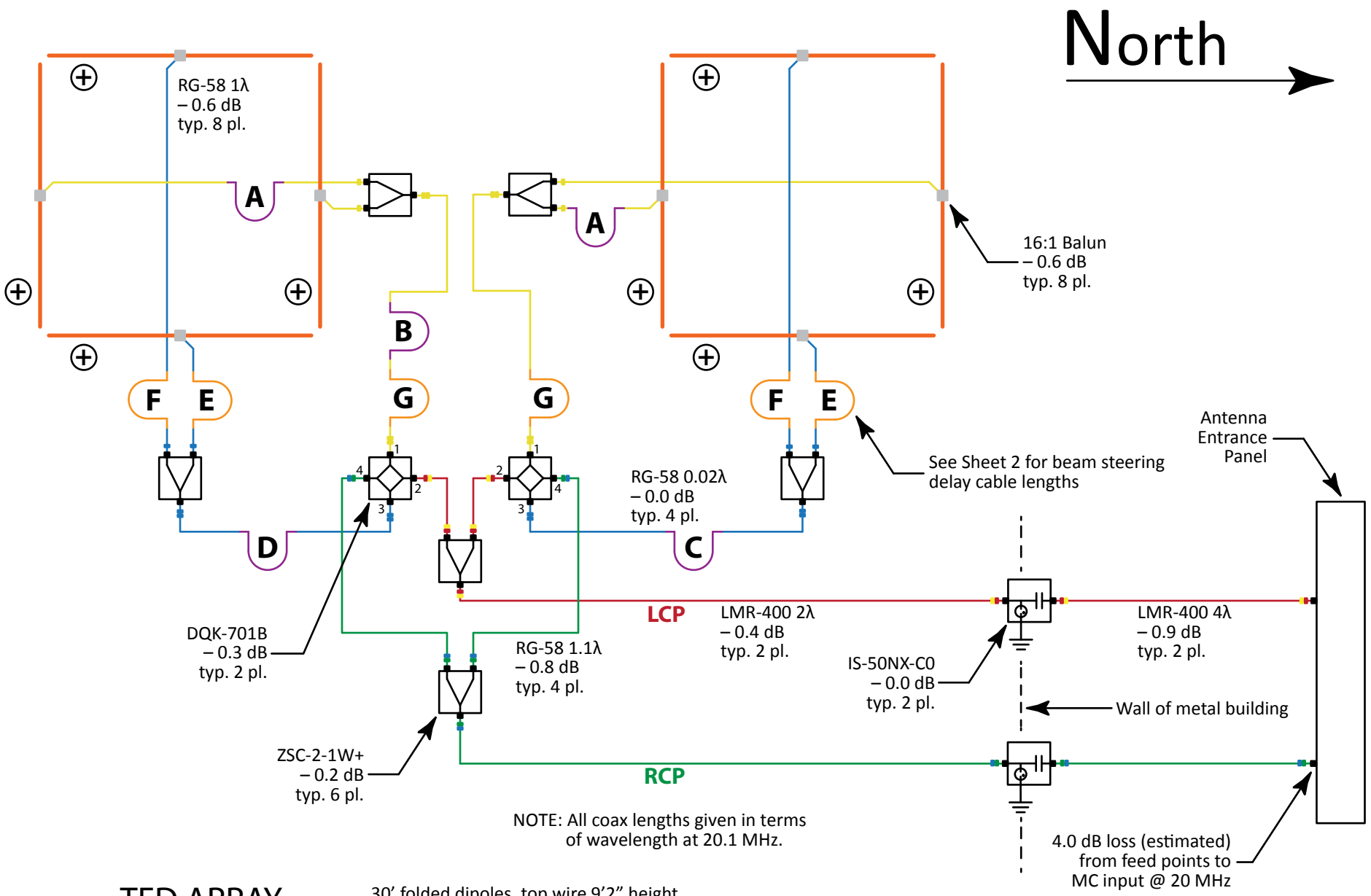


NOTE: All coax lengths given in terms of wavelength at 20.1 MHz.

