



Propagation Systems, Inc.

Quality Broadcast Antenna Systems

Directional FM Antenna
KMEN
MBP Licensee, LLC
Mendota, CA

A standard model PSIFMR antenna with parasitic elements was used in conjunction with the customer's 24" triangular face tower to create the necessary directional radiation pattern. The final antenna consists of four radiating elements each secured to the tower with a custom-mounting bracket. The antenna bays are full wave spaced and there are a total of one horizontal and two vertical parasitic elements per bay. The antenna array is center fed from an existing 1-5/8" flexible transmission line. Each radiating element receives equal power and phase.

Pattern testing was performed using a 1/3 scale model element and tower. The azimuth plane measurements were taken on a ground reflection test range. This type of test range utilizes the reflected signal and direct signal from the source antenna to form an interference pattern on the antenna under test. The antenna and tower under test was mounted to a turntable that allowed the structure to be rotated 360° in the azimuth plane. The source antenna was located approximately 75 ft. from the antenna under test. The source height above ground was adjusted to peak the first lobe of the interference pattern at the antenna under test.

The test antenna was mounted in the center of rotation of the turntable. The antenna and mounting structure were rotated clockwise while data was recorded in a counter clockwise direction. All feed cables to the antenna were secured and grounded during pattern measurements. A Hewlett Packard 8753A-network analyzer operating at 301.5 MHz was used as both the source and receiver. The level of the received signal was compared with a standard dipole to establish the directivity of the final pattern. The final pattern measured does not exceed the envelope pattern and is 86% of the envelope RMS.

The antenna is to be mounted 54 meters (178 ft) above ground level on the northwest tower face. At this elevation the antenna will be within the allowed +2m/-4m tolerance. No other antenna can be installed within 10 ft of any radiating element. The antenna will be positioned 330° True when installed in accordance with the attached instructions and drawings. It is recommended that a broadcast engineer is present to supervise the installation of the antenna and that he or she certifies the antenna has been installed according to the enclosed instructions.

An input power level of 2.34 kW will be required at the antenna input in order to reach the licensed 6.0 kW ERP. The transmitter output power requirements are dependent upon the transmission line size and length used to feed the antenna. The length of 1-5/8" air dielectric transmission line feeding the antenna is estimated to be 188 ft. The efficiency for this length of line is 90.9% with a resulting transmitter output power of 2.57 kW. The final length of transmission line must be determined after installation.

Antenna Specifications

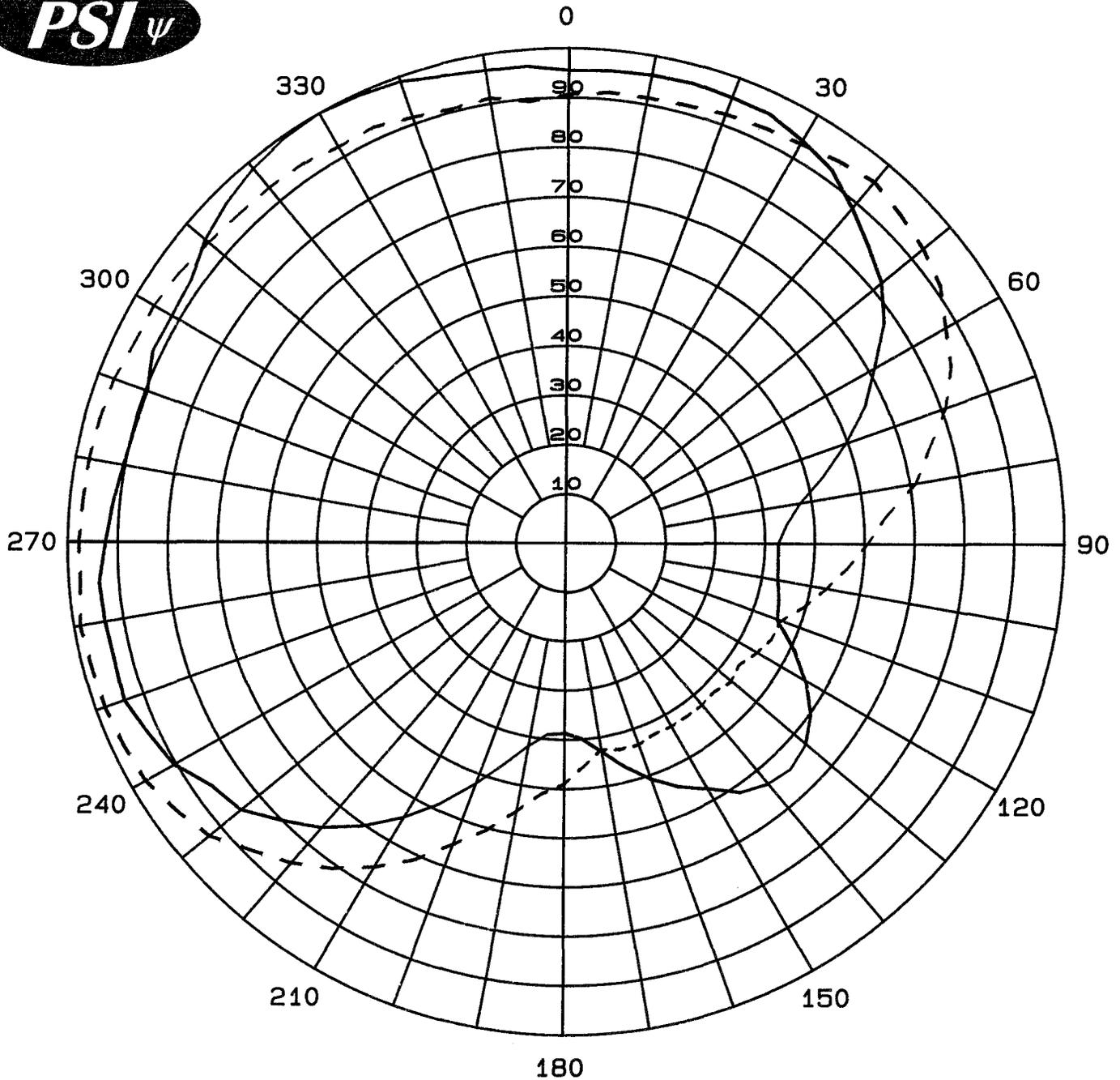
Antenna Model	PSIFMR-4C-DA
Type	4-bay directional FM antenna
Bay Spacing	full wave spaced elements
Frequency	100.5 MHz
Polarization	Circular
Envelope RMS	.959
Composite RMS	.828
Gain (h-pol)	2.56 (4.08 dB)
RMS (h-pol)	.78
Gain (v-pol)	2.49 (3.97 dB)
RMS (v-pol)	.81
Input	1-5/8" EIA center fed input
Power rating	12 kW
Length	34 ft.- 3-1/16 in.
Weight	280 lbs.
Wind Area	24.83 sq. ft.

Statement of Certification

This is to certify the antenna has been designed, fabricated and tested under my supervision and it meets the required envelope pattern limitations set forth in the stations construction permit.

 2/20/2007

Douglas A. Ross
President
Propagation Systems Inc.



Measured Relative Field
Azimuth Plane Pattern
Antenna: PSIFMR-4C-DA
Type: 4-Bay Directional FM
H-pol Gain (solid): 2.56 (4.08 dB)
V-pol Gain (dash): 2.49 (3.97 dB)
Frequency: 100.5 MHz
KMEN Mendota, CA

Propagation Systems Inc.
PO Box 113
Ebensburg, PA 15931

Measured Relative Field Tabulation

Antenna: PSIFMR-4C-DA

MBP Licensee, LLC

Station: KMEN

Frequency: 100.5 MHz

Location: Mendota, CA

Horizontal Polarization

Angle	Relative Field	Power Gain	Gain (dB)
0	0.956	2.34	3.69
10	0.961	2.36	3.74
20	0.958	2.35	3.71
30	0.940	2.26	3.54
40	0.887	2.01	3.04
50	0.824	1.74	2.40
60	0.715	1.31	1.17
70	0.598	0.92	-0.38
80	0.479	0.59	-2.31
90	0.427	0.47	-3.31
100	0.433	0.48	-3.19
110	0.454	0.53	-2.78
120	0.559	0.80	-0.97
130	0.634	1.03	0.12
140	0.637	1.04	0.17
150	0.575	0.85	-0.72
160	0.509	0.66	-1.78
170	0.429	0.47	-3.27
180	0.385	0.38	-4.21
190	0.418	0.45	-3.49
200	0.519	0.69	-1.61
210	0.643	1.06	0.25
220	0.756	1.46	1.65
230	0.846	1.83	2.63
240	0.903	2.09	3.20
250	0.939	2.26	3.54
260	0.936	2.24	3.51
270	0.923	2.18	3.39
280	0.902	2.08	3.19
290	0.895	2.05	3.12
300	0.916	2.15	3.32
310	0.950	2.31	3.64
320	0.984	2.48	3.94
330	1.000	2.56	4.08
340	0.991	2.51	4.00
350	0.969	2.40	3.81

Maximum Value

Field 1.00
Gain 2.56 (4.08 dB)

Azimuth Bearing 330 degrees

Minimum Field

Field 0.385
Gain .38 (-4.21 dB)

Azimuth Bearing 180 degrees

Vertical Polarization

Angle	Relative Field	Power Gain	Gain (dB)
0	0.906	2.10	3.22
10	0.914	2.14	3.30
20	0.922	2.18	3.38
30	0.933	2.23	3.48
40	0.955	2.33	3.68
50	0.930	2.21	3.45
60	0.877	1.97	2.94
70	0.812	1.69	2.27
80	0.714	1.31	1.16
90	0.607	0.94	-0.25
100	0.531	0.72	-1.42
110	0.461	0.54	-2.64
120	0.444	0.50	-2.97
130	0.436	0.49	-3.13
140	0.427	0.47	-3.31
150	0.427	0.47	-3.31
160	0.434	0.48	-3.17
170	0.425	0.46	-3.35
180	0.489	0.61	-2.13
190	0.553	0.78	-1.06
200	0.652	1.09	0.37
210	0.761	1.48	1.71
220	0.851	1.85	2.68
230	0.929	2.21	3.44
240	0.969	2.40	3.81
250	0.981	2.46	3.92
260	0.987	2.49	3.97
270	0.977	2.44	3.88
280	0.972	2.42	3.84
290	0.966	2.39	3.78
300	0.958	2.35	3.71
310	0.941	2.27	3.55
320	0.934	2.23	3.49
330	0.922	2.18	3.38
340	0.914	2.14	3.30
350	0.911	2.12	3.27

Maximum Value

Field 0.987
Gain 2.49 (3.97 dB)

Azimuth Bearing 260 degrees

Minimum Field

Field 0.426
Gain .46 (-3.34 dB)

Azimuth Bearing 155 degrees

ERP Tabulation

Antenna: PSIFMR-4C-DA
 MBP Licensee, LLC
 Station: KMEN
 Frequency: 100.5 MHz
 Location: Mendota, CA
 Maximum ERP: 6.0 kW (7.78 dBk)

Horizontal Polarization

Angle	Relative Field	ERP (kW)	ERP (dBk)
0	0.956	5.48	7.39
10	0.961	5.54	7.44
20	0.958	5.51	7.41
30	0.940	5.30	7.24
40	0.887	4.72	6.74
50	0.824	4.07	6.10
60	0.715	3.07	4.87
70	0.598	2.15	3.32
80	0.479	1.38	1.39
90	0.427	1.09	0.39
100	0.433	1.12	0.51
110	0.454	1.24	0.92
120	0.559	1.87	2.73
130	0.634	2.41	3.82
140	0.637	2.43	3.86
150	0.575	1.98	2.97
160	0.509	1.55	1.92
170	0.429	1.10	0.43
180	0.385	0.89	-0.51
190	0.418	1.05	0.21
200	0.519	1.62	2.08
210	0.643	2.48	3.95
220	0.756	3.43	5.35
230	0.846	4.29	6.33
240	0.903	4.89	6.90
250	0.939	5.29	7.23
260	0.936	5.26	7.21
270	0.923	5.11	7.09
280	0.902	4.88	6.89
290	0.895	4.81	6.82
300	0.916	5.03	7.02
310	0.950	5.42	7.34
320	0.984	5.81	7.64
330	1.000	6.00	7.78
340	0.991	5.89	7.70
350	0.969	5.63	7.51

