STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

November 15, 2000

David I. Bass, Esq.
Rubenstein & Green LLC
315 Post Road West
P.O. Box 5143
Westport, CT 06881-5143

RE: **TS-METRICOM-014-001026** - Metricom, Inc. request for an order to approve tower sharing at an existing telecommunications facility located at 21 Acorn Road, Branford, Connecticut.

Dear Attorney Bass:

At a public meeting held November 14, 2000, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures, as reconfigured and subject to the replacement of antennas to reduce the stress ratio below 100 percent. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letters dated October 25, 2000 and November 13, 2000.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Anthony J. DaRos, First Selectman, Town of Branford
Julie M. Cashin, Esq., Hurwitz & Sagarin LLC
Ronald C. Clark, Nextel Communications
Peter W. van Wilgen, Springwich Cellular Limited Partnership

I:\siting\cm\metricom\branford\dc111400.doc

WFI
the global leader
IN TELECOM OUTSOURCING

SENT VIA HAND DELIVERY

RECEIVED
NOV 13 2000
CONNECTICUT
SITING COUNCIL

Joel Rinebold, Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

November 13, 2000

Re: EM-METRICOM-014-001026 - 21 Acorn Rd. – Branford, CT

Dear Joel:

This site is on tomorrow's agenda. As per your request, please find enclosed the following materials in support of Metricom's Notice of Intent to modify the existing monopole at the aforementioned location:

- Twenty-one (21) copies of the Tower Structural Re-Analysis, dated November 10, 2000 and prepared by Malouf Engineering Intl, Inc.; and
- Twenty-one (21) sets of revised drawings, dated November 9, 2000 and prepared by URS – Greiner.

We have modified the previous design in order to lessen the structural impact of Metricom's proposed installation. This change included a reduction in the number of antennas. The new proposal is for eight (8) Triple Decibel antennas. By reducing the antenna count from sixteen (16) to eight (8), Metricom's installation would result in a Maximum Stress ratio of 99.6% as indicated in the above-referenced analysis. The enclosed drawings also reflect this new configuration. Please advise if you have any additional concerns.

Respectfully yours,

Julian Pedini

Site Acquisition and Zoning - CT
Wireless Facilities, Inc.

Voice: (201) 476-1078 Mobile: (917) 592-4160 Fax: (201) 326-3044
1 Paragon Dr. – Suite 150 – Montvale, NJ 07645
E-mail: julian.pedini@wfinet.com

MALOUF ENGINEERING INTL., INC.
STRUCTURAL CONSULTANTS

November 10, 2000

Mr. Alan Saccente
WFI
One Paragon Drive
Montvale, NJ 07645

SUBJECT: *Tower Structural Re-Analysis*
Existing 147 ft. Monopole Tower
BRANFORD SITE # NYC0011
SPRINT SITE # CT03XC021-05
Branford, Connecticut
MEI Project # 00-529A

Dear Alan:

As requested on 11/08/00, the existing 147 ft monopole for BRANFORD SITE # NYC0011, located at Branford, Connecticut was re-analyzed in conformance with the ANSI/TIA/EIA 222-F Standard for a basic wind speed of 85 Mph with and without 1/2" Ice (with 25% reduction). The reanalysis was for the following revised loading configuration, which mainly consisted of changing the proposed Metricom Antennas. (Please refer to MEI # 00-529 for additional information).

ELEVATION	APPURTENANCES DESCRIPTION	TENANT	AZIMUTH	TRANSMISSION LINES
FT	PROPOSED		DEG.	
116.0	***(8) Triple Panel Antennas + (3) 12' Antenna Boom Mounts (max. mounts CaAa = 60 ft^2 total)***	*METRICOM*	*0°, 120°, 240°*	*2" Dia. Conduit – external*
	EXISTING / FUTURE			
147.0	Lightning Rod			
147.0	(9) DB980H90 Panel Antennas + Low Profile Platform	SPRINT		(9) 1 5/8" Dia. – internal
127.0	(12) ALP9212 Panel Antennas + Low Profile Platform	NEXTEL		(12) 1-5/8" Dia. - internal
105.0	(9) Algon 7120.16 Panel Antennas + Low Profile Platform	SNET		(9) 1 1/4" Dia. – internal

The tower and antenna information used in this analysis is based on updated antenna data as supplied on 11/08/00 via phone by Jay Ditsworth of Metricom, and other data as per previous information available in our records. This existing tower is assumed, for the purpose of this analysis, to have been properly maintained and to be in good condition with no structural defects.

With the revised antennae configuration, the structural analysis results indicated the following:

MEMBERS	RESULTS
POLE SHAFT	All Section of the tower/shaft Are **Satisfactory** *Maximum Stress Ratio = 99.6%*
FOUNDATION	Based on Data Supplied – **Acceptable**
DEFLECTION	Max Deflection at 85 Mph is 102.91 inches

Based on the computer structural analysis results, *the existing 147 ft monopole does meet the requirements of ANSI/TIA/EIA 222-F Standard for a basic specified wind speed of 85 Mph with 0" Ice* (controls) for the antennae configuration considered.

Install the new MetriCom antennas at elevation 116 ft. c.l. AGL using the new 12 ft Antenna Boom Mounts (mounts CaAa = 60 ft^2 total) and the new conduit to be routed externally strapped to the pole. Install accordingly.

If you have any questions or need further clarification, please call.

Sincerely,

E. Mark Malouf, PE
Connecticut # 17715

ANALYSIS PRINTOUT


```
   ************************************************************
   *              MONOPOLE STRUCTURAL ANALYSIS                *
   *         (c) 1999, Malouf Engineering Intl., Inc.         *
   ************************************************************

   MEI JOB NO.       : 00-529A
   SITE NAME         : NYC0011/BRANFORD
   SITE LOCATION     : BRANFORD,CT / NEW HAVEN COUNTY
   CLIENT NAME       : METRICOM, INC
   CLIENT LOCATION   : PLANO,TX
   TOWER DESCR.      : SUMMIT MANUF/18-SIDED - 1997
   ORIGINAL DESIGN   : TIA/EIA 222-F 90MPH + 0" ICE

COMMENTS
TOWER OWNER IS SPRINT SITES USA SITE #CT03XC021-05
PROPOSED ANTENNAE AT 116' WITH 2" CONDUIT ON OUTSIDE.
ALL EXISTING LINES INTERNAL.
COUNTY BWS = 85 MPH

S ZHANG, EIT / E.MARK MALOUF,PE

PROGRAM DESCRIPTION
The monopole is modeled for the computer analysis as a uniform
cantilevered beam with a fixed support. The monopole is divided into
element members, and antennae are applied as concentrated loads. The
structural analysis includes the primary and first order P-Delta
moments. The horizontal wind shear is calculated as per EIA Sect 2.3.2
and the allowable stresses are per EIA Table 5.

DESIGN/ANALYSIS REQUIREMENTS
Design Code          : ANSI/TIA EIA222-F
Basic Wind Velocity :  85.00 Mph
Ice Thickness        :    .00 Inch

ANTENNA LOADING CONSIDERED
```

#	Elev (ft)	Antenna Description	TX-Line	NUM	EXP	DIA (in)	WGT (plf)
1	147.0	EXIST LIGHTNING ROD					
2	147.0	EXIST STEP BOLTS	1/2" Dia.	1	1.00	.63	.14
3	147.0	EXIST (9) DB980H90 PANEL ANTS	1-5/8" Dia.	9	.00	1.98	1.08
4	147.0	EXIST LOW PROFILE PLATFORM					
5	127.0	EXIST (12)ALP9212 PANELL ANTS	1-5/8" Dia.	12	.00	1.98	1.08
6	127.0	EXIST LOW PROFILE PLATFORM					
7	116.0	PROP. (8)DUAL BAND TRIPLE PANE	2" Dia. Conduit	1	1.00	2.38	3.65
8	116.0	PROP. (3)12'ANT. BOOMS ON POLE					
9	105.0	EXIST (9) ALGON7120.16 PANEL A	1-1/4" Dia.	9	.00	1.55	.66
10	105.0	EXIST LOW PROFILE PLATFORM					

#	Elev (ft)	TYPE	CaAa/Dia ft2/ft	Wght kips	V_arm ft	Ice Factor CaAa/	Ice Factor WgHt	Hor_Fl| kips|	TX_Line Elev (ft)	TX_Wid xCa(in)	Hor_F2 kips
1	147.0	MISC	4.0	.050	4.0	1.00	1.00	.192|			
2	147.0	MISC	.0	.000	.0	1.00	1.00	.000|	.0 147.0	.76	.359
3	147.0	MISC	34.0	.150	.0	1.00	1.00	1.629|	.0 147.0	.00	.000
4	147.0	MISC	32.0	1.800	.0	1.00	1.00	1.533|			
5	127.0	MISC	47.0	.400	.0	1.00	1.00	2.159|	.0 127.0	.00	.000
6	127.0	MISC	32.0	1.800	.0	1.00	1.00	1.470|			
7	116.0	MISC	32.5	.160	.0	1.00	1.00	1.455|	.0 116.0	2.85	1.024
8	116.0	MISC	60.0	1.800	.0	1.00	1.00	2.686|			
9	105.0	MISC	30.0	.200	.0	1.00	1.00	1.305|	.0 105.0	.00	.000
10	105.0	MISC	32.0	1.800	.0	1.00	1.00	1.392|			

```
Total Antenna Horizontal Load =  13.821 Kips
Total Antenna Weight          =   8.160 Kips
Total Appurtenance Horz. Load =   1.384 Kips
Total Appurtenance Weight     =   4.147 Kips

MONOPOLE CHARACTERISTICS

Actual
```

Sec	Fy (ksi)	Length (ft)	Elev.bot (ft)	Elev.top (ft)	Dia.bot (in)	Dia.top (in)	Thick (in)	Taper (in/ft)	Weight (kips)	Splice@ bot(in)
1	60	47.500	.000	47.500	45.120	37.043	.4375	.1700	9.122	.0
2	60	35.250	42.750	78.000	38.601	32.607	.3750	.1700	5.029	57.0
3	60	35.000	73.750	108.750	33.955	28.004	.3125	.1700	3.623	51.0
4	60	42.000	105.000	147.000	29.141	22.000	.2500	.1700	2.871	45.0

```
Analytical Model
```

Sec	Fy (ksi)	Length (ft)	Elev.bot (ft)	Elev.top (ft)	Dia.bot (in)	Dia.top (in)	Thick (in)	Taper (in/ft)	Weight (kips)	Splice W(kips)
1	60	45.000	.000	45.000	45.120	37.468	.4375	.1700	8.687	.435
2	60	31.000	45.000	76.000	38.218	32.947	.3750	.1700	4.420	.609
3	60	31.000	76.000	107.000	33.572	28.302	.3125	.1700	3.204	.418
4	60	40.000	107.000	147.000	28.801	22.000	.2500	.1700	2.716	.155

```
Monopole Height : 147.00 ft
Monopole Weight :  20.65 Kips (excluding antennae and lines)
Base Diameter   :  45.12 Inch
Top Diameter    :  22.00 Inch
Modulus of Elas :  29000 Ksi
Pole Shape      : 18 Sided Section

=======================
** ANALYSIS SUMMARY **
=======================
Moment @ base     = 2708.52 ft-Kips
Shear @ base      =   25.20 Kips
Vert_Load @ base  =   32.98 Kips
Max. Stress Ratio =    .996 ** Satisfactory
(Allowable Stress Increase Factor = 1.333 Already Included)
Max.Total Deflect.=  102.91 in
```

ANALYSIS PRINTOUT

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529A

WIND LOADING ANALYSIS RESULTS (Gh= 1.690)

Memb.	Elev. (ft.)	O.D. (inch)	Thick (inch)	OD ice (inch)	Kz	C	Cf	Shear (kips)	Moment (kip-ft)
SECTION 4 (ELEV 107.00- 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS									
147	147.0	22.000	.250	22.000	1.531	192.81	.000	.00	.00
146	146.0	22.170	.250	22.170	1.528	194.11	.650	3.41	4.14
145	145.0	22.340	.250	22.340	1.525	195.41	.650	3.47	7.57
144	144.0	22.510	.250	22.510	1.522	196.70	.650	3.54	11.09
143	143.0	22.680	.250	22.680	1.519	197.99	.650	3.60	14.71
142	142.0	22.850	.250	22.850	1.516	199.27	.650	3.66	18.41
141	141.0	23.020	.250	23.020	1.513	200.55	.650	3.72	22.22
140	140.0	23.190	.250	23.190	1.510	201.83	.650	3.78	26.11
139	139.0	23.360	.250	23.360	1.507	203.10	.650	3.84	30.10
138	138.0	23.530	.250	23.530	1.503	204.36	.650	3.91	34.17
137	137.0	23.700	.250	23.700	1.500	205.63	.650	3.97	38.35
136	136.0	23.870	.250	23.870	1.497	206.88	.650	4.03	42.61
135	135.0	24.040	.250	24.040	1.494	208.14	.650	4.10	46.97
134	134.0	24.210	.250	24.210	1.491	209.39	.650	4.16	51.42
133	133.0	24.380	.250	24.380	1.488	210.63	.650	4.23	55.97
132	132.0	24.550	.250	24.550	1.484	211.87	.650	4.29	60.60
131	131.0	24.720	.250	24.720	1.481	213.10	.650	4.36	65.34
130	130.0	24.890	.250	24.890	1.478	214.33	.650	4.42	70.16
129	129.0	25.060	.250	25.060	1.475	215.56	.650	4.49	75.08
128	128.0	25.230	.250	25.230	1.471	216.78	.650	4.55	80.09
127	127.0	25.400	.250	25.400	1.468	218.00	.650	4.62	85.19
126	126.0	25.571	.250	25.571	1.465	219.21	.650	8.31	94.02
125	125.0	25.741	.250	25.741	1.461	220.41	.650	8.38	102.94
124	124.0	25.911	.250	25.911	1.458	221.61	.650	8.45	111.95
123	123.0	26.081	.250	26.081	1.455	222.81	.650	8.51	121.06
122	122.0	26.251	.250	26.251	1.451	224.00	.650	8.58	130.26
121	121.0	26.421	.250	26.421	1.448	225.18	.650	8.65	139.55
120	120.0	26.591	.250	26.591	1.444	226.36	.650	8.72	148.93
119	119.0	26.761	.250	26.761	1.441	227.54	.650	8.79	158.41
118	118.0	26.931	.250	26.931	1.437	228.70	.650	8.85	167.98
117	117.0	27.101	.250	27.101	1.434	229.87	.650	8.92	177.64
116	116.0	27.271	.250	27.271	1.430	231.02	.650	9.00	187.39
115	115.0	27.441	.250	27.441	1.427	232.18	.650	13.22	201.38
114	114.0	27.611	.250	27.611	1.423	233.32	.650	13.30	215.48
113	113.0	27.781	.250	27.781	1.420	234.46	.650	13.38	229.67
112	112.0	27.951	.250	27.951	1.416	235.60	.650	13.46	243.97
111	111.0	28.121	.250	28.121	1.412	236.73	.650	13.54	258.37
110	110.0	28.291	.250	28.291	1.409	237.85	.650	13.62	272.87
109	109.0	28.461	.250	28.461	1.405	238.96	.650	13.71	287.47
108	108.0	28.631	.250	28.631	1.401	240.07	.650	13.79	302.17
SECTION 3 (ELEV 76.00- 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS									
107	107.0	28.302	.313	28.302	1.398	236.99	.650	13.87	316.97
106	106.0	28.472	.313	28.472	1.394	238.10	.650	13.95	331.88
105	105.0	28.642	.313	28.642	1.390	239.19	.650	14.03	346.88
104	104.0	28.812	.313	28.812	1.386	240.28	.650	16.81	364.67
103	103.0	28.982	.313	28.982	1.382	241.37	.650	16.89	382.57
102	102.0	29.152	.313	29.152	1.379	242.44	.650	16.97	402.77
101	101.0	29.322	.313	29.322	1.375	243.51	.650	17.05	420.87
100	100.0	29.492	.313	29.492	1.371	244.57	.650	17.13	439.04
99	99.0	29.662	.313	29.662	1.367	245.63	.650	17.21	457.31
98	98.0	29.832	.313	29.832	1.363	246.68	.650	17.29	475.67
97	97.0	30.002	.313	30.002	1.359	247.72	.650	17.37	494.12
96	96.0	30.172	.313	30.172	1.355	248.75	.650	17.46	512.66
95	95.0	30.342	.313	30.342	1.351	249.78	.650	17.54	531.30
94	94.0	30.512	.313	30.512	1.347	250.80	.650	17.62	550.04
93	93.0	30.682	.313	30.682	1.342	251.81	.650	17.70	568.86
92	92.0	30.852	.313	30.852	1.338	252.81	.650	17.79	587.78
91	91.0	31.022	.313	31.022	1.334	253.80	.650	17.87	606.79
90	90.0	31.192	.313	31.192	1.330	254.79	.650	17.95	625.89
89	89.0	31.362	.313	31.362	1.326	255.77	.650	18.03	645.09
88	88.0	31.532	.313	31.532	1.321	256.74	.650	18.12	664.37
87	87.0	31.702	.313	31.702	1.317	257.70	.650	18.20	683.74
86	86.0	31.872	.313	31.872	1.313	258.65	.650	18.28	703.21
85	85.0	32.042	.313	32.042	1.308	259.59	.650	18.37	722.76
84	84.0	32.212	.313	32.212	1.304	260.53	.650	18.45	742.41
83	83.0	32.382	.313	32.382	1.299	261.45	.650	18.53	762.14
82	82.0	32.552	.313	32.552	1.295	262.37	.650	18.62	781.97
81	81.0	32.722	.313	32.722	1.290	263.27	.650	18.70	801.88
80	80.0	32.892	.313	32.892	1.286	264.17	.650	18.78	821.88
79	79.0	33.062	.313	33.062	1.281	265.06	.650	18.87	841.96
78	78.0	33.232	.313	33.232	1.276	265.93	.650	18.95	862.14
77	77.0	33.402	.313	33.402	1.272	266.80	.650	19.04	882.40
SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS									
76	76.0	32.947	.375	32.947	1.267	262.66	.650	19.12	902.74
75	75.0	33.117	.375	33.117	1.262	263.52	.650	19.20	923.17
74	74.0	33.287	.375	33.287	1.257	264.36	.650	19.28	943.69
73	73.0	33.457	.375	33.457	1.252	265.19	.650	19.37	964.29
72	72.0	33.627	.375	33.627	1.247	266.01	.650	19.45	984.98
71	71.0	33.797	.375	33.797	1.242	266.82	.650	19.53	1007.99
70	70.0	33.967	.375	33.967	1.237	267.61	.650	19.62	1028.82
69	69.0	34.137	.375	34.137	1.232	268.40	.650	19.70	1049.69
68	68.0	34.307	.375	34.307	1.227	269.17	.650	19.78	1070.65
67	67.0	34.477	.375	34.477	1.222	269.93	.650	19.86	1091.68
66	66.0	34.647	.375	34.647	1.216	270.67	.650	19.95	1112.80
65	65.0	34.818	.375	34.818	1.211	271.40	.650	20.03	1134.00
64	64.0	34.988	.375	34.988	1.206	272.12	.650	20.11	1155.28
63	63.0	35.158	.375	35.158	1.200	272.82	.650	20.19	1176.63
62	62.0	35.328	.375	35.328	1.195	273.51	.650	20.28	1198.07
61	61.0	35.498	.375	35.498	1.189	274.19	.650	20.36	1219.59
60	60.0	35.668	.375	35.668	1.183	274.84	.650	20.44	1241.18
59	59.0	35.838	.375	35.838	1.178	275.49	.650	20.53	1262.86
58	58.0	36.008	.375	36.008	1.172	276.11	.650	20.61	1284.61
57	57.0	36.178	.375	36.178	1.166	276.72	.650	20.69	1306.44
56	56.0	36.348	.375	36.348	1.160	277.31	.650	20.77	1328.35
55	55.0	36.518	.375	36.518	1.154	277.89	.650	20.86	1350.33
54	54.0	36.688	.375	36.688	1.148	278.44	.650	20.94	1372.39
53	53.0	36.858	.375	36.858	1.142	278.98	.650	21.02	1394.53
52	52.0	37.028	.375	37.028	1.136	279.50	.650	21.10	1416.74
51	51.0	37.198	.375	37.198	1.129	280.00	.650	21.18	1439.03
50	50.0	37.368	.375	37.368	1.123	280.48	.650	21.26	1461.39
49	49.0	37.538	.375	37.538	1.116	280.93	.650	21.35	1483.83
48	48.0	37.708	.375	37.708	1.110	281.37	.650	21.43	1506.34
47	47.0	37.878	.375	37.878	1.103	281.78	.650	21.51	1528.92
46	46.0	38.048	.375	38.048	1.096	282.16	.650	21.59	1551.58
SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS									
45	45.0	37.468	.438	37.468	1.089	276.98	.650	21.67	1574.31

44	44.0	37.638	.438	37.638	1.082	277.33	.650	21.75	1597.11
43	43.0	37.808	.438	37.808	1.075	277.66	.650	21.83	1619.98
42	42.0	37.978	.438	37.978	1.068	277.97	.650	21.91	1653.40
41	41.0	38.148	.438	38.148	1.060	278.24	.650	21.98	1676.43
40	40.0	38.318	.438	38.318	1.053	278.48	.650	22.06	1701.21
39	39.0	38.488	.438	38.488	1.045	278.70	.650	22.14	1724.34
38	38.0	38.658	.438	38.658	1.037	278.88	.650	22.22	1747.48
37	37.0	38.828	.438	38.828	1.029	279.02	.650	22.30	1770.70
36	36.0	38.998	.438	38.998	1.021	279.14	.650	22.37	1793.98
35	35.0	39.168	.438	39.168	1.013	279.21	.650	22.45	1817.32
34	34.0	39.339	.438	39.339	1.004	279.25	.650	22.53	1840.73
33	33.0	39.509	.438	39.509	1.000	279.85	.650	22.60	1864.20
32	32.0	39.679	.438	39.679	1.000	281.06	.650	22.68	1887.74
31	31.0	39.849	.438	39.849	1.000	282.26	.650	22.76	1922.04
30	30.0	40.019	.438	40.019	1.000	283.47	.650	22.83	1945.72
29	29.0	40.189	.438	40.189	1.000	284.67	.650	22.91	1969.46
28	28.0	40.359	.438	40.359	1.000	285.87	.650	22.99	1993.27
27	27.0	40.529	.438	40.529	1.000	287.08	.650	23.07	2017.14
26	26.0	40.699	.438	40.699	1.000	288.28	.650	23.14	2041.07
25	25.0	40.869	.438	40.869	1.000	289.49	.650	23.22	2065.06
24	24.0	41.039	.438	41.039	1.000	290.69	.650	23.30	2089.12
23	23.0	41.209	.438	41.209	1.000	291.90	.650	23.38	2113.25
22	22.0	41.379	.438	41.379	1.000	293.10	.650	23.46	2137.43
21	21.0	41.549	.438	41.549	1.000	294.31	.650	23.54	2161.68
20	20.0	41.719	.438	41.719	1.000	295.51	.650	23.62	2198.34
19	19.0	41.889	.438	41.889	1.000	296.71	.650	23.70	2222.67
18	18.0	42.059	.438	42.059	1.000	297.92	.650	23.78	2247.06
17	17.0	42.229	.438	42.229	1.000	299.12	.650	23.86	2271.52
16	16.0	42.399	.438	42.399	1.000	300.33	.650	23.94	2296.04
15	15.0	42.569	.438	42.569	1.000	301.53	.650	24.02	2320.62
14	14.0	42.739	.438	42.739	1.000	302.74	.650	24.11	2345.27
13	13.0	42.909	.438	42.909	1.000	303.94	.650	24.19	2369.98
12	12.0	43.079	.438	43.079	1.000	305.15	.650	24.27	2394.75
11	11.0	43.250	.438	43.250	1.000	306.35	.650	24.35	2419.59
10	10.0	43.420	.438	43.420	1.000	307.56	.650	24.44	2444.49
9	9.0	43.590	.438	43.590	1.000	308.76	.650	24.52	2469.45
8	8.0	43.760	.438	43.760	1.000	309.96	.650	24.60	2494.48
7	7.0	43.930	.438	43.930	1.000	311.17	.650	24.69	2519.58
6	6.0	44.100	.438	44.100	1.000	312.37	.650	24.77	2544.74
5	5.0	44.270	.438	44.270	1.000	313.58	.650	24.85	2569.97
4	4.0	44.440	.438	44.440	1.000	314.78	.650	24.94	2595.26
3	3.0	44.610	.438	44.610	1.000	315.99	.650	25.02	2620.61
2	2.0	44.780	.438	44.780	1.000	317.19	.650	25.11	2646.03
1	1.0	44.950	.438	44.950	1.000	318.40	.650	25.20	2671.52
0	.0	45.120	.438	45.120	1.000	319.60	.650	25.20	2708.52

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529A

MAXIMUM STRESS ANALYSIS RESULTS / CSR= (1.000fa + 1.000fb)/(1.333Fab)