TFD ARRAY CONFIGURATION B CP MODE

30' folded dipoles, top wire 9'2" height, 8" wire spacing, 32' element spacing, 800 Ω termination resistors, 16:1 baluns.

N-S BW ~20° E-W BW ~20° for < 3 dB response variance at 24 MHz

AJ4CO OBSERVATORY

AJ4CO Observatory Diagram

SIZE	DATE	PART NUMBER	REV
A	08 DEC 2013	N/A	
SCALE	NONE	DRAWN BY DAVE TYPINSKI	SHEET 1 OF 5

TFD Array Beam Steering Time Delay Cable Length Calulations

Delay Cable VoP		**66%**
Array elements N-S Spacing (feet):		**32**
Desired beam elevation along meridian θ:		**85°**
A Delay cable length (feet)	**Δ**	**1' 10"**
B Delay cable length (feet)	**2Δ**	**3' 8-1/4"**
C Delay cable length (feet)	**0.5Δ**	**11"**
D Delay cable length (feet)	**2.5Δ**	**4' 7-1/4"**

$$\text{Elevation delay cable length (ft)} = \text{Baseline(ft)} \times \cos\theta \times \text{VoP}$$

$$\text{Azimuth delay cable length (ft)} = \text{Baseline(ft)} \times \cos\phi \times \text{VoP}$$

Array elements E-W Spacing (feet)		**32**					
Desired beam E or W offset from meridian ϕ		**0°**	**5°**	**10°**	**15°**	**20°**	**25°**	**30°**
Actual beam azimuth for eastward delay:		**180°**	**135°**	**116°**	**108°**	**104°**	**101°**	**99°**
Actual beam azimuth for westward delay:		**180°**	**135°**	**244°**	**252°**	**256°**	**259°**	**261°**
True elevation toward actual azimuth:		**85°**	**83°**	**79°**	**74°**	**69°**	**65°**	**60°**
E OR F Delay cable length (feet)	**Δ**	**0"**	**1' 10"**	**3' 8"**	**5' 5-1/2"**	**7' 2-3/4"**	**8' 11"**	**10' 6-3/4"**
G Delay cable length (feet)	**0.5Δ**	**0"**	**11"**	**1' 10"**	**2' 8-3/4"**	**3' 7-1/4"**	**4' 5-1/2"**	**5' 3-1/4"**

