BLOCK 701 LOT 7,8,15,16 ADDRESS (SITE) _____ PERMIT NO. 307-93

RECEIVED
FEB 17 1993

CONSTRUCTION PERMIT APPLICATION

Applicant Completes: Sections I, II, III (optional), IV, VI and VII

DIV. OF INSPECTION

I. IDENTIFICATION

1. Proposed Work-site at: 650 Route 70 Brick
2. Name of Owner in Fee: Marshalls Tel. (908) 920-2628
   Address 650 Route ~~650~~ 70 (street) Brick (municipality) NJ 08723 (zip code)
3. Ownership in Fee: Public _____ Private ✓
4. Principal Contractor: National Satellite Inc Tel. (609) 547-0909
   Address 41 Shreve Ave Barrington NJ 08007
   License No. OR, if new home, Builder Reg. No. _____ Exp. Date _____
   Federal Emp. No. 22-292-6763 Social Security No. _____
5. Architect or Engineer _____ Tel. (___) _____
   Address _____
6. Responsible Person In Charge of Work Ralph Morales Tel. (609) 547-0909

V. FEE SUMMARY (for office use only)

		Update	Update
1. Building	$ 8 —		
2. Electrical			
3. Plumbing			
4. Fire Protection			
5. Other			
6. Subtotal	$ 8 —		
7. Less 20% for State Plan Review	5 —		
8. Subtotal	$		
9. DCA Training Fee	1 —		
10. Subtotal	$		
11. Cert. of Occupancy	20 —		
12. Other			
13. TOTAL	$ 34 —		

VI. BUILDING/SITE CHARACTERISTICS

	(office use only)
1. Number of Stories	
2. Height of Structure ____ ft.	
3. Area—Largest Floor ____ sq. ft.	
4. Building Area—All Floors ____ sq. ft.	
5. Volume of Structure ____ cu. ft.	
6. Construction Classification	
7. Total Land Area Disturbed ____ sq. ft.	
8. Flood Hazard Zone	
9. Base Flood Elevation ____ ft.	
10. Wetlands yes ____ sq. ft. / no	
11. Fire Grading	
12. Max. Live Load	
13. Max. Occupancy Load	

II. PROPOSED WORK

Satellite antennae FOR MARSHALL'S

	Est. Cost
1. ☐ Minor Work (single trade)	
2. ☐ Small Job ($5,000 and no prior approvals)	
3. ☐ New Building	
4. ☐ Addition	
5. ☐ Alteration	
6. ☐ Fire Protection	
7. ☐ Plumbing	
8. ☐ Electrical	
9. ☐ Asbestos Abatement	
10. ☐ Demolition	
TOTAL COSTS	700.-

OPTIONAL (for office use only)

Plans Rec'd By	Date Rec'd	Rejection Date	Approval Date	Re-viewer	Resubmission Dates Approval	Rejection	Re-viewer
			2/24/93	AK			

III. DO YOU WANT: (optional) 1. ☐ Partial Releases 2. ☐ Prototype Processing

IV. DOES OR WILL YOUR BUILDING CONTAIN ANY OF THE FOLLOWING?

1. ☐ Elevators/Escalators/Lifts/Dumbwaiters/Moving Walks
2. ☐ High Pressure Boilers
3. ☐ Pressure Vessels
4. ☐ Refrigeration Systems
5. ☐ Cross-Connections/Backflow Preventers
6. ☐ Hazardous Uses/Places of Assembly
7. ☐ Sprinklers
8. ☐ Smoke Control Systems in Open Wells
9. ☐ Underground Storage Tanks

VII. DESCRIPTION OF BUILDING USE

A. RESIDENTIAL-
1. ☐ Hotels (R-1)
2. ☐ Multi-Family (R-2)
3. ☐ Two-Family (R-3) BOCA
4. ☐ Two-Family (R-4) CABO
5. ☐ One-Family (R-3) BOCA
6. ☐ One-Family (R-4) CABO

No of dwelling units:
Before Construction ____
After Construction ____
Net gain or loss ____

B. NON-RESIDENTIAL ✓
1. State Specific Use: Shopping Plaza
2. Use Group:
3. Change in Use Group, Indicate Former:

20K

LDS BR 10210131

U.C.C. Form F-100A

CERTIFICATION IN LIEU OF OATH

I. OWNER SECTION (to be completed if the applicant is the owner in fee)

I hereby certify that I am the owner in fee of the property listed on Page 1.

Mark the following applicable boxes:

A. ( ) I further certify that a new home (private residence) will be constructed on this property for my own use and occupancy. This dwelling is to be occupied by myself and is not to be used for any purpose other than single family residential use. I attest that all construction, plumbing, or electrical work will be done, in whole or in part, by me or by subcontractors under my supervision, in accordance with all applicable laws; and, I further acknowledge that said new home is not covered under the New Home Warranty and Builders Registration Act (N.J.S.A. 46:3B-1 et seq.) and that such fact shall be disclosed to any person purchasing this property within ten years of the date of issuance of a certificate of occupancy.

I UNDERSTAND THAT IN MARKING BOX A, I ACKNOWLEDGE THAT I AM ASSUMING RESPONSIBILITY FOR THE WORK DONE ON SAID PROPERTY, THE CONDITION OF THE PROPERTY PRIOR TO, DURING, AND AFTER ANY WORK PERFORMED, AND FOR THE PERFORMANCE OF THE SUBCONTRACTORS I HIRE, EMPLOY, OR OTHERWISE CONTRACT OR WITH WHOM I MAKE AGREEMENTS TO PERFORM WORK. I AM VOLUNTARILY AND KNOWINGLY ASSUMING THIS RESPONSIBILITY.

B. ( )I further certify the following as required by the New Jersey Uniform Construction Code, N.J.A.C. 5:23-2.15(e)1.vii:

I personally prepared the plans submitted for: 1) the new home referred to in A.; or, 2) an addition, alteration, renovation, or repair to an existing single family residence owned and occupied by myself and located on the property listed on Page 1; or, 3) a new structure that will be physically separate from, but that will be deemed part of, an existing single family residence that is owned and occupied by myself and located on the property listed on Page 1.

C. ( ) I further certify that I will perform or supervise the following work:
C.1. ( ) Building C.2. ( ) Fire Protection
I further certify that I will perform the following work:
C.3. ( ) Electrical C.4. ( ) Plumbing

D. ( )I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals have been given, including such certification as the construction official may require.

I understand that if any of the above statements are willfully false, I am subject to punishment.

Signature _____ Date _____

II. AGENT SECTION

(to be completed if the applicant is not the owner in fee)

I hereby certify the following as required by the New Jersey Uniform Construction Code, N.J.A.C. 5:32-2.15(d): the proposed work is authorized by the owner in fee; and I have been authorized by the owner in fee to make this application as his agent.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals have been given, including such certification as the construction official may require.

I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I understand that if any of the above statements are willfully false, I am subject to punishment.

(✓ Check if contractor.

Agent Name NATIONAL SATELLITE INC

Address 141 Shreve Ave

BARRINGTON NJ. 08007

Telephone (609) 547-0909

Signature _____ Date _____

OFFICE DATE RECEIVED: _____

VIII. PRIOR APPROVALS CHECKLIST (office use only)	LOCAL APPROVAL Prelimin. Initial	LOCAL APPROVAL Final Date	COUNTY APPROVAL Prelimin. Initial	COUNTY APPROVAL Final Date	REGIONAL APPROVAL Prelimin. Initial	REGIONAL APPROVAL Final Date	STATE APPROVAL Prelimin. Initial	STATE APPROVAL Final Date	COMMENTS
☐ Planning Board							X	X	
☐ Zoning Board			X	X	X	X	X	X	
☐ Sewer Authority							X	X	
☐ Water Authority							X	X	
☐ Fire Department					X	X	X	X	
☐ Police Department			X	X	X	X	X	X	
☐ Health Department					X	X			
☐ Soil Conservation							X	X	
☐ N.J. Dept. of Community Affairs	X	X	X	X	X	X			
☐ N.J. Department of Transportation	X	X	X	X	X	X			
☐ N.J. Dept. of Environmental Protect.	X	X	X	X	X	X			
☐ Utility Dig No.			X	X	X	X	X	X	
☒ Other Zoning	JK	2/17/93	roof antennae						
☐									
☐									

IX. SUBCODES AND SPECIAL REGULATIONS APPLICABLE (office use only—optional)

	Name of Code & Edition		Name of Code & Edition		
Building		Energy		Other	
Electrical		Barrier Free			
Plumbing		Flood Hazard			
Fire Protection		As Built Elevation Cert.			
Mechanical		Other			

X. CERTIFICATES ISSUED (office use only)

			DATE EXPIRED
☐ Temporary Certificate of Occupancy	No.		
☐ Temporary Certificate of Occupancy	No.		
☐ Continued Certificate of Occupancy	No.		
☐ Certificate of Occupancy	No.		
☐ Certificate of Approval	No.		
☐ None			

CONSTRUCTION PERMIT

Date Issued 3/5/93
Control #
Permit # 307-93

IDENTIFICATION Block 701 Lot 7 & 15 16

Work Site Location 650 Route 70

Owner In Fee Mars Malls

Address Brick

Tele. ( )

Contractor National Intellect

Address

Tele. ( )

Lic. No. or Bldrs. Reg. No. _____ Exp. Date _____

Federal Emp. No. _____

or Social Security No. _____

is hereby granted permission to perform the following work:

[X] BUILDING [ ] PLUMBING [ ] OTHER _____

[ ] ELECTRICAL [ ] FIRE PROTECTION

DESCRIPTION OF WORK:

Interior alterations

NOTE: If construction does not commence within one (1) year of date of issuance, or if construction ceases for a period of six (6) months, this permit is void.

Estimated Cost of Work $ 700

CONSTRUCTION OFFICIAL

U.C.C. Form F-170A

PAYMENTS (Office Use Only) 307*#	
Building 1 BLOCK	1.00
Plumbing 701 #	
Electrical LOT	1.00
Fire Protection 7 #	
Other FIRE SPRINKLING	5.00
Other PLAN R/W	5.00
DCA Training Fee N.J.P.A.	1.00
Cert. of Occ.	20.00
Other TOTAL	34.00
Total CASH	34.00
Check No.	1.00
Cash	
Collected By: MD 5 10090805	15:31

1 WHITE - OFFICE 2 CANARY - TAX ASSESSER 3 PINK - JACKET 4 GOLD - APPLICANT

BUILDING SUBCODE
TECHNICAL SECTION

Date Received 3/5/93
Date Issued
Control # 307-93
Permit #

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 701 Lot 7, 8, 15, 16
Work Site Location 650 Route 70
Brick NJ
Owner in Fee Marshalls
Address 650 Route 70
Brick NJ 08723
Tele. (908) 920-7628
Contractor National Satellite Inc
Address 141 Shreve Ave
Barrington NJ 08007
Tele (609) 541-0909
Lic. No. or Bldrs. Reg. No.
Federal Emp. No. 22-292-6763 or Social Security No.