Maximum Value (H-pol)

Field 1.00
 ERP 6.0 kW (7.78 dBk)
 Azimuth Bearing 330 degrees

Minimum Field (H-pol)

Field 0.385
 ERP .89 kW (-.51 dBk)
 Azimuth Bearing 180 degrees

Vertical Polarization

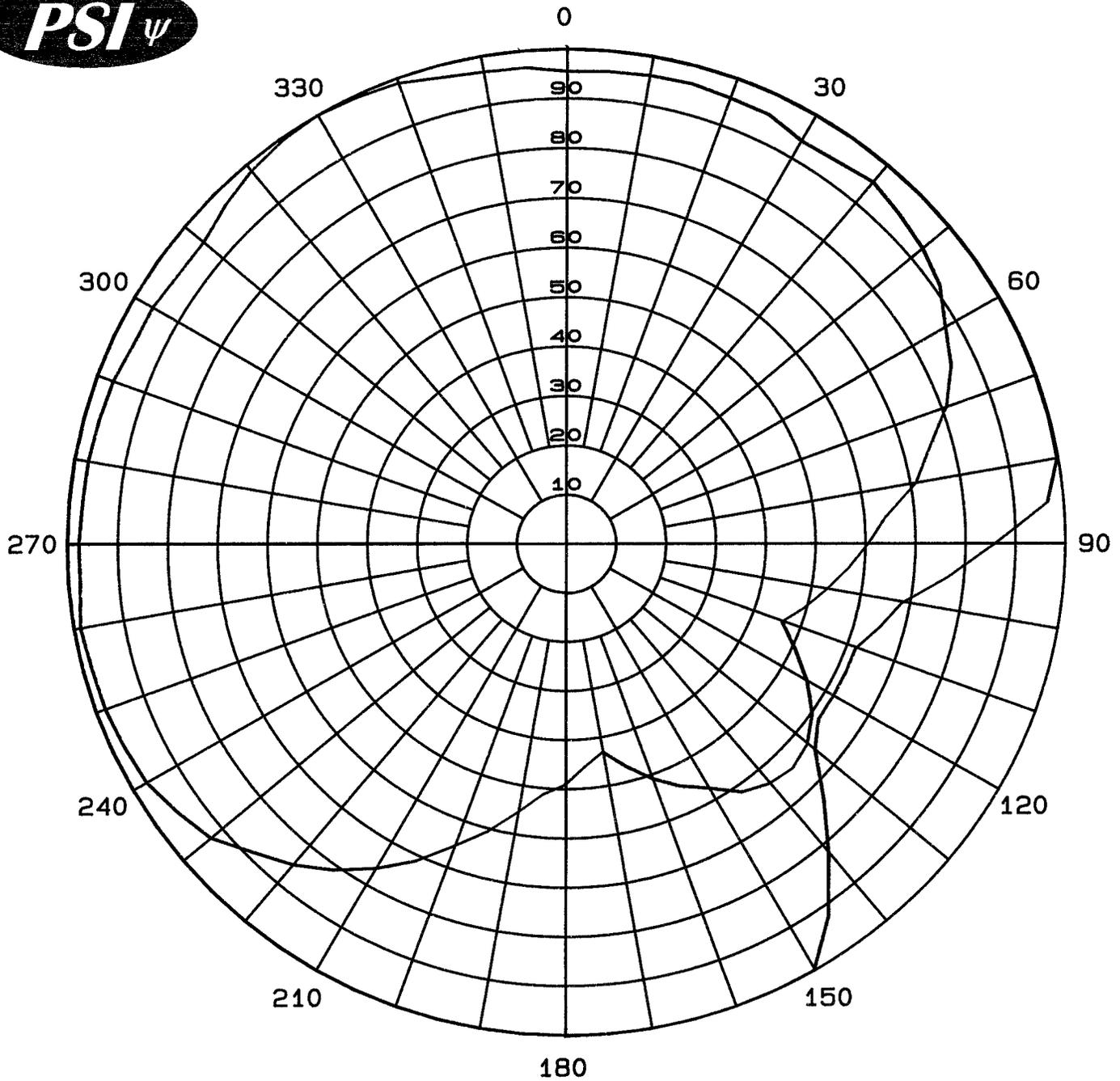
Angle	Relative Field	ERP (kW)	ERP (dBk)
0	0.906	4.93	6.92
10	0.914	5.01	7.00
20	0.922	5.10	7.08
30	0.933	5.22	7.18
40	0.955	5.47	7.38
50	0.930	5.19	7.15
60	0.877	4.61	6.64
70	0.812	3.96	5.97
80	0.714	3.06	4.86
90	0.607	2.21	3.45
100	0.531	1.69	2.28
110	0.461	1.28	1.06
120	0.444	1.18	0.73
130	0.436	1.14	0.57
140	0.427	1.09	0.39
150	0.427	1.09	0.39
160	0.434	1.13	0.53
170	0.425	1.08	0.35
180	0.489	1.43	1.57
190	0.553	1.83	2.64
200	0.652	2.55	4.07
210	0.761	3.47	5.41
220	0.851	4.35	6.38
230	0.929	5.18	7.14
240	0.969	5.63	7.51
250	0.981	5.77	7.61
260	0.987	5.85	7.67
270	0.977	5.73	7.58
280	0.972	5.67	7.53
290	0.966	5.60	7.48
300	0.958	5.51	7.41
310	0.941	5.31	7.25
320	0.934	5.23	7.19
330	0.922	5.10	7.08
340	0.914	5.01	7.00
350	0.911	4.98	6.97

Maximum Value (V-pol)

Field 0.987
 ERP 5.85 kW (7.67 dBk)
 Azimuth Bearing 260 degrees

Minimum Field (V-pol)

Field 0.426
 ERP 1.09 kW (.36 dBk)
 Azimuth Bearing 155 degrees



Measured Composite and
Maximum Envelope Pattern
Antenna: PSIFMR-4C-DA
Type: 4-Bay Directional FM
Composite RMS: .828
Envelope RMS: .959
Frequency: 100.5 MHz
KMEN Mendota, CA

Propagation Systems Inc.
PO Box 113
Ebensburg, PA 15931

Peak ERP: 6 kW

Composite Pattern Tabulation

Antenna: PSIFMR-4C-DA

MBP Licensee, LLC

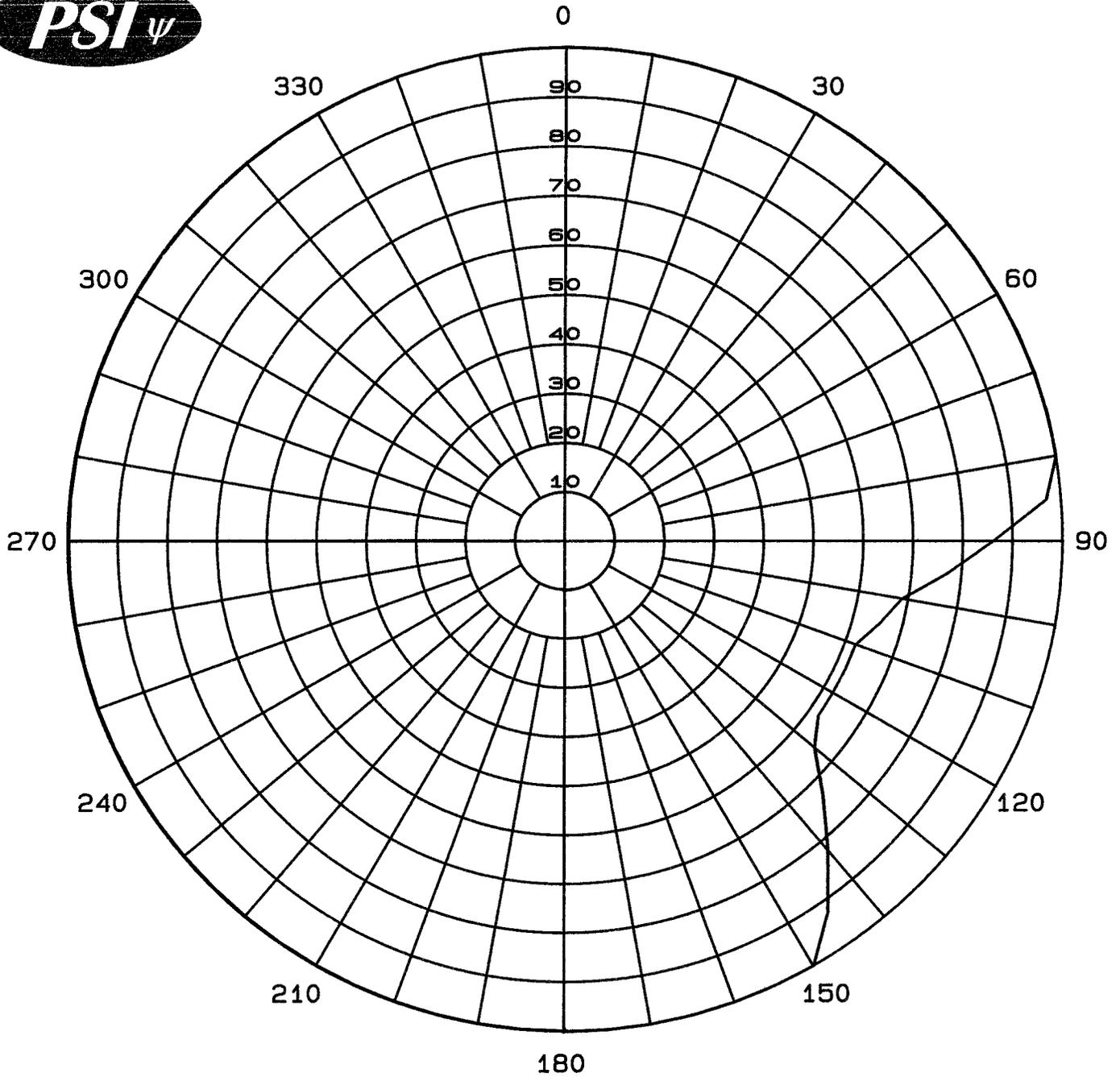
Station: KMEN

Frequency: 100.5 MHz

Location: Mendota, CA

Maximum ERP: 6.0 kW (7.78 dBk)

Angle	Relative Field	ERP (kW)	ERP (dBk)
0	0.956	5.48	7.39
10	0.961	5.54	7.44
20	0.958	5.51	7.41
30	0.940	5.30	7.24
40	0.955	5.47	7.38
50	0.930	5.19	7.15
60	0.877	4.61	6.64
70	0.812	3.96	5.97
80	0.714	3.06	4.86
90	0.607	2.21	3.45
100	0.531	1.69	2.28
110	0.461	1.28	1.06
120	0.559	1.87	2.73
130	0.634	2.41	3.82
140	0.637	2.43	3.86
150	0.575	1.98	2.97
160	0.509	1.55	1.92
170	0.429	1.10	0.43
180	0.489	1.43	1.57
190	0.553	1.83	2.64
200	0.652	2.55	4.07
210	0.761	3.47	5.41
220	0.851	4.35	6.38
230	0.929	5.18	7.14
240	0.969	5.63	7.51
250	0.981	5.77	7.61
260	0.987	5.85	7.67
270	0.977	5.73	7.58
280	0.972	5.67	7.53
290	0.966	5.60	7.48
300	0.958	5.51	7.41
310	0.950	5.42	7.34
320	0.984	5.81	7.64
330	1.000	6.00	7.78
340	0.991	5.89	7.70
350	0.969	5.63	7.51



Maximum Envelope
Relative Field Pattern
Antenna: PSIFMR-4C-DA
Type: 4-Bay Directional FM
Peak ERP: 6 kW (7.78 dBk)
Envelope RMS: .959
Frequency: 100.5 MHz
KMEN Mendota, CA

