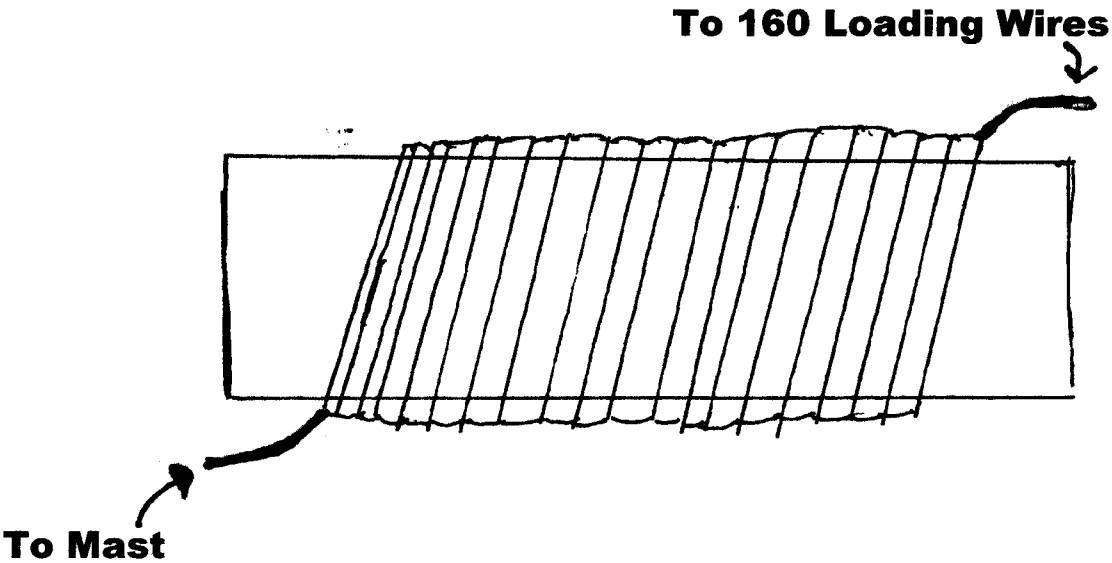
160 Meter Loading Coil

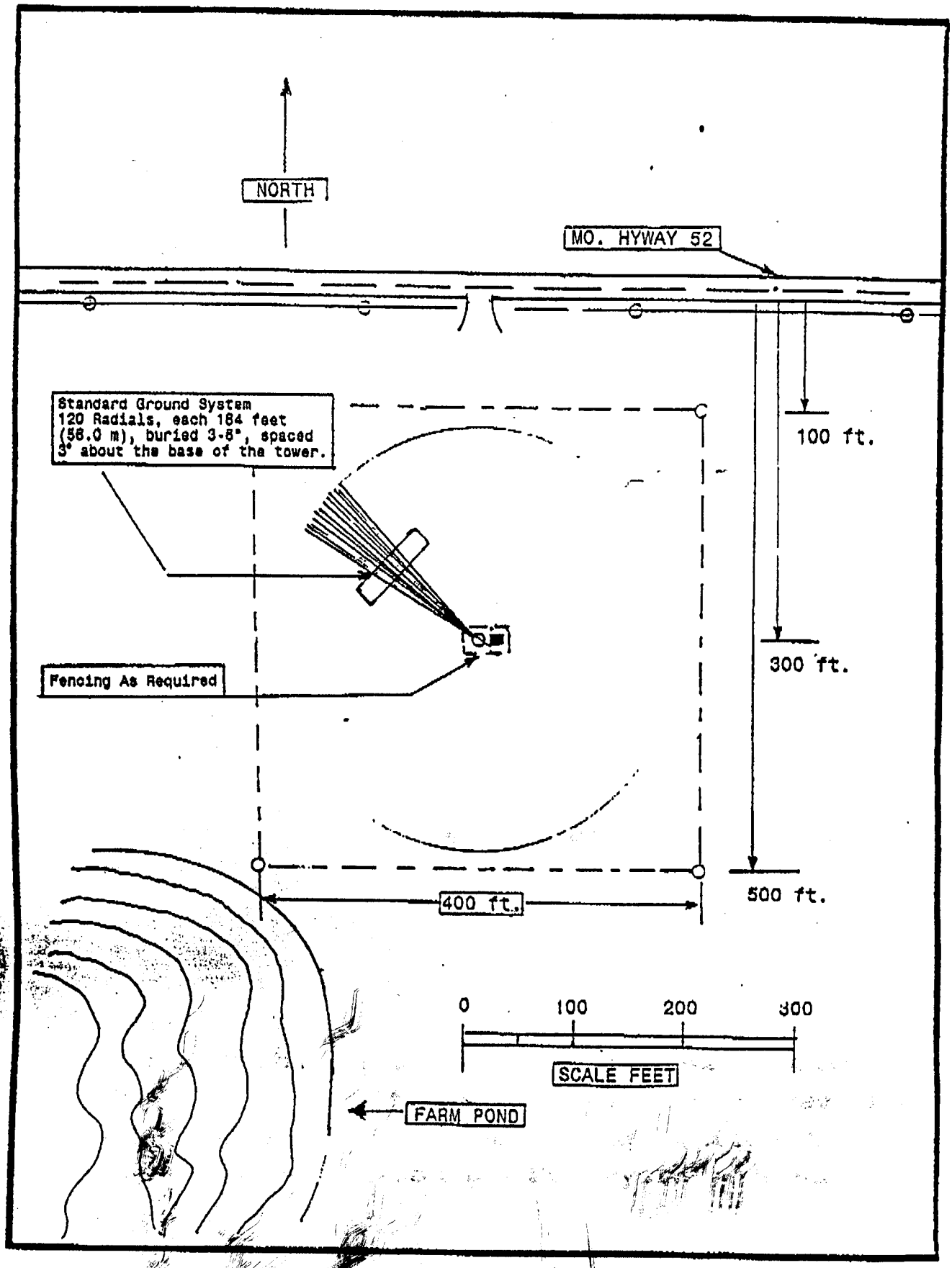
This is the data on the top coil for 160:
Material List:
12" of Schedule 80 PVC, 1" Diameter
16 AWG Wire



The PVC should be turned on a lathe with the following info:

Start 1" from the end,
Coil is 10" long,
8 Turns per inch,
so that you have 1" space from either end of the form.
Fasten coil form to top section of mast with screw (but make sure there is adequate spacing from turns).
Top hat wires are also top set of guys for antenna.