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

Signature [signature]

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK

Installation of small antenna for computer information. 1 meter. Antenna is to be install on the roof of Marshalls close to middle of the roof next to HVAC

JOB SUMMARY (Office Use Only)

PLAN REVIEW	Date	Initial	INSPECTIONS Type:	Failure	Failure	Approval	Initial
[ ] No Plans Req.	7-15-93	RJ					
[ ] All			Footing				
[ ] Footing			Foundation				
[ ] Foundation			Slab				
[ ] Frame			Frame				
[ ] Other			Insulation				
Joint Plan Review Required:			Finishes:				
[ ] Elec. [ ] Plumb. [ ] Fire			Energy				
SUBCODE APPROVAL			Mechanical				
[ ] CO [ ] CCO [ ] CA			TCO				
Date:			Other				
Approved By:			Final				

Dates (Month/Day)

TYPE OF WORK:

	(Office Use Only) FEE
[ ] New Building	$
[ ] Addition	
[ ] Alteration	
[ ] Roofing	
[ ] Siding	
[ ] Other	
[ ] Demolition	
[ ] Miscellaneous	
[ ] Fence ____ Height	
[ ] Sign ____ Sq. Ft.	
[ ] Pool	
[ ] Elevator	
[ ] Asbestos Abatement	
[✓] Other Antenna Installation	

Administrative Surcharge $
Paid [ ] Check # ____ Minimum Fee $
Collected by: ____ TOTAL FEE $

B. BUILDING CHARACTERISTICS

Use Group Present ____ Proposed ____
Constr. Class Present ____ Proposed ____
No. of Stories 1
Height of Structure 15 Ft.
Area—Largest Floor ____ Sq. Ft.
Total Bldg. Area/All Floors ____ Sq. Ft.
Volume of Structure ____ Cu. Ft.
Total Land Area Disturbed ____ Sq. Ft.

Est. Cost of Bldg. Work:
1. New Bldg. $
2. Alteration $
3. Total (1+2) $ 700—

U.C.C. Form F-110A

1 White = Inspector Copy
2 Canary = Office Copy
3 Pink = Office Copy
4 Gold = Applicant Copy

Section 1
0.75M AND 1.0M RECTANGULAR ANTENNA ASSEMBLY

This section is written for both the 0.75M and the 1.0M Rectangular Antenna Assemblies. When the two antennas differ, the antennas will be cited individually.

1.1 SHIPPING CONFIGURATION

The complete 0.75M Rectangular Antenna System (HNS P/N 3000179-0001, Prodelin P/N 1752-132) is shipped in two cartons:

Prodelin P/N	Description	Weight	Dimensions
• 0800-066	0.75M Rectangular Reflector with Feed System	27 lbs	9.5" x 25-3/8" x 53-3/8"
• 0800-118	0.75M/1.0M Rectangular Az/El Mount	40 lbs	18.5" x 19.25" x 10"

The 0.75M rectangular reflector with feed system carton (0800-066) includes:

Prodelin P/N	Description	Quantity
0176-048	Feed Rod, 0.75M Rectangular	2
0179-131	Reflector, 0.75M Rectangular	1
0200-507	Kit, HDWE. Feed System 0.75M Rectangular	1
0600-021	Support, Radio 0.75M Rectangular	1
0800-107	Rectangular Feedhorn Kit	1
5005-147	0800-066 Checklist	1

The complete 1.0M Rectangular Antenna System (HNS P/N 3000172-0001, Prodelin P/N 1102-132) is shipped in two cartons:

Prodelin P/N	Description	Weight	Dimensions
• 0800-108	1.0M Rectangular Reflector with Feed System	38 lbs	9.5" x 25-3/8" x 53-3/8"
• 0800-118	0.75M/1.0M Rectangular Az/El Mount	40 lbs	18.5" x 19.25" x 10"

The 1.0M rectangular reflector with feed system carton (0800-108) includes:

Prodelin P/N	Description	Quantity
0176-050	Feed Rod, 1.0M Rectangular	2
0179-132	Reflector, 1.0M Rectangular	1
0200-507	Kit, HDWE. Feed System 1.0M Rectangular	1
0600-018	Support, Radio 1.0M Rectangular	1
0800-107	Rectangular Feedhorn Kit	1
5005-148	0800-108 Checklist	1

The 0.75M/1.0M rectangular Az/El mount carton (0800-118) includes:

Prodelin P/N	Description	Quantity
0181-256	Assembly, Elevation Adjustment Rod 1.0M Rectangular	1
0181-257	Assembly, Reflector Support 1.0M Rectangular	1
0181-258	Assembly, Az/El Positioner 1.0M Rectangular	1
0200-512	Kit, Elevation Indicator	1
5005-149	0800-118 Checklist	1

The antenna containers should be unpacked and inspected at the earliest date to ensure that all material has been received and is in good condition. Any damage to materials while in transit should be immediately directed to the freight carrier. He will instruct you on matters regarding any freight damage claims. Any questions regarding missing or damaged materials that are not due to the freight carrier should be directed to Prodelin's Customer Service Department at: Prodelin Corporation, 1700 NE Cable Drive, P.O. Box 368, Conover, North Carolina 28613, Phone (704) 464-4141.

1.2 MECHANICAL INSTALLATION TOOLS (0.75M, 1.0M, 1.2M)

The following tools are recommended for use when installing the antenna.

1 Ratchet, 1/2" drive
1 Socket, 9/16" deep well, 1/2" drive
1 Socket, 5/16", 1/2" drive
1 Socket, 1/2", 1/2" drive
1 Wrench, Combination 5/16"
1 Wrench, Combination 3/8"
1 Wrench, Combination 7/16"
1 Wrench, Combination 1/2"
1 Wrench, Combination 9/16"
1 Wrench, Combination 3/4"
1 Screwdriver, standard blade
1 10" adjustable Crescent Wrench
1 Screwdriver, Phillips No. 3

1.3 ASSEMBLY

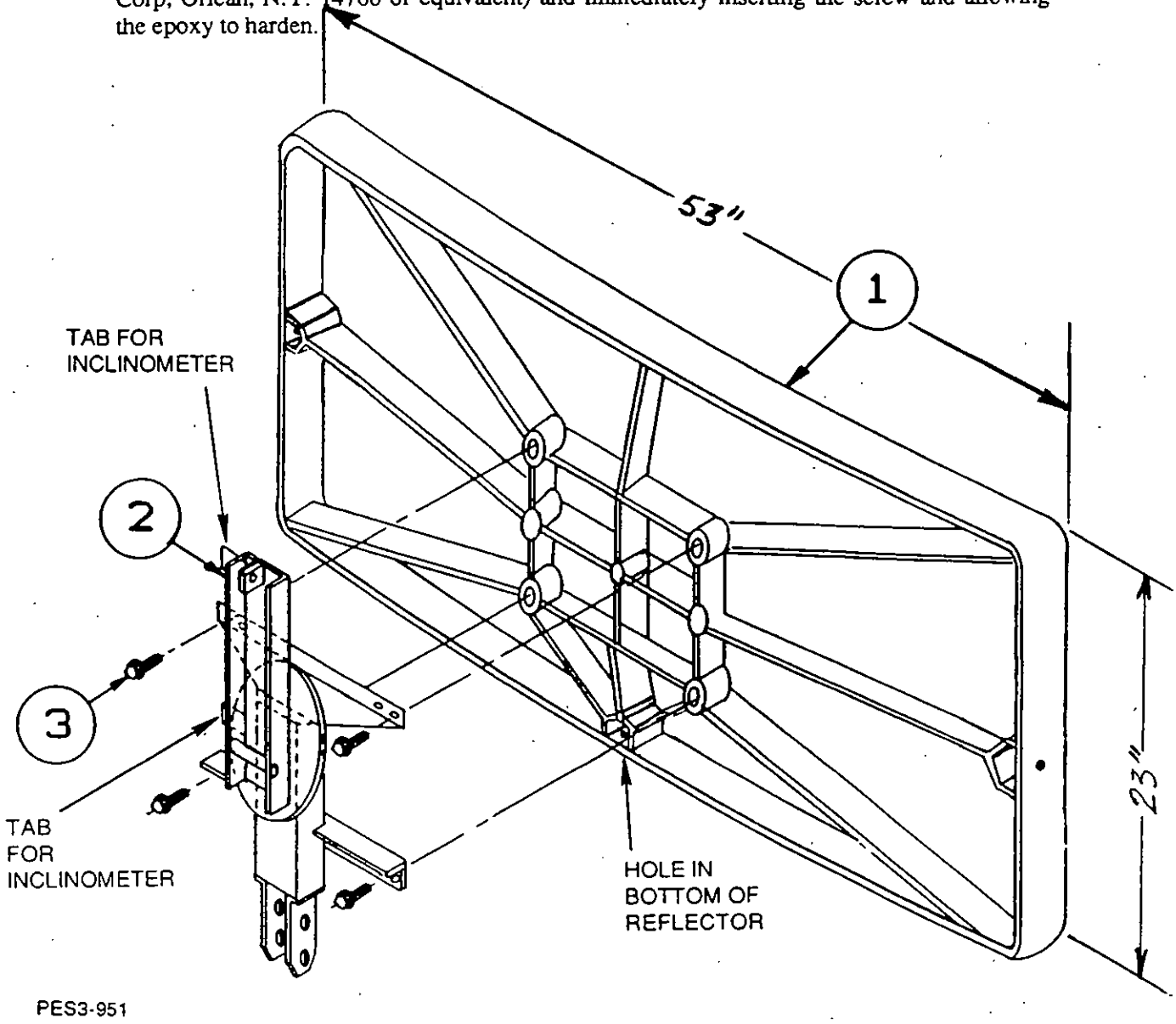
STEP 1. Refer to figure 1-1. Unpack the reflector support assembly (item 1), which is shipped in folded position (rotated as far as possible in polarization). Carefully straighten (unfold) it to the zero polarization position shown in figure 1-1 **making sure that the polarization indicator does not wedge underneath the riveted-in-place polarization scale (early units), figure 1-4.** If anti-icing is required, refer to chapter 8, section 2 before proceeding. If anti-icing is not required, locate the reflector and the four special self-tapping 27/64-13 x 1.38" screws (shown as item 3). These screws can be identified by their special double threads (high and low threads).

STEP 2. Attach the reflector support assembly (item 2) to the rectangular reflector (item 1). Orient the reflector support assembly so that its forked end is nearest the bottom of the reflector as shown in figure 1-1. The bottom of the reflector has three support ribs and a hole in the edge (the top does not have a hole). Using the special screws from step 1, carefully start the special screws so that they are straight. If a hole has previously had a screw inserted into it, make certain that the screw is re-threaded into the previously cut threads or stripped threads will result.

For the 1.0M Antenna Assembly, attach the reflector support assembly to a 1.0M Rectangular Reflector using the outermost holes provided on the reflector support assembly.

For the 0.75M Antenna Assembly, attach the reflector support assembly to a 0.75M Rectangular Reflector using the innermost holes provided on the reflector support assembly.

Tighten the screws securely, but do not overtighten. If a hole is stripped, it can usually be repaired by filling the hole with 2-part Epoxy (e.g. Epoxy-Patch, Hysul Division of Dexter Corp, Orlean, N.Y. 14760 or equivalent) and immediately inserting the screw and allowing the epoxy to harden.



Item No.	Part No.	Description	Quantity
____*	0179-131	0.75M Rectangular Reflector	1
1	0179-132	1.0M Rectangular Reflector	1
2	0181-257	Reflector Support Assembly	1
3	8319-006	27/64-13 x 1.38" Screw	4
* Not shown			

Figure 1-1. Mating Reflector to Reflector Support Assembly

NOTE

The Az/El positioner assembly is placed on the mast in the next step. Alternately, the entire antenna may be assembled first and placed on the mast at one time.

