Interoffice

NATIONAL RADIO ASTRONOMY OBSERVATORY

TUCSON, ARIZONA

April 22, 1981

To: J. Payne

From: D. Ross

12 METER MILLIMETER WAVE TELESCOPE
MEMO No. 22

Subject: 12-Meter Antenna

We cannot mount a 12-meter diameter surface to the existing mount and observe at 0^{o} elevation for all azimuth positions. It would be possible, however, to observe at approximately 6^{o} elevation if we assume that the pedestal remains at its present height above the floor, and that the new back structure does not interfere with the pedestal. We presently are limited to observations above 14.5^{o} elevation for all azimuth positions.

There are conditions where, with major modifications to the existing buildings, it would be possible to observe at 6^{o} elevation for all azimuth positions. There are conditions where minor modifications to the existing buildings would allow observations at 6^{o} elevation over a limited azimuth range. Observations at 0^{o} elevation could be achieved if the new surface were 11.28 meters in diameter and minor modifications were made to the existing buildings.

I have outlined the various conditions below:

Proposal #1

ASSUME:

1. All existing buildings stay as are.
2. The new surface is 12 meters in diameter.
3. The distance from the surface to the pedestal mount is 4 feet 3 inches.

Under these conditions we could observe at an elevation of 6^{o} from 126^{o} to 264^{o} in azimuth. Observation at approximately 56^{o} elevation would be possible from 264^{o} to 126^{o} azimuth. See Figure 1B.

Proposal #2

ASSUME:

1. The observers lounge were modified as shown in Fig. 2B.
2. The new surface is 12 meters in diameter.
3. The distance from the surface to the pedestal mount is 1 meter. (See Fig. 2A).

Under these conditions we could observe at an elevation of 6^{o} from 86^{o} to 264^{o} in azimuth. Observations at approximately 56^{o} elevation would be possible between 264^{o} and 86^{o} azimuth. The loss of space to the observers lounge would be approximately 90 square feet.

Proposal #3

ASSUME:

1. All buildings are modified as shown in Fig. 3B.
2. The new surface is 12 meters in diameter.
3. The distance from the surface to the pedestal mount is 1 meter (see Fig. 3A).

Under these conditions it would be possible to observe at approximately 6^{o} elevation for all positions of azimuth.

The loss of space would be approximately:

1. Observer's lounge - 64 square feet.
2. Analysis computer room - 20 square feet.
3. Control Room - 95 square feet.
4. Work Area - 15 square feet.

Proposal #4

ASSUME:

1. All buildings are modified as shown in Fig. 4B.

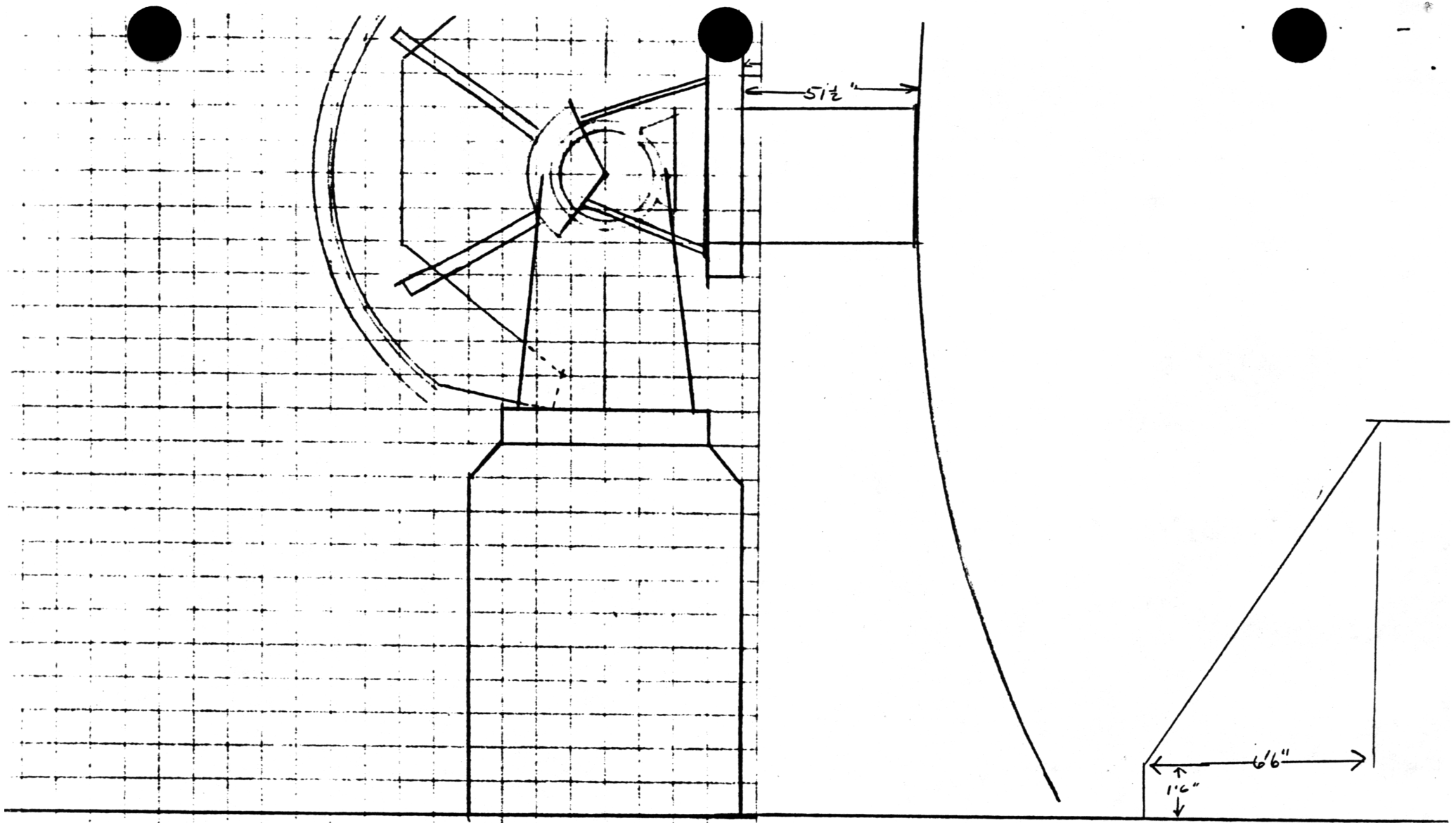
2. New surface diameter is 11.28 meters.

