

TEMPORARY INSTRUCTIONS

FOR

ANTENNA AN-56-A

Manufactured By

BENDIX RADIO

DIVISION OF BENDIX AVIATION CORPORATION

BALTIMORE, MARYLAND, U. S. A.

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WARNING

ERECTION OF THIS EQUIPMENT CAN BE HAZARDOUS IF ANYTHING SHOULD FAIL.
INSPECT ALL ROPES, GUYS, AND SHACKLES BEFORE USING. USE ALL POSSIBLE
PRECAUTIONS TO KEEP PERSONS FROM THE VICINITY OF THE MAST EXCEPT MEN
SPECIFICALLY ASSIGNED TO WORK ON THE MAST.

TEMPORARY INSTRUCTIONS

FOR

ANTENNA AN-56-()

SECTION I
DESCRIPTION

1. GENERAL

Ninety-foot Antenna AN-56-() is a tubular steel mast capable of easy assembly and erection in the field by six men. It is designed to support the antenna dipoles and coaxial cable for two Antenna Equipments RC-81-() on a horizontal crossarm or truss fastened to the top of the mast. The mast may be raised or lowered, disassembled, repacked, and shipped with 100 percent of its parts reusable for erection at a new location. The mast, when erected, will withstand high wind velocities and adverse weather conditions.

2. COMPONENTS, DIMENSIONS, AND WEIGHTS

1 Antenna AN-56-() 90 foot
Antenna Mast packed in the
following boxes or crates:

<i>Description</i>	<i>Overall Size in Inches</i>	<i>Weight in Lbs.</i>	<i>Displacement Cubic Feet</i>
Box No. 1 (crate)	188 3/4 x 44 1/4 x 26 1/2	2635	128.09
Box No. 2	102 1/4 x 68 x 23 1/2	1067	93.55
Box No. 3	140 1/2 x 13 3/4 x 5 7/8	190	6.57
Box No. 4	34 3/4 x 27 1/4 x 19 7/8	515	10.89
Box No. 5*	35 3/4 x 35 3/4 x 19 7/8	434	14.70

* When maul and winch are included the gross weight is 544 pounds.
Two of each 8 masts have mauls and winches.

Antenna Equipment
RC-81-() two for
each mast.

3. PACKING DATA

See Figure 1

<i>Piece No.</i>	<i>Description</i>	<i>Quantity</i>	<i>Location (Box No.)</i>
1	Truss	1	3
2	Mast Section	1	1

DESCRIPTION

<i>Piece No.</i>	<i>Description</i>	<i>Quantity</i>	<i>Location (Box No.)</i>
3	Mast Section	1	1
4	Mast Section	1	1
5	Mast Section	1	1
6	Mast Section	1	1
7	Mast Section	1	1
8	Mast Section	1	1
9	Mast Section	1	1
10	Mast Section	1	1
11	Boom Section	1	1
12	Boom Section	1	1
13	Boom Section	1	1
14	Clip	2	5
15	Clip	8	5
16	Clip	3	5
17	Clip	4	5
18	Clip	4	5
19	Clip	4	5
20	Clip	4	5
21	Clip	4	5
22	Clip	5	5
23	Clip	4	5
24	Clip	3	5
25	Bolt	3	5
26	Thumb Screw	16	5
27	Thumb Screw	37	5
28	Shackle	11	5
29	Socket	8	5
30	Socket	8	5
31	Guy	4	5
32	Guy	4	5

DESCRIPTION

<i>Piece No.</i>	<i>Description</i>	<i>Quantity</i>	<i>Location (Box No.)</i>
33	Turnbuckle	8	4
34	Spanner Plate	4	5
35	Shackle	10	4
		2	5
36	Chain	3	4
37	Ring	2	4
38	Chain	1	4
39	Link	3	4
40	Chain	2	4
41	Link	2	4
42	Cap Screw	2	4
43	Nut	2	4
44	Washer	2	4
45	Link	1	4
46	Shackle	1	5
47	Rope	1	5
48	Triple Block	1	5
49	Double Block	1	5
50	Snatch Block	1	5
51	Ground Guy	3	5
52	Thimble	3	5
53	Clip	12	5
54	Base & Socket	1	4
55	Stake Bar	4	3
56	Anchor	3	2
57	Anchor	1	2
58	Bolt	2	5
59	Bolt	4	5
60	*Maul	1	5
--	Boom Cap	1	4

DESCRIPTION

<i>Piece No.</i>	<i>Description</i>	<i>Quantity</i>	<i>Location (Box No.)</i>
--	*Winch	1	5
--	*Winch Handle	1	5

* One maul and one winch are supplied with each Radio Set SCR-562 (transmitting station) and each Radio Set SCR-563 (receiving station). The boxes in which these items are packed are marked.

SECTION II
PREPARATION FOR USE

4. UNPACKING

All parts for 90-foot Antenna AN-56-() are packed in five cases. Set the boxes at a point convenient to the erection site and open.

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SECTION III ERECTION OF MAST AND ANTENNAS

5. PREPARATION OF GROUND

Lay out the site for the base plate and four anchors as shown in Figure 2.
Important: Follow the diagram as accurately as possible. Any inaccuracy in placing the base and anchor points will make it impossible to raise the mast properly. The base plate is to be positioned at the exact point where the mast is to stand. For the relation of this point to the station vehicle, see the instruction books for each station.

The position for the base plate must be level as checked with a spirit level. *Do not attempt to level by eye as the slope of the ground may be imperceptible in relation to the terrain.* The ground should be hard enough to withstand a downward pressure of at least 100 pounds per square inch. If the ground is muddy or soft, make some preparation to provide a firm support for the base. Dig the holes for the four anchors deeply enough so that when the anchors are in position and the ground filled, the eyelets will protrude no more than 5 or 6 inches. *Follow Figures 2 and 3 exactly; accurate location of the anchors is very important.*

6. ANCHORS AND BASE

Figure 3 shows the anchors (Pc. Nos. 56 and 57) and base plate (Pc. No. 54) in position.

- (a) Orient the base so that the sockets will permit assembly of the mast in the direction selected.
- (b) Drive the four stakes (Pc. No. 55) to hold the base into the ground with a 20-pound sledge hammer or maul.
- (c) Fasten the three ground guys (Pc. No. 51) between the base and the side and back anchors. The guys should be just taut if the anchors were properly positioned.

7. ASSEMBLY OF MAST AND TRUSS

The mast (Pc. Nos. 2 - 10) and the truss (Pc. No. 1) are assembled on the ground as shown in Figures 1 and 4.

- (a) Remove burlap from the mast sections. Handle burlap carefully and store for future use.
- (b) Place mast sections together as shown in Figure 1. It is important that the center punch markings on each end are aligned and the letters on the section ends are on the upper part of the mast. This will place the tapped holes for the cable clips on top where they can be worked on most easily.
- (c) Fasten pieces No. 2 and No. 3 together with a bolt (Pc. No. 25).
- (d) Attach the two sets of side guys (Pc. Nos. 31 and 32) between the side eyes on the mast collars (bottom of pieces No. 3 and 6). See Figure 1 for side

ERECTION OF MAST AND ANTENNAS

guy assembly.

- (e) Fasten the truss on the end of piece No. 2 with two bolts (Pc. No. 25).

8. ASSEMBLY OF BOOM

The boom (Pc. Nos. 11, 12, and 13) is assembled on top of the mast as shown in Figure 1.

- (a) Insert piece No. 11 into the Y socket. Lay sufficient burlap on the mast to protect the finish when the boom is assembled.
- (b) Put piece Nos. 12 and 13 together.
- (c) Attach boom cap to the end of the boom with its projecting edge toward the mast as shown in Figure 1.
- (d) Fasten boom vang (lanyards, Pc. No. 61, see Figure 1) to the boom cap and tie ends taut to the side anchors.

9. RAISING BOOM

- (a) Connect hoisting tackle from the boom cap to the forward anchor. (See Figure 1).
- (b) Pull up boom a few feet and connect forward guy assembly from the rear of the boom cap to the front eye of the collar on the mast.
- (c) Pull the boom up to a vertical position and fasten the pulling rope (see Figure 6). Be sure boom vangs are both tight.

10. INSTALLING ANTENNA EQUIPMENT RC-81-() AND HAZARD LIGHT

Figure 7 shows the installation of the antenna dipoles and the coaxial cable connections.

- (a) Fasten the antennas (dipoles) to the ends of the truss using the fittings provided.
- (b) Remove pipe cap on top of truss, and screw hazard light on in its place.
- (c) Lay out the coaxial cables along the truss and mast using every precaution against injuring the cables. Form each coaxial cable into an easy curve from truss to mast. DO NOT BEND OR TWIST THE COAXIAL CABLES ACUTELY AS THIS MAY DISPLACE THE INTERNAL BEADS. Special clips and thumbnuts are provided for fastening cables (see Figures 1 and 7). Be sure to observe the markings on clips and to use them on the particular section of the mast for which they are marked. The clips are not interchangeable.
- (d) Lay out light cable along mast, after making connections to junction box below obstruction light and tightening up gland fitting around cable.