STEP 3. Refer to figure 1-2. Loosen the square head canister set screws (item 2) and the screw for grounding so that the Az/El positioner assembly will fit over the mast. Make a pencil mark on the mast 4.5 inches from the top. Place the Az/El positioner assembly on the mast. It should cover the pencil mark. If it does not, check that the top canister set screws have been sufficiently loosened.

The Az/El positioner assembly must be oriented correctly in relation to the satellite orbital arc to allow the azimuth Quick Repoint feature to sight on both the primary and backup satellites.

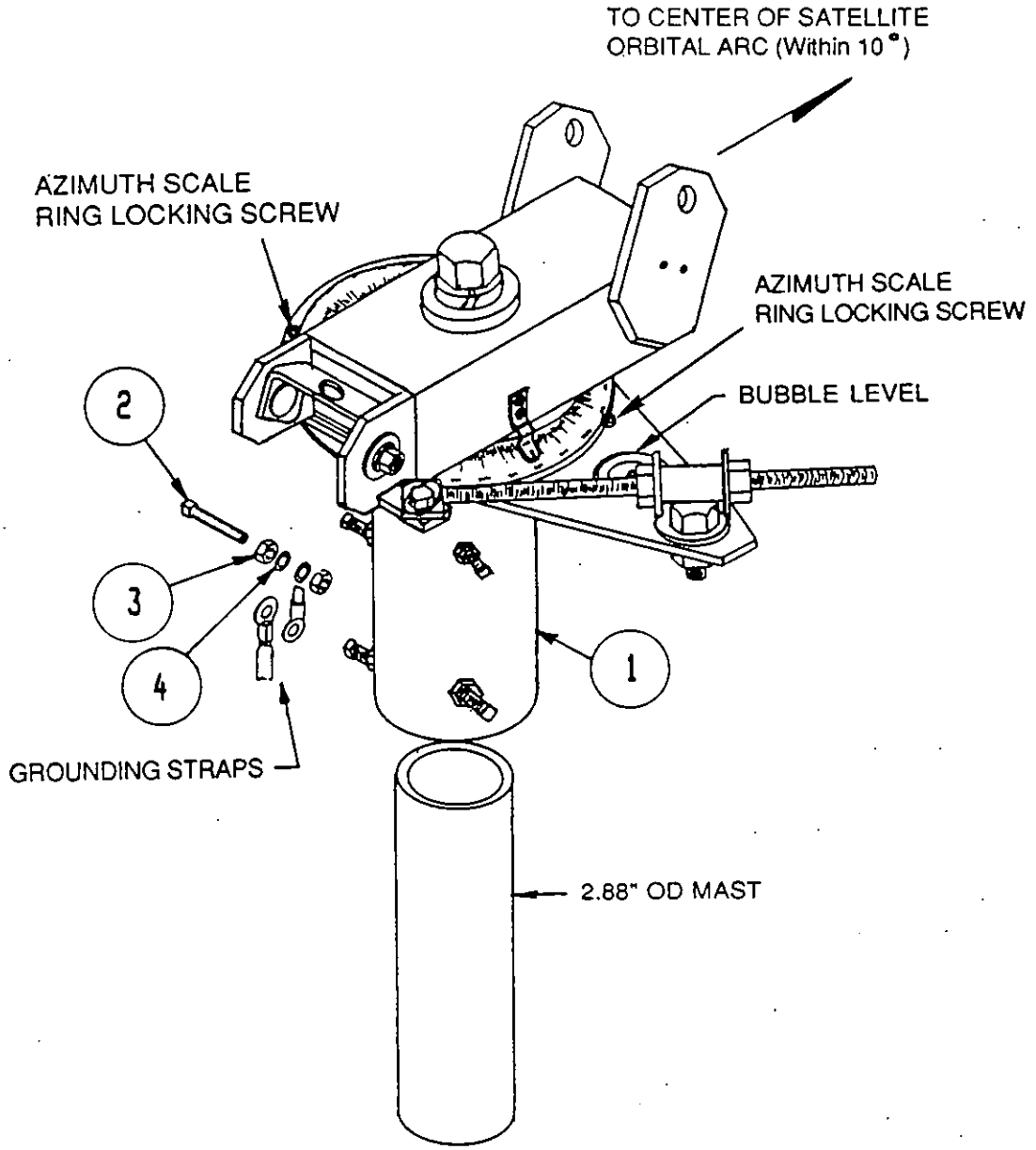
NOTE

The quick repoint antenna has a range of 90 degrees in azimuth at a given setting of canister position. By properly positioning the Az/El positioner assembly on the mast, you will make sure that any backup satellite is within the azimuth range without having to change canister position.

Note the arrow in figure 1-2 showing the canister orientation ("TO CENTER OF SATELLITE ORBITAL ARC"). Adjust the Az/El Positioner Assembly so the top rotating part of the Az/El Positioner Assembly is oriented approximately as shown in figure 1-2 with respect to the bottom half [i.e., so that the azimuth adjust is in the middle (can go ±45 degrees) and can adjust to the primary and the backup satellite without unbolting the positioner from the mast]. If this is not done properly, it will not be possible to later use the "quick repoint" feature to switch to the backup satellite.

If the primary and backup satellites are both known, use the site commissioning computer LATLONG function to calculate the azimuth from your site to each. In almost all cases the azimuth difference is less than 90° between the two satellites. Position the Az/El Positioner Assembly on the mast so that it points midway in azimuth between the two satellites.

If the backup satellite is not known, for North America, select a satellite at longitude 103 degrees West for aiming "TO CENTER OF SATELLITE ARC," the Az/El positioner assembly. This selection permits the most sites to view both their primary and backup satellites without having to change the canister position. Use the LATLONG function to calculate the azimuth from your site to a satellite located at 103 degrees West. Correct the azimuth for magnetic declination and aim the Az/El positioner assembly accordingly.



PES3-952

Item No.	Part No.	Description	Quantity
1	0181-258	Az/El Positioner Assembly	1
2	8317-008	1/4-20 x 2.00" Square Head Screw	1
3	8100-007	1/4-20 Hex Nut	2
4	8200-018	1/4" Int. Tooth Lockwasher	2
Note: Items 2, 3 & 4 are removed from Item 1 for Assembly.			

Figure 1-2. Az/El Positioner Assembly

STEP 4. Alternately tighten the eight set screws (item 2 of figure 1-2) while watching the bubble level on the top canister plate to **be sure that the Az/El positioner assembly is level.** It is important to make sure the canister is level. Otherwise, the quick repoint feature will not work correctly because the elevation will not be correct as the antenna is changed in azimuth.

STEP 5. With all set screws snug, check again to be sure that the Az/El positioner assembly is level and securely tighten the set screws. Tighten the lock nuts against the canister. Use terminal lugs to attach the ground wires (from RF Unit and to building ground) to the square head screw (see items 2, 3, and 4 of figure 1-2). **NOTE:** Terminal lugs are required on with the 1.0 M antenna even though the 1.8 M antenna may not have permitted terminal lugs.

STEP 6. Refer to figure 1-3. Remove the the 5/8-11 x 5.00 " elevation pivot bolt (item 9 in figure 1-3) from the reflector support assembly. Place one washer on the elevation pivot bolt (item 9), then locate the bolt where it can be easily reached (for example, on top of the Az/El positioner assembly). Lift the reflector support assembly with reflector to the Az/El positioner assembly and feed the elevation pivot bolt thru the indicated tube. Attach the indicated washers and nut (items 10, 11, and 12).

STEP 7. Locate the elevation adjustment rod assembly (Prodelin part number 0181-256) and attach the elevation adjustment rod (item 1 in figure 1-3) to the Az/El positioner assembly and to the reflector support assembly using the indicated hardware (items 2 thru 8). As shown in figure 1-3 the elevation rod passes through a hole in a pivoting bracket on the Az/El positioner. If necessary, slightly loosen the pivoting bracket bolts so that it pivots freely. Apply a weather protective lubricant (such as "LPS3" manufactured by Holt Lloyd Corp. and available at distributors in your area, whose address can be obtained by calling 1-800-241-8334) to the elevation adjustment rod and to the azimuth adjustment rod. Move the adjustment locations and reapply so that the entire rods are covered. The lubricant is used to inhibit corrosion and to make it easier to repoint or adjust the antenna at a later date.

Table 1-1. Item Numbers for Figure 1-3

Item No.	Note	Part No.	Description	Quantity
1	Note 1	0181-256	Elevation Adj. Rod Assembly	1
2	Note 1	0159-227	Elevation Adj. Spacer	1
3	Note 1	8201-030	1/2" Flatwasher	2
4	Note 1	8104-007	1/2-13 Hex Nut	2
5	Note 1	8032-008	3/8-16 x 1.00" Bolt	1
6	Note 1	8201-042	3/8" Flatwasher	2
7	Note 1	8202-042	3/8" Lockwasher	1
8	Note 1	8102-007	3/8-16 Hex Nut	1
9	Note 2	8034-040	5/8-11 x 5.00" Bolt	1
10	Note 2	8201-044	5/8" Flatwasher	2
11	Note 2	8202-044	5/8" Lockwasher	1
12	Note 2	8105-007	5/8-11 Hex Nut	1

Note 1. Items 2 thru 8 are removed from Item 1 for assembly.
Items 1 thru 8 included as part of 0181-256 Elevation Adjustment Rod Assembly.

Note 2. Items 9 thru 12 are removed from the Reflector Support Assembly.

