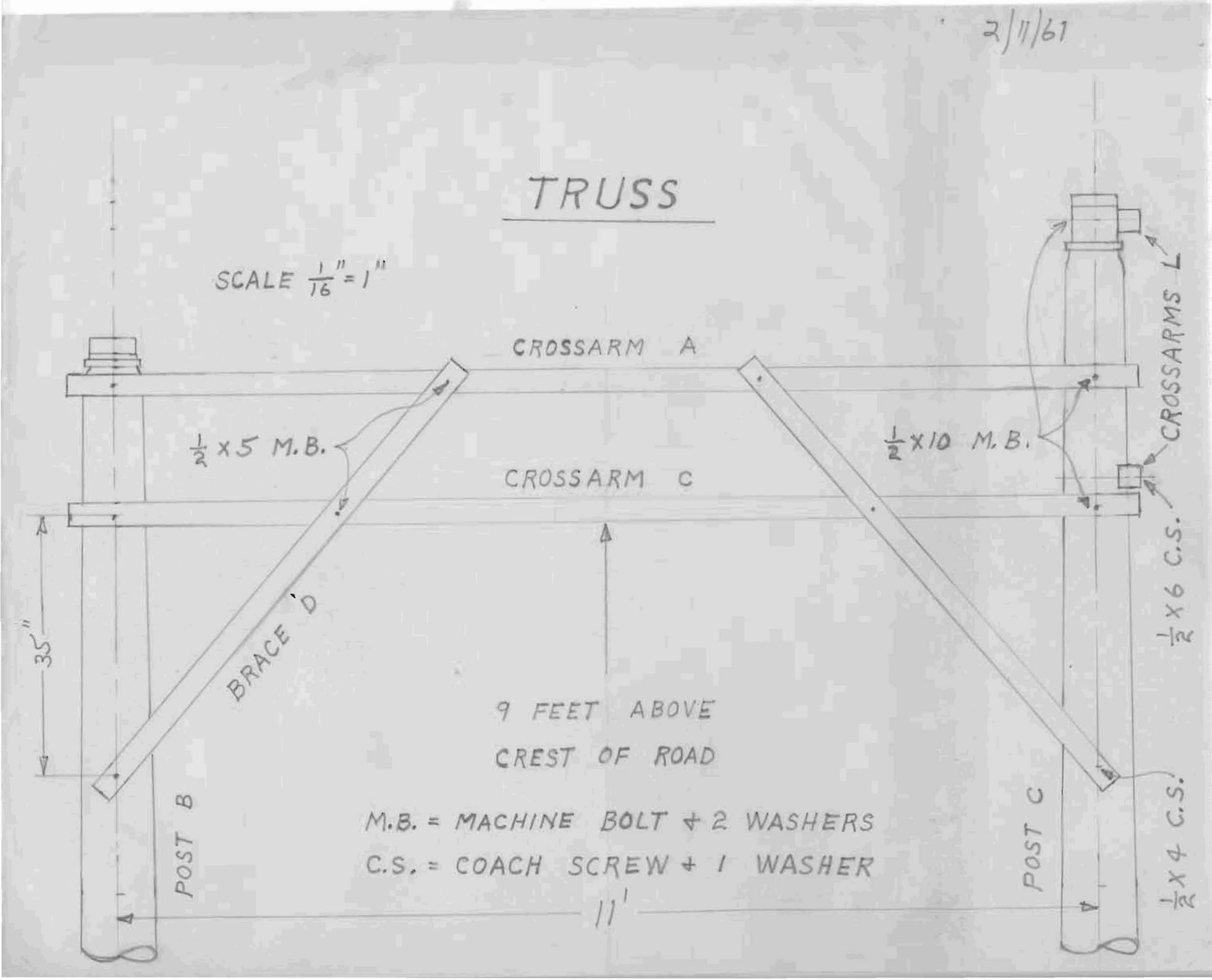
2/11/61

TRUSS



M.B. = MACHINE BOLT + 2 WASHERS

C.S. = COACH SCREW + 1 WASHER

8 Jan 61

Top operating frequency = 2238 KC = 139.1 m = 490 ft

Center " " = 2130 KC = 140.9 m = 462 ft

Bottom " " = 2022 KC = 148.4 m = 468.5 ft.

