APPENDIX A

PRESURVEY DATA

1. Administrative Data.
   a. Name of project _____
   b. Task charge number _____
   c. Site name or identification _____
   d. Type of station _____
   e. Operating service ( ) USA, ( ) USN, ( ) USAF, Other (specify)
   _____
   f. Location of site _____
   g. Site coordinates: Latitude _____ Longitude _____
   Elevation _____ As obtained from _____
   h. Directions to site (Mark route upon the best available road or topographical map.)
   _____
   _____
   i. Owner or command controlling site (name and address)
   _____
   _____
   j. Military and civilian contacts (names and addresses)
   _____
   _____
2. Earth Terminal Data.
   a. Earth terminal(s).
   Type _____ Number _____
   Transmitter power _____ kW.
   b. Azimuths of satellite rise and set (from true north).
   Rize azimuth _____ Set azimuth _____
3. Table of Maps and Plots. (Fill in paragraph a below for each map; scale should be 1:24, 000 or 1:62, 500 with a contour interval of 10 feet or less).
   a. Title _____
   (1) Map series _____
   (2) Type (geodetic, profile, plot, etc.) _____
   (3) Territory _____

(4) Source _____

(5) Scale _____ Date _____

(6) Special data (plot size, antenna, bearing, etc.)

_____

_____

_____

b. If not already shown on existing maps, the following items should be added during the presurvey preparation or during the site survey.

(1) Area of site, assigned or to be acquired, and route of access road (access road required is 12-foot crown width). Note possible obstructions which may block transportation of equipment to the site.

(2) Heavily populated areas within 5 miles, ammunition storage areas within 3 miles, and POL storage areas within 1 mile. Show other military installations within 10 miles.

(3) The location of possible RF interference sources.

(4) Route of communications cable, existing LOS, or tropo. (Add additional sheets for each map required.)

4. Surveying Data and Accuracy.

a. Description and coordinates of established site marker in the area to be surveyed and bearing and distance from this marker to the proposed site _____

_____

_____

b. Surveying accuracy will be as follows:

(1) Base line azimuth; _____ order.
(1st, 2nd, 3rd)

(2) Length of base line; _____ order.
(1st, 2nd, 3rd)

Note: 3rd order accuracy, one part in 5000 or better, is desired for both (1) and (2).

(3) Site marker elevation accuracy required is ± _____ feet.

c. Amount of topographic data required from survey team

_____

_____

d. Contour interval required _____ feet.

e. Other _____

_____

5. Land Requirements.

a. Earth Terminal

(1) Length _____ feet (approximately).

(2) Width _____ feet (approximately).

(3) Area _____ acres.

b. Auxiliary Facilities. List the minimum area required for auxiliary facilities, (e.g., interconnect link terminal facility, storage sheds, barracks, fuel and water tanks, etc.)

Facility	Length (ft.)	Width (ft.)	Area (acres)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

6. Power Requirements. (Power requirements must include auxiliary equipment and facilities, if applicable.)

a. The anticipated power requirements are as follows:

Total technical load _____ kVA.

Total nontechnical load _____ kVA.

Total power requirements _____ kVA at _____ Hz, _____ phase, _____ volts at a power factor of _____

b. Allowable voltage and frequency deviations from rated values:

Voltage ± _____ volts or ± _____ %.

Frequency ± _____ Hz or ± _____ %.

c. Stand-by requirements _____ kVA at _____ Hz, _____ phase, _____ volts at a power factor of _____

d. On the basis of circuit needs to be satisfied by the earth terminal, indicate the power supply reliability required.

_____

_____

e. Frequency converter required (AN/TSC-54 only).

( ) Yes ( ) No ( ) Not applicable

f. Local power company contact _____

_____

7. Physical Survivability of Existing Structures.

a. Indicate commands and activities to be served by the earth station and degree of survivability of existing headquarters, command post, operations center, communications center, and similar activity associated with each.

Command or other Activity	Installation (e.g., Hq, CP, CommCen)	Degree of Hardness (psi)	Survivability Fallout Protection (days/hours)

b. Indicate distances between earth station and primary targets.