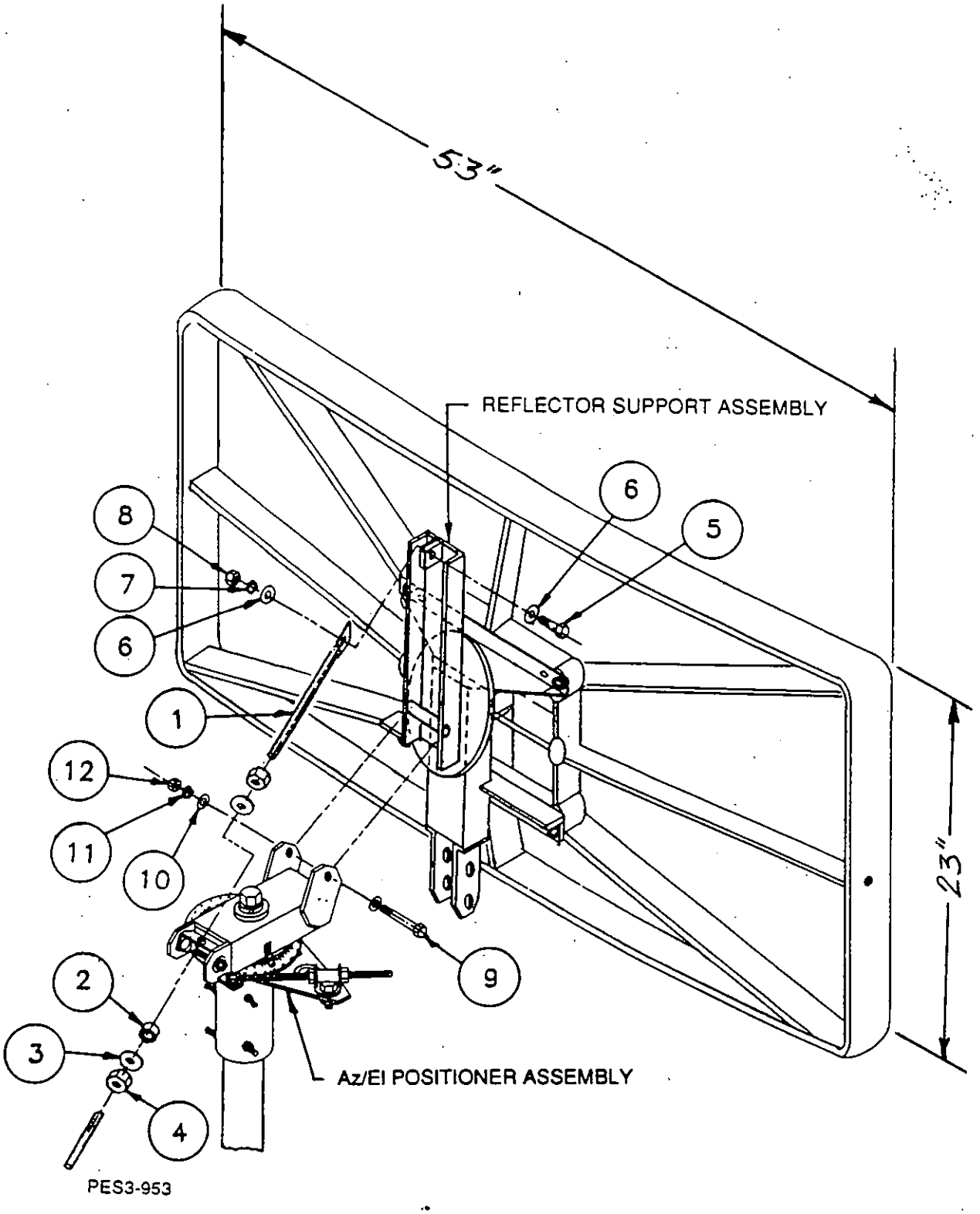
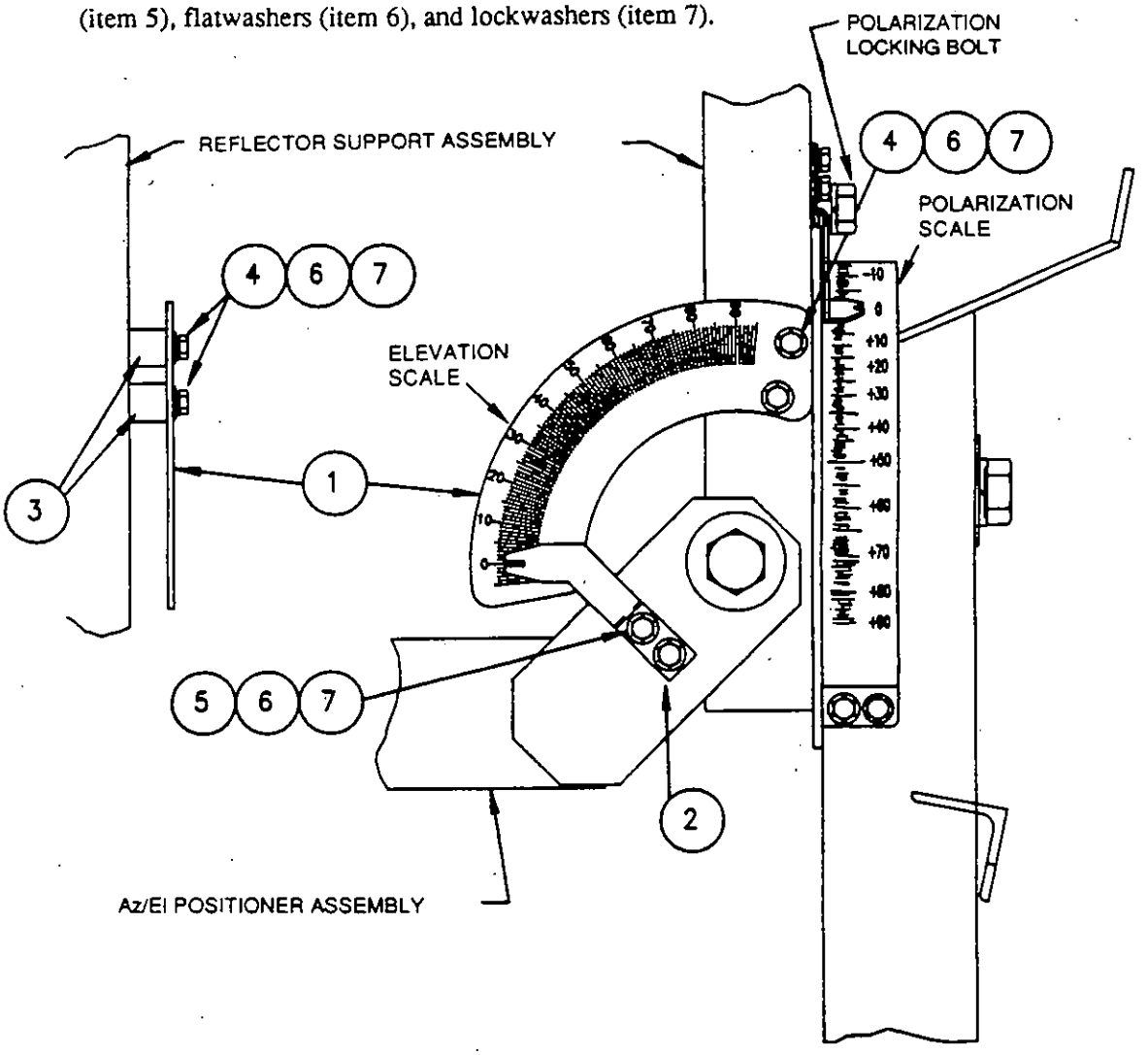


Figure 1-3. Mating Az/El Positioner Assembly to Reflector Support Assembly

STEP 8. Refer to figure 1-4. Locate the elevation indicator kit (Prodelin part number 0200-512). Attach the elevation scale (item 1) to the reflector support assembly using the spacers (item 3), 1" long screws (item 4), flatwashers (item 6), and lockwashers (item 7).

Attach the elevation indicator (item 2) to Az/El positioner assembly using 1/2" long screws (item 5), flatwashers (item 6), and lockwashers (item 7).



PES3-954

Item No.	Note	Part No.	Description	Quantity
1	Note 1	4090-030	Elevation Scale	1
2	Note 1	0211-427	Elevation Indicator	1
3	Note 1	0159-220	Spacer	2
4	Note 1	8321-006	#10-24 x 1.00" Tapping Screw	2
5	Note 1	8321-007	#10-24 x .50" Tapping Screw	2
6	Note 1	8201-037	#10 Flatwasher	4
7	Note 1	8201-032	#10 Lockwasher	4
Note 1. Items 1 thru 7 supplied as 0200-512, Kit Elevation Indicator.				

Figure 1-4. Installing Elevation Scale/Indicator

STEP 9. Loosely attach the ends of the feed rods (item 2 or 2A) that have the longer flattened area to the sides of the reflector (figure 1-5). Details of this connection are shown in detail B of figure 1-6 for the 1.0M antenna. Detail B of figure 1-7 is similar for the 0.75M antenna.

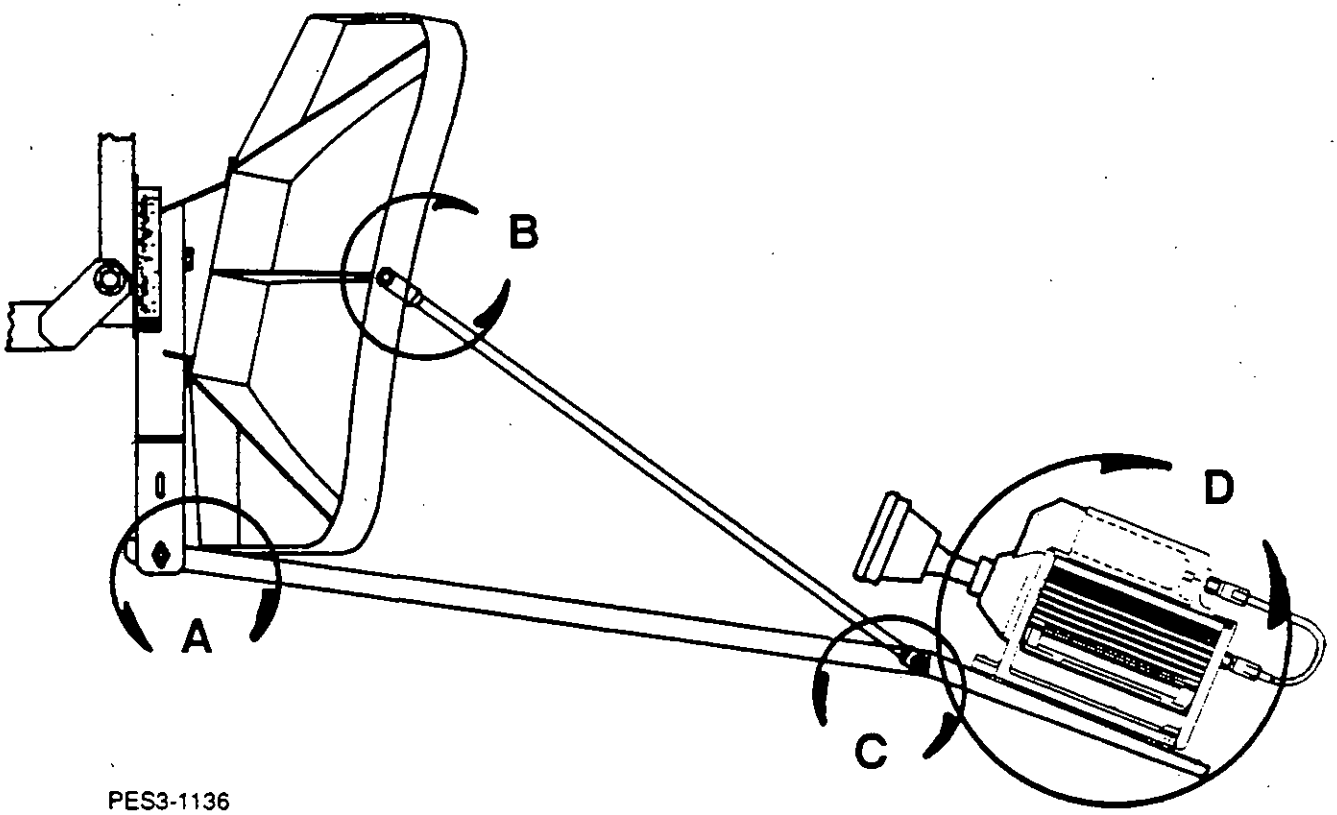


Figure 1-5. Installation of Radio Support and Feed Rods

STEP 10. Loosely attach the radio support (item 1 or 1A) to the feed rods (item 2 or 2A) using bolts, washers, and nuts (items 10 thru 13). Details of this connection are shown in detail C of figure 1-6 for the 1.0M antenna or figure 1-7 for the 0.75M antenna.

STEP 11. Loosely attach the radio support (item 1 or 1A) to the reflector support assembly using bolts, washers, and nuts (items 10 thru 13). For the 1.0M antenna, use the lower slots in the reflector support as shown in detail A of figure 1-6. For the 0.75M antenna, use the upper slots in the reflector support as shown in detail A of figure 1-7.