Frequency range = 2130 KC ± 108 KC = ± 5.07 %

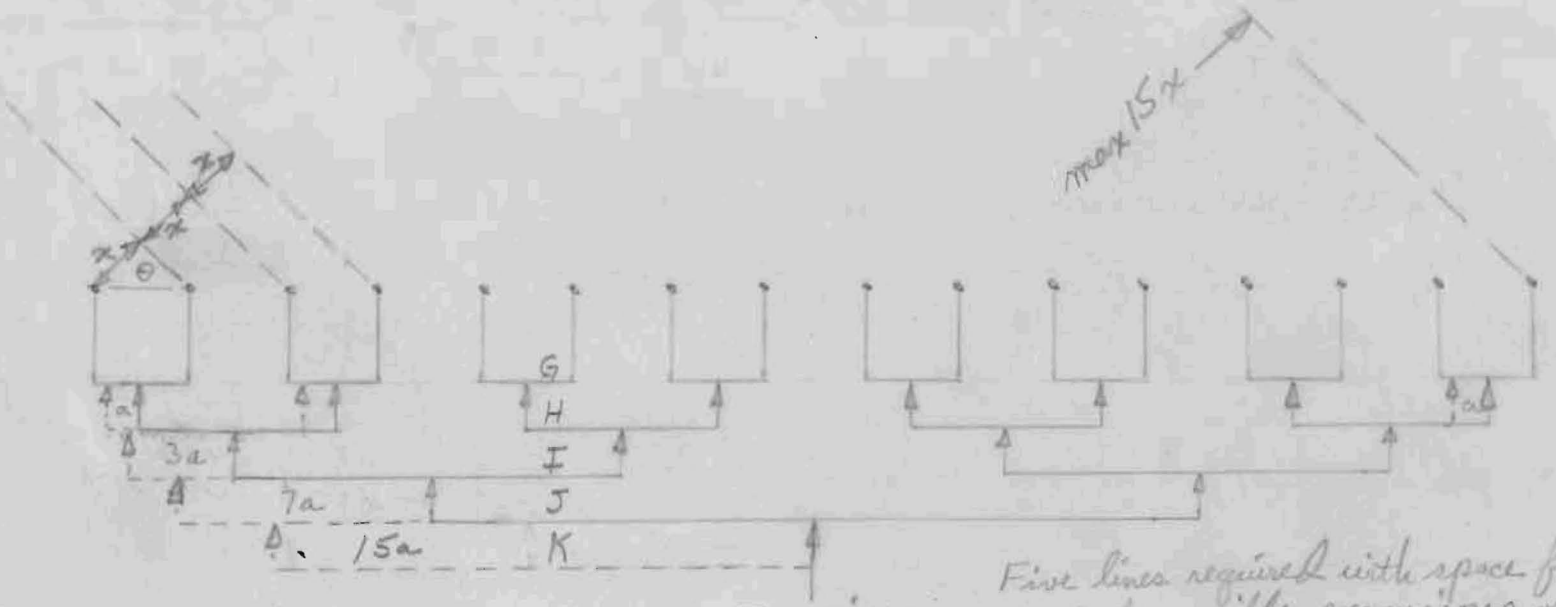
Antenna spacing = 220 ft = 67.1 m = 0.4765 ± 0.0235 λ

26 March 61

Feed system on North-South Line

Sixteen E/W lines with phase adjustment ± 45°

Under conditions shown the right E/W line will have 2(15a) = 30a more line in series with it than left E/W line.
Loss in 30a of line must be small compared to taper of illumination.



Five lines required with space for two more for possible expansions of array.

$\frac{1}{2}" = 220'$

When $\theta = 45°$; $x = 220 \sin 45° = 155.5'$; $a = \frac{x}{2} = 77.8'$

Limit is $a = 110'$, $x = 220'$; $\theta = \sin^{-1} \frac{220}{220} = 90°$ which is horizon

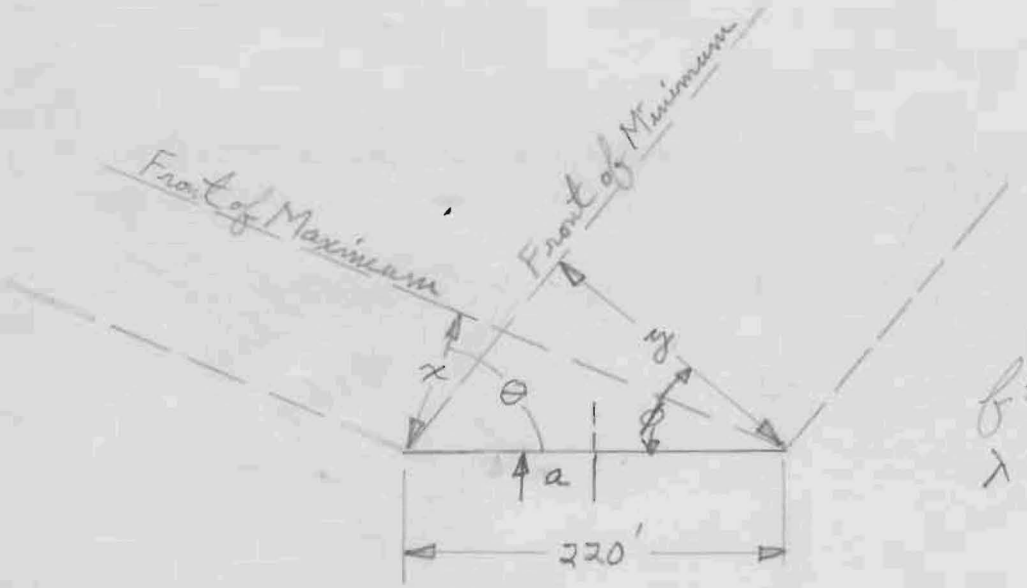
When $\theta > 45°$, the main lobe decreases fast and beam loses sharpness.

