INSTRUCTION MANUAL
for
Model 66B (343)

6 Meter 6 Element Beam

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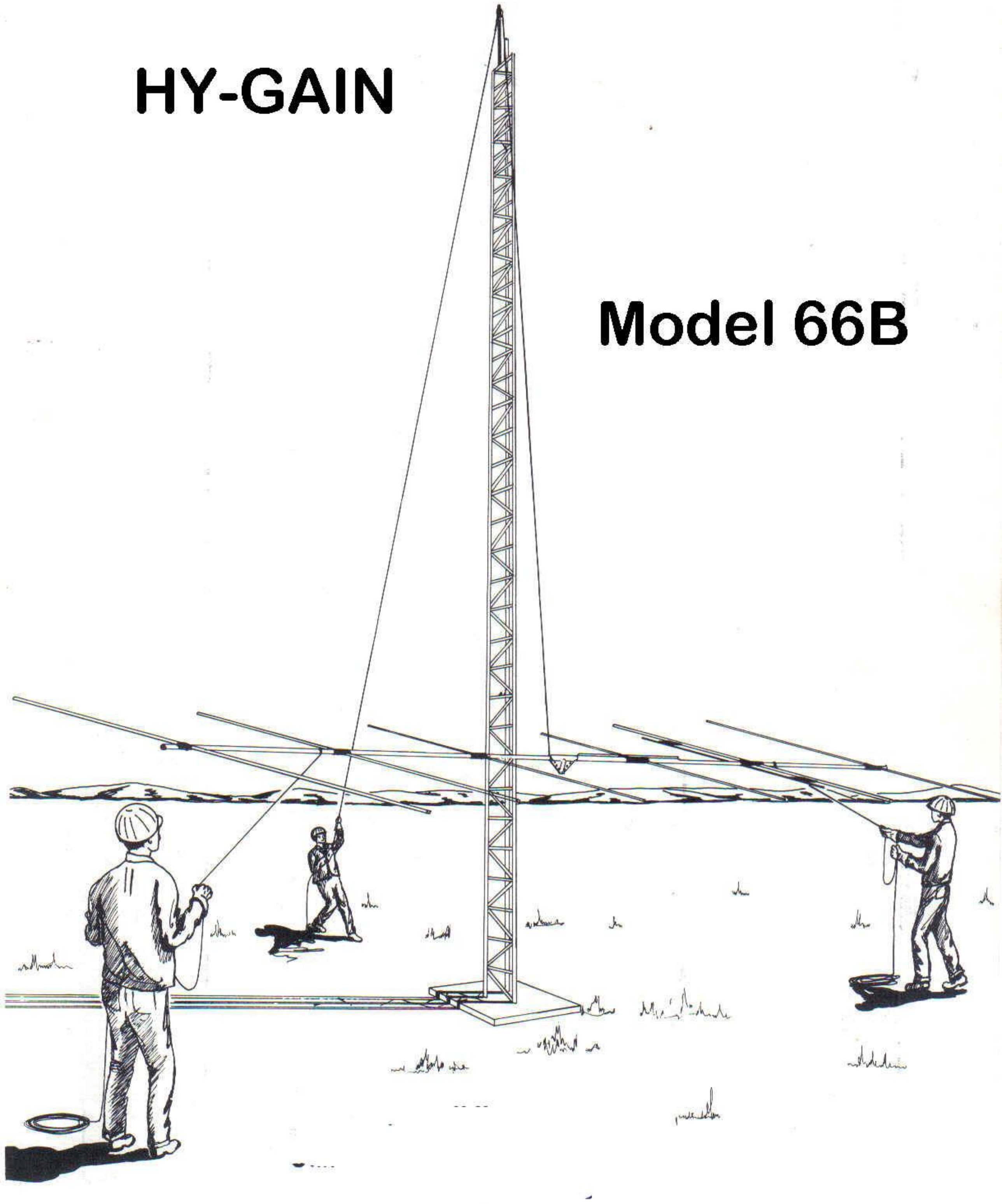
HY-GAIN

Model 66B



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CAUTION

Read this entire manual BEFORE beginning the assembly of the antenna. This will help you become familiar with the parts and greatly simplify the assembly. If you do this it will allow you to get "on the air" in a minimum of time.

Assembly of the Elements. (Figures 5, 6, and 7.)

( ) Select the element to boom brackets (the ten small brackets) and LOOSELY assemble on the boom as illustrated in Figure 5 using 1/4-20 x 3/4" bolts, lockwashers and nuts and 1/4-20 x 1/2" taper point screws. Place the brackets in their approximate position on the boom.

NOTE

Refer to Figure 5 for assembly of the Element brackets. Do not tighten the taper point anchor screws at this time.

( ) Select the 5/8 x 7 7/16" reinforcing tubing and slip them into the brackets assembled on the boom. Tighten the 1/4-20 x 3/4" screws holding the tubing. The Driven Element does not require reinforcing tubing.

( ) Select the Reflector elements and the 1/2" compression clamps. Slip the compression clamps over the 5/8 x 77/16" tubing in the bracket on the reflector and of the boom. Slip the Reflector elements into the reinforcing tubing, adjust to the desired dimensions and tighten the compression clamps using 10-24 x 5/16" screws, nuts and lockwashers.

NOTE

The compression clamps used in this antenna are a universal device and are used in many varied applications. Depending upon the application, the screw head may or may not contact the lockwasher or clamp body. DO NOT Over Tighten the clamps in an attempt to contact the clamp body with the screw head. To do so may result in clamp failure or tube failure caused by puncture.

( ) Select the Driven Element to boom brackets (the two larger brackets). Assemble the Beta Match to bracket clamp to one of these brackets. See Figure 5. Loosely assemble both brackets to the approximate Driven Element location as shown in Figure 6. An installed view of the Beta Match is shown in Figure 7.

( ) Assemble the Directors in the same manner.

( ) Place the Driven Element insulators in the D.E. bracket, slip the elements into the insulators to the desired dimensions and tighten the 1/4-20 x 3/4" screws holding the tubing.

( ) Locate all of the elements in the correct position on the boom, insure the elements are in a plane parallel to the earth when the antenna is erected and tighten the anchor screws securely. This will indent the boom preventing the elements from twisting.

Assembly of the Beta Match and Balun (Figure 7)

( ) Select the Beta Match tube (7/16 x 56 1/2") and the three Beta supports and install on the Driven Element.

( ) Select the balun and the balun to Driven Element clamps and attach the balun to the Driven Element as illustraded.

NOTE

The center conductors of the balun connect to the Driven Elements and the braid connects to the bracket as shown in the illustrations.

( ) Securely tape the balun to the boom using waterproof tape. Weather proof the balun connections with Neoprene, Pli-O-Bond, or some similar substance.

Final Assembly

( ) Place a 7/16" caplug on the end of each element and on the ends of the Beta Match tube.

( ) Connect the coaxial feedline (RG-8/U polyfoam is recommended) to the Driven Element as shown in Figure 7. The center conductor of the coax connects to the Driven Element and the braid connects to the bracket.

( ) Run the coax feedline to the mast taping it securely to the boom every six inches with waterproof tape. Weatherproof the coax connection with Pli-O-Bond, Neoprene or some similar substance.