STEP 12. Attach the bolt, washers, and nut (items 10 thru 13) between the radio support and the reflector. Details of this connection are shown in detail A of figure 1-6 or 1-7. Tighten this bolt between the feed support and the reflector first while allowing the loosened bolts in the reflector support slots to adjust to their proper positions. Then, tighten the other hardware installed in steps 9 thru 12 (details A, B, and C of figure 1-6 or 1-7).

CAUTION

Failure to install and tighten the bolt (item 10) between the radio support and the reflector could allow a misalignment of the RF Unit to the reflector causing signal degredation or failure.

STEP 13. Spray or brush touch-up zinc enriched paint on the antenna galvanized metal surfaces on the antenna and mount in any areas that may have been scratched or where bare metal has been exposed.

Table 1-2. Item Numbers for Figures 1-6 and 1-7

Item No.	Note	Part No.	Description	Quantity
1	-	0600-018	Radio Support, 1.0M	1
1A	-	0600-021	Radio Support, 0.75M	1
2	-	0176-050	Feed Rod, 1.0M	2
2A	-	0176-048	Feed Rod, 0.75M	2
3	Note 1	0183-318	Feedhorn	1
4	Note 1	0198-120	O-Ring	1
5	Note 1	8300-002	#6-32 x .50" Socket Head Screw	6
6	Note 1	8200-010	#6 Lockwasher	6
-	Note 1	-	Silicon Grease Capsule	1
-	Note 1	-	Allen Wrench 7/64"	1
7	Note 2	8308-019	M8 x 16MM Pan Head Screw	2
8	Note 2	8201-034	Flatwasher, 5/16 Stainless Steel Std.	2
9	Note 2	8202-028	Lockwasher	2
10	Note 2	8030-008	1/4-20 x 1.00" Bolt	7
11	Note 2	8201-040	1/4" Flatwasher	14
12	Note 2	8202-040	1/4" Lockwasher	7
13	Note 2	8100-007	1/4-20 Hex Nut	7

Note 1. Items 3 thru 6 are shipped as 0800-107 Rectangular Feedhorn Kit.
Note 2. Items 7 thru 13 are shipped as 0200-507 Kit, Hdwe, Feed System 1.0M Rectangular.

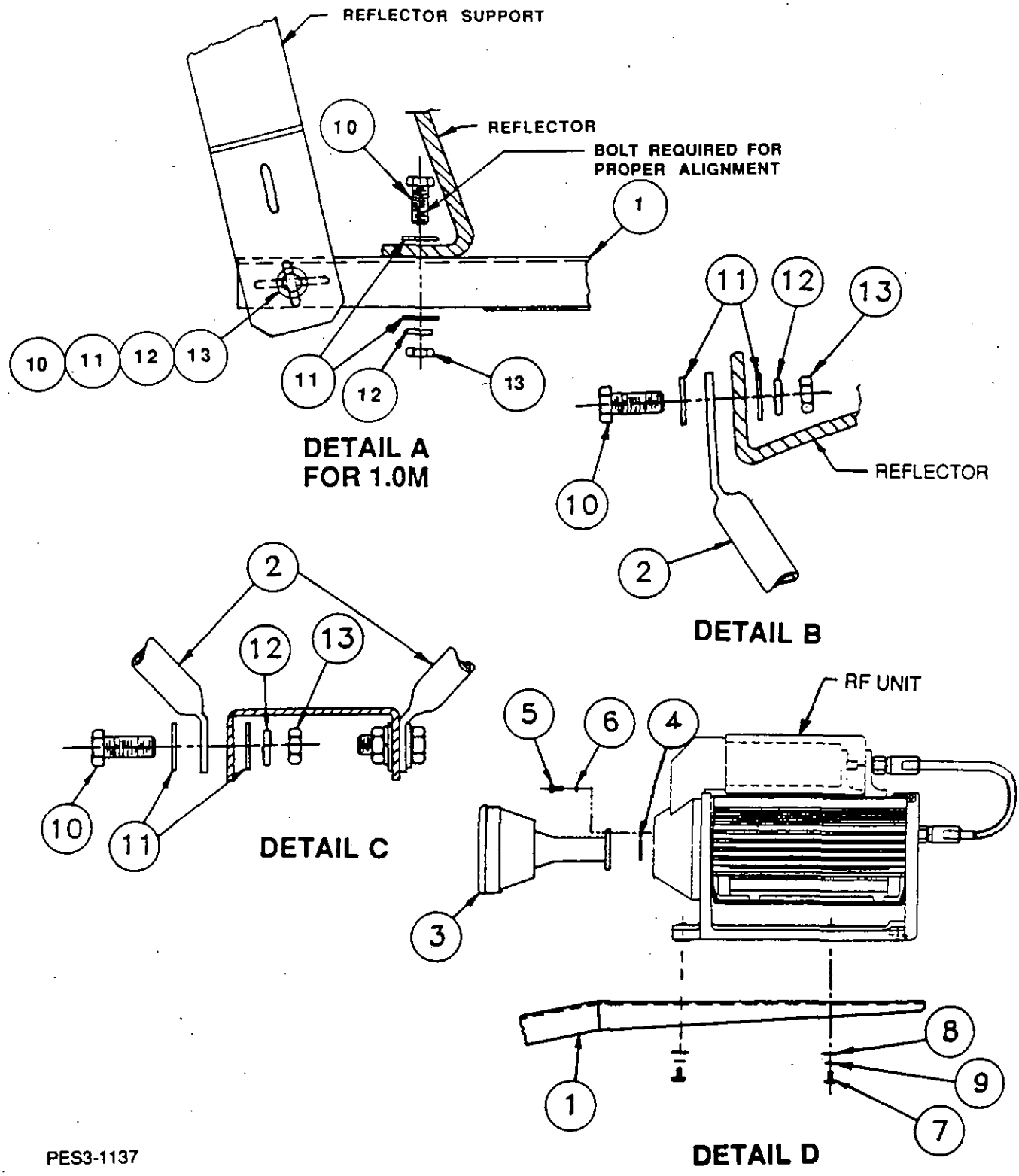


Figure 1-6. Radio Support and Feed Rods Installation Details for 1.0M Antenna

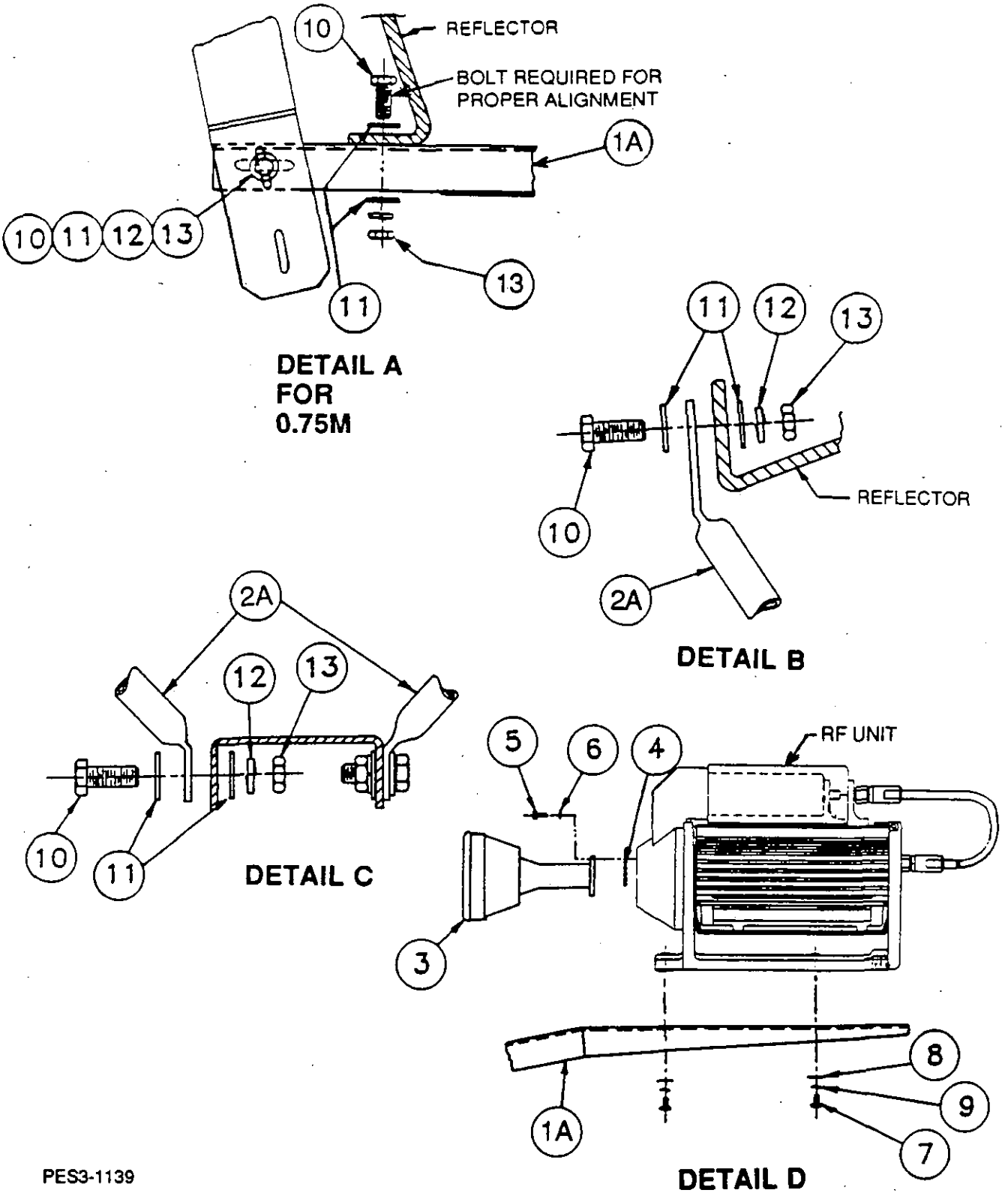
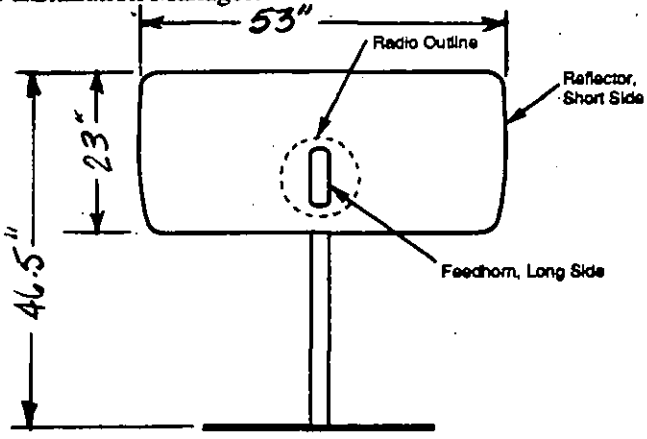


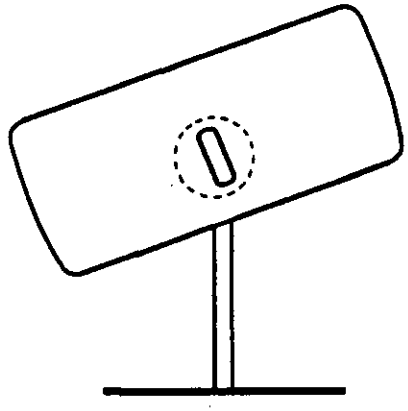
Figure 1-7. Radio Support and Feed Rods Installation Details for 0.75M Antenna

NOTE

On frequency reuse satellites, like SBS-6, there are both vertically and horizontally polarized satellite transponders. For the rectangular antenna the two polarizations are accommodated by attaching the feedhorn to the radio in two different orientations and then properly orienting the radio/feedhorn combination with respect to the rectangular reflector. Looking at this from the point of view of the antenna reflector, the feedhorn is always in the same physical orientation with respect to the reflector as shown in figure 1-8A. The radio is then attached to this fixed position feedhorn in either a 0-degree (horizontal polarized downlink - step 14) or 90-degree (vertical polarized downlink - step 15) position. Failure to get these two orientations (feedhorn with respect to reflector and radio with respect to feedhorn) correct will prevent receiving the outroute and finding the satellite. To find out whether you are operating with a vertical or horizontal polarized outroute transponder, on a particular satellite, refer to the "Installation Specification" for that particular customer. Table 2-1 on page 11-2-1 in chapter 11, Antenna Aiming, lists the downlink transponder polarizations for satellites used for PES at the time of this writing. If you are still not sure of the downlink polarization for your site, contact your designated "HNS Installation Manager."