11. HOISTING MAST

See Figure 8 for method of hoisting mast.

ERECTION OF MAST AND ANTENNAS

- (a) Fasten rear guy wire assembly from mast to rear anchor.
Important: The rear guy wires must be fastened before the mast is raised. However, it may be necessary to raise the mast slightly to attach the rear guy assembly to the mast. BE SURE THE HOISTING ROPE IS FIRMLY FASTENED BEFORE ANYONE APPROACHES THE PARTLY RAISED MAST.
- (b) Lay the rear guy wires on the ground under the side guys in a position that will prevent fouling while the mast is being hoisted.
- (c) Hoist mast using the hand winch provided or a power winch if available.
CAUTION: THE PROCESS OF RAISING A MAST OF THIS SIZE CAN BE HAZARDOUS IF ANYTHING FAILS. USE ALL POSSIBLE PRECAUTIONS TO KEEP PERSONS FROM THE VICINITY OF THE MAST EXCEPT THE MEN SPECIFICALLY ASSIGNED TO HOISTING. SEE INSTRUCTIONS BELOW FOR MAN ASSIGNED TO REAR GUYS.
If hand power is used, five or more men will be required to pull up the mast two men to operate the winch and two to spell them. The fifth man will be required to keep the rope taut on the winch. Another man is required to pull on the rear guys as the mast is raised to a vertical position. Hoist the mast slowly. As the mast is being raised, make sure the rear guy wires do not kink. The hoisting process should be slowed up considerably when approaching the erect position to prevent the mast from snapping into position from the weight of the boom. *The man assigned to the rear guys must keep from under the mast until the angle between the mast and the ground is at least 60 degrees.* He may assist the man keeping the hoisting rope taut during the first stage of raising the mast. As the tension on the hoisting tackle begins to decrease, have the rear guy man pull on the rear guys sufficiently to ease the mast into a vertical position. NOTE: IF THE MAST IS HOISTED MECHANICALLY, PAY PARTICULAR ATTENTION TO THE METHOD OF EASING THE MAST TO A VERTICAL POSITION SINCE THE SPEED OF HOISTING WILL BE GREATER.
- (d) Attach the guys to the front guy anchor using the chain (Pc. No. 27) at the end of the boom.
- (e) Remove the hoisting tackle.

12. TRUING MAST

- (a) Check mast with a spirit level.
- (b) If necessary, take up slack in chain due to irregularities in sinking anchors or irregular terrain as follows:
 - (1) Fasten hoisting tackle to the loose guy assembly and its anchor.
 - (2) Pull on hoisting rope until guys are taut. Do not tighten too much as excessive stresses may be encountered.
 - (3) Fasten the hoisting end of the tackle.
 - (4) Open the turnbuckles to full travel.
 - (5) Shackle in proper link of chain.
 - (6) Tighten turnbuckles.

ERECTION OF MAST AND ANTENNAS

(7) Remove tackle.

- (c) Remove boom vang and tie to the hoisting tackle as a precaution against lowering the mast without attaching the vangs to the boom.
- (d) Stow the tackle and vangs to avoid weathering.

13. LOWERING THE MAST

- (a) Fasten side vangs to end of boom and tie to side anchors.
- (b) Assemble hoisting tackle to boom end and front guy anchor, taking three turns around a winch or a well-rooted tree with the hoisting end and making fast.
- (c) Uncouple front guy chain by removing shackle.
- (d) Pull on front guy to start mast down by raising boom.
- (e) Pay out rope to hoisting tackle keeping the turns around the winch or tree.
- (f) Lower away slowly hand over hand until mast is down and boom is in erect position.
- (g) Make hoisting end fast.

NOTE: It is not necessary to lower the mast except when the Antenna Equipment RC-81-() is to be changed, or the entire antenna system is to be dismantled and removed to another location. DO NOT LOWER THE BOOM FORWARD TO THE MAST WITHOUT FIRST REMOVING THE COAXIAL AND HAZARD LIGHT CABLES, INCLUDING CLIPS AND THUMBSCREWS, TO PREVENT DAMAGE BY BOOM.

SECTION IV
MAINTENANCE

14. GENERAL

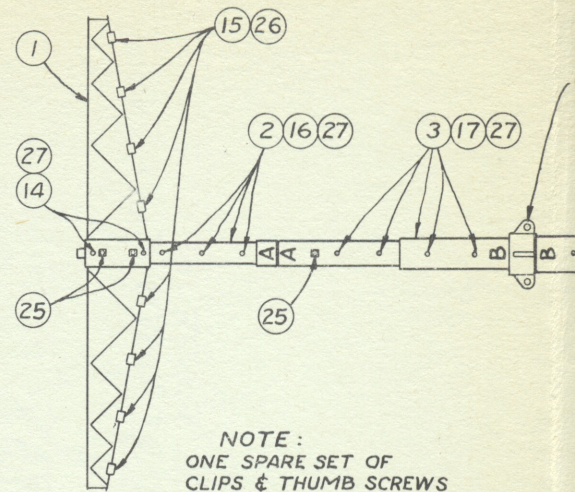
Inspect the mast and guys daily. If the guys should become slack, tighten and true the mast as described in Paragraph 12. No other maintenance should be required if the mast has been properly installed.

MATERIAL FOR MAST			
REQ.	PC.Nº	MARK	NAME MATERIAL
1	1		HEAD STEEL
1	2	A	PIPE, 2" COPPER BEARING SEAMLESS STEEL
1	3	A-B	PIPE, 2 1/2" COPPER BEARING SEAMLESS STEEL
1	4	B-C	PIPE, 3 1/2" COPPER BEARING SEAMLESS STEEL
1	5	C-D	PIPE, 4" COPPER BEARING SEAMLESS STEEL
1	6	D-E	PIPE, 4 1/2" COPPER BEARING SEAMLESS STEEL
1	7	E-F	PIPE, 5" COPPER BEARING SEAMLESS STEEL
1	8	F-G	PIPE, 6" COPPER BEARING SEAMLESS STEEL
1	9	G-H	PIPE, 5" COPPER BEARING SEAMLESS STEEL
1	10	H-X	PIPE, 4 1/2" COPPER BEARING SEAMLESS STEEL

LIST OF CLIPS					
REQ.	PC.Nº	MARK	NAME	MATERIAL	REMARKS
2	14	A-H	SINGLE CLIP	H.R.STEEL	FOR LIGHT LINE
8	15	B-H	SPECIAL SINGLE CLIP	H.R.STEEL	TRANSMISSION LINE ON HEAD
3	16	A	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
4	17	A-B	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
4	18	B-C	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
4	19	C-D	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
4	20	D-E	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
4	21	E-F	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
5	22	F-G	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
4	23	G-H	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST
3	24	H-X	TRIPLE CLIP	H.R.STEEL	LIGHT & TRANSM. LINE ON MAST

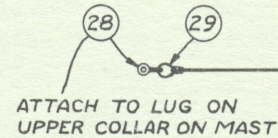
MATERIAL FOR BOOM			
REQ.	PC.Nº	MARK	NAME MATERIAL
1	11	Y-J	PIPE, 3 1/2" COPPER BEARING SEAMLESS STEEL
1	12	J-K	PIPE, 4 1/2" COPPER BEARING SEAMLESS STEEL
1	13	K-Z	PIPE, 3 1/2" COPPER BEARING SEAMLESS STEEL

LIST OF BOLTS & THUMB SCREWS				
REQ.	PC.Nº	NAME	MATERIAL	REMARKS
3	25	SQ. HD. BOLT	STEEL, GALV.	1/2" DIA. - 3 1/2" LONG BINDS #192 #2 to 3
16	26	THUMB SCREW	C.F. STEEL	3/8" DIA. - 3/4" LONG FOR "BH" CLIPS ONLY
37	27	THUMB SCREW	C.F. STEEL	3/8" DIA. - 1" LONG TO TRIPLE & SINGLE CLIP



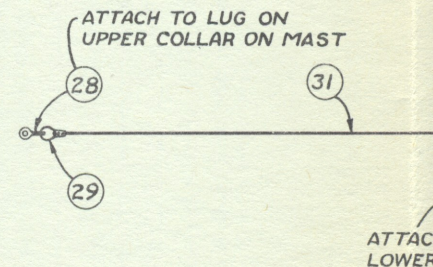
NOTE:
ONE SPARE SET OF CLIPS & THUMB SCREWS FURNISHED WITH EACH MAST.

MATERIAL FOR BACK & SIDE GUYS				
REQ.	PC.Nº	NAME	MATERIAL	REMARKS
6	28	SHACKLE, 1/2"	STEEL	GALV., SCREW PIN
6	29	CLOSED SOCKET	STEEL	GALVANIZED - 5/16"
6	30	CLOSED SOCKET	STEEL	GALVANIZED - 3/8"
3	31	GUY, 5/16" DIA.	COPPER CLAD STEEL	74'0" LONG ASSEMBLED
3	32	GUY, 3/8" DIA.	COPPER CLAD STEEL	49'5 1/2" LG. ASSEMBLED
6	33	TURNBUCKLE	STEEL	3/4" x 12" L., GALV. W. LOCKNUTS
3	34	SPANNER PL.	STEEL	5/8" THICK, GALVANIZED
6	35	SHACKLE, 5/8"	STEEL	GALV., SCREW PIN
3	36	CHAIN, 5/8" DIA.	STEEL	80" L. 4 1/2" INST. LINK - GALV.