( ) Install the antenna on the mast using one of the methods suggested in this manual. To further insure that the boom-to-mast bracket will not slip, drill a 5/16" hole in the mast and pin the bracket using the 5/16-18 x 3 1/2" screw. Refer to Figure 4. Tighten all boom-to-mast bracket screws securely.

Lightning Protection

To porperly protect the Hy-Gain Model 66B the supporting structure MUST be grounded. A good ground will also insure the most noise free reception possible. To ground the supporting structure, connect its base to a proper ground with copper braid or with #10 or larger (lower number) copper or aluminum wire.

A proper ground consists of one or more 1/2" x 8' copperclad steel ground rods driven into the earth as closely as possible to the supporting structure. Eight feet represents the minimum depth necessary to get a good ground.

For total protection of the equipment, it is strongly recommended that a Hy-Gain Model LA-1 Lightning Arrestor be installed in the feedline. The LA-1 is available from any local Hy-Gain dealer.

PARTS LIST

Part No.	Description	Qty
102734	Bracket, Cast Aluminum	2
114781	Reflector #1, 7/16 x 52"	2
161409	Bracket, Parasitic Element-to-Boom	10
163764	Bracket, Driven Element-to-Boom	2
172732	Clamp, Boom-to-Bracket	1
172735	Bracket, Casting-to-Boom	1
172801	Boom Section, 2 x 75"	1
172922	Director, 7/16 x 47"	8
172936	Boom Section, 2 x 66"	1
172937	Boom Section, 2 x 84"	1
175661	Boom Section (Inside), 2 x 75"	1
175669	Beta Tube, 7/16 x 56 1/2"	1
190002	Reinforcing Tubing, 5/8 x 7 7/16"	10
871740	Balun Assembly	1
172802	Driven Element, 7/16 x 54 3/8"	2
873574	Parts Pack "A" contains the following:	
162728	Clamp, Beta Match-to-Bracket	1
165123	Compression Clamp, 1/2"	10
165217	Tubing Clamp, Balun and Coax Connection	4
165641	Clamp, Beta-to-Element	2
455625	Caplug, 2"	2
465216	Insulator, Driven Element	2
475639	Caplug, 7/16"	14

Part No.	Description	Qty
501541	Screw, 5/16-18 x 3 1/2"	3
501543	Screw, 5/16-18 x 5"	4
873575	Parts Pack "B" contains the following:	
505671	Screw, 10-24 x 5/16"	10
506325	Screw, 1/4-20 x 3/4"	57
506480	Screw, 10-24 x 5/8"	4
506890	Screw, 1/4-20 x 3/8"	1
509160	Screw, 1/4-20 x 2 1/4"	2
509173	Screw, 5/16-18 x 2 1/2"	2
548684	Screw, 1/4-20 x 1/2" Taper Point	11
555362	Nut, 10-24 Square	10
556945	Nut, 5/16-18 Hex	9
556960	Nut, 1/4-20 Hex	60
556970	Nut, 10-24 Hex	4
558685	Nut, 1/4-20 Square	12
566664	Lockwasher, 5/16" Split	9
567085	Washer, 5/16" Flat	9
567110	Lockwasher, 1/4" Internal	60
567125	Lockwasher, No. 10 Internal	15

SECTION 1

GENERAL DESCRIPTION

General The Hy-Gain Model 66B is a full sized 6 element 6 meter beam. The elements are optimum spaced for maximum gain and the antenna is equipped with Hy-Gains exclusive Beta Match and Balun to insure maximum transfer of electrical energy. The Model 66B is designed to fit a 1 5/8" OD mast. Plumbers pipe (1 1/4") has an OD of 1 5/8" and is highly recommended for masting purposes.

Specifications

ELECTRICAL:

Gain	15 db
Front-to-Back Ratio	20-25 db
Maximum Power	1 KW AM 2 KW PEP
Input Impedance	52 ohms
Lightning Protection	DC ground

MECHANICAL:

Longest Element	9' 9"
Element Diameter	7/16"
Boom Length	24' 5 3/4"
Turning Radius	12' 6"
Boom Diameter	2"
Maximum Wind Survival	100 mph
Net Weight	17 lbs
Mast Diameter	1 5/8" OD
Wind Surface Area	2.4 sq. ft.
Wind Load (80 mph)	61.5 lbs.

NOTE

When unpacking your antenna, check the inside of all tubing for parts (clamps, insulators, smaller tubing, etc.). To conserve space, these smaller articles are sometimes put inside larger pieces.

SECTION 2

ASSEMBLY AND INSTALLATION

Installation Considerations One of the most important factors in superior VHF reception is antenna height. In general, the higher the VHF antenna is mounted above general terrain, the better its day to day performance and range. For maximum performance it is recommended that the antenna be mounted a minimum of 18' above the earth. If at all possible, it should be in the clear with no obstructions between it and the horizon. In any case, the beam should not be closer than six feet to any other surrounding object if the design performance is to be obtained.

Preparation for Assembly Before rushing into the assembly of this antenna, please take a moment to read this paragraph. Hy-Gains Model 66B is a fairly large antenna and requires some consideration as to how to mount it on the top of a tower or mast. To help you with this problem we have illustrated three methods of hoisting the antenna and suggest that you decide now which one to use. This is important because the way the antenna is lifted into position affects how it is assembled.

Method #1 Completely assemble the antenna on the ground then lift it into position from above or with a single pulley and rope arrangement as shown in Figure 1. This is heavy work and not recommended for any but the calmest of days.

Method #2 The guy wire method of hoisting (Figure 2) is a relatively simple and inexpensive way of installing the antenna. Add a fourth guy wire as shown in the drawing and pull the antenna into position. This method required the fabrication of two boom cradles as shown in the detailed drawing.

Method #3 The suggested method to mount the 66B is to assemble the antenna on the ground. Then separate it into two halves and hoist each half up the tower.

Assembly of the Boom

( ) Select the Cast Aluminum Brackets, the Casting-to-Boom Bracket and the Boom-to-Bracket Clamp. Assemble loosely as shown in Figure 4.

( ) Select the two inside boom sections and slip the unswaged ends into the boom-to-mast bracket. Line up the holes in the boom with the holes in the boom-to-mast bracket and secure as shown in Figure 4.

( ) Select the two outside boom sections and slip the drilled ends onto the swaged ends of the boom sections already assembled. Line up the holes and secure using the two 1/4-20 x 2 1/4" bolts with nuts and lockwashers as shown in Figure 4.

( ) Place a 2" caplug on each end of the boom.