Plat of Site



T.Z. Sawyer Technical Consultants, Chevy Chase, Maryland

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ASSEMBLY INSTRUCTIONS FOR COLATCHCO 80-160TH 42 FT VERTICAL ANTENNA

ASSUMPTIONS:

THIS MANUAL ASSUMES THAT YOU HAVE PURCHASED THE 80-160TH KIT IN ITS COMPLETE FORM AND THAT YOU ARE ASSEMBLING THIS ANTENNA TO OPERATE ON BOTH 80 AND 160. IF THIS IS NOT THE CASE, AND YOU HAVE PURCHASED ONLY PORTIONS OF KIT, WHICH IS YOUR OPTION, SOME OF THE PORTIONS OF THIS MANUAL MAY NOT BE PERTINENT. FOR INSTANCE IF YOU DID NOT BUY THE BP-1 PRE-DRILLED BASE PIPE, YOU WILL HAVE TO IMPROVISE USING THE DRAWINGS SUPPLIED. FURTHER IF YOU DID NOT ORDER THE 160 METER TOP-RESONATOR, AND PLAN TO OPERATE ONLY ON 80 METERS, DISREGARD THE SECTIONS IN THE MANUAL OUTLINING RESONATOR INSTALLATION AND TUNING.

✓1. INSTALL THE 1 5/8" GALVANIZED BASE PIPE IN THE GROUND APPROXIMATELY 2 1/2 FEET. IF A SLEDGE HAMMER IS USED, PROTECT THE TOP OF THE PIPE WITH A HEAVY BOARD TO PREVENT DEFORMATION. THE BOTTOM HOLE IN PIPE SHOULD BE ABOUT 2" ABOVE THE GROUND. MAKE SURE THE PIPE IS "TRUE" VERTICALLY AND FIRMLY IMPLANTED IN TAMPED SOIL.

THE MOUNTING LOCATION MUST ALLOW FOR THE INSTALLATION OF AN ADEQUATE GROUND RADIAL SYSTEM. WE RECOMMEND AT LEAST 20 QUARTER WAVE RADIALS RUN SYMMETRICALLY OUT FROM THE BASE PIPE. THE GREATER THE NUMBER, THE GREATER THE EFFICIENCY OF THE RADIATING SYSTEM. 40 RADIALS ARE GOOD, 60 BETTER, OVER 120 DOES NOT YIELD FURTHER REWARDS. IF YOU CAN NOT GET IN QUARTER WAVE RADIALS DUE TO AREA RESTRICTIONS MAKE THEM AS LONG AS YOU CAN. YOU DO NOT HAVE TO BURY THE RADIALS. WE MAKE AVAILABLE AT $26.00/1000 FT #16 BARE COPPER. YOU CAN ALSO USE INSULATED WIRE PROVIDED THAT YOU SCRAPE THE INSULATION OFF THE ENDS THAT CONNECT TO THE BASE PIPE!

BE SURE THAT THERE ARE NO POWER LINES IN THE VICINITY OF THE ANTENNA SITE. REMEMBER THAT IT SWINGS IN A 42 FT ARC DURING ERECTION PROCESS. DO NOT COURT ELECTROCUTION BY TAKING CHANCES!

✓2. A PAIR OF "U" BRACKETS ARE PROVIDED FOR MOUNTING THE RADIATOR. THE BOTTOM BRACKET IS USED AS THE PIVOT POINT FOR THE ANTENNA DURING THE TILT-UP ERECTION PROCESS.

✓3. USING THE ASSEMBLY DRAWING AS YOUR GUIDE, BOLT THE TWO "U" BRACKETS TO THE BASE PIPE WHICH YOU HAVE JUST INSTALLED, WITH THE 2 1/2" 1/4-20 SS BOLTS, LOCK WASHERS, AND NUTS PROVIDED IN TO THE PRE-DRILLED HOLES OF THE BP-1 PIPE.

BOLT THE HOSE CLAMP RETAINER BRACKET IN THE TOP "U" BRACKET. FIGURE 1 SHOWS MOUNTING DIMENSIONS. BE SURE THAT THE FRONT OF THE "U" FACES IN A DIRECTION THAT WILL ALLOW THE FULL 42 FT. VERTICAL TO BE ASSEMBLED AND THEN TILTED UP INTO PLACE. THIS MEANS THAT YOU MUST CLEAR ALL TREES OR OVERHANGING BRANCHES THAT MIGHT INTERFERE DURING THE ERECTION PROCESS.

4. THE UHF CONNECTOR ASSEMBLY SHOULD BE MOUNTED ON THE SIDE OF THE LOWER "U" BRACKET USING THE #6 MOUNTING HARDWARE SUPPLIED.

5. PLACE THE BOTTOM ANTENNA SECTION ON THE GROUND IN FRONT OF THE LOWER "U" BRACKET WITH INSULATOR TOWARD THE BRACKET. THE 45 DEGREE NOTCH ON THE BOTTOM OF THE INSULATOR SHOULD BE FACING UP.

