

ENGINEERING STATEMENT

This firm has been retained by Radio Power Inc., licensee of Radio Station WRCD(FM), Canton, New York, (Facility ID 15821), to prepare this engineering statement in support of its Application For License, FCC Form 302, to cover construction authorized in Construction Permit File No. BPH-20001024ABH issued October 3, 2001. Construction of this facility is now complete and the permittee has complied with all conditions contained in the Construction Permit.

The Construction Permit BPH-20021024ABH contained 5 conditions, 4 of which related to the installation of a Directional Antenna. Specifically, the conditions are:

1. BEFORE PROGRAM TESTS ARE AUTHORIZED, permittee shall submit the results of a complete proof-of-performance to establish the horizontal plane radiation patterns for both the horizontally and vertically polarized radiation components. This proof-of-performance may be accomplished using the complete full size antenna, or individual bays therefrom, mounted on a supporting structure of identical dimensions and configuration as the proposed structure, including all braces, ladders, conduits, coaxial lines, and other appurtenances; or using a carefully manufactured scale model of the entire antenna, or individual bays therefrom, mounted on an equally scaled model of the proposed supporting structure, including all appurtenances. Engineering exhibits should include a description of the antenna testing facilities and equipment employed, including appropriate photographs or sketches and a description of the testing procedures, including scale factor, measurements frequency, and equipment calibration.

The documentation for this condition is being submitted as Exhibit E-1

2. BEFORE PROGRAM TESTS ARE AUTHORIZED, permittee shall submit an affidavit from a licensed surveyor to establish that the directional antenna has been oriented at the proper azimuth.

The Declaration of a surveyor licensed in the State of New York was employed to verify that the antenna was correctly oriented on the supporting tower. See Exhibit E-2.

3. BEFORE PROGRAM TESTS ARE AUTHORIZED, permittee/licensee shall submit an affidavit that the installation of the directional antenna system was overseen by a qualified engineer. This affidavit shall include a certification by the engineer that the antenna was installed pursuant to the manufacturer's instructions and list the qualifications of the certifying engineer.

The Declaration of the engineer employed by Radio Power Inc. is attached as Exhibit E-3. That Declaration certifies that the directional antenna was installed in accordance with the manufacturer's installation instructions.

4. The relative field strength of neither the measured horizontally nor vertically polarized radiation component shall exceed at any azimuth the value indicated on the composite radiation pattern authorized by this construction permit.

A relative field strength of 1.0 on the composite radiation pattern herein authorized corresponds to the following effective radiated power:

50 kilowatts.

Principal minima and their associated field strength limits:

30 - 40 degrees True: 2.70 kilowatts.

The maximum power radiated in the span between 20 and 40 degrees true does not exceed 2.7 kilowatts. See Exhibit E-1

This engineering statement has been prepared by the undersigned and is true and correct to the best of his knowledge and belief, and is submitted in good faith. My qualifications are a matter of record before the Commission.

Dated this 12th day of November 2003.

Respectfully,



F. W. Hannel, PE

F. W. Hannel & Associates
10733 East Butherus Drive
Scottsdale, AZ 85255
(480) 585-7475
Fax (815) 327-9559
<http://www.fwhannel.com>

EXHIBIT E-1

Directional Antenna Proof of Performance
Radio Station WRCD(FM)
Canton, New York
Facility ID 15281

November 2003



SYSTEMS WITH RELIABILITY, LTD.
Broadcast Antenna and Transmission Systems

PATTERN CERTIFICATION

DIRECTIONAL FM ANTENNA
WRCD
October 28, 2003

Call Sign	:	WRCD
Location	:	Canton, NY
Frequency	:	101.5 MHz
Channel	:	268
Antenna Model	:	FM10/8 HWS DA Illumitron
Maximum Antenna Gain	:	
Horizontal	:	3.14233/ 4.97252 dB
Vertical	:	3.14233/ 4.97252 dB

ANTENNA DESCRIPTION

A custom designed **FM10/8 HWS DA Illumitron** antenna was used to produce the required directional azimuth pattern. Each antenna bay consists of a circularly polarized dipole-radiating element with a vertical and horizontal parasitic system. The array is comprised of **eight** bays, that are spaced a half wavelength apart, mounted to a tower pointing **210** degrees true north.

DESCRIPTION OF TEST PROCEDURE

The test antenna consists of a third-scale antenna and parasitic system. This antenna was mounted to an 8-inch third-scale model tower with the use of mounting brackets supplied with the finalized antenna. The tower was 20 ft. on a platform. All feed cables are properly grounded during pattern testing. Horizontal and vertical parasitic elements were used to obtain the desired directional pattern.

The source antenna, a vertical/horizontal Cavity Back Resonator antenna configuration was mounted approximately 100 feet from the test antenna. The source's height was adjusted to provide a uniform field at the test antenna location. The CBR antenna was operated in the transmit mode at a frequency of 304.5 MHz. The antenna under test was rotated in a clockwise direction. A gain reference was taken using a dipole tuned to 304.5 MHz. Nowhere does the received signal exceed a maximum to minimum ratio of 15 dB.

DOCUMENT EXHIBITS

The following exhibits are included as part of this Certificate of Compliance:

Exhibit 1	Circular Polarized Azimuth Pattern Field Strength Tabulations (Composite)
Exhibit 2	Measured Horizontal Polarized Azimuth Pattern Measured Field Strength Tabulations (Horizontal)
Exhibit 3	Measured Vertical Polarized Azimuth Pattern Measured Field Strength Tabulations (Vertical)
Exhibit 4	Elevation Pattern Elevation Tabulations
Exhibit 5	Antenna Data Sheet

TEST EQUIPMENT

Network Analyzer	:	Hewlett Packard Model # 8753C Serial Number : 08753 – 69138 Calibrated 8/26/02, SWR, Inc.
Computer	:	White Mountain 366 Computer
Plotter	:	Hewlett-Packard 7550A
Positioner	:	Orbit Positioner Calibrated 1/06/03, SWR, Inc.

Prepared by:



Jason Duncan
SWR, Inc.

TEST RESULTS

The attached calculations verify that the **RMS** value of this antenna is **93.89 %** of the **RMS** value of the pattern authorized in the related construction permit **BPH –20001024ABH**. The vertical component **RMS** value is **0.781** and the horizontal component **RMS** value is **0.724**.

Azimuth and elevation plots and associated tabulations of this antenna are included with this package.

Measured horizontal polarized directivity	:	1.91034 / 2.81 dB
Measured vertical polarized directivity	:	1.64027/ 2.15 dB
Measured composite azimuth pattern directivity	:	1.9087 / 2.8074 dB

Gain in each polarization was calculated using the following relation:

GAIN = Azimuth Directivity x Elevation Directivity x Power Ratio Between Polarizations x Antenna Efficiency

Using this relationship along with ratio measured at our testing facilities:

H-Pol. Gain = (1.91034)(4.189)(0.46197)(.85) = 3.14233 / 4.97252 dB

V-Pol. Gain = (1.64027)(4.189)(0.53803)(.85) = 3.14233 / 4.97252 dB

INSTALLATION AND MOUNTING

The antenna is to be mounted in accordance with the supplied drawings. The antenna center of radiation is to be **31 meters** above ground level. The antenna (parasitic system included) aperture is **33.92 feet**. No other antennas are to be mounted within **10 feet** of the antenna. No other obstructions other than those specified by original drawings supplied are to be mounted at the same level as the antenna. The antenna is to be oriented **260 degrees** true North.

The parasitic system is custom designed to shape and direct the antenna pattern as required. The systems orientation and the mounting details are described in the following drawings:

DRAWING NO.	TITLE
0479C00	ORIENTATION WITH PARASITICS
0479A00B	ANTENNA ORIENTATION
0479A15	PARASITIC PLACEMENT BAY 1
0479A16	PARASITIC PLACEMENT BAY 2
0479A17	PARASITIC PLACEMENT BAY 3
0479A18	PARASITIC PLACEMENT BAY 4
0479A19	PARASITIC PLACEMENT BAY 5
0479A20	PARASITIC PLACEMENT BAY 6
0479A21	PARASITIC PLACEMENT BAY 7
0479A22	PARASITIC PLACEMENT BAY 8
2105A10	TEST RANGE SCHEMATIC

The array shall be mounted according to **DWG. 0479C00**. The parasitic assembly is shown in **DWG. 0479A15** through **DWG. 0479A16**. The antenna elements shall be aligned at the same heading as in **DWG. 0479A00B**. This will ensure that the antenna is oriented properly at **260** degrees true north.



SYSTEMS WITH RELIABILITY, INC.
Broadcast Antennas and Transmission Systems

WRCD Antenna RMS Comparison

PROPOSED ANTENNA		DESIGNED ANTENNA	
Azimuth Heading	Relative Field	Azimuth Heading	Relative Field
0	0.4560	0	0.4157
10	0.3630	10	0.3563
20	0.2900	20	0.2673
30	0.2320	30	0.2276
40	0.2320	40	0.2276
50	0.2590	50	0.2376
60	0.3240	60	0.2871
70	0.4070	70	0.3563
80	0.5100	80	0.4751
90	0.6400	90	0.6236
100	0.8040	100	0.7522
110	1.0000	110	0.9304
120	1.0000	120	0.9799
130	1.0000	130	1.0000
140	1.0000	140	0.9602
150	1.0000	150	0.9800
160	1.0000	160	1.0000
170	1.0000	170	0.9701
180	1.0000	180	0.9404
190	1.0000	190	0.9404
200	1.0000	200	0.9206
210	1.0000	210	0.9107
220	1.0000	220	0.8909
230	1.0000	230	0.8810
240	1.0000	240	0.8612
250	1.0000	250	0.8612
260	1.0000	260	0.8711

PROPOSED ANTENNA

Azimuth Heading	Relative Field
270	1.0000
280	1.0000
290	1.0000
300	1.0000
310	1.0000
320	1.0000
330	0.9000
340	0.7170
350	0.5710

Sum of Relative Field Squared : 25.835
Sum Divided by 36 (Readings) : 0.718
Square Root : 0.847