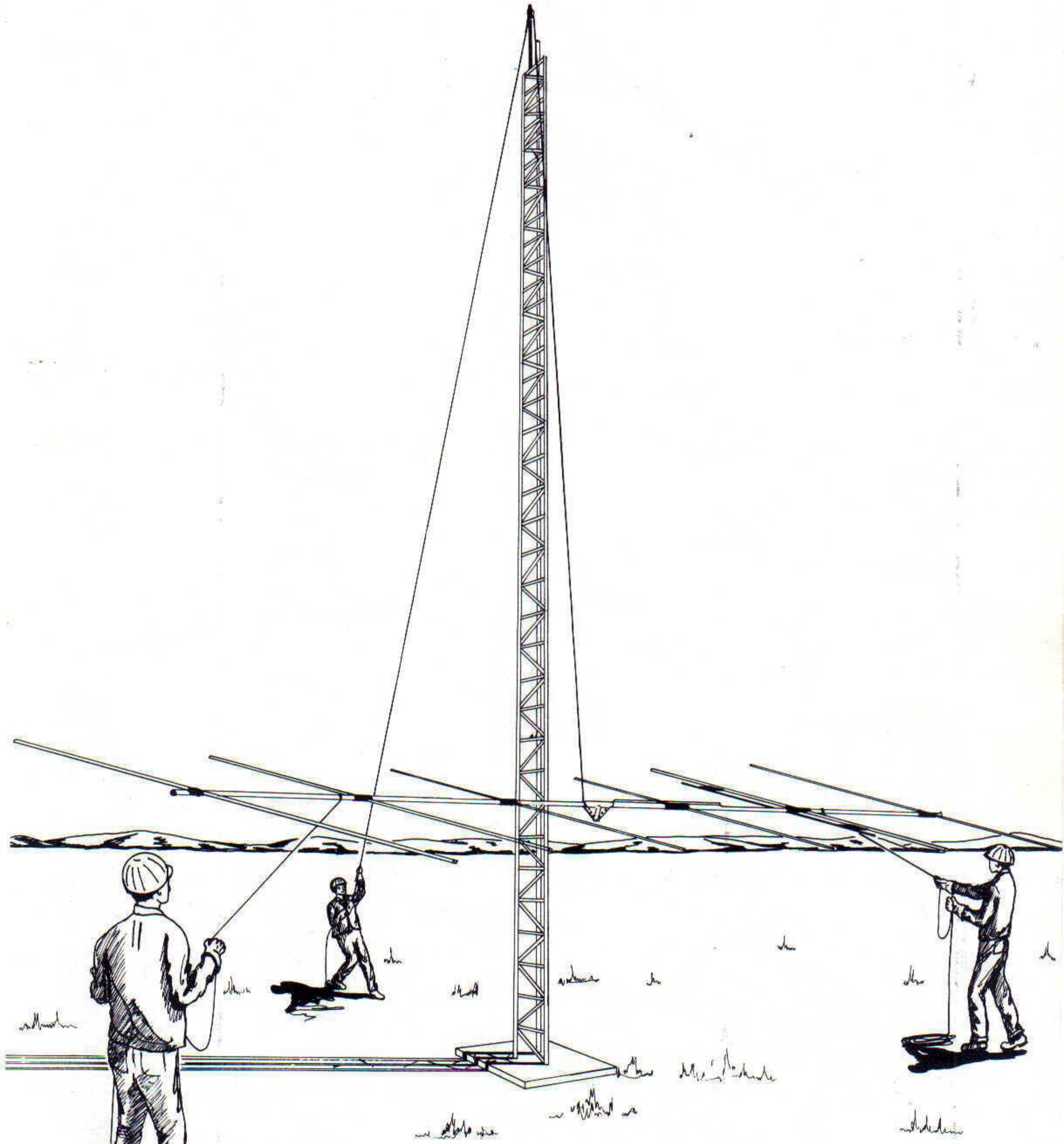


FIGURE 1

COMPLETE ANTENNA HOISTED
BY CABLE OR ROPE

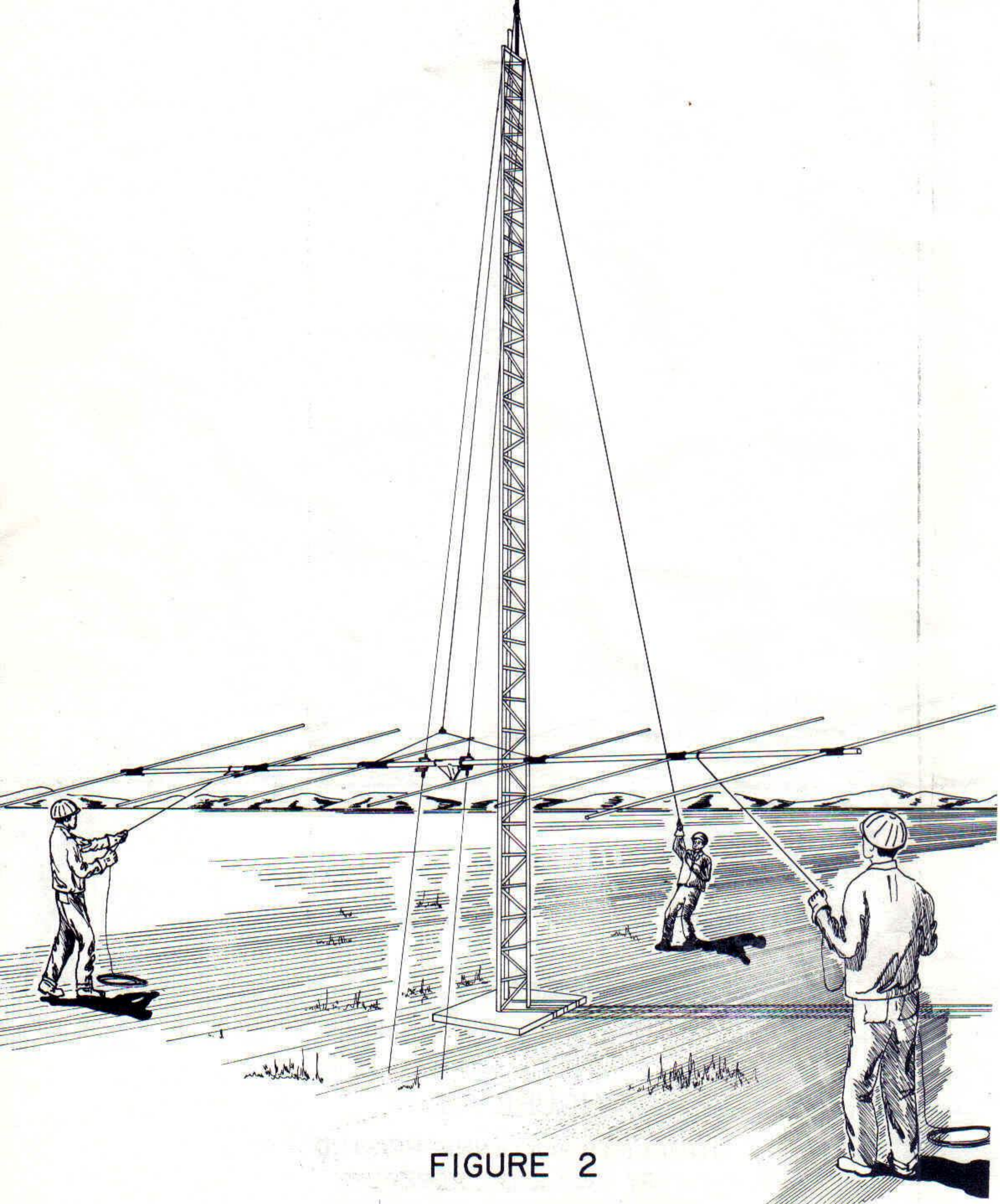


FIGURE 2