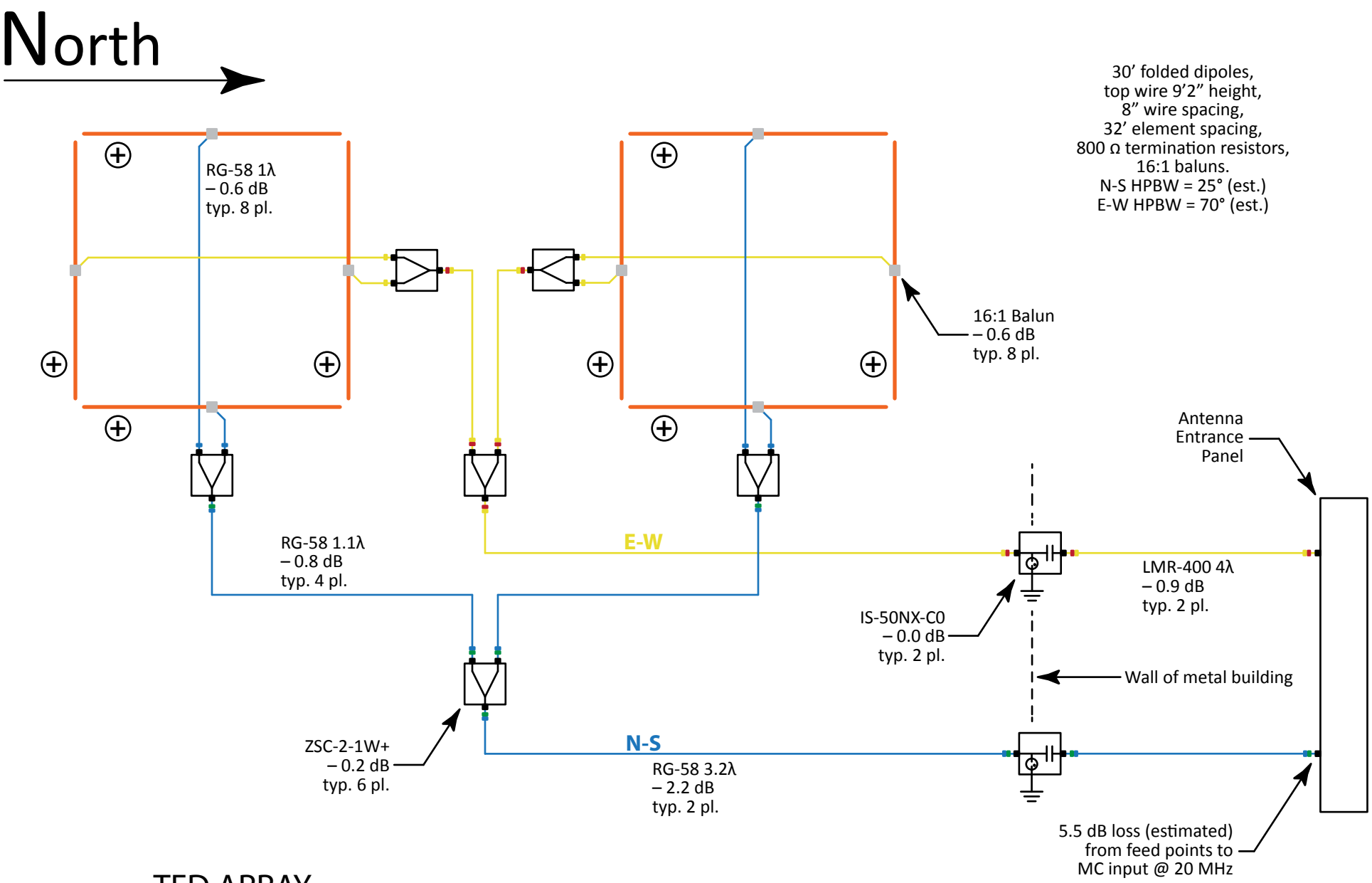
Use delay cables E for eastward beam steering, use delay cables F for westward beam steering, use delay cables G for either