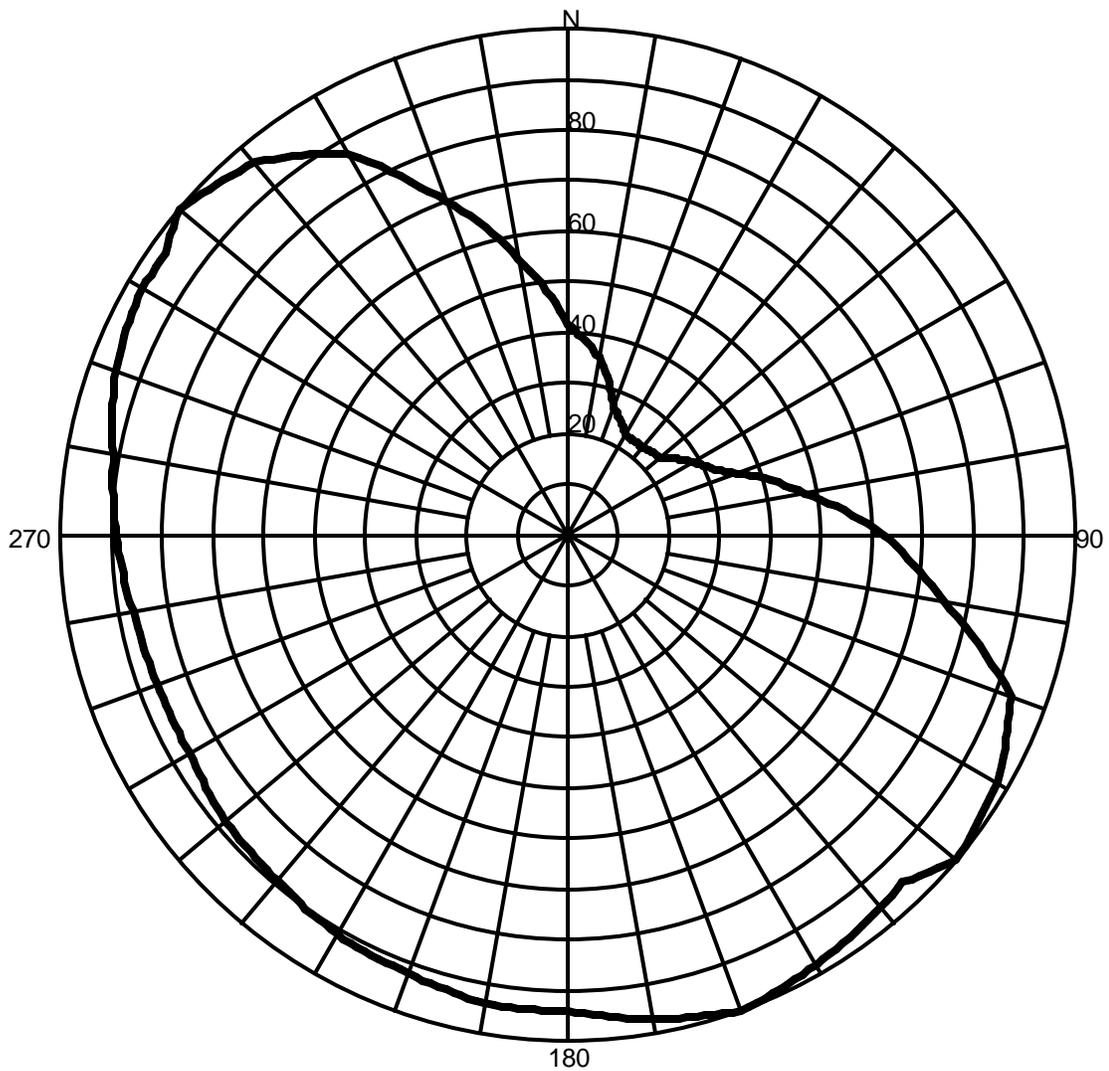
Percentage of Construction Permit Antenna Filled :

DESIGNED ANTENNA

Azimuth Heading	Relative Field
270	0.8909
280	0.9107
290	0.9503
300	0.9701
310	1.0000
320	0.9601
330	0.8710
340	0.7028
350	0.5543

Sum of Relative Field Squared : 22.777
Sum Divided by 36 (Readings) : 0.633
Square Root : 0.795

93.89%



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 1*

Date: 10/28/2003

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Circular

CIRCULARITY(+/-dB): NA

AZ. DIRECTIVITY: 1.9087 / 2.8074dB

PATTERN RMS: 0.724

Relative Field Tabulation(Azimuth)

Azimuth Heading	Normalized Field(dB)	Azimuth Heading	Normalized Field(dB)
0	.4157 (-7.62)	180	.9404 (-0.53)
5	.3860 (-8.27)	185	.9404 (-0.53)
10	.3563 (-8.96)	190	.9404 (-0.53)
15	.3118 (-10.12)	195	.9305 (-0.63)
20	.2673 (-11.46)	200	.9206 (-0.72)
25	.2474 (-12.13)	205	.9156 (-0.77)
30	.2276 (-12.86)	210	.9107 (-0.81)
35	.2276 (-12.86)	215	.9008 (-0.91)
40	.2276 (-12.86)	220	.8909 (-1)
45	.2320 (-12.69)	225	.8859 (-1.05)
50	.2376 (-12.48)	230	.8810 (-1.1)
55	.2623 (-11.62)	235	.8711 (-1.2)
60	.2871 (-10.84)	240	.8612 (-1.3)
65	.3118 (-10.12)	245	.8612 (-1.3)
70	.3563 (-8.96)	250	.8612 (-1.3)
75	.4157 (-7.62)	255	.8661 (-1.25)
80	.4751 (-6.46)	260	.8711 (-1.2)
85	.5493 (-5.2)	265	.8810 (-1.1)
90	.6236 (-4.1)	270	.8909 (-1)
95	.6879 (-3.25)	275	.9008 (-0.91)
100	.7522 (-2.47)	280	.9107 (-0.81)
105	.8413 (-1.5)	285	.9305 (-0.63)
110	.9304 (-0.63)	290	.9503 (-0.44)
115	.9551 (-0.4)	295	.9602 (-0.35)
120	.9799 (-0.18)	300	.9701 (-0.26)
125	.9899 (-0.09)	305	.9701 (-0.26)
130	1.0000 (0)	310	1.0000 (0)
135	.9602 (-0.35)	315	.9800 (-0.18)
140	.9602 (-0.35)	320	.9601 (-0.35)
145	.9701 (-0.26)	325	.9155 (-0.77)
150	.9800 (-0.18)	330	.8710 (-1.2)
155	.9900 (-0.09)	335	.7819 (-2.14)
160	1.0000 (0)	340	.7028 (-3.06)
165	.9850 (-0.13)	345	.6286 (-4.03)
170	.9701 (-0.26)	350	.5543 (-5.13)
175	.9552 (-0.4)	355	.4850 (-6.29)

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 1*

Date: 10/28/2003

ANTENNA TYPE: FM10/8 HWS DA Illumitron

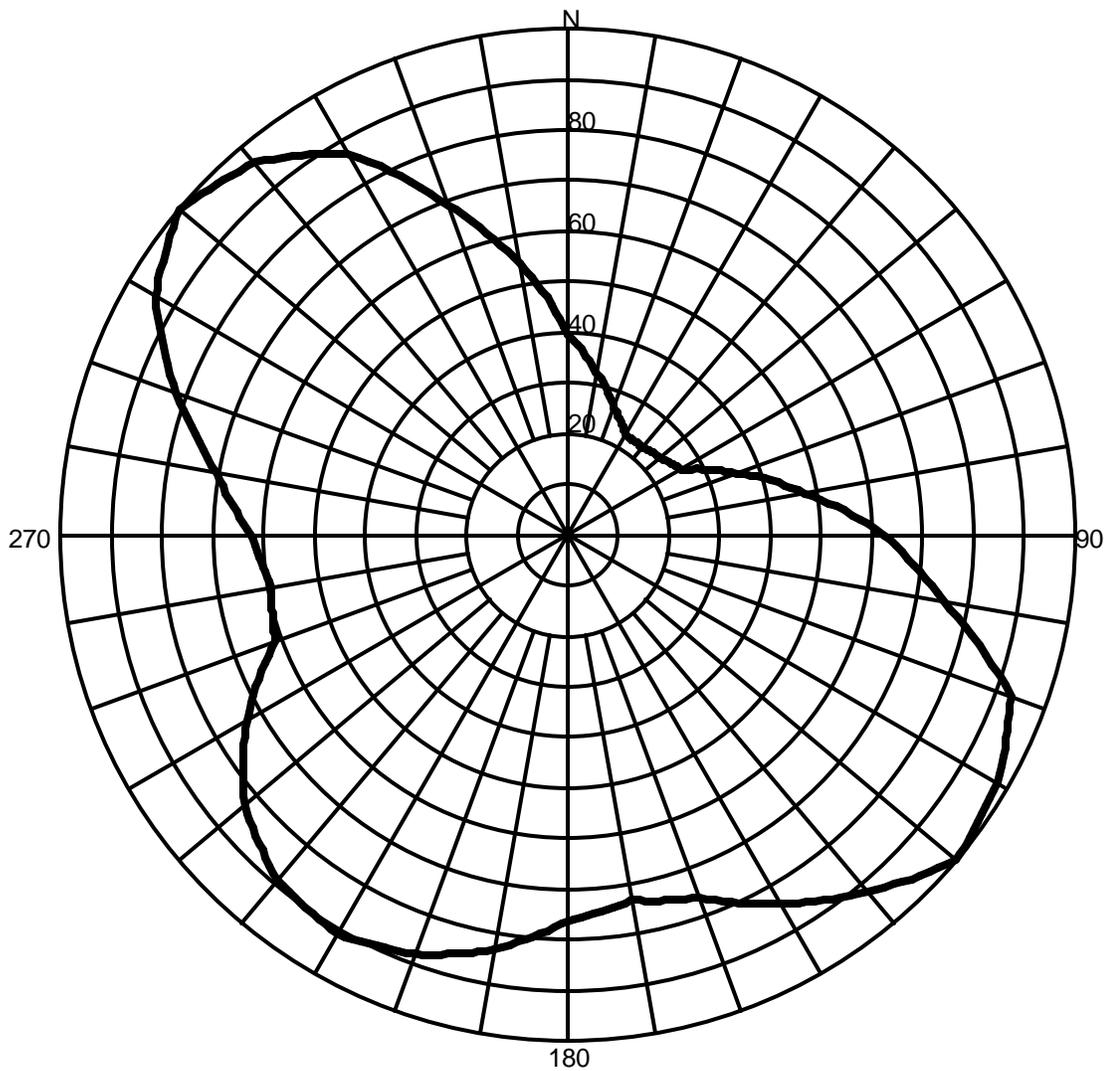
FREQUENCY: 101.5

PATTERN POL.: Circular

CIRCULARITY(+/-dB): NA

AZ. DIRECTIVITY: 1.9087 / 2.8074dB

PATTERN RMS: 0.724



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 2*

Date: 10/28/2003

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Horizontal

CIRCULARITY(+/-dB): NA

AZ. DIRECTIVITY: 1.91034 / 2.81dB

PATTERN RMS: 0.724

Relative Field Tabulation(Azimuth)

Azimuth Heading	Normalized Field(dB)	Azimuth Heading	Normalized Field(dB)
0	.3959 (-8.05)	180	.7621 (-2.36)
5	.3613 (-8.84)	185	.7968 (-1.97)
10	.3266 (-9.72)	190	.8314 (-1.6)
15	.2969 (-10.55)	195	.8562 (-1.35)
20	.2672 (-11.46)	200	.8809 (-1.1)
25	.2474 (-12.13)	205	.8958 (-0.96)
30	.2276 (-12.86)	210	.9106 (-0.81)
35	.2276 (-12.86)	215	.9007 (-0.91)
40	.2276 (-12.86)	220	.8908 (-1)
45	.2320 (-12.69)	225	.8611 (-1.3)
50	.2375 (-12.49)	230	.8314 (-1.6)
55	.2474 (-12.13)	235	.7819 (-2.14)
60	.2573 (-11.79)	240	.7324 (-2.71)
65	.3068 (-10.26)	245	.6731 (-3.44)
70	.3563 (-8.96)	250	.6137 (-4.24)
75	.4157 (-7.62)	255	.6038 (-4.38)
80	.4751 (-6.46)	260	.5939 (-4.53)
85	.5493 (-5.2)	265	.6087 (-4.31)
90	.6236 (-4.1)	270	.6236 (-4.1)
95	.6879 (-3.25)	275	.6632 (-3.57)
100	.7522 (-2.47)	280	.7027 (-3.06)
105	.8413 (-1.5)	285	.7621 (-2.36)
110	.9304 (-0.63)	290	.8215 (-1.71)
115	.9551 (-0.4)	295	.8809 (-1.1)
120	.9799 (-0.18)	300	.9403 (-0.53)
125	.9899 (-0.09)	305	.9701 (-0.26)
130	1.0000 (0)	310	1.0000 (0)
135	.9602 (-0.35)	315	.9800 (-0.18)
140	.9205 (-0.72)	320	.9601 (-0.35)
145	.8809 (-1.1)	325	.9155 (-0.77)
150	.8413 (-1.5)	330	.8710 (-1.2)
155	.8017 (-1.92)	335	.7819 (-2.14)
160	.7621 (-2.36)	340	.6928 (-3.19)
165	.7473 (-2.53)	345	.6186 (-4.17)
170	.7324 (-2.71)	350	.5444 (-5.28)
175	.7473 (-2.53)	355	.4701 (-6.56)