6. PLACE THE INSULATOR IN THE LOWER "U" BRACKET AND SLIDE THE 3/8" X 2 1/4" PIVOT TUBE THROUGH THE WALL OF THE "U" BRACKET AND THE 3/8" HOLE IN THE BOTTOM INSULATOR. USING THE SS 3" X 1/4-20 BOLT, WASHERS, AND NUT, BOLT THE PIVOT TUBE IN PLACE THROUGH THE BOTTOM "U" BRACKET. THE BOTTOM SECTION SHOULD

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VOT FREELY UP AND DOWN. MAKE SURE THAT IT POINTS IN THE CLEARED DIRECTION!

7. ATTACH THE WIRE FROM THE UHF CONNECTOR TO THE ELEMENT USING A #10 SHEET METAL SCREW. A MOUNTING HOLE HAS BEEN PROVIDED ABOVE THE LOWER INSULATOR.

8. ATTACH THE GROUND SYSTEM TO THE MOUNTING PIPE USING THE REMAINING 2 1/2" SS BOLT, WASHERS AND NUT.

9. INSERT THE 2ND SECTION (1 1/2" WITH INSERT) INTO THE TOP OF THE BOTTOM SECTION AND SECURE WITH A #16 HOSE CLAMP.

10. INSERT THE 3RD SECTION (1 3/8") 3" INTO THE TOP OF THE 1 1/2" TUBE AND SECURE WITH #16 HOSE CLAMP.

11. SLIDE THE 1 1/4" GALVANIZED GUY RING OVER THE 1 1/4" INSERT PROTRUDING FROM THE BOTTOM OF THE 4TH SECTION. THIS GUY RING IN THE FUTURE WILL BE REFERRED TO AS THE "LOWER GUY RING".

12. INSERT THE 4TH SECTION (1 3/8" WITH 1 1/4" INSERT AND LOWER GUY RING) INTO THE TOP OF THE 1 3/8" TUBE. SECURE WITH A #16 CLAMP.

13. INSERT THE REMAINING 1 3/8 SECTION WITH INSERT INTO THE 4TH SECTION AND SECURE WITH A #16 CLAMP.

14. INSERT THE 6TH SECTION (1 1/4") 2 1/2" INTO THE 5TH SECTION AND SECURE WITH A #16 CLAMP.

15. SLIDE THE MIDDLE 1 1/4" GALVANIZED GUY RING OVER THE 1 1/4" SECTION. (SEE STEPS 19, 20 AND 21)

16. INSERT THE 7TH SECTION (1 1/8" X 3') 2 1/2" INTO THE 1 1/4" TUBE AND SECURE WITH A #10 HOSE CLAMP.

17. INSERT THE 8TH SECTION (1" X 3') 2 1/2" INTO THE 1 1/8" TUBE AND SECURE WITH A #10 CLAMP.

18. CUT THREE SECTIONS OF #14 COPPER WIRE EACH 33 FT. IN LENGTH.

19. RUN EACH OF THE THREE 33' WIRES THROUGH A HOLE IN THE GUY RING, TWIST AROUND ITSELF SEVERAL TIMES LEAVING A 8" PIGTAIL.

20. SOLDER A #6 LUG TO EACH PIGTAIL.

21. ATTACH THE LUGS USING A #6 SHEET METAL SCREW TO THE TOP OF THE 1 3/8" SECTION. A MOUNTING HOLE IS PROVIDED APPROXIMATELY 4" BELOW THE TOP OF THIS SECTION.

22. ATTACH AN EGG INSULATOR TO THE REMAINING END OF EACH WIRE.

23. ATTACH THREE SECTIONS OF INSULATING LINE TO EACH EGG INSULATOR. WE HAVE PROVIDED IN THE 80-160TH KIT 250 FEET OF PRE-STRETCHED 1/8" POLYESTER LINE WHICH SHOULD BE ADEQUATE FOR THE LOWER GUYS AND FOR THE MIDDLE AND UPPER GUY "TAILS". THE EXACT LENGTH OF THE POLYESTER SECTIONS WILL VARY IN INDIVIDUAL SITES. ONE SUGGESTION WOULD BE TO USE ANY STANDARD HEAVY TWINE FOR THE FIRST

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ERECTION PROCESS TO DETERMINE THE EXACT LENGTH NEEDED AND THEN TO REPLACE BY THE POLYESTER LINE IN THE FINAL ERECTION AND TIGHTENING PROCESS. THE POLYESTER SHOULD BE "HOT KNIFED" TO SEAL THE ENDS.

24. ATTACH THREE LENGTHS OF INSULATING GUY LINE TO THE LOWER GUY RING.

25. INSERT THE END OF THE 160 METER RESONATOR 2 1/2" (SEE NEXT SECTION) INTO THE TOP OF 8TH SECTION AND SECURE WITH A #10 HOSE CLAMP.

26. CUT THREE 33' SECTIONS OF #16 COPPER WIRE AND ATTACH TO THE TOP 7/8" GALVANIZED GUY WASHER AS OUTLINED IN SECTIONS 18 THROUGH 25. THE TOP WASHER SLIDES OVER THE UPPER PART OF THE TOP RESONATOR SECTION. ATTACH THE LUGS WITH A #6 SHEET METAL SCREW IN THE HOLE PROVIDED. THE GUY RING SHOULD BE BELOW THE SCREW WITH THE PIGTAILS POINTING-UP. THIMBLES HAVE BEEN PROVIDED FOR THIS GUY RING.