A) FEEDHORN ORIENTATION FOR BOTH HORIZONTAL AND VERTICAL DOWNLINK

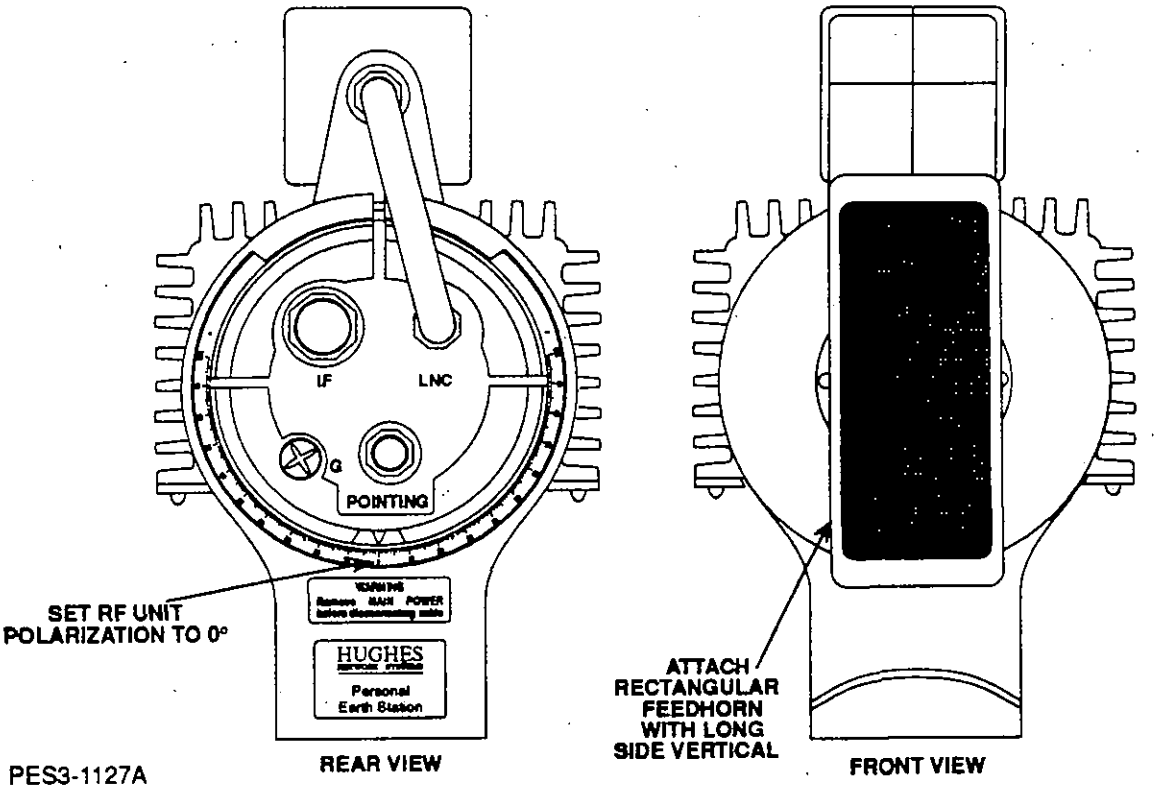


B) ENTIRE REFLECTOR ROTATES FOR POLARIZATION ADJUSTMENT

PES93-1241

Figure 1-8. Feedhorn to Reflector Orientation

STEP 14. If your site is designated for a **horizontally** polarized downlink (outroute/remote PES receive) transponder, attach the rectangular feedhorn to the RF Unit as shown in figure 1-9. First, set the RF Unit polarization to **zero degrees**. Then, attach the feedhorn so that the long side is vertical. The **double** ridge marks on the feedhorn flange align with the parting groove in the plastic weather shield on the RF Unit.



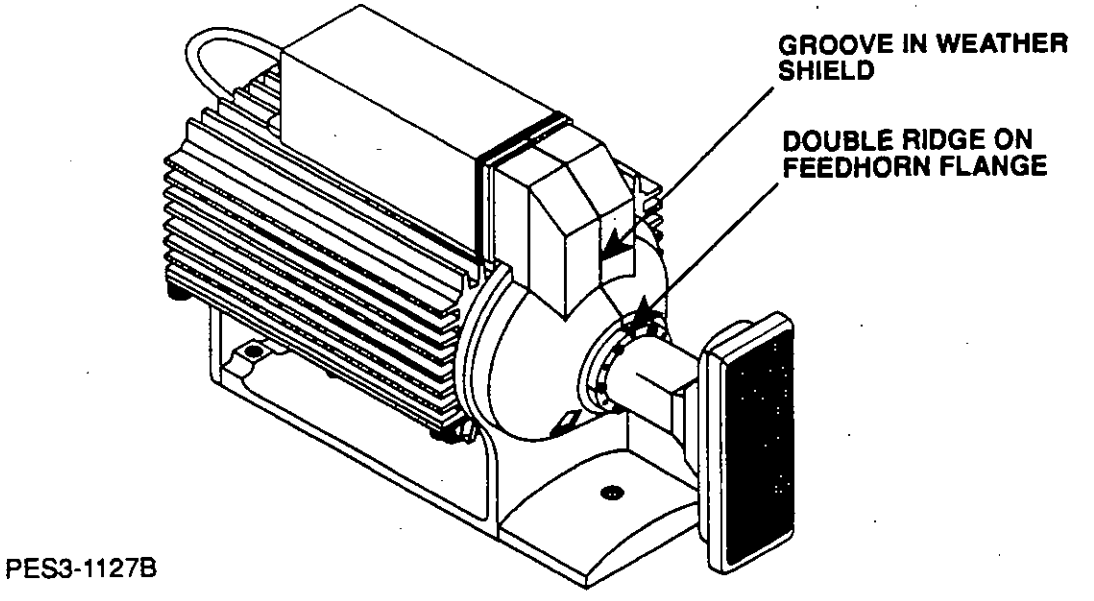


Figure 1-9. Proper Orientation of Rectangular Feedhorn on RF Unit for a Horizontal Downlink Transponder

NOTE

The rectangular feedhorn kit (Prodelin part number 200-507) provides the proper feedhorn, the O-ring, screws, and lockwashers (shown as items 3, 4, 5, and 6 in detail D of figure 1-6 or 1-7). The kit also includes the proper allen wrench for the feedhorn screws and some silicon grease for the O-ring. For the rectangular antennas, polarization is set by rotating the entire reflector and RF Unit together (figure 1-8B). There is a polarization scale and adjustment on the rear of the reflector. The long side of the feedhorn should be vertical when the RF Unit is on a level horizontal surface. When the orientation is correct, the long side of the rectangular feedhorn window will be parallel to the short side of the antenna reflector.

STEP 15. If your site is designated for a **vertically** polarized downlink (outroute/remote PES receive) transponder, attach the rectangular feedhorn to the RF Unit as shown in figure 1-10. First, set the RF Unit polarization to **90 degrees**. (Plus 90 and minus 90 are equilvalent.) Then, attach the feedhorn so that the long side is vertical. In this situation, the **single** ridge mark on the feedhorn flange aligns with the parting groove in the plastic weather shield on the RF Unit.

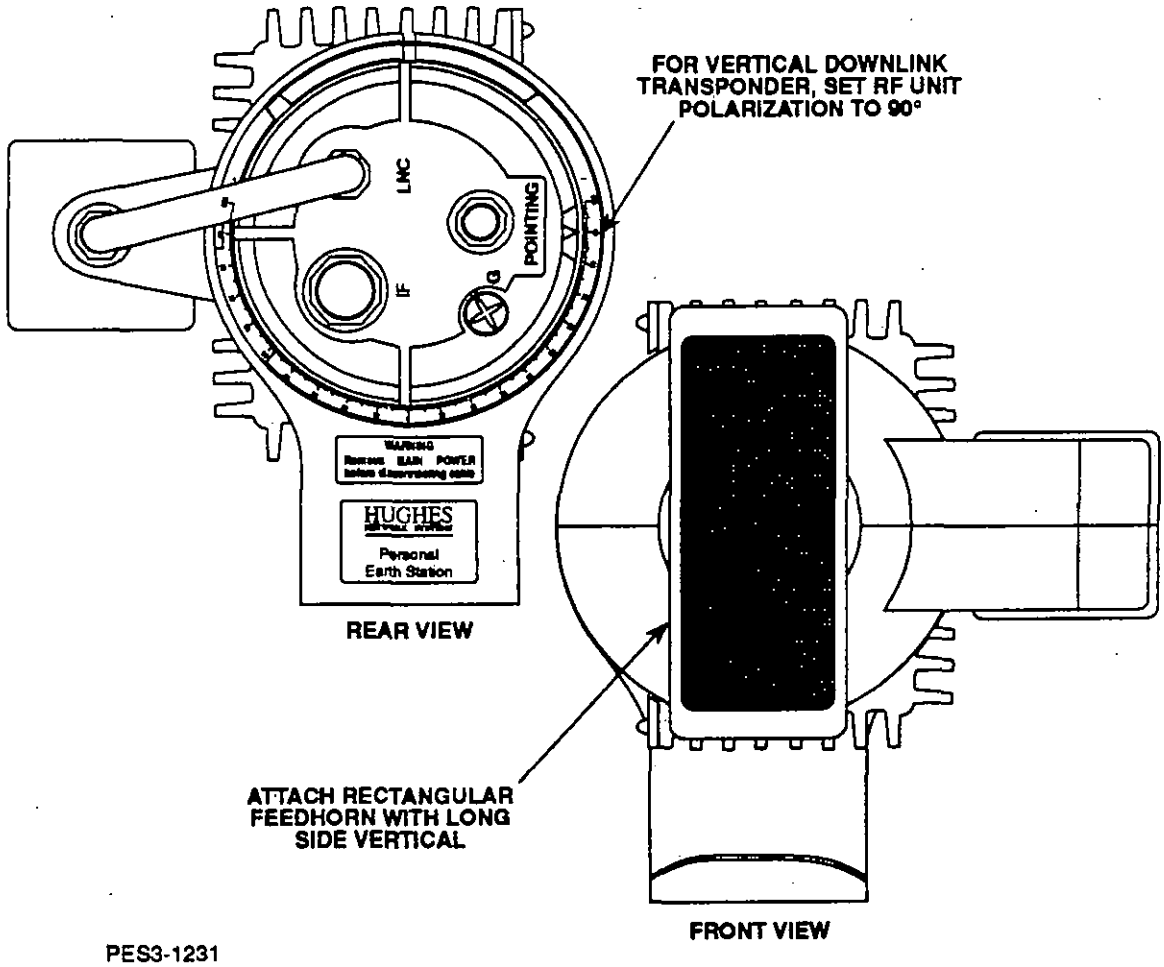


Figure 1-10. Orientation of Rectangular Feedhorn for a Vertical Downlink Transponder

STEP 16. Attach the RF Unit to the radio support using the the metric M8 bolts, lockwashers, and flatwashers (items 7, 9, and 8 shown in detail D of figure 1-6 or 1-7). Remove the screws from the slotted holes in the RF Unit bracket (figure 3-11 on page 7-3-13.) These screws thru the slotted holes are not used for this antenna.