3. The distance from the surface to the pedestal mount is 1 meter.

Under these conditions we could observe at 0^{o} elevation for all azimuth positions, with minimal loss of building space (see Figs. 4A & B).

Attachments

c: Cathy Burgess



NOT TO SCALE

4/21/81 DEK

FIG 1A

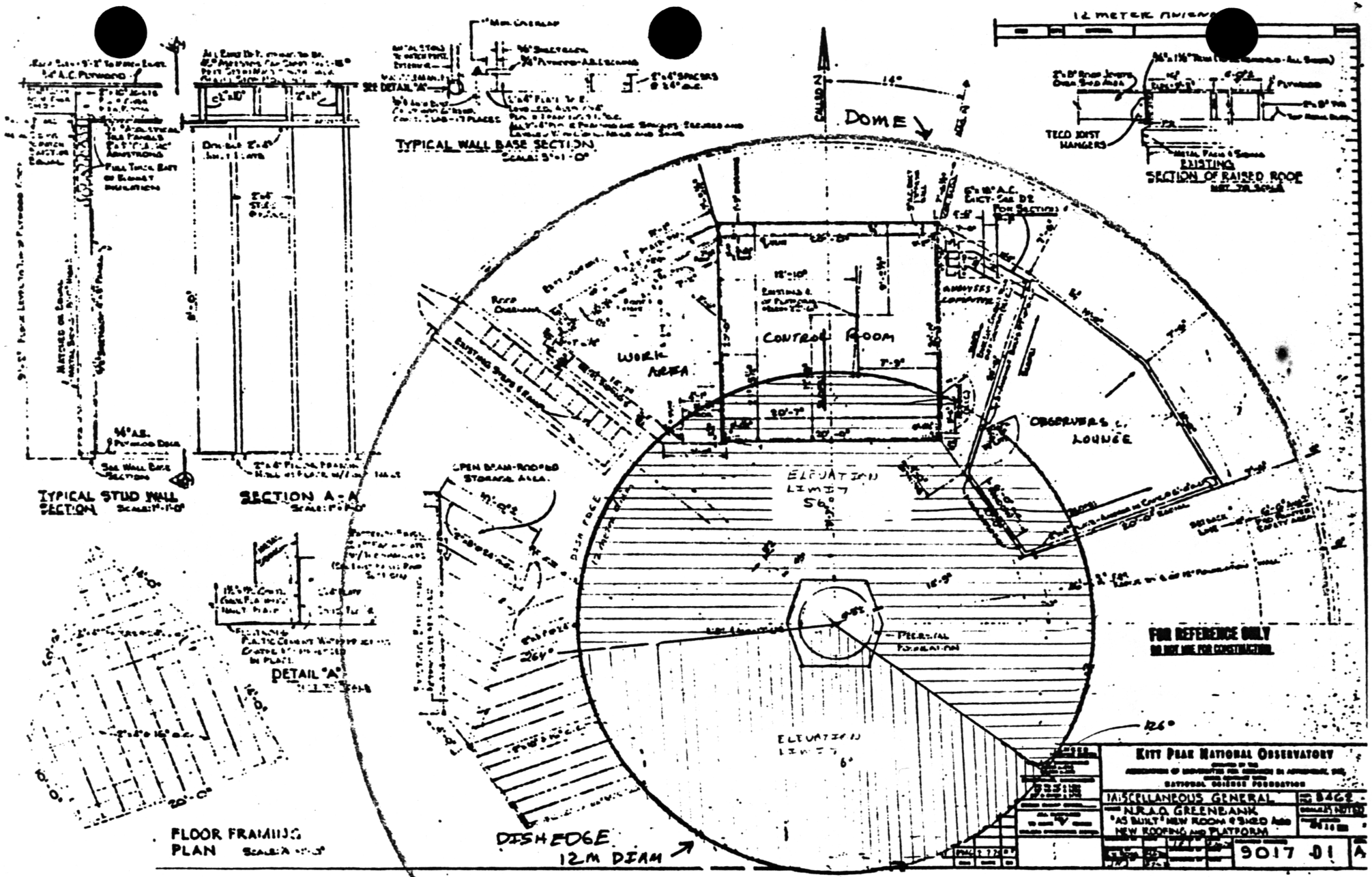
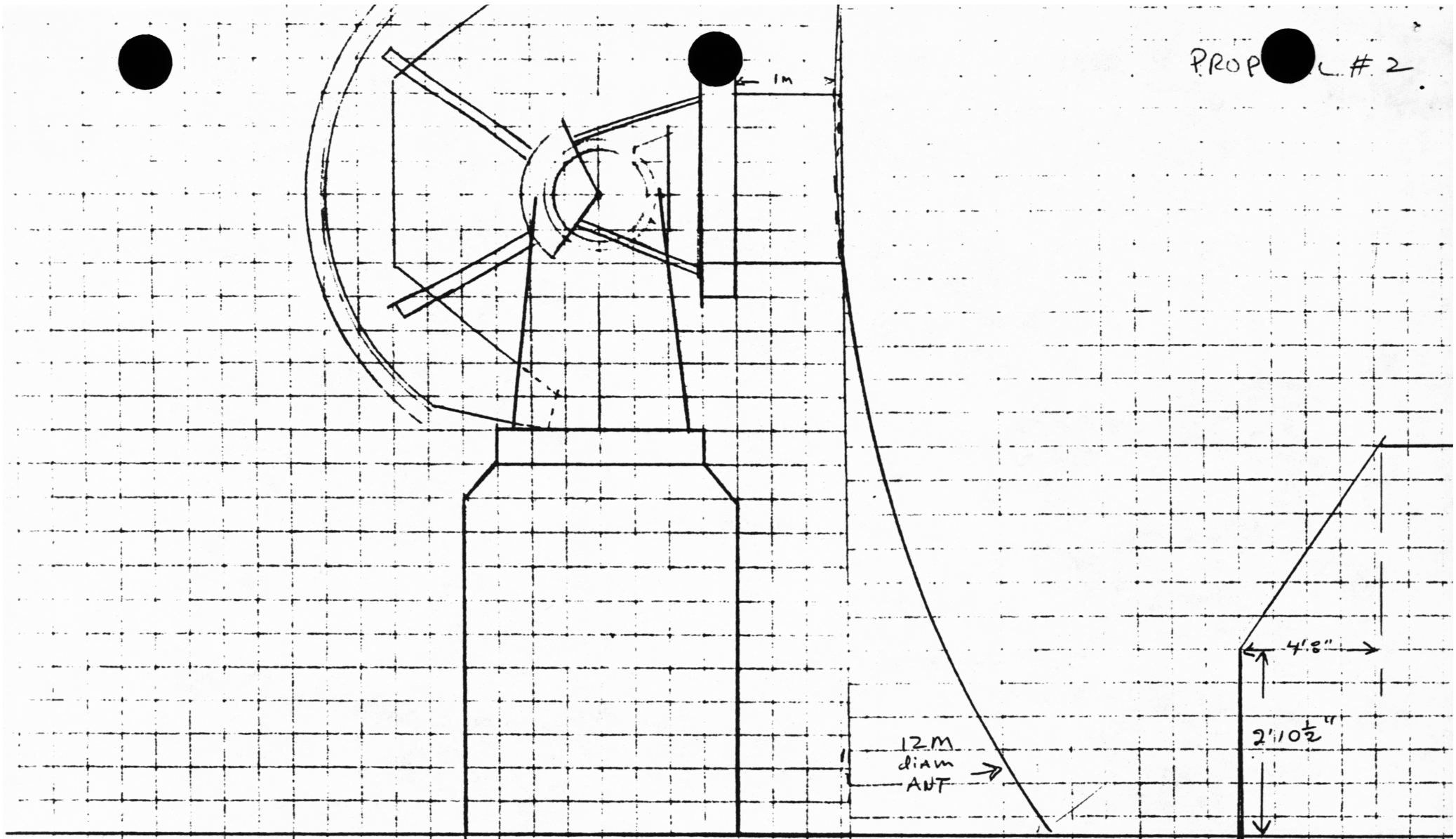

