

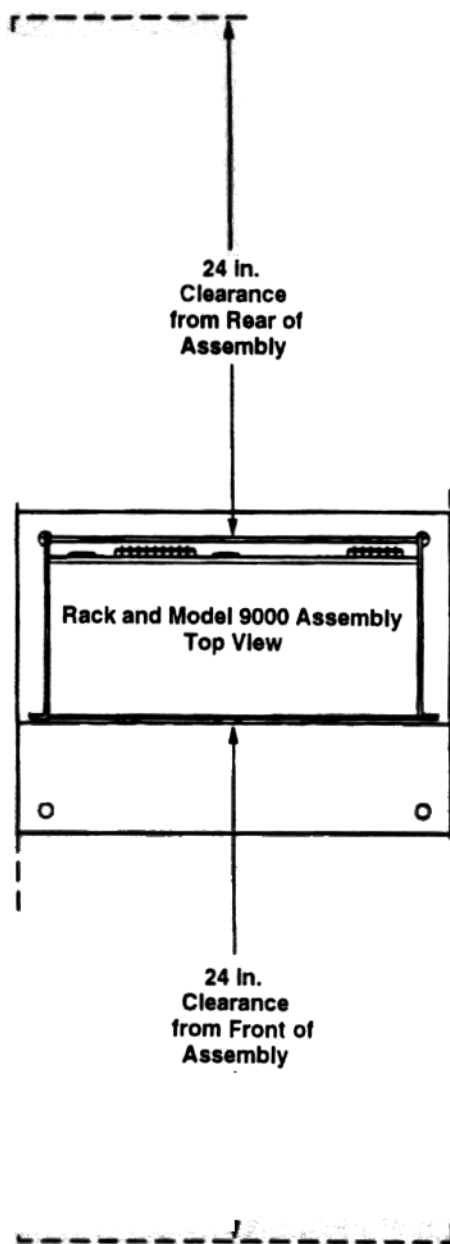


Figure 2-1. Rack Footprint, Minimum Space Clearances

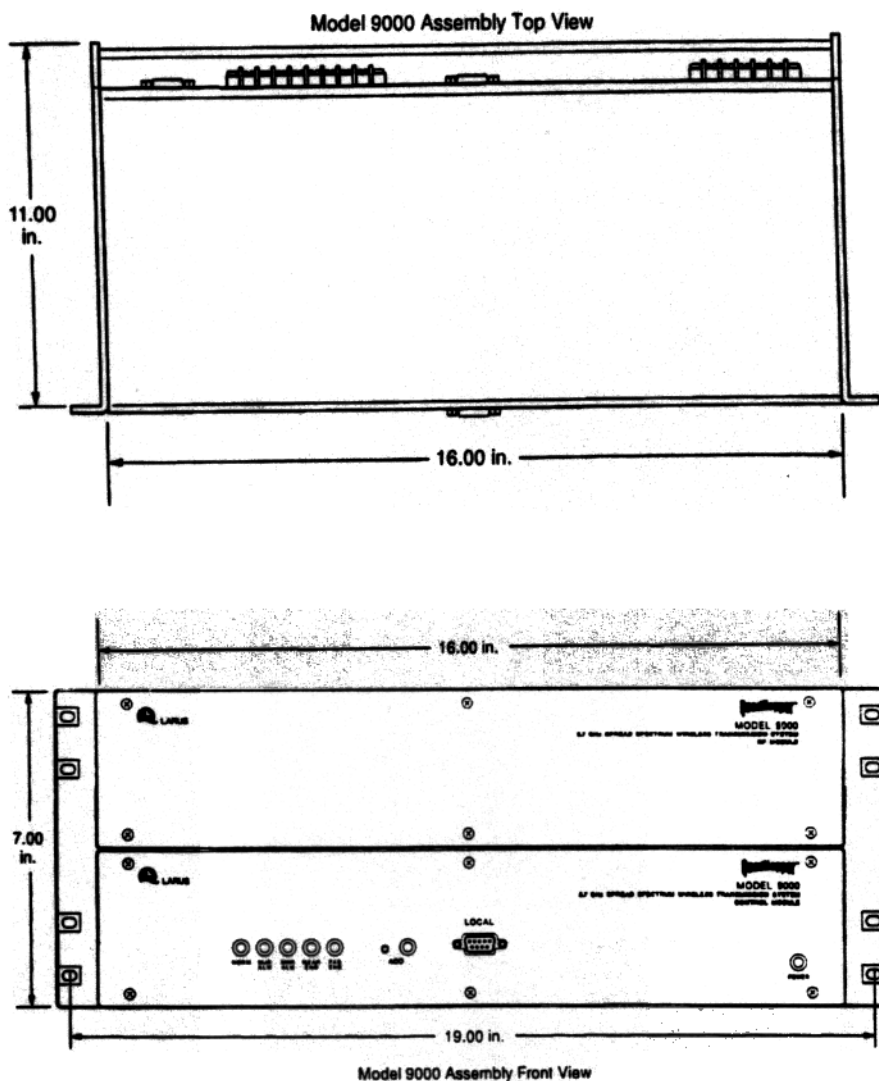


Figure 2-2. Model 9000 Assembly Dimensions and Elevations

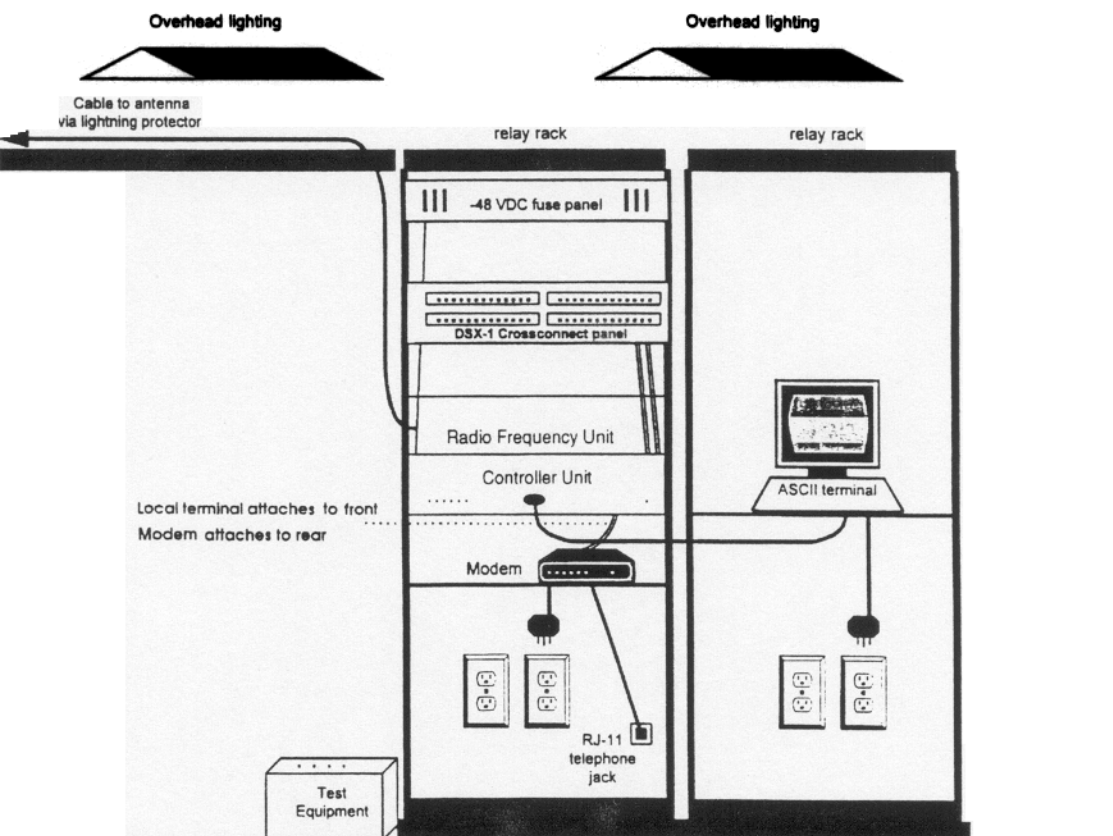


Figure 2-3. Typical Mounting Arrangement of Model 9000 Equipment

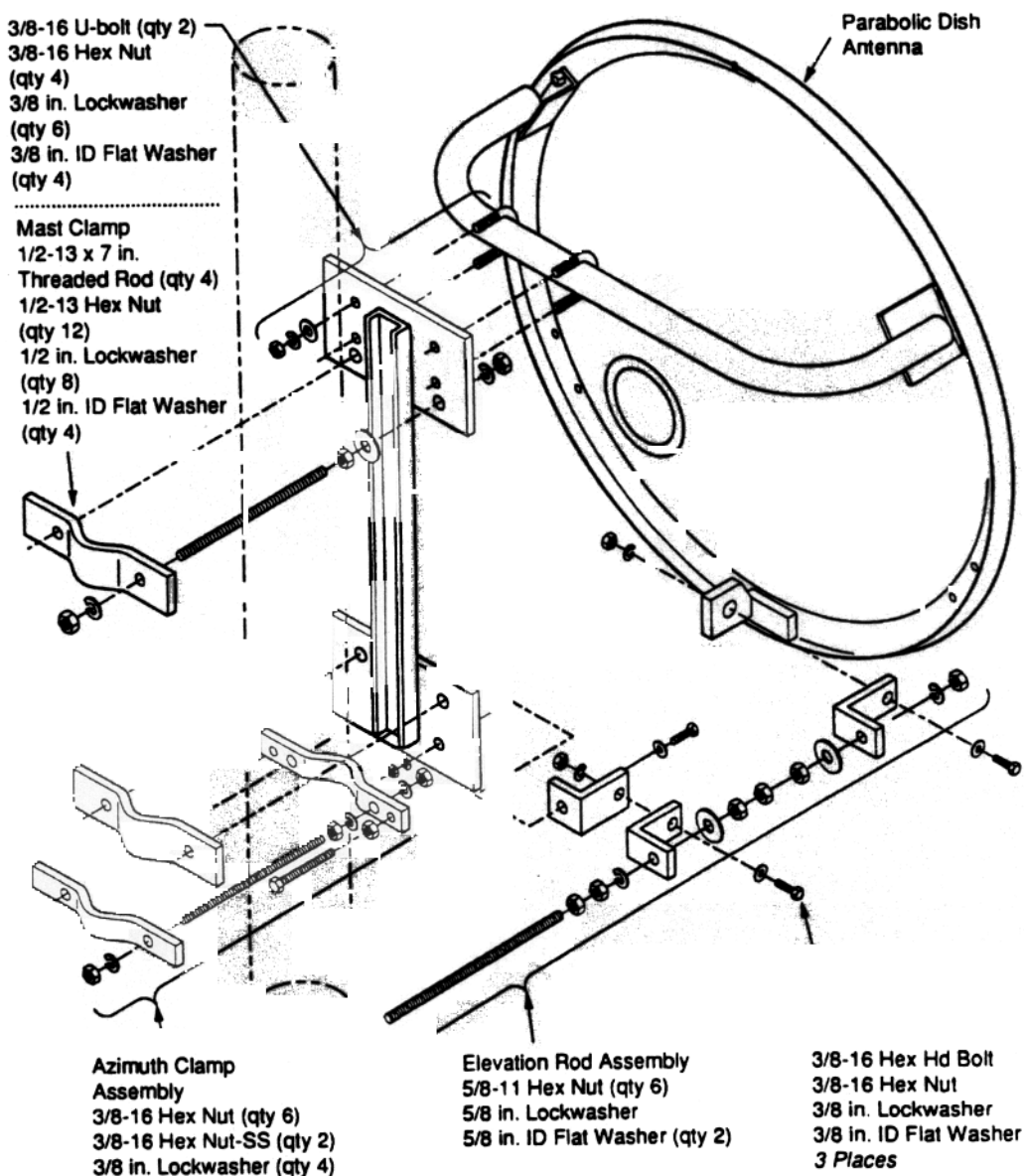


Figure 2-4. Typical Parabolic Dish Antenna Mounting Exploded View

2.302 (continued)

Connect Type N coaxial jumper cable from the RF module to waveguide and run the waveguide, in turn, to the antenna. Refer to Figure 2-5. Allow approximately 3 inches of hole clearance through walls for the cable connector. Connect the waveguide to ground. Ensure that the outdoor connection from RF module to antenna is properly weatherproofed with 3M Scotch™ 130C or equivalent.

With reference to subsection 2.5, power up the radio system.

- When a maintenance terminal is used, connect it to the LOCAL port on the controller and set its data parameters (9600 baud, N-8-1) per subsection 2.6. Also set the transmitter power level.

Align the near-end and far-end antennas following the instructions in Section 3, paragraph 3.03.

Test the performance of the radio system from the maintenance terminal as described in Section 4.