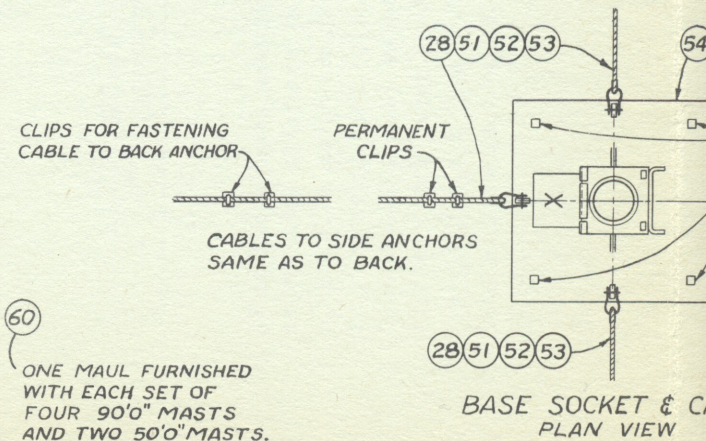


NOTE:
NUMBERS IN CIRCLES CORRESPOND TO NUMBERS IN COLUMN TITLED PC.Nº. IN RESPECTIVE MATERIAL CHARTS.

MATERIAL FOR FORWARD GUY									
REQ.	PC.Nº	NAME	MATERIAL	REMARKS	REQ.	PC.Nº	NAME	MATERIAL	REMARKS
2	28	SHACKLE, 1/2"	STEEL	GALV., SCREW PIN	2	41	LINKS	STEEL	2 1/2" x 1/2" x 10 1/2" LG., GALV.
2	29	CLOSED SOCKET	STEEL	GALVANIZED, 5/16"	2	42	CAP SCREW	STEEL	HEX. 1" x 3 1/4" LG., GALV.
2	30	CLOSED SOCKET	STEEL	GALVANIZED, 3/8"	2	43	NUT, HEX. 1"	STEEL	GALVANIZED
1	31	GUY, 5/16" DIA.	COP. CLAD STEEL	74'0" LONG ASSEMBLED	2	44	WASHER, STD.	STEEL	1", GALVANIZED
1	32	GUY, 3/8" DIA.	COP. CLAD STEEL	49'5 1/2" LG. ASSEMBLED	1	45	LINK	STEEL	2 1/2" x 3/4" x 5 1/2" LG., GALV.
2	33	TURNBUCKLE	STEEL	3/4" x 12" L., GALV., LOCKNUTS	1	46	SHACKLE, 7/8"	STEEL	GALV., SCREW PIN
1	34	SPANNER PL.	STEEL	5/8" THICK, GALV.	1	47	ROPE, 3/4"	MANILA	500'0" HAULING LINE
6	35	SHACKLE, 5/8"	STEEL	GALV., SCREW PIN	1	48	BLOCK, TRIPLE, 6"	STEEL & WOOD	FOR 3/4" ROPE, GALV. HDW., 7/8" UPSET SHACKLE
2	37	RING, 5/8"	STEEL	4" INSIDE DIA., GALV.	1	49	BLOCK, 6" DOUBLE	STEEL & WOOD	FOR 3/4" ROPE, GALV. HDW., 3/4" UPSET SHACKLE
1	38	CHAIN, 5/8"	STEEL	70" L. 4 1/2" LINK, GALV.	1	50	BLOCK, SNATCH 6"	STEEL & WOOD	FOR 3/4" ROPE, GALV. HDW., SWIVEL HOOK & LINK.
3	39	SPLIT LINK, 5/8"	STEEL	GALVANIZED					
2	40	CHAIN, 5/8"	STEEL	TWO LINKS, GALV.					

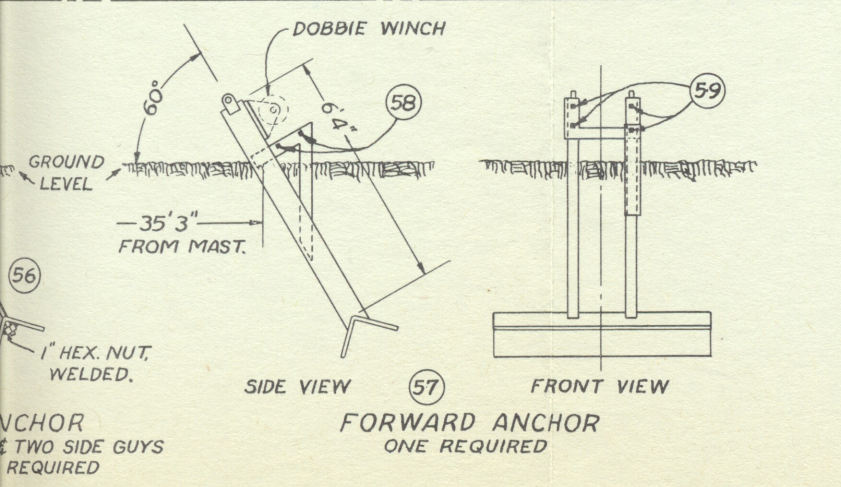
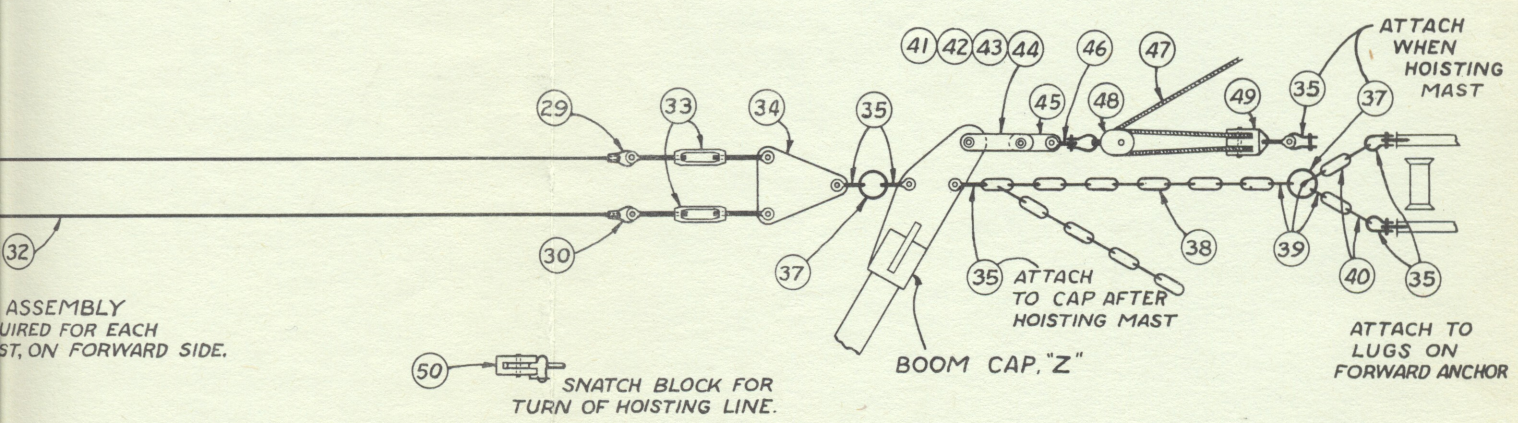
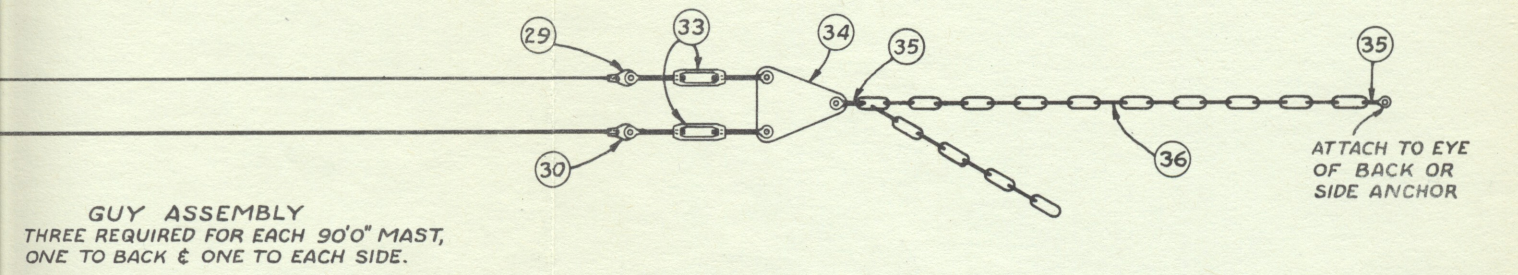
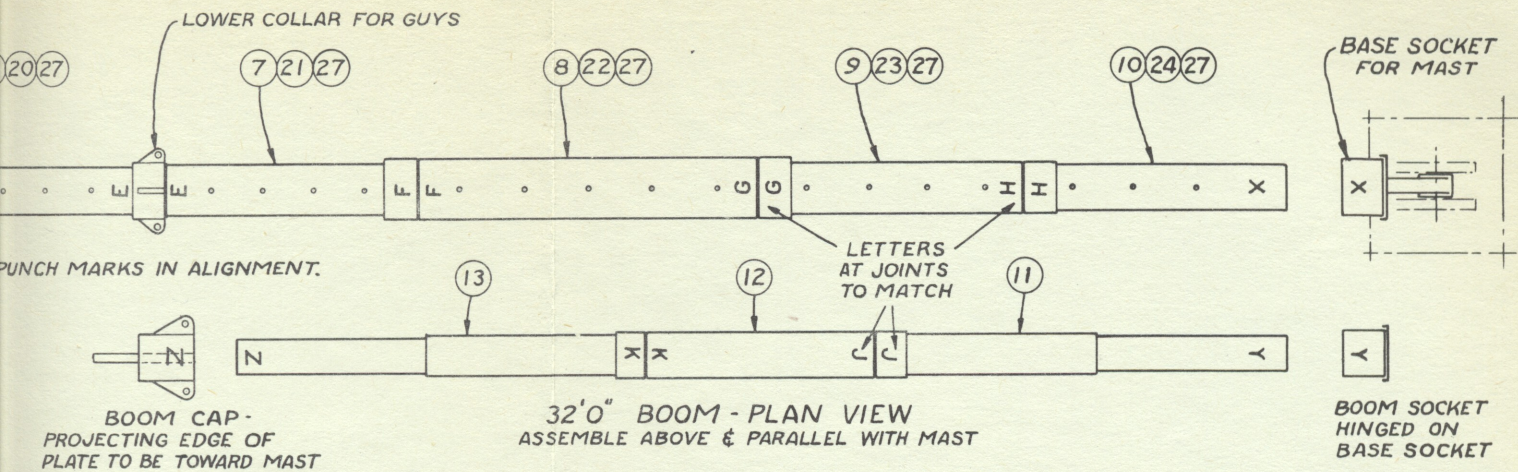