Primary Target	Approximate Distance (miles)

8. Access Requirements.

a. The site selection data will include information about existing means of transmission that are available for establishing interconnect links from the earth terminal to a naval communications station facility. Some of the data to be included in paragraph 8 of the site survey data form (Appendix B) may be available during the pre-survey planning.

b. Complete paragraph 8 of the site survey data form to the extent that information is available prior to survey and verify it during the survey.

9. Support.

The extent of the support required by the earth terminal will depend on the facilities which will have to be provided on-site as opposed to those which can be provided off-site by nearby military installation.

a. Personnel.

(1) Total station complement for operation and maintenance

_____

(2) Number of personnel required for construction and installation

_____

(3) Approximate length of time required for construction and installation

_____

b. Storage.

(1) AN/MSC-46 Terminal. A spare parts kit provided with the terminal has about 2900 line items which are estimated to be about a year's supply. The maintenance van has sufficient storage space to accommodate the spare parts. In addition, about 70 percent of the inside of the cargo van is available for storage after it is unloaded at the site.

(2) AN/TSC-54 Terminal. A spare parts kit provided with the terminal consists of approximately 600 line items estimated to be about a year's supply. The shelter does not provide storage space for spare parts. The manufacturer's specifications state that storage facilities must be provided to store components of the equipment, spare parts, tools, instruction books and all other items that must be transported and used with the equipment.

(3) Factors. The storage space required for a particular earth terminal will depend upon its distance from the logistics support base and the number and types of terminals. Based on a consideration of these factors, requirements for storage space will have to be determined on an individual basis.

(4) POL Storage. Fuel consumption per diesel engine with the AN/TSC-54 terminal is approximately 5 gallons per hour. The fuel consumption per engine with the AN/MSC-46 is 8 gallons per hour. Two generators are required to supply the normal load of the AN/MSC-46. The storage requirements will depend on reliability of local power and POL sources, and will have to be determined on an individual basis. Indicate the required POL storage (a minimum of one week's supply):

(a) Bulk (gal.) _____

(b) Drum (sq. ft.) _____

(5) Vehicles.

(a) Type and number of vehicles required for installation _____

_____

(b) Type and number of vehicles required for station operation _____

_____

(c) Special cranes or hoists required (specify) _____

_____

_____

10. Other Pertinent Data. _____

_____

_____

APPENDIX B

SITE SURVEY DATA

1. Administrative Data

   a. This report reflects the results of a field site survey for _____

   facility located at _____

   _____

   This survey was conducted on (dates) _____

   b. Authority for this survey _____

   _____ dated _____

   c. Composition of survey team:

NAME	TITLE	ORGANIZATION
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

   d. Key local military and civilian personnel contacted:

NAME	TITLE	ORGANIZATION
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Topography: A plan of the earth terminal site is provided as _____

   _____

3. Horizon Profile Data

   Location _____

   Site marker coordinates: Latitude _____ Longitude _____

   Date _____ Temperature _____ Visibility _____

   Elevation of ground at instrument _____

   Height of instrument above ground _____

   Horizon profile plot shown on _____

4. Photographs of Site and Horizon are attached (available from) _____

   _____

5. Possible Radio Interference

a. Radio or radar transmitters

(1) Distance _____ miles.

(2) Direction (azimuth) _____ degrees.

(3) Frequency _____ Pulse Rep. Rate (Radar) _____

(4) Type of emission _____

(5) Power _____

b. Radio receiving stations

(1) Distance _____

(2) Direction (azimuth) _____ degrees.

(3) Receiving frequencies _____

_____

(4) Receiver sensitivity (or type and model) _____

_____

(5) Type of station or operating organization _____

_____

c. Azimuth and distance to railroads or highways _____

_____

d. Distance from power lines _____

e. Distance from ordnance areas _____

f. Distance to airways _____

(1) Existence of airways or traffic patterns within sector of satellite visibility

_____

(2) Type of aircraft:

(a) Preponderantly jet _____

(b) Preponderantly propeller _____

(c) Commercial airline _____

(d) Private, light plane _____

g. Anticipated industrial noise level _____

(1) Distance _____

(2) Direction _____ degrees.