27. AGAIN INSTALL EGG INSULATORS ON THE COPPER WIRE ENDS AND SUITABLE LENGTHS OF INSULATING GUYLINES.

28. INSERT AN OPEN #28 HOSE CLAMP THROUGH HOSE CLAMP BRACKET IN THE UPPER "U' BRACKET.

* 29. PUSH THE VERTICAL UP INTO PLACE AND SECURE WITH THE #28 HOSE CLAMP.

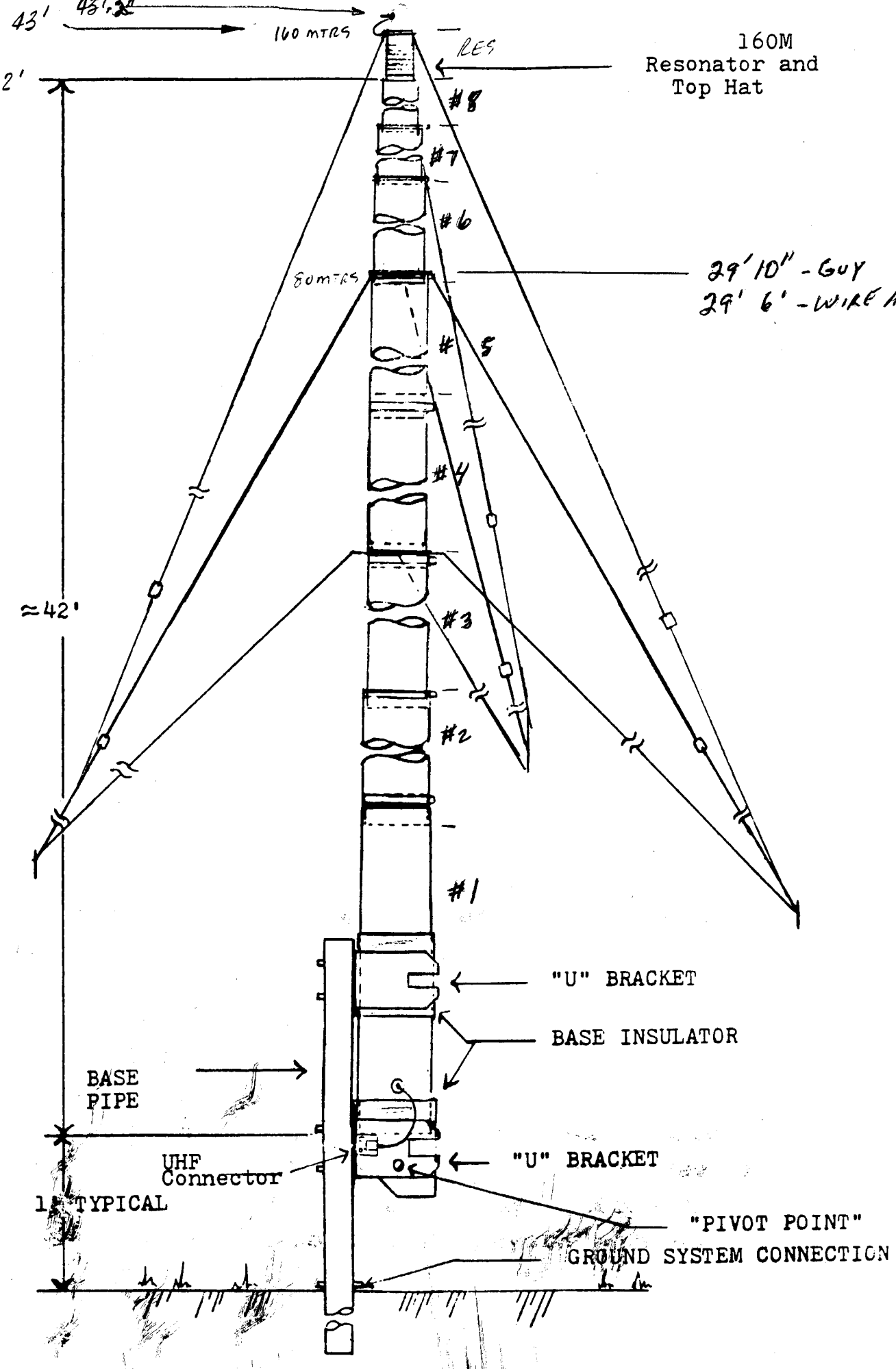
30. THE GUY ANCHOR LOCATION IS CRITICAL TO SURVIVE HIGH WINDS. THE ANCHORS SHOULD BE WELL IN TO THE SOIL. LIVESTOCK AUGER TETHERS WILL WORK IN MOST SOIL CONDITIONS. THE ANCHORS SHOULD BE POSITIONED 120 DEGREES APART IN A CIRCLE CENTERED ON THE BASE PIPE AT A RADIUS OF AT LEAST 35 FEET FROM THE BASE. ONE ANCHOR SHOULD BE DIRECTLY BEHIND THE "U" BRACKET. CLEAR ANY LIMBS THAT MAY FALL ON THE GUY LINES IN BAD WEATHER.

31. MAKE A QUICK CHECK TO DETERMINE THE LENGTH OF THE TEMPORARY GUY LINES. LOWER THE ANTENNA AND REPLACE WITH THE POLYESTER 1/8" LINE. ALLOW AT LEAST 10 FEET EXTRA IN CASE YOU NEED IT LATER !

32. RE-ERECT THE ANTENNA AND WITH THE POLYESTER GUYS AND GUY TAILS AND WITH AN OBSERVER UNDER THE ANTENNA, FIRST TIGHTEN THE BOTTOM SECTION BELOW THE LOWER GUY RING AND THEN THE MIDDLE SECTION AND FINALLY THE TOP SECTION.