MATERIAL FOR BASE SOCKET & ANCHORS				
REQ.	PC.Nº	NAME	MATERIAL	REMARKS
3	51	GROUND GUY	GALV. STL. WIRE ROPE	40'0" LONG - 3/8" DIA.
3	28	SHACKLE	STEEL	1/2" - GALV. - SCREW PIN
3	52	THIMBLES	STEEL	3/8" - GALVANIZED
12	53	CLIPS	STEEL	3/8" - GALVANIZED
1	54	BASE & SOCKET	STEEL	GALV. - ASSEMBLED
4	55	STAKE BAR	STEEL	GALV. - 4'0" LONG
3	56	ANCHOR	STEEL	GALVANIZED
1	57	ANCHOR	STEEL	FORWARD - GALV. ASS'Y
2	58	SQ. HD. BOLT	STEEL	GALV. - 1/2" DIA. - 1 1/2" LONG
4	59	SQ. HD. BOLT	STEEL	GALV. - 1/2" DIA. - 1 3/4" LONG
SEE NOTE	60	MAUL	STEEL	20 LB. - 36" WOOD HAND'L



ONE MAUL FURNISHED WITH EACH SET OF FOUR 90'0" MASTS AND TWO 50'0" MASTS.

BASE SOCKET & C. PLAN VIEW



MATERIAL FOR BOOM-VANGS

REQ.	PCNS	NAME	MATERIAL	REMARKS
2	61	LANYARD	MANILA	1/2" Dia. 55'0" LONG
2	62	THIMBLE	STEEL	1/2" GALVANIZED
2	28	SHACKLE	STEEL	1/2" GALV. SCREW PIN

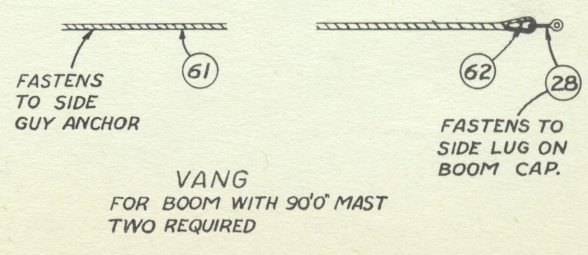
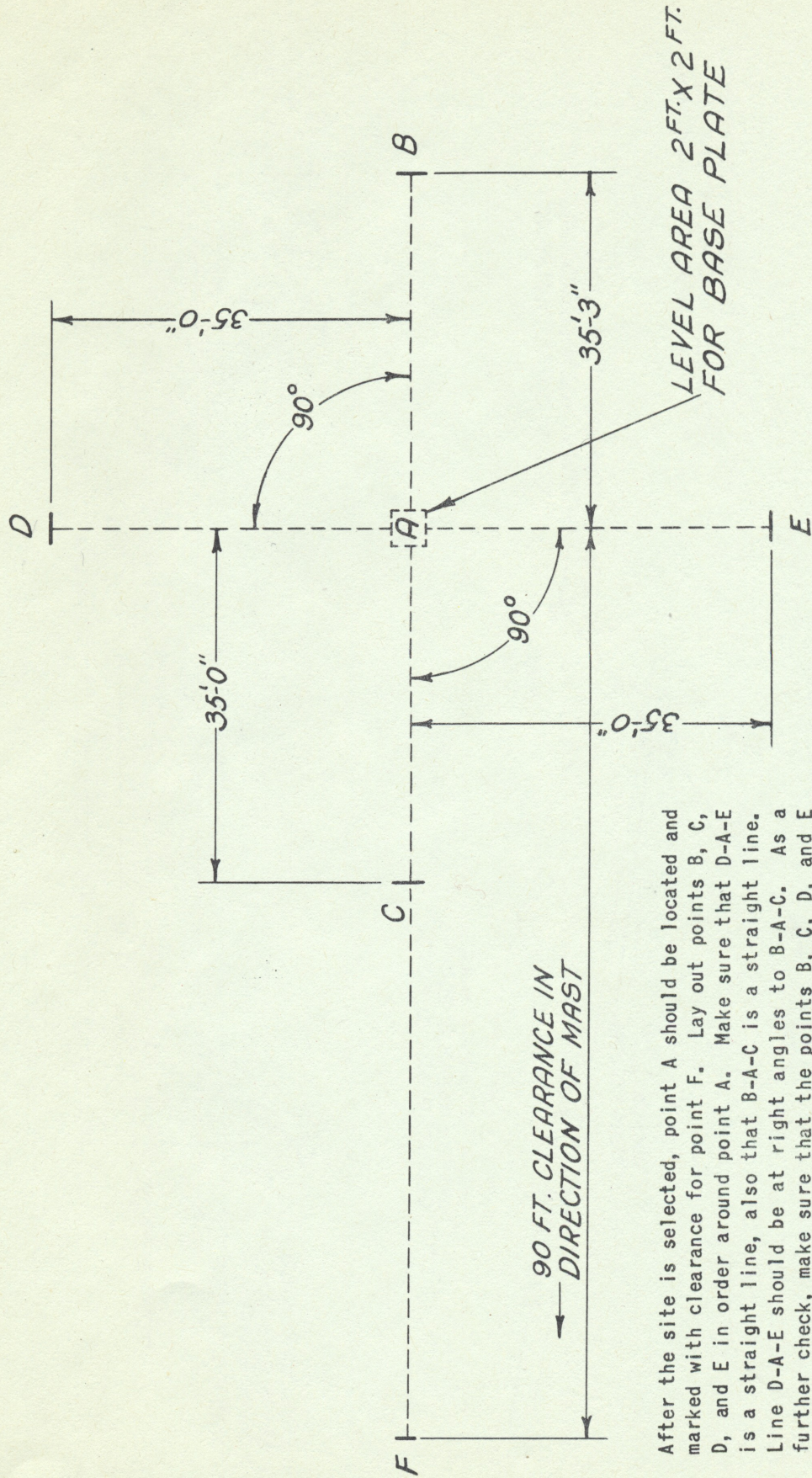


FIG. 1 - NOMENCLATURE OF PARTS



After the site is selected, point A should be located and marked with clearance for point F. Lay out points B, C, D, and E in order around point A. Make sure that D-A-E is a straight line, also that B-A-C is a straight line. Line D-A-E should be at right angles to B-A-C. As a further check, make sure that the points B, C, D, and E are equidistant from their adjoining points. Point F is located by measuring 90 feet from line D-A-E along line B-A-C.