DOME
TYPICAL WALL BASE SECTION
TYPICAL STUD WALL SECTION
SECTION A-A
DETAIL "A"
FLOOR FRAMING PLAN
DISH EDGE
12M DIAM
CONTROL ROOM
WORK AREA
OBSERVER'S LOUNGE
OPEN BEAM-ROOFED STORAGE AREA
ELEVATION LIMIT 56°
ELEVATION LIMIT 6°
264°
126°
EXISTING SECTION OF RAISED ROOF
TECO JOIST HANGERS
FOR REFERENCE ONLY
DO NOT USE FOR CONSTRUCTION
KITT PEAK NATIONAL OBSERVATORY
MISCELLANEOUS GENERAL
N.R.A.O. GREENBANK
"AS BUILT" NEW ROOM & SHED ADD
NEW ROOFING AND PLATFORM
9017 01

FIG 1B

PROP C # 2

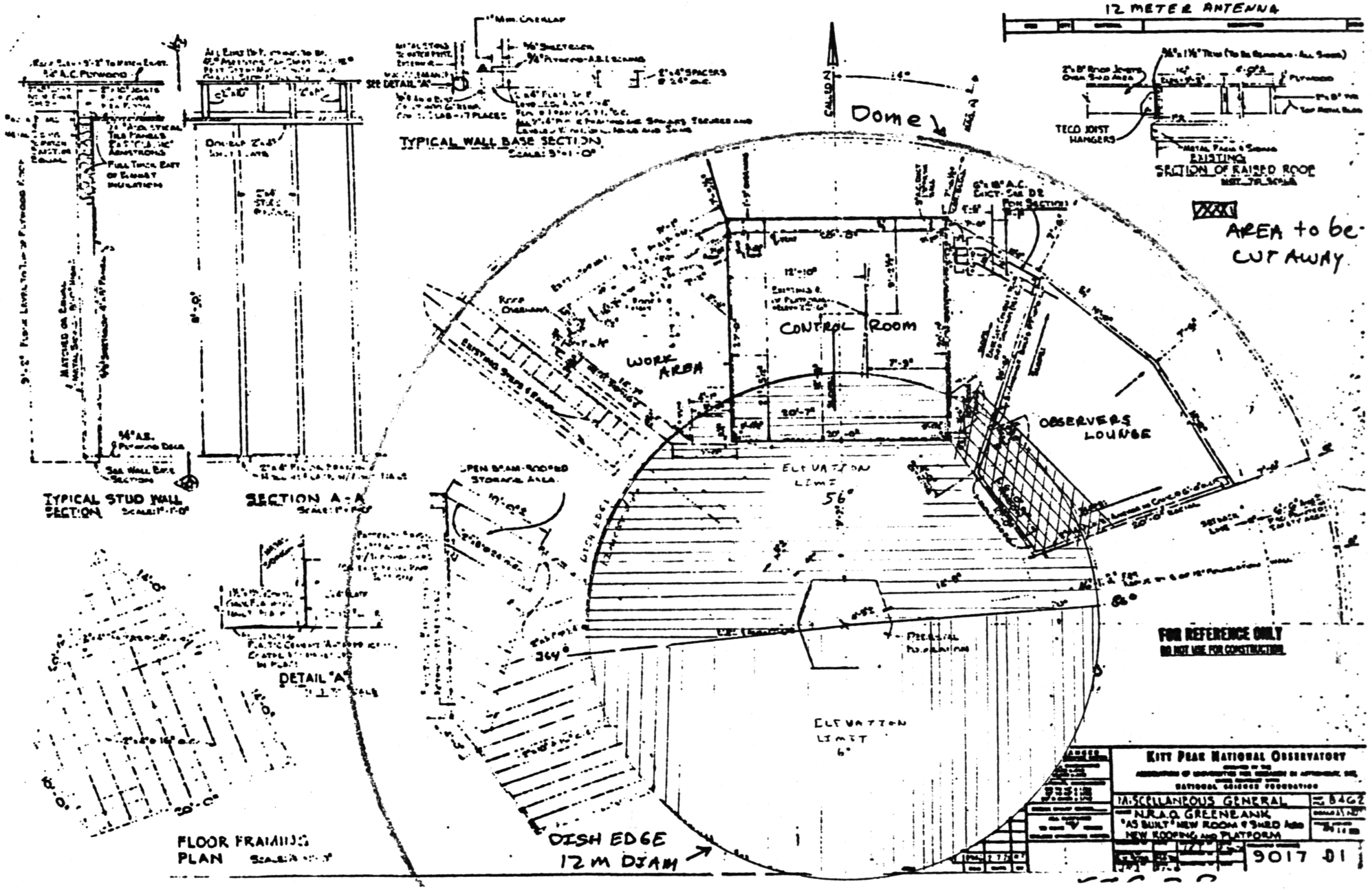


NOT TO SCALE

4/2/81
DEK.