AJ4CO OBSERVATORY

AJ4CO Observatory Diagram

SIZE	DATE	PART NUMBER	REV
A	08 DEC 2013	N/A	

SCALE	DRAWN BY	SHEET
NONE	DAVE TYPINSKI	2 OF 5



TFD ARRAY CONFIGURATION A X-Y MODE

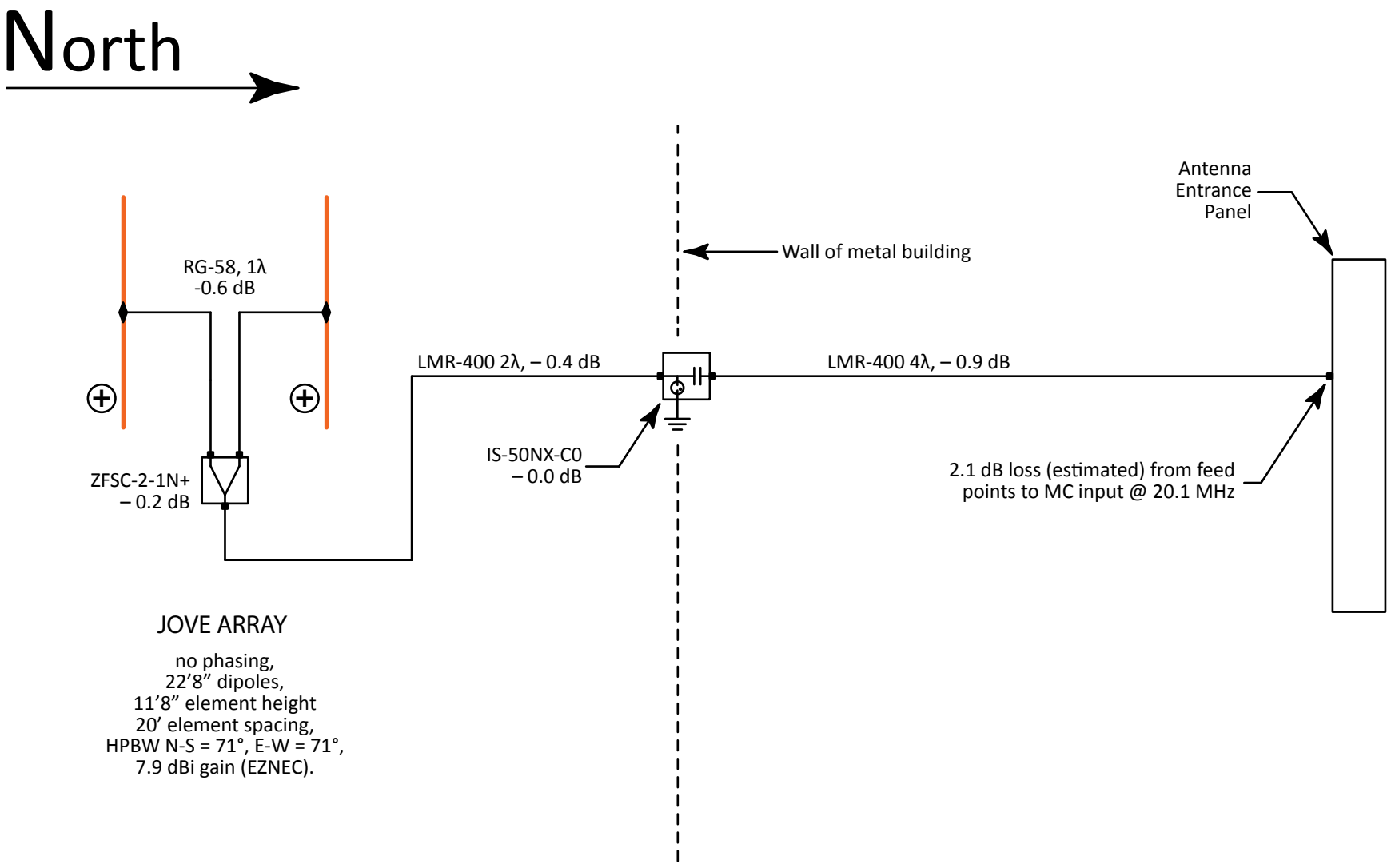
NOTE: All coax lengths given in terms of wavelength at 20.1 MHz.