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 2*

Date: 10/28/2003

ANTENNA TYPE: FM10/8 HWS DA Illumitron

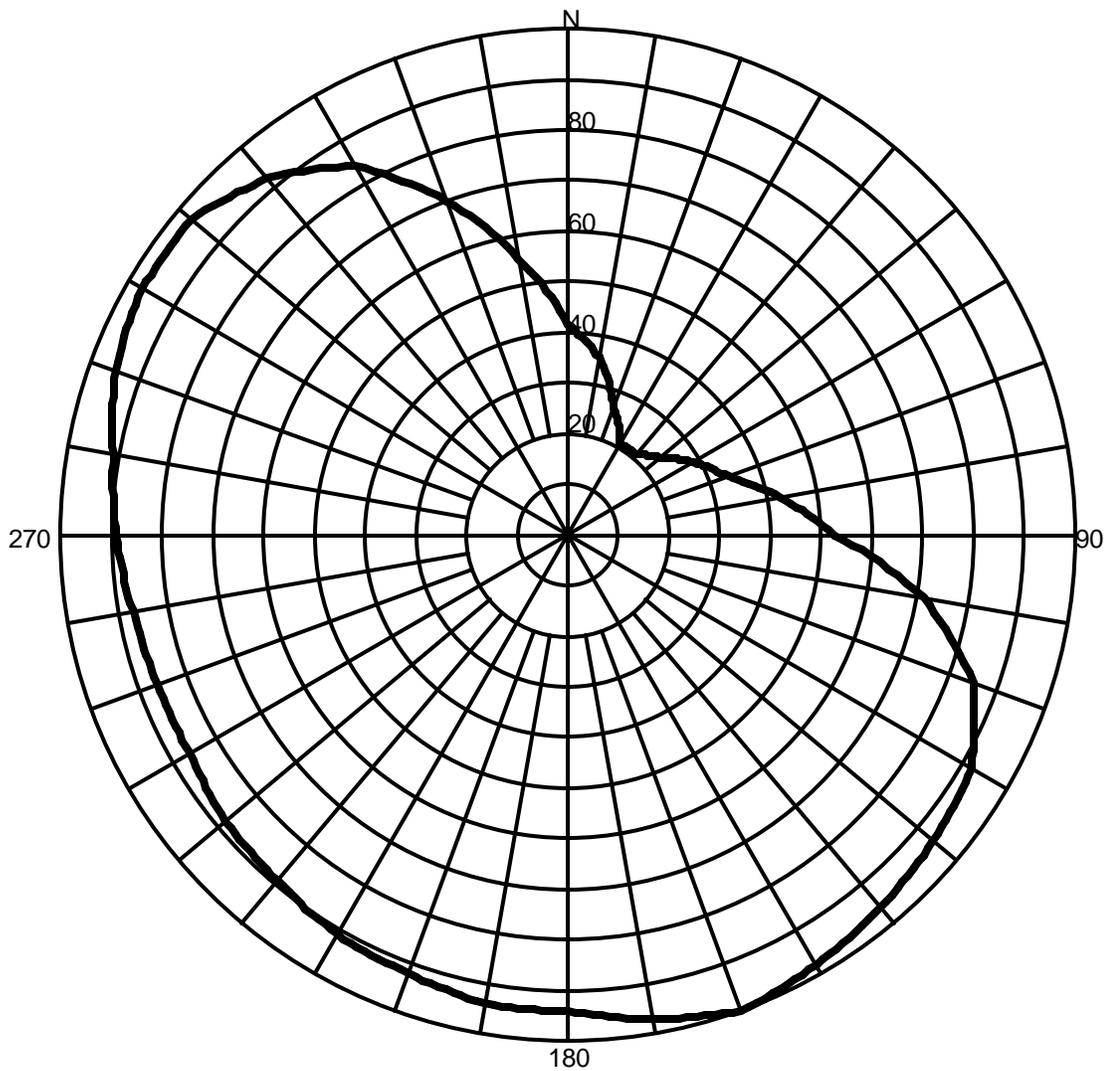
FREQUENCY: 101.5

PATTERN POL.: Horizontal

CIRCULARITY(+/-dB): NA

AZ. DIRECTIVITY: 1.91034 / 2.81dB

PATTERN RMS: 0.724



Azimuth Pattern

Scale: Linear

Unit: Relative Field

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 3*

Date: 10/28/2003

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Vertical

CIRCULARITY(+/-dB): NA

AZ. DIRECTIVITY: 1.64027 / 2.15dB

PATTERN RMS: 0.781

Relative Field Tabulation(Azimuth)

Azimuth Heading	Normalized Field(dB)	Azimuth Heading	Normalized Field(dB)
0	.4157 (-7.62)	180	.9404 (-0.53)
5	.3860 (-8.27)	185	.9404 (-0.53)
10	.3563 (-8.96)	190	.9404 (-0.53)
15	.3118 (-10.12)	195	.9305 (-0.63)
20	.2673 (-11.46)	200	.9206 (-0.72)
25	.2376 (-12.48)	205	.9156 (-0.77)
30	.2079 (-13.64)	210	.9107 (-0.81)
35	.2079 (-13.64)	215	.9008 (-0.91)
40	.2079 (-13.64)	220	.8909 (-1)
45	.2227 (-13.05)	225	.8859 (-1.05)
50	.2376 (-12.48)	230	.8810 (-1.1)
55	.2623 (-11.62)	235	.8711 (-1.2)
60	.2871 (-10.84)	240	.8612 (-1.3)
65	.3118 (-10.12)	245	.8612 (-1.3)
70	.3366 (-9.46)	250	.8612 (-1.3)
75	.3811 (-8.38)	255	.8661 (-1.25)
80	.4256 (-7.42)	260	.8711 (-1.2)
85	.4751 (-6.46)	265	.8810 (-1.1)
90	.5246 (-5.6)	270	.8909 (-1)
95	.6187 (-4.17)	275	.9008 (-0.91)
100	.7127 (-2.94)	280	.9107 (-0.81)
105	.7820 (-2.14)	285	.9305 (-0.63)
110	.8513 (-1.4)	290	.9503 (-0.44)
115	.8859 (-1.05)	295	.9602 (-0.35)
120	.9206 (-0.72)	300	.9701 (-0.26)
125	.9305 (-0.63)	305	.9701 (-0.26)
130	.9404 (-0.53)	310	.9701 (-0.26)
135	.9503 (-0.44)	315	.9453 (-0.49)
140	.9602 (-0.35)	320	.9206 (-0.72)
145	.9701 (-0.26)	325	.8810 (-1.1)
150	.9800 (-0.18)	330	.8414 (-1.5)
155	.9900 (-0.09)	335	.7721 (-2.25)
160	1.0000 (0)	340	.7028 (-3.06)
165	.9850 (-0.13)	345	.6286 (-4.03)
170	.9701 (-0.26)	350	.5543 (-5.13)
175	.9552 (-0.4)	355	.4850 (-6.29)

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 3*

Date: 10/28/2003

ANTENNA TYPE: FM10/8 HWS DA Illumitron

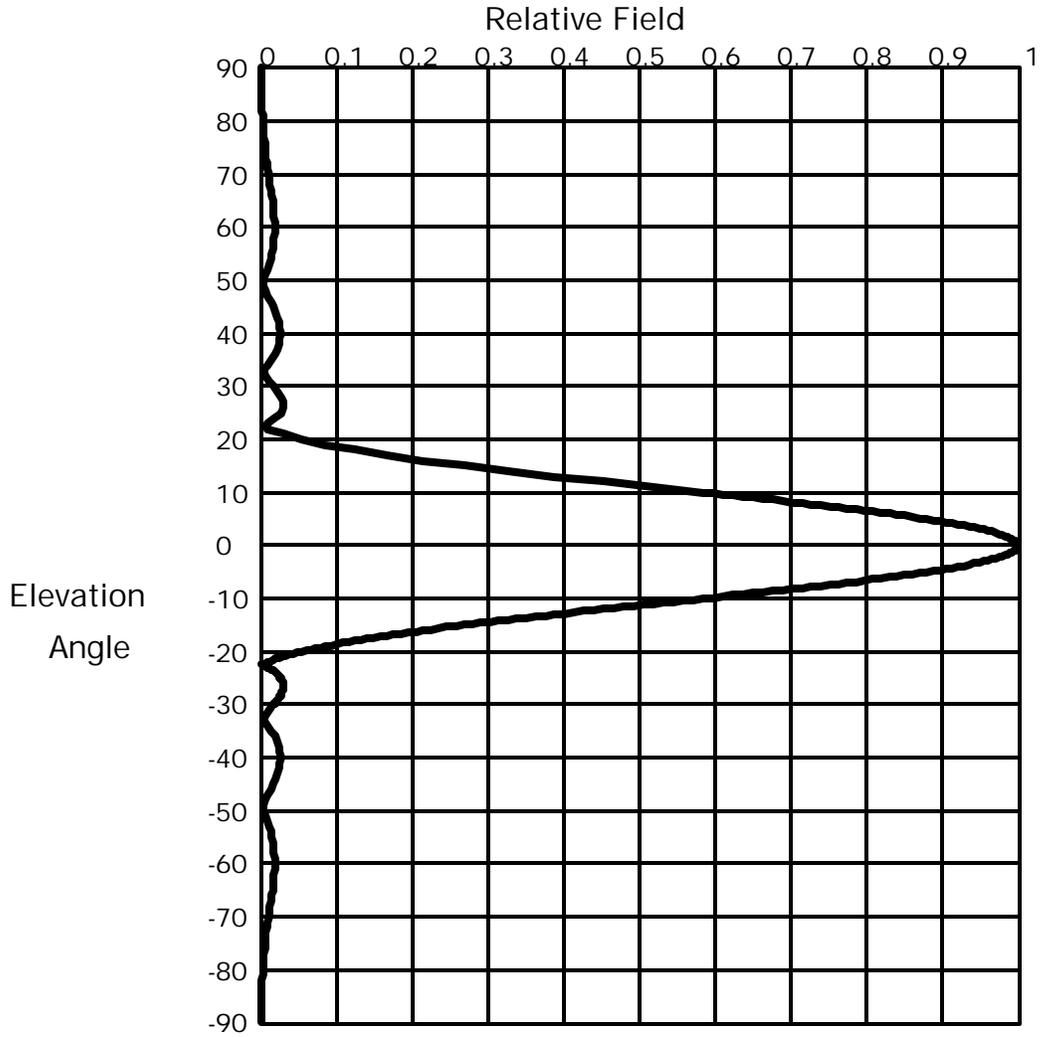
FREQUENCY: 101.5

PATTERN POL.: Vertical

CIRCULARITY(+/-dB): NA

AZ. DIRECTIVITY: 1.64027 / 2.15dB

PATTERN RMS: 0.781



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability Inc

CLIENT: *Martz Communications (WRCD)- Exhibit 4*

Date: 7/27/03

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.189/6.221 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.189/6.221 dBd