33. FOR THE TUNING PROCESS, INSTALL THE 2:1 MATCHING TRANSFORMER AT THE UHF CONNECTOR AT THE BASE AND FEED THE ANTENNA THROUGH A VSWR METER AT THE INPUT TO THE TRANSFORMER WITH A BAREFOOT EXCITER, PREFERABLY ACCESSIBLE TO THE BASE. SWING THROUGH 80 METERS LOOKING FOR A DIP IN THE VSWR. TUNE TO THE CENTER FREQUENCY YOU WANT BY CHANGING THE LENGTH OF THE WIRES ON THE BOTTOM GUYS. SHORTENING THE WIRES WILL RAISE THE CENTER FREQUENCY AT ABOUT 100 KHZ PER FOOT. REPEAT THE STEPS AT 160 VARYING THE LENGTH OF WIRES IN THE UPPER GUYS. SHORTENING THE TOP GUYS 1 FOOT ON 160 SHOULD RAISE THE CENTER FREQUENCY APPROXIMATELY 25 KHZ. WITH THE ORIGINAL LENGTH THE RESONANT FREQUENCY SHOULD FALL BELOW THE BAND IT MAY BE NECESSARY TO REPEAT THE PROCEDURE ON 80.

* 35. MAKE SURE THAT ALL THE GUYS ARE TAUT AFTER THE TUNEUP IS FINISHED. TO PREVENT TANGLING, IT IS SUGGESTED THAT THE GUYS ETC. BE TEMPORARILY TAPED TO THE BASE BEFORE ERECTION. THE UPPER COPPER "TOP HAT" WIRES CAN HANG UP ON THE TOP HOSE CLAMP, IF YOU ARE NOT CAREFUL.



DUAL BAND 80-160 TH ANTENNA

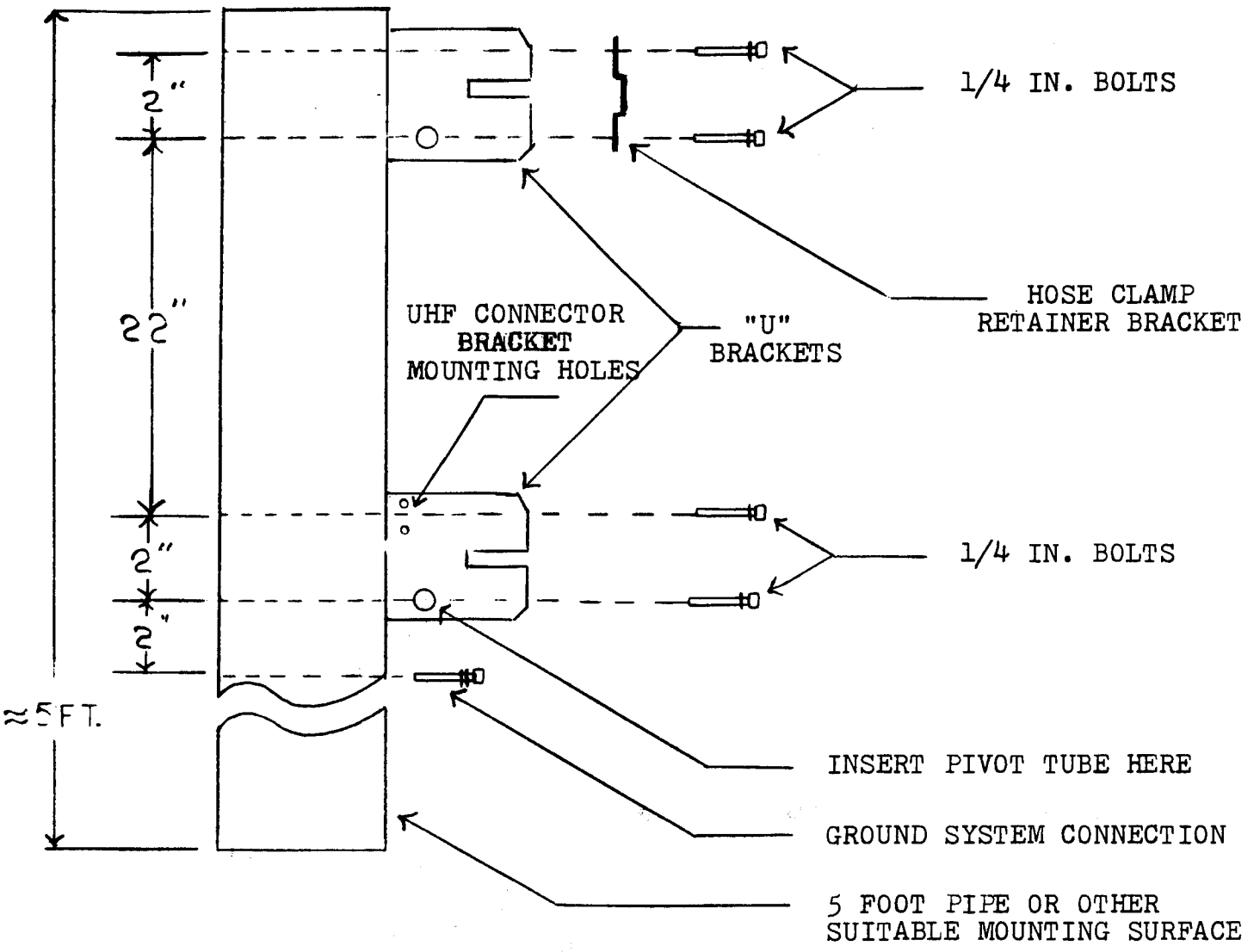
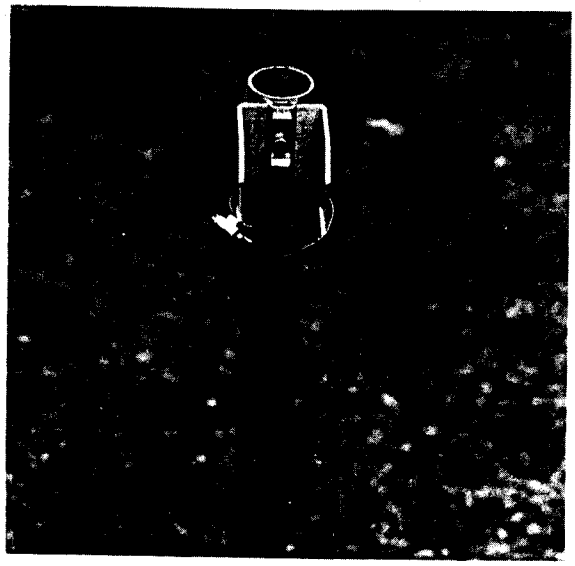
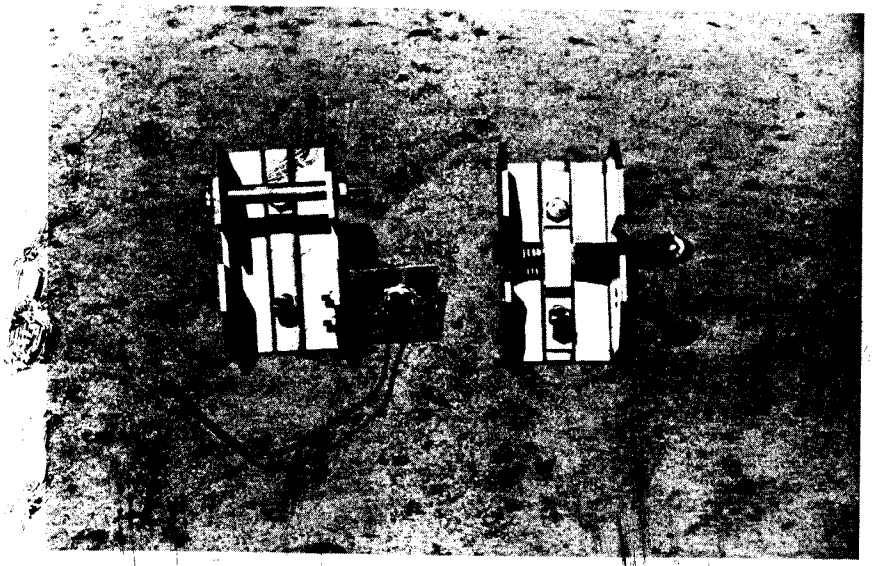