Propagation Systems Inc.
PO Box 113
Ebensburg, PA 15931

Maximum Envelope Tabulation

Antenna: PSIFMR-4C-DA

MBP Licensee, LLC

Station: KMEN

Frequency: 100.5 MHz

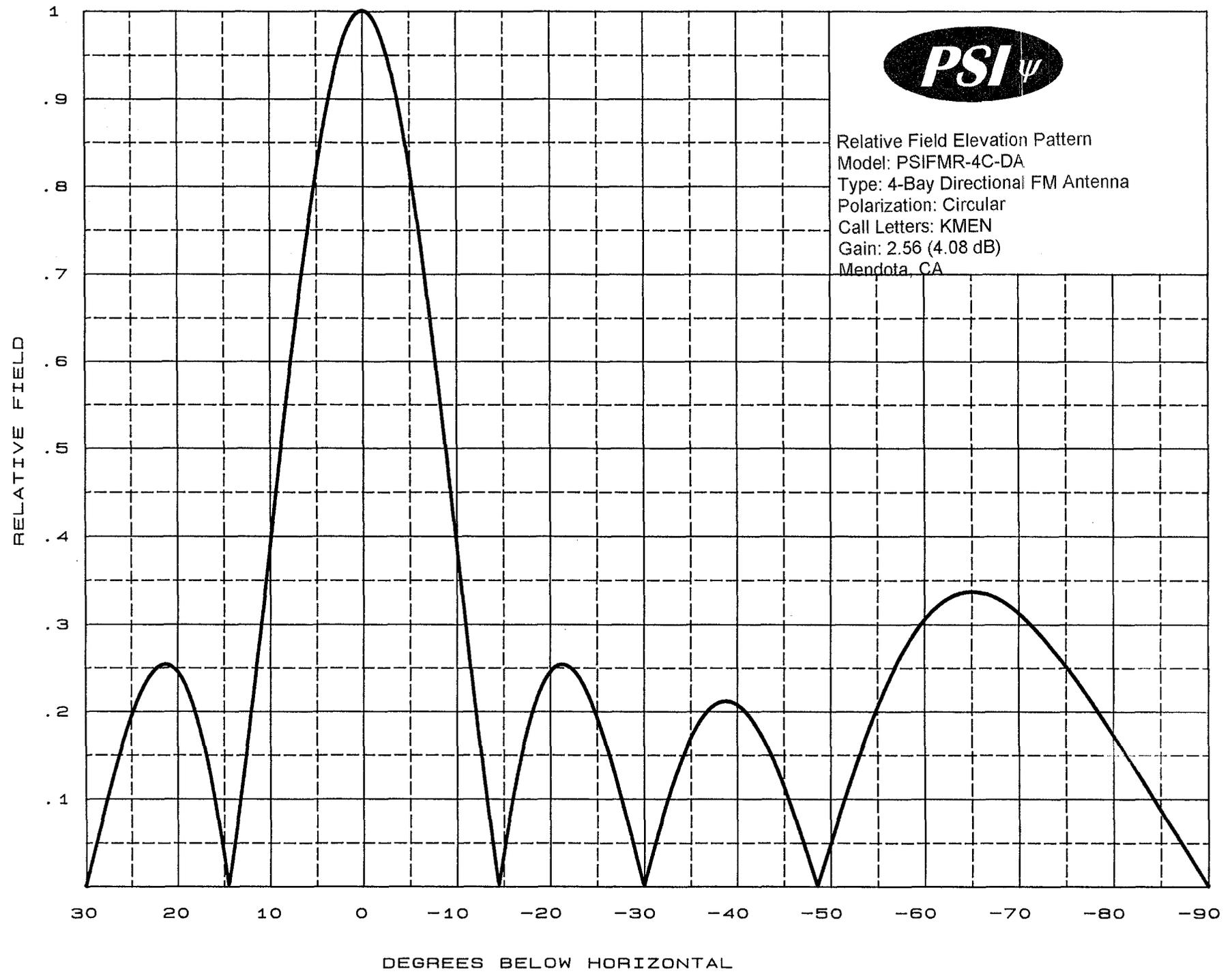
Location: Mendota, CA

Maximum ERP: 6.0 kW (7.78 dBk)

Angle	Relative Field	ERP (kW)	ERP (dBk)
0	1.000	6.00	7.78
10	1.000	6.00	7.78
20	1.000	6.00	7.78
30	1.000	6.00	7.78
40	1.000	6.00	7.78
50	1.000	6.00	7.78
60	1.000	6.00	7.78
70	1.000	6.00	7.78
80	1.000	6.00	7.78
90	0.860	4.44	6.47
100	0.686	2.82	4.51
110	0.620	2.31	3.63
120	0.620	2.31	3.63
130	0.653	2.56	4.08
140	0.822	4.05	6.08
150	1.000	6.00	7.78
160	1.000	6.00	7.78
165	1.000	6.00	7.78
170	1.000	6.00	7.78
180	1.000	6.00	7.78
190	1.000	6.00	7.78
200	1.000	6.00	7.78
210	1.000	6.00	7.78
220	1.000	6.00	7.78
230	1.000	6.00	7.78
240	1.000	6.00	7.78
250	1.000	6.00	7.78
260	1.000	6.00	7.78
270	1.000	6.00	7.78
280	1.000	6.00	7.78
290	1.000	6.00	7.78
300	1.000	6.00	7.78
310	1.000	6.00	7.78
320	1.000	6.00	7.78
330	1.000	6.00	7.78
340	1.000	6.00	7.78
350	1.000	6.00	7.78



Relative Field Elevation Pattern
Model: PSIFMR-4C-DA
Type: 4-Bay Directional FM Antenna
Polarization: Circular
Call Letters: KMEN
Gain: 2.56 (4.08 dB)
Mendota, CA



INSTRUCTION MANUAL

MBP Licensee, LLC

KMEN

100.5 MHz

Antenna Model: PSIFMR-4C-DA

Uncrating

When uncrating the antenna system, open each crate carefully so that the crates may be used to return any merchandise that may have been damaged in shipping. Separate all parts and confirm that all items on the packing list have been received. If any parts are missing, notify PSI or its agent prior to assembling the antenna. If any parts are damaged through shipment or are missing, promptly notify the shipping carrier and PSI.

General Notes:

1. Review antenna elevation and plan the installation. The antenna brackets are for tower face mount only. The antenna is to be mounted on the north/west tower face positioned 330 degrees true. Be aware of possible mounting conflicts such as other antennas, guy wires, tower leg flanges, conduits etc. and plan accordingly.
2. All bays are to be aligned to the same azimuth angle.
3. Use only the supplied hardware and O-ring at all 1-5/8" flange connections.
4. Exercise care when assembling the inner conductors of the coaxial line. The bullet should fit firmly in the inner conductor in order to assure a proper connection.
5. Check a bracket on the tower for proper fit.
6. Install one bay/inter-bay assembly at a time.
7. Keep all transmission lines free from dirt and moisture. All Teflon insulators must be clean and dry.
8. The antenna must be pressurized with dry air or nitrogen.
9. The antenna has been tuned at the factory and should not require field adjustment. However a fine matcher has been supplied and if the antenna requires tuning, consult the factory before adjustments are made.
10. The antenna system should be tested before the erector leaves the premises to insure that the complete antenna system is functioning properly.

Installation Procedure

Step One

The antenna must be installed one bay/inter-bay assembly at a time. Starting with bay 1, attach the element to inter-bay 1 block. Use only the supplied 5/16-18 x 7/8" hardware and O-ring. The feed point on all elements must be in the down position. Refer to drawing J1106FM-566-001. Next attach the shorting stub and then the bay-mounting bracket J1106FM-566-011 to the boom of bay 1 using the supplied hose clamps. Attach the horizontal parasitic element per drawing J1106FM-566-002 to the antenna boom using the supplied hose clamps. The elements are color-coded. Attach the inter-bay bracket J1106FM-566-012 approximately 12"-18" below the bay. The first bay/inter-bay assembly is now ready to be installed on the tower. **The inter-bay inner conductor is not captivated. Take precautions to secure all inner conductors during erection.** Carefully hoist the first bay/inter-bay assembly to the correct location on the tower and secure the brackets to the north/west tower face using the 3/8-16 x 2" U-bolts, nuts and locks. Attach the vertical parasitic elements to the tower legs using the 3/8-16 x 2" U-bolts. Position the tower leg parasitic shown in drawing J1106FM-566-002.

Step Two

Follow the same procedure with bay 2. Inter-bay 2 is a short section that has been pre-attached to the center tee. Connect bay as shown in drawing J1106FM-566-014. Attach the element to the inter-bay block; attach the bay mounting bracket and inter-bay bracket. Hoist bay 2 center tee assembly and connect with inter-bay 1 using the supplied 5/16-18 x 7/8" bolts, locks and O-ring. Position the center tee section so the elbow will be positioned outside of the bay brackets. Secure the bay to the tower and attach the parasitic elements.

Step Three

Attach a mounting bracket to bay three, hoist bay three and connect to inter-bay block three that was installed with the center tee in step two. Secure the bay to the tower and attach the parasitic elements.

Step Four

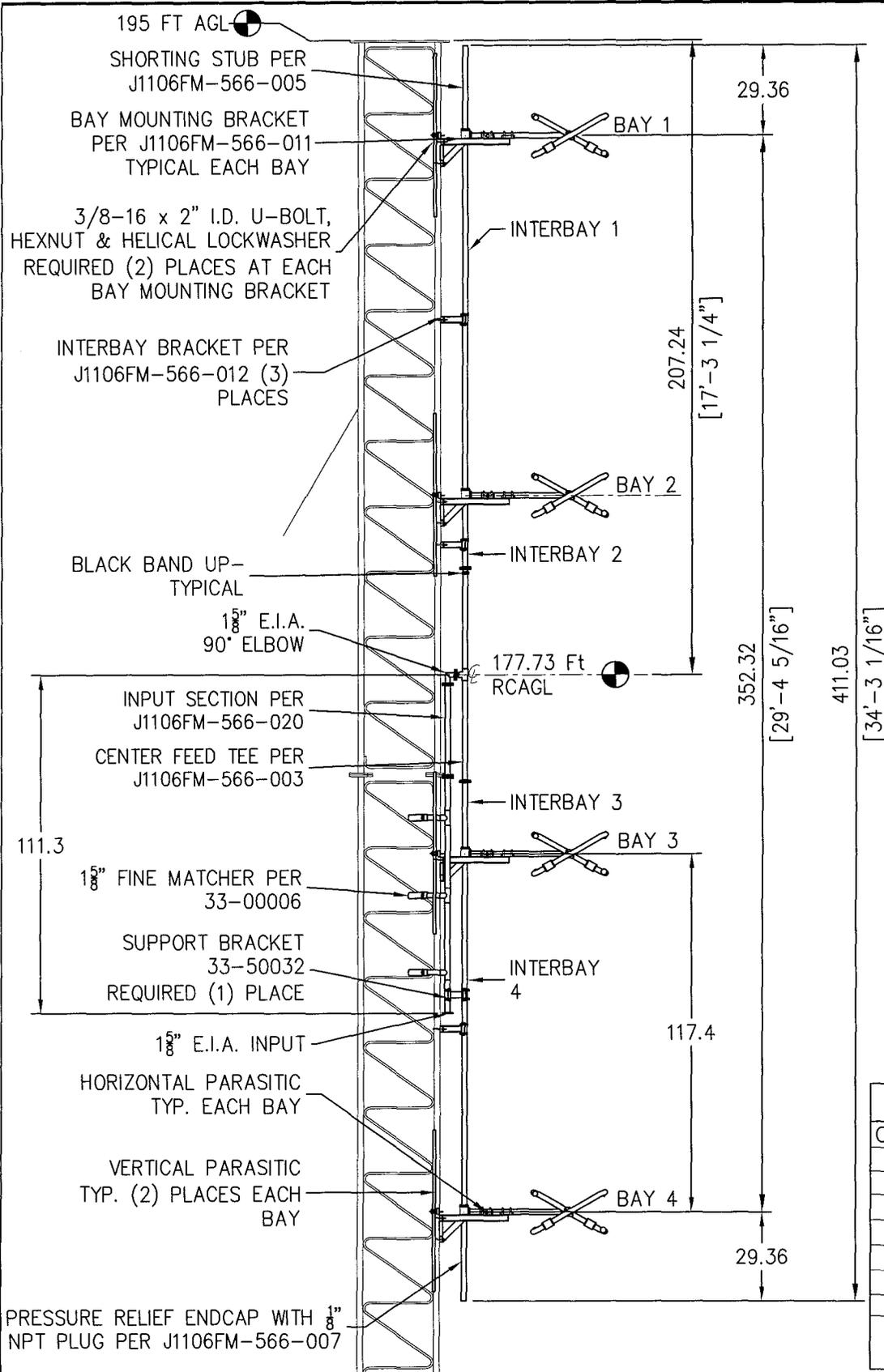
Follow the same procedure for bay 4. After installing bay 4 connect the 1-5/8" elbow and tuner to the center tee section. Use the supplied 5/16-18 x 1-1/4" bolts, nuts, locks and O-ring supplied. Attach the tuner bracket between probe three and the input flange for additional support. See drawing J1106FM-566-014 for an overview. Attach the end of the tuner with the black band up.