Null Fill(s)(%) : None

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.00 (-50)	52.0	.007 (-42.564)	14.0	.326 (-9.745)
89.0	.00 (-50)	51.0	.005 (-46.615)	13.0	.387 (-8.236)
88.0	.00 (-89.666)	50.0	.002 (-55.859)	12.0	.452 (-6.898)
87.0	.00 (-81.644)	49.0	.002 (-55.524)	11.0	.518 (-5.711)
86.0	.00 (-75.769)	48.0	.005 (-45.828)	10.0	.585 (-4.659)
85.0	.00 (-71.099)	47.0	.009 (-41.297)	9.8	.598 (-4.464)
84.0	.00 (-67.208)	46.0	.012 (-38.364)	9.6	.611 (-4.274)
83.0	.001 (-63.868)	45.0	.015 (-36.264)	9.4	.625 (-4.089)
82.0	.001 (-60.939)	44.0	.018 (-34.709)	9.2	.638 (-3.908)
81.0	.001 (-58.331)	43.0	.021 (-33.561)	9.0	.651 (-3.732)
80.0	.002 (-55.982)	42.0	.023 (-32.755)	8.8	.664 (-3.561)
79.0	.002 (-53.849)	41.0	.024 (-32.257)	8.6	.677 (-3.394)
78.0	.003 (-51.898)	40.0	.025 (-32.062)	8.4	.689 (-3.232)
77.0	.003 (-50.105)	39.0	.025 (-32.184)	8.2	.702 (-3.074)
76.0	.004 (-48.451)	38.0	.023 (-32.666)	8.0	.714 (-2.921)
75.0	.005 (-46.921)	37.0	.021 (-33.589)	7.8	.727 (-2.772)
74.0	.005 (-45.504)	36.0	.018 (-35.108)	7.6	.739 (-2.627)
73.0	.006 (-44.192)	35.0	.013 (-37.557)	7.4	.751 (-2.487)
72.0	.007 (-42.976)	34.0	.008 (-41.842)	7.2	.763 (-2.35)
71.0	.008 (-41.853)	33.0	.002 (-52.905)	7.0	.775 (-2.218)
70.0	.009 (-40.819)	32.0	.004 (-47.991)	6.8	.786 (-2.09)
69.0	.01 (-39.87)	31.0	.01 (-39.708)	6.6	.797 (-1.966)
68.0	.011 (-39.005)	30.0	.016 (-35.69)	6.4	.809 (-1.846)
67.0	.012 (-38.225)	29.0	.022 (-33.235)	6.2	.819 (-1.73)
66.0	.013 (-37.53)	28.0	.026 (-31.725)	6.0	.83 (-1.618)
65.0	.014 (-36.921)	27.0	.028 (-30.967)	5.8	.84 (-1.511)
64.0	.015 (-36.401)	26.0	.028 (-30.966)	5.6	.851 (-1.406)
63.0	.016 (-35.975)	25.0	.025 (-31.925)	5.4	.86 (-1.306)
62.0	.017 (-35.648)	24.0	.019 (-34.508)	5.2	.87 (-1.21)
61.0	.017 (-35.428)	23.0	.008 (-41.756)	5.0	.879 (-1.118)
60.0	.017 (-35.324)	22.0	.007 (-42.932)	4.8	.888 (-1.029)
59.0	.017 (-35.352)	21.0	.028 (-31.199)	4.6	.897 (-0.944)
58.0	.017 (-35.527)	20.0	.053 (-25.446)	4.4	.905 (-0.863)
57.0	.016 (-35.876)	19.0	.085 (-21.413)	4.2	.914 (-0.786)
56.0	.015 (-36.435)	18.0	.122 (-18.249)	4.0	.921 (-0.712)
55.0	.014 (-37.256)	17.0	.165 (-15.629)	3.8	.929 (-0.642)
54.0	.012 (-38.426)	16.0	.214 (-13.394)	3.6	.936 (-0.576)
53.0	.01 (-40.095)	15.0	.268 (-11.451)	3.4	.943 (-0.513)

Systems With Reliability Inc

Page 1 of 3

CLIENT: *Martz Communications (WRCD)- Exhibit 4*

Date: 7/27/03

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.189/6.221 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.189/6.221 dBd

Null Fill(s)(%) : None

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.949 (-0.454)	-4.4	.905 (-0.863)	-12.0	.452 (-6.898)
3.0	.955 (-0.399)	-4.6	.897 (-0.944)	-12.2	.439 (-7.153)
2.8	.961 (-0.347)	-4.8	.888 (-1.029)	-12.4	.426 (-7.414)
2.6	.966 (-0.299)	-5.0	.879 (-1.118)	-12.6	.413 (-7.682)
2.4	.971 (-0.255)	-5.2	.87 (-1.21)	-12.8	.40 (-7.956)
2.2	.976 (-0.214)	-5.4	.86 (-1.306)	-13.0	.387 (-8.236)
2.0	.98 (-0.177)	-5.6	.851 (-1.406)	-13.2	.375 (-8.524)
1.8	.984 (-0.143)	-5.8	.84 (-1.511)	-13.4	.362 (-8.818)
1.6	.987 (-0.113)	-6.0	.83 (-1.618)	-13.6	.35 (-9.12)
1.4	.99 (-0.087)	-6.2	.819 (-1.73)	-13.8	.338 (-9.428)
1.2	.993 (-0.064)	-6.4	.809 (-1.846)	-14.0	.326 (-9.745)
1.0	.995 (-0.044)	-6.6	.797 (-1.966)	-14.2	.314 (-10.069)
.8	.997 (-0.028)	-6.8	.786 (-2.09)	-14.4	.302 (-10.402)
.6	.998 (-0.016)	-7.0	.775 (-2.218)	-14.6	.29 (-10.743)
.4	.999 (-0.007)	-7.2	.763 (-2.35)	-14.8	.279 (-11.093)
.2	1.00 (-0.002)	-7.4	.751 (-2.487)	-15.0	.268 (-11.451)
.0	1.00 (0)	-7.6	.739 (-2.627)	-15.2	.256 (-11.819)
-.2	1.00 (-0.002)	-7.8	.727 (-2.772)	-15.4	.246 (-12.197)
-.4	.999 (-0.007)	-8.0	.714 (-2.921)	-15.6	.235 (-12.585)
-.6	.998 (-0.016)	-8.2	.702 (-3.074)	-15.8	.224 (-12.984)
-.8	.997 (-0.028)	-8.4	.689 (-3.232)	-16.0	.214 (-13.394)
-1.0	.995 (-0.044)	-8.6	.677 (-3.394)	-16.2	.204 (-13.815)
-1.2	.993 (-0.064)	-8.8	.664 (-3.561)	-16.4	.194 (-14.248)
-1.4	.99 (-0.087)	-9.0	.651 (-3.732)	-16.6	.184 (-14.695)
-1.6	.987 (-0.113)	-9.2	.638 (-3.908)	-16.8	.175 (-15.155)
-1.8	.984 (-0.143)	-9.4	.625 (-4.089)	-17.0	.165 (-15.629)
-2.0	.98 (-0.177)	-9.6	.611 (-4.274)	-17.2	.156 (-16.118)
-2.2	.976 (-0.214)	-9.8	.598 (-4.464)	-17.4	.148 (-16.624)
-2.4	.971 (-0.255)	-10.0	.585 (-4.659)	-17.6	.139 (-17.147)
-2.6	.966 (-0.299)	-10.2	.572 (-4.859)	-17.8	.13 (-17.688)
-2.8	.961 (-0.347)	-10.4	.558 (-5.064)	-18.0	.122 (-18.249)
-3.0	.955 (-0.399)	-10.6	.545 (-5.274)	-18.2	.114 (-18.831)
-3.2	.949 (-0.454)	-10.8	.532 (-5.49)	-18.4	.107 (-19.437)
-3.4	.943 (-0.513)	-11.0	.518 (-5.711)	-18.6	.099 (-20.067)
-3.6	.936 (-0.576)	-11.2	.505 (-5.937)	-18.8	.092 (-20.725)
-3.8	.929 (-0.642)	-11.4	.492 (-6.169)	-19.0	.085 (-21.413)
-4.0	.921 (-0.712)	-11.6	.478 (-6.406)	-19.2	.078 (-22.135)
-4.2	.914 (-0.786)	-11.8	.465 (-6.649)	-19.4	.072 (-22.894)

Systems With Reliability Inc

Page 2 of 3

CLIENT: *Martz Communications (WRCD)- Exhibit 4*

Date: 7/27/03

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.189/6.221 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.189/6.221 dBd

Null Fill(s)(%) : None

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.065 (-23.695)	-27.2	.028 (-31.06)	-54.0	.012 (-38.426)
-19.8	.059 (-24.543)	-27.4	.028 (-31.183)	-55.0	.014 (-37.256)
-20.0	.053 (-25.446)	-27.6	.027 (-31.335)	-56.0	.015 (-36.435)
-20.2	.048 (-26.412)	-27.8	.027 (-31.515)	-57.0	.016 (-35.876)
-20.4	.042 (-27.453)	-28.0	.026 (-31.725)	-58.0	.017 (-35.527)
-20.6	.037 (-28.583)	-28.2	.025 (-31.964)	-59.0	.017 (-35.352)
-20.8	.032 (-29.823)	-28.4	.024 (-32.233)	-60.0	.017 (-35.324)
-21.0	.028 (-31.199)	-28.6	.024 (-32.534)	-61.0	.017 (-35.428)
-21.2	.023 (-32.751)	-28.8	.023 (-32.867)	-62.0	.017 (-35.648)
-21.4	.019 (-34.543)	-29.0	.022 (-33.235)	-63.0	.016 (-35.975)
-21.6	.015 (-36.675)	-29.2	.021 (-33.64)	-64.0	.015 (-36.401)
-21.8	.011 (-39.335)	-29.4	.02 (-34.084)	-65.0	.014 (-36.921)
-22.0	.007 (-42.932)	-29.6	.019 (-34.57)	-66.0	.013 (-37.53)
-22.2	.004 (-48.686)	-29.8	.018 (-35.104)	-67.0	.012 (-38.225)
-22.4	.00 (-67.463)	-30.0	.016 (-35.69)	-68.0	.011 (-39.005)
-22.6	.003 (-51.588)	-31.0	.01 (-39.708)	-69.0	.01 (-39.87)
-22.8	.005 (-45.197)	-32.0	.004 (-47.991)	-70.0	.009 (-40.819)
-23.0	.008 (-41.756)	-33.0	.002 (-52.905)	-71.0	.008 (-41.853)
-23.2	.011 (-39.448)	-34.0	.008 (-41.842)	-72.0	.007 (-42.976)
-23.4	.013 (-37.748)	-35.0	.013 (-37.557)	-73.0	.006 (-44.192)
-23.6	.015 (-36.428)	-36.0	.018 (-35.108)	-74.0	.005 (-45.504)
-23.8	.017 (-35.372)	-37.0	.021 (-33.589)	-75.0	.005 (-46.921)
-24.0	.019 (-34.508)	-38.0	.023 (-32.666)	-76.0	.004 (-48.451)
-24.2	.02 (-33.792)	-39.0	.025 (-32.184)	-77.0	.003 (-50.105)
-24.4	.022 (-33.195)	-40.0	.025 (-32.062)	-78.0	.003 (-51.898)
-24.6	.023 (-32.694)	-41.0	.024 (-32.257)	-79.0	.002 (-53.849)
-24.8	.024 (-32.275)	-42.0	.023 (-32.755)	-80.0	.002 (-55.982)
-25.0	.025 (-31.925)	-43.0	.021 (-33.561)	-81.0	.001 (-58.331)
-25.2	.026 (-31.636)	-44.0	.018 (-34.709)	-82.0	.001 (-60.939)
-25.4	.027 (-31.401)	-45.0	.015 (-36.264)	-83.0	.001 (-63.868)
-25.6	.028 (-31.213)	-46.0	.012 (-38.364)	-84.0	.00 (-67.208)
-25.8	.028 (-31.07)	-47.0	.009 (-41.297)	-85.0	.00 (-71.099)
-26.0	.028 (-30.966)	-48.0	.005 (-45.828)	-86.0	.00 (-75.769)
-26.2	.029 (-30.9)	-49.0	.002 (-55.524)	-87.0	.00 (-81.644)
-26.4	.029 (-30.868)	-50.0	.002 (-55.859)	-88.0	.00 (-89.666)
-26.6	.029 (-30.87)	-51.0	.005 (-46.615)	-89.0	.00 (-50)
-26.8	.029 (-30.903)	-52.0	.007 (-42.564)	-90.0	.00 (-50)
-27.0	.028 (-30.967)	-53.0	.01 (-40.095)	90.0	.00 (-50)