Memb	<--Elev---> (ft)	(ft)	Sec_Mod (in3)	Prim_Mom (Kip-ft)	P-D_Mom (Kip-ft)	Tot_Mom (Kip-ft)	fa (Ksi)	fb (Ksi)	Fab (Ksi)	C.S.R
SECTION 4 (ELEV 107.00- 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS										
147	146.0	147.0	93.5	3.35	.02	4.14	.00	.53	36.00	.011
146	145.0	146.0	95.0	6.74	.06	7.57	.01	.96	36.00	.020
145	144.0	145.0	96.5	10.18	.14	11.09	.01	1.38	36.00	.029
144	143.0	144.0	98.0	13.68	.25	14.71	.02	1.80	36.00	.038
143	142.0	143.0	99.5	17.25	.40	18.41	.02	2.22	36.00	.047
142	141.0	142.0	101.0	20.88	.57	22.22	.02	2.64	36.00	.055
141	140.0	141.0	102.6	24.57	.78	26.11	.03	3.05	36.00	.064
140	139.0	140.0	104.1	28.32	1.01	30.10	.03	3.47	36.00	.073
139	138.0	139.0	105.7	32.13	1.28	34.17	.03	3.88	36.00	.082
138	137.0	138.0	107.2	36.01	1.57	38.35	.04	4.29	36.00	.090
137	136.0	137.0	108.8	39.95	1.90	42.61	.04	4.70	36.00	.099
136	135.0	136.0	110.4	43.95	2.25	46.97	.05	5.10	36.00	.107
135	134.0	135.0	112.0	48.02	2.64	51.42	.05	5.51	36.00	.116
134	133.0	134.0	113.6	52.15	3.06	55.97	.05	5.91	36.00	.124
133	132.0	133.0	115.3	56.34	3.50	60.60	.06	6.31	36.00	.133
132	131.0	132.0	116.9	60.60	3.97	65.34	.06	6.71	36.00	.141
131	130.0	131.0	118.5	64.92	4.47	70.16	.06	7.10	36.00	.149
130	129.0	130.0	120.2	69.31	5.00	75.08	.07	7.49	36.00	.158
129	128.0	129.0	121.9	73.76	5.56	80.09	.07	7.89	36.00	.166
128	127.0	128.0	123.6	78.28	6.14	85.19	.18	8.27	36.00	.176
127	126.0	127.0	125.3	86.50	6.75	94.02	.19	9.01	36.00	.192
126	125.0	126.0	127.0	94.78	7.39	102.94	.19	9.73	36.00	.207
125	124.0	125.0	128.7	103.13	8.06	111.95	.19	10.44	36.00	.222
124	123.0	124.0	130.4	111.54	8.75	121.06	.20	11.14	36.00	.236
123	122.0	123.0	132.2	120.02	9.47	130.26	.20	11.83	36.00	.251
122	121.0	122.0	133.9	128.57	10.21	139.55	.20	12.50	36.00	.265
121	120.0	121.0	135.7	137.19	10.98	148.93	.21	13.17	36.00	.279
120	119.0	120.0	137.5	145.87	11.77	158.41	.21	13.83	36.00	.292
119	118.0	119.0	139.3	154.62	12.59	167.98	.21	14.48	36.00	.306
118	117.0	118.0	141.1	163.44	13.43	177.64	.22	15.11	36.00	.319
117	116.0	117.0	142.9	172.33	14.30	187.39	.31	15.74	36.00	.334
116	115.0	116.0	144.7	185.43	15.19	201.38	.31	16.70	36.00	.355
115	114.0	115.0	146.5	198.61	16.10	215.48	.32	17.65	36.00	.374
114	113.0	114.0	148.4	211.88	17.03	229.67	.32	18.58	36.00	.394
113	112.0	113.0	150.2	225.22	17.98	243.97	.32	19.49	36.00	.413
112	111.0	112.0	152.1	238.64	18.96	258.37	.32	20.38	36.00	.431
111	110.0	111.0	154.0	252.14	19.96	272.87	.33	21.27	36.00	.450
110	109.0	110.0	155.9	265.73	20.98	287.47	.33	22.13	36.00	.468
109	108.0	109.0	157.8	279.39	22.01	302.17	.33	22.98	36.00	.486
108	107.0	108.0	159.7	293.14	23.07	316.97	.29	23.82	36.00	.502
SECTION 3 (ELEV 76.00- 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS										
107	106.0	107.0	193.7	306.96	24.14	331.88	.29	20.56	36.00	.434
106	105.0	106.0	196.1	320.87	25.24	346.88	.36	21.23	36.00	.450
105	104.0	105.0	198.4	337.56	26.35	364.67	.37	22.05	36.00	.467
104	103.0	104.0	200.8	354.32	27.48	382.57	.37	22.86	36.00	.484
103	102.0	103.0	203.3	371.17	30.84	402.77	.37	23.78	36.00	.503
102	101.0	102.0	205.7	388.09	32.01	420.87	.37	24.55	36.00	.519

101	100.0	101.0	208.1	405.10	33.17	439.04	.37	25.31	36.00	.535
100	99.0	100.0	210.6	422.19	34.35	457.31	.38	26.06	36.00	.551
99	98.0	99.0	213.1	439.36	35.54	475.67	.38	26.79	36.00	.566
98	97.0	98.0	215.6	456.61	36.74	494.12	.38	27.51	36.00	.581
97	96.0	97.0	218.1	473.95	37.95	512.66	.38	28.21	36.00	.596
96	95.0	96.0	220.6	491.36	39.17	531.30	.39	28.90	36.00	.610
95	94.0	95.0	223.1	508.86	40.41	550.04	.39	29.58	36.00	.624
94	93.0	94.0	225.7	526.44	41.65	568.86	.39	30.25	36.00	.638
93	92.0	93.0	228.2	544.10	42.91	587.78	.39	30.90	36.00	.652
92	91.0	92.0	230.8	561.85	44.17	606.79	.40	31.55	36.00	.666
91	90.0	91.0	233.4	579.68	45.45	625.89	.40	32.18	36.00	.679
90	89.0	90.0	236.0	597.59	46.73	645.09	.40	32.80	36.00	.692
89	88.0	89.0	238.6	615.58	48.02	664.37	.40	33.41	36.00	.704
88	87.0	88.0	241.3	633.66	49.32	683.74	.40	34.01	36.00	.717
87	86.0	87.0	243.9	651.81	50.63	703.21	.41	34.60	36.00	.729
86	85.0	86.0	246.6	670.06	51.94	722.76	.41	35.18	36.00	.741
85	84.0	85.0	249.2	688.38	53.26	742.41	.41	35.74	36.00	.753
84	83.0	84.0	251.9	706.79	54.59	762.14	.41	36.30	36.00	.765
83	82.0	83.0	254.6	725.28	55.92	781.97	.42	36.85	36.00	.776
82	81.0	82.0	257.4	743.86	57.25	801.88	.42	37.39	36.00	.788
81	80.0	81.0	260.1	762.52	58.59	821.88	.42	37.92	36.00	.799
80	79.0	80.0	262.8	781.26	59.94	841.96	.42	38.44	36.00	.810
79	78.0	79.0	265.6	800.09	61.28	862.14	.42	38.95	36.00	.820
78	77.0	78.0	268.4	819.00	62.63	882.40	.43	39.45	36.00	.831
77	76.0	77.0	271.2	837.99	63.98	902.74	.38	39.95	36.00	.840
SECTION	2 (ELEV	45.00-	76.00 FT):	LENGTH=	31.00 FT	/ STEEL WT=	5.029	KIPS		
76	75.0	76.0	314.7	857.07	65.34	923.17	.38	35.21	36.00	.741
75	74.0	75.0	318.0	876.23	66.70	943.69	.38	35.61	36.00	.750
74	73.0	74.0	321.3	895.47	68.06	964.29	.39	36.01	36.00	.758
73	72.0	73.0	324.6	914.80	69.42	984.98	.39	36.41	36.00	.767
72	71.0	72.0	328.0	934.21	73.02	1007.99	.39	36.88	36.00	.776
71	70.0	71.0	331.4	953.70	74.36	1028.82	.39	37.25	36.00	.784
70	69.0	70.0	334.8	973.27	75.66	1049.69	.40	37.62	36.00	.792
69	68.0	69.0	338.2	992.93	76.95	1070.65	.40	37.99	36.00	.800
68	67.0	68.0	341.6	1012.67	78.25	1091.68	.40	38.34	36.00	.807
67	66.0	67.0	345.1	1032.49	79.55	1112.80	.40	38.70	36.00	.815
66	65.0	66.0	348.6	1052.39	80.84	1134.00	.40	39.04	36.00	.822
65	64.0	65.0	352.1	1072.38	82.13	1155.28	.41	39.38	36.00	.829
64	63.0	64.0	355.6	1092.45	83.41	1176.63	.41	39.71	36.00	.836
63	62.0	63.0	359.1	1112.61	84.70	1198.07	.41	40.04	36.00	.843
62	61.0	62.0	362.6	1132.84	85.98	1219.59	.41	40.36	36.00	.849
61	60.0	61.0	366.2	1153.16	87.26	1241.18	.42	40.68	36.00	.856
60	59.0	60.0	369.7	1173.56	88.53	1262.86	.42	40.99	36.00	.863
59	58.0	59.0	373.3	1194.05	89.80	1284.61	.42	41.29	36.00	.869
58	57.0	58.0	376.9	1214.61	91.06	1306.44	.42	41.59	36.00	.875
57	56.0	57.0	380.6	1235.26	92.32	1328.35	.42	41.89	36.00	.881
56	55.0	56.0	384.2	1255.99	93.57	1350.33	.43	42.17	36.00	.888
55	54.0	55.0	387.9	1276.81	94.82	1372.39	.43	42.46	36.00	.893
54	53.0	54.0	391.5	1297.71	96.06	1394.53	.43	42.74	36.00	.899
53	52.0	53.0	395.2	1318.68	97.29	1416.74	.43	43.01	36.00	.905
52	51.0	52.0	399.0	1339.74	98.52	1439.03	.43	43.28	36.00	.911
51	50.0	51.0	402.7	1360.89	99.74	1461.39	.44	43.55	36.00	.916
50	49.0	50.0	406.4	1382.11	100.95	1483.83	.44	43.81	36.00	.922
49	48.0	49.0	410.2	1403.41	102.16	1506.34	.44	44.07	36.00	.927
48	47.0	48.0	414.0	1424.80	103.35	1528.92	.44	44.32	36.00	.933
47	46.0	47.0	417.8	1446.27	104.54	1551.58	.45	44.57	36.00	.938
46	45.0	46.0	421.6	1467.82	105.72	1574.31	.41	44.81	36.00	.942
SECTION	1 (ELEV	.00-	45.00 FT):	LENGTH=	45.00 FT	/ STEEL WT=	9.122	KIPS		
45	44.0	45.0	474.3	1489.45	106.89	1597.11	.41	40.40	36.00	.850
44	43.0	44.0	478.7	1511.16	108.06	1619.98	.41	40.61	36.00	.855
43	42.0	43.0	483.1	1532.94	119.69	1653.40	.41	41.07	36.00	.864
42	41.0	42.0	487.6	1554.81	120.85	1676.43	.42	41.26	36.00	.868
41	40.0	41.0	492.0	1576.76	123.69	1701.21	.42	41.49	36.00	.873
40	39.0	40.0	496.5	1598.78	124.79	1724.34	.42	41.68	36.00	.877
39	38.0	39.0	501.0	1620.88	125.84	1747.48	.42	41.86	36.00	.881
38	37.0	38.0	505.5	1643.06	126.87	1770.70	.43	42.03	36.00	.885
37	36.0	37.0	510.0	1665.32	127.89	1793.98	.43	42.21	36.00	.888
36	35.0	36.0	514.6	1687.65	128.90	1817.32	.43	42.38	36.00	.892
35	34.0	35.0	519.2	1710.06	129.90	1840.73	.43	42.55	36.00	.895
34	33.0	34.0	523.8	1732.55	130.89	1864.20	.43	42.71	36.00	.899
33	32.0	33.0	528.4	1755.11	131.86	1887.74	.44	42.87	36.00	.902
32	31.0	32.0	533.0	1777.75	143.52	1922.04	.44	43.27	36.00	.911
31	30.0	31.0	537.7	1800.47	144.48	1945.72	.44	43.43	36.00	.914
30	29.0	30.0	542.3	1823.27	145.43	1969.46	.44	43.58	36.00	.917
29	28.0	29.0	547.0	1846.14	146.36	1993.27	.44	43.73	36.00	.920
28	27.0	28.0	551.8	1869.09	147.28	2017.14	.45	43.87	36.00	.923
27	26.0	27.0	556.5	1892.11	148.19	2041.07	.45	44.01	36.00	.926
26	25.0	26.0	561.2	1915.22	149.08	2065.06	.45	44.15	36.00	.929
25	24.0	25.0	566.0	1938.40	149.95	2089.12	.45	44.29	36.00	.932
24	23.0	24.0	570.8	1961.66	150.81	2113.25	.45	44.43	36.00	.935
23	22.0	23.0	575.6	1985.01	151.66	2137.43	.46	44.56	36.00	.938
22	21.0	22.0	580.5	2008.43	152.49	2161.68	.46	44.69	36.00	.941
21	20.0	21.0	585.3	2031.93	165.65	2198.34	.46	45.07	36.00	.949
20	19.0	20.0	590.2	2055.51	166.40	2222.67	.46	45.19	36.00	.951
19	18.0	19.0	595.1	2079.17	167.13	2247.06	.47	45.31	36.00	.954
18	17.0	18.0	600.0	2102.91	167.85	2271.52	.47	45.43	36.00	.956
17	16.0	17.0	605.0	2126.73	168.54	2296.04	.47	45.54	36.00	.959
16	15.0	16.0	609.9	2150.63	169.22	2320.62	.47	45.66	36.00	.961
15	14.0	15.0	614.9	2174.62	169.88	2345.27	.47	45.77	36.00	.963
14	13.0	14.0	619.9	2198.68	170.53	2369.98	.48	45.88	36.00	.966
13	12.0	13.0	624.9	2222.83	171.15	2394.75	.48	45.99	36.00	.968
12	11.0	12.0	630.0	2247.06	171.76	2419.59	.48	46.09	36.00	.970
11	10.0	11.0	635.0	2271.37	172.35	2444.49	.48	46.19	36.00	.972
10	9.0	10.0	640.1	2295.76	172.92	2469.45	.48	46.30	36.00	.975
9	8.0	9.0	645.2	2320.24	173.48	2494.48	.49	46.39	36.00	.977
8	7.0	8.0	650.3	2344.80	174.01	2519.58	.49	46.49	36.00	.979
7	6.0	7.0	655.5	2369.45	174.53	2544.74	.49	46.59	36.00	.981
6	5.0	6.0	660.6	2394.18	175.02	2569.97	.49	46.68	36.00	.983
5	4.0	5.0	665.8	2418.99	175.50	2595.26	.49	46.78	36.00	.985
4	3.0	4.0	671.0	2443.89	175.96	2620.61	.50	46.87	36.00	.987
3	2.0	3.0	676.2	2468.87	176.40	2646.03	.50	46.96	36.00	.989
2	1.0	2.0	681.5	2493.94	176.82	2671.52	.50	47.04	36.00	.990
1	.0	1.0	686.7	2519.09	188.66	2708.52	.50	47.33	36.00	.996

ANALYSIS PRINTOUT

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529A

DEFLECTION ANALYSIS RESULTS

Memb	Elev. (ft.)	Mom_Inert (in4)	deflection due to Pres.S.S (inch)	Moment (inch)	Prev.S.S (inch)	Pt.Ld (inch)	Total Deflc (inch)	
SECTION 4 (ELEV 107.00- 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS								
147	147.0	1028.9	.000	.000	.000	.000	102.913	
146	146.0	1053.2	.000	.000	.000	.000	101.729	
145	145.0	1077.9	.000	.000	.000	.000	100.545	
144	144.0	1103.0	.000	.000	.000	.000	99.361	
143	143.0	1128.5	.000	.000	.000	.000	98.178	
142	142.0	1154.3	.000	.000	.000	.000	96.996	
141	141.0	1180.6	.000	.001	.000	.000	95.815	
140	140.0	1207.2	.000	.001	.000	.000	94.634	
139	139.0	1234.3	.000	.001	.000	.000	93.455	
138	138.0	1261.7	.000	.001	.000	.000	92.277	
137	137.0	1289.6	.000	.001	.000	.000	91.101	
136	136.0	1317.8	.000	.001	.000	.000	89.927	
135	135.0	1346.5	.000	.001	.000	.000	88.754	
134	134.0	1375.6	.000	.001	.000	.000	87.583	
133	133.0	1405.0	.000	.001	.000	.000	86.414	
132	132.0	1435.0	.000	.001	.000	.000	85.248	
131	131.0	1465.3	.000	.001	.000	.000	84.084	
130	130.0	1496.0	.000	.001	.000	.000	82.922	
129	129.0	1527.2	.000	.001	.000	.000	81.764	
128	128.0	1558.8	.000	.001	.000	.000	80.607	
127	127.0	1590.9	.000	.001	.000	.000	79.454	
126	126.0	1623.4	.000	.002	.000	.000	78.304	
125	125.0	1656.3	.000	.002	.000	.000	77.156	
124	124.0	1689.7	.000	.002	.000	.000	76.013	
123	123.0	1723.5	.000	.002	.000	.000	74.873	
122	122.0	1757.7	.000	.002	.000	.000	73.737	
121	121.0	1792.4	.000	.002	.000	.000	72.604	
120	120.0	1827.6	.000	.002	.000	.000	71.477	
119	119.0	1863.2	.000	.002	.000	.000	70.354	
118	118.0	1899.3	.000	.002	.000	.000	69.235	
117	117.0	1935.8	.000	.003	.000	.000	68.121	
116	116.0	1972.8	.000	.003	.000	.000	67.013	
115	115.0	2010.3	.000	.003	.000	.000	65.910	
114	114.0	2048.3	.000	.003	.000	.000	64.812	
113	113.0	2086.7	.000	.003	.000	.000	63.720	
112	112.0	2125.6	.000	.003	.000	.000	62.634	
111	111.0	2165.0	.000	.003	.000	.000	61.555	
110	110.0	2204.8	.000	.003	.000	.000	60.482	
109	109.0	2245.2	.000	.004	.000	.000	59.416	
108	108.0	2286.0	.000	.004	.000	.000	58.358	
SECTION 3 (ELEV 76.00- 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS								
107	107.0	2740.8	.000	.003	.000	.000	57.306	
106	106.0	2791.0	.000	.003	.000	.000	56.262	
105	105.0	2841.9	.000	.003	.000	.000	55.224	
104	104.0	2893.4	.000	.003	.000	.000	54.193	
103	103.0	2945.5	.000	.004	.000	.000	53.169	
102	102.0	2998.2	.000	.004	.000	.000	52.152	
101	101.0	3051.5	.000	.004	.000	.000	51.143	
100	100.0	3105.5	.000	.004	.000	.000	50.141	
99	99.0	3160.1	.000	.004	.000	.000	49.147	
98	98.0	3215.4	.000	.004	.000	.000	48.162	
97	97.0	3271.2	.000	.004	.000	.000	47.184	
96	96.0	3327.8	.000	.004	.000	.000	46.215	
95	95.0	3384.9	.000	.004	.000	.000	45.254	
94	94.0	3442.8	.000	.004	.000	.000	44.302	
93	93.0	3501.2	.000	.004	.000	.000	43.359	
92	92.0	3560.4	.000	.005	.000	.000	42.425	
91	91.0	3620.2	.000	.005	.000	.000	41.501	
90	90.0	3680.6	.000	.005	.000	.000	40.585	
89	89.0	3741.8	.000	.005	.000	.000	39.679	
88	88.0	3803.6	.000	.005	.000	.000	38.783	
87	87.0	3866.1	.000	.005	.000	.000	37.896	
86	86.0	3929.2	.000	.005	.000	.000	37.019	
85	85.0	3993.1	.000	.005	.000	.000	36.152	
84	84.0	4057.6	.000	.005	.000	.000	35.295	
83	83.0	4122.8	.000	.005	.000	.000	34.449	
82	82.0	4188.8	.000	.005	.000	.000	33.612	
81	81.0	4255.4	.000	.005	.000	.000	32.787	
80	80.0	4322.7	.000	.005	.000	.000	31.971	
79	79.0	4390.7	.000	.005	.000	.000	31.166	
78	78.0	4459.5	.000	.005	.000	.000	30.372	
77	77.0	4528.9	.000	.005	.000	.000	29.589	
SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS								
76	76.0	5183.5	.000	.005	.000	.000	28.816	
75	75.0	5265.1	.000	.005	.000	.000	28.054	
74	74.0	5347.6	.000	.005	.000	.000	27.302	
73	73.0	5430.9	.000	.005	.000	.000	26.559	
72	72.0	5515.1	.000	.005	.000	.000	25.826	
71	71.0	5600.1	.000	.005	.000	.000	25.104	
70	70.0	5686.1	.000	.005	.000	.000	24.391	
69	69.0	5772.8	.000	.005	.000	.000	23.688	
68	68.0	5860.5	.000	.005	.000	.000	22.996	
67	67.0	5949.0	.000	.005	.000	.000	22.314	
66	66.0	6038.5	.000	.005	.000	.000	21.642	
65	65.0	6128.8	.000	.005	.000	.000	20.980	
64	64.0	6220.0	.000	.005	.000	.000	20.328	
63	63.0	6312.2	.000	.005	.000	.000	19.687	
62	62.0	6405.2	.000	.005	.000	.000	19.056	
61	61.0	6499.1	.000	.005	.000	.000	18.436	
60	60.0	6594.0	.000	.005	.000	.000	17.826	
59	59.0	6689.8	.000	.005	.000	.000	17.227	
58	58.0	6786.4	.000	.005	.000	.000	16.638	
57	57.0	6884.1	.000	.005	.000	.000	16.059	
56	56.0	6982.6	.000	.005	.000	.000	15.492	
55	55.0	7082.1	.000	.005	.000	.000	14.934	
54	54.0	7182.5	.000	.005	.000	.000	14.388	
53	53.0	7283.9	.000	.005	.000	.000	13.852	
52	52.0	7386.2	.000	.005	.000	.000	13.327	
51	51.0	7489.5	.000	.005	.000	.000	12.813	
50	50.0	7593.8	.000	.005	.000	.000	12.309	
49	49.0	7699.0	.000	.005	.000	.000	11.816	
48	48.0	7805.1	.000	.005	.000	.000	11.334	
47	47.0	7912.3	.000	.005	.000	.000	10.863	
46	46.0	8020.4	.000	.005	.000	.000	10.402	
SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS								

45	45.0	8886.2	.000	.005	.000	.000	9.952
44	44.0	9009.2	.000	.005	.000	.000	9.513
43	43.0	9133.3	.000	.005	.000	.000	9.084
42	42.0	9258.6	.000	.005	.000	.000	8.664
41	41.0	9384.9	.000	.005	.000	.000	8.254
40	40.0	9512.5	.000	.005	.000	.000	7.855
39	39.0	9641.2	.000	.005	.000	.000	7.465
38	38.0	9771.0	.000	.005	.000	.000	7.085
37	37.0	9902.0	.000	.005	.000	.000	6.716
36	36.0	10034.1	.000	.005	.000	.000	6.356
35	35.0	10167.5	.000	.005	.000	.000	6.006
34	34.0	10302.0	.000	.005	.000	.000	5.666
33	33.0	10437.7	.000	.005	.000	.000	5.336
32	32.0	10574.5	.000	.005	.000	.000	5.016
31	31.0	10712.6	.000	.005	.000	.000	4.706
30	30.0	10851.9	.000	.005	.000	.000	4.406
29	29.0	10992.3	.000	.005	.000	.000	4.116
28	28.0	11134.0	.000	.005	.000	.000	3.835
27	27.0	11276.9	.000	.005	.000	.000	3.565
26	26.0	11421.0	.000	.005	.000	.000	3.305
25	25.0	11566.3	.000	.005	.000	.000	3.054
24	24.0	11712.8	.000	.005	.000	.000	2.814
23	23.0	11860.6	.000	.005	.000	.000	2.583
22	22.0	12009.6	.000	.005	.000	.000	2.363
21	21.0	12159.9	.000	.005	.000	.000	2.152
20	20.0	12311.4	.000	.005	.000	.000	1.951
19	19.0	12464.2	.000	.005	.000	.000	1.760
18	18.0	12618.2	.000	.005	.000	.000	1.579
17	17.0	12773.5	.000	.005	.000	.000	1.408
16	16.0	12930.1	.000	.005	.000	.000	1.247
15	15.0	13087.9	.000	.005	.000	.000	1.095
14	14.0	13247.0	.000	.005	.000	.000	.954
13	13.0	13407.4	.000	.005	.000	.000	.822
12	12.0	13569.1	.000	.005	.000	.000	.700
11	11.0	13732.0	.000	.005	.000	.000	.588
10	10.0	13896.3	.000	.005	.000	.000	.486
9	9.0	14061.9	.000	.005	.000	.000	.393
8	8.0	14228.8	.000	.005	.000	.000	.311
7	7.0	14397.0	.000	.005	.000	.000	.238
6	6.0	14566.5	.000	.005	.000	.000	.175
5	5.0	14737.4	.000	.005	.000	.000	.121
4	4.0	14909.6	.000	.005	.000	.000	.078
3	3.0	15083.1	.000	.005	.000	.000	.044
2	2.0	15257.9	.000	.005	.000	.000	.019
1	1.0	15434.1	.000	.005	.000	.000	.005

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529A

SWAY ANALYSIS RESULTS

Memb	Elev. (ft.)	Mom_Inert (in4)	sway due to Pres.S.S (degree)	Moment (degree)	Prev.S.S (degree)	Pt.Ld (degree)	Total Sway (degree)	
SECTION 4 (ELEV 107.00~ 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS								
147	147.0	1028.9	.0000	.0000	.0000	.0000	5.6543	
146	146.0	1053.2	.0000	.0009	.0005	.0005	5.6543	
145	145.0	1077.9	.0000	.0018	.0005	.0000	5.6524	
144	144.0	1103.0	.0000	.0026	.0005	.0000	5.6502	
143	143.0	1128.5	.0000	.0035	.0005	.0000	5.6471	
142	142.0	1154.3	.0000	.0043	.0005	.0000	5.6432	
141	141.0	1180.6	.0000	.0050	.0004	.0000	5.6385	
140	140.0	1207.2	.0000	.0058	.0004	.0000	5.6330	
139	139.0	1234.3	.0000	.0065	.0004	.0000	5.6268	
138	138.0	1261.7	.0000	.0072	.0004	.0000	5.6198	
137	137.0	1289.6	.0000	.0079	.0004	.0000	5.6121	
136	136.0	1317.8	.0000	.0086	.0004	.0000	5.6037	
135	135.0	1346.5	.0000	.0093	.0004	.0000	5.5947	
134	134.0	1375.6	.0000	.0099	.0004	.0000	5.5850	
133	133.0	1405.0	.0000	.0106	.0004	.0000	5.5746	
132	132.0	1435.0	.0000	.0112	.0004	.0000	5.5636	
131	131.0	1465.3	.0000	.0118	.0004	.0000	5.5520	
130	130.0	1496.0	.0000	.0123	.0004	.0000	5.5398	
129	129.0	1527.2	.0000	.0129	.0004	.0000	5.5271	
128	128.0	1558.8	.0000	.0135	.0004	.0000	5.5137	
127	127.0	1590.9	.0000	.0140	.0004	.0000	5.4998	
126	126.0	1623.4	.0000	.0152	.0007	.0003	5.4854	
125	125.0	1656.3	.0000	.0163	.0007	.0000	5.4692	
124	124.0	1689.7	.0000	.0174	.0007	.0000	5.4522	
123	123.0	1723.5	.0000	.0184	.0007	.0000	5.4341	
122	122.0	1757.7	.0000	.0194	.0007	.0000	5.4150	
121	121.0	1792.4	.0000	.0204	.0007	.0000	5.3949	
120	120.0	1827.6	.0000	.0214	.0007	.0000	5.3738	
119	119.0	1863.2	.0000	.0223	.0007	.0000	5.3518	
118	118.0	1899.3	.0000	.0232	.0007	.0000	5.3288	
117	117.0	1935.8	.0000	.0240	.0007	.0000	5.3050	
116	116.0	1972.8	.0000	.0249	.0006	.0000	5.2803	
115	115.0	2010.3	.0000	.0262	.0009	.0003	5.2548	
114	114.0	2048.3	.0000	.0276	.0009	.0000	5.2273	
113	113.0	2086.7	.0000	.0289	.0009	.0000	5.1988	
112	112.0	2125.6	.0000	.0301	.0009	.0000	5.1690	
111	111.0	2165.0	.0000	.0314	.0009	.0000	5.1380	
110	110.0	2204.8	.0000	.0325	.0009	.0000	5.1057	
109	109.0	2245.2	.0000	.0337	.0009	.0000	5.0723	
108	108.0	2286.0	.0000	.0348	.0009	.0000	5.0378	
SECTION 3 (ELEV 76.00~ 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS								
107	107.0	2740.8	.0000	.0304	.0007	.0000	5.0021	
106	106.0	2791.0	.0000	.0313	.0007	.0000	4.9710	
105	105.0	2841.9	.0000	.0321	.0007	.0000	4.9390	
104	104.0	2893.4	.0000	.0332	.0008	.0001	4.9062	
103	103.0	2945.5	.0000	.0342	.0008	.0000	4.8720	