AJ4CO OBSERVATORY

AJ4CO Observatory Diagram

SIZE	DATE	PART NUMBER	REV
A	08 DEC 2013	N/A	

SCALE	NONE	DRAWN BY	DAVE TYPINSKI	SHEET	3 OF 5



JOVE ARRAY

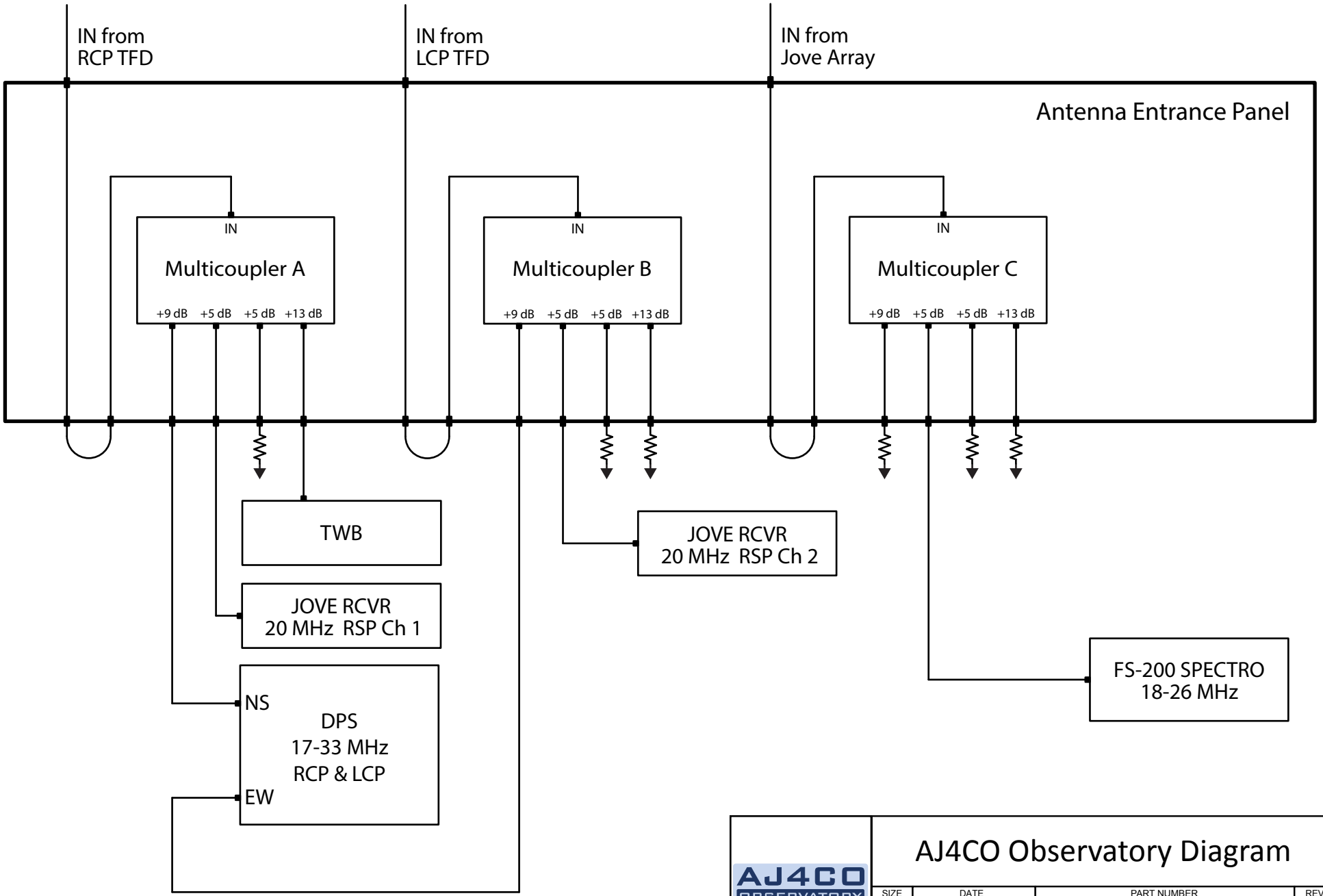
no phasing,
22’8” dipoles,
11’8” element height
20’ element spacing,
HPBW N-S = 71°, E-W = 71°,
7.9 dBi gain (EZNEC).

NOTE: All coax lengths given in terms of wavelength at 20.1 MHz.