FIG. 2 - GROUND PLAN FOR MAST

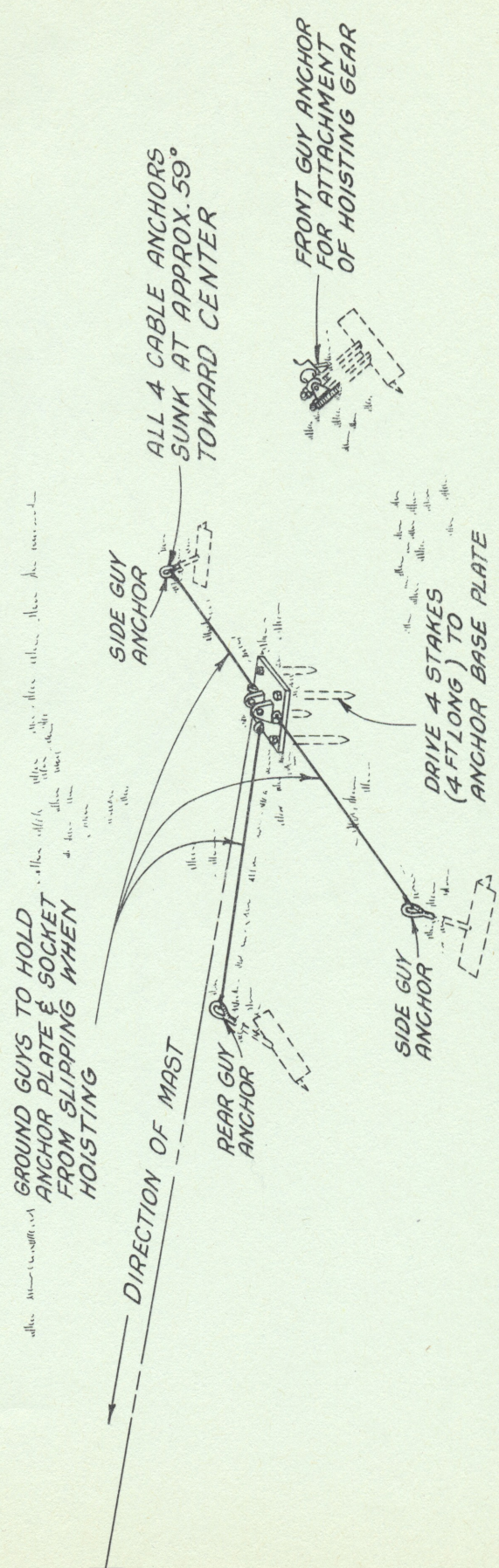
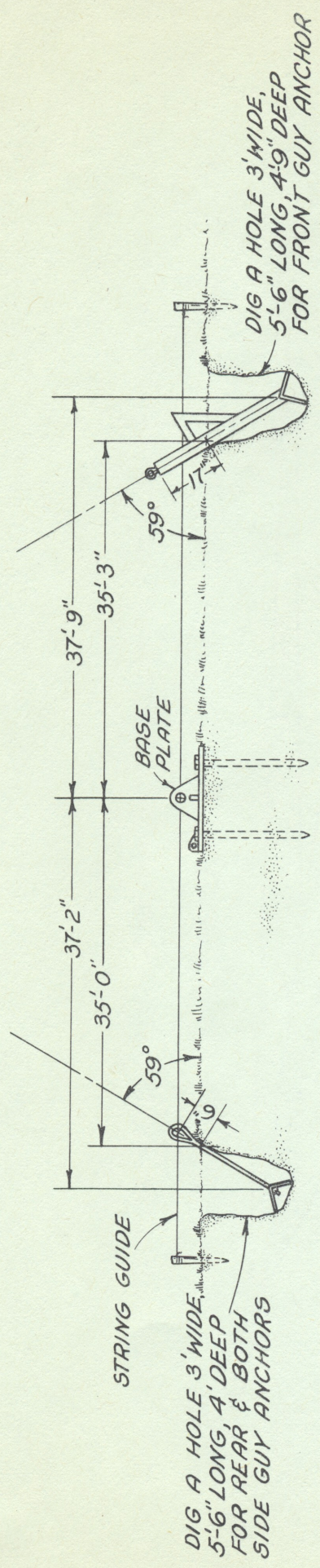
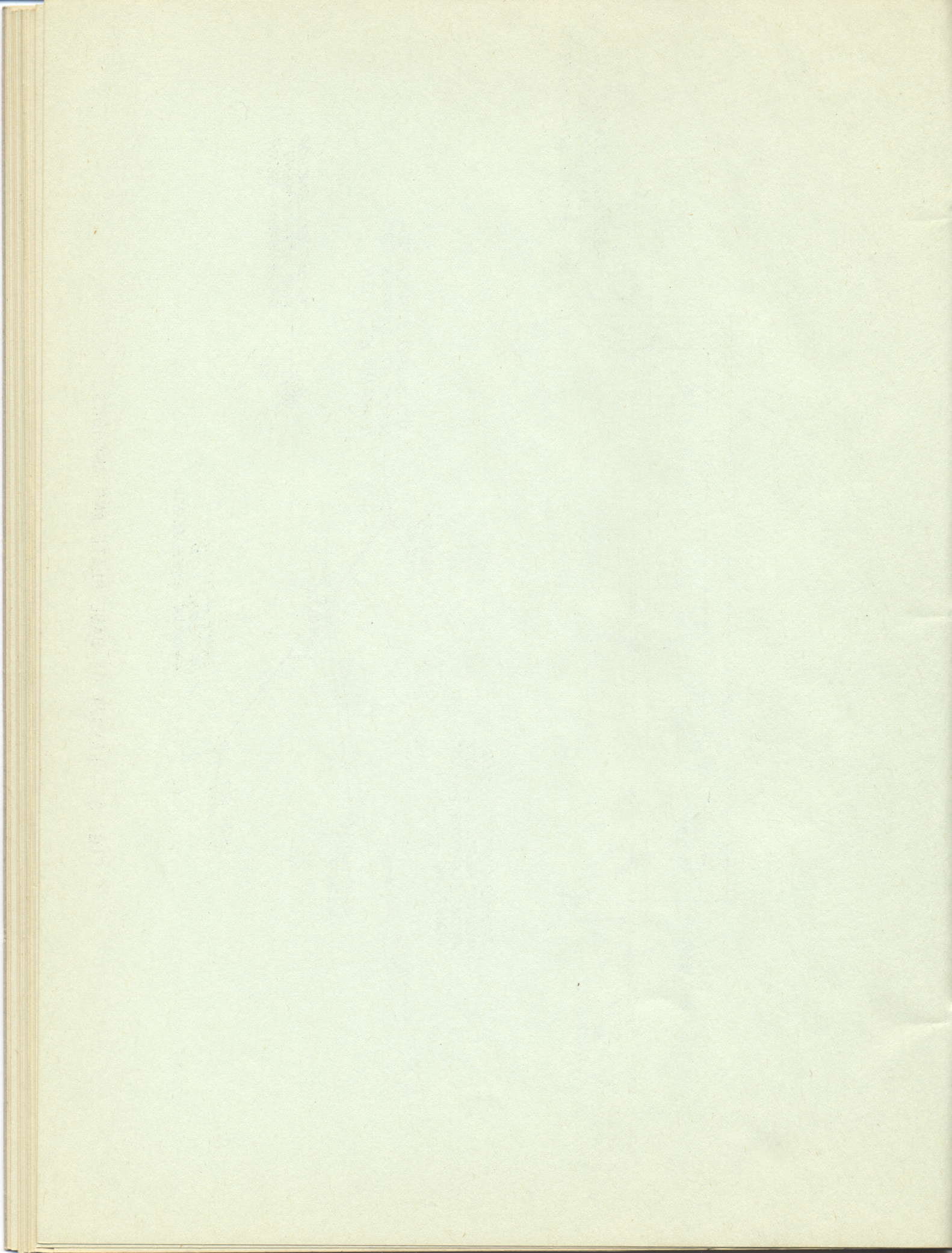