(3) Frequency _____

(4) Power _____

6. Existing Power

a. Capacity available _____

b. Voltage _____ Frequency _____ Phase _____

c. Distance to closest connection _____

d. Construction required _____

e. Remarks and pertinent data _____

_____

7. Physical Security of Site

a. Adequate (describe) _____

b. Inadequate (list steps necessary to make adequate; fence, lights, guards, etc.)

_____

8. Access to Naval Communications Station

a. Communication requirements

(1) Number of lines or voice channels _____

_____

(2) Quality required _____

b. Interconnect links (see attached maps) _____

(1) Link route, distance to, and locations of terminal facilities from the earth terminal _____

_____

_____

(2) Number of channels:

(a) Voice channels _____

(b) Teletype channels _____ WPM _____

(c) Data channels _____ BPS _____

(3) Applicable transmission standards _____

(4) Type of existing interconnect links _____

(a) Open wire _____

(b) Aerial/buried cable _____

Number pairs available _____ wire gauge _____

(c) Troposcatter link _____ Frequency _____

(d) Microwave LOS link _____ Frequency _____

9. Support

a. Personnel

(1) Off-base and on-base housing available _____

(2) Off-base and on-base messing facilities _____

_____

(3) Administrative services for station personnel _____

_____

10. Weather Data

a. Temperature: Max. _____ Min. _____ Average _____

b. Humidity: Max. _____, Average _____

c. Rainfall (inches) Max recorded _____ Date: _____, 19___

d. Snowfall (inches) Max recorded _____ Date: _____, 19___

e. Wind velocity (mph) Max. _____ Direction _____

f. Presence of permafrost: Yes _____ No _____

g. Maximum depth of frost line _____ feet.

h. Unusual weather phenomena (hurricane, monsoon, sandstorm, etc.) _____

_____

11. Real Estate

a. Ownership of site and access road area _____

b. Encroachment control required _____

c. Relocation of existing facilities required _____

_____

d. Expansion capabilities _____

_____

e. Requirements for host-tenant agreement _____

f. Zoning restrictions _____

_____

g. Local government restrictions _____

_____

12. Fence Enclosures

a. Area enclosed _____

b. Owner _____

c. Type and heights _____

d. Shown on drawing No. _____

13. Soil Bearing and Drainage

a. Bearing value _____

b. Type foundation required (drawing) _____

_____

c. Drainage (describe) _____

_____

14. On-Site Projections or Obstructions

_____

_____

15. Site Accessibility

a. Obstructions along access road (12 foot crown width)

(1) Overpass, tunnels: Location _____

Dimensions: Width _____ Height _____

(2) Bridges: Location _____

Maximum load capacity _____ pounds.

(3) Others: _____

b. Road improvement or temporary bridges needed _____

_____

16. Frequency Clearance

Actions required to obtain frequency clearance _____

_____

17. Remarks

_____

_____

_____

_____

APPENDIX C

REFERENCES

1. DCAC 370-185-1, DCS Applications Engineering Manual, Vol. 1, May, 1968.

2. DCAC 800-2000.1, Criteria for Earth Station Site Selection of the Defense Satellite Communications System (DSCS), May, 1968.

3. DCAC C810-2300.2 (Conf), Initial Defense Communications Satellite Project Earth Station/Defense Communications System Interface and Engineering Criteria (U), June, 1965.

4. DCA Report R-242102-1-2(b) (Conf), Defense Satellite Communication System — Description and Capabilities, June 1967.

5. Hdqtrs. U.S. Army STRATCOM, CCP 105-5, Introduction to Satellite Communications, Feb., 1968.

6. Technical Manual, Transportable Satellite Communications Link Terminal AN/MSC-46; Vol. I - Operators Information; Vol. II - System Installation, Alignment, Adjustment and Maintenance.

7. Technical Manual, Satellite Communication Terminal AN/TSC-54; Vol. 12 - Operator and Organizational Maintenance Manual, POMM 11-5895-389-12, Aug., 1968.

