ELECTRONICS RESEARCH, INC.

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Engineering Report

FM Multiplex Antenna Orientation
Proof of Performance

American Tower project for Miami, Florida
ERI Project #10345
February 18, 2005

Recently, American Tower installed a FM multiplex antenna for their multiplex FM facility in Miami, Florida. The FM multiplex antenna was manufactured by Electronics, Research, Inc., and it was designed to be installed on an existing Kline tower. The antenna and its new support spine were both supplied as a top mounted system by Electronics Research, Inc., and the adapter for the attachment of the new ERI antenna to the existing Kline tower was designed and manufactured by Kline. With this report, I have included a drawing of the ERI antenna as Figure #1, a drawing showing the orientation of the Kline tower as Figure #2, a drawing of the Kline tower interface layout as Figure #3, and the surveyors report as Figure #4.

I have reviewed these documents carefully, and I have climbed the tower in Miami, Florida to verify that the Kline tower interface was manufactured and installed correctly. The final assembly on the tower of the Kline tower interface and the ERI FM Multiplex antenna is correct, and, based on the surveyor's report, the installed tower is orientated correctly. The Electronics Research design was based on the orientation of the Kline tower shown on Figure #2, and the final survey indicated that the tower is within twenty seconds of that. Therefore, based on my field observations of the install of the antenna, the installed antenna is within +/- 0.5 degrees of the specified orientation of N 10 degrees E.

This report was prepared by Thomas B. Silliman of Electronics Research, Inc. whose qualifications are of record at the FCC. Any questions regarding this report should be directed to my attention.

Thomas B. Silliman

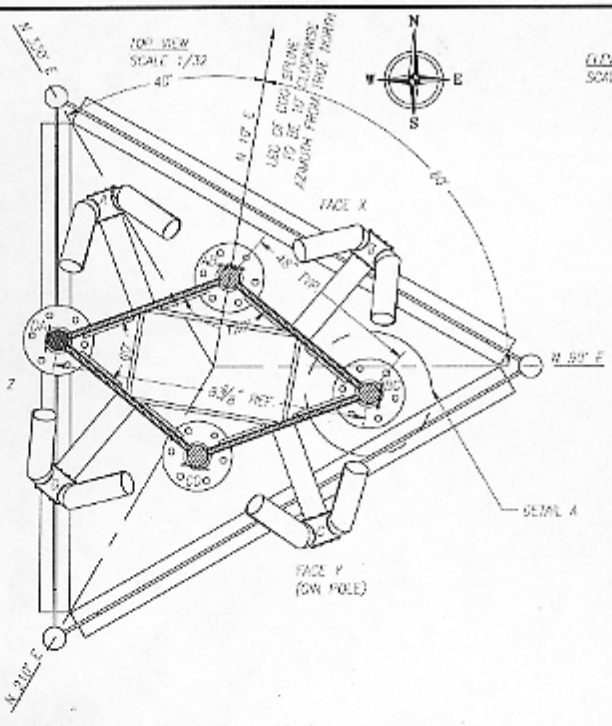
Thomas B. Silliman, P.E.
President
Electronics Research, Inc.