Turn up the radio system (put the Model 9000 into service)

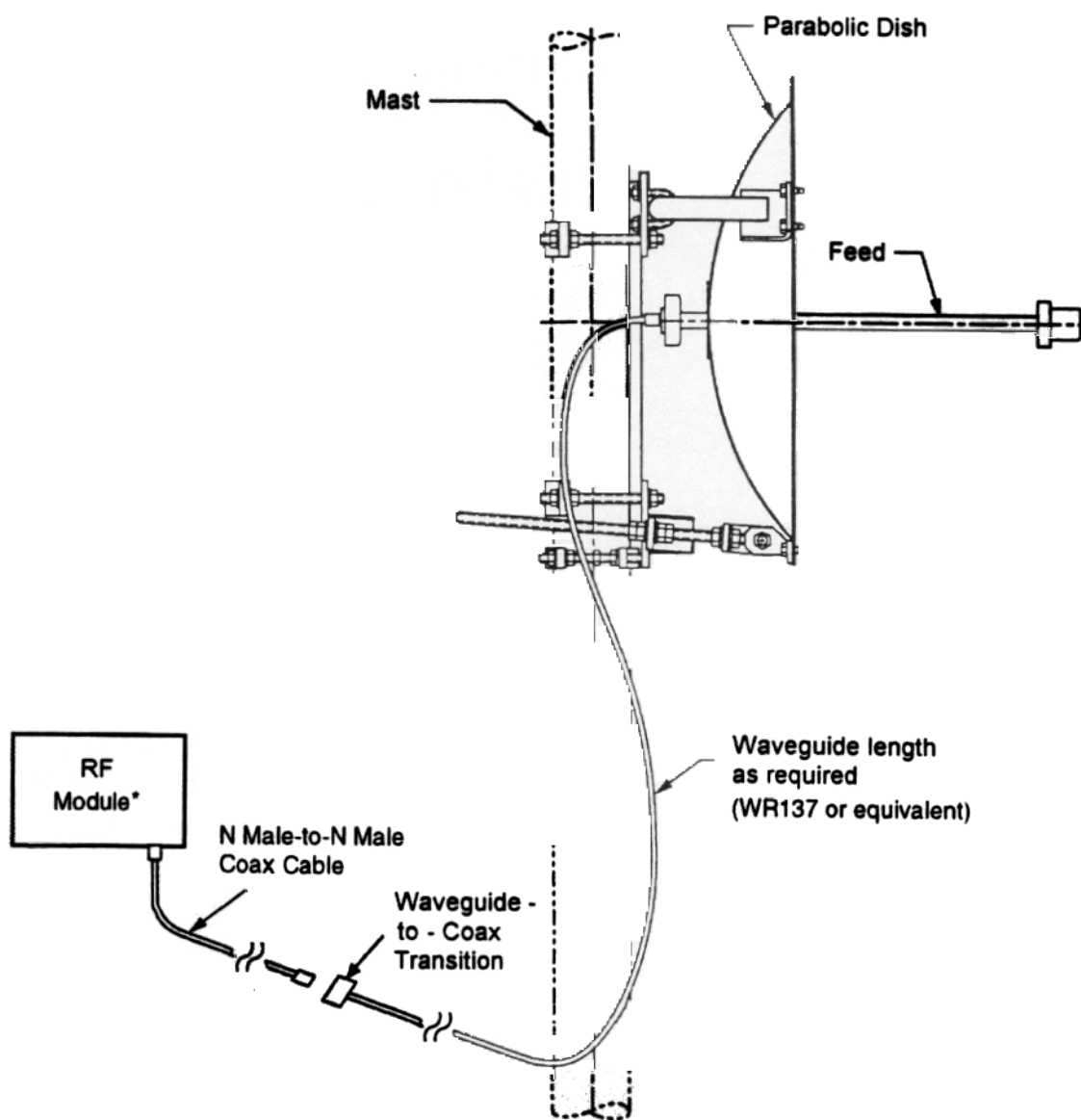
2.4 Connecting Model 9000 to Facility

- 2.401 Mount the 9000 assembly in the rack, making sure of the 24-inch minimum space clearances (refer to Figure 2-1), then perform the steps in the following paragraphs to connect it to the facility.



NOTE:

The method of distributing power to the Model 9000 equipment within the rack is entirely the customer's option. It can be connected through a rack fuse and alarm panel by way of bus bars or with separate power cables distributed from a primary power connection point on the rack. Actual power connections to the 9000 are by way of terminal block TB1 on the Control Module's back panel.