Systems With Reliability Inc

Page 3 of 3

CLIENT: *Martz Communications (WRCD)- Exhibit 4*

Date: 7/27/03

ANTENNA TYPE: FM10/8 HWS DA Illumitron

FREQUENCY: 101.5

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.189/6.221 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.189/6.221 dBd

Null Fill(s)(%) : None



SYSTEMS WITH RELIABILITY, Inc.
Broadcast Antenna & Transmission Systems

SYSTEM DATA SHEET

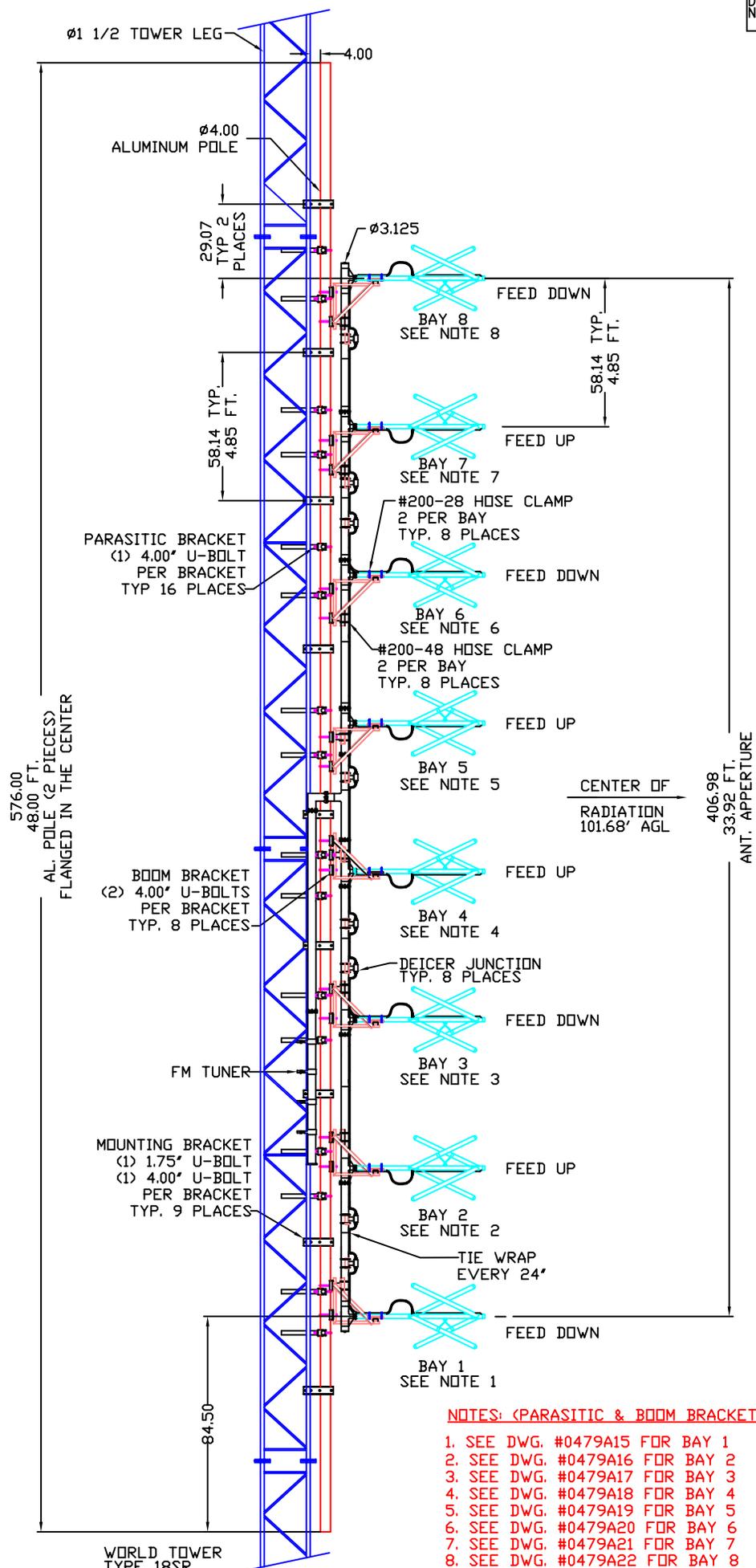
Call Sign WRCD-FM
Customer Martz Communications
Location Canton NY
Antenna Model 8 Bay Illumitron
Channel/Frequency 101.5 MHz
Polarization Type Circular

Antenna Specifications:

	H. Pol.	dB	V. Pol.	dB
License ERP (KW)	50	16.9897	50	16.9897
Elevation Directivity	4.189	6.2211	4.189	6.2211
Azimuth Directivity	1.91034	2.81111	1.64027	2.14915
Polarization Ratio	0.46197	-3.3539	0.53803	-2.6919
Antenna Efficiency	0.85	-0.7058	0.85	-0.7058
Antenna Gain	3.14233	4.97252	3.14233	4.97252
Antenna Input Power (KW)	15.912	12.017	15.912	12.017

Feed Line Specifications:

Line Type	3-1/8 - 50 Ohm
Attenuation Per 100 ft (dB)	0.099
Line Length (ft)	150
Total Line Attenuation (dB)	-0.1485
Line Efficiency	0.96638
Input to the Line (KW)	16.465



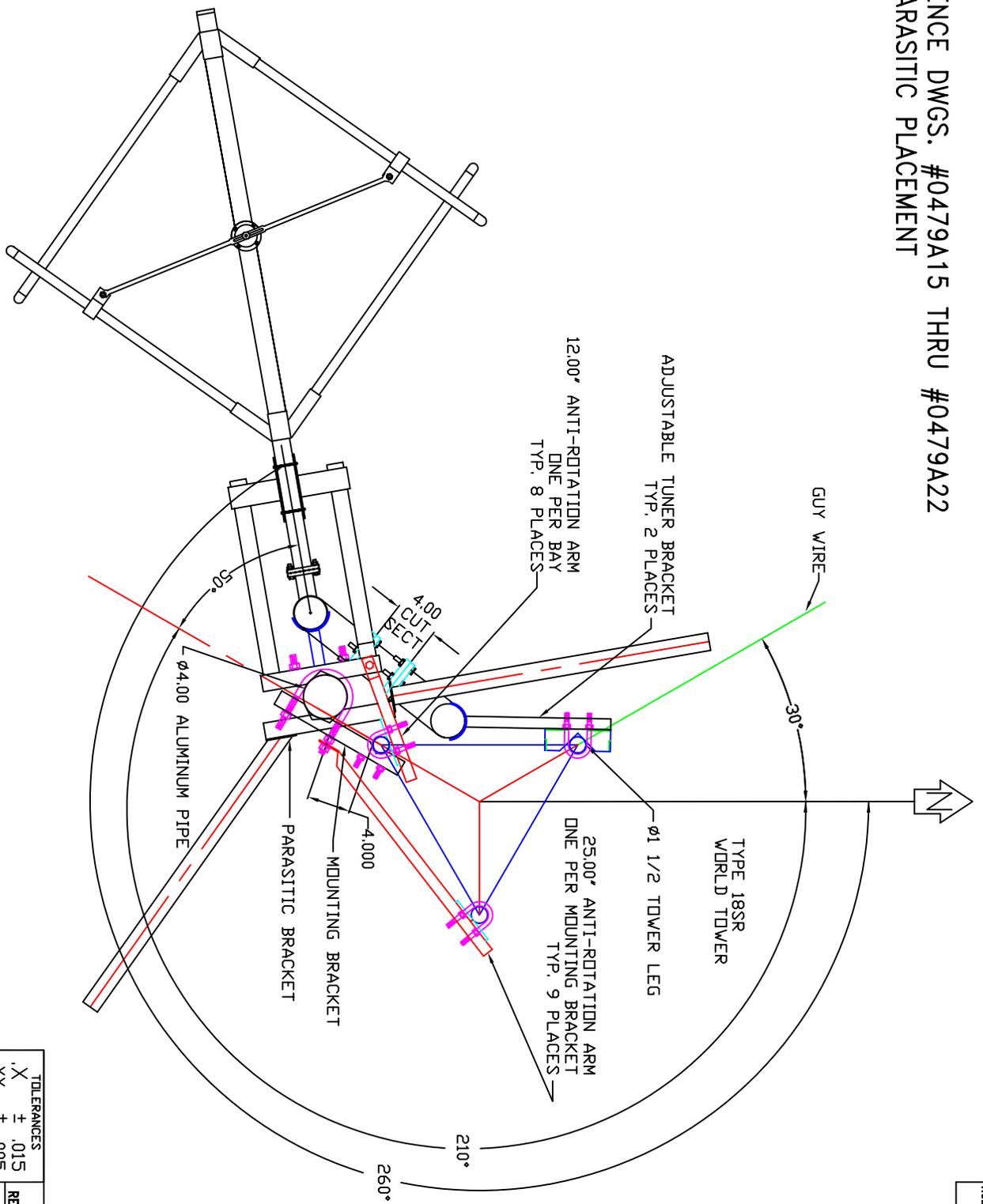
NOTES: (PARASITIC & BOOM BRACKET PLACEMENT)

1. SEE DWG. #0479A15 FOR BAY 1
2. SEE DWG. #0479A16 FOR BAY 2
3. SEE DWG. #0479A17 FOR BAY 3
4. SEE DWG. #0479A18 FOR BAY 4
5. SEE DWG. #0479A19 FOR BAY 5
6. SEE DWG. #0479A20 FOR BAY 6
7. SEE DWG. #0479A21 FOR BAY 7
8. SEE DWG. #0479A22 FOR BAY 8

NOTE:

REFERENCE DWGS. #0479A15 THRU #0479A22
FOR PARASITIC PLACEMENT

DRAWING NUMBER: 0479A00B



TOLERANCES	REV	REVISION	RECORD	DATE
.X				
± .015				
.XX				
± .005				
.XXX				
± .002				
X/X				
± 1/32				
DEG. ± 1/2				
UNLESS OTHERWISE SPECIFIED				