STEP 17. Calculate the antenna pointing angles by using LATLONG function on the site commissioning computer. In the steps below, perform an intial alignment of the antenna in elevation, polarization, and azimuth.

STEP 18. Place an inclinometer (which is correctly assembled in the vertical position) on the special tabs on the reflector support assembly shown in figure 1-1. On the inclinometer, turn the adjusting knob until the computed elevation angle on the movable scale lines up with the center 0°mark on the fixed scale. The grating may show a crossing pattern or a pattern of arrows at this time.

STEP 19. Turn the elevation adjust nuts (item 4 on figure 1-3) until the grating on the inclinometer shows a pattern of parallel lines. When the grating begins to show arrows, you are getting close to the desired value. Each arrow represents 0.5°. If the present antenna elevation is lower than the computed elevation, the antenna needs to be pointed higher. Turn the bottom elevation adjust nut tighter to raise the antenna while loosening the top elevation nut.

STEP 20. When the inclinometer grating shows parallel lines with the computed elevation angle on the movable scale aligned with the fixed scale 0°index mark, the antenna is set to the computed elevation angle. The elevation scale and indicator (items 1 and 2 in figure 1-4) should agree with the inclinometer.

STEP 21. Loosen the polarization locking bolt (figures 1-4 and 1-11) and rotate the reflector to the computed polarization value. Observe the proper plus (+) or minus (-) value. Tighten the polarization locking bolt with its hold down bracket positioned as shown in figure 1-11. The polarization setting of the rectangular reflector is the value from the LATLONG for both a horizontal downlink transponder and a vertical downlink transponder because the orientation of the feedhorn on the RF Unit is set for each case. The polarization setting on the rear of the RF Unit should be left at its current value: (0° or 90°).

STEP 22. Point the antenna in azimuth as a first approximation. If necessary, use a magnetic compass for general orientation. Some searching may be required during antenna aiming. For the time being, ignore the reading on the azimuth scale ring.

STEP 23. Tighten the elevation and azimuth adjustment nuts after the site commissioning parameters have been entered into the indoor unit, the correct satellite signal has been acquired, and antenna pointing has been refined for the best signal reception. Then, loosen the azimuth scale ring locking screws (figure 1-2). Rotate the azimuth scale ring to indicate the exact calculated azimuth (true azimuth - not magnetic azimuth) from the site commissioning computer. Tighten the azimuth scale ring locking screws. A correct setting of the azimuth scale ring is essential for future repointing.

STEP 24. Check that the elevation scale (figure 1-4) agrees with the exact calculated values from the site commissioning computer. If there is a small difference, do **not** move the antenna. Instead, loosen the screws on the indicator (pointer), adjust the indicator position to read the correct value, and retighten the screws.

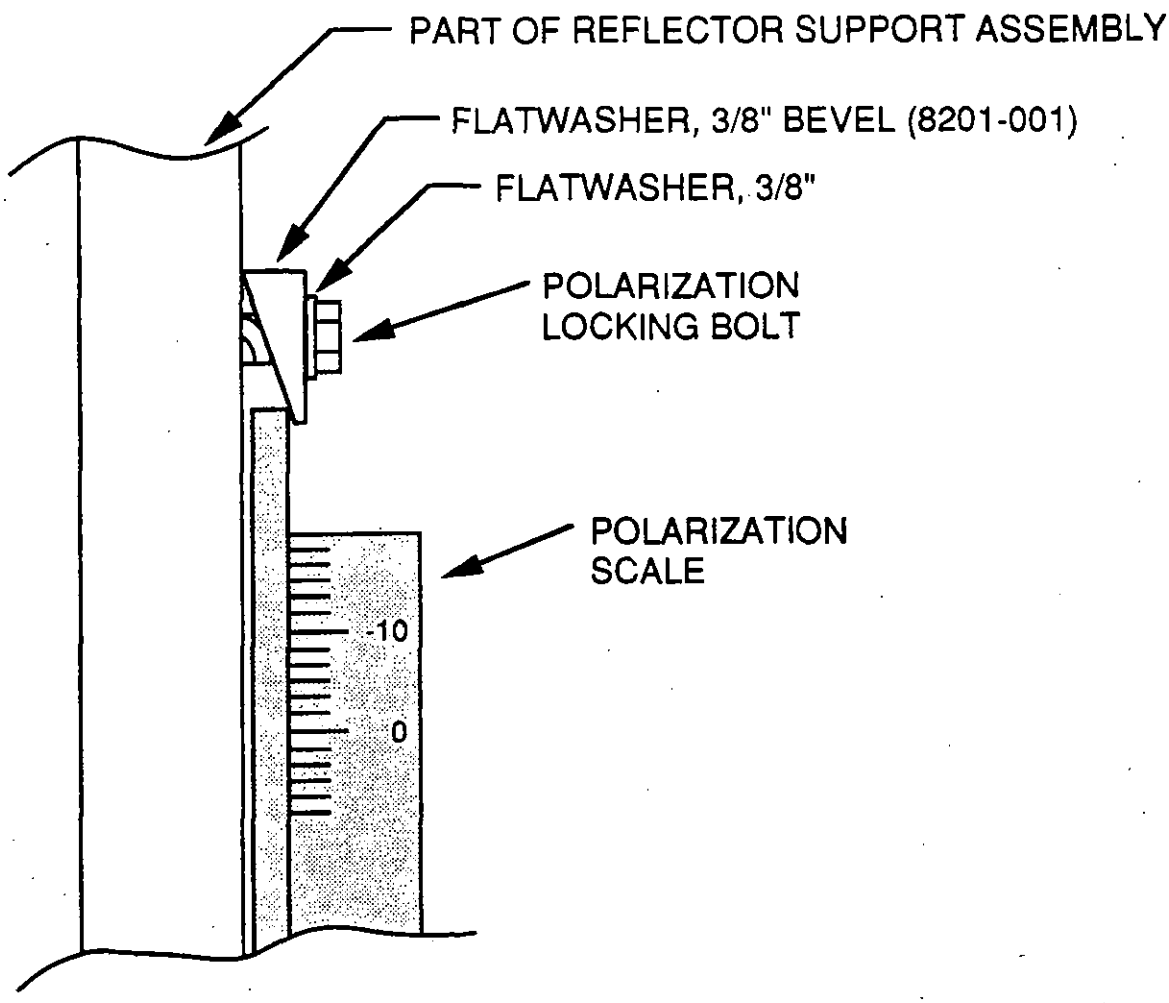


Figure 1-11. Polarization Locking Bolt

STEP 25. Locate the Az/El information label affixed to the rear of the reflector, figure 1-12. Write the following information on the label: site longitude, site latitude, primary satellite designation, designations for backup satellites, satellite longitudes, antenna pointing elevations, azimuth, polarizations for the primary and backup satellites, and the install date. If the SBS satellites are used for primary and backup, then mark all three (SBS-4, SBS-5, and SBS-6) as shown in figure 1-12. Locate the envelope taped to the rear of the reflector and the clear plastic material enclosed. Peel off the protective paper and apply the clear plastic self stick material (P/N 4090-034) over the completed Az/El information label. (Note: The envelope also contains an extra Az/El information label to be used if anti-icing is added and an extra bar code label with HNS serial number for the antenna.) If anti-icing is added, affix a completed Az/El information label on the rear of the anti-icing panel and cover with clear plastic.

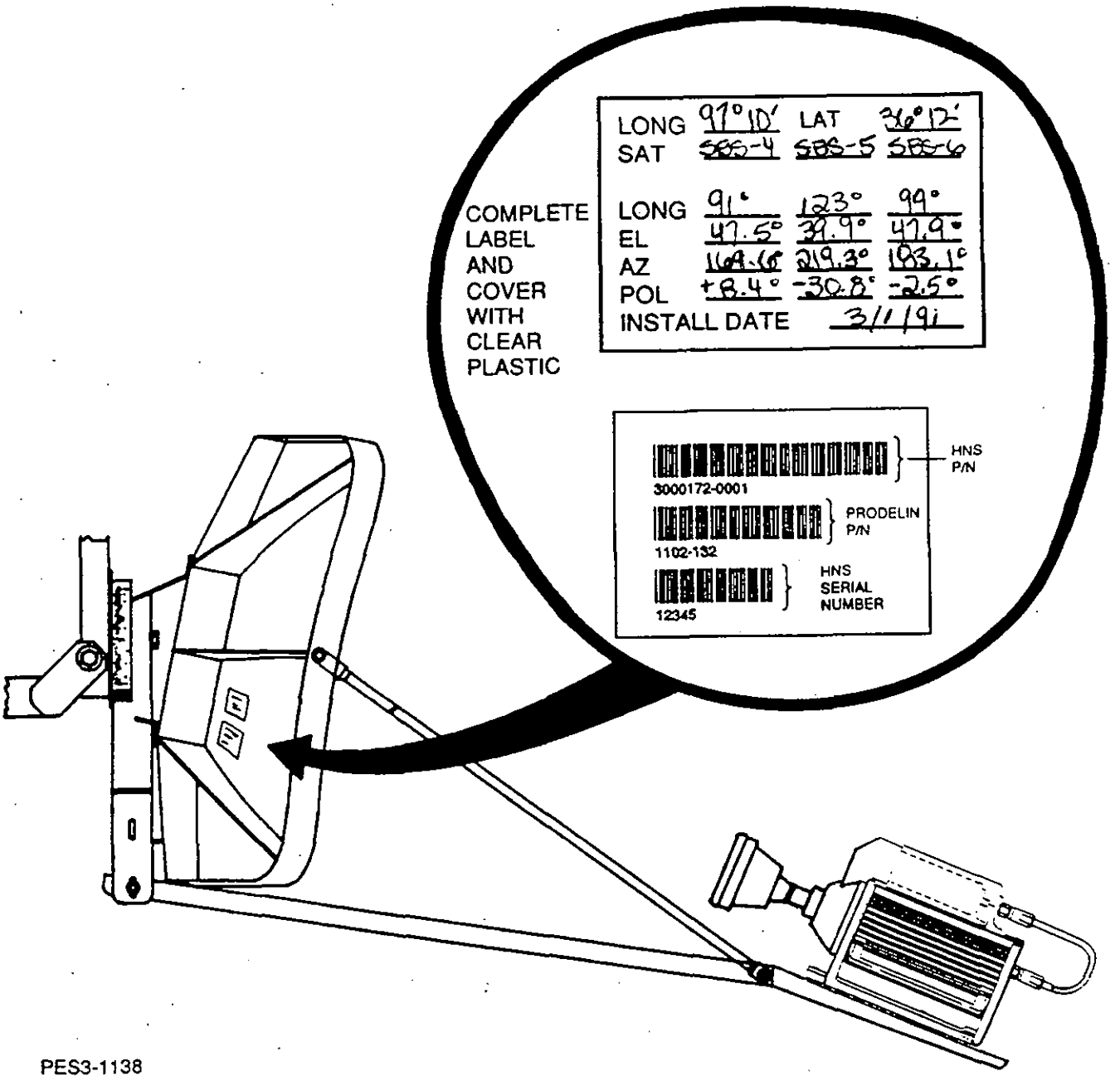


Figure 1-12. Recording Site Latitude, Longitude, and Primary and Backup Satellite Pointing Angles on the Rear of Reflector

4.2 ROOF PREPARATION AND PADDING

When an NPMM is installed on a roof, padding material (such as Trafbloc* or Verigard Walkway Pad**) can be installed between the roof and the NPMM. For certain NPMMs the padding material is supplied with the NPMM or can be ordered with the NPMM.

