84	0.56	0.56	1.19	1-1/4

48 FT SELF SUPPORT TOWER

-- OUTPUT -- 69.25 mph wind with 0.50 inch radial ice

* MEANS ALLOWABLE STRESS INCREASED BY 1/3

GIRT LOADS (KIPS) (Fy = 36.0 KSI)

Loads shown for Zero Force Girts represent 1-1/2t of the Leg Load

SEC No.	TOWER GIRT CAPACITY (allowable load)				TOWER GIRT LOAD		GIRT BOLTS	
	GIRT	SIZE	L/r (K-1)	*ALLOW. (kips)	COMP (kips)	TENSION (kips)	*ALLOW (kips)	BOLTS (size)
1	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
2	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
3	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
4	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
5	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
6	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
7	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
8	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
9	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
10	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
11	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
12	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
13	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
14	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
15	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
16	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
17	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
18	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
19	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
20	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
21	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
22	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
23	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
24	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
25	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
26	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
27	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
28	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
29	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
30	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
31	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
32	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
33	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
34	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
35	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE
36	-- NONE --		0.00	0.00	0.00	0.00	0.00	NONE

65 FT SELF SUPPORT TOWER

-- OUTPUT -- 69.28 mph wind with 0.50 inch radial ice

-- Deflection, Sway & twist --

SECTION NO.	ELEV (ft)	AVG MOMENT OF INERTIA (ft ² -in ²)	MOMENT AREA (ft ² -K)	DEFLECTION (inches)	SWAY (deg)	TWIST (deg)
1	48.00	0.15	0.1	7.161	1.099	0.000
2	46.67	0.18	0.2	6.884	1.099	0.000
3	45.33	0.18	0.4	6.547	1.096	0.000
4	44.00	0.18	0.7	6.241	1.091	0.000
5	42.67	0.18	1.1	5.936	1.083	0.000
6	41.33	0.18	1.5	5.634	1.072	0.000
7	40.00	0.31	1.9	5.334	1.056	0.000
8	38.67	0.36	2.5	5.040	1.043	0.000
9	37.33	0.36	3.0	4.748	1.030	0.000
10	36.00	0.36	3.7	4.461	1.013	0.000
11	34.67	0.36	4.4	4.178	0.993	0.000
12	33.33	0.36	5.2	3.900	0.969	0.000
13	32.00	0.53	6.0	3.629	0.941	0.000
14	30.67	0.60	6.9	3.366	0.919	0.000
15	29.33	0.60	7.9	3.110	0.896	0.000
16	28.00	0.60	8.9	2.860	0.870	0.000
17	26.67	0.60	10.0	2.617	0.841	0.000
18	25.33	0.60	11.2	2.382	0.808	0.000
19	24.00	0.72	12.4	2.156	0.771	0.000
20	22.67	0.81	13.7	1.941	0.737	0.000
21	21.33	0.81	15.1	1.735	0.704	0.000
22	20.00	0.81	16.5	1.538	0.667	0.000
23	18.67	0.81	18.0	1.352	0.627	0.000
24	17.33	0.81	19.6	1.177	0.583	0.000
25	16.00	1.10	21.3	1.014	0.535	0.000
26	14.67	1.22	23.0	0.865	0.496	0.000
27	13.33	1.22	24.8	0.726	0.459	0.000
28	12.00	1.22	26.7	0.598	0.419	0.000
29	10.67	1.22	28.7	0.481	0.376	0.000
30	9.33	1.22	30.7	0.376	0.329	0.000
31	8.00	1.51	32.8	0.284	0.280	0.000
32	6.67	1.66	35.0	0.206	0.237	0.000
33	5.33	1.66	37.3	0.140	0.195	0.000
34	4.00	1.66	39.6	0.086	0.150	0.000
35	2.67	1.66	42.1	0.044	0.103	0.000
36	1.33	1.66	44.6	0.025	0.063	0.000

48 FT SELF SUPPORT TOWER

-- OUTPUT -- 50 mph wind with 0.50 inch radial ice accumulation

-- Deflection, Sway & twist based upon 50 MPH Wind--

SECTION NO.	ELEV (ft)	AVG MOMENT OF INERTIA (ft ² -in ²)	MOMENT AREA (ft ² -K)	DEFLECTION (inches)	SWAY (deg)	TWIST (deg)
1	48.00	0.15	0.0	3.730	0.573	0.000
2	46.57	0.18	0.1	3.570	0.572	0.000
3	45.33	0.18	0.2	3.410	0.571	0.000
4	44.00	0.18	0.4	3.251	0.568	0.000
5	42.67	0.18	0.6	3.092	0.564	0.000
6	41.33	0.18	0.8	2.934	0.558	0.000
7	40.00	0.31	1.0	2.778	0.550	0.000
8	38.67	0.36	1.3	2.625	0.543	0.000
9	37.33	0.36	1.6	2.473	0.536	0.000
10	36.00	0.36	1.9	2.323	0.528	0.000
11	34.67	0.36	2.3	2.176	0.527	0.000
12	33.33	0.36	2.7	2.031	0.505	0.000
13	32.00	0.53	3.1	1.890	0.490	0.000
14	30.67	0.60	3.6	1.753	0.479	0.000
15	29.33	0.60	4.1	1.620	0.467	0.000
16	28.00	0.60	4.6	1.489	0.453	0.000
17	26.67	0.60	5.2	1.363	0.438	0.000
18	25.33	0.60	5.8	1.240	0.421	0.000
19	24.00	0.72	6.5	1.123	0.402	0.000
20	22.67	0.81	7.1	1.011	0.384	0.000
21	21.33	0.81	7.8	0.903	0.367	0.000
22	20.00	0.81	8.6	0.801	0.347	0.000
23	18.67	0.81	9.4	0.704	0.326	0.000
24	17.33	0.81	10.2	0.613	0.303	0.000
25	16.00	1.10	11.1	0.528	0.278	0.000
26	14.67	1.22	12.0	0.450	0.259	0.000
27	13.33	1.22	12.9	0.378	0.239	0.000
28	12.00	1.22	13.9	0.311	0.218	0.000
29	10.67	1.22	14.9	0.251	0.196	0.000
30	9.33	1.22	16.0	0.196	0.171	0.000
31	8.00	1.51	17.1	0.148	0.146	0.000
32	6.67	1.66	18.2	0.107	0.123	0.000
33	5.33	1.66	19.4	0.073	0.102	0.000
34	4.00	1.66	20.6	0.045	0.078	0.000
35	2.67	1.66	21.9	0.023	0.054	0.000
36	1.33	1.66	23.2	0.008	0.028	0.000