 SYSTEMS WITH RELIABILITY, INC
 619 INDUSTRIAL PARK ROAD
 EBENSBURG, PENNSYLVANIA 15931

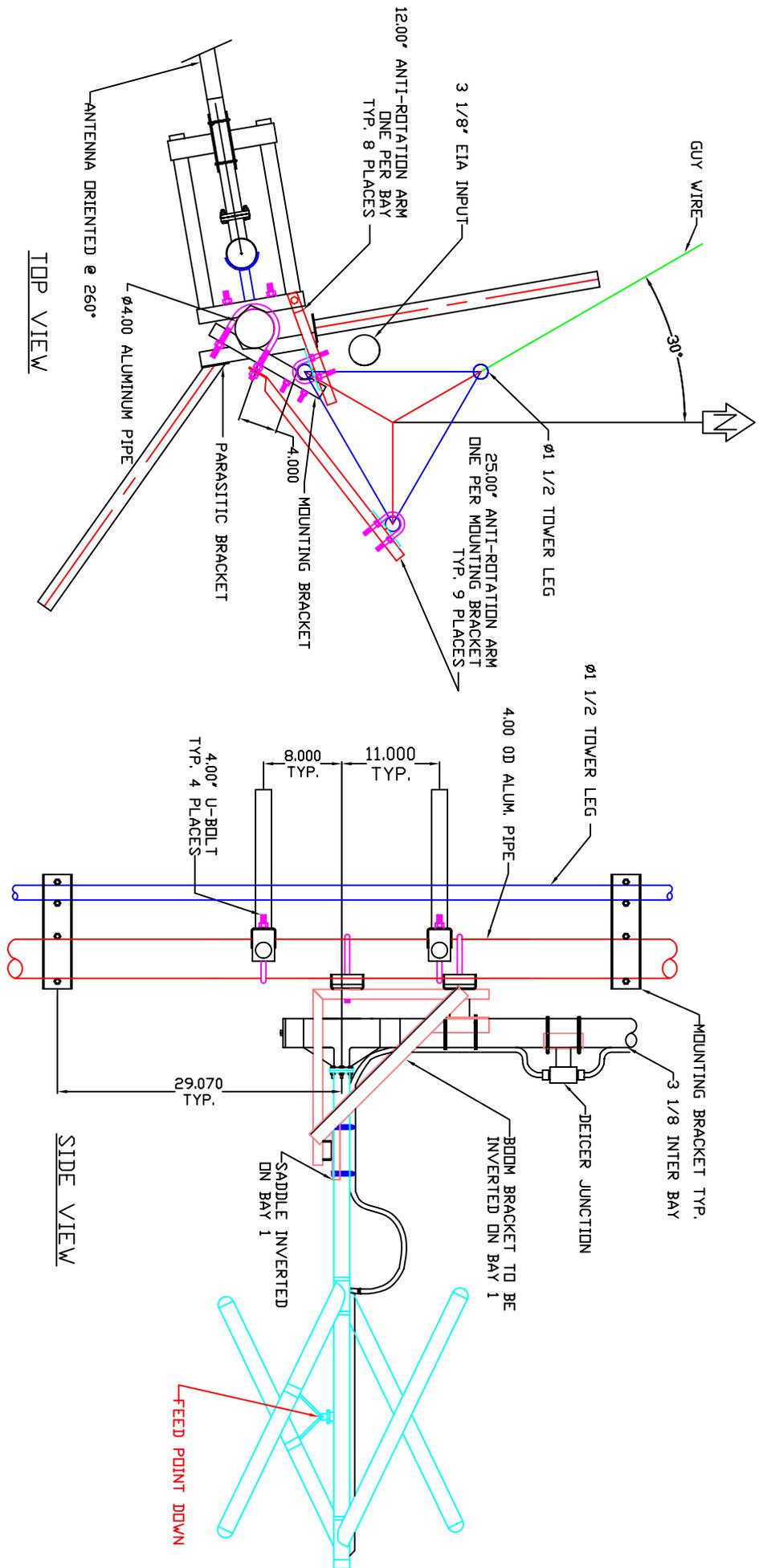
TITLE: FM10/8-HWS-DA
 WRCD, FREQ. 101.5
 ANTENNA ORIENTATION
 MATERIAL:
 SIZE: A

PARTS MADE BY THIS DRAWING
 SCALE: NTS
 NAME: RAC
 DATE: 8/6/03
 DRAWING NUMBER: 0479A00B
 SHEET 1 OF 1

NOTE:

1. REFERENCE DWGS. #0479A16 THRU #0479A22 FOR BAYS 2 THRU 8

DRAWING NUMBER: 0479A15



REV	REVISION	RECORD	DATE

TOLERANCES
 .X ± .015
 .XX ± .005
 .XXX ± .002
 X/XX ± 1/32
 DEG. ± 1/2
 UNLESS OTHERWISE SPECIFIED

SYSTEMS WITH RELIABILITY, INC
 619 INDUSTRIAL PARK ROAD
 EBENSBURG, PENNSYLVANIA 15931

TITLE: FM10/8-HWS-DA
 WRCD, FREQ. 101.5
 PARASITIC PLACEMENT
 BAY 1

MATERIAL: PARASITIC PLACEMENT
 BAY 1

SIZE: A

PARTS MADE BY THIS DRAWING: NTS

NAME: RAC

DATE: 8/11/03

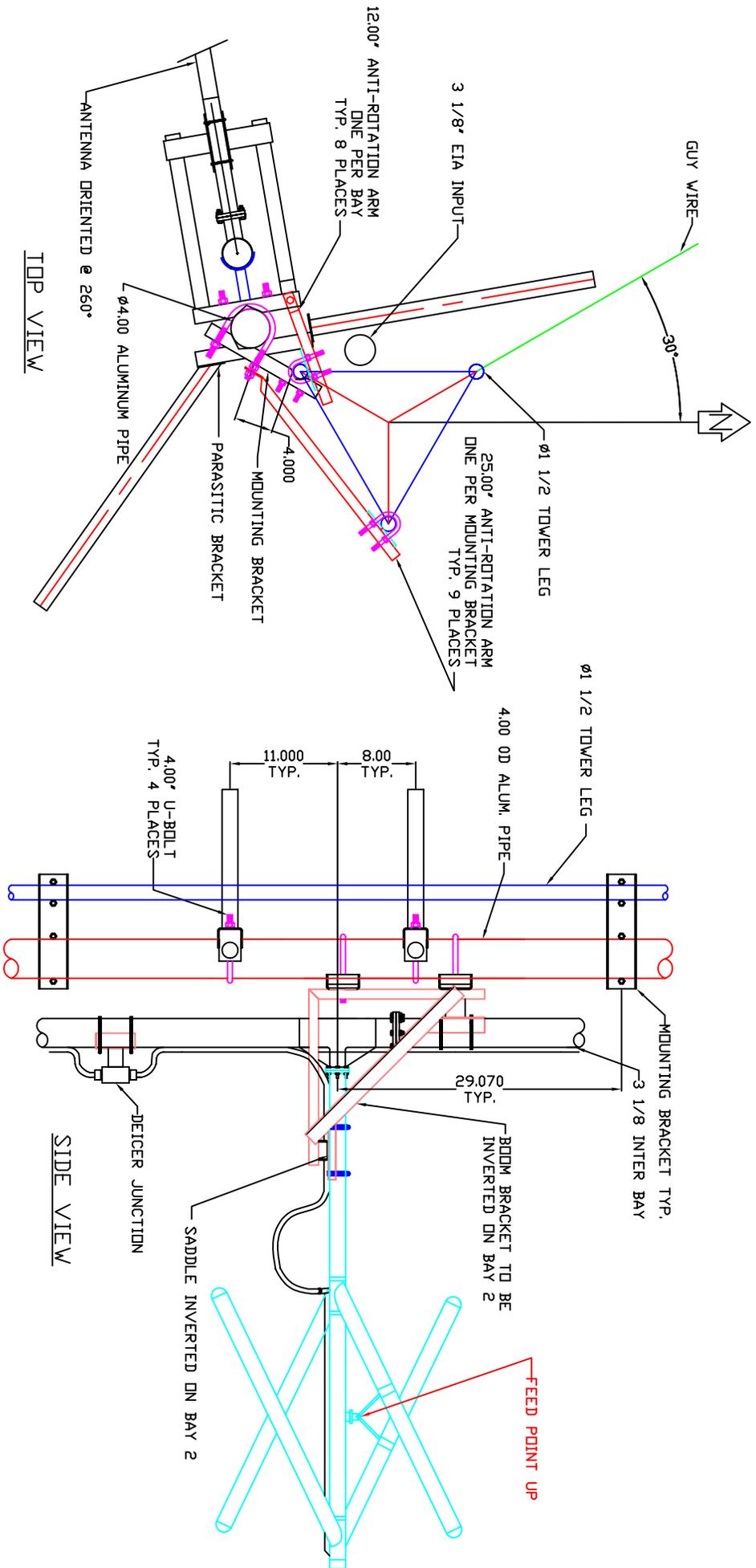
DRAWING NUMBER: 0479A15

SHEET 1 OF 1

NOTE:

1. REFERENCE DWG. #0479A15 FOR BAY 1
2. REFERENCE DWGS. #0479A17 THRU #0479A22 FOR BAYS 3 THRU 8

DRAWING NUMBER
0479A16



SYSTEMS WITH RELIABILITY, INC
619 INDUSTRIAL PARK ROAD
EBENSBURG, PENNSYLVANIA 15931

TITLE: **FM10/8-HWS-DA**
WRCD, FREQ. 101.5
PARASITIC PLACEMENT
BAY 2

SIZE: **A**

PARTS MADE BY THIS DRAWING

SCALE: **NTS** NAME: **RAC** DATE: **8/11/03** SHEET **1** OF **1**

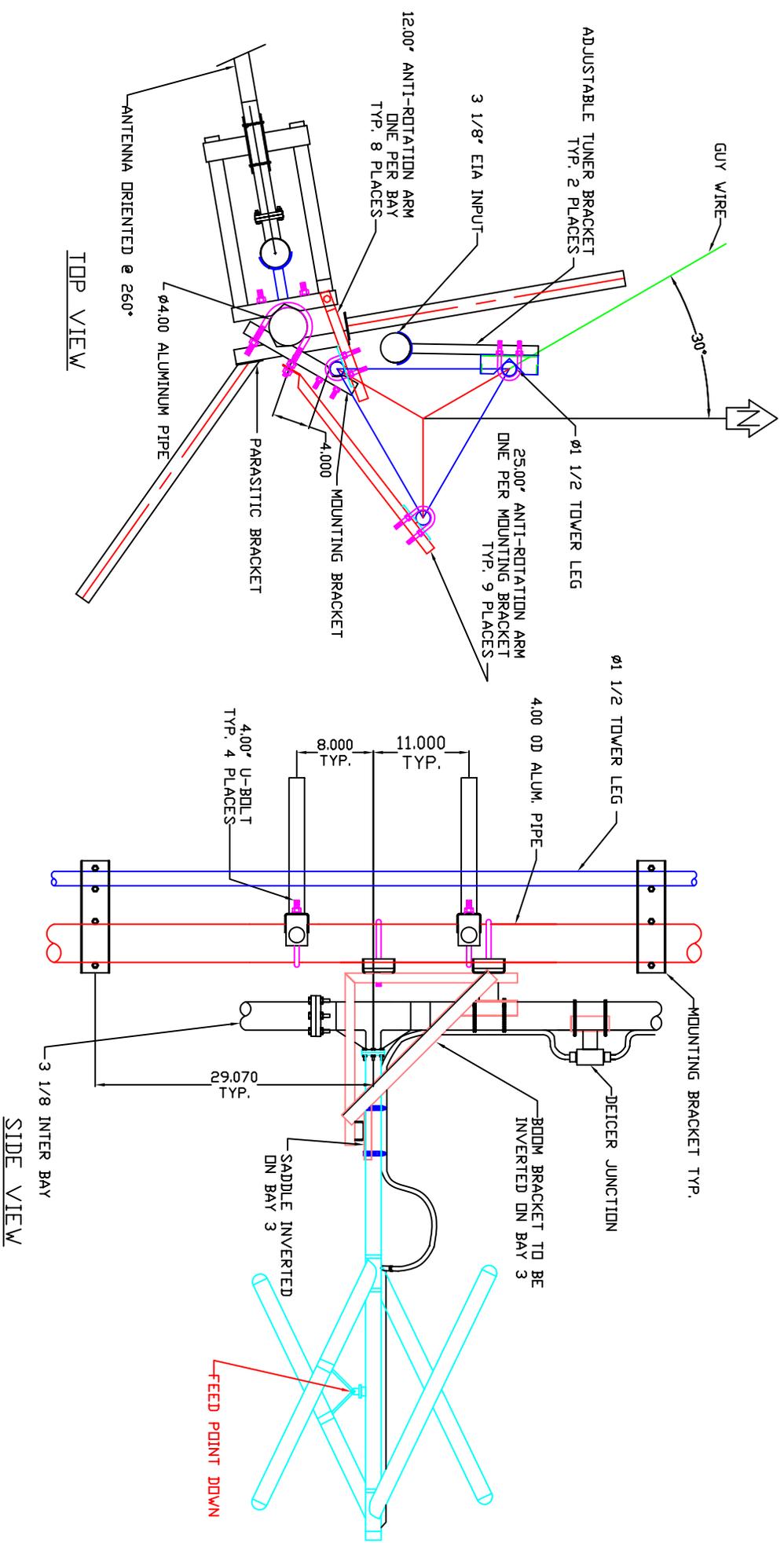
DRAWING NUMBER: **0479A16**

TOLERANCES		REVISION RECORD	
REV	APPROVAL	DATE	
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.XXX	± .002		
X/X	± 1/32		
DEG.	± 1/2		
UNLESS OTHERWISE SPECIFIED			