Step Five

Check all bolted connections for tightness. Connect the main transmission line to the antenna input located at the tuner base. Do not allow the weight of the feed line to be supported by the antenna. Pressurize the antenna system to a maximum of 5 lbs. with dry air or nitrogen. The antenna system should be tested before the erector leaves the premises to insure that the complete antenna system is functioning properly. The antenna has been tested at the factory and the tuner has been adjusted for optimum match conditions, see attached test data. If the antenna-input match (VSWR) is greater than a 1.1:1, confirm the antenna was installed properly. If the VSWR is greater than 1.15:1 contact the factory for instructions before applying power to the antenna. If the VSWR is greater than 1.1:1 but less than 1.15:1 the tuner can be adjusted, using the appropriate test equipment, for minimum reflected power.

Drawing Index

<u>Drawing</u>	<u>Title</u>
J1106FM-566-001	Antenna Elevation
J1106FM-566-002	Antenna Orientation
J1106FM-566-013	Bay 1 Side View
J1106FM-566-014	Bays 2 and 3 with Center Tee Section
J1106FM-566-015	Bay 4 Side View
J1106FM-566-019	Tower Leg Parasitic
J1106FM-566-016	Antenna Boom Parasitic
J1106FM-566-005	Shorting Stub
J1106FM-566-003	Center Tee Outline
J1106FM-566-008	Tuner Outline
J1106FM-566-007	End Cap Outline
J1106FM-566-011	Bay Bracket Outline
J1106FM-566-012	Inter-Bay Bracket Outline
33-50032	Tuner Bracket Outline



SPECIFICATIONS	
CONFIGURATION:	CENTER FED
SPACING:	1.0λ
GAIN:	2.56 (4.08 dB)
RATING:	12 kW
INPUT:	1-5/8" E.I.A.
LENGTH:	34.25 Ft.
APERTURE:	29.36 Ft.
WEIGHT:	±280.54 Lbs
WIND AREA:	24.83 Sq. Ft.
(NO ICE)	

REV.	MADE BY	CHECKED BY	DATE	CHANGE

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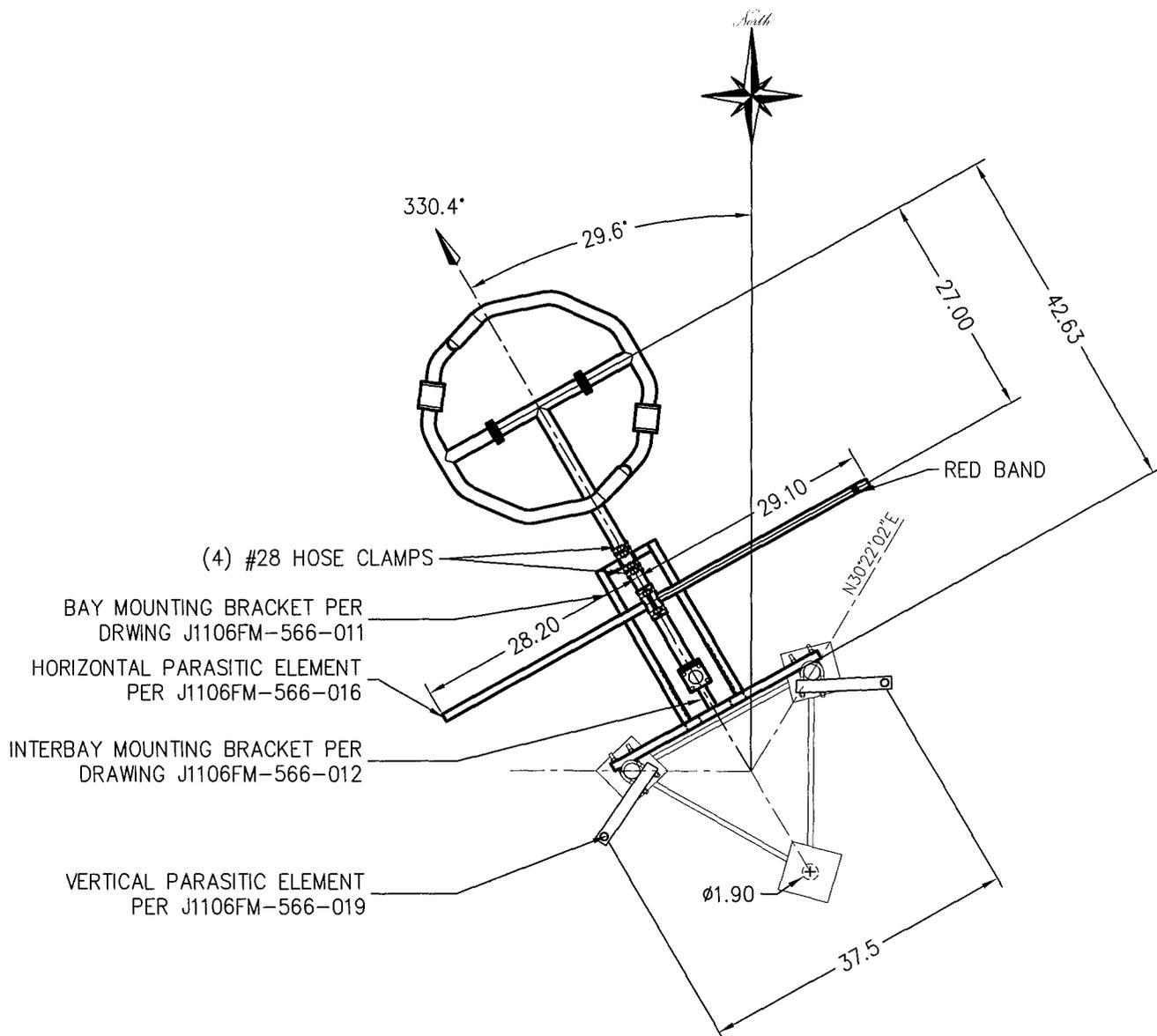
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PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

ANTENNA ELEVATIONS

MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 11/08/06
CHANNEL/FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:
SCALE: 1:50	DRAWING NO.: J1106FM-566-001	REV. 0



- (4) #28 HOSE CLAMPS
- BAY MOUNTING BRACKET PER
DRAWING J1106FM-566-011
- HORIZONTAL PARASITIC ELEMENT
PER J1106FM-566-016
- INTERBAY MOUNTING BRACKET PER
DRAWING J1106FM-566-012
- VERTICAL PARASITIC ELEMENT
PER J1106FM-566-019

REV.	MADE BY	CHECKED BY	DATE	CHANGE

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PROPAGATION SYSTEMS, INC.
Ebensburg, Pennsylvania USA 814-472-5540

ANTENNA PLANVIEW AND ORIENTATION

MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 1/16/07
CHANNEL/FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:
SCALE: 1:10	DRAWING NO.: J1106FM-566-002	REV. 0

A

195 FT AGL

ATTACH INTERBAY TO INTERBAY BLOCK WITH (4) 5/16-18 x 7/8" HEXHEAD CAPSCREWS AND HELICAL LOCKWASHERS. REQUIRES (1) 2-328 O-RING

SHORTING STUB PER J1106FM-566-005

ATTACH HORIZONTAL PARASITIC J1106FM-566-016 TO BAY BOOM WITH (2) #28 HOSE CLAMPS

VERTICAL PARASITIC PER J1106FM-566-019 (2) PLACES EACH BAY WITH (1) 3/8-16 x 2" I.D. GALV. U-BOLT ASSY

29.36

BAY MOUNTING BRACKET PER J1106FM-566-011 & (4) 3/8-16 x 2" I.D. U-BOLT, HEXNUT & HELICAL LOCKWASHER

(4) #28 HOSE CLAMPS TYPICAL EACH BAY

ATTACH ELEMENT TO INTERBAY BLOCK WITH (4) 5/16-18 x 7/8" HEXHEAD CAPSCREWS AND HELICAL LOCKWASHERS. REQUIRES (1) 2-328 O-RING

BAY 1

INTERBAY 1

INTERBAY MOUNTING BRACKET PER J1106FM-566-012 & (2) 3/8-16 x 2" I.D. U-BOLT, HEXNUT & HELICAL LOCKWASHER

(2) #28 HOSE CLAMPS TYPICAL EACH BAY

GUY LINE

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

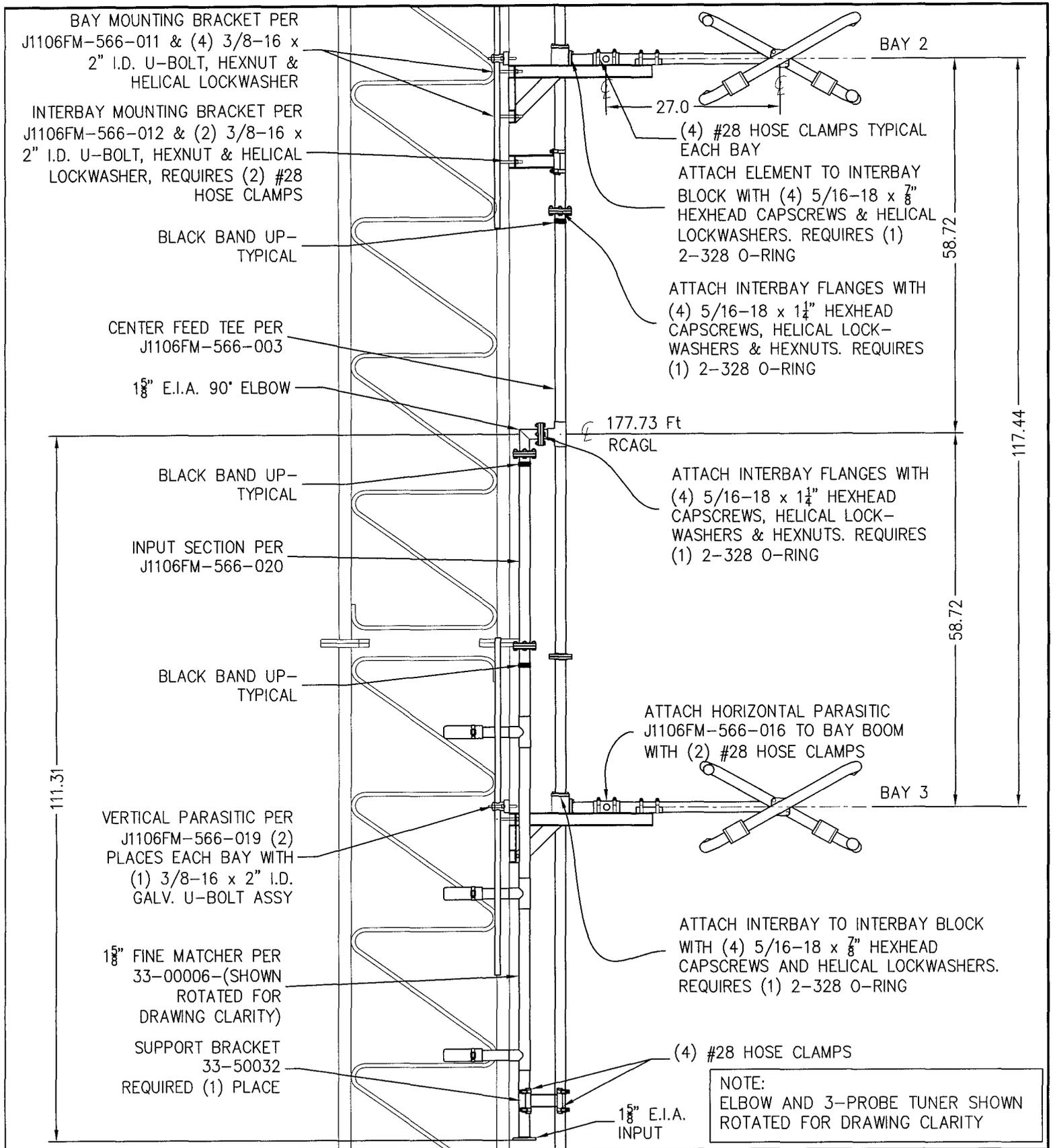
BAY 1 INSTALLATION AND ELEVATIONS

REV.	MADE BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

SIZE
A

MODEL:	PSIFMR-4C-DA	DRAWN BY:	D.G. Kellar	DATE:	2/02/07
CHANNEL/FREQUENCY:	100.5 MHz	APPROVED BY:		DATE:	
SCALE:	1:20	DRAWING NO.:	J1106FM-566-013	REV.	0