8. DCAC 300-175-1 (Conf), DCA RED/BLACK Engineering Installation Criteria (U), 19 Oct. 1964.

9. NAVELEXINST 011120.1 (Conf), Shore Electronics Engineering Installation Guidance for Equipments and Systems Processing Classified Information, 28 March 1968.

10. NAVORD OP 3565/NAVAIR 16-1-529 (Conf), Technical Manual Radio Frequency Hazards to Ordnance, Personnel, and Fuel, Revision 3 of 15 August 1969 with effective changes.

11. University of California Engineering and Sciences Extension Series, Space Communications, edited by A. V. Balakrishnan, McGraw-Hill Book Co., Inc., 1963.

12. Schwartz, J. W.; Aien, J. M.; and Kaiser, J. "Modulation Techniques for Multiple Access to a Hard Limiting Satellite Repeater," Proceedings of IEEE, May 1966, 763-777.

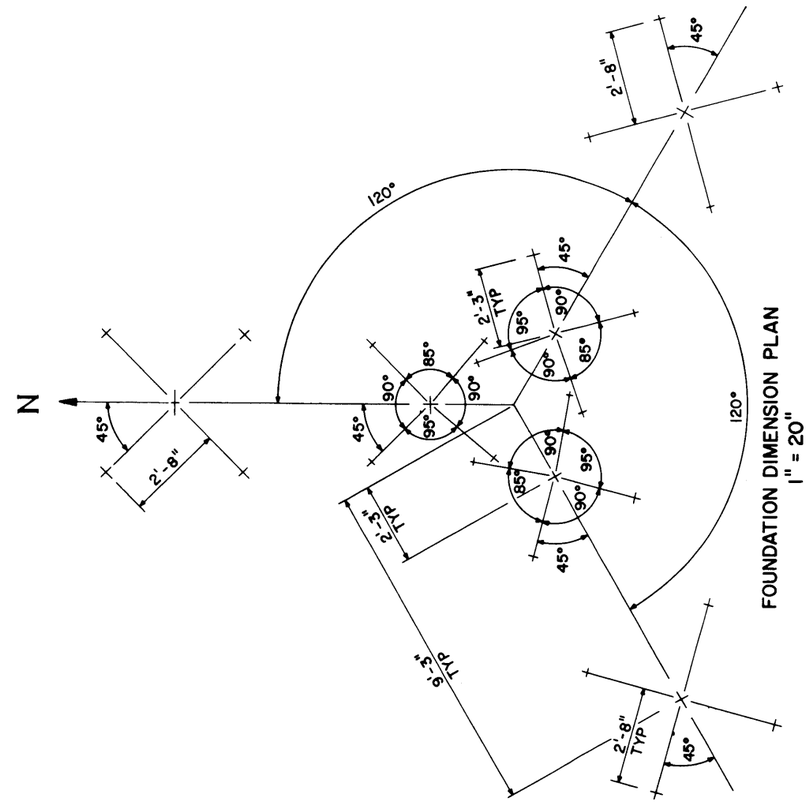
13. Clarke, Arthur C. "Extra-Terrestrial Relays," Wireless World, October, 1945.