* Rack-mounted in equipment room.

Figure 2-5. Typical Antenna Mounting and Cable Connections

Power

- 2.411 Plant battery connects to the Model 9000 equipment at terminal block TB1 on the controller's rear panel. The assignments for this terminal block include **FRM GND**, **BAT GND**, and **-24/-48 Vdc**. Refer to Figure 2-6. Follow the steps below to make power and ground connections to the shelf.



Use a DC power source capable of supplying two (2) amps minimum with a ripple noise of less than 100 MVRms.

1. Connect the plant Battery A and Battery B power feeds to TB1 terminals **-24/-48 Vdc A** and **-24/-48 Vdc B**, respectively. (Remove shorting clips that are not required.)
2. Connect the plant battery return to TB1 terminals **BAT GND A** and **BAT GND B**, respectively. (Remove shorting clips that are not required.)
3. Connect the rack frame ground to TB1 terminal **FRM GND**. (Remove shorting clips if appropriate.)
4. Dress the power and ground lines across the back of the shelf, then down or up the edge of the rack frame (as required by your site's cable runs).

Alarms

The minor and major alarms from Model 9000 to facility alarm equipment connect through TB2 on the controller's rear panel.



NOTE:

The alarm **Form A** relay contacts can handle a maximum of 0.1 amp at 100 Vdc. (**Form A** is normally open.)



2.43 E1/DS1 Lines

2.431 Customer E1/DS1 lines connect to the Model 9000 through the 50-pin RJ48M (Amp Champ Male) connector P4 on the Control Module's rear panel. Attach the E1/DS1 cable to this connector. Pin assignments are listed in Table 2-A.

Table 2-A

E1/DS1 Interface Connector Pin Assignments

E1/DS1 Signal			P4 Connector
Channel 1:	E1/DS1 Transmit Out	(TIP)	Pin 1
		(RING)	Pin 26
	E1/DS1 Receive In	(TIP)	Pin 39
		(RING)	Pin 14
Channel 2:	E1/DS1 Transmit Out	(TIP)	Pin 2
		(RING)	Pin 27
	E1/DS1 Receive In	(TIP)	Pin 40
		(RING)	Pin 15
Channel 3:	E1/DS1 Transmit Out	(TIP)	Pin 3
		(RING)	Pin 28
	E1/DS1 Receive In	(TIP)	Pin 41
		(RING)	Pin 16
Channel 4:	E1/DS1 Transmit Out	(TIP)	Pin 4
		(RING)	Pin 29
	E1/DS1 Receive In	(TIP)	Pin 42
		(RING)	Pin 17

Lightning Protection

- 2.441** All grounds for lightning are left outside the Central Office structure while equipment grounds are entirely inside the structure. The only place where everything ties together is at the master ground bar, typically located in a cable vault or basement or near the battery room. Lightning, or anything possibly conducting lightning, is kept outside and carried to a well-certified ground point (typically < 1 ohm with respect to absolute ground). Exactly what is implemented as a grounding scheme depends on adherence to the National Electrical Code, local regulations, and company practices. These are weighed against the types and value of transmission equipment installed as well as the traffic revenue loss in the event of disruption.
- 2.442** The Model 9000 has internal circuits designed to protect the E1/DS1 interfaces and its own connections from the effects of lightning. However, to ensure the unit is protected, the 9000 **must** be properly connected to earth ground as shown in Figure 2-7. Outdoor lightning protection, which is entirely the customer's responsibility, requires cutting into the interface cable and adding the appropriate lightning protectors (refer to Figure 2-8).



CAUTION:

Refer the installation of additional lightning protection to a qualified service engineer.