102	102.0	2998.2	.0000	.0352	.0008	.0000	4.8370
101	101.0	3051.5	.0000	.0362	.0008	.0000	4.8009
100	100.0	3105.5	.0000	.0371	.0008	.0000	4.7640
99	99.0	3160.1	.0000	.0380	.0008	.0000	4.7261
98	98.0	3215.4	.0000	.0389	.0008	.0000	4.6873
97	97.0	3271.2	.0000	.0397	.0008	.0000	4.6476
96	96.0	3327.8	.0000	.0405	.0007	.0000	4.6072
95	95.0	3384.9	.0000	.0413	.0007	.0000	4.5659
94	94.0	3442.8	.0000	.0421	.0007	.0000	4.5239
93	93.0	3501.2	.0000	.0428	.0007	.0000	4.4811
92	92.0	3560.4	.0000	.0435	.0007	.0000	4.4376
91	91.0	3620.2	.0000	.0442	.0007	.0000	4.3934
90	90.0	3680.6	.0000	.0448	.0007	.0000	4.3485
89	89.0	3741.8	.0000	.0454	.0007	.0000	4.3030
88	88.0	3803.6	.0000	.0460	.0007	.0000	4.2569
87	87.0	3866.1	.0000	.0466	.0007	.0000	4.2102
86	86.0	3929.2	.0000	.0472	.0007	.0000	4.1629
85	85.0	3993.1	.0000	.0477	.0007	.0000	4.1150
84	84.0	4057.6	.0000	.0483	.0006	.0000	4.0666
83	83.0	4122.8	.0000	.0488	.0006	.0000	4.0177
82	82.0	4188.8	.0000	.0493	.0006	.0000	3.9683
81	81.0	4255.4	.0000	.0497	.0006	.0000	3.9184
80	80.0	4322.7	.0000	.0502	.0006	.0000	3.8681
79	79.0	4390.7	.0000	.0506	.0006	.0000	3.8173
78	78.0	4459.5	.0000	.0510	.0006	.0000	3.7660
77	77.0	4528.9	.0000	.0514	.0006	.0000	3.7144

SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS

76	76.0	5183.5	.0000	.0460	.0005	.0000	3.6623
75	75.0	5265.1	.0000	.0463	.0005	.0000	3.6158
74	74.0	5347.6	.0000	.0466	.0005	.0000	3.5690
73	73.0	5430.9	.0000	.0469	.0005	.0000	3.5218
72	72.0	5515.1	.0000	.0472	.0005	.0000	3.4744
71	71.0	5600.1	.0000	.0475	.0005	.0000	3.4267
70	70.0	5686.1	.0000	.0477	.0005	.0000	3.3788
69	69.0	5772.8	.0000	.0480	.0005	.0000	3.3306
68	68.0	5860.5	.0000	.0482	.0005	.0000	3.2821
67	67.0	5949.0	.0000	.0484	.0005	.0000	3.2334
66	66.0	6038.5	.0000	.0486	.0005	.0000	3.1845
65	65.0	6128.8	.0000	.0489	.0005	.0000	3.1354
64	64.0	6220.0	.0000	.0491	.0005	.0000	3.0861
63	63.0	6312.2	.0000	.0492	.0005	.0000	3.0366
62	62.0	6405.2	.0000	.0494	.0005	.0000	2.9869
61	61.0	6499.1	.0000	.0496	.0004	.0000	2.9370
60	60.0	6594.0	.0000	.0498	.0004	.0000	2.8870
59	59.0	6689.8	.0000	.0499	.0004	.0000	2.8368
58	58.0	6786.4	.0000	.0501	.0004	.0000	2.7864
57	57.0	6884.1	.0000	.0502	.0004	.0000	2.7359
56	56.0	6982.6	.0000	.0503	.0004	.0000	2.6853
55	55.0	7082.1	.0000	.0505	.0004	.0000	2.6346
54	54.0	7182.5	.0000	.0506	.0004	.0000	2.5837
53	53.0	7283.9	.0000	.0507	.0004	.0000	2.5327
52	52.0	7386.2	.0000	.0508	.0004	.0000	2.4816
51	51.0	7489.5	.0000	.0509	.0004	.0000	2.4304
50	50.0	7593.8	.0000	.0510	.0004	.0000	2.3791
49	49.0	7699.0	.0000	.0511	.0004	.0000	2.3277
48	48.0	7805.1	.0000	.0512	.0004	.0000	2.2763
47	47.0	7912.3	.0000	.0512	.0004	.0000	2.2247
46	46.0	8020.4	.0000	.0513	.0004	.0000	2.1731

SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS

45	45.0	8886.2	.0000	.0470	.0003	.0000	2.1214
44	44.0	9009.2	.0000	.0470	.0003	.0000	2.0741
43	43.0	9133.3	.0000	.0471	.0003	.0000	2.0267
42	42.0	9258.6	.0000	.0471	.0003	.0000	1.9793
41	41.0	9384.9	.0000	.0471	.0003	.0000	1.9318
40	40.0	9512.5	.0000	.0472	.0003	.0000	1.8844
39	39.0	9641.2	.0000	.0472	.0003	.0000	1.8369
38	38.0	9771.0	.0000	.0472	.0003	.0000	1.7894
37	37.0	9902.0	.0000	.0472	.0003	.0000	1.7418
36	36.0	10034.1	.0000	.0472	.0003	.0000	1.6943
35	35.0	10167.5	.0000	.0472	.0003	.0000	1.6468
34	34.0	10302.0	.0000	.0472	.0003	.0000	1.5992
33	33.0	10437.7	.0000	.0472	.0003	.0000	1.5517
32	32.0	10574.5	.0000	.0472	.0003	.0000	1.5042
31	31.0	10712.6	.0000	.0472	.0003	.0000	1.4566
30	30.0	10851.9	.0000	.0472	.0003	.0000	1.4091
29	29.0	10992.3	.0000	.0472	.0003	.0000	1.3616
28	28.0	11134.0	.0000	.0472	.0003	.0000	1.3141
27	27.0	11276.9	.0000	.0472	.0003	.0000	1.2667
26	26.0	11421.0	.0000	.0471	.0003	.0000	1.2192
25	25.0	11566.3	.0000	.0471	.0003	.0000	1.1718
24	24.0	11712.8	.0000	.0471	.0003	.0000	1.1244
23	23.0	11860.6	.0000	.0471	.0003	.0000	1.0770
22	22.0	12009.6	.0000	.0470	.0003	.0000	1.0297
21	21.0	12159.9	.0000	.0470	.0003	.0000	.9824
20	20.0	12311.4	.0000	.0470	.0003	.0000	.9351
19	19.0	12464.2	.0000	.0469	.0003	.0000	.8879
18	18.0	12618.2	.0000	.0469	.0003	.0000	.8407
17	17.0	12773.5	.0000	.0468	.0003	.0000	.7936
16	16.0	12930.1	.0000	.0468	.0003	.0000	.7465
15	15.0	13087.9	.0000	.0468	.0003	.0000	.6994
14	14.0	13247.0	.0000	.0467	.0003	.0000	.6524
13	13.0	13407.4	.0000	.0467	.0003	.0000	.6054
12	12.0	13569.1	.0000	.0466	.0003	.0000	.5585
11	11.0	13732.0	.0000	.0466	.0003	.0000	.5117
10	10.0	13896.3	.0000	.0465	.0003	.0000	.4649
9	9.0	14061.9	.0000	.0464	.0002	.0000	.4181
8	8.0	14228.8	.0000	.0464	.0002	.0000	.3714
7	7.0	14397.0	.0000	.0463	.0002	.0000	.3248
6	6.0	14566.5	.0000	.0463	.0002	.0000	.2782
5	5.0	14737.4	.0000	.0462	.0002	.0000	.2317
4	4.0	14909.6	.0000	.0462	.0002	.0000	.1852
3	3.0	15083.1	.0000	.0461	.0002	.0000	.1388
2	2.0	15257.9	.0000	.0460	.0002	.0000	.0925
1	1.0	15434.1	.0000	.0460	.0002	.0000	.0462

ANALYSIS PRINTOUT

```
Version: FDN2-D65/AK
**********************************************************
*               FOUNDATION ANALYSIS PROGRAM              *
*                     Pier Analysis                      *
*         (c) 1999, Malouf Engineering Intl., Inc.       *
**********************************************************

------------------------------------------------------------------------------
MEI JOB NUMBER = 00-529A
DESCRIPTION    = 147' MONOPOLE FOUNDATION CHK
SITE NAME      = NYC0011/BRANFORD, CT
CLIENT NAME    = METRICOM, INC
TIME/DATE/FILE = 10:12:45 / 11-09-2000 / 00-529A1.mnp
------------------------------------------------------------------------------

======================
 INPUT DATA
======================
*LOADS*                                          | ORIGINAL DESIGN
COMPRESSION FORCE              =    32.980 KIPS  |    26.000 KIPS
UPLIFT FORCE                   =      .000 KIPS  |      .000 KIPS
SHEAR FORCE                    =    25.200 KIPS  |    25.000 KIPS
MOMENT                         =  2708.520 KIP-FT |  2616.000 KIP-FT

*PIER DIMENSIONS AND PROPERTIES*
PIER DEPTH                     =    22.500 FT
PIER DIAMETER                  =     7.000 FT
EXTENSION ABOVE GRADE          =      .500 FT

*FACTOR OF SAFETY VALUES*
F.O.S. BEARING PRESSURE        =     2.000
F.O.S. PASSIVE PRESSURE        =     2.000
F.O.S. CONCRETE WEIGHT         =     1.250
F.O.S. SOIL WEIGHT             =     1.500
F.O.S. SKIN FRICTION (UPLIFT)  =     2.000
F.O.S. SKIN FRICTION (DOWNLD)  =     2.000

*SOIL LAYER DATA*  (WATER DEPTH=  5.0FT)
------------------------------------------------------------------------------
                 |                          ULT.    ULT.    SOIL CONCR. ULT.
  DESCRIPTION    | THK DEPTH  PHI     Cu PASS.PR SKIN FR  DENS. DENS.  Q
                 |  ft    ft  deg    ksf    kcf     ksf     kcf   kcf  ksf
                 |
1 NEGLECT        | 3.0   3.0   .0   .000   .100*   .000   .100  .150   .0
2 SANDY          | 2.0   5.0 36.0   .000  1.040*   .162+  .120  .150 16.0
3 SANDY          |17.5  22.5 36.0   .000   .264*   .359+  .038  .088 16.0
------------------------------------------------------------------------------
* PASSIVE PRESSURE COMPUTED BASED ON SOIL FRICTION AND COHESION
+ SKIN FRICTION COMPUTED BASED ON SOIL FRICTION AND COHESION (ALPHA= .35)

*** COMMENTS ***
SOIL PARAMETERS AS PER ORIGINAL PAUL J FORD / SUMMIT MANUF CALCS.
```

```
======================
 RESULTS
======================
**COMPARISON WITH ORIGINAL DESIGN LOADS**
ORIGINAL COMPRESSION      =     26.0 KIPS <      33.0 KIPS (CHECK) R= 1.268
ORIGINAL SHEAR            =     25.0 KIPS <      25.2 KIPS (OK<5%) R= 1.008
ORIGINAL MOMENT           =   2616.0 K-FT <    2708.5 K-FT (OK<5%) R= 1.035

WT./VOL. OF SOIL ABOVE    =       .0 KIPS /     .000 FT3
WT./VOL. OF CONCRETE PIER =     90.7 KIPS /  885.144 FT3

SKIN RESISTANCE           =     72.6 KIPS (ALLOWABLE)
TIP BEARING CAPACITY      =    307.9 KIPS (ALLOWABLE)

UPLIFT CAPACITY OF PIER   =    145.2 KIPS >        .0 KIPS (OK)    R=  .000
TOTAL DOWNLOAD CAPACITY   =    380.5 KIPS >      33.0 KIPS (OK)    R=  .087

BROM'S METHOD FOR GRANULAR SOILS:
DEPTH OF SOIL NEGLECTED   =     3.000 FT
AVERAGE ALLW PASSIVE PRESS=      .126 KCF
REQUIRED PIER LENGTH      =   22.852 FT  ( 4.356 FT DEPTH TO ZERO SHEAR)
AVAILABLE PIER LENGTH     =   22.500 FT   <    22.852 FT   (OK<5%) R= 1.016
MAXIMUM MOMENT            =  2869.90 KIP-FT

==============================================================================
REINFORCEMENT CHECK (PIER FOUNDATION) L= 23.00' D= 84.0"  C= 3.0" FC= 3000 PSI
==============================================================================

FACTORED MOMENT LOAD      =  4145.41 KIP-FT
FACTORED COMPRESSION LOAD =    57.17 KIPS (ECC= 1044.")
REINFD. COMPR. CAPACITY =     99.99 KIPS (COMPR. & MOMENT: TENSION CONTROLS)

REQUIRED STEEL AREA       =  28.11 IN2 (COMPR. AND MOMENT)
REQUIRED STEEL AREA       =  27.71 IN2 (ACI MIN.= 0.005A)

TOTAL BAR AREA PROVIDED   =  49.97 IN2 (32 x NO.11 BARS) /FY= 60.KSI,C= 3.0"
THE TOTAL BAR AREA PROVIDED IS SUFFICIENT.
VERT. BAR CLEAR SPACING   =   6.25 IN
```

RUBENSTEIN & GREEN, L.L.C.
Attorneys and Counsellors at Law
Writer's e-mail: dbass@rubengreen.com

MARK A. RUBENSTEIN
DANIEL GREEN
DAVID I. BASS*
LISA K. KENT

Of Counsel
ALEXANDER H. SCHWARTZ*
STEPHEN GLAZER*

**Also admitted in New York*

315 POST ROAD WEST
POST OFFICE BOX 5143
WESTPORT, CONNECTICUT 06881-5143
TELEPHONE: (203) 222-0022
TELECOPIER: (203) 227-0766

November 13, 2000

RECEIVED
NOV 13 2000
CONNECTICUT
SITING COUNCIL

Mr. Mortimer A. Gelston, Chairman,
Connecticut Siting Council
10 Franklin Street
New Britain, Connecticut 06051

RE: Request by Metricom, Inc. for the Shared Use of an Existing Tower at 21 Acorn Road, Branford, Connecticut

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

Pursuant to Connecticut General Statutes (C.G.S.) § 16-50aa Metricom, Inc. hereby requests an order from the Connecticut Siting Council (the "Council") to approve the shared use of an existing tower located at 21 Acorn Road, in the Town of Branford, operated by Sprint Sites USA (the "Sprint Facility"). The Applicant has entered into an agreement with the tower operator to permit the installation of a wireless communications facility at the Sprint Facility.

The Sprint Facility

The Sprint Facility consists of a 150' telecommunications tower ("Tower") and other equipment at grade level within a fenced compound. Sprint and Nextel currently have antennas on the Tower at the 150' and 127' level of the monopole respectively and SNET intends on installing antennas at the 105' level of the Tower.

Metricom's Facility

Metricom is licensed by the Federal Communications Commission to provide high-speed wireless access to the Internet throughout the State of Connecticut. As shown on the enclosed plans prepared by URS Greiner, which includes a site plan and elevation, Metricom will install sixteen (16) ISM Larsen panel antennas and three (3) twelve (12)-foot Boom Mounts at the 116' centerline of the Tower and install necessary equipment within Sprint's existing building located within its compound.

Connecticut General Statues § 16-50aa provides that, upon written request for shared use approval, an order approving such use shall be issued, "if the council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns." (C.G.S. § 16-50aa(c)(1).) Further, upon approval of such shared use, it is exclusive and no

local zoning or land use approvals are required C.G.S. § 16-50x. Shared use of the Sprint Facility satisfies the approval criteria set forth in C.G.S. § 16-50aa as follows:

A. Technical Feasibility Metricom has confirmed that the tower is structurally capable of supporting the addition of Metricom, Inc.'s antennas as set forth in a Structural Report by E. Mark Malouf, PE revised November 10, 2000 , attached hereto. The proposed shared use of this tower is therefore technically feasible.

B. Legal Feasibility Pursuant to C.G.S. § 16-50aa, the Council has been authorized to issue an order approving shared use of the existing Sprint Facility. (C.G.S. § 16-50aa(c)(1)). Under the authority vested in the Council by C.G.S. § 16-50aa, an order by the Council approving the shared use of a tower would permit the Applicant to obtain a building permit for the proposed installation.

C. Environmental Feasibility The proposed shared use would have a minimal environmental effect, for the following reasons:

1. The proposed installation would have a de minimis visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing facility;

2. The proposed installation by Metricom, Inc. would not increase the height of the tower itself and would not extend the boundaries of Sprint's lease parcel;

3. The proposed installation would not increase the noise levels at the existing facility boundaries by six decibels or more;

4. The operation of Metricom's antennas will not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. The maximum potential exposure level around the Tower induced by the Metricom system is 0.0002 mW/cm^2 , which represents 0.041% of the FCC limit for continuous exposure of the general population. As the RF Exposure Report indicates, the "worst case" cumulative emissions from all existing and proposed antennas on the Tower equals 17.571% of the FCC limit for continuous exposure of the general population. See "Analysis and Report of RF Exposure Levels and Compliance with FCC Regulations", prepared by Edwards and Kelcey, attached.

5. The proposed shared use of the Sprint Facility would not require any water or sanitary facilities, or generate air emissions or discharges to water bodies. Further, the installation will not generate any traffic other than for periodic maintenance visits.

D. Economic Feasibility . The Applicant and tower operators have entered into a mutual agreement to share use of the Metricom Facility on terms agreeable to both parties. The proposed tower sharing is therefore economically feasible.

E. Public Safety As stated above and evidenced in the Radio Frequency Report prepared by Edward's and Kelcey, the operation of Metricom, Inc.'s antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. Additionally, the compound is completely fenced for security purposes. Further, the addition of Metricom, Inc.'s telecommunications service in the Branford area through shared use of the Sprint Facility is expected to enhance the welfare of local residents and meets public safety concerns.

Conclusion

As delineated above, the proposed shared use of the Sprint Facility satisfies the criteria set forth in C.G.S. § 16-50aa, and advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in the State of Connecticut. Metricom, Inc. therefore requests the Siting Council issue an order approving the proposed shared use of the Sprint Facility.

Respectfully submitted,

David I. Bass, Esq.
On behalf of Metricom, Inc.

cc: Mayor of Branford

ricochet™
METRICOM, Inc.

ACORN ROAD

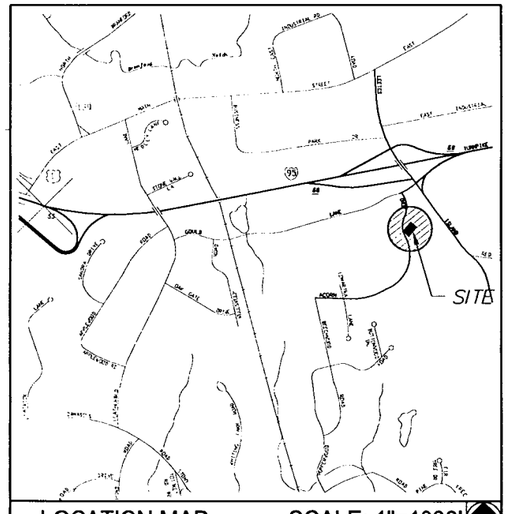
NYC0011-a

21 ACORN ROAD

BRANFORD, CONNECTICUT, 06405

LATITUDE 41°,17',36", LONGITUDE 72°,45',45"

RECEIVED
NOV 13 2000
CONNECTICUT
SITING COUNCIL



LOCATION MAP SCALE: 1"=1000'

- -TAKE I-95 NORTH TO EXIT 56.
- -TAKE A RIGHT AT THE END OF RAMP ONTO LEETES ISLAND RD.
- -THEN TAKE AN IMMEDIATE RIGHT ONTO GOULD LANE.
- -TAKE YOUR FIRST LEFT ONTO ACORN ROAD
- -THE SITE WILL BE ON YOUR LEFT DIRECTLY AHEAD.

DRIVING DIRECTIONS

THIS IS AN APPLICATION FOR AN:
UNMANNED WIRELESS DATA FACILITY CONSISTING OF WIRELESS DATA EQUIPMENT, AN EQUIPMENT PLATFORM, CONNECTING CABLES, AND DIRECTIONAL ANTENNAS. THE TOTAL NUMBER OF DIRECTIONAL WIRELESS DATA ANTENNAS SHALL NOT EXCEED 24. THE SIZE, HEIGHT, AND DIRECTION OF THE ANTENNAS SHALL BE ADJUSTED TO MEET SYSTEM REQUIREMENTS. RICOCHET IS A SERVICE OF METRICOM, INC. THAT PROVIDES WIRELESS ACCESS TO THE INTERNET VIA A WIRELESS MODEM. RICOCHET ALLOWS USERS THE FREEDOM AND FLEXIBILITY TO CONNECT TO THE INTERNET FROM WHEREVER THEY NEED TO ACCESS DATA.

PROJECT DESCRIPTION

APPLICANT/LESSEE

APPLICANT/LESSEE	METRICOM, INC. 218 MIDDLESEX STREET SUITE 201 HARRISON, NJ 07029

PROPERTY INFORMATION

OWNER: ADDRESS	SECONDINO & SON Inc. 21 ACORN ROAD BRANFORD, CONNECTICUT
CONTACT: PHONE:	KYLE MacCALLUM (201) 684-2134
AREA OF CONSTRUCTION:	120 SQ. FT.
ASSESSOR'S PARCEL NO:	MAP H05, LOT 10, BLOCK 3
DEED VOL/PAGE	VOL 568 / PAGE 731
CURRENT ZONING:	I-G2 (GENERAL INDUSTRIAL DISTRICT-2)
TYPE OF APPLICATION:	EXEMPT MODIFICATION
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.

PROJECT INFORMATION

EQUIPMENT LOCATION:	☐ OUTDOOR ☒ INDOOR
EQUIPMENT TYPE:	☒ ISM ☐ WCS ☐ ISM/WCS
ANTENNA LOCATION:	☐ GUY TOWER ☐ SELF SUPPORT TOWER ☒ EXISTING MONOPOLE ☐ MONOPOLE ☐ ROOF TOP ☐ EXISTING TOWER ☐ OTHER
PARAPET TYPE:	N/A

PROJECT SUMMARY

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. UNIFORM BUILDING CODE (UBC) 1997
2. BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA) 1996
3. UNIFORM MECHANICAL CODE (UMC) 1997
4. NATIONAL ELECTRIC CODE (NEC) WITH LOCAL AMMENDMENTS 1999
5. ANSI/EIA-222-F
6. LIFE SAFETY CODE NFPA-101-1990
7. AMERICAN INSTITUE OF STEEL CONSTRUCTION SPECIFICATIONS (ASC)
8. UNDERWATER LABORATORIES APPROVED ELECTRICAL PRODUCTS
9. LOCAL BUILDING CODE
10. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

ARCHITECT:

CONSULTANT'S NAME ADDRESS CITY, STATE, ZIP CONTACT: PHONE:	URS CORPORATION 500 ENTERPRISE DRIVE ROCKY HILL, CT 06067 DOUGLAS J. ROBERTS (860) 529-8882

STRUCTURAL ENGINEER:

CONSULTANT'S NAME ADDRESS CITY, STATE, ZIP CONTACT: PHONE:	N/A N/A N/A N/A N/A

ELECTRICAL ENGINEER:

CONSULTANT'S NAME ADDRESS CITY, STATE, ZIP CONTACT: PHONE:	URS CORPORATION 500 ENTERPRISE DRIVE ROCKY HILL, CT 06067 N. SUBRAMANIAN (860) 529-8882

SURVEYOR:

CONSULTANT'S NAME ADDRESS CITY, STATE, ZIP CONTACT: PHONE:	URS CORPORATION 500 ENTERPRISE DRIVE ROCKY HILL, CT 06067 MICHAEL G. WILMES (860) 529-6662

TOWER ENGINEER:

CONSULTANT'S NAME ADDRESS CITY, STATE, ZIP CONTACT: PHONE:	N/A N/A N/A N/A N/A

PROJECT TEAM

SHEET	DESCRIPTION
T-1	TITLE SHEET
SC-1	SITE PLAN
SC-2	ENLARGED SITE PLAN AND MONOPOLE ELEVATION

SHEET INDEX

TITLE	SIGNATURE	DATE
MDCMC		
RF ENGINEER		
REAL ESTATE		
METRICOM CSA AREA MANAGER		
PROPERTY OWNER		
SITTING COUNCIL APPROVAL		
CONSTRUCTION DIRECTOR		
ADDITIONAL APPROVAL		

APPLICANT APPROVAL LIST

ricochet™
Network Operations
218 MIDDLESEX STREET, SUITE 201
HARRISON, NJ 07029

PROJECT INFORMATION:

BRANFORD
NYC0011-a
21 ACORN ROAD
BRANFORD, CONNECTICUT 06405
NEW HAVEN COUNTY

CURRENT ISSUE DATE:
11/09/00

ISSUED FOR:
CT. SITING COUNCIL

REV.:	DATE:	DESCRIPTION:
A	05/26/00	CLIENT REVIEW
B	07/08/00	CT. SITING COUNCIL
C	08/08/00	CT. SITING COUNCIL
D	09/26/00	CT. SITING COUNCIL
E	10/04/00	CT SITING COUNCIL
F	10/11/00	ANTENNA HEIGHT REVISED
G	11/09/00	ANTENNA CHANGE

PLANS PREPARED BY:

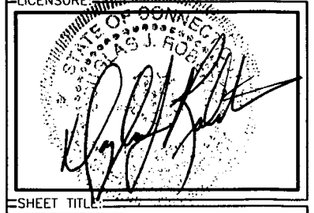
URS
URS CORPORATION AES
500 ENTERPRISE DRIVE
ROCKY HILL, CT. 06067
1-(860)-529-8882

CONSTRUCTION MANAGER:

WFI
the global leader
IN TELECOM OUTSOURCING

DRAWN BY:	CHK.:	APV.:
KJB		

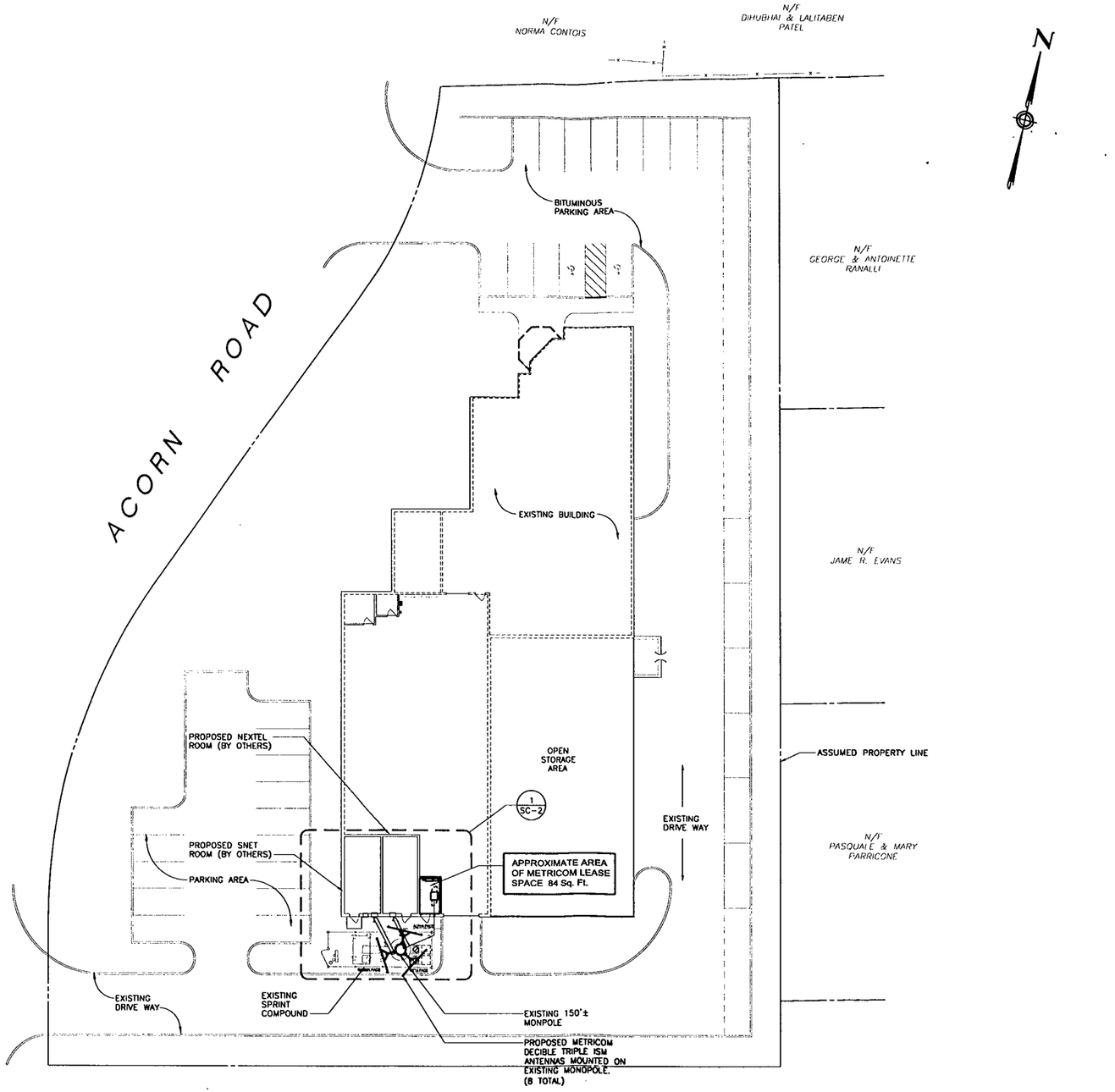
LICENSURE:



SHEET TITLE:
TITLE SHEET

SHEET NUMBER: T-1
REVISION: G F03

URS PROJECT NO.
F30001941.11



1 SC-1 **SITE PLAN**
SCALE: 1"=20'-0"

0 10 20 40

NOTE:
DURING CONSTRUCTION PHASE OF PROJECT 8 PARKING SPACES ARE REQUIRED FOR THE VARIOUS TRADES PEOPLE WORKING AT THE PROPOSED SITE. UPON COMPLETION OF PROJECT A SINGLE (1) PARKING SPACE WILL BE REQUIRED FOR ONCE A MONTH FOR MAINTENANCE VISITS.

NOTE:
DO NOT SCALE DRAWINGS. ALL DIMENSIONS OF AND BETWEEN EXISTING BUILDINGS/STRUCUTURES, OR RELATIVE DISTANCES AS SHOWN BETWEEN EXISTING BUILDINGS/STRUCTURES, PROPERTY LINES AND THE TRUE NORTH ARE TO BE CONFIRMED BY SURVEYOR.

ricochet™
METRICOM, Inc.
Network Operations
218 MIDDLESEX STREET, SUITE 201
HARRISON, NJ 07029

PROJECT INFORMATION:

BRANFORD
NYC0011-a
21 ACORN ROAD
BRANFORD, CONNECTICUT 06405
NEW HAVEN COUNTY

CURRENT ISSUE DATE:
11/09/00

ISSUED FOR:
CT. SITING COUNCIL

REV.	DATE:	DESCRIPTION:
A	05/26/00	CLIENT REVIEW
B	07/08/00	CT. SITING COUNCIL
C	08/08/00	CT. SITING COUNCIL
D	09/26/00	CT. SITING COUNCIL
E	10/04/00	CT SITING COUNCIL
F	10/11/00	ANTENNA HEIGHT REVISED
G	11/09/00	ANTENNA CHANGE

PLANS PREPARED BY:

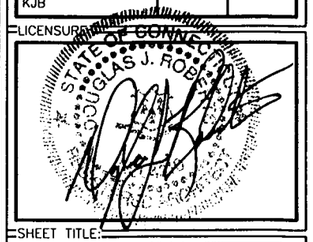
URS
URS CORPORATION AES
500 ENTERPRISE DRIVE
ROCKY HILL, CT. 06067
1-(860)-529-8882

CONSTRUCTION MANAGER:

WFI
the global leader
IN TELECOM OUTSOURCING

DRAWN BY:	CHK.:	APV.:
KJB		

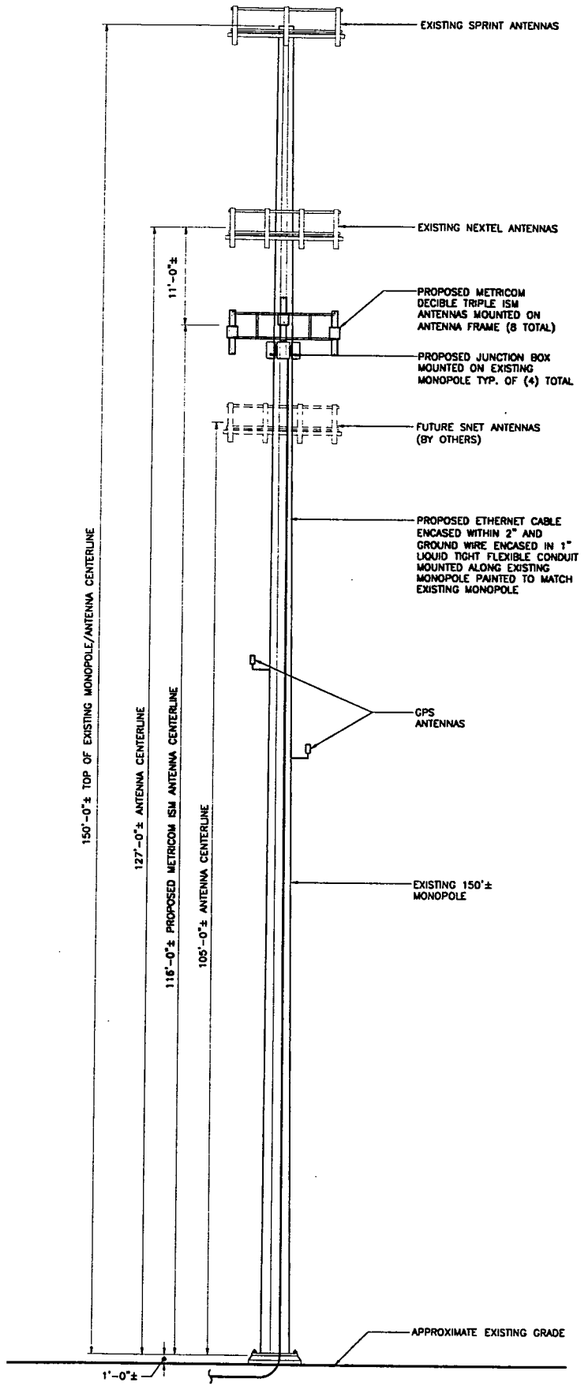
LICENSURE:



SHEET TITLE:
SITE
PLAN

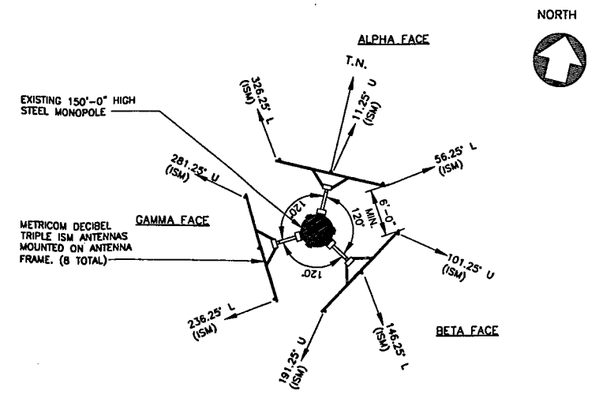
SHEET NUMBER:	REVISION:
SC-1	G F03

URS PROJECT NO.
F30000194 1.11

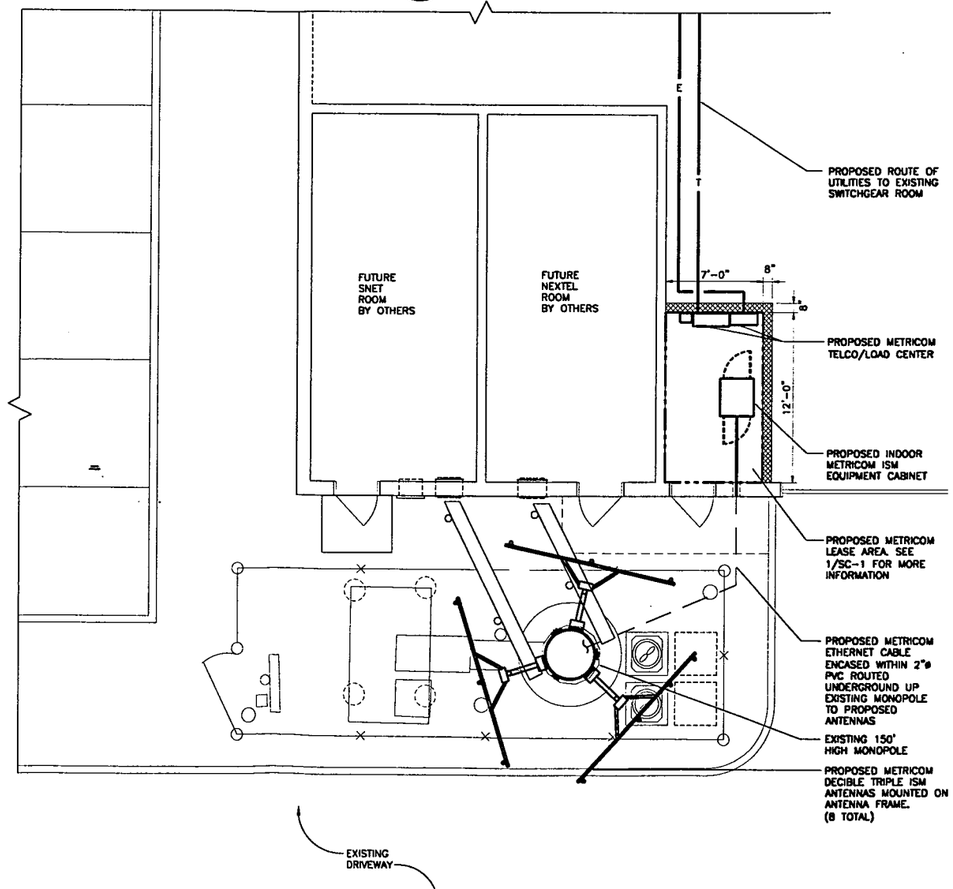


3 / SC-2 **MONOPOLE ELEVATION**
SCALE: 1/8"=1'-0"

0 4 8 16



2 / SC-2 **ANTENNA LAYOUT**
SCALE: N.T.S.



1 / SC-2 **ENLARGED SITE PLAN**
SCALE: 1"=5'-0"

0 2.5 5 10

ricochet™
NETWORKS, Inc.
Network Operations
218 MIDDLESEX STREET, SUITE 201
HARRISON, NJ 07029

PROJECT INFORMATION:

BRANFORD
NYC0011-a
21 ACORN ROAD
BRANFORD, CONNECTICUT 06405
NEW HAVEN COUNTY

CURRENT ISSUE DATE:
11/09/00

ISSUED FOR:
CT. SITING COUNCIL

REV.:	DATE:	DESCRIPTION:
A	05/26/00	CLIENT REVIEW
B	07/08/00	CT. SITING COUNCIL
C	08/08/00	CT. SITING COUNCIL
D	09/26/00	CT. SITING COUNCIL
E	10/04/00	CT SITING COUNCIL
F	10/11/00	ANTENNA HEIGHT REVISED
G	11/09/00	ANTENNA CHANGE

PLANS PREPARED BY:

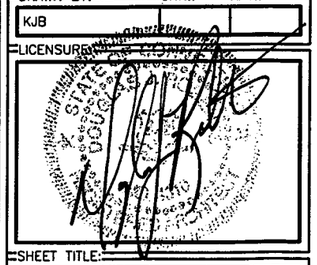
URS
URS CORPORATION AES
500 ENTERPRISE DRIVE
ROCKY HILL, CT. 06067
1-(860)-529-8882

CONSTRUCTION MANAGER:

WFI
the global leader
IN TELECOM OUTSOURCING

DRAWN BY:	CHK.:	APV.:
KJB		

LICENSURE:



SHEET TITLE:
ENLARGED SITE PLAN AND MONOPOLE ELEVATION

SHEET NUMBER:	REVISION:
SC-2	G
	F03

URS PROJECT NO.
F30000194I.11

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

November 3, 2000

Honorable Anthony J. DaRos
First Selectman
Town of Branford
Town Hall
1019 Main Street
P. O. Box 150
Branford, CT 06405-0150

RE: **EM-METRICOM-014-001026** - Metricom, Inc. notice of intent to modify an existing telecommunications facility located at 21 Acorn Road, Branford, Connecticut.

Dear Mr. DaRos:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

The Council will consider this item at the next meeting scheduled for November 14, 2000, at 11:00 a..m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

Please call me or inform the Council if you have any questions or comments regarding this proposal.

Thank you for your cooperation and consideration.

Very truly yours,

Joel M. Rinebold
Executive Director

JMR/RKE/laf

Enclosure: Notice of Intent

RUBENSTEIN & GREEN, L.L.C.
Attorneys and Counsellors at Law
Writer's e-mail: dbass@rubengreen.com

MARK A. RUBENSTEIN
DANIEL GREEN
DAVID I. BASS*
LISA K. KENT

Of Counsel
ALEXANDER H. SCHWARTZ*
STEPHEN GLAZER*

**Also admitted in New York*

315 POST ROAD WEST
POST OFFICE BOX 5143
WESTPORT, CONNECTICUT 06881-5143
TELEPHONE: (203) 222-0022
TELECOPIER: (203) 227-0766

October 25, 2000

Mr. Mortimer A. Gelston, Chairman,
Connecticut Siting Council
10 Franklin Street
New Britain, Connecticut 06051

RE: Metricom, Inc.'s Notice of Intent to Modify an Existing Telecommunications Tower located at 21 Acorn Road, Branford, Connecticut

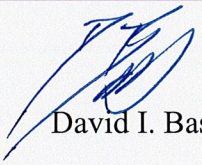
Dear Mr. Gelston:

Enclosed please find one original and twenty (20) copies of the following documents in support of the above stated application:

1. Notice of Intent to Modify an Existing Telecommunications Tower pursuant to Connecticut Agencies Regulations Sections 16-50j-72(b)(2).
2. Structural Report by E. Mark Malouf, PE dated June 29, 2000.
3. Radio Frequency Emissions Report, prepared by Edwards and Kelcey, dated July 27, 2000, demonstrating that the radio emissions from proposed Facility will be far below all FCC and State radio emission standards.
4. Site Plan Drawings prepared, signed and sealed by URS Greiner Woodard Clyde A.E.S. dated 5/26/00 as revised through 10/11/00
5. Application fee in the amount of $500.00

If you have any questions regarding the enclosed materials, please don't hesitate to contact me.

Very truly yours,



David I. Bass

DIB:lnst.o
Enclosure
cc: Mr. Julian Pedini (w/out enclosures)

RUBENSTEIN & GREEN, L.L.C.
Attorneys and Counsellors at Law
Writer's e-mail: dbass@rubengreen.com

MARK A. RUBENSTEIN
DANIEL GREEN
DAVID I. BASS*
LISA K. KENT

Of Counsel
ALEXANDER H. SCHWARTZ*
STEPHEN GLAZER*

**Also admitted in New York*

315 POST ROAD WEST
POST OFFICE BOX 5143
WESTPORT, CONNECTICUT 06881-5143
TELEPHONE: (203) 222-0022
TELECOPIER: (203) 227-0766

October 25, 2000

VIA Federal Express

Mr. Mortimer A. Gelston, Chairman,
Connecticut Siting Council
10 Franklin Street
New Britain, Connecticut 06051

RE: Metricom, Inc.'s Notice of Intent to Modify an Existing Telecommunications Tower located at 21 Acorn Road, Branford, Connecticut

Hon. Mortimer Gelston, Chairman and Members of the Siting Council:

Metricom, Inc., ("Metricom") requests approval to install additional antennas, cables and accessory equipment (the "Metricom Facility") at the existing Sprint tower ("Tower") and facility (the "Sprint Facility") located at Latitude 41°, 17', 36", Longitude 72°, 45', 45" and commonly known as 21 Acorn Road in the Town of Branford. Metricom requests a determination from the Siting Council that the addition of the Metricom Facility constitutes an exempt modification pursuant to Section 16-50j-72(b)(2) of the Regs., Conn. State Agencies, and will not constitute a modification to an existing telecommunications Tower that may have a substantial adverse environmental effect.

The Sprint Facility

The Sprint Facility consists of a 150' telecommunications tower ("Tower") and other equipment at grade level within a fenced compound. Sprint and Nextel currently have antennas on the Tower at the 150' and 127' level of the monopole respectively and SNET intends on installing antennas at the 105' level of the Tower.

Metricom's Facility

Metricom is licensed by the Federal Communications Commission to provide high-speed wireless access to the Internet throughout the state of Connecticut. As shown on the enclosed plans prepared by URS Greiner, which include a site plan and elevation, Metricom will install sixteen (16) ISM Larsen panel antennas and three (3) twelve (12) foot Boom Mounts at the 116' centerline level of the Tower and install necessary equipment within Sprint's existing building located within its lease compound.

For the following reasons the proposed Metricom Facility complies with the express requirements set forth in 16-50j-72(b)(2) of the Regs., Conn. State Agencies:

1. The Metricom Facility will not extend the Tower's height. The existing Tower is 150' in height and Metricom's proposed antennas will be installed at the 116' centerline level of the Tower. See "Monopole Elevation" on Sheet SC-2 of the enclosed plans.

2. The site boundaries will not be extended. . See "Site Plan" on Sheet SC-1 of the enclosed plans.

3. The proposed Metricom Facility will not increase the noise levels at the existing Sprint Facility by six decibels or more.

4. The operation of Metricom's antennas will not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. The maximum potential exposure level around the Tower induced by the Metricom system is 0.0002 mW/cm^2 ,which represents 0.041% of the FCC limit for continuous exposure of the general population. As the RF Exposure Report indicates, the "worst case" cumulative emissions from all existing and proposed antennas on the Tower equals 17.571% of the FCC limit for continuous exposure of the general population. See "Analysis and Report of RF Exposure Levels and Compliance with FCC Regulations", prepared by Edwards and Kelcey, attached hereto.

A structural analysis report demonstrating that the existing Tower is capable of supporting the proposed Metricom Facility is also submitted with this application

Finally, please note that in accordance with Section 16-50j-73 of the Regs., Conn. State Agencies, a copy of this Application is being provided to the Mayor of the Town of Branford.

Conclusion:

The proposed Metricom Facility advances the General Assembly's and the Siting Council's goal of preventing the proliferation of towers in the State of Connecticut. Therefore, Metricom respectfully requests that the Siting Council determine that: the proposed Metricom Facility fully complies with the requirements of Section 16-50j-72(b)(2) of the Regs., Conn. State Agencies and is an exempt modification of an existing Tower Facility. If you have any questions concerning this Application, please do not hesitate to contact me at (203) 222-0022.

Respectfully submitted,

David I. Bass, Esq.
on behalf of Metricom, Inc.

cc: Mayor, Town of Branford

Structural Analysis Report

Proposed Antennae Configuration
Existing 147 ft. Monopole Tower
BRANFORD SITE # NYC0011
SPRINT SITE # CT03XC021-05
Branford, Connecticut

MEI PROJECT # 00-529

MALOUF ENGINEERING INTL., INC.
STRUCTURAL CONSULTANTS

275 W. CAMPBELL ROAD, SUITE 611 ▪ RICHARDSON, TEXAS 75080-3549 ▪ TEL. 972-783-2578 FAX. 972-783-2583

MONOPOLE TOWER REPORT

Structural Analysis Report

Proposed Antennae Configuration
Existing 147 ft. Monopole Tower
BRANFORD SITE # NYC0011
SPRINT SITE # CT03XC021-05
Branford, Connecticut

MEI PROJECT # 00-529

For

METRICOM, INC.
Plano, Texas

Prepared by:

E. Mark Malouf, PE
Registered Professional Engineer
Connecticut # 17715

June 29, 2000

MALOUF ENGINEERING INTL., INC.
STRUCTURAL CONSULTANTS

275 W. CAMPBELL RD., SUITE 611 ■ RICHARDSON, TEXAS 75080-3549 ■ TEL. 972 -783-2578 FAX 972-783-2583
www.mei1inc.com

Table of Contents

I. SUMMARY

A stress analysis was performed by MEI as requested and authorized by Mr. Jay Ditsworth, MetriCom, Inc. and Alan Saccente, WFI, Inc., to determine whether the existing monopole will be in compliance with the TIA/EIA 222-F Standard when supporting the antenna configuration loading. The different report sections detail the applicable information used in this evaluation, relating to the monopole data, the antenna configuration and the wind and ice loading considered.

Based on the analysis results, the tower pole stresses and foundation are marginally in conformance with the TIA/EIA 222F Standard for the loading considered.

II. TOWER HISTORY / DATA

The following information has been made available or is known to MEI :

	Type of Information
Tower Location	21 Acorn Rd, Branford, CT 10590 / 41-17-36 N LAT 72-45-45 W LON
Tower Owner / Site Number	SPRINT SITES USA, Irving, TX – **Site # CT03XC021-05**
Original Designer Fabricator	SUMMIT MANUFACTURING – West Hazleton, PA
Origination Date	1997
Tower Model & Configuration	*147 ft.* ***12-Sided*** - made of uniformly tapered slip-joint sections. Base Diameter across flats varying from 45.12 inches Width Across Flats at the base to 22.00 inches Width Across Flats at the top with a uniform taper and is fabricated of four (4) 12-sided tubular sections.
Original Wind & Ice Requirements	TIA/EIA -222-F – 90 Mph + 0" Ice
Tower History / Prior Structural Modification	No details available. No known prior structural modification.

INFORMATION SUPPLIED FOR ANALYSIS:

All tower information used in the analysis was obtained as follows:

	Supplied By	***Type of Information***
Tower Mast	METRICOM – Jay Ditsworth	Original Tower Manufacturer Mast Drawing and Design Calculations, Summit job # 2737-97, PJF job # 29297-566, dated 9/29/97.
Antennas	METRICOM – Jay Ditsworth	Existing and future antenna information as per supplied data by Metricom including Sprint Sites letter dated 5/9/00 and updated e-mail on 6/27/00. Proposed antenna information as per updated e-mail on 6/27/00 and per Ravi Bhatia letter supplied by Jay Ditsworth of Metricom.
Foundation	METRICOM – Jay Ditsworth	Foundation data as per Summit job # 2737-97, PJF job # 29297-566, dated 9/29/97. Soil parameters were included in the original design calculations.

Monopole and antenna data used in analysis is based on and is as accurate as the data furnished/obtained. Please review monopole model and antenna configuration and if any discrepancies are noted, please notify MEI.

MATERIALS INFORMATION USED IN ANALYSIS:

The following material properties were used for this structural analysis:

Monopole Mast*	*Shaft* : ASTM A-607 Material - Gr. 60 KSI Yield Strength
Splice Type*	Slip-Joint connections
Anchor Bolts Type*	ASTM A-615 Gr. 75 #18J bolts

* = As per As per Summit job # 2737-97, PJF job # 29297-566, dated 9/29/97.

ASSUMPTIONS:

This engineering study is based on the theoretical capacity of the members and is not a condition assessment of the monopole. This analysis is from information supplied, and therefore, its results are based on and as accurate as that supplied data. MEI has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural stress analysis:

- The Monopole shaft sizes and shape are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
- The antenna configuration is as supplied and/or as stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
- Some assumptions are made regarding antennas and mounts sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type & industry practice.
- The top platform, if applicable, is considered adequate to support the loading. No actual analysis of the platform itself is performed, with the analysis being limited to analyzing the pole and its foundation.
- The soil parameters are as per data supplied or as assumed and stated in the calculations. Refer to the Appendix. If no data is available, the foundation system is assumed to support the structure with its new reactions.
- This existing monopole is assumed, for the purpose of this analysis, to have been properly maintained in accordance with the TIA/EIA Standard and/or its original manufacturer and to be in good condition with no structural defects and with no deterioration to its member capacities ('as-new' condition).
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.

MEI recommends that an assessment of the actual condition of the monopole be performed by qualified personnel. Please contact MEI for a checklist.

III. ANALYSIS

The purpose of this independent stress analysis review is to determine that the existing monopole design is in conformance to the ANSI/TIA/EIA 222-F Standard requirements for the proposed antennae configuration loads installation by METRICOM, INC.

The proprietary Monopole Tower Computer Program provides a complete and rigorous analysis based on a three-dimensional, cantilevered pole type structure with a fixed base. The computer program analyzes Round, 12-sided, 16-sided or 18-sided monopole towers. The wind is applied to all members with the appropriate shape factors according to code. This existing tower is assumed, for the purpose of this analysis, to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its member capacities. Refer to the related section in this report for a listing of the assumptions made.