14. Cohen, Jay J. "Military Services Satellites Will Ring the Earth," Electronics, May 2, 1966, 96-99.

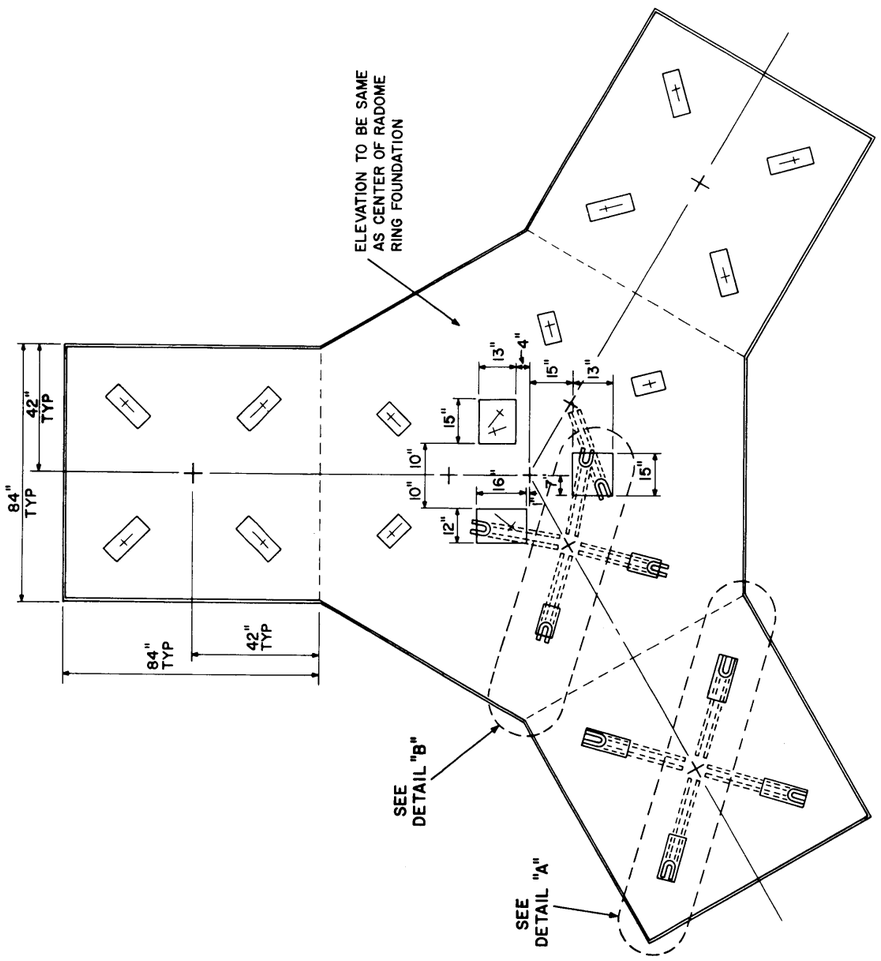
15. TRW Space Log - Winter 1968-1969.

16. EASCON '69 Convention Record, IEEE Transactions on Aerospace and Electronic Systems, October, 1969.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1971 O - 422-671