NOTE:
ELBOW AND 3-PROBE TUNER SHOWN
ROTATED FOR DRAWING CLARITY

REV.	MADE BY CHECKED BY	DATE	CHANGE

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

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A

BAYS 2 & 3 INSTALLATION AND ELEVATIONS			
MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 2/02/07	
CHANNEL/ FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:	
SCALE: 1:20	DRAWING NO.:	J1106FM-566-014	REV. 0

INTERBAY MOUNTING BRACKET PER J1106FM-566-012 & (2) 3/8-16 x 2" I.D. U-BOLT, HEXNUT & HELICAL LOCKWASHER

VERTICAL PARASITIC PER J1106FM-566-019 (2) PLACES EACH BAY WITH (1) 3/8-16 x 2" I.D. GALV. U-BOLT ASSY

BAY MOUNTING BRACKET PER J1106FM-566-011 & (4) 3/8-16 x 2" I.D. U-BOLT, HEXNUT & HELICAL LOCKWASHER

PRESSURE RELIEF ENDCAP WITH 1/8" NPT PLUG PER J1106FM-566-007

(2) #28 HOSE CLAMPS TYPICAL EACH BAY

ATTACH INTERBAY TO INTERBAY BLOCK WITH (4) 5/16-18 x 7/8" HEXHEAD CAPSCREWS AND HELICAL LOCKWASHERS. REQUIRES (1) 2-328 O-RING

ATTACH HORIZONTAL PARASITIC J1106FM-566-016 TO BAY BOOM WITH (2) #28 HOSE CLAMPS

27.0

BAY 4

(4) #28 HOSE CLAMPS TYPICAL EACH BAY

ATTACH ELEMENT TO INTERBAY BLOCK WITH (4) 5/16-18 x 7/8" HEXHEAD CAPSCREWS AND HELICAL LOCKWASHERS. REQUIRES (1) 2-328 O-RING

29.36

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

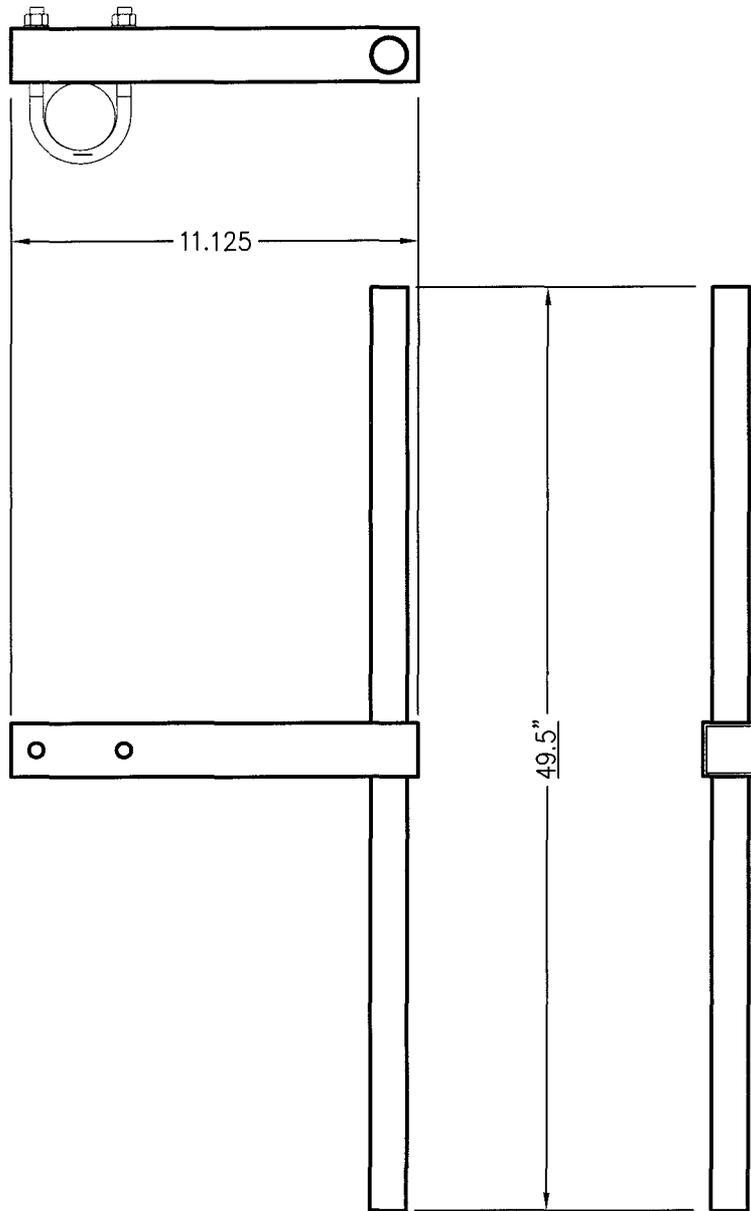
BAY 4 INSTALLATION AND ELEVATIONS

REV.	MADE BY	CHECKED BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the foregoing agreement.

SIZE
A

MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 2/02/07
CHANNEL/FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:
SCALE: 1:20	DRAWING NO.: J1106FM-566-015	REV. 0



NOTES:
1. (8) REQUIRED

REV.	MADE BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

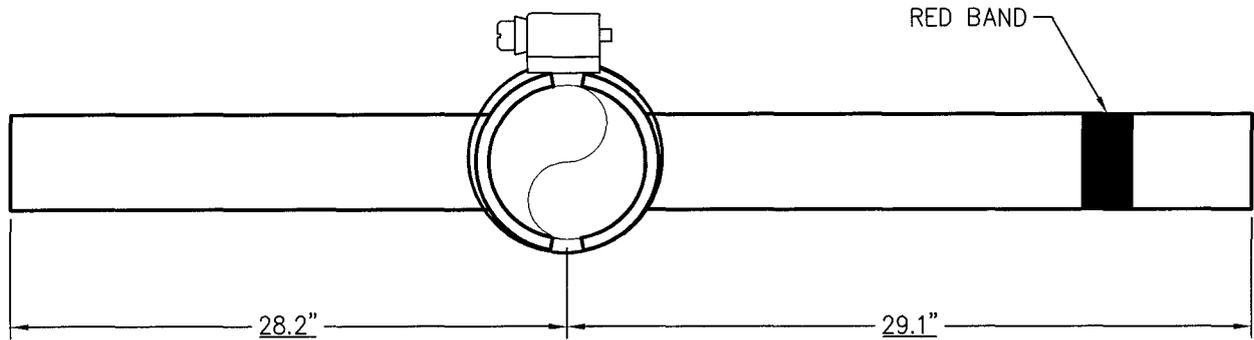
SIZE
A

PROPAGATION SYSTEMS, INC.

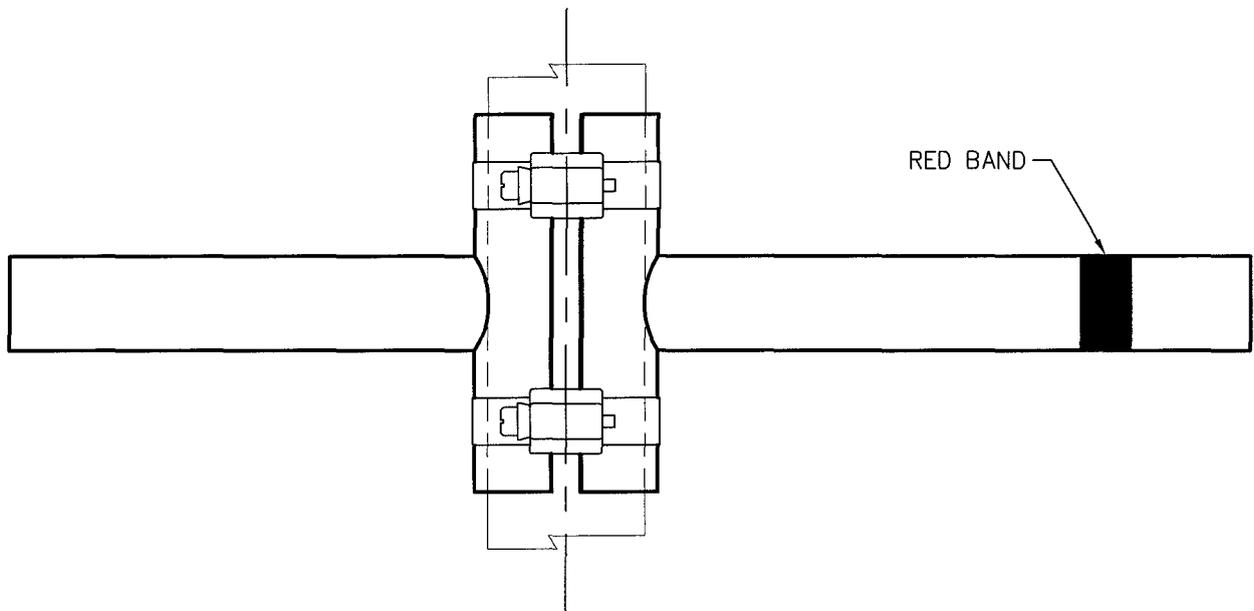
Ebensburg, Pennsylvania USA 814-472-5540

VERTICAL PARASITIC

MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 2/07/07
CHANNEL/FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:
SCALE: 1:5.33	DRAWING NO.: J1106FM-566-019	REV. 0



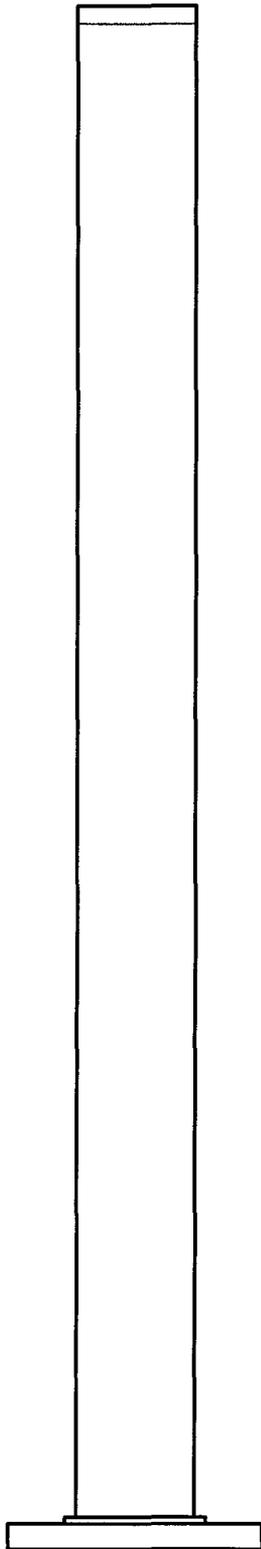
VIEWED FROM FRONT OF BOOM



PLAN VIEW

NOTES;
1. (4) ASSEMBLY REQUIRED

				PROPAGATION SYSTEMS, INC.			
				Ebensburg, Pennsylvania USA 814-472-5540			
				HORIZONTAL PARASITIC			
REV.	MADE BY	DATE	CHANGE	MODEL:	DRAWN BY:	DATE:	
				PSIFMR-4C-DA	D.G. Kellar	2/07/07	
				CHANNEL/ FREQUENCY:	APPROVED BY:	DATE:	
				100.5 MHz			
				SCALE:	DRAWING NO.:	REV.	
				1:2	J1106FM-566-016	0	
This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.				A			