FIG. 2A

PROPOSAL # 2
12 METER ANTENNA



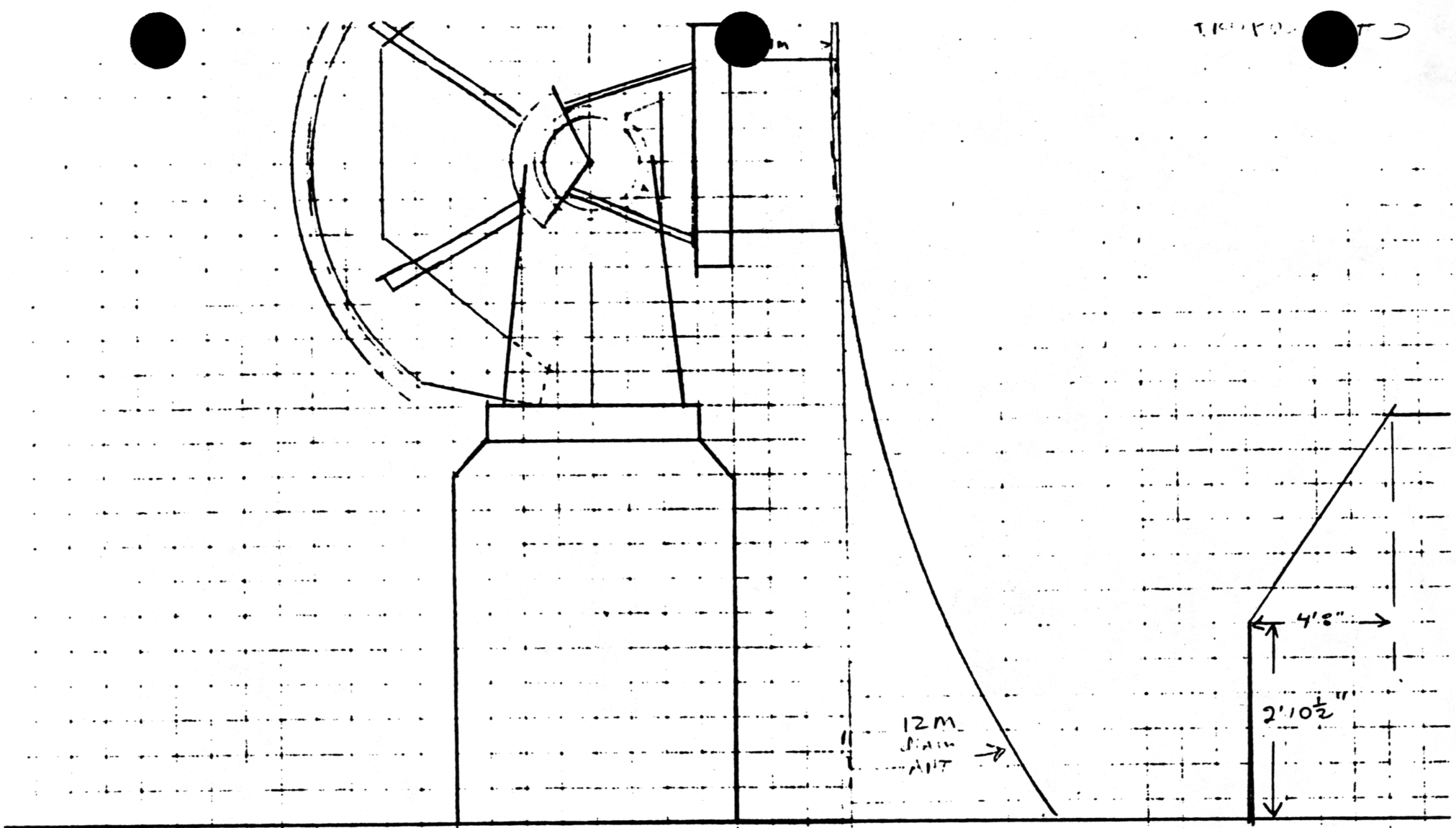