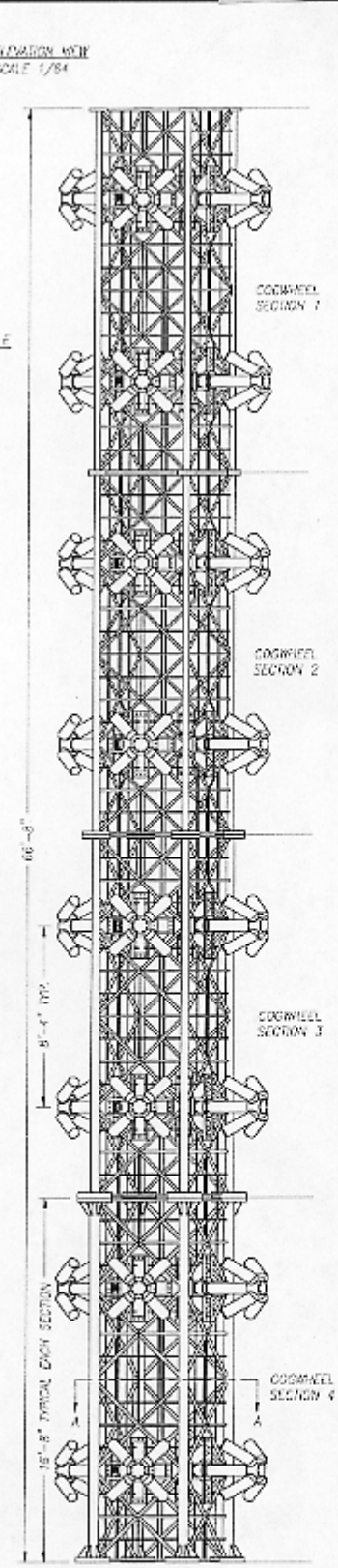
STATE OF MARYLAND
THOMAS B. SILLIMAN
No. 12313
REGISTERED
PROFESSIONAL ENGINEER

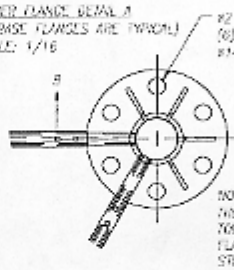
Feb 18, 2005

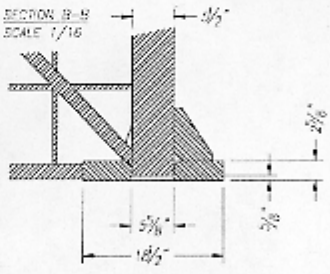
55 Years 1943 - 1998

FIGURE #1









COG SPINE DESIGN NOTES

1. SPINE DESIGNED FOR A 130 MPH (FASTEST MILE) (K_z=2.58, G_t=1.0) BASIC WIND SPEED IN ACCORDANCE WITH THE ANSI/EIA-TIA-222-F STANDARD AND 100 PSF IN ACCORDANCE WITH EIA RS-222-C STANDARD.

2. WELD TOGETHER COG SPINE TOWER SECTIONS HAVE BOLTED CONNECTIONS. CONNECTIONS USE GALVANIZED A-325 BOLTS, NUTS AND LOCKING DEVICES AND A354 GRADE BC BOLTS, NUTS AND LOCKING DEVICES AT BASE CONNECTION TO SUPPORTING TOWER STRUCTURE. INSTALLATION PER EIA-222-F AND AISC SPECIFICATIONS.

3. COG SPINE MEMBERS ARE "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A-123 AND A-153 STANDARDS.

4. ALL STEEL IS ASTM A572 GRADE 50 OR EQUAL.

5. WELDS ARE FABRICATED WITH ER-70S-6 ELECTRODES.

6. LISTED WEIGHTS (INCLUDING ALL ANTENNA ELEMENTS AND FEED LINES) ARE ESTIMATES TO BE USED FOR INSTALLATION ERECTION PLANNING ONLY. IT SHALL BE THE RESPONSIBILITY OF THE ERECTOR TO VERIFY ALL SECTION WEIGHTS AT GROUND LEVEL PRIOR TO THE FINAL HOSTING OPERATION.

7. ERI TO SUPPLY A TEMPLATE OF THE BASE CONNECTION TO THE SUPPORTING TOWER MANUFACTURER.

MAXIMUM COG SPINE LEG FORCES (W/P-Δ EFFECTS)

130 MPH - F STD	100 PSF - C STD
MAX COMP. 593.5 K	MAX COMP. 368.6 K
MAX UPLIFT: 624.9 K	MAX UPLIFT: 389.7 K
MAX SHEAR: 25.3 K	MAX SHEAR: 14.8 K

LEGS (ASTM A572-50 S.R.)	#5 1/2"	#4 1/2"	#3 1/2"		
DIAGONALS (ASTM A572-50 S.R.)	#1 3/4"	#1 1/2"	#1 1/4"		
TOP GIRTS (ASTM A572-50 S.R.)			#1 1/8		
BOTTOM GIRTS (ASTM A572-50 S.R.)			#1 1/8		
MID GIRTS (ASTM A572-50 S.R.)			#1 1/8		
HORIZONTALS (ASTM A572-50 S.R.)	#1 1/4"			#1 1/8"	
WEIGHT IN LBS. PER SECTION	14,100 LBS.	10,000	7,900 LBS.		7,400 LBS.

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NO.	REVISION	APP'D	DATE
1	ADDED ANTENNA		2/26/03
2	CHANGED WEIGHTS		2/26/03
3			
4			
5			
6			

NAME ELEVATION LAYOUT
FOR 10345-MANIFEST
DRAWN BY: [illegible] DATE: 2/26/03
CHECKED BY: [illegible] DATE: 2/26/03
APP'D: [illegible] DATE: [illegible]
SIZE: A4 SCALE: NTS
DWG. NO. [illegible] REV. 2