FIG. 3 - LAYOUT OF BASE PLATE AND ANCHORS



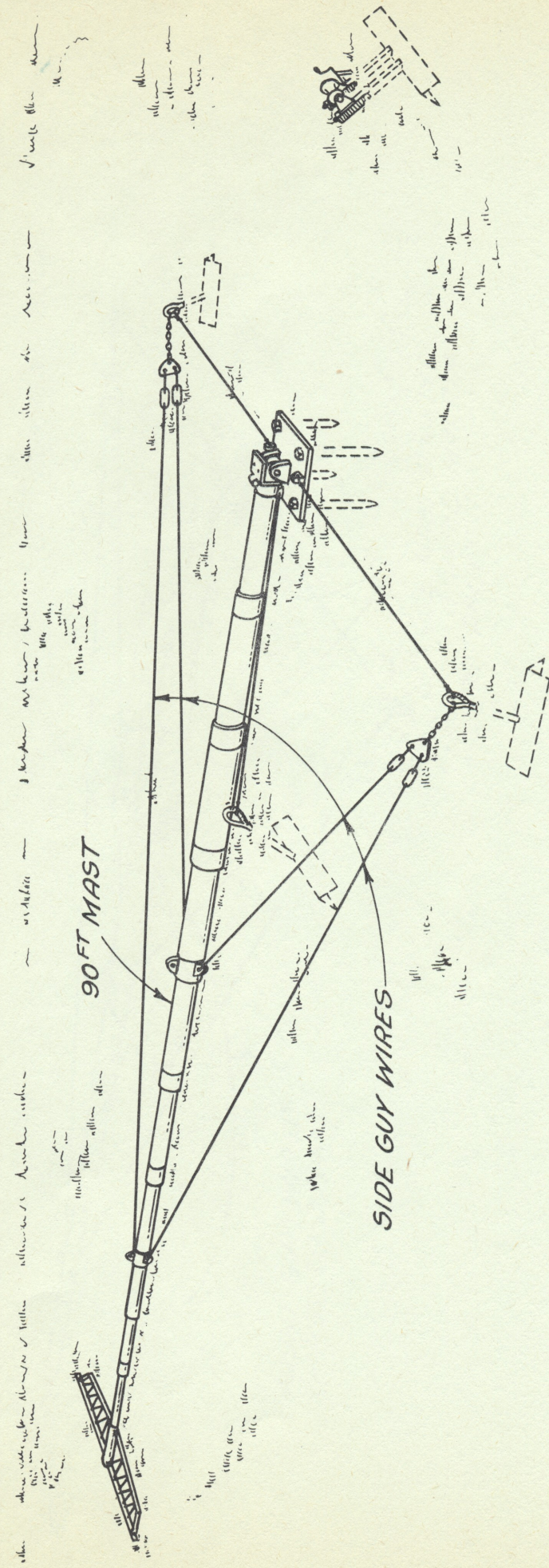


FIG. 4 - MAST AND TRUSS ASSEMBLY

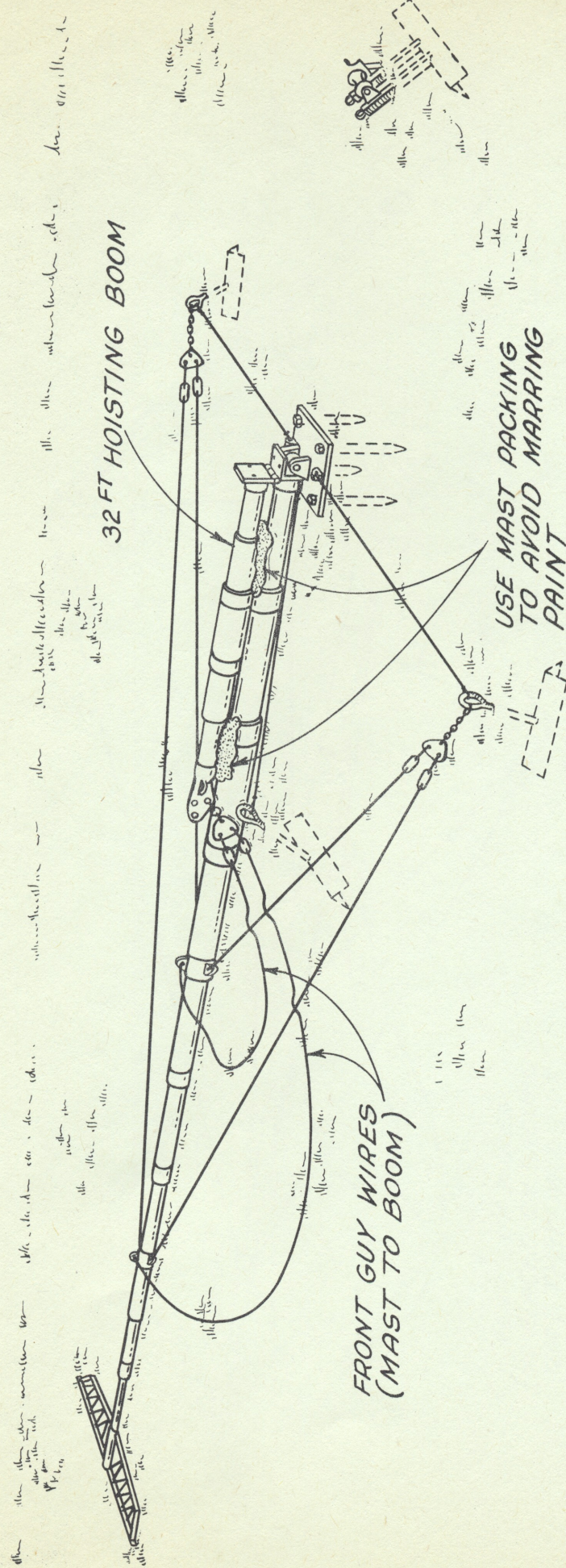


FIG. 5 - BOOM ASSEMBLY

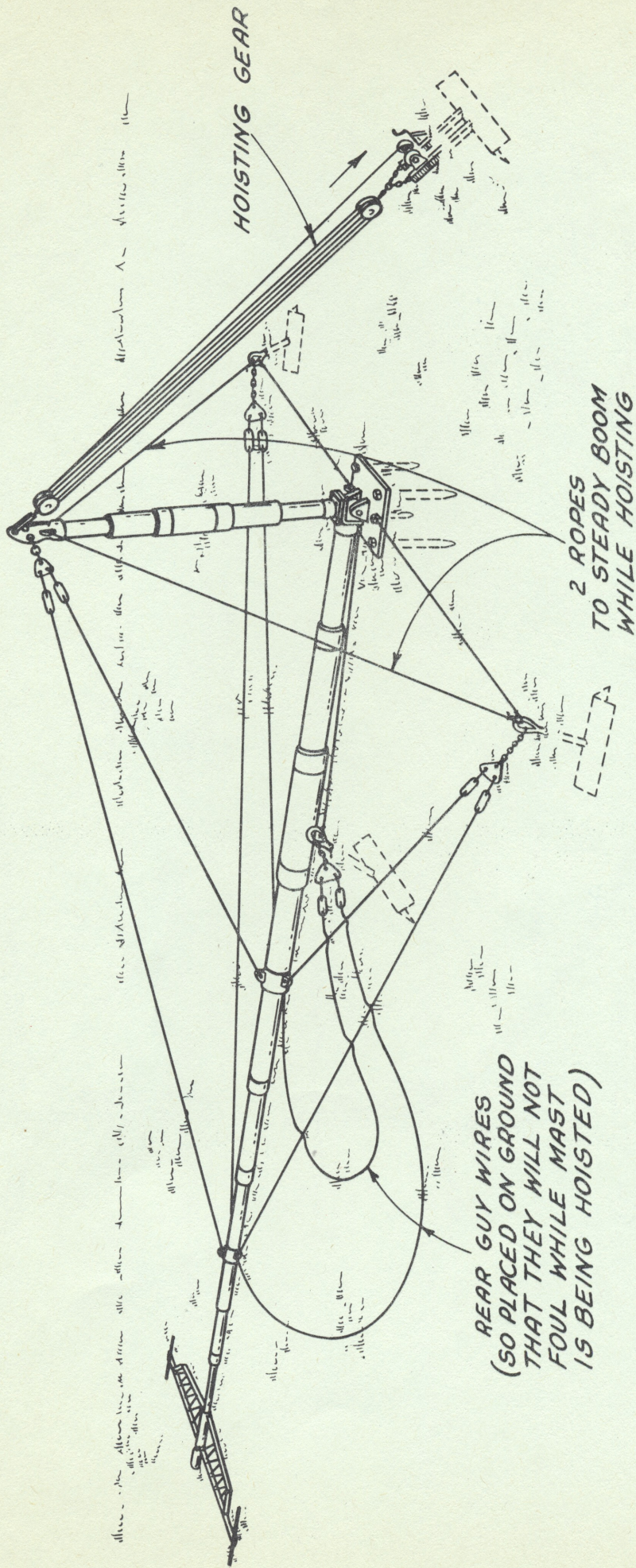
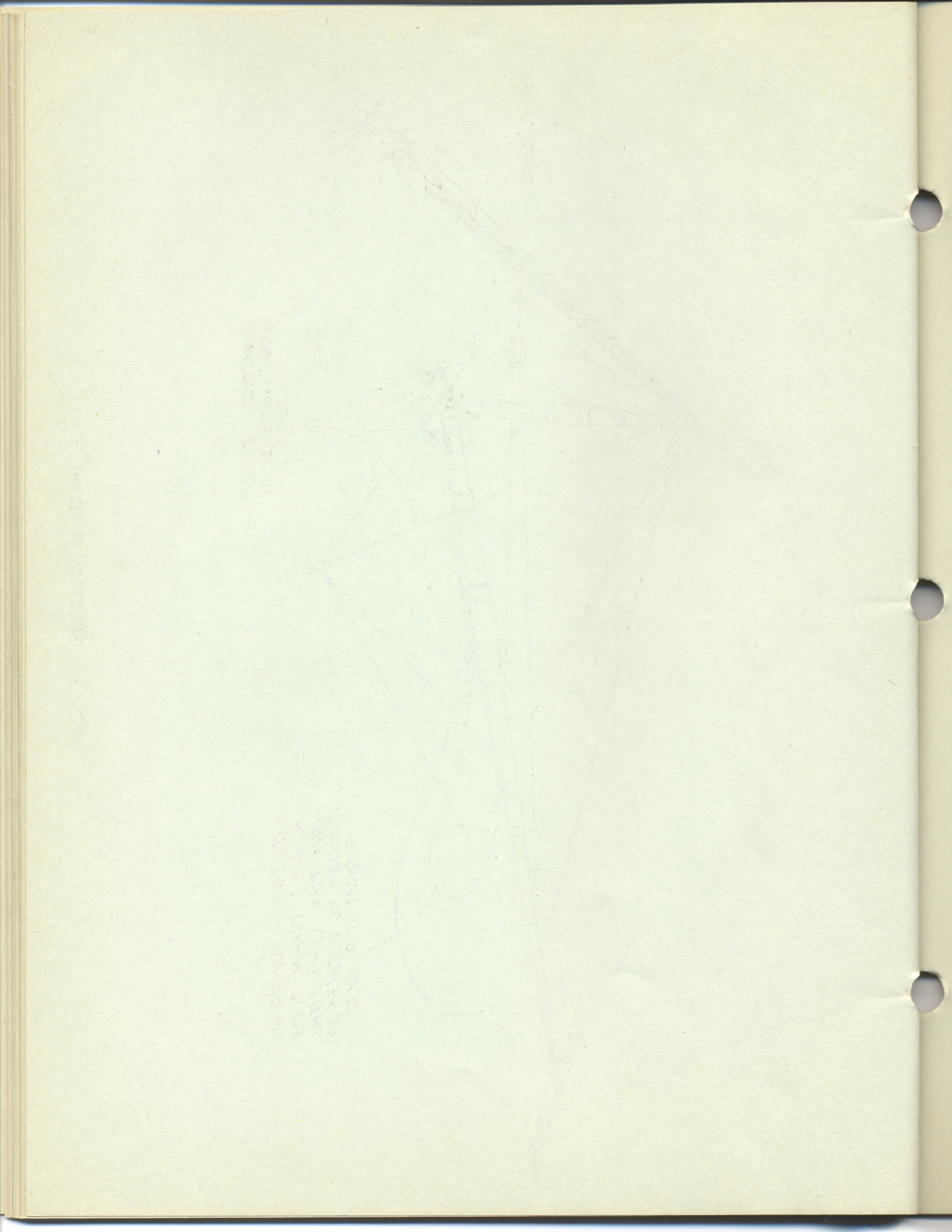