FIGURE "U" BRACKET MOUNTING

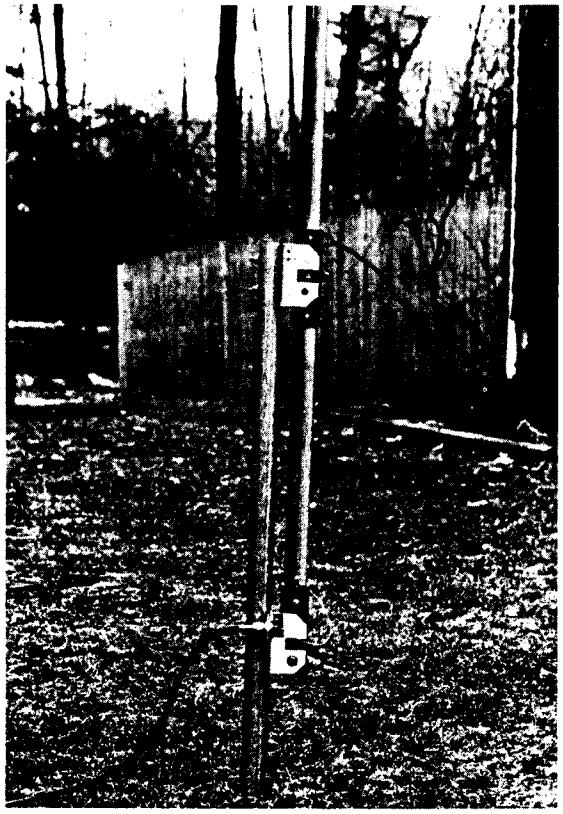


Top "U" bracket
and clamp assembly

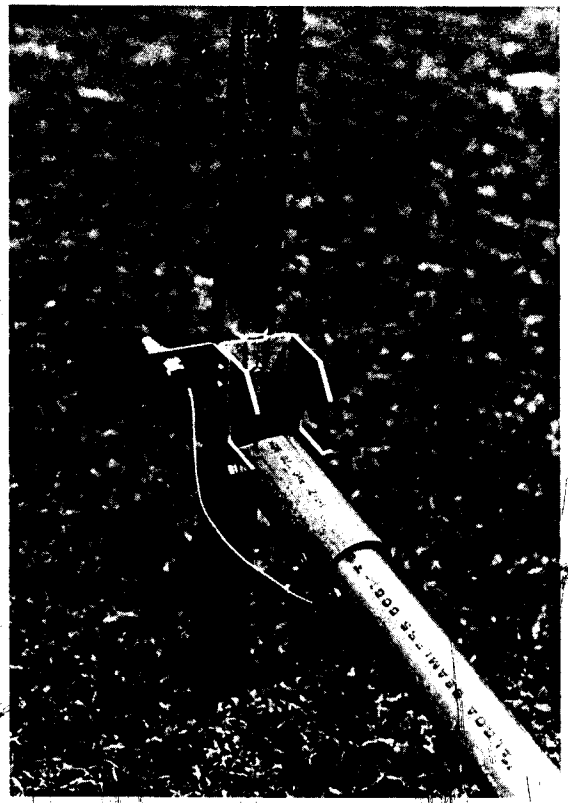
160 meter
"Top Hat"
and guy ring
assembly