COMPLETE ANTENNA USING
GUYING FOR ERECTION

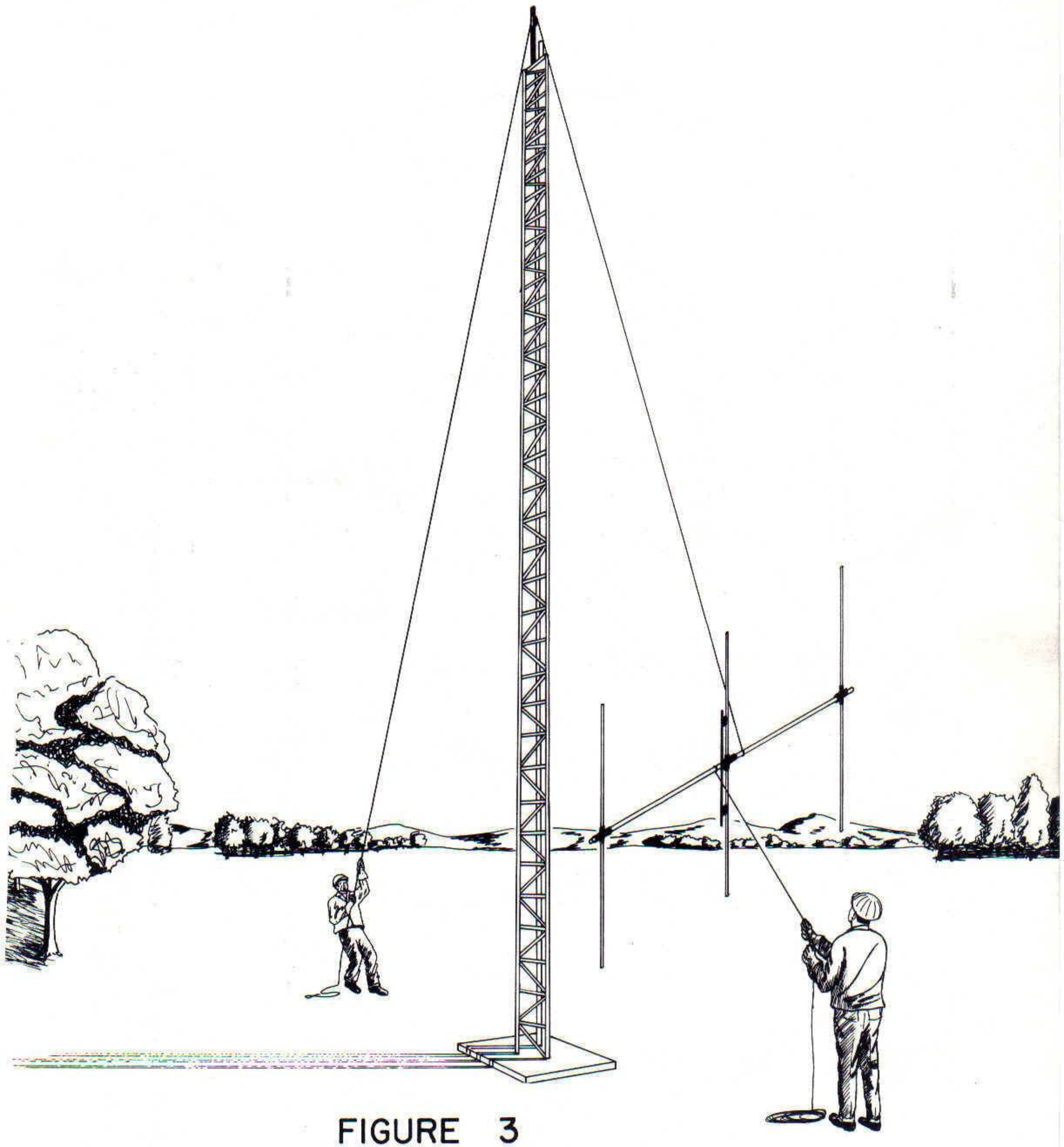
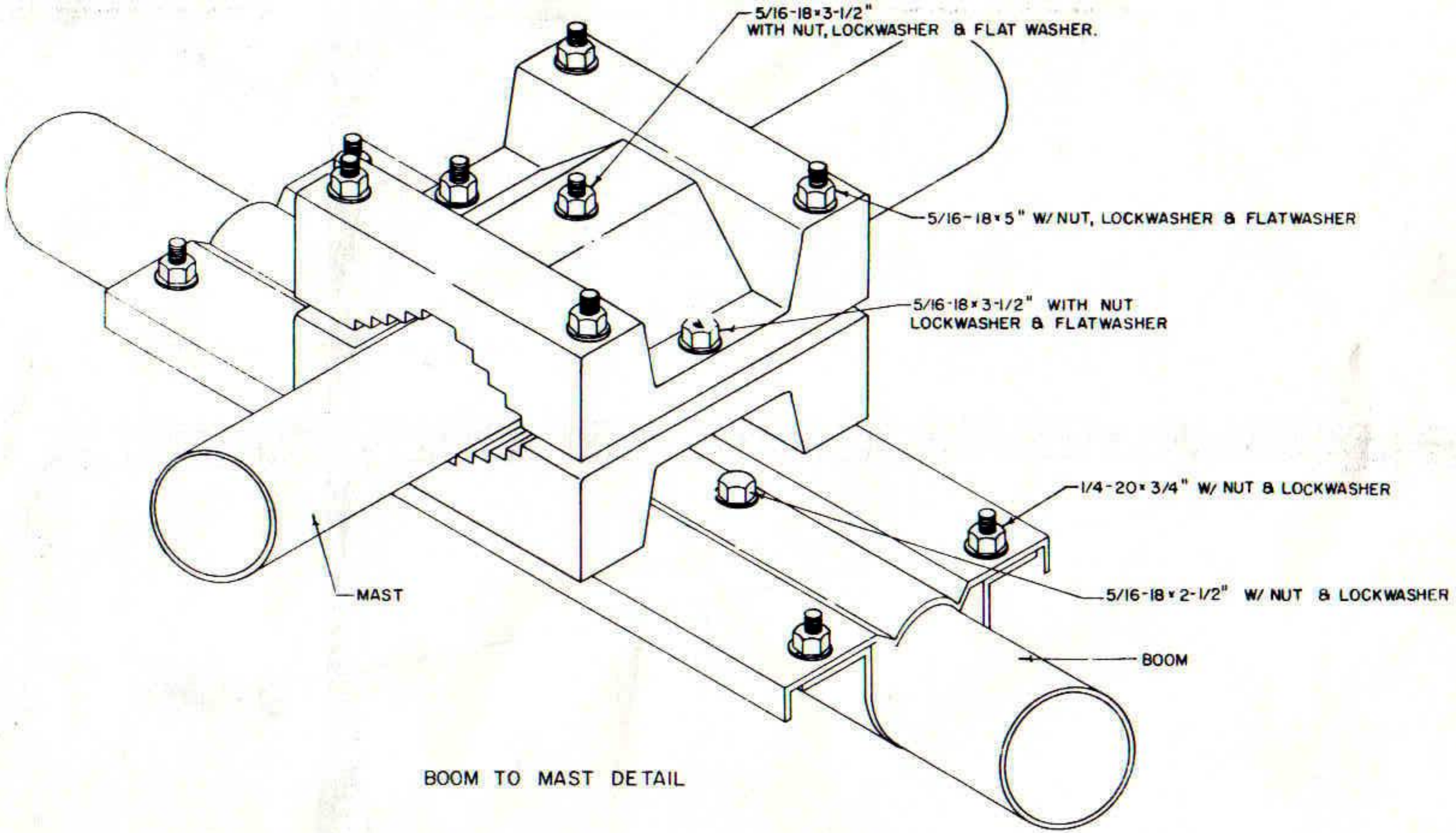
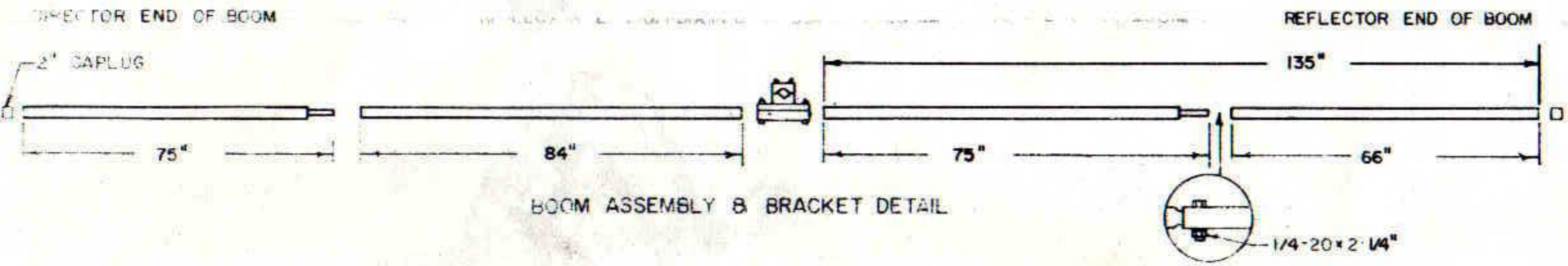