REV.	MADE BY	CHECKED BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

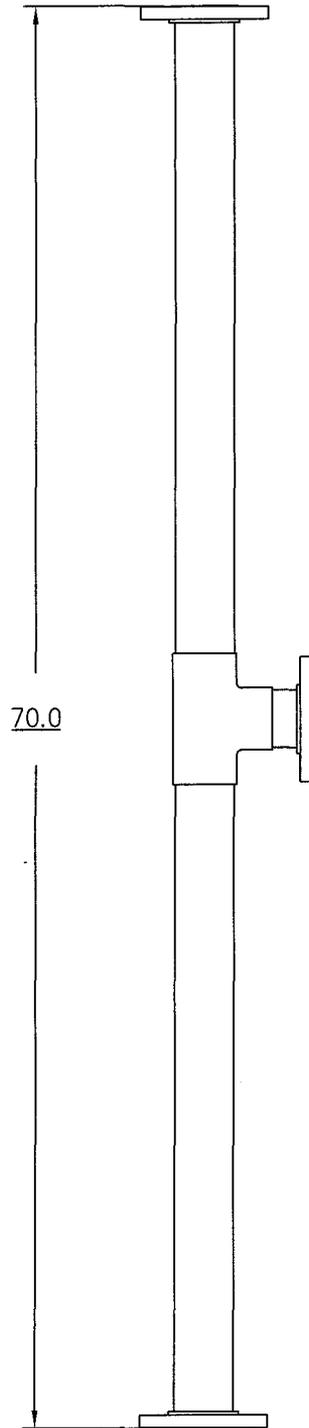
PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

SHORTING STUB OUTLINE

MODEL:	PSIFMR-4C-DA	DRAWN BY:	D.G. Kellar	DATE:	1/19/07
CHANNEL/ FREQUENCY:	100.5 MHz	APPROVED BY:		DATE:	
SCALE:	NONE	DRAWING NO.:	J1106FM-566-005	REV.	0

A



70.0

PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

1-5/8" CENTER FED POWER DIVIDER TEE OUTLINE

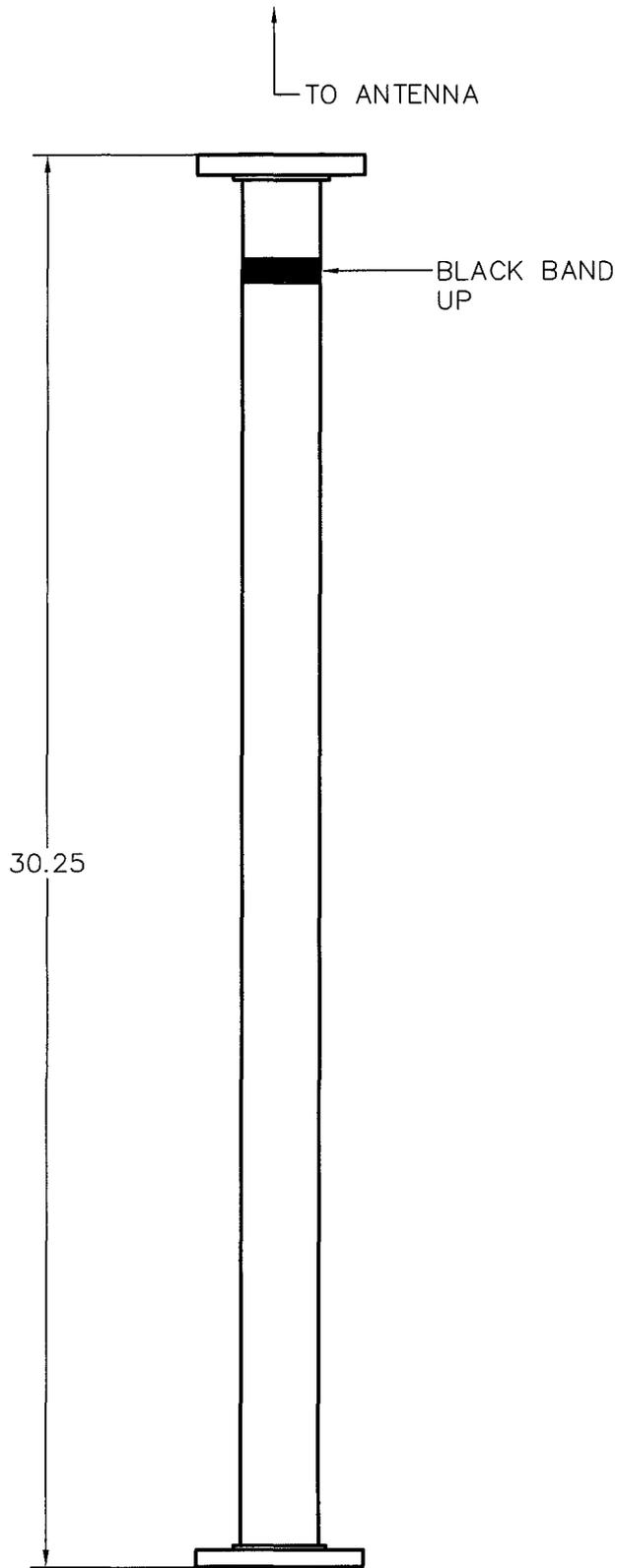
REV.	MADE BY	CHECKED BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

SIZE

A

MODEL:	PSIFMR-4C-DA	DRAWN BY:	D.G. Kellar	DATE:	1/17/07
CHANNEL/ FREQUENCY:	100.5 MHz	APPROVED BY:		DATE:	
SCALE:	1:5.33	DRAWING NO.:	J1106FM-566-003	REV.	0



REV.	MADE BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

MATERIAL:
NOT APPLICABLE

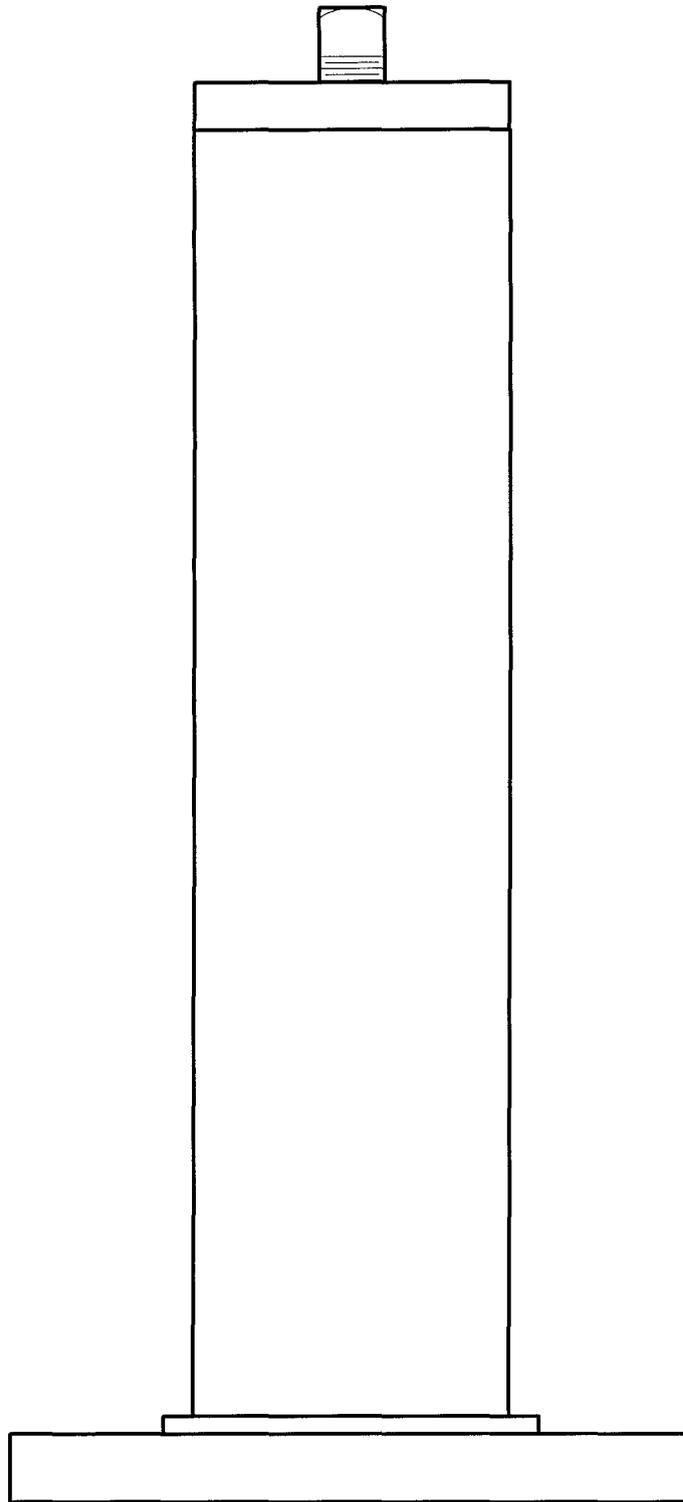
TOLERANCES UNLESS OTHERWISE NOTED
 FRACTIONS X/X ± 1/16"
 DECIMALS XX ± .01"
 DECIMALS XXX ± .005"
 ANGLES ± 3'

SIZE
A

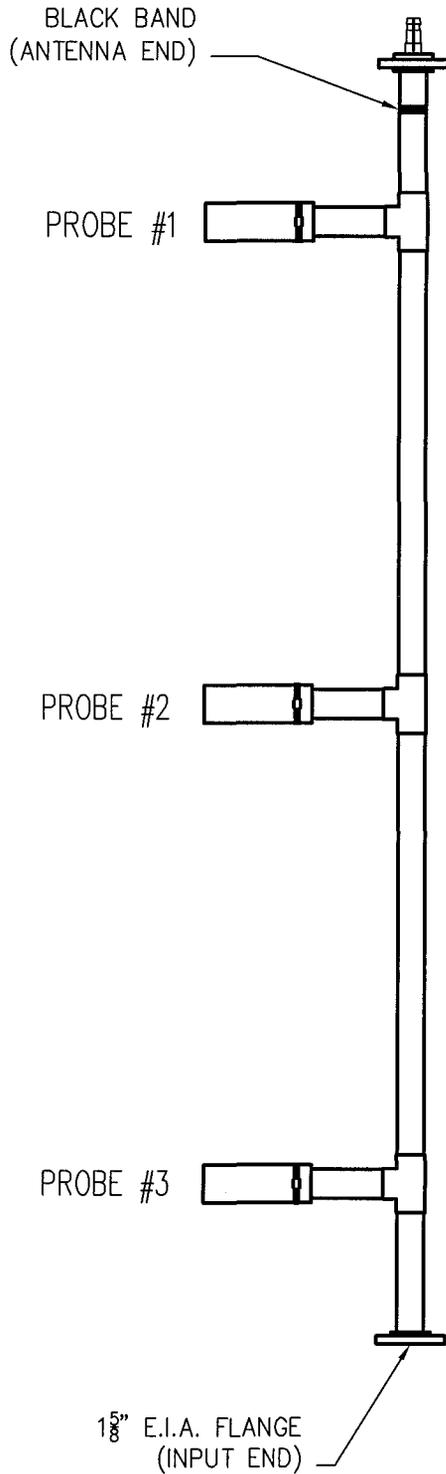
PROPAGATION SYSTEMS, INC.
 Ebensburg, Pennsylvania USA

1-5/8" INPUT SECTION ASSEMBLY

MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 2/09/07
CHANNEL/FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:
SCALE: 1:4	PART NO.: 33-00125	DRAWING NO.: J1106FM-566-020
		REV. 0



				PROPAGATION SYSTEMS, INC.			
				Ebensburg, Pennsylvania USA 814-472-5540			
				EXTENDED PRESSURE CAP OUTLINE			
REV.	MADE BY CHECKED BY	DATE	CHANGE	MODEL:	DRAWN BY:	DATE:	
				PSIFMR-4C-DA	D.G. Kellar	1/19/07	
This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.				CHANNEL/ FREQUENCY:	APPROVED BY:	DATE:	
				SCALE:	DRAWING NO.:	REV.	
				1:1	J1106FM-566-007	0	
				SIZE			
				A			



REV.	MADE BY	CHECKED BY	DATE	CHANGE

This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

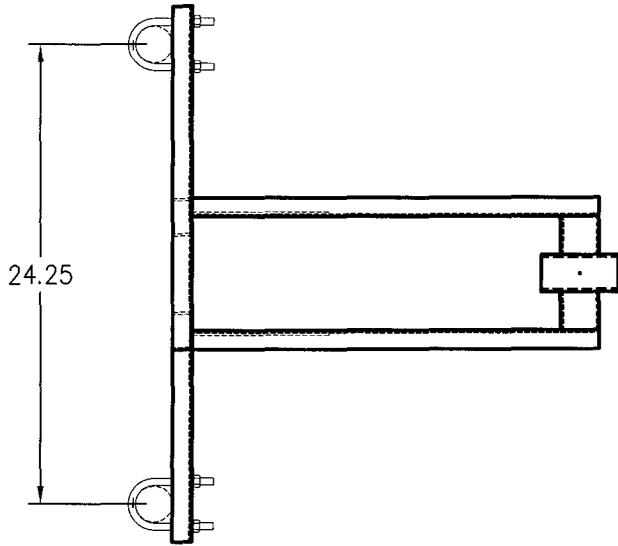
PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