Shorting stubs should be provided $\lambda/4 = 115'$ beyond each sliding tap as noted by arrows.

$\left(6\frac{9}{16}" - \frac{15}{16}"\right) / \frac{3}{16}" = \frac{90}{16} \times \frac{16}{3} = 30a$ line difference, where $a = \frac{3}{16}"$

26 March 61

Position of Minimum



$f = 2130$ KC

$\lambda = 140.9_m = 462$ ft

Let feed line be offset from center an amount "a"

Path length $110 + a = x + 110 - a = 220 \cos\theta + 110 - a$

so $2a = 220 \cos\theta$ or $\theta = \cos^{-1}\frac{2a}{220}$ for maximum

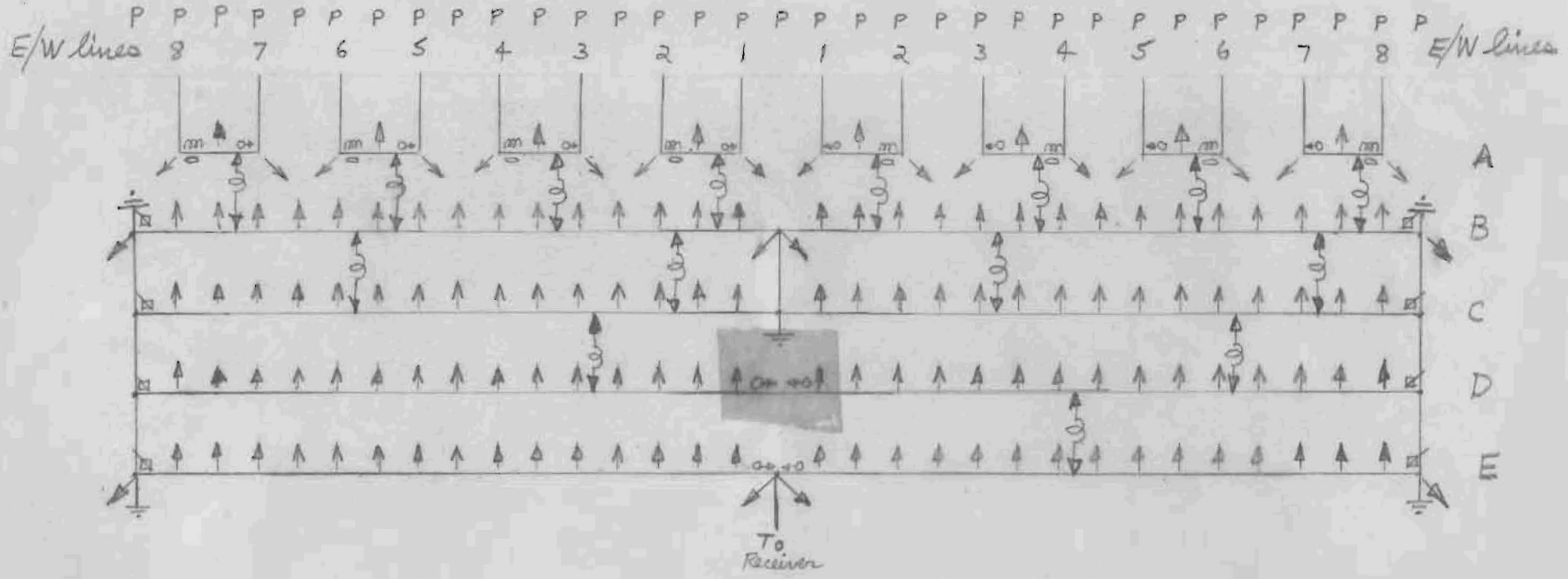
Path length $110 - a + 231 = y + 110 + a = 220 \cos\phi + 110 + a$

so $231 - 2a = 220 \cos\phi$ or $\phi = \cos^{-1}\frac{231-2a}{220}$ for minimum

a	$\frac{2a}{220}$	θ	$(231-2a)$	$(\rightarrow)/220$	ϕ	$90-\theta$
30'	.273	74.15°	171	.778	38.93°	15.85°
60'	.546	56.91°	111	.504	59.72°	33.08°
77.8'	.707	45.0	75.4	.343	69.94°	45.0°
90'	.819	35.0	51	.232	76.6°	55.0°
					minimum above horizon	maximum from zenith

Detail of North/South Lines

18 June 61



33 pairs of posts P

24 anchors

5 Ground rods ⏚ Transmission lines tied together at ends and center and connected to ground rods at each side post.

15 Transformers 300/600 ohms adjustable

8 Pairs spirneys and eyes

8 Pairs strain insulators

128 Pairs bell insulators & pins

144 line separators (one for each 110 ft span)

8 offset counterweight assemblies

12 pairs auger insulators

32 Line terminations.

Line E is to be broken at center, active half with trans. is connected to receiver. Other half is grounded. When beam is straight up; the trans. connects between receiver and line D. Both half of line E are grounded.

4 lines 3520 = 14080

8 lines 220 = 1760

15840 ft line = 31680 ft wire