FIGURE 3

ANTENNA SECTION BEING
ERECTED ON
TOWER

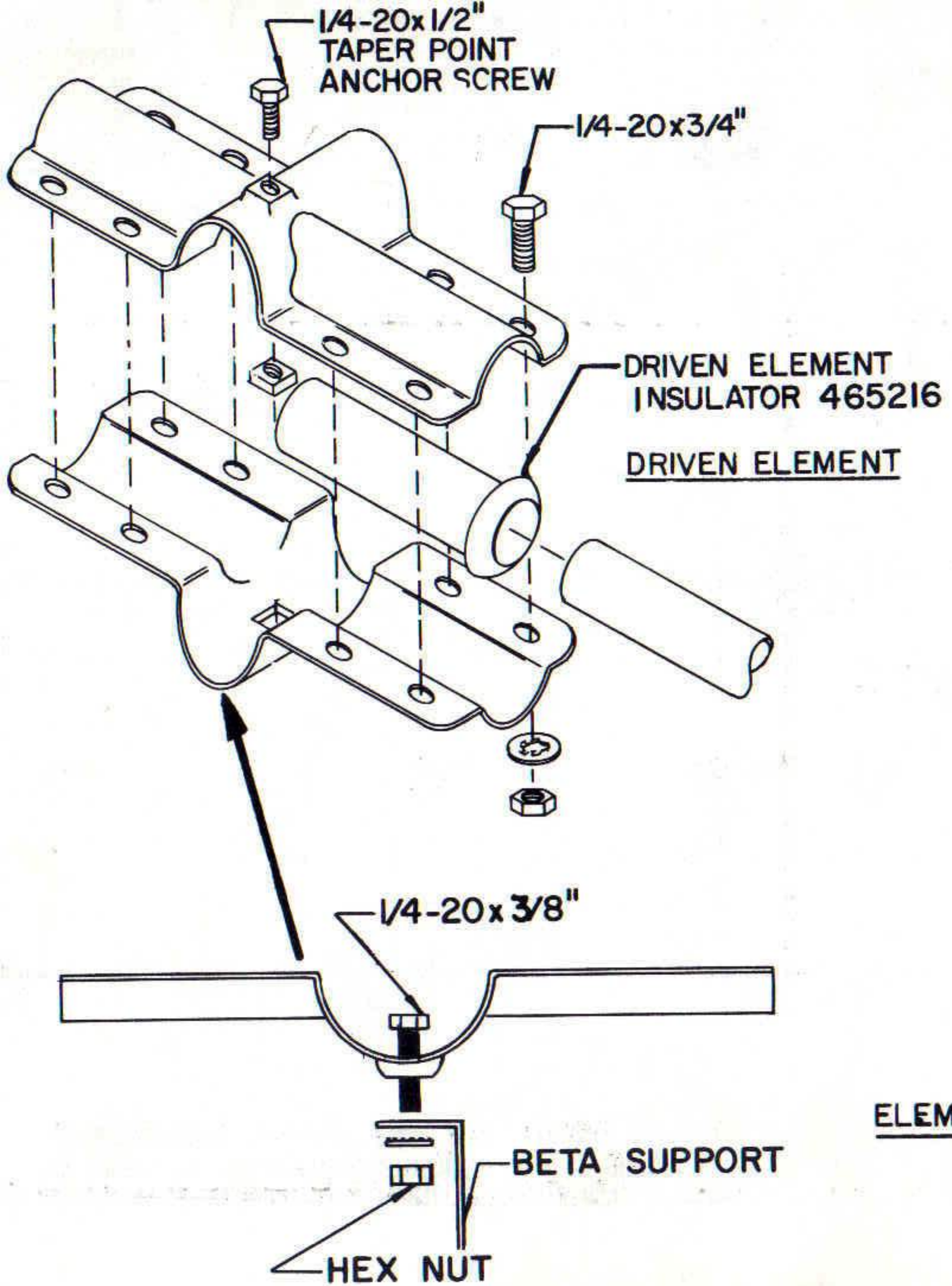


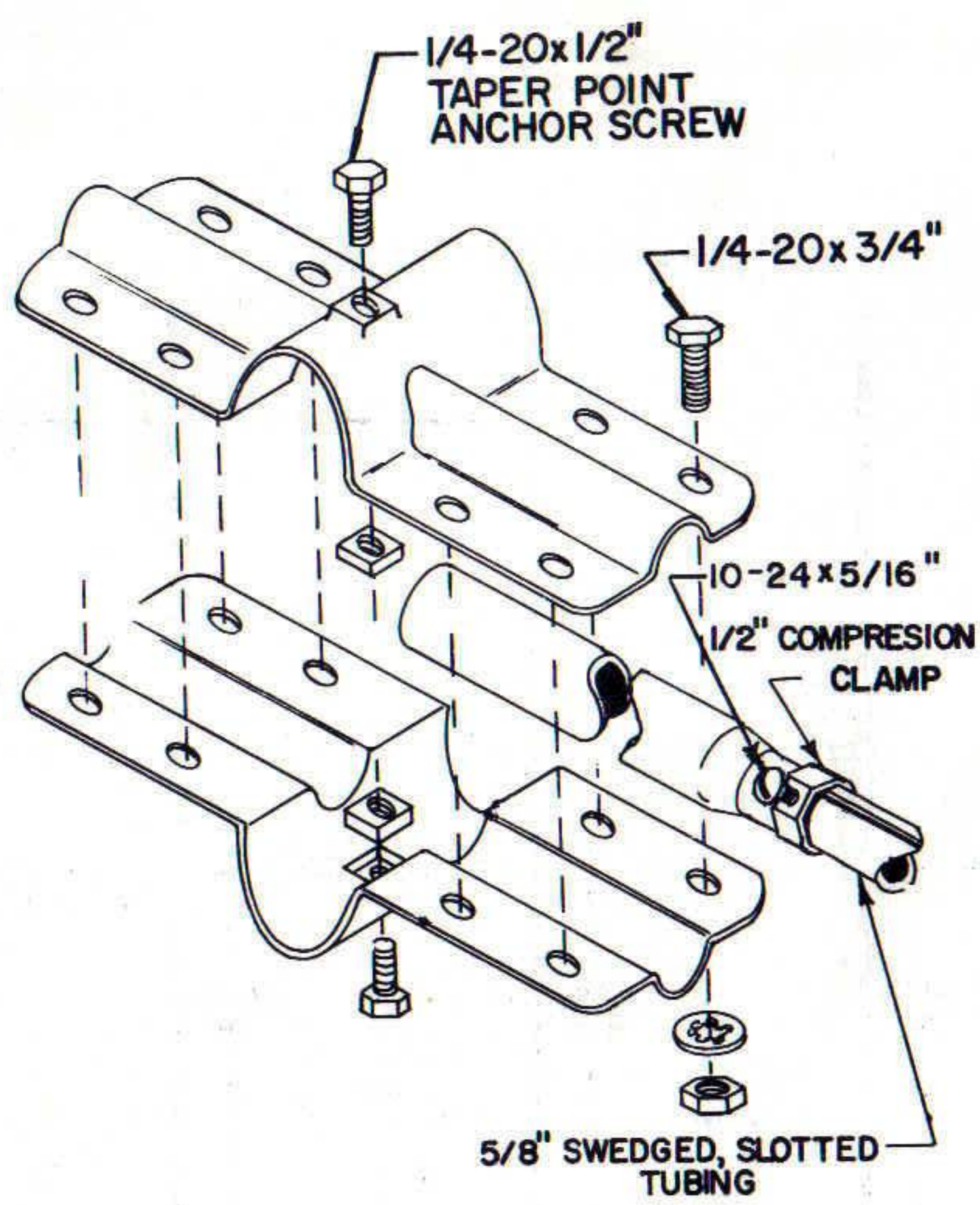
BOOM TO MAST DETAIL



BOOM ASSEMBLY & BRACKET DETAIL

FIGURE 4