3-PROBE FINE MATCHER OUTLINE

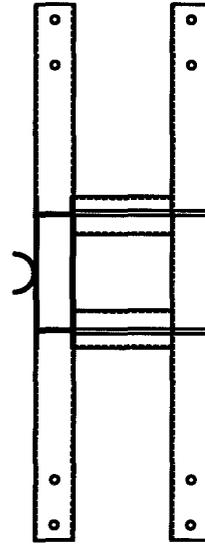
MODEL:	PSIFMR-4C-DA	DRAWN BY:	D.G. Kellar	DATE:	1/19/07
CHANNEL/FREQUENCY:	100.5 MHz	APPROVED BY:		DATE:	
SCALE:	1:16	DRAWING NO.:	J1106FM-566-008	REV.	0

A

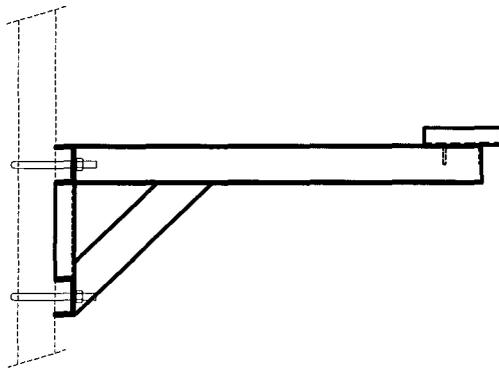


24.25

TOP VIEW



END VIEW



SIDE VIEW

NOTES:

1. APPROXIMATE WEIGHT: 16.31 Lbs/Each
2. ASSEMBLY TO BE HOT DIP GALVANIZED AFTER FABRICATION
3. (4) REQUIRED

REV.	MADE BY	CHECKED BY	DATE	CHANGE

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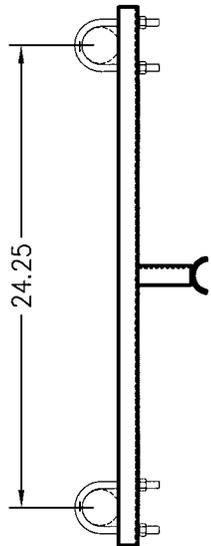
PROPAGATION SYSTEMS, INC.

Ebensburg, Pennsylvania USA 814-472-5540

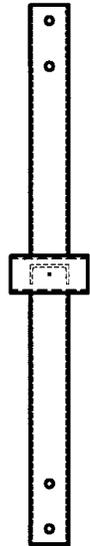
BAY MOUNTING BRACKET

MODEL:	PSIFMR-4C-DA	DRAWN BY:	D.G. Kellar	DATE:	1/17/06
CHANNEL/FREQUENCY:	100.5 MHz	APPROVED BY:		DATE:	
SCALE:	1:10	DRAWING NO.:	J1106FM-566-011	REV.	0

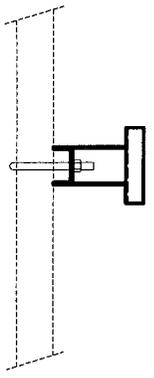
A



TOP VIEW



END VIEW



SIDE VIEW

NOTES:
 1. APPROXIMATE WEIGHT: 5.08 Lbs/Each
 2. ASSEMBLY TO BE HOT DIP GALVANIZED AFTER FABRICATION
 3. (3) REQUIRED

REV.	MADE BY	CHECKED BY	DATE	CHANGE

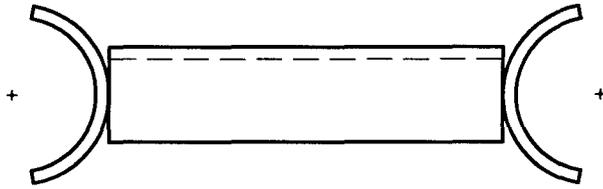
This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the forgoing agreement.

SIZE: A

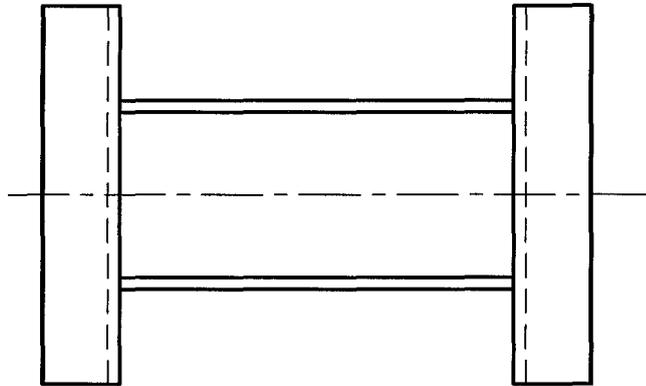
PROPAGATION SYSTEMS, INC.
 Ebensburg, Pennsylvania USA 814-472-5540

INTERBAY MOUNTING BRACKET

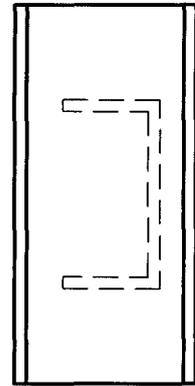
MODEL: PSIFMR-4C-DA	DRAWN BY: D.G. Kellar	DATE: 1/17/07
CHANNEL/FREQUENCY: 100.5 MHz	APPROVED BY:	DATE:
SCALE: 1:10	DRAWING NO.: J1106FM-566-012	REV. 0



PLAN VIEW



SIDE VIEW



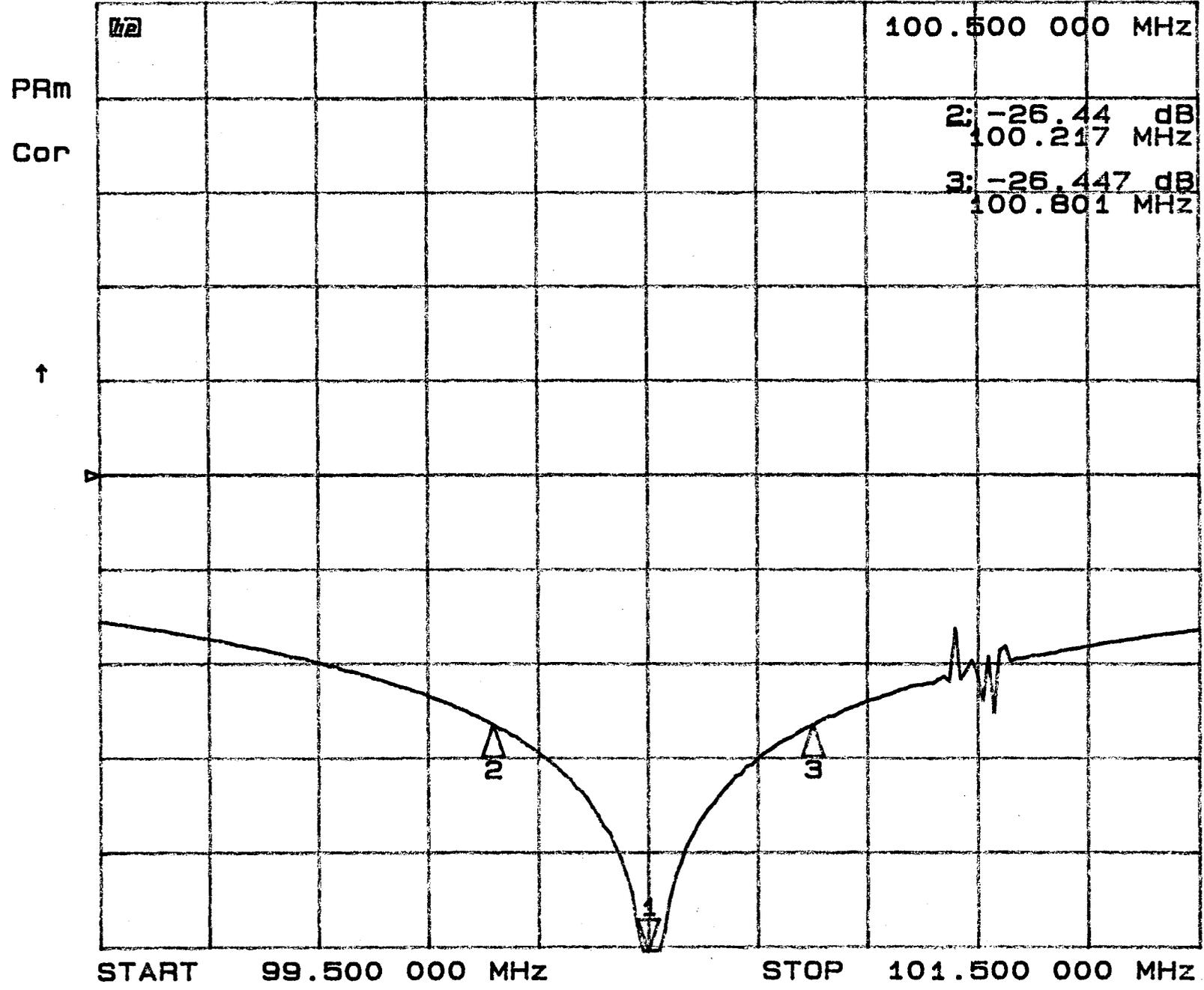
END VIEW

				MATERIAL:	PROPAGATION SYSTEMS, INC.			
				ALL COMPONENTS SHOWN ARE MILD STEEL, HOT DIP GALVANIZED				
REV.	MADE BY CHECKED BY	DATE	CHANGE		TUNER BRACKET FOR CENTER FEED			
This drawing is loaned subject to the express understanding and agreement that the drawing and information therein contained are, and shall remain the property of PSI, and will not be otherwise utilized or disposed of, directly or indirectly, and will not be used in whole or in part or assist in making or finish any information for the making of drawings, prints or other reproductions hereof, or for the design or making of any item, parts, object, apparatus or parts thereof, except upon the written permissions of PSI first obtained. The acceptance of this drawing will be construed as an acceptance of the foregoing agreement.					MODEL:			
				TOLERANCES UNLESS OTHERWISE NOTED	DRAWN BY:		DATE:	
				FRACTIONS X/X ± 1/16"	P. MCINTOSH		9-3-99	
				DECIMALS XX ± .01"	APPROVED BY:		DATE:	
				DECIMALS XXX ± .005"				
				ANGLES ± 3°	SCALE:		DRAWING NO.:	
				SIZE A	1:2		33-50032	
					PART NO.:		REV.	
					33-50032		0	