AJ4CO Observatory Diagram

SIZE	DATE	PART NUMBER	REV
A	08 DEC 2013	N/A	

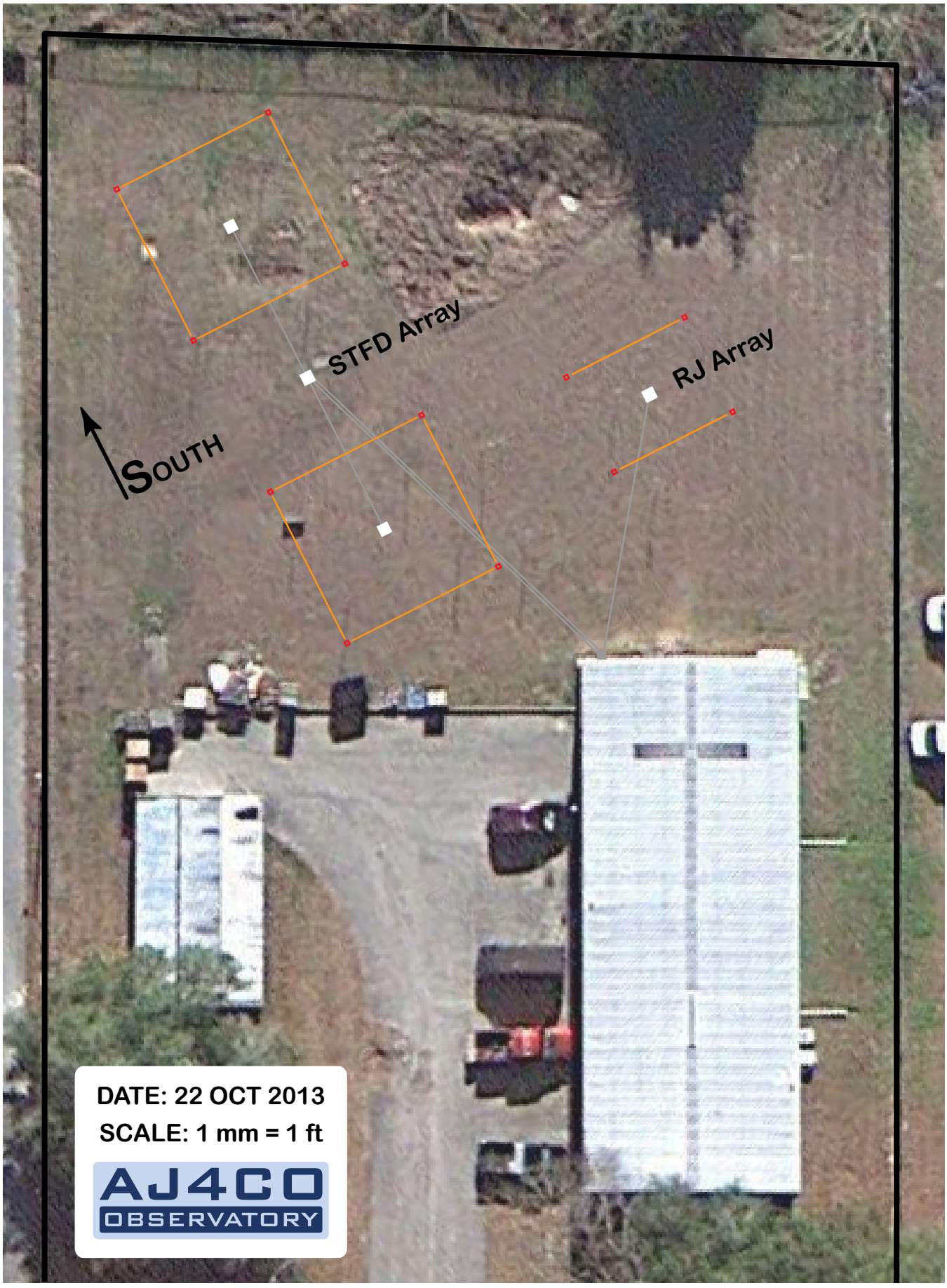
SCALE	DRAWN BY	SHEET
NONE	DAVE TYPINSKI	4 OF 5