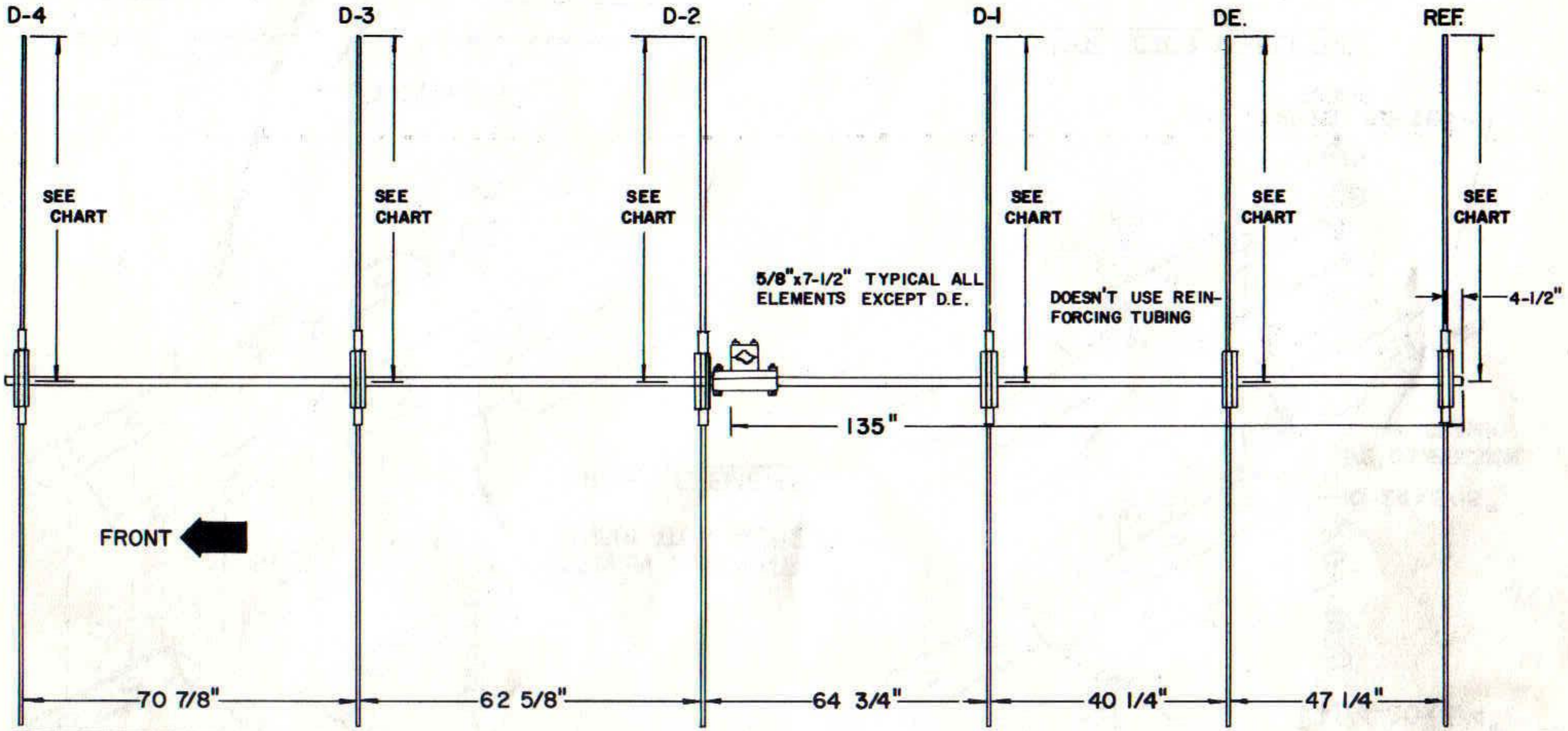


REFLECTOR & DIRECTOR

ELEMENT TO BOOM BRACKETS

FIGURE 5

NOTE: ANTENNA IS TUNED TO LOWEST FREQUENCY.
TO OPERATE ON HIGHER FREQUENCIES, IT WILL
BE NECESSARY TO CUT THE D.E. TUBING