The subject tower is analyzed for conformance with the following:

Minimum Code Requirements	*New Haven County Area, Connecticut* ANSI/TIA/EIA 222-F Standard *85 Mph basic wind speed*
Present Analysis	ANSI/TIA/EIA 222-F Standard – June 1996
Basic wind speed Used	*85 Mph with 0" Ice controls over 74 Mph + ½" ice condition*

ANTENNA LOADS

The following antenna loading configuration was considered:

ELEVATION	APPURTENANCES DESCRIPTION	TENANT NAME	LOCATION	TRANSMISSION LINES
ft - AGL	PROPOSED		Orientation	
116.0	*(16) Larsen ISM Dual Band Panel Antennas + (3) 12' Antenna Boom Mounts (max. mounts CaAa = 68 ft² total)*	*METRICOM*	*0°, 120°, 240°*	*2" Dia. Conduit – external*
	EXISTING / FUTURE			
147.0	Lightning Rod			
147.0	(9) DB980H90 Panel Antennas + Low Profile Platform	SPRINT		(9) 1 5/8" Dia. – internal
127.0	(12) ALP9212 Panel Antennas + Low Profile Platform	NEXTEL		(12) 1-5/8" Dia. - internal
105.0	(9) Algon 7120.16 Panel Antennas + Low Profile Platform	SNET		(9) 1 1/4" Dia. – internal

Notes:
1. *The 2" conduit contains the ¼" Ethernet cables for the Metricom ISM antennas*
2. if any shielding is taken on the transmission lines, it is as per field data obtained / supplied.
3. The above antennas, mounts, and lines represent MEI's understanding of the proposed antenna configuration. If different than above, the analysis is invalid. Please refer to the appendix for projected wind areas used in the calculations for antennas and mounts. Please contact MEI if any discrepancies are found. Additional re-analysis charges may be incurred.

IV. RESULTS

The existing monopole tower is analyzed with the antennae configuration loading as stated in Section III and as per ANSI/TIA/EIA 222-F Standard requirements.

The results of the computer structural analysis indicated the following:

MEMBERS	RESULTS
POLE SHAFT	Elev. 0' – 9': up to 2.0% overstressed – **Acceptable** All other sections of the tower mast/shaft are Satisfactory *Max Stress Ratio = 102.3 %*
FOUNDATION	Based on Data Supplied – **Acceptable** *Max Stress Ratio = 102.3%*
DEFLECTION	Max Deflection at 85 Mph is 105.34 inches

Notes:

1. The percent of *Overstress* (OS) is the percentage that the maximum load in the member is above the allowable load as determined by Code requirements (which already includes the applicable allowed stress increase).
2. Refer to the Appendix for more details on the monopole member loads.
3. NG = Not Good / Not Satisfactory ; Acceptable = max. stress ratio between 100% to 105%; SF = Safety Factor.
4. *Basic Wind Speed is the Fastest-mile wind speed (a sustained type of wind) and is not a Gusting wind speed (short duration gust wind of 3-second duration in general).*

V. FINDINGS

- Based on the computer structural analysis results, *the existing monopole tower does marginally meet the requirements of ANSI/TIA/EIA 222-F Standard for a basic wind speed of 85 Mph with 0" Ice (controls) for the antennae configuration considered.*
- Based on the analysis results and data available, the *pole main shaft stress is below the maximum allowable capacity* (see pg. 6) at the previously noted elevations for the proposed antenna loading at the wind loading considered. Refer to the Graphical Results Diagrams in Appendix 2 for visual depictions of the analysis results.
- Based on the data available and soil parameters used, the existing foundation is *acceptable* for the new base reactions.
- This analysis considered the transmission lines to be located as previously stated in Section III.
- All tower and antenna data is based on information supplied by METRICOM, INC., and therefore, the analysis results are based on and as accurate as that supplied data.
- *The tower mast and foundation are at their maximum support capacity (102.3% stress ratio) at this wind loading; therefore, no additional loads besides should be installed without further structural evaluation.*

VI. RECOMMENDATIONS

- *The existing tower member stresses are marginally in conformance with the TIA/EIA 222-F Standard for the wind loading considered while supporting the previously stated proposed antenna configuration loads.*
- *Install the new MetriCom antennas at elevation 116 ft. c.l. AGL using the new 12 ft Antenna Boom Mounts (mounts CaAa = 68 ft^2 total) and the new conduit to be routed externally strapped to the pole. Install accordingly.*

Installation procedures and loading are not with the scope of this report and should be performed and evaluated by a competent tower erection contractor.

VII. REPORT SCOPE & LIMITATIONS

The engineering services rendered by MALOUF ENGINEERING INTERNATIONAL, INC. ('MEI') in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. MEI does not analyze the fabrication, including welding and connection capacities, except as included in this Report.

The information and conclusions contained in this report were determined by application of the current "state-of-the-art" engineering and analysis procedures and formulae, and MEI assumes no obligation to revise any of the information or conclusions contained in this report in the event such engineering and analysis procedures and formulae are hereafter modified or revised.

MEI makes no warranties, expressed or implied in connection with this Report and disclaims any liability arising from original design, material, fabrication, and erection deficiencies or the "As-Built" condition of this tower. MEI will not be responsible whatsoever for or on account of consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this Report. The maximum liability of MALOUF ENGINEERING INTERNATIONAL, INC. pursuant to this Report shall be limited to the total fee received for the preparation of this Report.

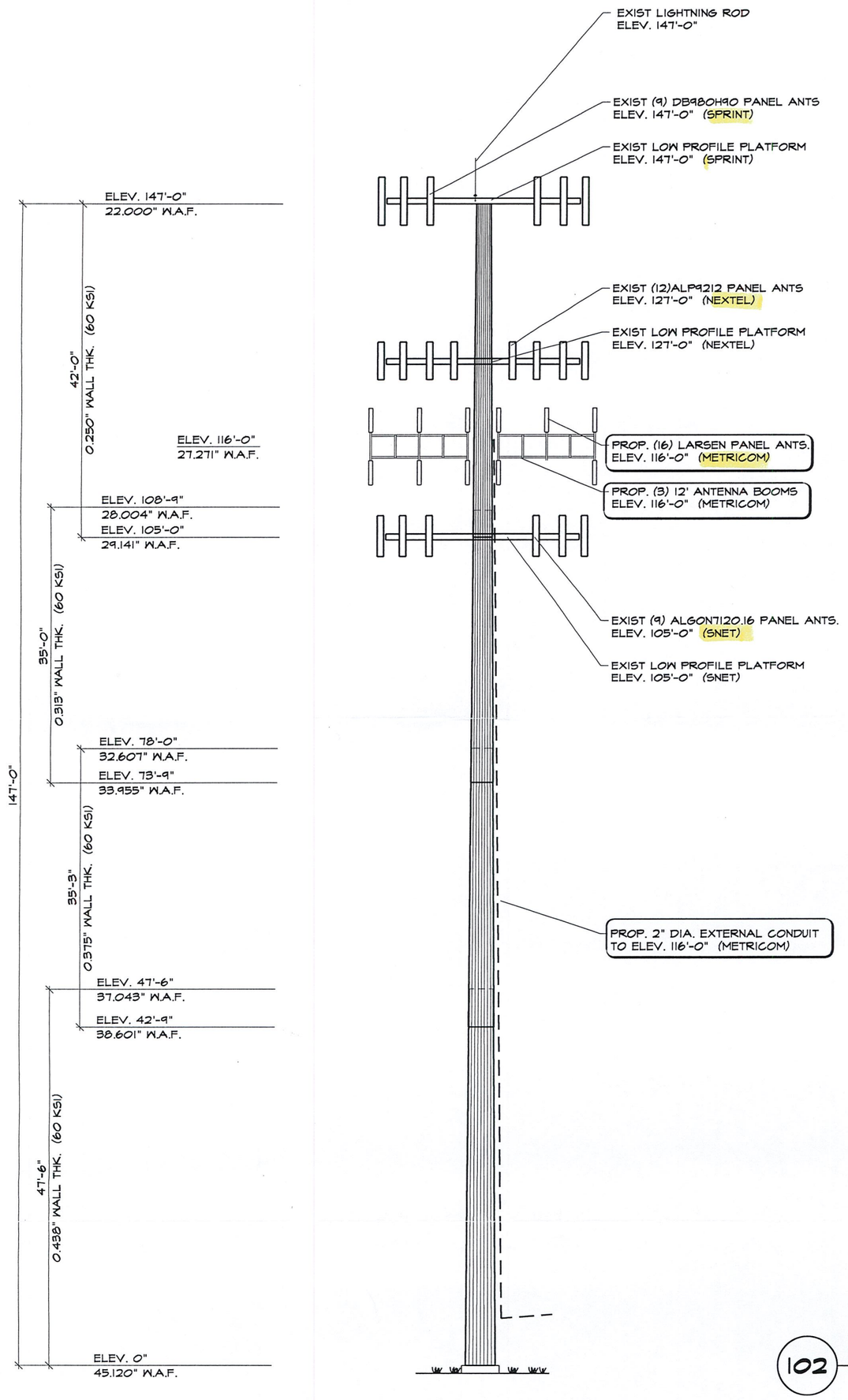
Installation procedures and loading are not within the scope of this report and should be performed and evaluated by a competent tower erection contractor. Modification Design is Not within the scope of this report. The tower reinforcement design and detailing can be performed by MEI under a new consulting agreement.

APPENDIX - 1

TOWER ELEVATION DRAWING

TOWER HT. & TYPE:	147' MONOPOLE
SITE NAME:	NYC0011/BRANFORD
LOCATION:	BRANFORD, CT
MANUF. / MODEL:	SUMMIT MANUF/18-SIDED
YEAR BUILT:	1997
ORIGINAL DESIGN CRITERIA:	TIA/EIA 222-F 90MPH + 0" ICE
PRESENT ANALYSIS CRITERIA:	TIA/EIA-222-F - 85 MPH + 0" ICE

SPRINT SITES USA SITE #CT03XC021-05



101 **ELEVATION: 147' MONOPOLE**
SCALE: 1"=15'

102 **SECTION: THRU TOWER**
SCALE: N.T.S.

SHEET NO 1 OF 1 | DATE 06/24/00 | JOB NO 00-529 | REVISIONS

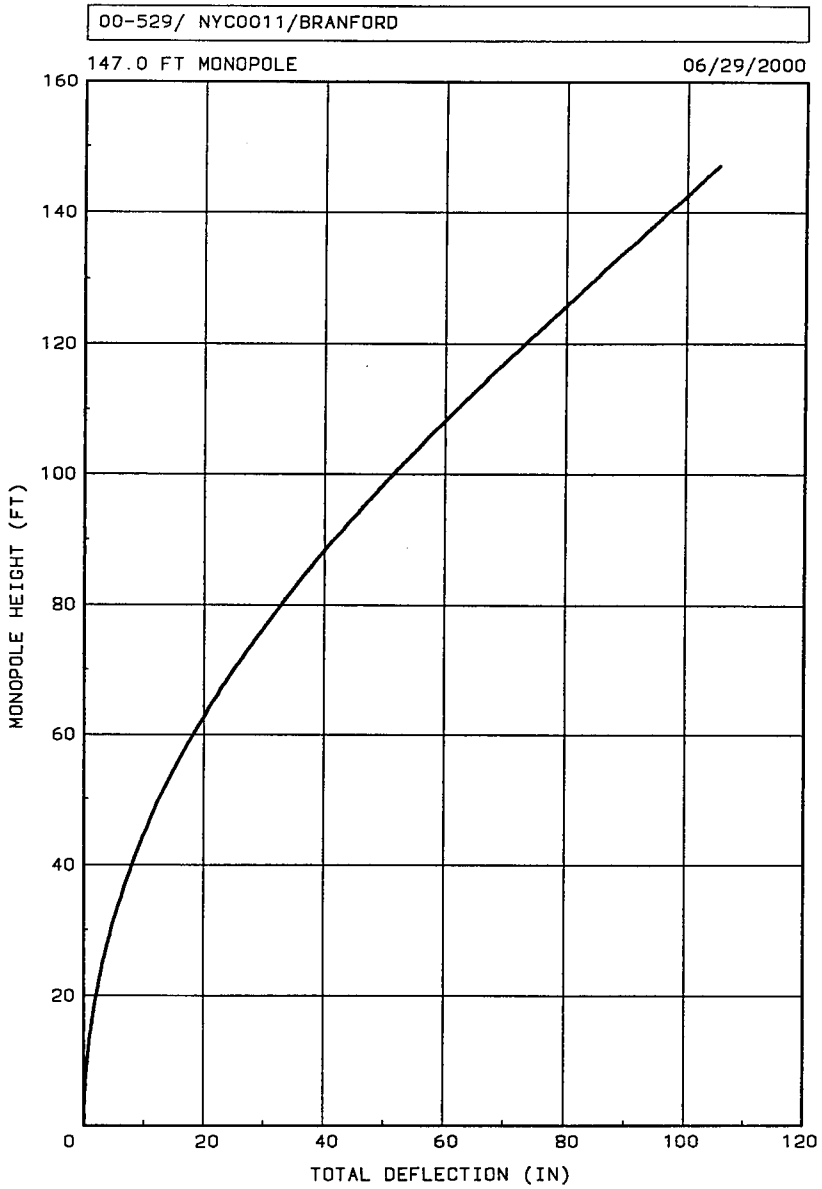
DRAWN BY: RS
ENG'D. BY: RS
APP'D. BY: MM

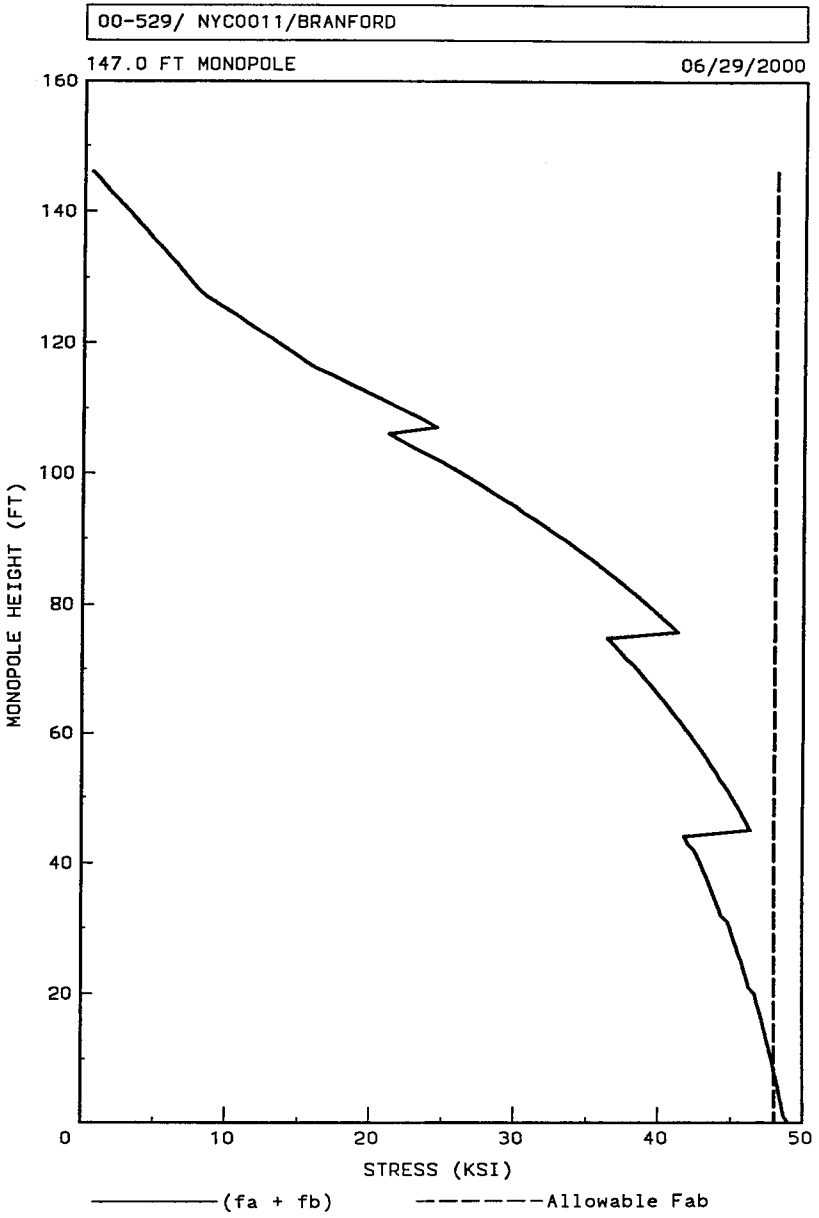
TOWER ELEVATION AND SECTION
147' MONOPOLE - NYC0011/BRANFORD
METRICOM, INC
PLANO TX

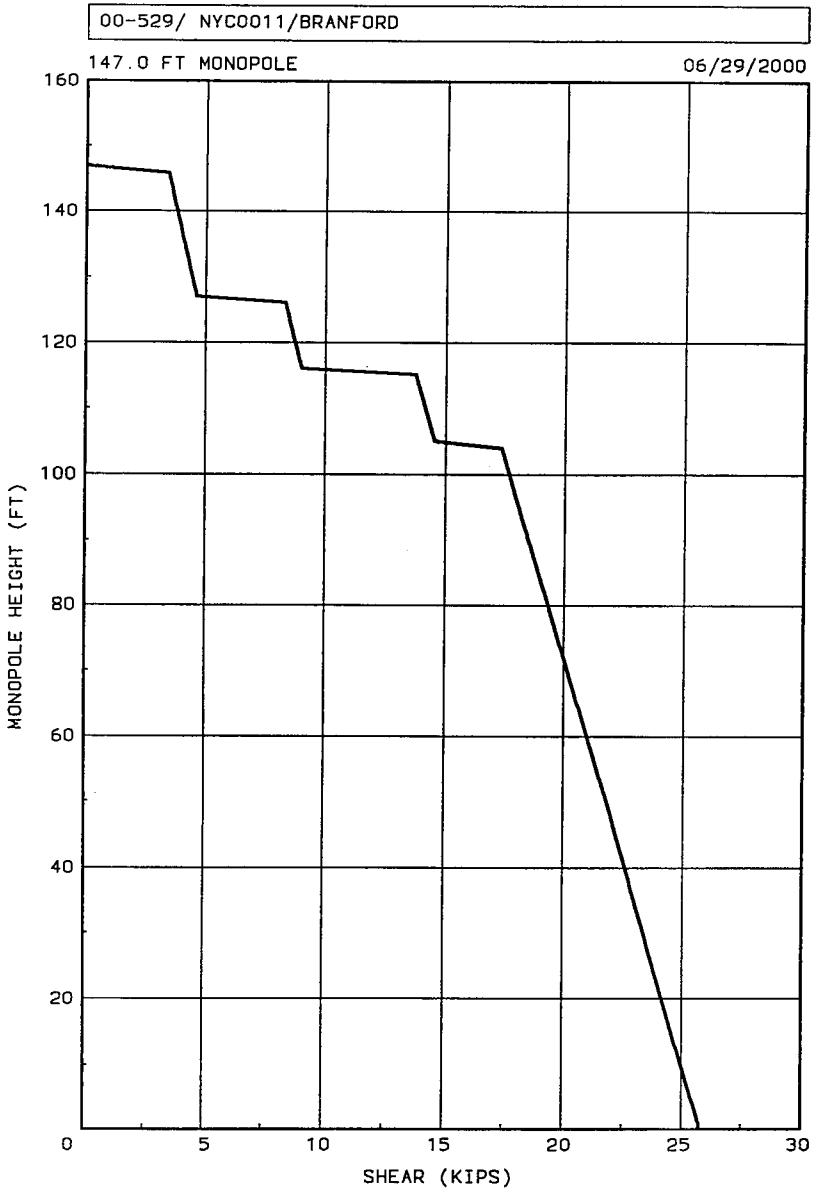
MALOUF ENGINEERING INT'L., INC.
STRUCTURAL CONSULTANTS
275 W. CAMPBELL RD. SUITE 611
RICHARDSON, TEXAS 75080-3549
Tel: 972-783-2578 Fax: 972-783-2583

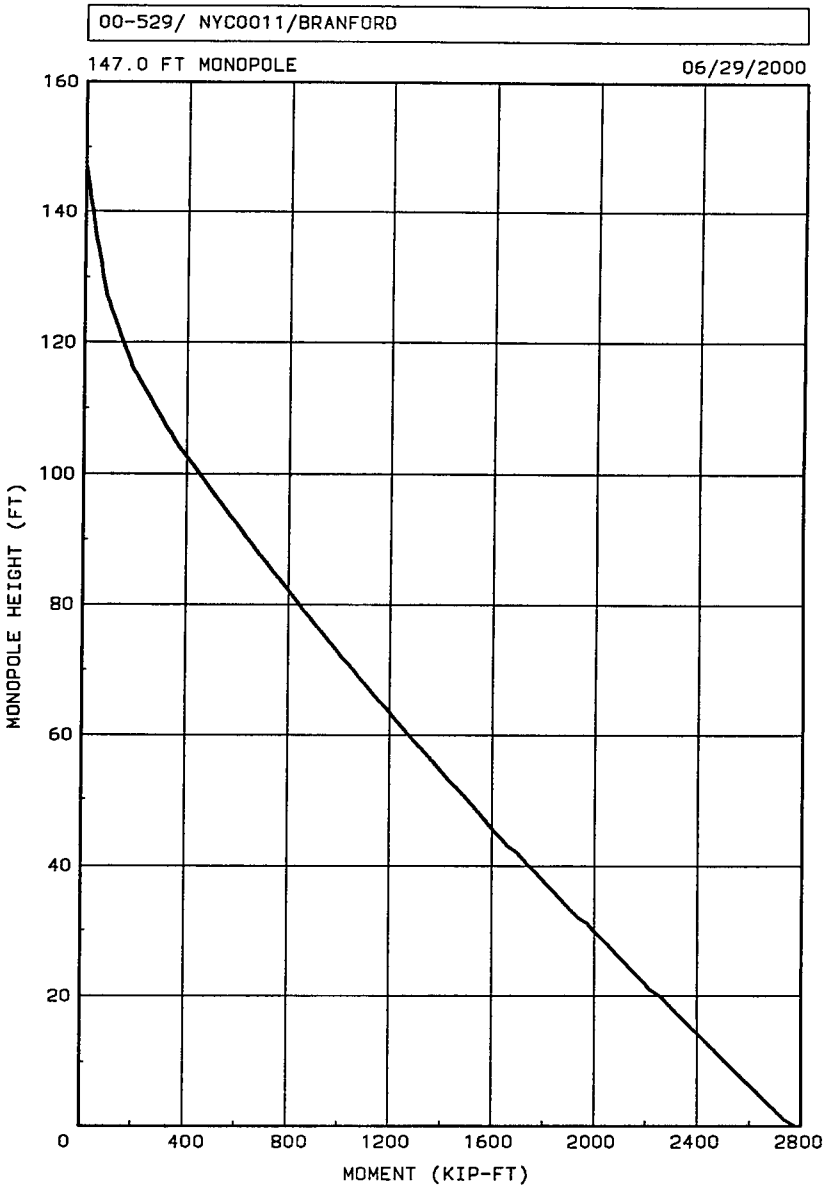
APPENDIX - 2

GRAPHICAL RESULTS DIAGRAMS


00-529/ NYC0011/BRANFORD
147.0 FT MONOPOLE
06/29/2000
MONOPOLE HEIGHT (FT)
TOTAL DEFLECTION (IN)
0
20
40
60
80
100
120
140
160


00-529/ NYC0011/BRANFORD
147.0 FT MONOPOLE
06/29/2000
MONOPOLE HEIGHT (FT)
STRESS (KSI)
0
10
20
30
40
50
(fa + fb)
Allowable Fab


00-529/ NYC0011/BRANFORD
147.0 FT MONOPOLE
06/29/2000
MONOPOLE HEIGHT (FT)
0
20
40
60
80
100
120
140
160
0
5
10
15
20
25
30
SHEAR (KIPS)


00-529/ NYC0011/BRANFORD
147.0 FT MONOPOLE
06/29/2000
MONOPOLE HEIGHT (FT)
0
20
40
60
80
100
120
140
160
0
400
800
1200
1600
2000
2400
2800
MOMENT (KIP-FT)

APPENDIX - 3

PROPOSED ANTENNA CONFIGURATION

STRUCTURAL ANALYSIS COMPUTER PRINTOUT

ANALYSIS PRINTOUT

MALOUF ENGINEERING INTERNATIONAL, Inc. 06/29/2000 - Page : 1
Richardson, Texas - (972)783-2578 Run at: 12:17:38.
VERSION: MONF2T22 051700 INPUT FILENAME: 00-529-1.mnp

```
   ************************************************************
   *              MONOPOLE STRUCTURAL ANALYSIS                *
   *         (c) 1999, Malouf Engineering Intl., Inc.         *
   ************************************************************
   MEI JOB NO.       : 00-529
   SITE NAME         : NYC0011/BRANFORD
   SITE LOCATION     : BRANFORD,CT / NEW HAVEN COUNTY
   CLIENT NAME       : METRICOM, INC
   CLIENT LOCATION   : PLANO,TX
   TOWER DESCR.      : SUMMIT MANUF/18-SIDED - 1997
   ORIGINAL DESIGN   : TIA/EIA 222-F 90MPH + 0" ICE

COMMENTS
TOWER OWNER IS SPRINT SITES USA SITE #CT03XC021-05
PROPOSED ANTENNAE AT 116' WITH 2" CONDUIT ON OUTSIDE.
ALL EXISTING LINES INTERNAL.
COUNTY BWS = 85 MPH

R SEHGAL, EIT / E.MARK MALOUF,PE

PROGRAM DESCRIPTION
The monopole is modeled for the computer analysis as a uniform
cantilevered beam with a fixed support. The monopole is divided into
element members, and antennae are applied as concentrated loads. The
structural analysis includes the primary and first order P-Delta
moments. The horizontal wind shear is calculated as per EIA Sect 2.3.2
and the allowable stresses are per EIA Table 5.

DESIGN/ANALYSIS REQUIREMENTS
Design Code          : ANSI/TIA EIA222-F
Basic Wind Velocity :  85.00 Mph
Ice Thickness        :    .00 Inch

ANTENNA LOADING CONSIDERED
```

#	Elev (ft)	Antenna Description	TX-Line	NUM	EXP	DIA (in)	WGT (plf)
1	147.0	EXIST LIGHTNING ROD					
2	147.0	EXIST STEP BOLTS	1/2" Dia.	1	1.00	.63	.14
3	147.0	EXIST (9) DB980H90 PANEL ANTS	1-5/8" Dia.	9	.00	1.98	1.08
4	147.0	EXIST LOW PROFILE PLATFORM					
5	127.0	EXIST (12)ALP9212 PANELL ANTS	1-5/8" Dia.	12	.00	1.98	1.08
6	127.0	EXIST LOW PROFILE PLATFORM					
7	116.0	PROP. (16) LARSEN PANEL ANT.	2" Dia. Conduit	1	1.00	2.38	3.65
8	116.0	PROP. (3) 12'ANTENNA BOOMS					
9	105.0	EXIST (9) ALGON7120.16 PANEL A	1-1/4" Dia.	9	.00	1.55	.66
10	105.0	EXIST LOW PROFILE PLATFORM					