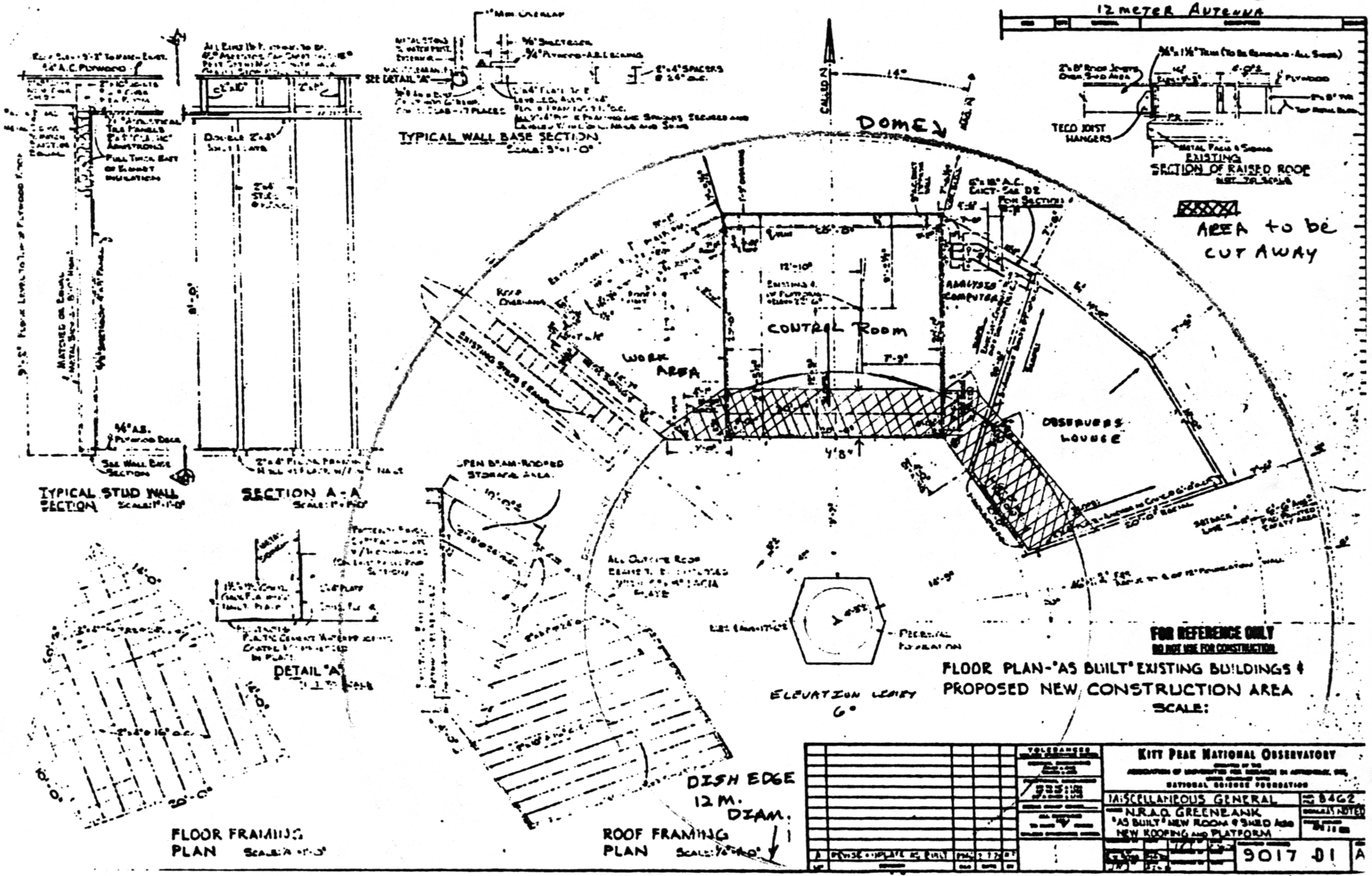