NOTE:

1. REFERENCE DWGS. #0479A15 & #0479A16 FOR BAYS 1 & 2
2. REFERENCE DWGS. #0479A18 THRU #0479A22 FOR BAYS 4 THRU 8

DRAWING NUMBER: 0479A17




SYSTEMS WITH RELIABILITY, INC
 619 INDUSTRIAL PARK ROAD
 EBENSBURG, PENNSYLVANIA 15931

TITLE: FM10/8-HWS-DA
 WRCD, FREQ. 101.5
MATERIAL: PARASITIC PLACEMENT
 BAY 3

SIZE: A

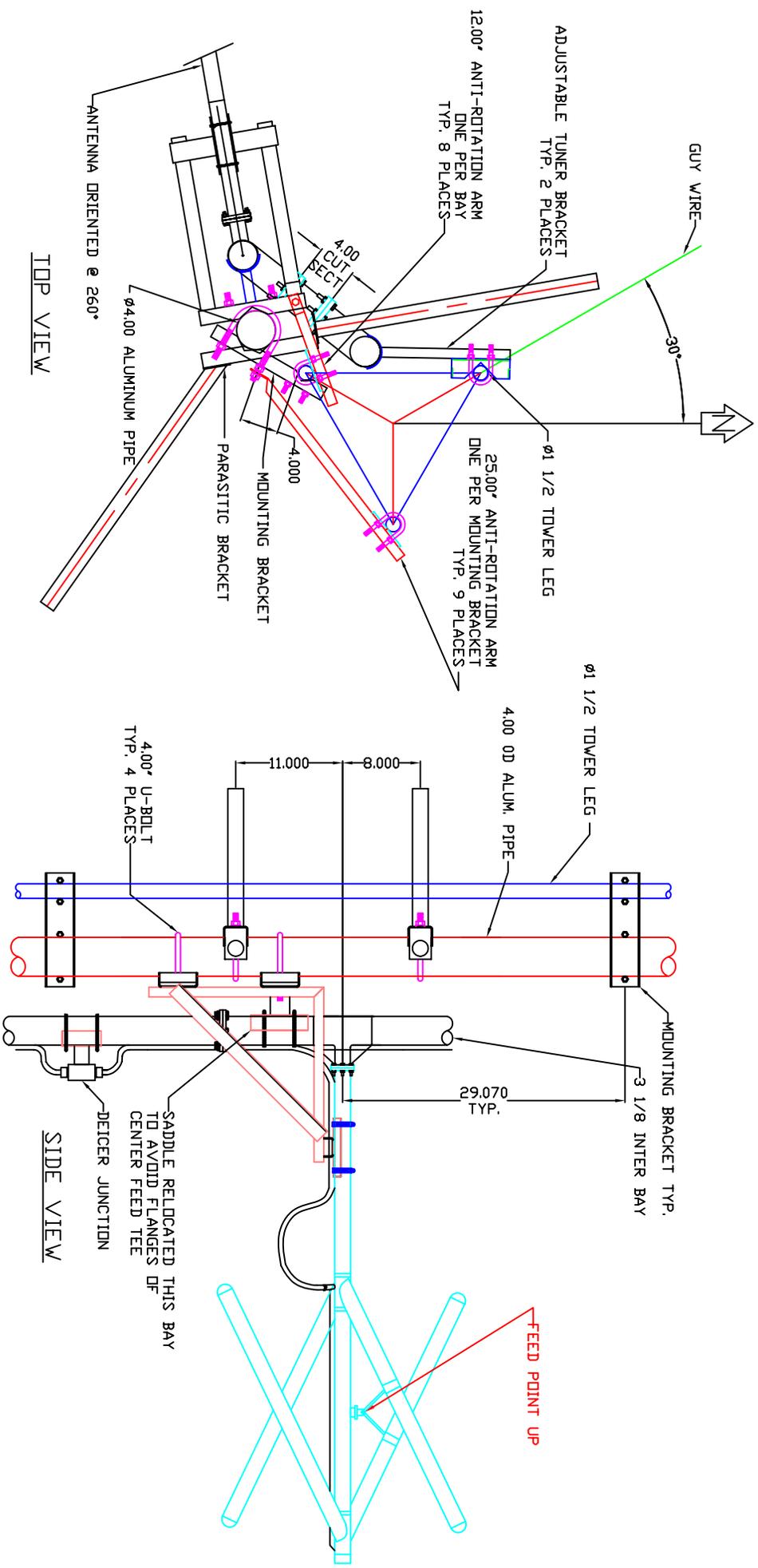
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TOLERANCES .X ± .015 .XX ± .005 .XXX ± .002 X/XX ± 1/32 DEG. ± 1/2 UNLESS OTHERWISE SPECIFIED	SCALE: NTS NAME: RAC DATE: 8/11/03	PARTS MADE BY THIS DRAWING	DRAWING NUMBER: 0479A17 SHEET: 1 OF 1
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NOTE:

REFERENCE DWGS. #0479A15 THRU #0479A18 FOR BAYS 1 THRU 4
 REFERENCE DWGS. #0479A20 TRHU #0479A22 FOR BAYS 6 THRU 8

DRAWING NUMBER: 0479A19



SYSTEMS WITH RELIABILITY, INC
 619 INDUSTRIAL PARK ROAD
 EBENSBURG, PENNSYLVANIA 15931

TITLE: FM10/8-HWS-DA
 WRCD, FREQ. 101.5
 PARASITIC PLACEMENT
 BAY 5

SIZE: A

PARTS MADE BY THIS DRAWING
 SCALE: NTS
 NAME: RAC
 DATE: 8/11/03

DRAWING NUMBER: 0479A19
 SHEET 1 OF 1

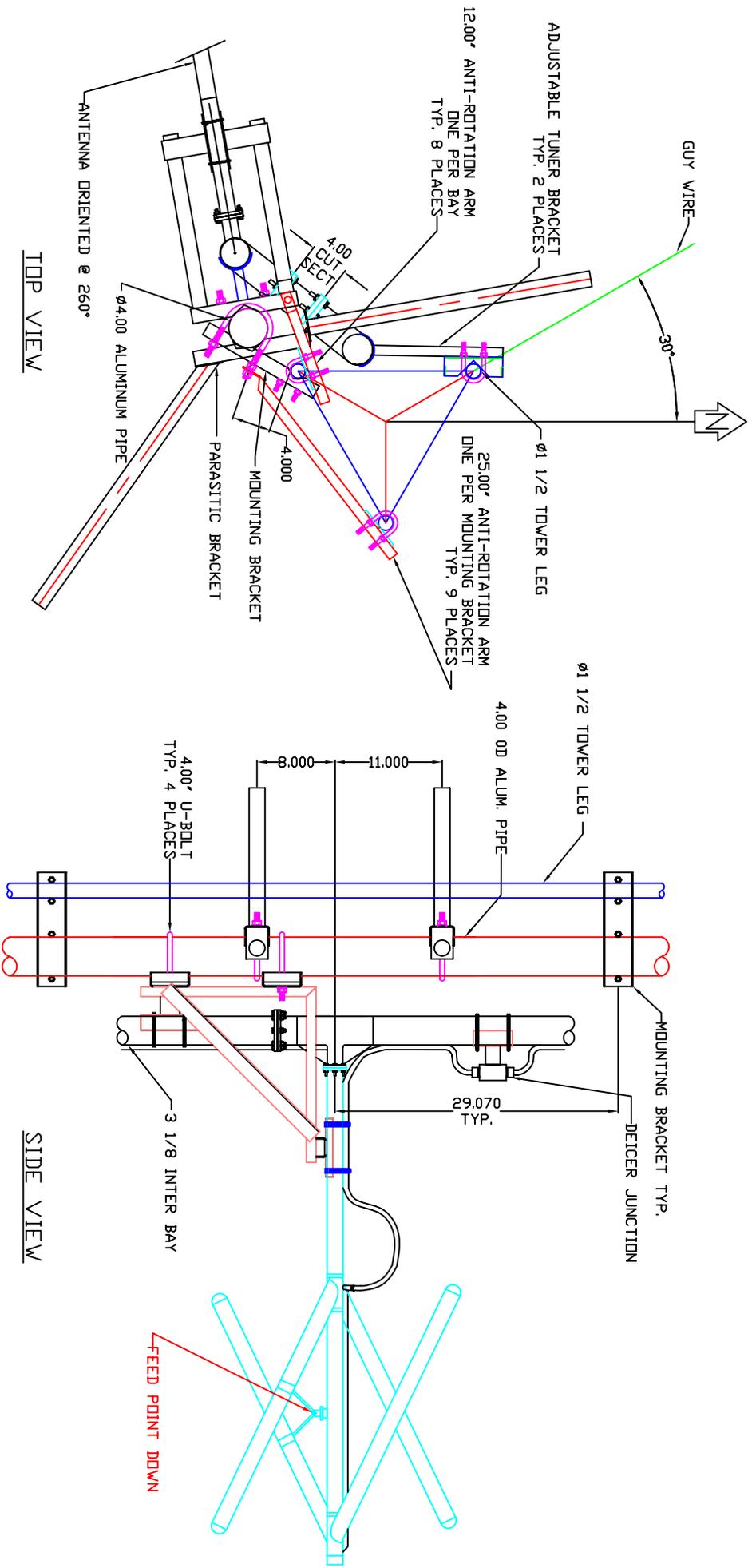
REV	REVISION	RECORD	DATE

TOLERANCES
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 .XX ± .005
 .XXX ± .002
 X/XX ± 1/32
 DEG. ± 1/2
 UNLESS OTHERWISE SPECIFIED

NOTE:

REFERENCE DWG. #0479A15 THRU #0479A19 FOR BAYS 1 THRU 5
 REFERENCE DWG. #0479A21 & #0479A22 FOR BAYS 7 & 8

DRAWING NUMBER: 0479A20



SYSTEMS WITH RELIABILITY, INC
 619 INDUSTRIAL PARK ROAD
 EBENSBURG, PENNSYLVANIA 15931

TITLE: **FM10/8-HWS-DA**
WRCD, FREQ. 101.5
PARASITIC PLACEMENT
BAY 6

MATERIAL:

SIZE: **A**

SCALE: **NTS** NAME: **RAC** DATE: **8/11/03** SHEET **1** OF **1**

PARTS MADE BY THIS DRAWING

DRAWING NUMBER: **0479A20**

REV	REVISION	RECORD	APPROVAL	DATE

TOLERANCES

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.XX ± .005

.XXX ± .002

X/X ± 1/32

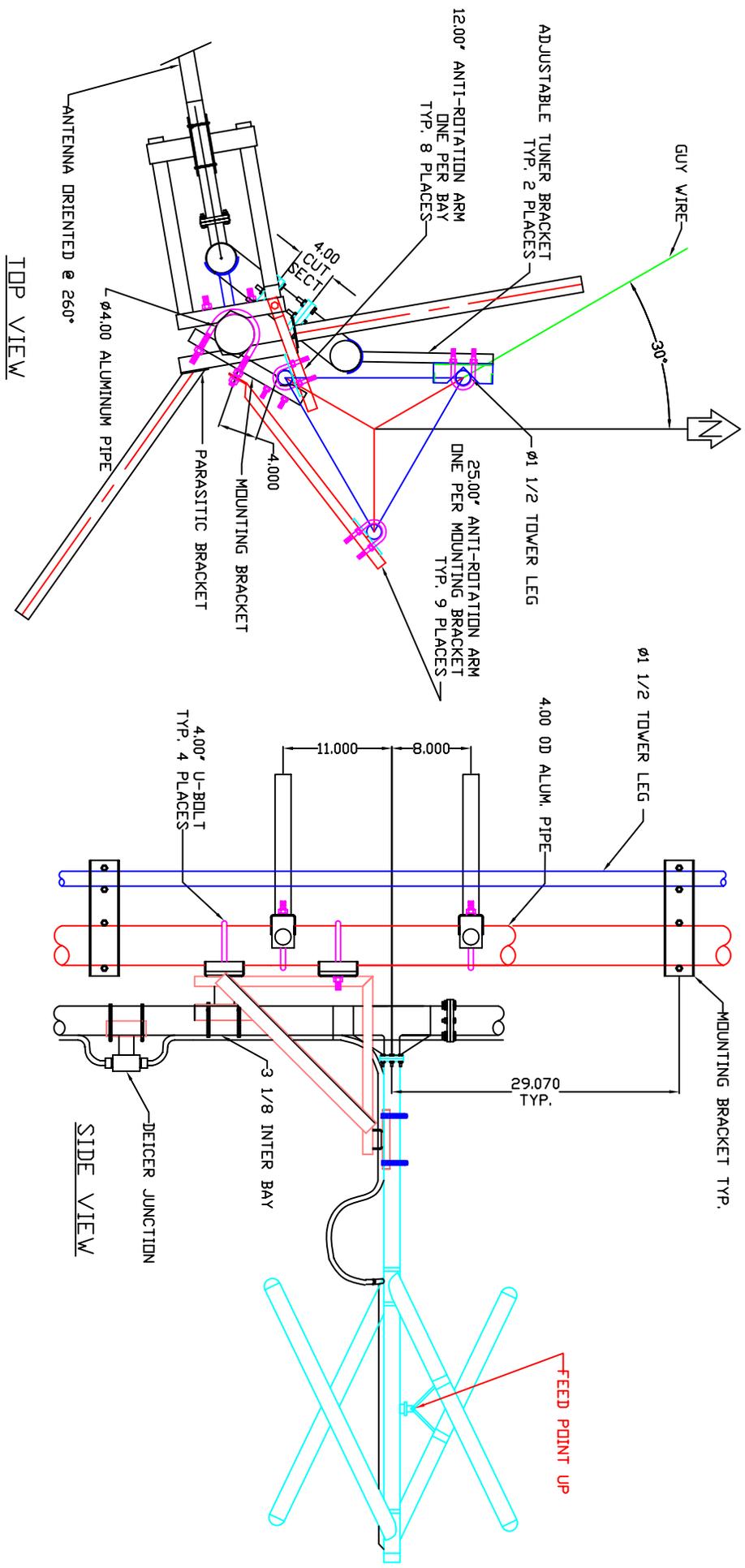
DEG. ± 1/2

UNLESS OTHERWISE SPECIFIED

NOTE:

1. REFERENCE DWGS. #0479A15 THRU #0479A20 FOR BAYS 1 THRU 6
2. REFERENCE DWG. #0479A22 FOR BAY 8

DRAWING NUMBER: 0479A21



SYSTEMS WITH RELIABILITY, INC
619 INDUSTRIAL PARK ROAD
EBENSBURG, PENNSYLVANIA 15931

TITLE: FM10/8-HWS-DA
WRCD, FREQ. 101.5
PARASITIC PLACEMENT
BAY 7

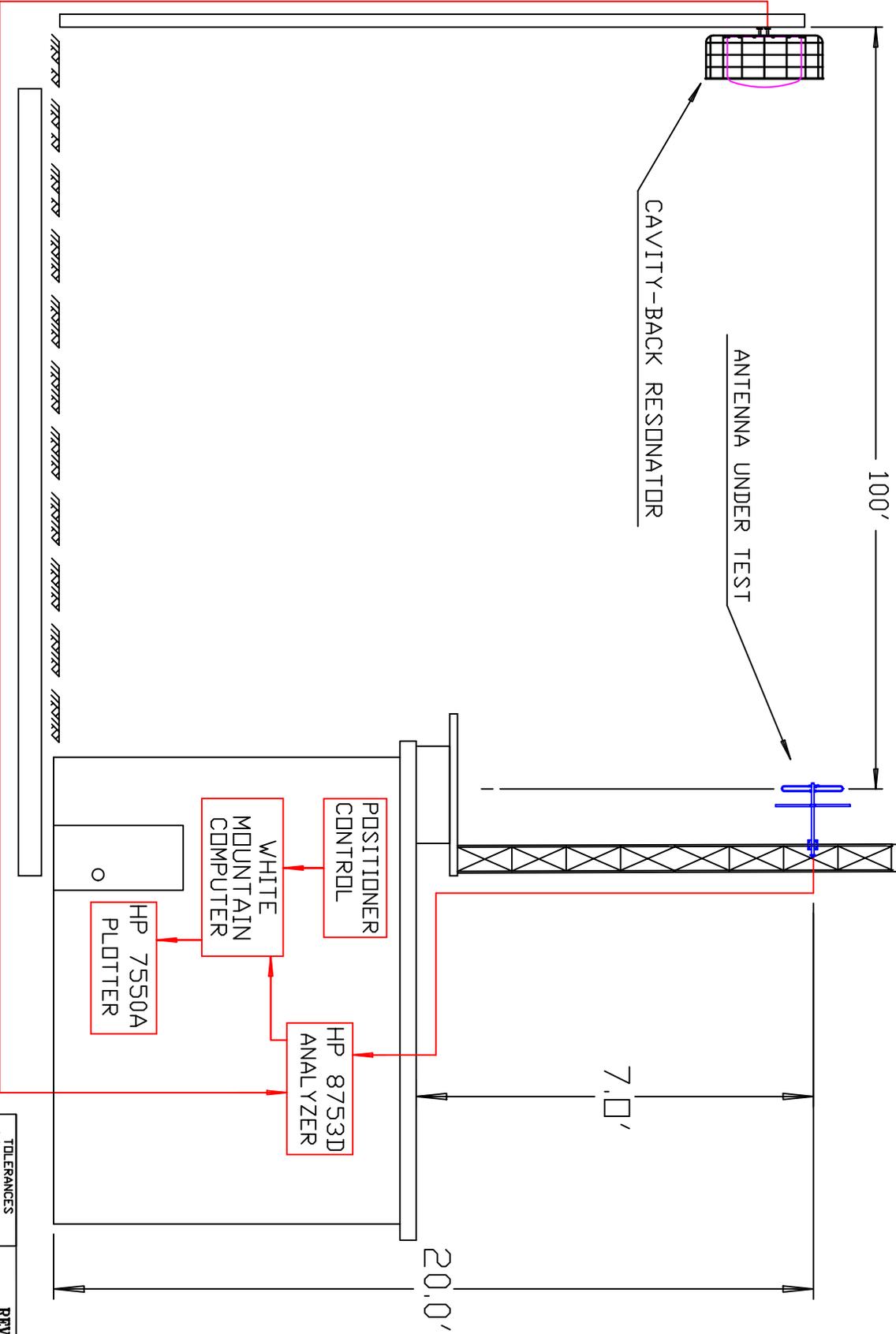
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NAME: RAC
DATE: 8/11/03
DRAWING NUMBER: 0479A21
SHEET 1 OF 1

REV	REVISION	RECORD	APPROVAL	DATE

TOLERANCES
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 .XX ± .005
 .XXX ± .002
 X/XX ± 1/32
 DEG. ± 1/2
 UNLESS OTHERWISE SPECIFIED

NOTE:

DRAWING NUMBER: 2105A10



TOLERANCES

'X	± .015
.XX	± .005
.XXX	± .002
X/XX	± 1/32
DEG.	± 1/2

UNLESS OTHERWISE SPECIFIED

REVISION RECORD

REV	APPROVAL	DATE
1		4/30/02

TITLE: TEST RANGE SCHEMATIC

SIZE: A

PARTS MADE BY THIS DRAWING: _____

SCALE: NTS

NAME: JRM

DATE: 11/1/98

DRAWING NUMBER: 2105A10

SHEET 1 OF 1

SYSTEMS WITH RELIABILITY, INC
619 INDUSTRIAL PARK ROAD
EBENSBURG, PENNSYLVANIA 15931

SURVEYOR DECLARATION

I, Fred Wilhelm, LS, under penalty of perjury, declare that:

1. I am a currently licensed Land Surveyor in the State of New York, License No. NYS . 49484.
2. I have provided professional services to Radio Power, Inc., licensee of Radio Station WRCD(FM), Canton, New York, (FCC Facility ID No. 15821), in connection with installation of a directional FM antenna authorized under the provisions of Construction Permit BPH-20001024ABH, issued on October 3, 2001.
3. I certify that the antenna, SWR Model FM10/8 HWS DA Illumitron, is installed in accordance with the manufacturers design specifications and that the orientation of the antenna elements are as specified in the engineering drawings.
4. The directional antenna is aligned within +/- 1 degree of the azimuth of 260 degrees True as specified by the antenna manufacturer.

The undersigned is aware that this Declaration is being filed with the Federal Communications Commission in connection with a license application for Radio Station WRCD(FM) and consents to its use for that purpose.

Dated this 4th day of November 2003.

Respectfully,



Fred Wilhelm, LS

Wilhelm, Chatelle & Towne Surveyors
971 Judson St. Rd.
Canton, NY 13617
(315-379-7630)

Exhibit E-2

Surveyor Declaration
Radio Station WRCD(FM)
Canton, New York
Facility ID 15821

ENGINEERING DECLARATION

I, Matt Connor, under penalty of perjury, declare that:

1. I have been employed by Radio Power, Inc., licensee of Radio Station WRCD(FM), Canton, New York to supervise the installation of a SWR Model FM10/8 HWS Directional Antenna as authorized under the provisions of Construction Permit No. BPH-20001024ABH.

3. I am the holder of a valid General Radio Telephone Operators License issued by the Federal Communications Commission.

3.) I am an active member of the Society of Broadcast Engineers.

4. I have been regularly employed as a broadcast engineer by several Radio Stations for over 25 years.

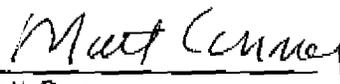
5. That I am familiar with the terms and conditions of the Construction Permit issued to Radio Station WRCD(FM), FCC File No. BPH-20001024ABH dated October 3, 2001.

6. I hereby certify that I have personally supervised the installation of the antenna and that the installation conforms, in all respects, to the manufacturers installation instructions and with the above Construction Permit issued by the FCC to Radio Station WRCD(FM).

I am aware that this declaration is being submitted to the Federal Communications Commission in connection with a license application for Radio Station WRCD(FM) and consent to its use for that purpose.

Dated this 11th day of November 2003

Respectfully,


Matt Connor

Matt Connor
16 Huntington Street
Malone, NY 12953
618-383-1186
Email: mattc@947hits.com

Exhibit E-3

Engineering Declaration
Radio Station WRCD(FM)
Canton, New York
Facility ID 15821