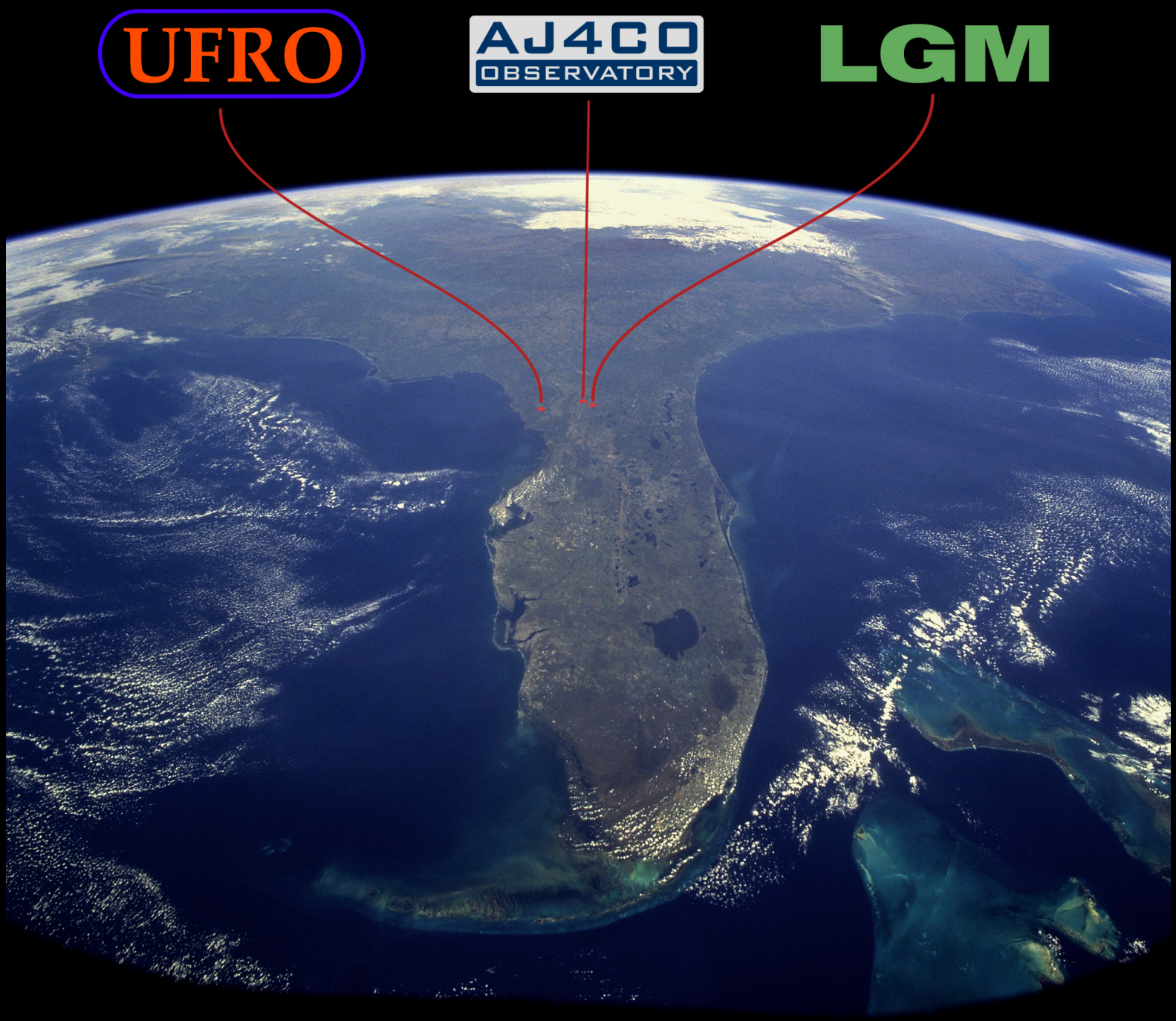


AJ4CO Observatory Diagram

SIZE	DATE	PART NUMBER	REV
A	08 DEC 2013	**N/A**	

SCALE	DRAWN BY	SHEET
NONE	DAVE TYPINSKI	5 OF 5


STFD Array
RJ Array
SOUTH
DATE: 22 OCT 2013
SCALE: 1 mm = 1 ft
AJ4CO
OBSERVATORY


UFRO
AJ4CO
OBSERVATORY
LGM