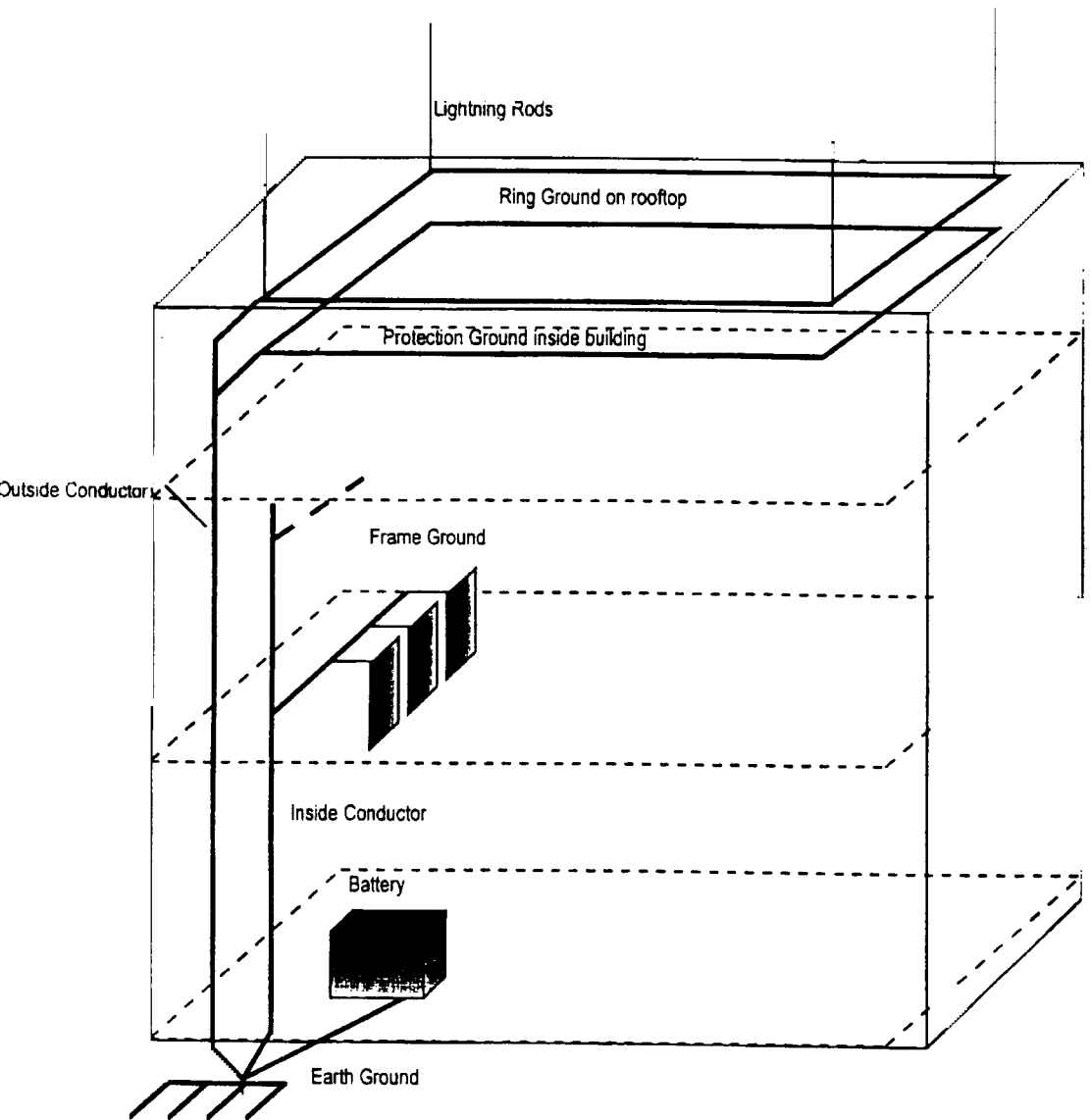
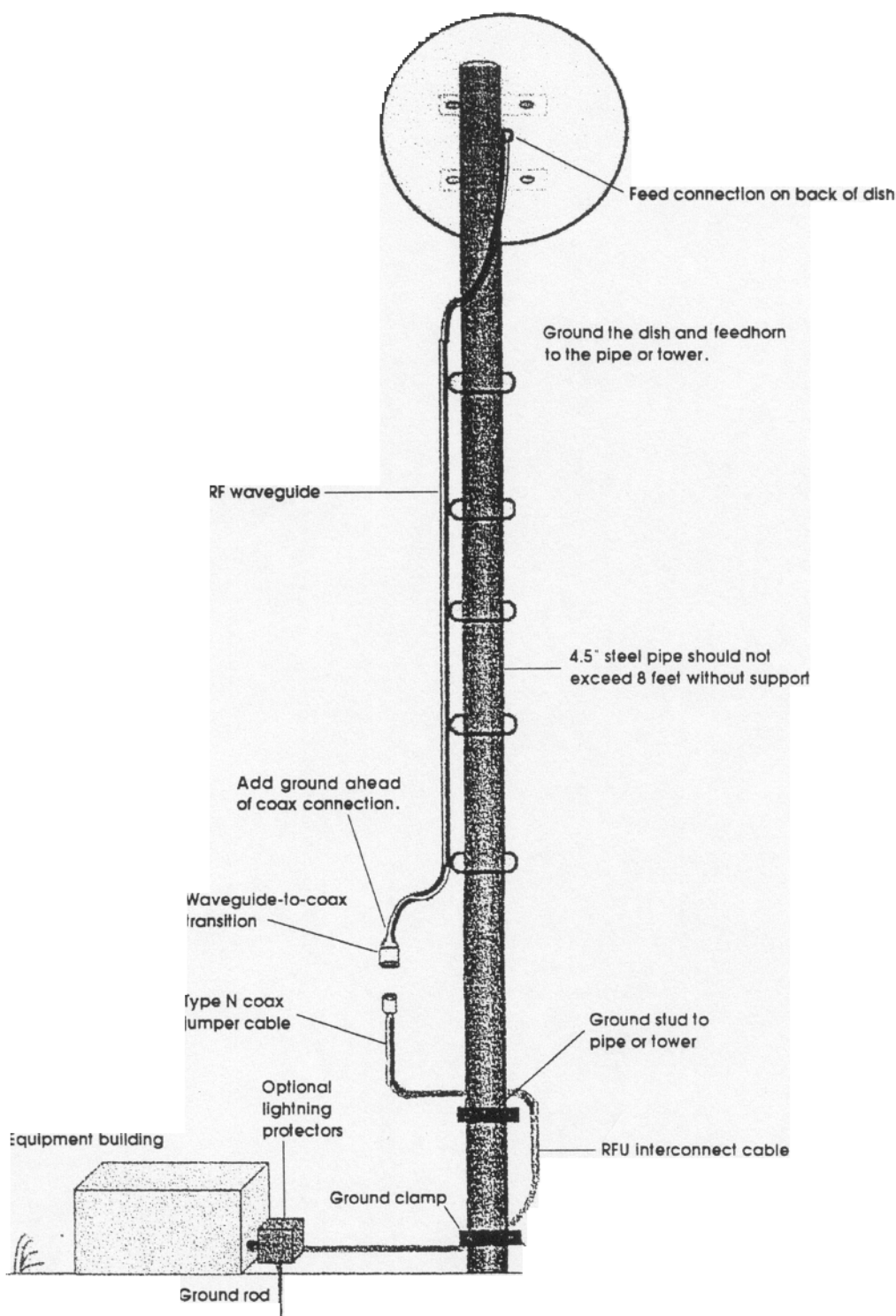