FIG 3A

PROPOSAL # 3
12 METER ANTENNA



KITT PEAK NATIONAL OBSERVATORY

MISCELLANEOUS GENERAL

N.R.A.O. GREENBANK
"AS BUILT" NEW ROOM & SHED Adds
NEW ROOFING and PLATFORM

9017 01

FIG # 3B

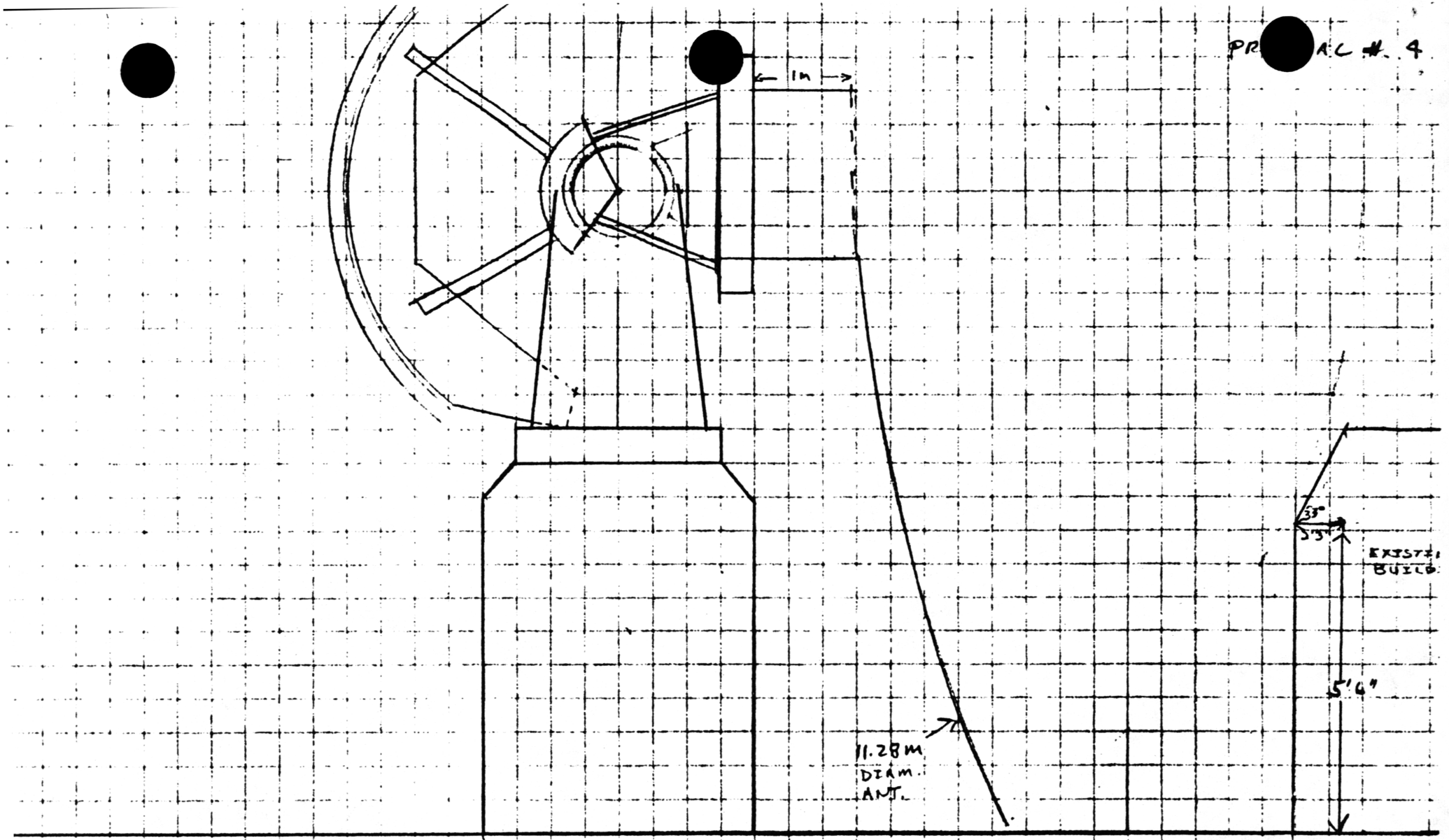
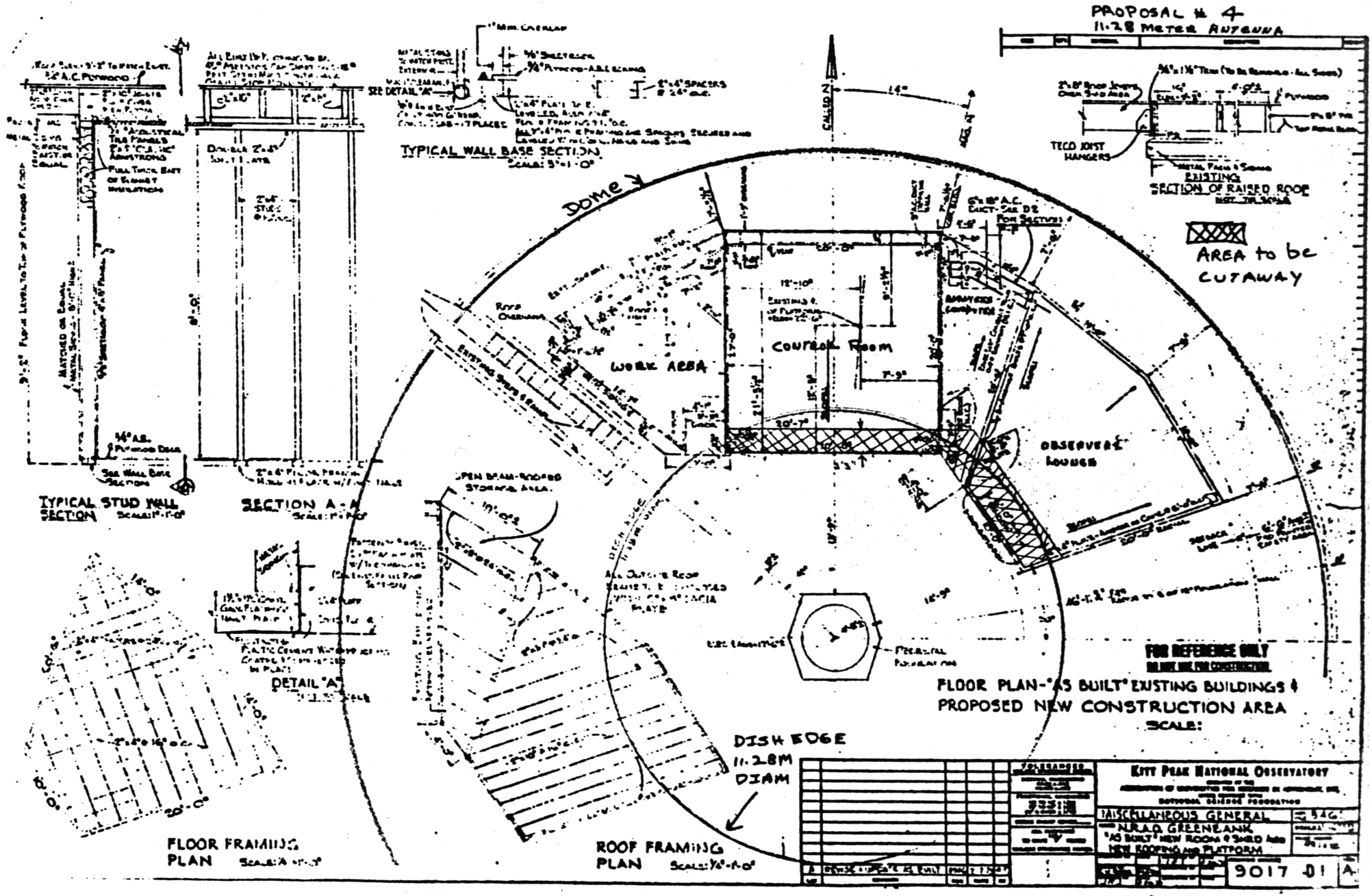

PR AC # 4
1m
11.28m
DIAM.
ANT.
33°
5'3"
EXIST
BUILD
5'6"
NOT TO SCALE
4/21/81 PER

FIG 4A


PROPOSAL # 4
11.28 METER ANTENNA
Dome
AREA to be CUTAWAY
EXISTING SECTION OF RAISED ROOF
TECO JOIST HANGERS
TYPICAL WALL BASE SECTION
TYPICAL STUD WALL SECTION
SECTION A-A
DETAIL "A"
Control Room
WORK AREA
OBSERVERS' LOUNGE
OPEN BEAM-ROOFED STORAGE AREA
DISH EDGE
11.28M DIAM
FLOOR FRAMING PLAN
ROOF FRAMING PLAN
FOR REFERENCE ONLY
FLOOR PLAN-"AS BUILT" EXISTING BUILDINGS & PROPOSED NEW CONSTRUCTION AREA
SCALE:
KITT PEAK NATIONAL OBSERVATORY
MISCELLANEOUS GENERAL
N.R.A.O. GREENBANK
"AS BUILT" NEW ROOM & SHED AND NEW ROOFING AND PLATFORM
9017 .01 A