Top and bottom
"U" bracket
assembly



Base mounting pipe
and vertical assembly



Lower "U" bracket
and pivot assembly

80-160TH VERTICAL PARTS LIST:

	DESCRIPTION	QUANTITY	REPLACEMENT UNIT PRICE
1	BASE SECTION 1 1/2" D X 6' W/INSULATORS	1	$35.00
2	TUBING 1 1/2" X 6' W/SLEEVE	1	$21.00
3	TUBING 1 3/8" X 6'	1	$17.00
4-5	TUBING 1 3/8" X 6' W/SLEEVE	2	$19.00
6	TUBING 1 1/4" X 6'	1	$13.90
7	TUBING 1 1/8" X 3'	1	$ 7.50
8	TUBING 1" X 3'	1	$ 7.10
	"U" BRACKET	2	$ 7.00
	HOSE CLAMP BRACKET	1	$ 3.00
	PIVOT TUBE 3/8" X 2 1/4"	1	$ 1.00
	#28 SS HOSE CLAMP	1	$ 1.40
	#16 SS HOSE CLAMP	5	$ 1.40
	#12 SS HOSE CLAMP	1	$ 1.30
	#10 SS HOSE CLAMP	1	$ 1.30
	UHF CONNECTOR/BRACKET	1	$ 7.00
	#10 SS SHEET METAL SCREW	1	$ .20
	1/4-20 X 2" SS BOLT	5	$ .60
	1/4-20 X 3" SS BOLT	1	$ .60
	1/4" LOCK WASHER	6	$ .20
	1/4-20 SS NUT	6	$ .20
	1/4" FLAT SS WASHER	8	$ .20
	#14 COPPER WIRE	100 FT.	$ 4.00
	#16 COPPER WIRE	100	$ 4.00
	1 1/4" GALVANIZED STEEL GUY RING	2	$ 2.50
	7/8" GALVANIZED STEEL GUY RING		$ 2.50

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#6 SOLDER LUG	6	$ .20
THIMBLE	3	$ .60
EGG INSULATORS	6	$ .60
#6 SS SHEET METAL SCREW	2	$ .20
1 5/8" X 5' PRE-DRILLED GALVANIZED BASE PIPE (BP-1)	1	$15.00
80-160 DUAL BAND ENCAPSULATED MATCHING TRANSFORMER	1	$30.00
160 METER TOP-HAT ENCAPSULATED RESONATOR	1	$53.00
1/4" POLYESTER PRE-STRESSED GUY LINE	250 FT.	$18.00
#16 AWG COPPER WIRE FOR RADIALS (OPTIONAL)		$26.00/1000 FT.

WARRANTY

ANY PRODUCT MANUFACTURED BY COLATCHCO, INC. IS GUARANTEED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP. SHOULD A PRODUCT FAIL TO OPERATE ACCORDING TO ITS DESIGNED FUNCTION WITHIN 90 DAYS FROM THE DATE OF PURCHASE, WHILE BEING OPERATED UNDER NORMAL USE AND CONDITIONS, AND UNDER THE INSTRUCTIONS AND CONSTRAINTS ISSUED BY COLATCHCO, INC., COLATCHCO, INC. WILL REMEDY THE DEFECT. NOTICE OF MALFUNCTION MUST BE MADE PROMPTLY IN WRITING INCLUDING CONFIRMATION THAT THE PRODUCT WAS PROPERLY INSTALLED AND OPERATED WITHIN THE LIMITS OF COLATCHCO, INC. INSTRUCTIONS AND CONSTRAINTS AND DETAILED FACTS CONCERNING THE MALFUNCTION. ITEMS JUDGED BY COLATCHCO, INC. TO BE DEFECTIVE UNDER THE TERMS OF THIS WARRANTY AGREEMENT WILL BE RETURNED TO COLATCHCO, INC. TRANSPORTATION PREPAID, WHERE IT WILL BE REPAIRED OR REPLACED, FREE OF COST. REPAIRED OR REPLACED ITEMS WILL BE RETURNED TRANSPORTATION PREPAID BY COLATCHCO, INC. THIS WARRANTY DOES NOT OBLIGATE COLATCHCO, INC. TO REPLACE OR RECONDITION A TOTAL ASSEMBLY, BUT IS LIMITED TO DEFECTIVE PARTS ONLY.
COLATCHCO, INC. ASSUMES NO RESPONSIBILITY FOR ANY CLAIMS OR DAMAGES ARISING OUT OF LOSS OF USE, OR ANY OTHER RELATED DAMAGES TO ANY DEFECT OF ANY PART OF THE PRODUCT, AND SHALL BE HELD HARMLESS BY THE BUYER OF SAID PRODUCTS FROM HIS CLAIMS OF THOSE OF ANY THIRD PARTY. THIS WARRANTY APPLIES ONLY TO THE FIRST BUYER OF THE PRODUCT.