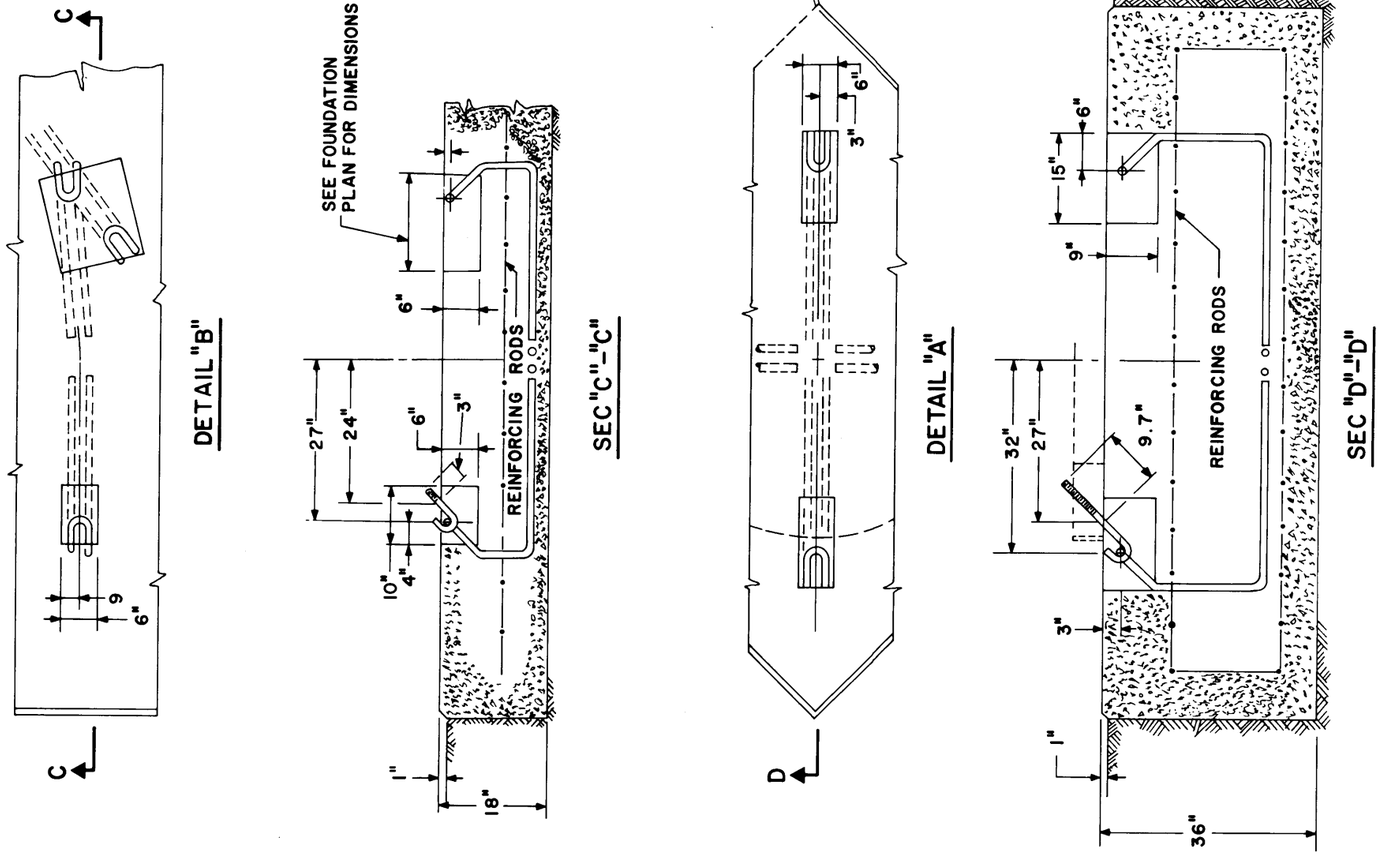


FOUNDATION DIMENSION PLAN
1" = 20"

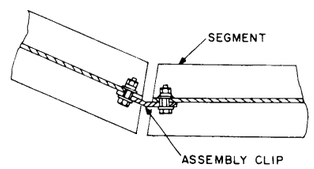


FOUNDATION PLAN