SETTING #1 (50.5 M.C.)	
REF.	59-1/16"
DE	55-7/8"
D1	52-1/2"
D2	51-1/8"
D3	51-1/8"
D4	52"

SETTING #2 (51.75 M.C)	
REF.	57-5/8"
DE	54-1/4"
D1	51-1/8"
D2	49-7/8"
D3	49-7/8"
D4	50-5/8"

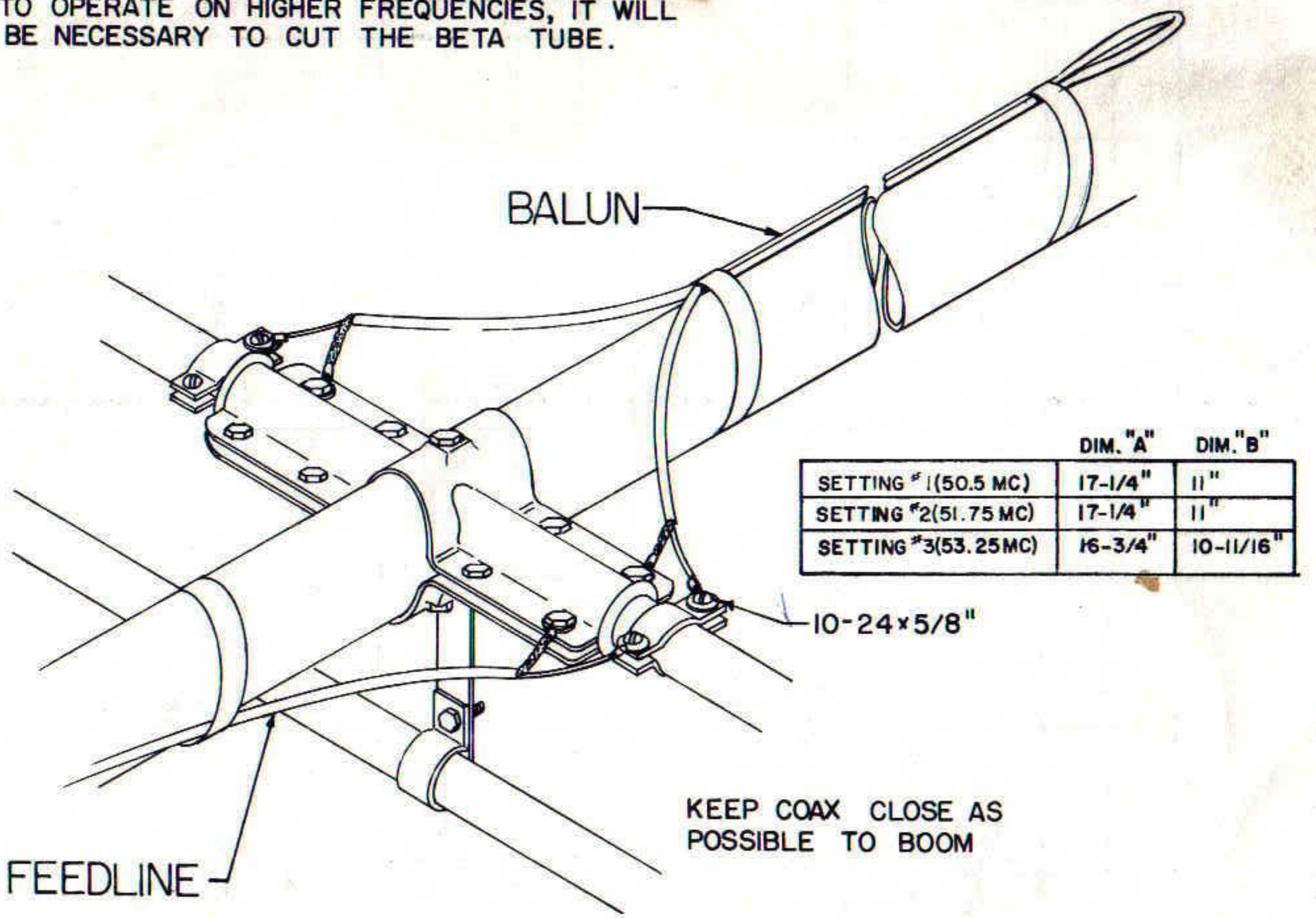
SETTING #3 (53.25 M.C.)	
REF.	56"
DE	51-7/8"
D1	49-5/8"
D2	48-1/2"
D3	48-1/2"
D4	49-1/4"

OVERALL VIEW

FIGURE 6

---NOTE---

ANTENNA IS TUNED TO LOWEST FREQUENCY.
TO OPERATE ON HIGHER FREQUENCIES, IT WILL
BE NECESSARY TO CUT THE BETA TUBE.



	DIM. "A"	DIM. "B"
SETTING #1 (50.5 MC)	17-1/4"	11"
SETTING #2 (51.75 MC)	17-1/4"	11"
SETTING #3 (53.25 MC)	16-3/4"	10-11/16"