THIS WARRANTY IS THE COMPLETE OBLIGATION OF COLATCHCO, INC. AND SPECIFICALLY DENIES ANY OTHER EXPRESS OR IMPLIED WARRANTY RELATIVE TO THIS PRODUCT. 06/19/84

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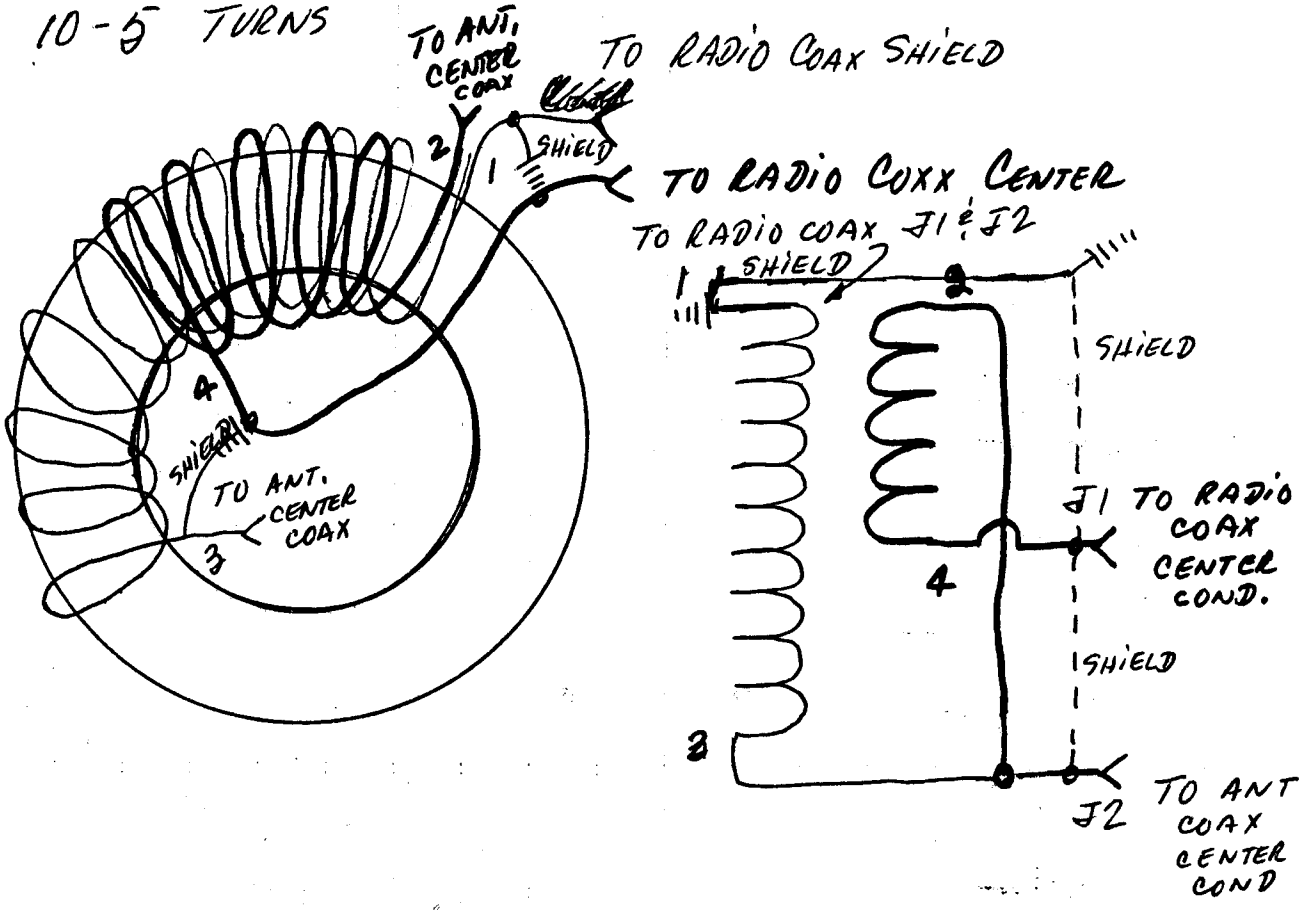
10 - 5 TURNS
TO ANT. CENTER COAX
TO RADIO COAX SHIELD
SHIELD
TO RADIO COXX CENTER
TO RADIO COAX J1 & J2
SHIELD
SHIELD
J1 TO RADIO COAX CENTER COND.
SHIELD
J2 TO ANT COAX CENTER COND
TO ANT. CENTER COAX
1
2
3
4

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MODEL 80-160TH DUAL BAND VERTICAL SYSTEM

GENERAL DESCRIPTION

The ColAtchCo 80-160TH is an omnidirectional vertical radiator. An encapsulated resonator at the top of the vertical acts as a loading coil on 160 and as a "trap" on 80. No bandswitch is necessary! The 80-160TH is easily erected, uses a tilt-up base, and is U.P.S. shippable.

SPECIFICATIONS

Mechanical (See drawing on reverse page)

Radiator Height	42 Ft. (approximately)
Construction	6061-T6 Aluminum Tubing
Hardware (Note 2)	Stainless Steel plus galvanized steel guy washers
Guying	3 sets of lightweight guys used. The top level acts as "top hat" on 160, the middle set on 80. "TH" System supplied with over 250' low stretch 1/8" polyester line
Weight	Approximately 30 lbs. (including base mounting pipe)

Electrical (Note 1)

Pattern	Low angle, omnidirectional, vertical radiation pattern
Frequency Bands (Note 2)	Antenna operates on both 80M and 160M when the "160TL" resonator is used.
Power Capability:	Over 2KW
Input Impedance (Note 2)	Approximately 20 to 30 ohms, 40 to 60 ohms when used with 80-160M matching transformer
Bandwidth	
80 Meters	Approximately 200 kHz (Adjustable)
160 Meters	Approximately 60 kHz (Adjustable)

Note 1: A suitable ground system is required under any vertical antenna. ColAtchCo recommends a minimum of 20 quarterwave radials. If space does not permit, then a greater number of shorter radials may be used at some reduction in efficiency. Input impedance and bandwidth are both affected by the ground system. Radials not supplied.

Note 2: The "TH" Antenna System is supplied with a 50 ohm dual-band toroidal matching transformer, (Model 80-160M), base mounting pipe (BP-1) and 160 meter resonator (160TL).

9/4/84
P. O. Box 230 Carlisle, MA 01741 617-371-1242