1" = 20"

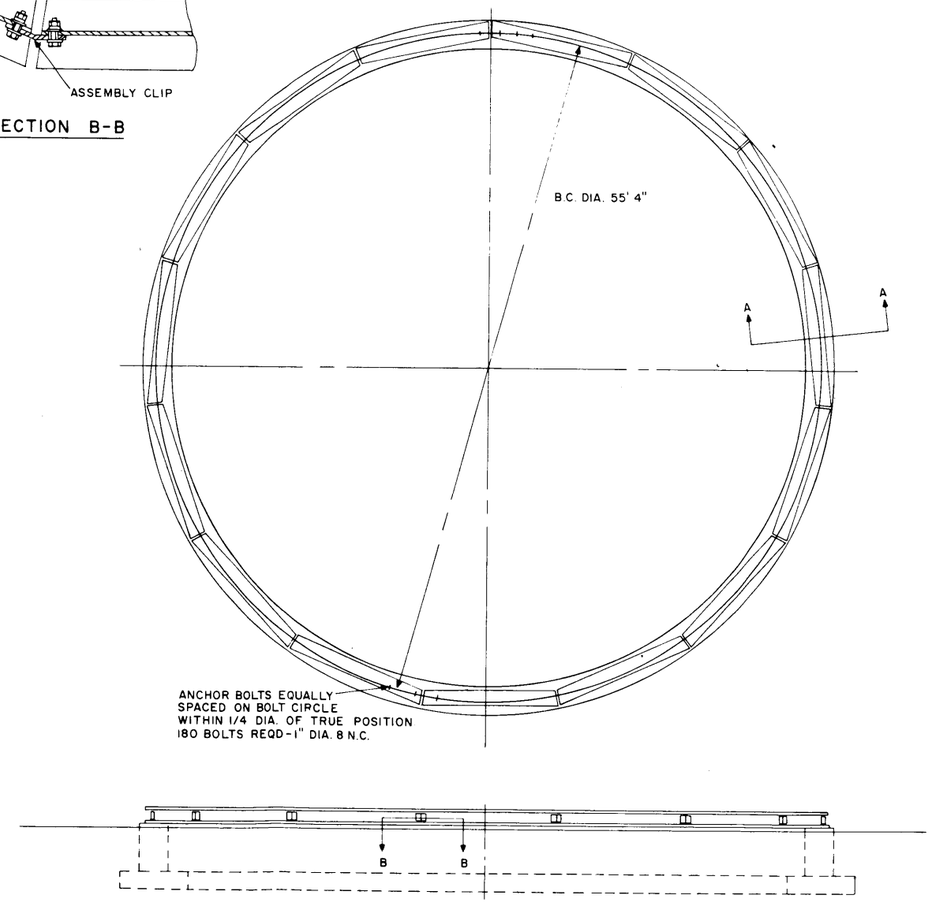
Foldout 3-1. Typical Foundation for AN/MSC-46 Antenna Pedestal (Sheet 1 of 2)