#	Elev (ft)	TYPE	CaAa/Dia ft2/ft	Wght kips	V_arm ft	Ice Factor CaAa/	WgHt	Hor_F1 kips	TX_Line Elev (ft)	TX_Wid xCa(in)	Hor_F2 kips
1	147.0	MISC	4.0	.050	4.0	1.00	1.00	.192			
2	147.0	MISC	.0	.000	.0	1.00	1.00	.000	.0 147.0	.76	.359
3	147.0	MISC	34.0	.150	.0	1.00	1.00	1.629	.0 147.0	.00	.000
4	147.0	MISC	32.0	1.800	.0	1.00	1.00	1.533			
5	127.0	MISC	47.0	.400	.0	1.00	1.00	2.159	.0 127.0	.00	.000
6	127.0	MISC	32.0	1.800	.0	1.00	1.00	1.470			
7	116.0	MISC	36.0	.336	.0	1.00	1.00	1.612	.0 116.0	2.85	1.024
8	116.0	MISC	68.0	1.800	.0	1.00	1.00	3.044			
9	105.0	MISC	30.0	.200	.0	1.00	1.00	1.305	.0 105.0	.00	.000
10	105.0	MISC	32.0	1.800	.0	1.00	1.00	1.392			

```
Total Antenna Horizontal Load =  14.336 Kips
Total Antenna Weight          =   8.336 Kips
Total Appurtenance Horz. Load =   1.384 Kips
Total Appurtenance Weight     =   4.147 Kips

MONOPOLE CHARACTERISTICS

Actual
```

Sec	Fy (ksi)	Length (ft)	Elev.bot (ft)	Elev.top (ft)	Dia.bot (in)	Dia.top (in)	Thick (in)	Taper (in/ft)	Weight (kips)	Splice@ bot(in)
1	60	47.500	.000	47.500	45.120	37.043	.4375	.1700	9.122	.0
2	60	35.250	42.750	78.000	38.601	32.607	.3750	.1700	5.029	57.0
3	60	35.000	73.750	108.750	33.955	28.004	.3125	.1700	3.623	51.0
4	60	42.000	105.000	147.000	29.141	22.000	.2500	.1700	2.871	45.0

```
Analytical Model
```

Sec	Fy (ksi)	Length (ft)	Elev.bot (ft)	Elev.top (ft)	Dia.bot (in)	Dia.top (in)	Thick (in)	Taper (in/ft)	Weight (kips)	Splice W(kips)
1	60	45.000	.000	45.000	45.120	37.468	.4375	.1700	8.687	.435
2	60	31.000	45.000	76.000	38.218	32.947	.3750	.1700	4.420	.609
3	60	31.000	76.000	107.000	33.572	28.302	.3125	.1700	3.204	.418
4	60	40.000	107.000	147.000	28.801	22.000	.2500	.1700	2.716	.155

```
Monopole Height : 147.00 ft
Monopole Weight :  20.65 Kips (excluding antennae and lines)
Base Diameter   :  45.12 Inch
Top Diameter    :  22.00 Inch
Modulus of Elas :  29000 Ksi
Pole Shape      : 18 Sided Section

========================
** ANALYSIS SUMMARY **
========================
Moment @ base     = 2773.71 ft-Kips
Shear @ base      =   25.72 Kips
Vert_Load @ base  =   33.16 Kips
Max. Stress Ratio =   1.020 ** Acceptable (< 5%)
(Allowable Stress Increase Factor = 1.333 Already Included)
Max.Total Deflect.=  105.34 in
```

ANALYSIS PRINTOUT

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529

WIND LOADING ANALYSIS RESULTS (Gh= 1.690)

Memb.	Elev. (ft.)	O.D. (inch)	Thick (inch)	OD ice (inch)	Kz	C	Cf	Shear (kips)	Moment (kip-ft)
SECTION 4 (ELEV 107.00- 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS									
147	147.0	22.000	.250	22.000	1.531	192.81	.000	.00	.00
146	146.0	22.170	.250	22.170	1.528	194.11	.650	3.41	4.14
145	145.0	22.340	.250	22.340	1.525	195.41	.650	3.47	7.57
144	144.0	22.510	.250	22.510	1.522	196.70	.650	3.54	11.09
143	143.0	22.680	.250	22.680	1.519	197.99	.650	3.60	14.71
142	142.0	22.850	.250	22.850	1.516	199.27	.650	3.66	18.42
141	141.0	23.020	.250	23.020	1.513	200.55	.650	3.72	22.23
140	140.0	23.190	.250	23.190	1.510	201.83	.650	3.78	26.13
139	139.0	23.360	.250	23.360	1.507	203.10	.650	3.84	30.12
138	138.0	23.530	.250	23.530	1.503	204.36	.650	3.91	34.20
137	137.0	23.700	.250	23.700	1.500	205.63	.650	3.97	38.38
136	136.0	23.870	.250	23.870	1.497	206.88	.650	4.03	42.65
135	135.0	24.040	.250	24.040	1.494	208.14	.650	4.10	47.02
134	134.0	24.210	.250	24.210	1.491	209.39	.650	4.16	51.48
133	133.0	24.380	.250	24.380	1.488	210.63	.650	4.23	56.03
132	132.0	24.550	.250	24.550	1.484	211.87	.650	4.29	60.68
131	131.0	24.720	.250	24.720	1.481	213.10	.650	4.36	65.42
130	130.0	24.890	.250	24.890	1.478	214.33	.650	4.42	70.26
129	129.0	25.060	.250	25.060	1.475	215.56	.650	4.49	75.19
128	128.0	25.230	.250	25.230	1.471	216.78	.650	4.55	80.21
127	127.0	25.400	.250	25.400	1.468	218.00	.650	4.62	85.33
126	126.0	25.571	.250	25.571	1.465	219.21	.650	8.31	94.17
125	125.0	25.741	.250	25.741	1.461	220.41	.650	8.38	103.10
124	124.0	25.911	.250	25.911	1.458	221.61	.650	8.45	112.13
123	123.0	26.081	.250	26.081	1.455	222.81	.650	8.51	121.25
122	122.0	26.251	.250	26.251	1.451	224.00	.650	8.58	130.46
121	121.0	26.421	.250	26.421	1.448	225.18	.650	8.65	139.77
120	120.0	26.591	.250	26.591	1.444	226.36	.650	8.72	149.17
119	119.0	26.761	.250	26.761	1.441	227.54	.650	8.79	158.67
118	118.0	26.931	.250	26.931	1.437	228.70	.650	8.85	168.26
117	117.0	27.101	.250	27.101	1.434	229.87	.650	8.92	177.94
116	116.0	27.271	.250	27.271	1.430	231.02	.650	9.00	187.71
115	115.0	27.441	.250	27.441	1.427	232.18	.650	13.74	202.23
114	114.0	27.611	.250	27.611	1.423	233.32	.650	13.82	216.86
113	113.0	27.781	.250	27.781	1.420	234.46	.650	13.90	231.60
112	112.0	27.951	.250	27.951	1.416	235.60	.650	13.98	246.43
111	111.0	28.121	.250	28.121	1.412	236.73	.650	14.06	261.37
110	110.0	28.291	.250	28.291	1.409	237.85	.650	14.14	276.40
109	109.0	28.461	.250	28.461	1.405	238.96	.650	14.22	291.54
108	108.0	28.631	.250	28.631	1.401	240.07	.650	14.30	306.79
SECTION 3 (ELEV 76.00- 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS									
107	107.0	28.302	.313	28.302	1.398	236.99	.650	14.38	322.13
106	106.0	28.472	.313	28.472	1.394	238.10	.650	14.46	337.57
105	105.0	28.642	.313	28.642	1.390	239.19	.650	14.54	353.11
104	104.0	28.812	.313	28.812	1.386	240.28	.650	17.32	371.45
103	103.0	28.982	.313	28.982	1.382	241.37	.650	17.40	389.88
102	102.0	29.152	.313	29.152	1.379	242.44	.650	17.48	410.68
101	101.0	29.322	.313	29.322	1.375	243.51	.650	17.56	429.32
100	100.0	29.492	.313	29.492	1.371	244.57	.650	17.64	448.03
99	99.0	29.662	.313	29.662	1.367	245.63	.650	17.73	466.84
98	98.0	29.832	.313	29.832	1.363	246.68	.650	17.81	485.74
97	97.0	30.002	.313	30.002	1.359	247.72	.650	17.89	504.74
96	96.0	30.172	.313	30.172	1.355	248.75	.650	17.97	523.83
95	95.0	30.342	.313	30.342	1.351	249.78	.650	18.05	543.01
94	94.0	30.512	.313	30.512	1.347	250.80	.650	18.14	562.29
93	93.0	30.682	.313	30.682	1.342	251.81	.650	18.22	581.66
92	92.0	30.852	.313	30.852	1.338	252.81	.650	18.30	601.12
91	91.0	31.022	.313	31.022	1.334	253.80	.650	18.38	620.67
90	90.0	31.192	.313	31.192	1.330	254.79	.650	18.47	640.32
89	89.0	31.362	.313	31.362	1.326	255.77	.650	18.55	660.06
88	88.0	31.532	.313	31.532	1.321	256.74	.650	18.63	679.89
87	87.0	31.702	.313	31.702	1.317	257.70	.650	18.72	699.81
86	86.0	31.872	.313	31.872	1.313	258.65	.650	18.80	719.82
85	85.0	32.042	.313	32.042	1.308	259.59	.650	18.88	739.92
84	84.0	32.212	.313	32.212	1.304	260.53	.650	18.97	760.11
83	83.0	32.382	.313	32.382	1.299	261.45	.650	19.05	780.39
82	82.0	32.552	.313	32.552	1.295	262.37	.650	19.13	800.76
81	81.0	32.722	.313	32.722	1.290	263.27	.650	19.22	821.22
80	80.0	32.892	.313	32.892	1.286	264.17	.650	19.30	841.77
79	79.0	33.062	.313	33.062	1.281	265.06	.650	19.38	862.40
78	78.0	33.232	.313	33.232	1.276	265.93	.650	19.47	883.12
77	77.0	33.402	.313	33.402	1.272	266.80	.650	19.55	903.93

ANALYSIS PRINTOUT

SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS

76	76.0	32.947	.375	32.947	1.267	262.66	.650	19.63	924.82
75	75.0	33.117	.375	33.117	1.262	263.52	.650	19.72	945.80
74	74.0	33.287	.375	33.287	1.257	264.36	.650	19.80	966.87
73	73.0	33.457	.375	33.457	1.252	265.19	.650	19.88	988.02
72	72.0	33.627	.375	33.627	1.247	266.01	.650	19.96	1009.25
71	71.0	33.797	.375	33.797	1.242	266.82	.650	20.05	1032.86
70	70.0	33.967	.375	33.967	1.237	267.61	.650	20.13	1054.24
69	69.0	34.137	.375	34.137	1.232	268.40	.650	20.21	1075.65
68	68.0	34.307	.375	34.307	1.227	269.17	.650	20.30	1097.15
67	67.0	34.477	.375	34.477	1.222	269.93	.650	20.38	1118.74
66	66.0	34.647	.375	34.647	1.216	270.67	.650	20.46	1140.40
65	65.0	34.818	.375	34.818	1.211	271.40	.650	20.54	1162.14
64	64.0	34.988	.375	34.988	1.206	272.12	.650	20.63	1183.97
63	63.0	35.158	.375	35.158	1.200	272.82	.650	20.71	1205.87
62	62.0	35.328	.375	35.328	1.195	273.51	.650	20.79	1227.85
61	61.0	35.498	.375	35.498	1.189	274.19	.650	20.88	1249.91
60	60.0	35.668	.375	35.668	1.183	274.84	.650	20.96	1272.06
59	59.0	35.838	.375	35.838	1.178	275.49	.650	21.04	1294.28
58	58.0	36.008	.375	36.008	1.172	276.11	.650	21.12	1316.57
57	57.0	36.178	.375	36.178	1.166	276.72	.650	21.21	1338.95
56	56.0	36.348	.375	36.348	1.160	277.31	.650	21.29	1361.40
55	55.0	36.518	.375	36.518	1.154	277.89	.650	21.37	1383.93
54	54.0	36.688	.375	36.688	1.148	278.44	.650	21.45	1406.53
53	53.0	36.858	.375	36.858	1.142	278.98	.650	21.53	1429.21
52	52.0	37.028	.375	37.028	1.136	279.50	.650	21.62	1451.97
51	51.0	37.198	.375	37.198	1.129	280.00	.650	21.70	1474.80
50	50.0	37.368	.375	37.368	1.123	280.48	.650	21.78	1497.71
49	49.0	37.538	.375	37.538	1.116	280.93	.650	21.86	1520.69
48	48.0	37.708	.375	37.708	1.110	281.37	.650	21.94	1543.74
47	47.0	37.878	.375	37.878	1.103	281.78	.650	22.02	1566.87
46	46.0	38.048	.375	38.048	1.096	282.16	.650	22.10	1590.07

SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS

45	45.0	37.468	.438	37.468	1.089	276.98	.650	22.18	1613.34
44	44.0	37.638	.438	37.638	1.082	277.33	.650	22.26	1636.69
43	43.0	37.808	.438	37.808	1.075	277.66	.650	22.34	1660.10
42	42.0	37.978	.438	37.978	1.068	277.97	.650	22.42	1694.31
41	41.0	38.148	.438	38.148	1.060	278.24	.650	22.50	1717.88
40	40.0	38.318	.438	38.318	1.053	278.48	.650	22.58	1743.25
39	39.0	38.488	.438	38.488	1.045	278.70	.650	22.66	1766.91
38	38.0	38.658	.438	38.658	1.037	278.88	.650	22.73	1790.60
37	37.0	38.828	.438	38.828	1.029	279.02	.650	22.81	1814.35
36	36.0	38.998	.438	38.998	1.021	279.14	.650	22.89	1838.17
35	35.0	39.168	.438	39.168	1.013	279.21	.650	22.96	1862.05
34	34.0	39.339	.438	39.339	1.004	279.25	.650	23.04	1886.00
33	33.0	39.509	.438	39.509	1.000	279.85	.650	23.12	1910.01
32	32.0	39.679	.438	39.679	1.000	281.06	.650	23.19	1934.09
31	31.0	39.849	.438	39.849	1.000	282.26	.650	23.27	1970.16
30	30.0	40.019	.438	40.019	1.000	283.47	.650	23.35	1994.38
29	29.0	40.189	.438	40.189	1.000	284.67	.650	23.43	2018.67
28	28.0	40.359	.438	40.359	1.000	285.87	.650	23.50	2043.01
27	27.0	40.529	.438	40.529	1.000	287.08	.650	23.58	2067.42
26	26.0	40.699	.438	40.699	1.000	288.28	.650	23.66	2091.89
25	25.0	40.869	.438	40.869	1.000	289.49	.650	23.74	2116.42
24	24.0	41.039	.438	41.039	1.000	290.69	.650	23.82	2141.02
23	23.0	41.209	.438	41.209	1.000	291.90	.650	23.90	2165.68
22	22.0	41.379	.438	41.379	1.000	293.10	.650	23.98	2190.40
21	21.0	41.549	.438	41.549	1.000	294.31	.650	24.05	2215.19
20	20.0	41.719	.438	41.719	1.000	295.51	.650	24.13	2252.68
19	19.0	41.889	.438	41.889	1.000	296.71	.650	24.22	2277.54
18	18.0	42.059	.438	42.059	1.000	297.92	.650	24.30	2302.47
17	17.0	42.229	.438	42.229	1.000	299.12	.650	24.38	2327.46
16	16.0	42.399	.438	42.399	1.000	300.33	.650	24.46	2352.51
15	15.0	42.569	.438	42.569	1.000	301.53	.650	24.54	2377.62
14	14.0	42.739	.438	42.739	1.000	302.74	.650	24.62	2402.80
13	13.0	42.909	.438	42.909	1.000	303.94	.650	24.70	2428.04
12	12.0	43.079	.438	43.079	1.000	305.15	.650	24.79	2453.34
11	11.0	43.250	.438	43.250	1.000	306.35	.650	24.87	2478.71
10	10.0	43.420	.438	43.420	1.000	307.56	.650	24.95	2504.14
9	9.0	43.590	.438	43.590	1.000	308.76	.650	25.03	2529.64
8	8.0	43.760	.438	43.760	1.000	309.96	.650	25.12	2555.20
7	7.0	43.930	.438	43.930	1.000	311.17	.650	25.20	2580.82
6	6.0	44.100	.438	44.100	1.000	312.37	.650	25.29	2606.51
5	5.0	44.270	.438	44.270	1.000	313.58	.650	25.37	2632.26
4	4.0	44.440	.438	44.440	1.000	314.78	.650	25.45	2658.08
3	3.0	44.610	.438	44.610	1.000	315.99	.650	25.54	2683.96
2	2.0	44.780	.438	44.780	1.000	317.19	.650	25.62	2709.91
1	1.0	44.950	.438	44.950	1.000	318.40	.650	25.71	2735.92
0	.0	45.120	.438	45.120	1.000	319.60	.650	25.72	2773.71

ANALYSIS PRINTOUT

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529

MAXIMUM STRESS ANALYSIS RESULTS / CSR= (1.000fa + 1.000fb)/(1.333Fab)

Memb	<--Elev--->		Sec_Mod	Prim_Mom	P-D_Mom	Tot_Mom	fa	fb	Fab	C.S.R
	(ft)	(ft)	(in3)	(Kip-ft)	(Kip-ft)	(Kip-ft)	(Ksi)	(Ksi)	(Ksi)	
SECTION	4 (ELEV	107.00-	147.00 FT):	LENGTH=		40.00 FT /	STEEL	WT=	2.871	KIPS
147	146.0	147.0	93.5	3.35	.02	4.14	.00	.53	36.00	.011
146	145.0	146.0	95.0	6.74	.07	7.57	.01	.96	36.00	.020
145	144.0	145.0	96.5	10.18	.15	11.09	.01	1.38	36.00	.029
144	143.0	144.0	98.0	13.68	.26	14.71	.02	1.80	36.00	.038
143	142.0	143.0	99.5	17.25	.41	18.42	.02	2.22	36.00	.047
142	141.0	142.0	101.0	20.88	.58	22.23	.02	2.64	36.00	.055
141	140.0	141.0	102.6	24.57	.79	26.13	.03	3.06	36.00	.064
140	139.0	140.0	104.1	28.32	1.03	30.12	.03	3.47	36.00	.073
139	138.0	139.0	105.7	32.13	1.30	34.20	.03	3.88	36.00	.082
138	137.0	138.0	107.2	36.01	1.61	38.38	.04	4.29	36.00	.090
137	136.0	137.0	108.8	39.95	1.94	42.65	.04	4.70	36.00	.099
136	135.0	136.0	110.4	43.95	2.30	47.02	.05	5.11	36.00	.107
135	134.0	135.0	112.0	48.02	2.70	51.48	.05	5.51	36.00	.116
134	133.0	134.0	113.6	52.15	3.12	56.03	.05	5.92	36.00	.124
133	132.0	133.0	115.3	56.34	3.58	60.68	.06	6.32	36.00	.133
132	131.0	132.0	116.9	60.60	4.06	65.42	.06	6.72	36.00	.141
131	130.0	131.0	118.5	64.92	4.57	70.26	.06	7.11	36.00	.149
130	129.0	130.0	120.2	69.31	5.11	75.19	.07	7.51	36.00	.158
129	128.0	129.0	121.9	73.76	5.68	80.21	.07	7.90	36.00	.166
128	127.0	128.0	123.6	78.28	6.28	85.33	.18	8.29	36.00	.176
127	126.0	127.0	125.3	86.50	6.90	94.17	.19	9.02	36.00	.192
126	125.0	126.0	127.0	94.78	7.56	103.10	.19	9.74	36.00	.207
125	124.0	125.0	128.7	103.13	8.24	112.13	.19	10.46	36.00	.222
124	123.0	124.0	130.4	111.54	8.94	121.25	.20	11.16	36.00	.237
123	122.0	123.0	132.2	120.02	9.68	130.46	.20	11.85	36.00	.251
122	121.0	122.0	133.9	128.57	10.44	139.77	.20	12.52	36.00	.265
121	120.0	121.0	135.7	137.19	11.22	149.17	.21	13.19	36.00	.279
120	119.0	120.0	137.5	145.87	12.03	158.67	.21	13.85	36.00	.293
119	118.0	119.0	139.3	154.62	12.87	168.26	.21	14.50	36.00	.307
118	117.0	118.0	141.1	163.44	13.73	177.94	.22	15.14	36.00	.320
117	116.0	117.0	142.9	172.33	14.61	187.71	.32	15.77	36.00	.335
116	115.0	116.0	144.7	185.95	15.52	202.23	.32	16.77	36.00	.356
115	114.0	115.0	146.5	199.64	16.45	216.86	.33	17.76	36.00	.377
114	113.0	114.0	148.4	213.42	17.41	231.60	.33	18.73	36.00	.397
113	112.0	113.0	150.2	227.28	18.39	246.43	.33	19.68	36.00	.417
112	111.0	112.0	152.1	241.22	19.39	261.37	.33	20.62	36.00	.437
111	110.0	111.0	154.0	255.23	20.41	276.40	.34	21.54	36.00	.456
110	109.0	110.0	155.9	269.33	21.45	291.54	.34	22.45	36.00	.475
109	108.0	109.0	157.8	283.51	22.51	306.79	.34	23.33	36.00	.493
108	107.0	108.0	159.7	297.77	23.59	322.13	.29	24.21	36.00	.510

SECTION	3 (ELEV	76.00-	107.00 FT):	LENGTH=		31.00 FT /	STEEL	WT=	3.622	KIPS
107	106.0	107.0	193.7	312.11	24.69	337.57	.30	20.91	36.00	.442
106	105.0	106.0	196.1	326.53	25.81	353.11	.37	21.61	36.00	.458
105	104.0	105.0	198.4	343.73	26.95	371.45	.37	22.46	36.00	.476
104	103.0	104.0	200.8	361.01	28.10	389.88	.37	23.29	36.00	.493
103	102.0	103.0	203.3	378.37	31.53	410.68	.38	24.24	36.00	.513
102	101.0	102.0	205.7	395.82	32.74	429.32	.38	25.05	36.00	.530
101	100.0	101.0	208.1	413.34	33.93	448.03	.38	25.83	36.00	.546
100	99.0	100.0	210.6	430.94	35.13	466.84	.38	26.60	36.00	.562
99	98.0	99.0	213.1	448.63	36.35	485.74	.39	27.36	36.00	.578
98	97.0	98.0	215.6	466.40	37.58	504.74	.39	28.10	36.00	.593
97	96.0	97.0	218.1	484.24	38.82	523.83	.39	28.83	36.00	.609
96	95.0	96.0	220.6	502.17	40.07	543.01	.39	29.54	36.00	.624
95	94.0	95.0	223.1	520.19	41.33	562.29	.39	30.24	36.00	.638
94	93.0	94.0	225.7	538.28	42.61	581.66	.40	30.93	36.00	.653
93	92.0	93.0	228.2	556.46	43.89	601.12	.40	31.61	36.00	.667
92	91.0	92.0	230.8	574.72	45.19	620.67	.40	32.27	36.00	.681
91	90.0	91.0	233.4	593.06	46.49	640.32	.40	32.92	36.00	.694
90	89.0	90.0	236.0	611.49	47.81	660.06	.41	33.56	36.00	.708
89	88.0	89.0	238.6	629.99	49.13	679.89	.41	34.19	36.00	.721
88	87.0	88.0	241.3	648.58	50.46	699.81	.41	34.81	36.00	.734
87	86.0	87.0	243.9	667.26	51.80	719.82	.41	35.42	36.00	.746
86	85.0	86.0	246.6	686.02	53.14	739.92	.41	36.01	36.00	.759
85	84.0	85.0	249.2	704.86	54.49	760.11	.42	36.60	36.00	.771
84	83.0	84.0	251.9	723.78	55.85	780.39	.42	37.17	36.00	.783
83	82.0	83.0	254.6	742.79	57.21	800.76	.42	37.74	36.00	.795
82	81.0	82.0	257.4	761.88	58.58	821.22	.42	38.29	36.00	.807
81	80.0	81.0	260.1	781.05	59.95	841.77	.43	38.84	36.00	.818
80	79.0	80.0	262.8	800.31	61.33	862.40	.43	39.37	36.00	.829
79	78.0	79.0	265.6	819.65	62.70	883.12	.43	39.90	36.00	.840
78	77.0	78.0	268.4	839.07	64.09	903.93	.43	40.42	36.00	.851
77	76.0	77.0	271.2	858.58	65.47	924.82	.38	40.93	36.00	.861

ANALYSIS PRINTOUT

SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS

76	75.0	76.0	314.7	878.18	66.86	945.80	.39	36.07	36.00	.759
75	74.0	75.0	318.0	897.85	68.25	966.87	.39	36.49	36.00	.768
74	73.0	74.0	321.3	917.61	69.64	988.02	.39	36.90	36.00	.777
73	72.0	73.0	324.6	937.45	71.04	1009.25	.39	37.30	36.00	.785
72	71.0	72.0	328.0	957.37	74.72	1032.86	.40	37.79	36.00	.795
71	70.0	71.0	331.4	977.38	76.09	1054.24	.40	38.17	36.00	.804
70	69.0	70.0	334.8	997.47	77.42	1075.65	.40	38.55	36.00	.812
69	68.0	69.0	338.2	1017.64	78.75	1097.15	.40	38.93	36.00	.819
68	67.0	68.0	341.6	1037.89	80.08	1118.74	.40	39.29	36.00	.827
67	66.0	67.0	345.1	1058.23	81.40	1140.40	.41	39.65	36.00	.835
66	65.0	66.0	348.6	1078.65	82.73	1162.14	.41	40.01	36.00	.842
65	64.0	65.0	352.1	1099.15	84.05	1183.97	.41	40.36	36.00	.849
64	63.0	64.0	355.6	1119.74	85.37	1205.87	.41	40.70	36.00	.856
63	62.0	63.0	359.1	1140.41	86.68	1227.85	.42	41.03	36.00	.864
62	61.0	62.0	362.6	1161.16	87.99	1249.91	.42	41.36	36.00	.870
61	60.0	61.0	366.2	1181.99	89.30	1272.06	.42	41.69	36.00	.877
60	59.0	60.0	369.7	1202.91	90.60	1294.28	.42	42.01	36.00	.884
59	58.0	59.0	373.3	1223.91	91.90	1316.57	.42	42.32	36.00	.890
58	57.0	58.0	376.9	1244.99	93.19	1338.95	.43	42.63	36.00	.897
57	56.0	57.0	380.6	1266.15	94.48	1361.40	.43	42.93	36.00	.903
56	55.0	56.0	384.2	1287.40	95.76	1383.93	.43	43.22	36.00	.909
55	54.0	55.0	387.9	1308.73	97.04	1406.53	.43	43.52	36.00	.916
54	53.0	54.0	391.5	1330.14	98.31	1429.21	.43	43.80	36.00	.922
53	52.0	53.0	395.2	1351.63	99.57	1451.97	.44	44.08	36.00	.928
52	51.0	52.0	399.0	1373.21	100.83	1474.80	.44	44.36	36.00	.933
51	50.0	51.0	402.7	1394.86	102.08	1497.71	.44	44.63	36.00	.939
50	49.0	50.0	406.4	1416.60	103.32	1520.69	.44	44.90	36.00	.945
49	48.0	49.0	410.2	1438.42	104.56	1543.74	.45	45.16	36.00	.950
48	47.0	48.0	414.0	1460.32	105.78	1566.87	.45	45.42	36.00	.956
47	46.0	47.0	417.8	1482.31	107.00	1590.07	.45	45.67	36.00	.961
46	45.0	46.0	421.6	1504.37	108.21	1613.34	.41	45.92	36.00	.965

SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS

45	44.0	45.0	474.3	1526.51	109.41	1636.69	.41	41.41	36.00	.871
44	43.0	44.0	478.7	1548.74	110.60	1660.10	.42	41.61	36.00	.876
43	42.0	43.0	483.1	1571.04	122.51	1694.31	.42	42.08	36.00	.885
42	41.0	42.0	487.6	1593.42	123.69	1717.88	.42	42.28	36.00	.890
41	40.0	41.0	492.0	1615.88	126.60	1743.25	.42	42.52	36.00	.895
40	39.0	40.0	496.5	1638.42	127.73	1766.91	.42	42.71	36.00	.899
39	38.0	39.0	501.0	1661.04	128.80	1790.60	.43	42.89	36.00	.902
38	37.0	38.0	505.5	1683.73	129.86	1814.35	.43	43.07	36.00	.906
37	36.0	37.0	510.0	1706.50	130.90	1838.17	.43	43.25	36.00	.910
36	35.0	36.0	514.6	1729.35	131.94	1862.05	.43	43.42	36.00	.914
35	34.0	35.0	519.2	1752.28	132.96	1886.00	.43	43.59	36.00	.917
34	33.0	34.0	523.8	1775.28	133.97	1910.01	.44	43.76	36.00	.921
33	32.0	33.0	528.4	1798.36	134.97	1934.09	.44	43.93	36.00	.924
32	31.0	32.0	533.0	1821.51	147.88	1970.16	.44	44.36	36.00	.933
31	30.0	31.0	537.7	1844.75	148.87	1994.38	.44	44.51	36.00	.937
30	29.0	30.0	542.3	1868.05	149.85	2018.67	.45	44.67	36.00	.940
29	28.0	29.0	547.0	1891.44	150.80	2043.01	.45	44.82	36.00	.943
28	27.0	28.0	551.8	1914.90	151.75	2067.42	.45	44.96	36.00	.946
27	26.0	27.0	556.5	1938.45	152.68	2091.89	.45	45.11	36.00	.949
26	25.0	26.0	561.2	1962.07	153.59	2116.42	.45	45.25	36.00	.952
25	24.0	25.0	566.0	1985.76	154.49	2141.02	.46	45.39	36.00	.955
24	23.0	24.0	570.8	2009.54	155.37	2165.68	.46	45.53	36.00	.958
23	22.0	23.0	575.6	2033.40	156.24	2190.40	.46	45.66	36.00	.961
22	21.0	22.0	580.5	2057.33	157.09	2215.19	.46	45.79	36.00	.964
21	20.0	21.0	585.3	2081.35	170.56	2252.68	.46	46.18	36.00	.972
20	19.0	20.0	590.2	2105.44	171.33	2277.54	.47	46.31	36.00	.974
19	18.0	19.0	595.1	2129.62	172.08	2302.47	.47	46.43	36.00	.977
18	17.0	18.0	600.0	2153.87	172.82	2327.46	.47	46.55	36.00	.980
17	16.0	17.0	605.0	2178.21	173.53	2352.51	.47	46.66	36.00	.982
16	15.0	16.0	609.9	2202.63	174.23	2377.62	.47	46.78	36.00	.984
15	14.0	15.0	614.9	2227.13	174.91	2402.80	.48	46.89	36.00	.987
14	13.0	14.0	619.9	2251.71	175.57	2428.04	.48	47.00	36.00	.989
13	12.0	13.0	624.9	2276.37	176.21	2453.34	.48	47.11	36.00	.991
12	11.0	12.0	630.0	2301.11	176.83	2478.71	.48	47.22	36.00	.994
11	10.0	11.0	635.0	2325.94	177.44	2504.14	.48	47.32	36.00	.996
10	9.0	10.0	640.1	2350.85	178.02	2529.64	.49	47.42	36.00	.998
9	8.0	9.0	645.2	2375.84	178.59	2555.20	.49	47.52	36.00	1.000
8	7.0	8.0	650.3	2400.92	179.14	2580.82	.49	47.62	36.00	1.002
7	6.0	7.0	655.5	2426.08	179.67	2606.51	.49	47.72	36.00	1.004
6	5.0	6.0	660.6	2451.32	180.18	2632.26	.49	47.81	36.00	1.006
5	4.0	5.0	665.8	2476.65	180.67	2658.08	.50	47.91	36.00	1.008
4	3.0	4.0	671.0	2502.06	181.14	2683.96	.50	48.00	36.00	1.010
3	2.0	3.0	676.2	2527.56	181.59	2709.91	.50	48.09	36.00	1.012
2	1.0	2.0	681.5	2553.14	182.02	2735.92	.50	48.18	36.00	1.014
1	.0	1.0	686.7	2578.81	194.14	2773.71	.50	48.47	36.00	1.020

ANALYSIS PRINTOUT

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529

DEFLECTION ANALYSIS RESULTS

Memb	Elev. (ft.)	Mom_Inert (in4)	Pres.S.S deflection due to (inch)	Moment (inch)	Prev.S.S (inch)	Pt.Ld (inch)	Total Deflc (inch)
SECTION 4 (ELEV 107.00- 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS							
147	147.0	1028.9	.000	.000	.000	.000	105.339
146	146.0	1053.2	.000	.000	.000	.000	104.129
145	145.0	1077.9	.000	.000	.000	.000	102.919
144	144.0	1103.0	.000	.000	.000	.000	101.710
143	143.0	1128.5	.000	.000	.000	.000	100.501
142	142.0	1154.3	.000	.000	.000	.000	99.293
141	141.0	1180.6	.000	.001	.000	.000	98.086
140	140.0	1207.2	.000	.001	.000	.000	96.880
139	139.0	1234.3	.000	.001	.000	.000	95.675
138	138.0	1261.7	.000	.001	.000	.000	94.471
137	137.0	1289.6	.000	.001	.000	.000	93.269
136	136.0	1317.8	.000	.001	.000	.000	92.069
135	135.0	1346.5	.000	.001	.000	.000	90.871
134	134.0	1375.6	.000	.001	.000	.000	89.674
133	133.0	1405.0	.000	.001	.000	.000	88.480
132	132.0	1435.0	.000	.001	.000	.000	87.288
131	131.0	1465.3	.000	.001	.000	.000	86.098
130	130.0	1496.0	.000	.001	.000	.000	84.911
129	129.0	1527.2	.000	.001	.000	.000	83.726
128	128.0	1558.8	.000	.001	.000	.000	82.544
127	127.0	1590.9	.000	.001	.000	.000	81.365
126	126.0	1623.4	.000	.002	.000	.000	80.189
125	125.0	1656.3	.000	.002	.000	.000	79.016
124	124.0	1689.7	.000	.002	.000	.000	77.847
123	123.0	1723.5	.000	.002	.000	.000	76.681
122	122.0	1757.7	.000	.002	.000	.000	75.519
121	121.0	1792.4	.000	.002	.000	.000	74.361
120	120.0	1827.6	.000	.002	.000	.000	73.208
119	119.0	1863.2	.000	.002	.000	.000	72.059
118	118.0	1899.3	.000	.002	.000	.000	70.915
117	117.0	1935.8	.000	.003	.000	.000	69.775
116	116.0	1972.8	.000	.003	.000	.000	68.641
115	115.0	2010.3	.000	.003	.000	.000	67.512
114	114.0	2048.3	.000	.003	.000	.000	66.389
113	113.0	2086.7	.000	.003	.000	.000	65.271
112	112.0	2125.6	.000	.003	.000	.000	64.160
111	111.0	2165.0	.000	.003	.000	.000	63.055
110	110.0	2204.8	.000	.003	.000	.000	61.957
109	109.0	2245.2	.000	.004	.000	.000	60.865
108	108.0	2286.0	.000	.004	.000	.000	59.781
SECTION 3 (ELEV 76.00- 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS							
107	107.0	2740.8	.000	.003	.000	.000	58.705
106	106.0	2791.0	.000	.003	.000	.000	57.635
105	105.0	2841.9	.000	.003	.000	.000	56.572
104	104.0	2893.4	.000	.004	.000	.000	55.516
103	103.0	2945.5	.000	.004	.000	.000	54.468
102	102.0	2998.2	.000	.004	.000	.000	53.426
101	101.0	3051.5	.000	.004	.000	.000	52.393
100	100.0	3105.5	.000	.004	.000	.000	51.367
99	99.0	3160.1	.000	.004	.000	.000	50.349
98	98.0	3215.4	.000	.004	.000	.000	49.339
97	97.0	3271.2	.000	.004	.000	.000	48.338
96	96.0	3327.8	.000	.004	.000	.000	47.345
95	95.0	3384.9	.000	.004	.000	.000	46.361
94	94.0	3442.8	.000	.005	.000	.000	45.386
93	93.0	3501.2	.000	.005	.000	.000	44.419
92	92.0	3560.4	.000	.005	.000	.000	43.463
91	91.0	3620.2	.000	.005	.000	.000	42.515
90	90.0	3680.6	.000	.005	.000	.000	41.577
89	89.0	3741.8	.000	.005	.000	.000	40.649
88	88.0	3803.6	.000	.005	.000	.000	39.731
87	87.0	3866.1	.000	.005	.000	.000	38.822
86	86.0	3929.2	.000	.005	.000	.000	37.924
85	85.0	3993.1	.000	.005	.000	.000	37.036
84	84.0	4057.6	.000	.005	.000	.000	36.158
83	83.0	4122.8	.000	.005	.000	.000	35.290
82	82.0	4188.8	.000	.005	.000	.000	34.434
81	81.0	4255.4	.000	.005	.000	.000	33.587
80	80.0	4322.7	.000	.005	.000	.000	32.752
79	79.0	4390.7	.000	.005	.000	.000	31.927
78	78.0	4459.5	.000	.005	.000	.000	31.114
77	77.0	4528.9	.000	.006	.000	.000	30.311

ANALYSIS PRINTOUT

SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS

76	76.0	5183.5	.000	.005	.000	.000	29.519
75	75.0	5265.1	.000	.005	.000	.000	28.738
74	74.0	5347.6	.000	.005	.000	.000	27.968
73	73.0	5430.9	.000	.005	.000	.000	27.207
72	72.0	5515.1	.000	.005	.000	.000	26.456
71	71.0	5600.1	.000	.005	.000	.000	25.716
70	70.0	5686.1	.000	.005	.000	.000	24.985
69	69.0	5772.8	.000	.005	.000	.000	24.265
68	68.0	5860.5	.000	.005	.000	.000	23.556
67	67.0	5949.0	.000	.005	.000	.000	22.857
66	66.0	6038.5	.000	.005	.000	.000	22.168
65	65.0	6128.8	.000	.005	.000	.000	21.490
64	64.0	6220.0	.000	.005	.000	.000	20.823
63	63.0	6312.2	.000	.005	.000	.000	20.166
62	62.0	6405.2	.000	.005	.000	.000	19.519
61	61.0	6499.1	.000	.005	.000	.000	18.884
60	60.0	6594.0	.000	.005	.000	.000	18.259
59	59.0	6689.8	.000	.005	.000	.000	17.645
58	58.0	6786.4	.000	.005	.000	.000	17.042
57	57.0	6884.1	.000	.005	.000	.000	16.449
56	56.0	6982.6	.000	.005	.000	.000	15.867
55	55.0	7082.1	.000	.005	.000	.000	15.297
54	54.0	7182.5	.000	.005	.000	.000	14.737
53	53.0	7283.9	.000	.005	.000	.000	14.188
52	52.0	7386.2	.000	.005	.000	.000	13.650
51	51.0	7489.5	.000	.005	.000	.000	13.123
50	50.0	7593.8	.000	.005	.000	.000	12.607
49	49.0	7699.0	.000	.005	.000	.000	12.102
48	48.0	7805.1	.000	.005	.000	.000	11.608
47	47.0	7912.3	.000	.005	.000	.000	11.125
46	46.0	8020.4	.000	.006	.000	.000	10.654

SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS

45	45.0	8886.2	.000	.005	.000	.000	10.193
44	44.0	9009.2	.000	.005	.000	.000	9.743
43	43.0	9133.3	.000	.005	.000	.000	9.303
42	42.0	9258.6	.000	.005	.000	.000	8.873
41	41.0	9384.9	.000	.005	.000	.000	8.454
40	40.0	9512.5	.000	.005	.000	.000	8.044
39	39.0	9641.2	.000	.005	.000	.000	7.645
38	38.0	9771.0	.000	.005	.000	.000	7.256
37	37.0	9902.0	.000	.005	.000	.000	6.877
36	36.0	10034.1	.000	.005	.000	.000	6.509
35	35.0	10167.5	.000	.005	.000	.000	6.150
34	34.0	10302.0	.000	.005	.000	.000	5.802
33	33.0	10437.7	.000	.005	.000	.000	5.464
32	32.0	10574.5	.000	.005	.000	.000	5.136
31	31.0	10712.6	.000	.005	.000	.000	4.819
30	30.0	10851.9	.000	.005	.000	.000	4.512
29	29.0	10992.3	.000	.005	.000	.000	4.214
28	28.0	11134.0	.000	.005	.000	.000	3.927
27	27.0	11276.9	.000	.005	.000	.000	3.651
26	26.0	11421.0	.000	.005	.000	.000	3.384
25	25.0	11566.3	.000	.005	.000	.000	3.128
24	24.0	11712.8	.000	.005	.000	.000	2.881
23	23.0	11860.6	.000	.005	.000	.000	2.645
22	22.0	12009.6	.000	.005	.000	.000	2.419
21	21.0	12159.9	.000	.005	.000	.000	2.203
20	20.0	12311.4	.000	.005	.000	.000	1.998
19	19.0	12464.2	.000	.005	.000	.000	1.802
18	18.0	12618.2	.000	.005	.000	.000	1.617
17	17.0	12773.5	.000	.005	.000	.000	1.442
16	16.0	12930.1	.000	.005	.000	.000	1.277
15	15.0	13087.9	.000	.005	.000	.000	1.122
14	14.0	13247.0	.000	.005	.000	.000	.977
13	13.0	13407.4	.000	.005	.000	.000	.842
12	12.0	13569.1	.000	.005	.000	.000	.717
11	11.0	13732.0	.000	.005	.000	.000	.602
10	10.0	13896.3	.000	.005	.000	.000	.497
9	9.0	14061.9	.000	.005	.000	.000	.403
8	8.0	14228.8	.000	.005	.000	.000	.318
7	7.0	14397.0	.000	.005	.000	.000	.243
6	6.0	14566.5	.000	.005	.000	.000	.179
5	5.0	14737.4	.000	.005	.000	.000	.124
4	4.0	14909.6	.000	.005	.000	.000	.079
3	3.0	15083.1	.000	.005	.000	.000	.045
2	2.0	15257.9	.000	.005	.000	.000	.020
1	1.0	15434.1	.000	.005	.000	.000	.005

ANALYSIS PRINTOUT

Monopole Description : 147 FT MONOPOLE
Site Location : NYC0011/BRANFORD
Client Name : METRICOM, INC
MEI Job Number : 00-529

SWAY ANALYSIS RESULTS

Memb	Elev. (ft.)	Mom_Inert (in4)	sway due to Pres.S.S Moment (degree)	Prev.S.S Pt.Ld (degree)	(degree)	Total Sway (degree)
SECTION 4 (ELEV 107.00- 147.00 FT): LENGTH= 40.00 FT / STEEL WT= 2.871 KIPS						
147	147.0	1028.9	.0000	.0000	.0000	5.7771
146	146.0	1053.2	.0000	.0009	.0005	5.7771
145	145.0	1077.9	.0000	.0018	.0005	5.7752
144	144.0	1103.0	.0000	.0026	.0005	5.7730
143	143.0	1128.5	.0000	.0035	.0005	5.7699
142	142.0	1154.3	.0000	.0043	.0005	5.7660
141	141.0	1180.6	.0000	.0050	.0004	5.7613
140	140.0	1207.2	.0000	.0058	.0004	5.7558
139	139.0	1234.3	.0000	.0065	.0004	5.7496
138	138.0	1261.7	.0000	.0072	.0004	5.7426
137	137.0	1289.6	.0000	.0079	.0004	5.7349
136	136.0	1317.8	.0000	.0086	.0004	5.7265
135	135.0	1346.5	.0000	.0093	.0004	5.7175
134	134.0	1375.6	.0000	.0099	.0004	5.7077
133	133.0	1405.0	.0000	.0106	.0004	5.6974
132	132.0	1435.0	.0000	.0112	.0004	5.6864
131	131.0	1465.3	.0000	.0118	.0004	5.6748
130	130.0	1496.0	.0000	.0123	.0004	5.6626
129	129.0	1527.2	.0000	.0129	.0004	5.6498
128	128.0	1558.8	.0000	.0135	.0004	5.6365
127	127.0	1590.9	.0000	.0140	.0004	5.6226
126	126.0	1623.4	.0000	.0152	.0007	5.6082
125	125.0	1656.3	.0000	.0163	.0007	5.5920
124	124.0	1689.7	.0000	.0174	.0007	5.5750
123	123.0	1723.5	.0000	.0184	.0007	5.5569
122	122.0	1757.7	.0000	.0194	.0007	5.5378
121	121.0	1792.4	.0000	.0204	.0007	5.5177
120	120.0	1827.6	.0000	.0214	.0007	5.4966
119	119.0	1863.2	.0000	.0223	.0007	5.4746
118	118.0	1899.3	.0000	.0232	.0007	5.4516
117	117.0	1935.8	.0000	.0240	.0007	5.4278
116	116.0	1972.8	.0000	.0249	.0006	5.4031
115	115.0	2010.3	.0000	.0263	.0010	5.3776
114	114.0	2048.3	.0000	.0277	.0010	5.3500
113	113.0	2086.7	.0000	.0291	.0009	5.3213
112	112.0	2125.6	.0000	.0304	.0009	5.2912
111	111.0	2165.0	.0000	.0317	.0009	5.2599
110	110.0	2204.8	.0000	.0329	.0009	5.2273
109	109.0	2245.2	.0000	.0341	.0009	5.1934
108	108.0	2286.0	.0000	.0353	.0009	5.1584
SECTION 3 (ELEV 76.00- 107.00 FT): LENGTH= 31.00 FT / STEEL WT= 3.622 KIPS						
107	107.0	2740.8	.0000	.0309	.0007	5.1222
106	106.0	2791.0	.0000	.0318	.0007	5.0906
105	105.0	2841.9	.0000	.0327	.0007	5.0580
104	104.0	2893.4	.0000	.0338	.0009	5.0246
103	103.0	2945.5	.0000	.0349	.0008	4.9898
102	102.0	2998.2	.0000	.0359	.0008	4.9541
101	101.0	3051.5	.0000	.0369	.0008	4.9173
100	100.0	3105.5	.0000	.0379	.0008	4.8796
99	99.0	3160.1	.0000	.0388	.0008	4.8409
98	98.0	3215.4	.0000	.0397	.0008	4.8014
97	97.0	3271.2	.0000	.0406	.0008	4.7609
96	96.0	3327.8	.0000	.0414	.0008	4.7195
95	95.0	3384.9	.0000	.0422	.0008	4.6774
94	94.0	3442.8	.0000	.0430	.0007	4.6344
93	93.0	3501.2	.0000	.0437	.0007	4.5907
92	92.0	3560.4	.0000	.0445	.0007	4.5462
91	91.0	3620.2	.0000	.0452	.0007	4.5010
90	90.0	3680.6	.0000	.0458	.0007	4.4551
89	89.0	3741.8	.0000	.0465	.0007	4.4085
88	88.0	3803.6	.0000	.0471	.0007	4.3613
87	87.0	3866.1	.0000	.0477	.0007	4.3135
86	86.0	3929.2	.0000	.0483	.0007	4.2651
85	85.0	3993.1	.0000	.0489	.0007	4.2161
84	84.0	4057.6	.0000	.0494	.0007	4.1665
83	83.0	4122.8	.0000	.0499	.0007	4.1165
82	82.0	4188.8	.0000	.0505	.0006	4.0658
81	81.0	4255.4	.0000	.0509	.0006	4.0147
80	80.0	4322.7	.0000	.0514	.0006	3.9632
79	79.0	4390.7	.0000	.0519	.0006	3.9111
78	78.0	4459.5	.0000	.0523	.0006	3.8586
77	77.0	4528.9	.0000	.0527	.0006	3.8057

ANALYSIS PRINTOUT

SECTION 2 (ELEV 45.00- 76.00 FT): LENGTH= 31.00 FT / STEEL WT= 5.029 KIPS

76	76.0	5183.5	.0000	.0471	.0005	.0000	3.7524
75	75.0	5265.1	.0000	.0475	.0005	.0000	3.7047
74	74.0	5347.6	.0000	.0478	.0005	.0000	3.6568
73	73.0	5430.9	.0000	.0481	.0005	.0000	3.6085
72	72.0	5515.1	.0000	.0484	.0005	.0000	3.5599
71	71.0	5600.1	.0000	.0486	.0005	.0000	3.5110
70	70.0	5686.1	.0000	.0489	.0005	.0000	3.4618
69	69.0	5772.8	.0000	.0492	.0005	.0000	3.4124
68	68.0	5860.5	.0000	.0494	.0005	.0000	3.3628
67	67.0	5949.0	.0000	.0496	.0005	.0000	3.3129
66	66.0	6038.5	.0000	.0499	.0005	.0000	3.2628
65	65.0	6128.8	.0000	.0501	.0005	.0000	3.2124
64	64.0	6220.0	.0000	.0503	.0005	.0000	3.1619
63	63.0	6312.2	.0000	.0505	.0005	.0000	3.1111
62	62.0	6405.2	.0000	.0507	.0005	.0000	3.0602
61	61.0	6499.1	.0000	.0508	.0005	.0000	3.0091
60	60.0	6594.0	.0000	.0510	.0005	.0000	2.9578
59	59.0	6689.8	.0000	.0512	.0004	.0000	2.9063
58	58.0	6786.4	.0000	.0513	.0004	.0000	2.8547
57	57.0	6884.1	.0000	.0515	.0004	.0000	2.8030
56	56.0	6982.6	.0000	.0516	.0004	.0000	2.7511
55	55.0	7082.1	.0000	.0517	.0004	.0000	2.6991
54	54.0	7182.5	.0000	.0518	.0004	.0000	2.6469
53	53.0	7283.9	.0000	.0520	.0004	.0000	2.5947
52	52.0	7386.2	.0000	.0521	.0004	.0000	2.5423
51	51.0	7489.5	.0000	.0522	.0004	.0000	2.4898
50	50.0	7593.8	.0000	.0523	.0004	.0000	2.4372
49	49.0	7699.0	.0000	.0523	.0004	.0000	2.3846
48	48.0	7805.1	.0000	.0524	.0004	.0000	2.3318
47	47.0	7912.3	.0000	.0525	.0004	.0000	2.2790
46	46.0	8020.4	.0000	.0526	.0004	.0000	2.2261

SECTION 1 (ELEV .00- 45.00 FT): LENGTH= 45.00 FT / STEEL WT= 9.122 KIPS

45	45.0	8886.2	.0000	.0482	.0004	.0000	2.1731
44	44.0	9009.2	.0000	.0482	.0004	.0000	2.1246
43	43.0	9133.3	.0000	.0482	.0003	.0000	2.0760
42	42.0	9258.6	.0000	.0483	.0003	.0000	2.0274
41	41.0	9384.9	.0000	.0483	.0003	.0000	1.9788
40	40.0	9512.5	.0000	.0483	.0003	.0000	1.9302
39	39.0	9641.2	.0000	.0483	.0003	.0000	1.8815
38	38.0	9771.0	.0000	.0484	.0003	.0000	1.8328
37	37.0	9902.0	.0000	.0484	.0003	.0000	1.7841
36	36.0	10034.1	.0000	.0484	.0003	.0000	1.7354
35	35.0	10167.5	.0000	.0484	.0003	.0000	1.6867
34	34.0	10302.0	.0000	.0484	.0003	.0000	1.6380
33	33.0	10437.7	.0000	.0484	.0003	.0000	1.5893
32	32.0	10574.5	.0000	.0484	.0003	.0000	1.5406
31	31.0	10712.6	.0000	.0484	.0003	.0000	1.4919
30	30.0	10851.9	.0000	.0484	.0003	.0000	1.4432
29	29.0	10992.3	.0000	.0483	.0003	.0000	1.3945
28	28.0	11134.0	.0000	.0483	.0003	.0000	1.3459
27	27.0	11276.9	.0000	.0483	.0003	.0000	1.2972
26	26.0	11421.0	.0000	.0483	.0003	.0000	1.2486
25	25.0	11566.3	.0000	.0483	.0003	.0000	1.2000
24	24.0	11712.8	.0000	.0482	.0003	.0000	1.1515
23	23.0	11860.6	.0000	.0482	.0003	.0000	1.1030
22	22.0	12009.6	.0000	.0482	.0003	.0000	1.0545
21	21.0	12159.9	.0000	.0481	.0003	.0000	1.0060
20	20.0	12311.4	.0000	.0481	.0003	.0000	.9576
19	19.0	12464.2	.0000	.0481	.0003	.0000	.9092
18	18.0	12618.2	.0000	.0480	.0003	.0000	.8609
17	17.0	12773.5	.0000	.0480	.0003	.0000	.8126
16	16.0	12930.1	.0000	.0479	.0003	.0000	.7644
15	15.0	13087.9	.0000	.0479	.0003	.0000	.7162
14	14.0	13247.0	.0000	.0478	.0003	.0000	.6680
13	13.0	13407.4	.0000	.0478	.0003	.0000	.6199
12	12.0	13569.1	.0000	.0477	.0003	.0000	.5719
11	11.0	13732.0	.0000	.0477	.0003	.0000	.5239
10	10.0	13896.3	.0000	.0476	.0003	.0000	.4759
9	9.0	14061.9	.0000	.0476	.0003	.0000	.4281
8	8.0	14228.8	.0000	.0475	.0003	.0000	.3803
7	7.0	14397.0	.0000	.0474	.0002	.0000	.3325
6	6.0	14566.5	.0000	.0474	.0002	.0000	.2848
5	5.0	14737.4	.0000	.0473	.0002	.0000	.2372
4	4.0	14909.6	.0000	.0473	.0002	.0000	.1896
3	3.0	15083.1	.0000	.0472	.0002	.0000	.1421
2	2.0	15257.9	.0000	.0471	.0002	.0000	.0947
1	1.0	15434.1	.0000	.0471	.0002	.0000	.0473