FIG. 6 - ERECTION OF BOOM



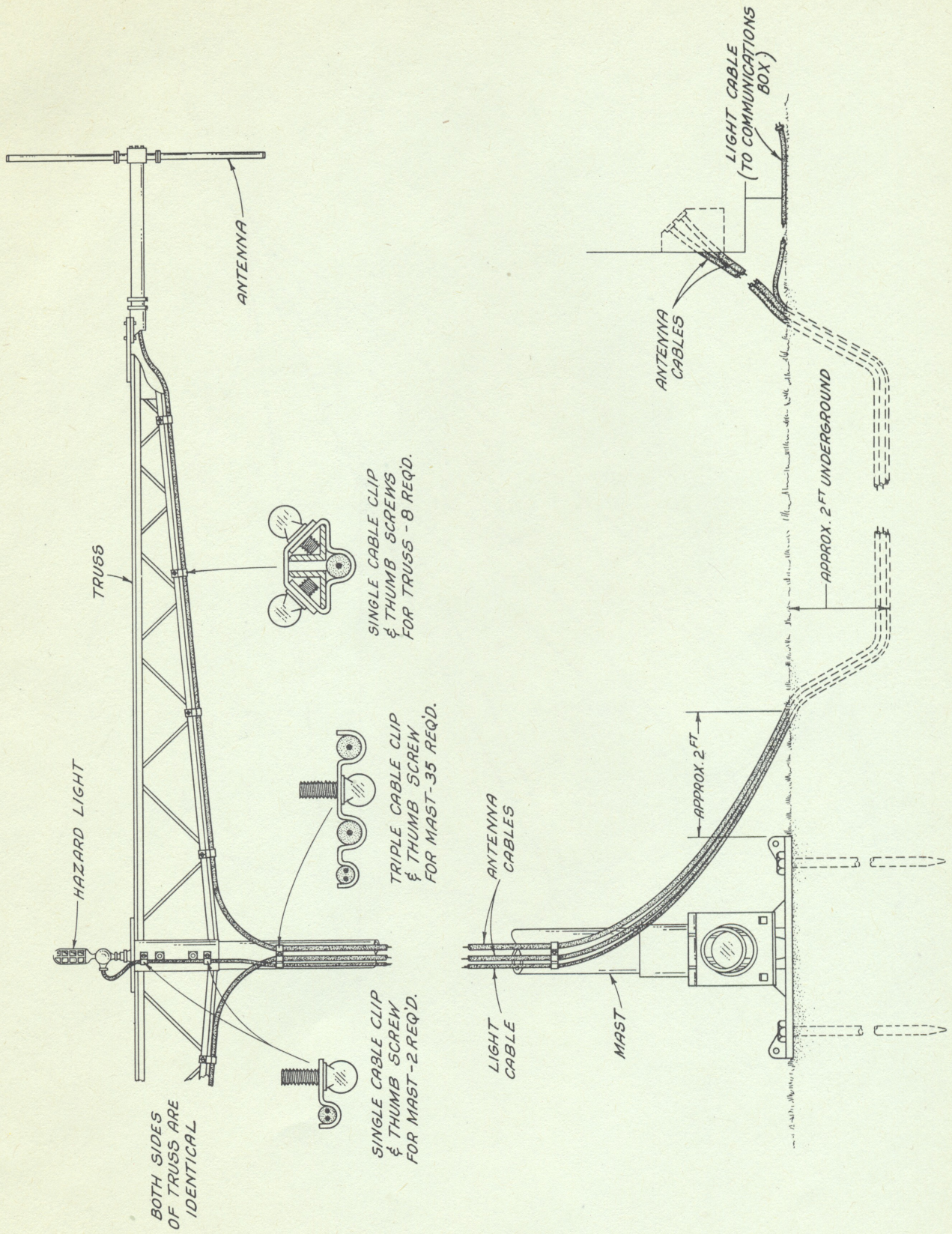


FIG. 7 - INSTALLATION OF ELECTRICAL EQUIPMENT

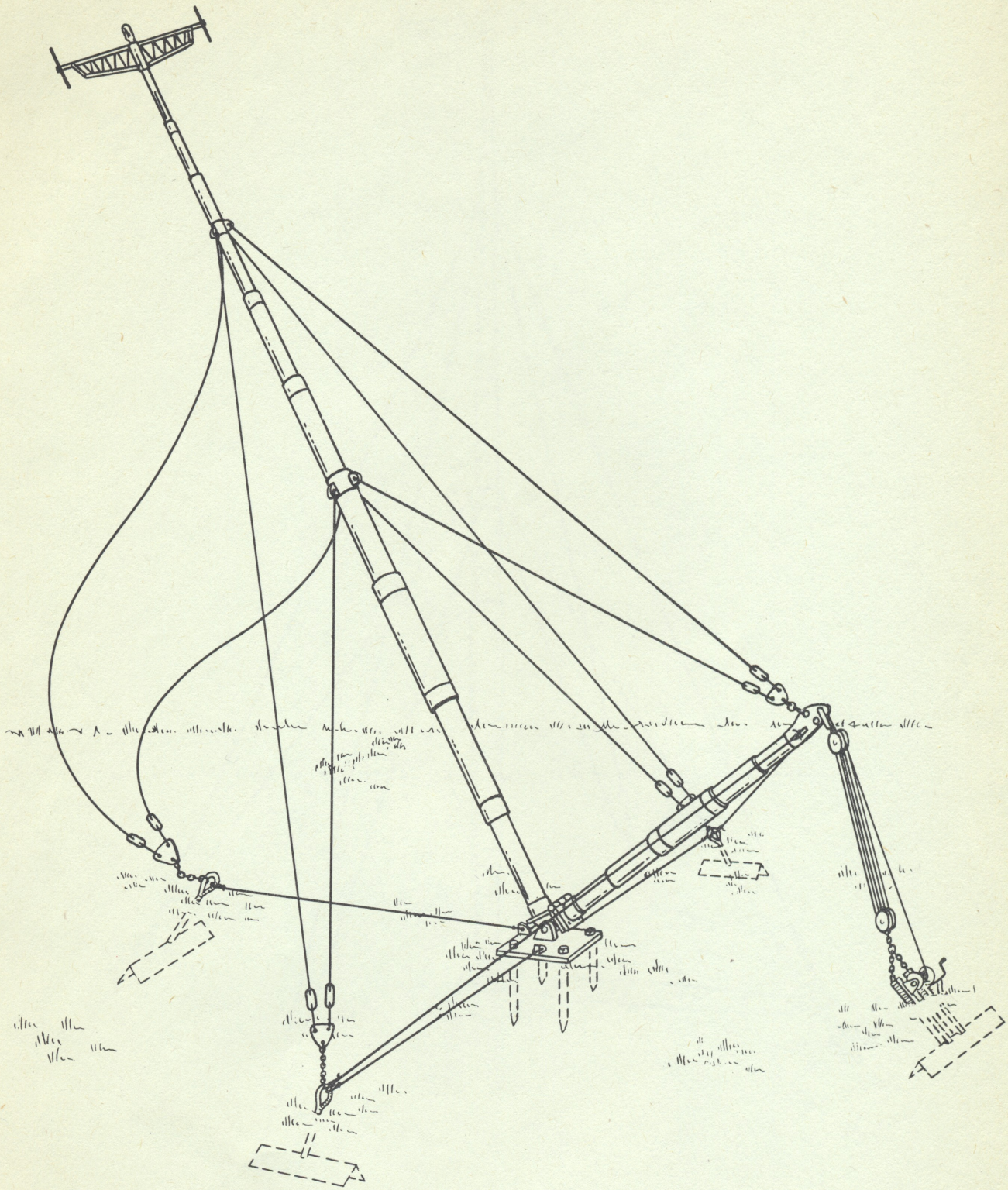