Figure 2-7. Typical Central Office Grounding Scheme



NOTE: Local practices may dictate a different method of grounding.

Figure 2-8. Outdoor Grounding at Installation

Virtual Data Circuit (Modem)

- 2.451** Attach a prefabricated cable to the DB-9P connector **P5 REMOTE** on the control module's rear panel. The pin assignments for these connectors are listed in Table 2-B.

Table 2-B

Modem/P5 REMOTE DB-9 Connector Pin Assignments

Pin	Signal	Pin	Signal
1	DCD (data carrier detect)	6	DSR (data set ready)
2	RxD (receive data)	7	RTS (ready to send)
3	TxD (transmit data)	8	CTS (clear to send)
4	DTR (data terminal ready)	9	RI (ring indicator)
5	SG (signal ground)		

NOTE: Attach connector shell to frame ground.

Model 9000 Power-up

- 2.501** The Model 9000 has no power control of its own. All power to the radio is by way of the circuit breakers or fuses that feed to the -24/-48 Vdc connection at the controller unit. To apply power to the radio, simply switch on the facility battery 'A' and 'B' branch circuit breakers or fuses.

2.6 Connecting Maintenance Terminal

- 2.601** The Model 9000 has two EIA RS-232D connections that can be used for controlling the radio locally and remotely through a modem. The terminal (or Local) input on the front panel of the controller must use a VT-100 or compatible device (e.g. a PC running a VT-100 terminal emulator). The modem (or Remote) input is located on the rear of the controller unit. The data rate and format for the virtual data circuit ports default to 9600 bps, 8 data bits, no parity bit, and one stop bit.

[This page is intentionally left blank.]