ANALYSIS PRINTOUT

```
Version: FDN2-D59/AK
**********************************************************
*               FOUNDATION ANALYSIS PROGRAM              *
*                      Pier Analysis                     *
*         (c) 1999, Malouf Engineering Intl., Inc.       *
**********************************************************

------------------------------------------------------------------------------
MEI JOB NUMBER = 00-529
DESCRIPTION    = 147' MONOPOLE FOUNDATION CHK
SITE NAME      = NYC0011/BRANFORD, CT
CLIENT NAME    = METRICOM, INC
TIME/DATE/FILE = 12:18:51 / 06-29-2000 / 00-529-1.mnp
------------------------------------------------------------------------------

======================
 INPUT DATA
======================
*LOADS*                                          | ORIGINAL DESIGN
COMPRESSION FORCE              =    33.160 KIPS     |    26.000 KIPS
UPLIFT FORCE                   =      .000 KIPS     |      .000 KIPS
SHEAR FORCE                    =    25.720 KIPS     |    25.000 KIPS
MOMENT                         =  2773.710 KIP-FT   |  2616.000 KIP-FT

*PIER DIMENSIONS AND PROPERTIES*
PIER DEPTH                     =    22.500 FT
PIER DIAMETER                  =     7.000 FT
EXTENSION ABOVE GRADE          =      .500 FT

*FACTOR OF SAFETY VALUES*
F.O.S. BEARING PRESSURE        =     2.000
F.O.S. PASSIVE PRESSURE        =     2.000
F.O.S. CONCRETE WEIGHT         =     1.250
F.O.S. SOIL WEIGHT             =     1.500
F.O.S. SKIN FRICTION (UPLIFT)  =     2.000
F.O.S. SKIN FRICTION (DOWNLD)  =     2.000

*SOIL LAYER DATA*  (WATER DEPTH=  5.0FT)
------------------------------------------------------------------------------
                 |                          ULT.    ULT.   SOIL CONCR. ULT.
  DESCRIPTION    | THK DEPTH  PHI     Cu PASS.PR SKIN FR  DENS. DENS.  Q
                 |  ft    ft  deg    ksf    kcf     ksf    kcf   kcf  ksf
                 |
1 NEGLECT        | 3.0   3.0   .0   .000   .100*   .000   .100  .150   .0
2 SANDY          | 2.0   5.0 36.0   .000  1.040*   .162+  .120  .150 16.0
3 SANDY          |17.5  22.5 36.0   .000   .264*   .359+  .038  .088 16.0
------------------------------------------------------------------------------
* PASSIVE PRESSURE COMPUTED BASED ON SOIL FRICTION AND COHESION
+ SKIN FRICTION COMPUTED BASED ON SOIL FRICTION AND COHESION (ALPHA= .35)

*** COMMENTS ***
SOIL PARAMETERS AS PER ORIGINAL PAUL J FORD / SUMMIT MANUF CALCS.

======================
 RESULTS
======================
**COMPARISON WITH ORIGINAL DESIGN LOADS**
ORIGINAL COMPRESSION      =     26.0 KIPS <      33.2 KIPS (CHECK) R= 1.275
ORIGINAL SHEAR            =     25.0 KIPS <      25.7 KIPS (OK<5%) R= 1.029
ORIGINAL MOMENT           =   2616.0 K-FT <    2773.7 K-FT (CHECK) R= 1.060

WT./VOL. OF SOIL ABOVE    =      .0 KIPS /     .000 FT3
WT./VOL. OF CONCRETE PIER =     90.7 KIPS /  885.144 FT3

SKIN RESISTANCE           =     72.6 KIPS (ALLOWABLE)
TIP BEARING CAPACITY      =    307.9 KIPS (ALLOWABLE)

UPLIFT CAPACITY OF PIER   =    145.2 KIPS >       .0 KIPS (OK)    R=  .000
TOTAL DOWNLOAD CAPACITY   =    380.5 KIPS >      33.2 KIPS (OK)    R=  .087

BROM'S METHOD FOR GRANULAR SOILS:
DEPTH OF SOIL NEGLECTED   =     3.000 FT
AVERAGE ALLW PASSIVE PRESS=      .126 KCF
REQUIRED PIER LENGTH      =   23.011 FT  ( 4.401 FT DEPTH TO ZERO SHEAR)
AVAILABLE PIER LENGTH     =   22.500 FT   <    23.011 FT   (OK<5%) R= 1.023
MAXIMUM MOMENT            =  2939.19 KIP-FT

==============================================================================
REINFORCEMENT CHECK (PIER FOUNDATION) L= 23.00' D= 84.0"  C= 3.0" FC= 3000 PSI
==============================================================================

FACTORED MOMENT LOAD      =  4245.49 KIP-FT
FACTORED COMPRESSION LOAD =    57.48 KIPS (ECC= 1064.")
REINFD. COMPR. CAPACITY =     98.12 KIPS (COMPR. & MOMENT: TENSION CONTROLS)

REQUIRED STEEL AREA       =  28.11 IN2 (COMPR. AND MOMENT)
REQUIRED STEEL AREA       =  27.71 IN2 (ACI MIN.= 0.005A)

TOTAL BAR AREA PROVIDED   =  49.97 IN2 (32 x NO.11 BARS) /FY= 60.KSI,C= 3.0"
THE TOTAL BAR AREA PROVIDED IS SUFFICIENT.
VERT. BAR CLEAR SPACING   =   6.25 IN
```

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

November 15, 2000

David I. Bass, Esq.
Rubenstein & Green LLC
315 Post Road West
P.O. Box 5143
Westport, CT 06881-5143

RE: **TS-METRICOM-014-001026** - Metricom, Inc. request for an order to approve tower sharing at an existing telecommunications facility located at 21 Acorn Road, Branford, Connecticut.

Dear Attorney Bass:

At a public meeting held November 14, 2000, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures, as reconfigured and subject to the replacement of antennas to reduce the stress ratio below 100 percent. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letters dated October 25, 2000 and November 13, 2000.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Anthony J. DaRos, First Selectman, Town of Branford
Julie M. Cashin, Esq., Hurwitz & Sagarin LLC
Ronald C. Clark, Nextel Communications
Peter W. van Wilgen, Springwich Cellular Limited Partnership

l:\siting\cm\metricom\branford\dc111400.doc

RF Emissions Experts
AN EDWARDS AND KELCEY SERVICE

Analysis and Report of RF Exposure Levels and Compliance with FCC Regulations

Branford, CT Site
21 Acorn Road
NYC0011

Prepared for

Metricom

July 27, 2000

EDWARDS AND KELCEY
299 Madison Avenue - PO Box 1936
Morristown, NJ 07962-1936

Tel: 973-267-8830 Fax: 973-267-3555
Email: sleader@ekmail.com
Internet: http://www.ekcorp.com

RF Emissions Experts
AN EDWARDS AND KELCEY SERVICE

FCC RF COMPLIANCE ANALYSIS FOR

Metricom

Branford, CT Monopole

This site compliance report is organized as follows:

- Site Technical Data (supplied by client)
- Analysis Method and Assumptions
- Applicable Formulas
- Analysis Results
- Conclusion

SITE TECHNICAL DATA

Facility type	Monopole
Frequency bands	920 MHz / 2.4 GHz
Antenna type	Dual Band
Antenna major dimension (length)	3 ft
Maximum antenna gain (920 MHz / 2.4 GHz)	6dBi / 15 dBi
Antenna mounting height	116 ft. above ground
Total number of antennas	16
Total power input to each antenna	1 watt
Maximum effective isotropic radiated power (EIRP) per antenna	36dBm @ 920 MHz 42dBm @ 2.4 GHz
Other facilities within 500 feet	See Attachments

ANALYSIS METHOD AND ASSUMPTIONS

Type of analysis	Maximum / ground-level
Area analyzed	0' to 500' from tower
Classification of area	Uncontrolled (gen. pop.)
FCC Maximum Permissible Exposure (MPE) limit	0.613 mW/ cm^2 (920 MHz) 1.000 mW/ cm^2 (2.4 GHz)
Mathematical model	Point source, far field
Assumed ground reflection factor	100%
Assumed human height	6'0"
Vertical antenna discrimination included	Yes (from Ant. Mfr. data)

APPLICABLE FORMULAS

According to FCC Bulletin OET65, different mathematical models apply to different distances around an antenna. At the height of the antenna, the breakpoint is the "far-field distance", calculated as the ratio of the square of the major dimension of the antenna divided by the signal wavelength . Beyond the far-field distance at the height of the antenna, as well as at ground-level underneath the antenna, a "far-field point source" model applies; within that distance, a "near-field cylindrical model applies. The subsections below provide background on the two applicable models in the 920 MHz band.

Far-Field Point Source Model

(1) $S\ [mW/cm^2] = (4 * EIRP_{max} * VertAntDisc(\phi)) / (4 * \pi * R^2_{cm})$

(2) FCC MPE limit = (920 MHz / 1500 MHz) mW/cm^2, or 0.613 mW/cm^2

(3) MPE% = 100 * (S / 0.613)

where:

S	=	Calculated power density
4 (in numerator)	=	100% field ground reflection effect (has $[1 + 1]^2 = 4$ effect on power density)
$EIRP_{max}$	=	Maximum effective isotropically radiated power (Note: EIRP is 64% higher than ERP, which is referenced to a half-wave dipole)
VertAntDisc(ϕ)	=	Numeric factor for antenna discrimination (EIRP reduction) in the vertical plane, applicable at downward angle ϕ to a 6' human standing on ground, calculated at distances from 0' to 500' away from the antenna
R	=	Straight-line distance from antenna to 6' human
MPE%	=	Calculated exposure level, as a percentage of the FCC MPE limit for continuous exposure of the general population

Near-Field Cylindrical Model

(1) $S\ [mW/cm^2] = (P_i * ACF / (2 \pi R\ h)$

(2) FCC MPE limit = (920 MHz / 1500 MHz) mW/cm^2, or 0.627 mW/cm^2

(3) MPE% = 100 * (S / 0.613)

where:

S	=	Calculated power density
P_i	=	Total power input to the antenna, in mW
ACF	=	Antenna correction factor (adjustment to near-field power density calculation to compensate for the antenna mounting height above ground level and resulting partial-body exposure; see Richard Tell article listed in the References)
R	=	Straight-line distance from antenna to 6' human
h	=	Subtended height of the antenna, in cm
MPE%	=	Calculated exposure level, as a percentage of the FCC MPE limit for continuous exposure of the general population

ANALYSIS RESULTS – GROUND-LEVEL

The Tables on the following pages, summarize the results of the calculations using the site data, method and far-field point source formula described above. Note that the information on the vertical antenna discrimination has been taken from the antenna manufacturer's specification sheets. In addition, note that while the tabular distances are listed in feet, the calculations translate these units into centimeters, to match the FCC specification of MPE units.

920 MHz Antenna Array					
G dist	**R dist**	**V angle**	**V disc**	**mWcm^2**	**GPMPE%**
0	109.5	90.0	0.251	0.0002	0.038
20	111.3	79.6	0.251	0.0002	0.036
40	116.6	69.9	0.251	0.0002	0.033
60	124.9	61.3	0.251	0.0002	0.029
80	135.6	53.8	0.251	0.0002	0.025
100	148.3	47.6	0.398	0.0002	0.033
120	162.5	42.4	0.398	0.0002	0.027
140	177.7	38.0	0.631	0.0002	0.036
160	193.9	34.4	0.631	0.0002	0.030
180	210.7	31.3	0.631	0.0002	0.026
200	228.0	28.7	0.794	0.0002	0.027
220	245.7	26.5	0.794	0.0001	0.024
240	263.8	24.5	0.794	0.0001	0.021
260	282.1	22.8	0.794	0.0001	0.018
280	300.6	21.4	0.794	0.0001	0.016
300	319.4	20.1	0.794	0.0001	0.014
320	338.2	18.9	1.000	0.0001	0.016
340	357.2	17.9	1.000	0.0001	0.014
360	376.3	16.9	1.000	0.0001	0.013
380	395.5	16.1	1.000	0.0001	0.012
400	414.7	15.3	1.000	0.0001	0.010
420	434.0	14.6	1.000	0.0001	0.010
440	453.4	14.0	1.000	0.0001	0.009
460	472.9	13.4	1.000	0.0000	0.008
480	492.3	12.9	1.000	0.0000	0.007
500	511.8	12.4	1.000	0.0000	0.007

Table 1. 920 MHz Ground level RF power density and percent-of-MPE calculations

2.4 GHz Antenna Array					
G dist	**R dist**	**V angle**	**V disc**	**mWcm^2**	**GPMPE%**
0	109.5	90.0	0.005	0.0000	0.003
20	111.3	79.6	0.005	0.0000	0.003
40	116.6	69.9	0.005	0.0000	0.003
60	124.9	61.3	0.005	0.0000	0.002
80	135.6	53.8	0.005	0.0000	0.002
100	148.3	47.6	0.005	0.0000	0.002
120	162.5	42.4	0.005	0.0000	0.001
140	177.7	38.0	0.013	0.0000	0.003
160	193.9	34.4	0.013	0.0000	0.002
180	210.7	31.3	0.013	0.0000	0.002
200	228.0	28.7	0.016	0.0000	0.002
220	245.7	26.5	0.016	0.0000	0.002
240	263.8	24.5	0.016	0.0000	0.002
260	282.1	22.8	0.016	0.0000	0.001
280	300.6	21.4	0.016	0.0000	0.001
300	319.4	20.1	0.016	0.0000	0.001
320	338.2	18.9	0.079	0.0000	0.005
340	357.2	17.9	0.079	0.0000	0.004
360	376.3	16.9	0.079	0.0000	0.004
380	395.5	16.1	0.079	0.0000	0.004
400	414.7	15.3	0.079	0.0000	0.003
420	434.0	14.6	0.079	0.0000	0.003
440	453.4	14.0	0.079	0.0000	0.003
460	472.9	13.4	0.079	0.0000	0.003
480	492.3	12.9	0.079	0.0000	0.002
500	511.8	12.4	0.079	0.0000	0.002

Table 2. 2.4 GHz Ground level RF power density and percent-of-MPE calculations

Cumulative Radiated Power		
G dist	$mWcm^2$	GPMPE%
0	0.0002	0.041
20	0.0002	0.039
40	0.0002	0.036
60	0.0002	0.031
80	0.0002	0.027
100	0.0002	0.034
120	0.0002	0.028
140	0.0002	0.039
160	0.0002	0.033
180	0.0002	0.028
200	0.0002	0.030
220	0.0002	0.026
240	0.0001	0.022
260	0.0001	0.019
280	0.0001	0.017
300	0.0001	0.015
320	0.0001	0.021
340	0.0001	0.019
360	0.0001	0.017
380	0.0001	0.015
400	0.0001	0.014
420	0.0001	0.013
440	0.0001	0.012
460	0.0001	0.011
480	0.0000	0.010
500	0.0000	0.009

Table 3. Cumulative Ground level RF power density and percent-of-MPE calculations

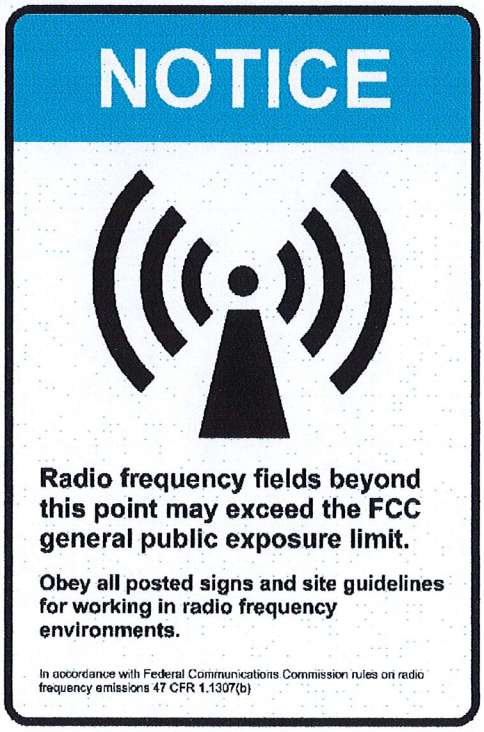
CONCLUSION

The calculations presented above demonstrate that the maximum potential exposure level around the tower induced by the Metricom system is 0.0002 mW/cm^2, which represents 0.041% of the FCC limit for continuous exposure of the general population.

The most recent power density study submitted to the Connecticut Siting Council, on behalf of SCLP reported that the cumulative 'worst case' percentage of the FCC limit for exposure of the general population was 17.53%, for the existing and proposed collocators at this site. Those results included Sprint PCS at 2.14%, Nextel at 3.37%, and SCLP at 12.02%. Adding the calculated Metricom level of 0.041% results in a total of 17.571%. Therefore the total ground level exposure around the monopole is still more than five times below the FCC limit, even with the inclusion of the Metricom system

Even with the low levels predicted on the ground, it's recommended that an FCC 'Notice' sign (shown below) be installed on the fence gate as a precautionary safety measure.

Therefore, the ADDITION of the Metricom Radio system to this facility should not create a significant risk of exposure to RF emissions to the general population. And, according to the calculations, and based on the installation of signage described above, the Metricom wireless facility is in compliance with the FCC regulations concerning the control of potential RF exposure.



Example of RF Notice Sign

CERTIFICATION

This report was prepared by Sheldon Leader, Associate Vice President and Director – RF Planning and Engineering. The undersigned has reviewed this report and certifies that the analysis provided herein is consistent with the applicable FCC Rules and Regulations and accepted industry practice.

Sheldon Leader

July 27, 2000

Sheldon Leader
Associate Vice President

Edwards and Kelcey, Inc.

REFERENCES

47 CFR, FCC Rules and Regulations, Section 1.1301 *et seq.*

FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), *In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (ET Docket 93-62), and Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning Amendment of the Commission's Rules to Preempt State and Local Regulation of Commercial Mobile Radio Service Transmitting Facilities*, released August 25, 1997.

FCC First Memorandum Opinion and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released December 24, 1996.

FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

FCC Office of Engineering and Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 97-01, August 1997.

FCC Office of Engineering and Technology (OET) Bulletin 56, "Questions and Answers About Biological Effects and Potential Hazards of RF Radiation", 1989.

Richard Tell, "CTIA's EME Design and Operation Considerations for Wireless Antenna Sites", November 15, 1996.

ATTACHMENT A

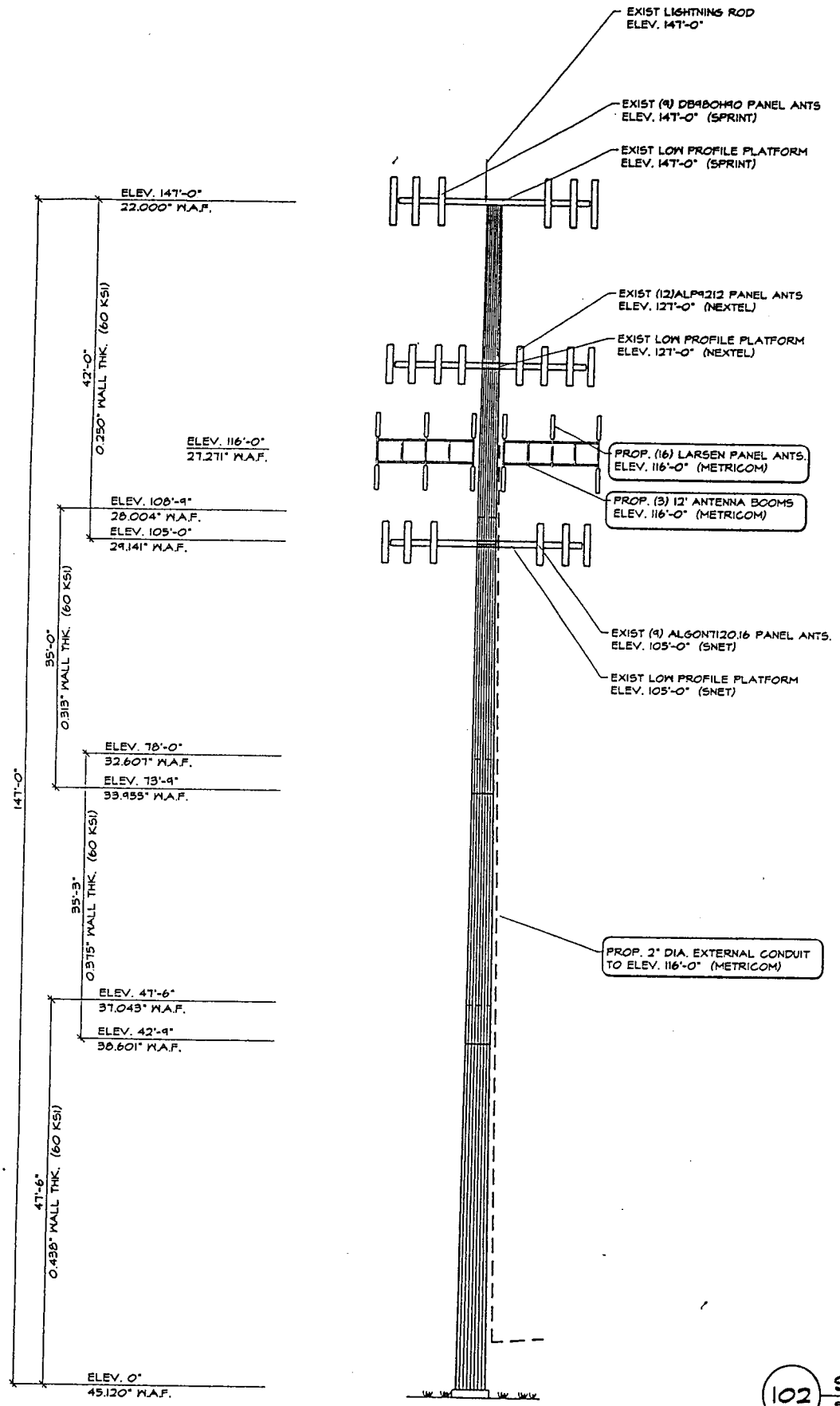
SITE DATA

DATA Needed for EMF Safety Reports 20-Jul-00

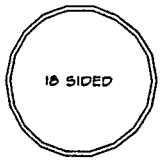
CARRIER	Company	Metricom	
CONTACT PERSON	Person	Julian Pedini - WFI	
	Phone	(201) 476-1078	
	Fax	(201) 326-3044	
	e-mail	julian.pedini@wfinet.com	
LOCATION	Site Address	21 Acorn Rd. - Sprint Monopole	
	Township, State	Branford, CT	
	Carrier Site Identification Number	NYC0011	
	Date Report Required	7/28/00	
		ISM	
FREQUENCY	Transmit Frequency Range: Upper	902 - 928 MHz	
	Transmit Frequency Range: Lower	2400 - 2483.5 MHz	
TOWER	Existing or Proposed	Existing	
	Monopole or Lattice or Building	Monopole	
	Height of Tower or Building (feet)	147' (Metricom @ 116')	
ANTENNAS	Model	Larsen Antennas (108 426-200)	
	Gain (dBd)- lower band	6 dBi	
	Gain (dBd)- upper band	15 dBi	
	Height of Rad. Center (feet)		
	Downtilt (degrees)	0	
	Total Number	16	
	Number per Sector	2 sectors w/ 5 antennas per sector, 1 sector with 6 antennas	
	No.of Transmit Antennas per sector	5 or 6 transmit/ receive antennas	
	No. of channels/antenna	spread spectrum freq. hopping	
	Max ERP / **antenna**- lower band	34 dBm	
	Max ERP / **antenna**- upper band	40 dBm	
RF ENGINEER	Name	Saju Paul	Stan Moreyno
	Phone	(732) 670-9622	(201) 476-1981
	Fax	(201) 476-1111	(201) 476-1111
	e-mail	saju.paul@wfinet.com	stan.moreyno@wfinet.com
COLLOCATORS	Carrier Names	Sprint @ 147'	
	Heights of Carrier Installations (feet)	Nextel @ 127'	
		Metricom @ 116'	
		SNET @ 105'	

MANUF. / MODEL:	SUMMIT MANUF/18-SIDED
YEAR BUILT:	1997
ORIGINAL DESIGN CRITERIA:	TIA/EIA 222-F 90MPH + 0" ICE
PRESENT ANALYSIS CRITERIA:	TIA/EIA-222-F - 85 MPH + 0" ICE

SPRINT SITES USA SITE #CT03XC021-05



101 ELEVATION: 147' MONOPOLE
SCALE: 1"=15'



102 SECTION: THRU TOWER
SCALE: N.T.S.

2. The proposed installation would not increase noise levels at the existing facility by six decibels or more.

3. Operation of the additional antennas at this site will not increase the total radio frequency electromagnetic radiation power density levels adopted by the State of Connecticut and the FCC as shown below. "Worst-case" exposure calculations for a point of interest at the base of the tower in relation to operation of the SCLP, Nextel and Sprint's antenna arrays are as follows:

FREQUENCY	POWER DENSITY	HEIGHT	STANDARD LIMITS (mW/cm2)	% OF STANDARD
Sprint PCS 1962.5	0.0214	150'	1.0000	2.14%
Nextel 851	0.0191	130'	0.5673	3.37%
SCLP (proposed) 880-894	0.0705	105'	0.5867	12.02%
TOTAL	N/A		N/A	17.53%

As the table demonstrates, The collective "worst-case" exposure would be only 17.53% of the ANSI/IEE standard, as calculated for mixed frequency sites. Power density levels from shared use of the tower facility would thus be well below applicable ANSI/IEE standards.

4. The proposed installation would not require any water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is completed (approximately four weeks), the proposed installation would not generate any vehicular traffic other than periodic maintenance visits. The proposed use of the facility would therefore have a minimal environmental effect, and is environmentally feasible.

D. **Economic Feasibility.** SCLP has entered into an agreement with Sprint and the property owner to share use of the tower and the new storage building. The proposed facility sharing is therefore economically feasible.

E. **Public Safety Concerns.** As stated above, the existing tower is structurally capable of supporting the Applicant's proposed antennas and fall well below State and Federal Standards. The Applicant is not aware of any other public safety concerns relative to the proposed sharing of the tower. In fact, the provision of new or improved wireless coverage in the area is expected to enhance the safety and welfare of Branford residents. The proposed-shared use of this facility would improve public safety along I-95 in the Town of Branford.