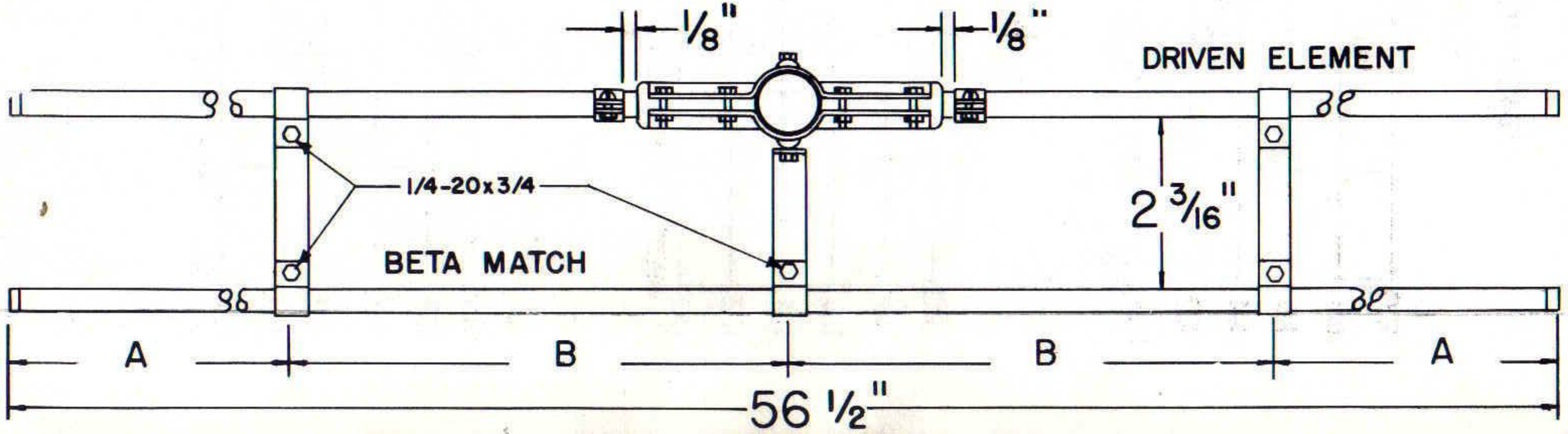
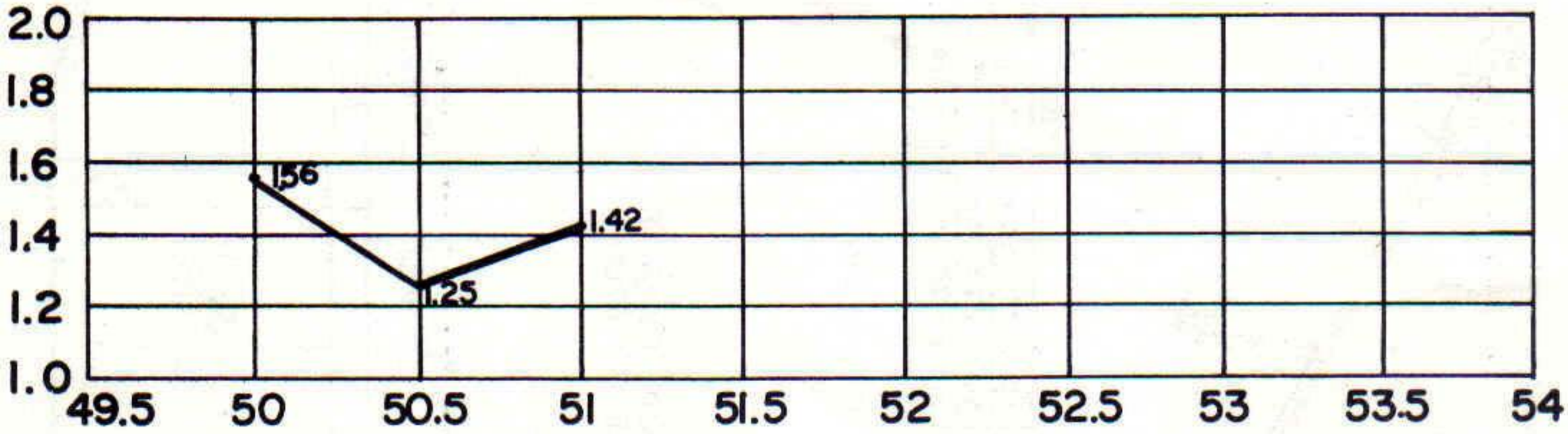
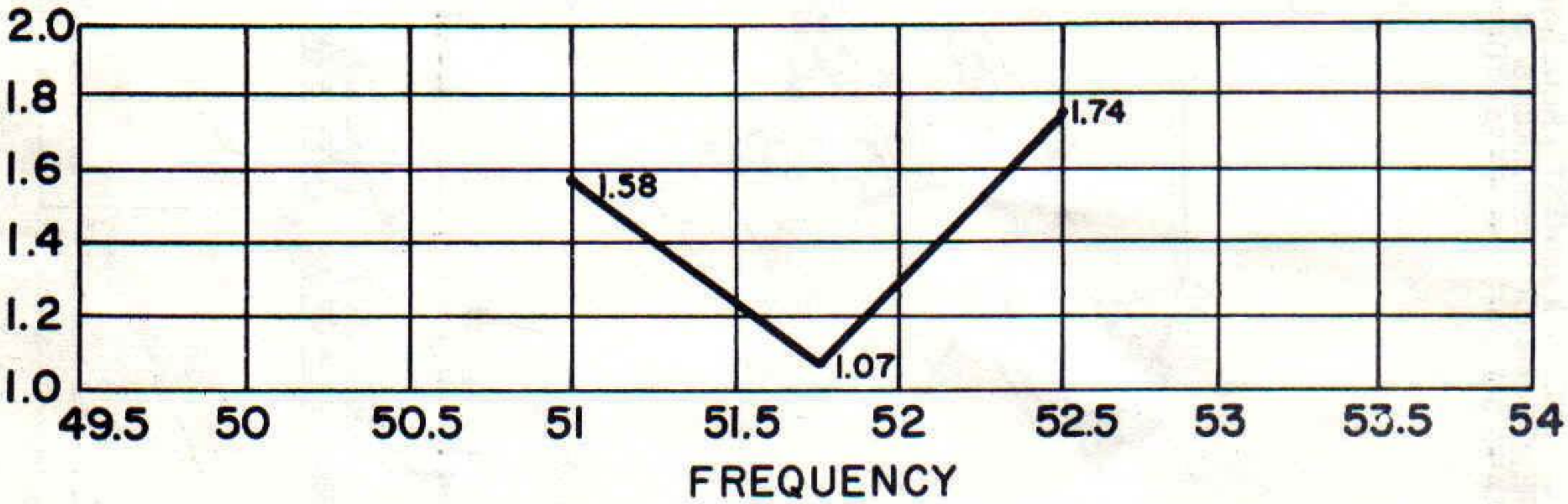


FIGURE 7

BETA MATCH AND BALUN

V.S.W.R. MEASURED AT ANTENNA TERMINALS





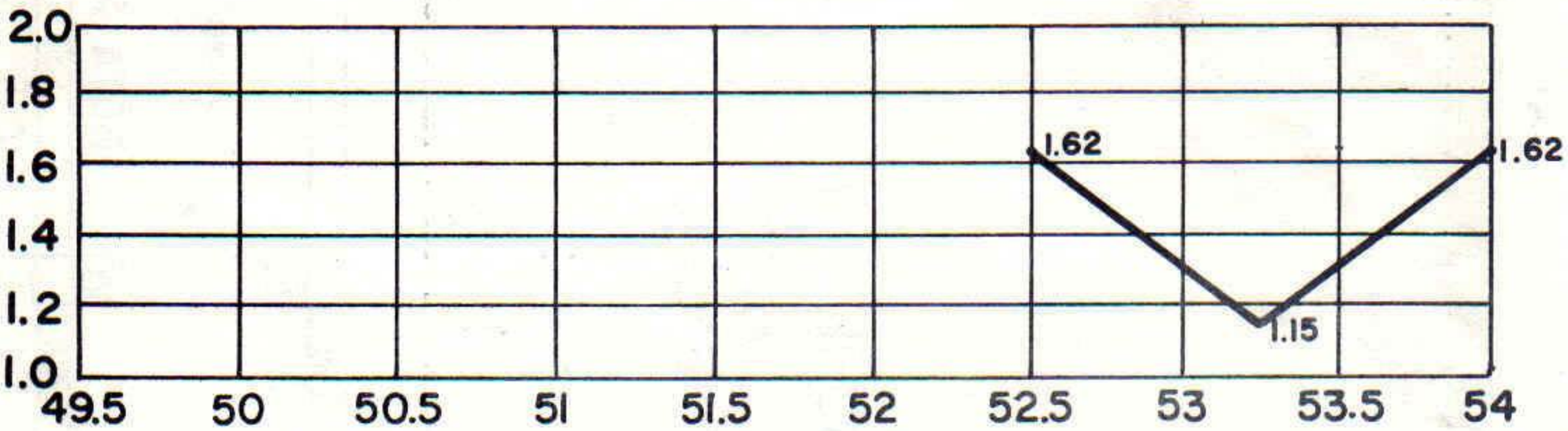


FIGURE 8

V.S.W.R. CURVE