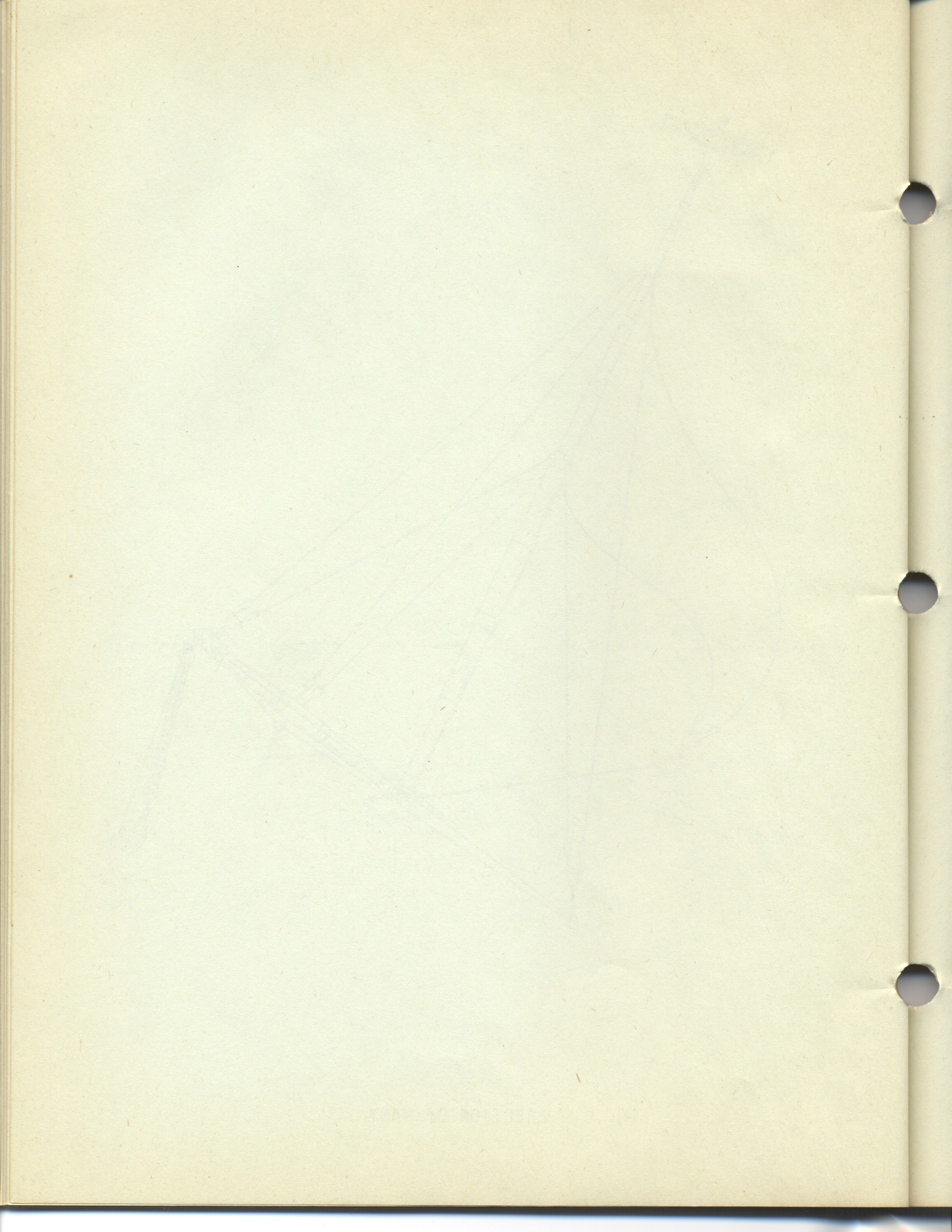


FIG. 8 - ERECTION OF MAST



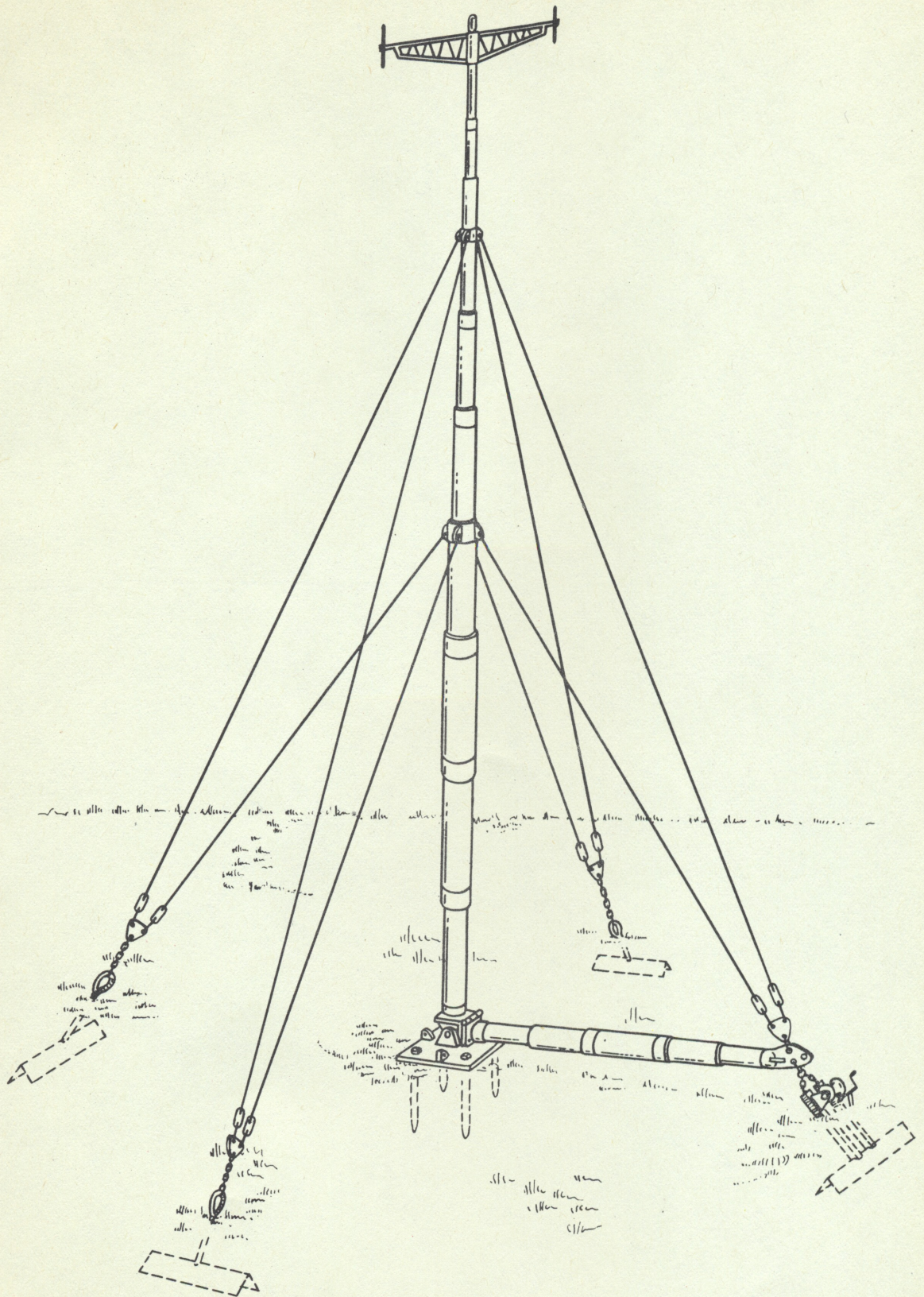


FIG. 9 - MAST ERECTED