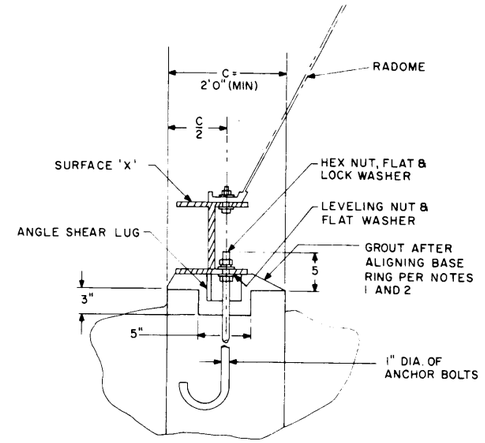


Foldout 3-1. Typical Foundation for AN/MSC-46 Antenna Pedestal (Sheet 2 of 2)



SECTION B-B





SECTION A-A

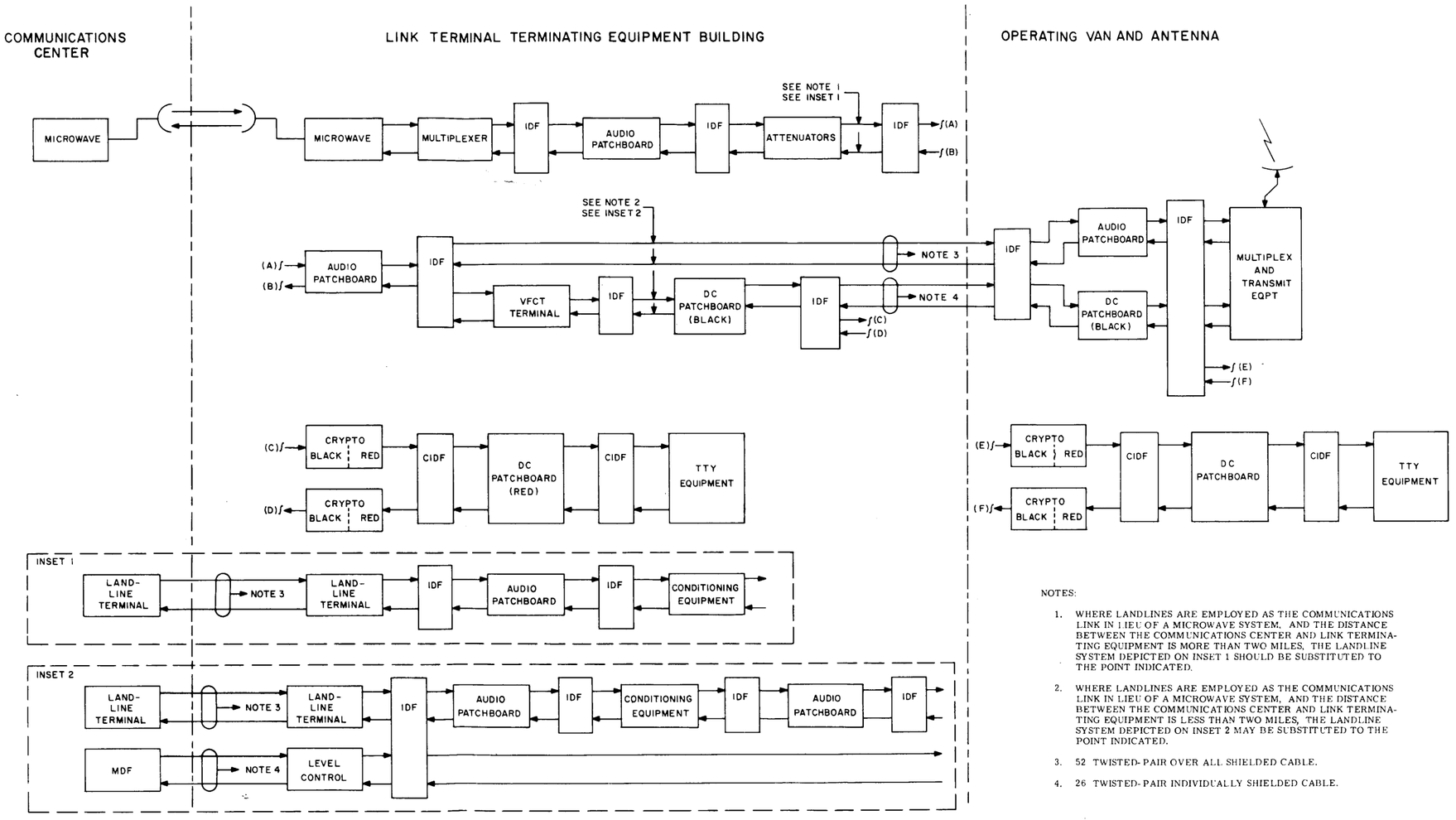
NOTES:

1. BASE RING SEGMENTS ARE TO BE ALIGNED RADIALLY SO THAT THE RADOME MOUNTING HOLES ON SURFACE 'X' ARE LOCATED WITHIN 1/6 OF TRUE POSITION, ALIGNMENT TOOLS ARE SUPPLIED WITH BASE

2. ENTIRE RADOME MOUNTING SURFACE 'X' IS TO BE LEVEL WITHIN 1/8", EACH BASE SEGMENT IS TO BE LEVEL WITHIN 1/32"

3. RADOME DIAMETER - 68'0", DRAG - 113,000 LBS., LIFT - 254,000 LBS., OVERTURN MOMENT - 2,200,000 LBS., RADOME WEIGHT - 20,000 LBS., WIND VELOCITY - 155 KNOTS.

Foldout 3-2. Typical Foundation for Radome for AN/MSC-46 Antenna



NOTES:

1. WHERE LANDLINES ARE EMPLOYED AS THE COMMUNICATIONS LINK IN LIEU OF A MICROWAVE SYSTEM, AND THE DISTANCE BETWEEN THE COMMUNICATIONS CENTER AND LINK TERMINATING EQUIPMENT IS MORE THAN TWO MILES, THE LANDLINE SYSTEM DEPICTED ON INSET 1 SHOULD BE SUBSTITUTED TO THE POINT INDICATED.
2. WHERE LANDLINES ARE EMPLOYED AS THE COMMUNICATIONS LINK IN LIEU OF A MICROWAVE SYSTEM, AND THE DISTANCE BETWEEN THE COMMUNICATIONS CENTER AND LINK TERMINATING EQUIPMENT IS LESS THAN TWO MILES, THE LANDLINE SYSTEM DEPICTED ON INSET 2 MAY BE SUBSTITUTED TO THE POINT INDICATED.
3. 52 TWISTED-PAIR OVER ALL SHIELDED CABLE.
4. 26 TWISTED-PAIR INDIVIDUALLY SHIELDED CABLE.

Foldout 3-3. Typical Earth Terminal Circuit Distribution