J1106FA1-566
EMR-4C-DP

FINAL

CH1 MEM log MAG 10 dB/ REF 0 dB 1: -59.049 dB



108 GUY ANCHOR

NAD83
 LONGITUDE 120°21'03.60709" WEST
 LATITUDE 36°38'51.32392" NORTH
 NORTHING 2121654.0951
 EASTING 6165353.4484

NAD27
 LONGITUDE 120°21'00.01977" WEST
 LATITUDE 36°38'51.50289" NORTH
 NORTHING 481239.35262
 EASTING 1603969.76813

ANTENNA

NAD83
 LONGITUDE 120°21'04.54539" WEST
 LATITUDE 36°38'49.99086" NORTH
 NORTHING 2121520.3758
 EASTING 6165275.0988

NAD27
 LONGITUDE 120°21'00.95809" WEST
 LATITUDE 36°38'50.16982" NORTH
 NORTHING 481105.63503
 EASTING 1603891.41651

109 GUY ANCHOR

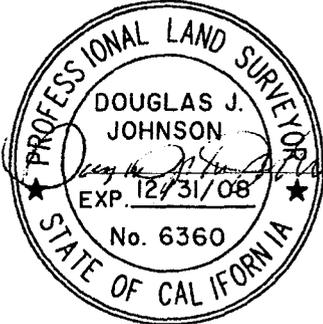
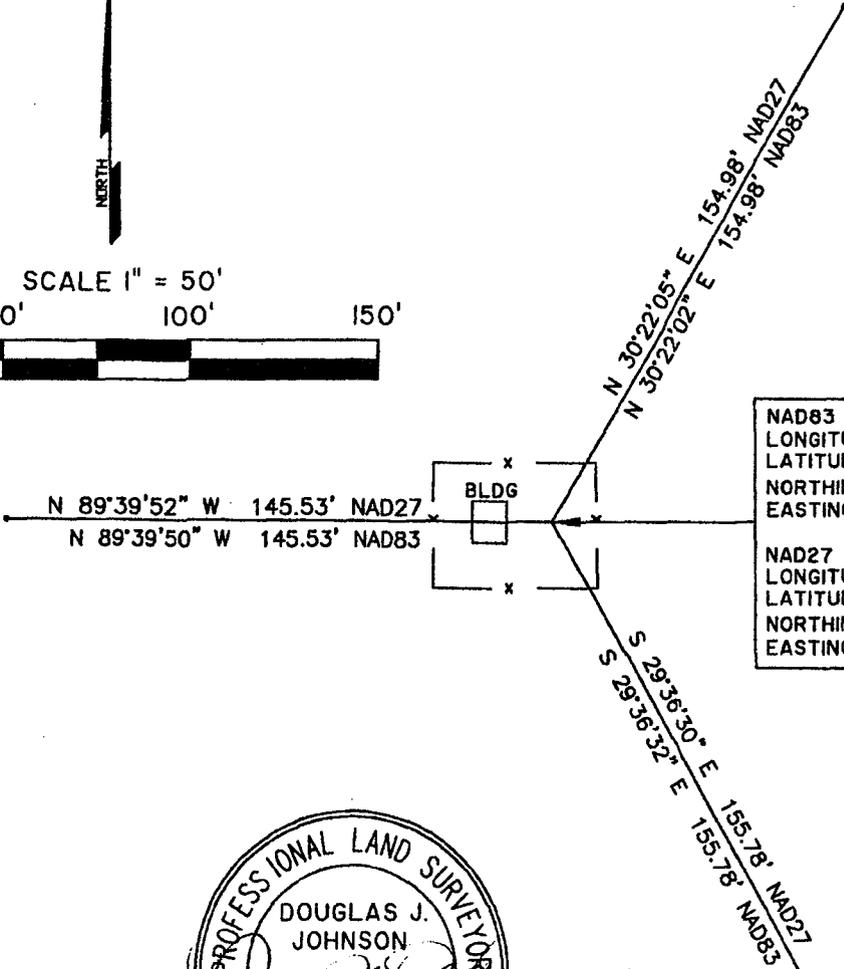
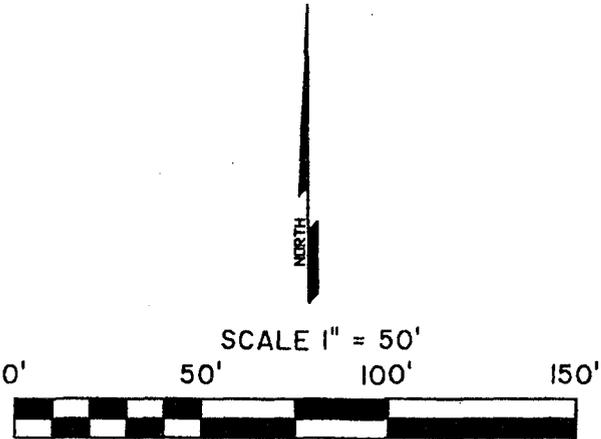
NAD83
 LONGITUDE 120°21'03.57757" WEST
 LATITUDE 36°38'48.66239" NORTH
 NORTHING 2121384.9363
 EASTING 6165352.0672

NAD27
 LONGITUDE 120°20'59.99036" WEST
 LATITUDE 36°38'48.84135" NORTH
 NORTHING 480970.19927
 EASTING 1603968.38078

110 GUY ANCHOR

NAD83
 LONGITUDE 120°21'06.33122" WEST
 LATITUDE 36°38'49.97905" NORTH
 NORTHING 2121521.2296
 EASTING 6165129.5713

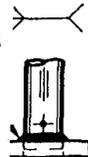
NAD27
 LONGITUDE 120°21'02.74386" WEST
 LATITUDE 36°38'50.15801" NORTH
 NORTHING 481106.48695
 EASTING 1603745.89095



DOUGLAS "JOHN" JOHNSON LAND SURVEYING
 4444 N. DICKENSON AVENUE
 FRESNO, CA 93723
 (559) 275-4900
 DJOHNSON@DJPLS.COM
 JN: 07003 1/11/06 DWG. 07003NAD83.DWG

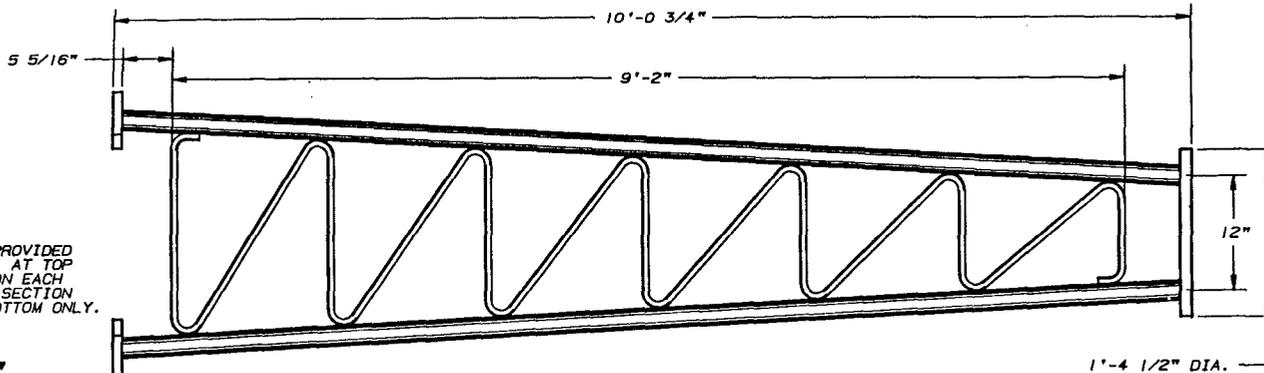
JOB 566
 ARRIVED 1/17/06 FRM DOUGLAS

Job#: 566
 Date Rcvd: _____
 Rcvd From: _____
 Ref. Nbr: _____

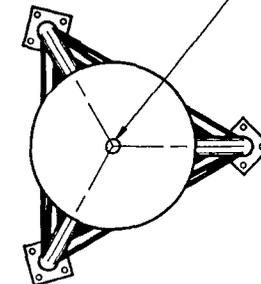


RAIN HOLE IS PROVIDED THE WELD (TYP. AT TOP OF EACH LEG) ON EACH LEGS AT THE BOTTOM ONLY.

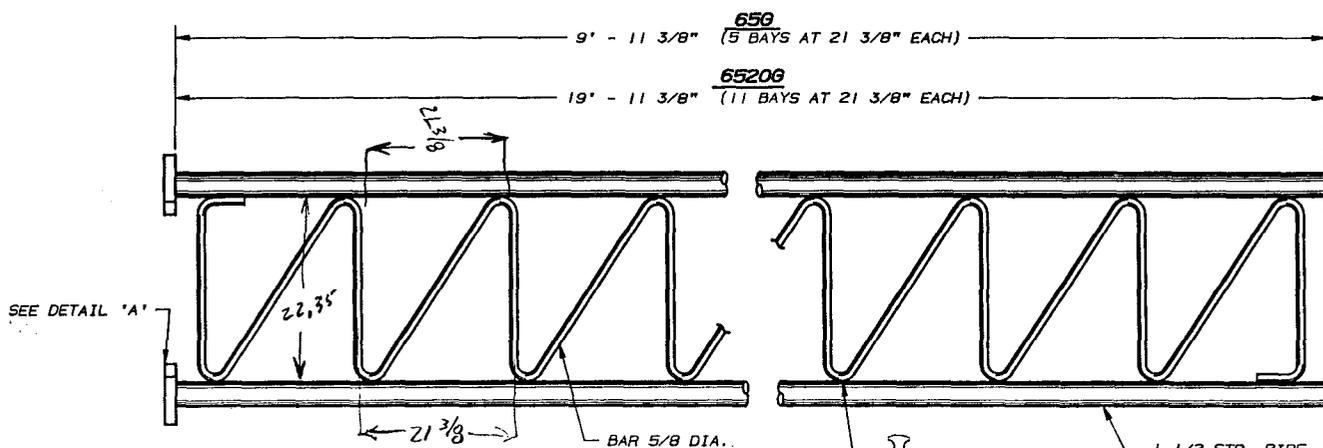
TAIL 'A'



1 1/16" DIA. HOLE FOR 15/16" DIA. X 16" LONG PIER PIN



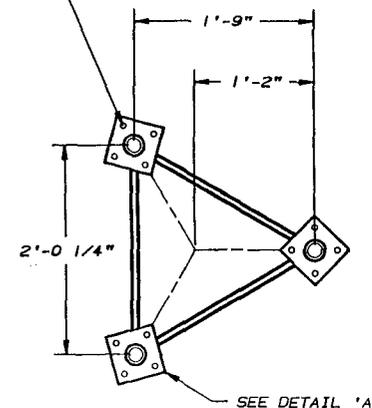
P/N 65TG SECTION



SEE DETAIL 'A'

NOTE: ALL SECTIONS CAN BE INSTALLED WITH EITHER END UP, EXCEPT FOR 65TG SECTION.
 NOTE: ALL SECTIONS ARE HOT DIP GALVANIZED AFTER FABRICATION.

(4) 5/8" DIA. X 2 1/2" LG. FLANG BOLTS (A-325 QUALITY) (12 TOTAL REQUIRED PER SECTION - EXCEPT FOR 65TG SECTION) (PAL NUTS ARE PROVIDED W/ ALL BO



P/N 65G SECTION AND P/N 6520G SECTION

SEC. >>	65G TOWER SECTION PROPERTIES		
ITEM	LEGS	BRACES	SECTION
SIZE	PIPE 1.50 STD.	BAR 5/8 DIA.	N/A
F _y	50.0	36.0	N/A
A	0.799	0.3068	2.40
S	0.326	0.0240	15.71
I	0.310	0.0075	234.9
r	0.623	0.1563	9.90
L	21.4	30.9	VARIES
K	1.0	0.70	1.0
KL/r	34.3	138.4	VARIES
C	28.3	3.20	N/A
T	28.3	N/A	N/A
M	N/A	N/A	N/A
W	2.72	1.044	14.50
W _s	164.0	126.0	290.0

NOMENCLATURE

A = CROSS SECTIONAL AREA (SQUARE INCHES)
 C = COMPRESSION CAPACITY WITH 1/3 INCREASE IN ALLOWABLE STRESS (KIPS)
 I = MOMENT OF INERTIA ABOUT CENTROIDAL AXIS (INCHES⁴)
 F_y = MINIMUM YIELD STRENGTH (KSI)
 K = EFFECTIVE LENGTH FACTOR (DIMENSIONLESS)
 L = UNBRACED LENGTH (INCHES)
 M = MOMENT CAPACITY WITH 1/3 INCREASE IN ALLOWABLE STRESS (FT.-KIPS)
 N/A = NOT APPLICABLE
 S = ELASTIC SECTION MODULUS (INCHES³)
 T = TENSION CAPACITY WITH 1/3 INCREASE IN ALLOWABLE STRESS (KIPS)
 r = RADIUS OF GYRATION (INCHES)
 W = WEIGHT PER FOOT (POUNDS)
 W_s = WEIGHT PER SECTION (POUNDS)

NOTE: CAPACITIES SHOWN ARE BASED ON ANSI/EIA-222-D-1986.

R13 REDRAWN AND REVISED SPEC. 02/18/88

No. ▲	Revision Description	▲	Date
UNR-Rohn			
Title			
65G SECTION ASSEMBLY			
Scale	NONE		
Unless otherwise specified, dimensions are given			
Tolerances			
Drawn by	GPW	Date	02/18/88
		Decimals	Fractions
		±	±
Checked by	WDR	Date	2-24-88
		Material	Finish
		Weight	
Approved by Engineering	Ben	Date	2-25-88
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Approved by Production		Date	
File Number			
Approved by Sales		Date	
Drawing Number			
			C630665 R1

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