Sweep away loose rocks present on the roof structure before placing the NPMM pad on the roof in order to prevent puncturing the roof membrane causing roof damage and/or weather leaks. The only exceptions to this practice are:

1. Rocks are an integral part of the roof structure and are imbedded into the roof.
2. Customer specifies that the rocks are not to be swept away from the area of NPMM placement. This should be documented on the Customer Acceptance Report.
3. Installation personnel determine that rocks must be present due to incompatibility of pad material with roof membrane material. You may need to enlist the expertise of a certified roofer to determine this.

If the NPMM is to be installed on a corrugated roof, special considerations and techniques apply. Refer to Field Service Bulletin 1074A.

4.3 BALLAST WEIGHT - GENERAL CONSIDERATION

The ballast weight for an NPMM mount should be engineered to meet the required design load and wind sheer specifications for the individual PES remote. The purpose of ballast is to prevent the antenna from being overturned or moved. The amount of ballast provided must be sufficient to hold the antenna in position while exposed to the maximum expected winds at that location, yet the total antenna/mount/ballast load must be less than the load bearing capacity of the roof by an adequate safety factor. Factors which determine the required ballast include: the wind zone in which antenna is located, the height of the antenna above the ground, the exposure to the wind, the type of the antenna, the size and weight of the antenna, the type and weight of non-penetration roof mount, and the elevation angle at which the antenna will be pointed. The HNS ballast program of DIU Configuration Editor version v3.0 uses these factors to compute the ballast weight.

The ballast program of v3.0 is similar to the ballast program of v2.0. The ballast program of v3.0 includes one NPMM (5' x 5' NPMM) which the v2.0 does not have. The ballast program of v3.0 also includes the 0.75M and 1.0M rectangular antennas. (The ballast program is not applicable to the cross mast mount.)

Normally, the amount of ballast required must be calculated before an NPMM can be approved. At the time of installation, **use the precalculated and approved amount of ballast. (Do not exceed this amount by more than 25 pounds.)** Record the amount and type of ballast used on the Finished Installation Report (FIR).

---

* Trafbloc, c/o SIPLAST, 1-800-922-8800

** Versigard Walkway Pad
c/o Goodyear Tire & Rubber Company, Roofing Systems
(216) 796-4421

Factory Telephone numbers. Call for location of nearest sales office.

If the antenna at a given location is repointed so that its elevation is lowered, it may be necessary to add ballast. If the backup satellite is known at the time of installation, calculate the elevation to both the primary and backup satellites. Use both elevations to determine the ballast required for the primary and backup satellites. Install the heavier ballast if approved for this site.

The ballast program calculates the required weight of ballast. A given NPMM type may require concrete blocks (or concrete cap blocks) to be used as ballast. The weight of these blocks varies in different parts of the country depending on the materials used to construct the blocks. Use a scale to weigh sample concrete blocks to determine the weight per block you will be using (often near 25 pounds for cap blocks). Divide the ballast weight by the weight per block to determine the number of blocks required.

The minimum ballast weight for HNS NPMMs 8' x 8' or larger with antennas of 1.8M size or larger is 500 pounds.

4.4 ROOF LOADING CONSIDERATIONS

The ballast program also calculates the "Engineering Roof Load" in pounds. The engineering roof load includes the weight of the antenna, the weight of the NPMM, the ballast weight, and the force of the maximal expected wind which would be transferred to the roof. Divide the "Engineering Roof Load" by the roof area covered by the NPMM to get the roof loading per unit area in pounds per square foot.

The effective roof area for the PES antenna mount types is given in table 4-3.

Table 4-3. Effective Area of NPMM Types

NPMM Type	Effective Area
Square 5.5' x 5.5'	31 sq. ft
Square 8' x 8'	64 sq. ft.
Square 10' x 10' panel style	100 sq. ft.
Square 10' x 10' open frame style	100 sq. ft.
Hexagon 13'9" or 14'3"	166 sq. ft.
Cross Mast Mount	98 sq. ft.

The square 8' x 8' NPMM is one choice for a NPMM for PES sites where applicable. However, if the roof loading per unit area exceeds 20 pounds per square foot*, verify that the roof can withstand the load as outlined below. If the roof construction is not adequate to withstand the load, a different mount is required.

****
* CAUTION *
****

If the roof loading exceeds 20 pounds per square foot* for the mount chosen, consult with a registered structural engineer or other qualified professional concerning the roof construction before installing the NPMM. Building permit departments may require a written analysis and justification of roof loads exceeding 20 pounds per square foot* depending on the type of roof construction.

* Some states or localities have a roof loading limit greater than 20 lb/ft^2 (for example, 30 lb/ft^2 or 55 lb/ft^2). In such a case the higher value can be used, but it must be derated for expected snow load.

4.5 NPMM AND THE QUICK REPOINT ANTENNA

For Quick Repoint installation, the surface (roof, parking lot, etc.) where the NPMM is installed must be level or must not slope more than five degrees. If the slope is more than five degrees, the Quick Repoint feature will not work correctly because elevation would change as the antenna azimuth is changed. Use the inclinometer to help you determine the slope of a given surface.

In addition, for Quick Repoint installation, calculate the ballast for both the primary and backup satellites, if known. Use the LATLONG function to get the elevation angle for each satellite. Use the elevation angle, wind zone, exposure factor, and height above ground to determine the ballast for each satellite. Use the heavier ballast. If approval cannot be obtained for the heavier ballast, then a different type mount must be selected in order to make the Quick Repoint feature usable.

NOTE

If the backup satellite is not known, use SBS-5 (longitude = 123°W) as the backup satellite if SBS-5 is not the primary satellite, or use SBS-4 (longitude = 91°W) if SBS-4 is not the primary satellite.

4.6 HNS BALLAST PROGRAM INPUTS

Figure 4-3 lists the HNS ballast program input prompts.

Mount Shape

The NPMM types are now identified by the mount shape and size.

If the square shape is selected, the program requests the dimensions of the square. Enter the appropriate code.

```
                HNS Ballast Program

ENTER Mount Shape, Square or Hexagon >?
ENTER Square Dimen., 5.5x5.5=1, 8x8=2, 10x10=3 >?
ENTER Wind Zone A, B, or C ?
Is 125 MPH Ballast required Y/N ?
ENTER Elevation Angle in degrees ?
ENTER Exposure Factor per manual:  1, 2, 3
or 4 ?
ENTER Height above ground in feet ?
Is Antenna Rectangular  YES=1, NO=2 ?
ENTER Antenna Diameter in meters ?
```

Figure 4-3. Ballast Program Input Prompts

Wind Zone

EIA Standard RS-222C, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, provides wind loading zone data which is applicable to the PES non-penetrating mast mount (NPMM) installations. A copy (figure 4-6 and table 4-5) of the contiguous continental United States wind loading zones by county is attached for convenient reference. The wind loading zones are divided into zones A, B, and C, where A has the lowest wind loading and C has the highest wind loading.

The wind loading velocities projected for the three basic wind zones measured at 33 feet above the ground are:

Zone A - 85 mph
Zone B - 100 mph
Zone C - 110 mph

Find the state and county of your site on the attached EIA Standard RS-222C from table 4-5 on page 6-3-13. For states and counties not listed and the District of Columbia, use zone A. Enter the wind zone for your site.

****
* CAUTION *
****

Table 4-5 lists counties alphabetically by wind zone, so it is *essential* to check the entire listing for a particular state. For example, Dade County, Florida is near the end of Florida state listings because it is Wind Zone C.

The square 8'x8' NPMM with a 1.8M antenna is not authorized for use in wind zone C.

125 mph Ballast Required?

If this question is answered with a "Y" for yes, the program assumes at least a 125 mph wind. The program still prompts for wind zone elevation angle, exposure factor, and antenna height above ground if the question is answered with a "Y."

State, county or local ordinances or regulations may specify a design wind load of 120 or 125 mph. The square 8' x 8' NPMM with a 1.8M antenna is not authorized for use in locations which must meet the 125 mph wind requirement.

Elevation Angle

Enter the elevation angle from the LATLONG program. As explained previously, run the ballast calculation twice. First, for the elevation to the primary satellite. Second, for the elevation to the backup satellite.

Exposure Factor

Enter the appropriate exposure factor from table 4-4.

Table 4-4. Exposure Factors

Exposure 1	Large city centers with at least 50% of the buildings having a height in excess of 70 feet. Use of this exposure category shall be limited to those areas for which terrain representative of Exposure 1 prevails in the upwind direction for a distance of at least one-half mile or 10 times the height of the building or structure, whichever is greater. Possible channeling effects or increased velocity pressures due to the adjacent building or structure being located in the wake of adjacent buildings shall be taken into account. Example: Downtown large city centers, etc.
Exposure 2	Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single family dwellings or larger. Use of this exposure category shall be limited to those areas for which terrain representative of Exposure 2 prevails in the upwind direction for a distance of at least 1500 feet or 10 times the height of the building or structure, whichever is greater. Example: Shopping malls in suburban or commercial building areas, etc.
Exposure 3	Open terrain with scattered obstructions having heights generally less than 30 feet. This category includes flat open country and grasslands. Example: Midwestern towns, Great Plains areas, etc.
Exposure 4	Flat, unobstructed coastal areas directly exposed to wind flowing over large bodies of water. This exposure shall be used for those areas representative of Exposure 4 extending inland from the shoreland a distance of 1500 feet or 10 times the height of the building or structure, whichever is greater. Example: Ocean coastal areas, Great Lakes areas, etc.

Antenna Height

Enter the antenna height above ground. If the antenna is placed on a roof, include the height of the building.

Rectangular Antenna

If your site has a rectangular antenna, enter 1 for yes. The program will prompt for the 0.75M or 1.0M size.

Antenna Diameter in Meters

For PES circular antennas, the correct entry will almost always be 1.2, 1.8, or 2.4. However, the program will accept other values.

Only the hexagon NPMM may be used to mount a 2.44 meter antenna, and only in locations not more than 100 feet above the ground in wind zone A. The hexagon NPMM has 6.6-inch outside diameter mast for the 2.44 meter antenna.

Input Verification

The program provides an input summary to allow you to check that the proper inputs have been entered correctly. Figure 4-4 gives an example.

```
      HNS Ballast Program

Square 10x10 Non-Pen Mount
Zone = A          Elev = 20 Deg
Height = 20 Ft     Dia = 1.8M
Exposure Factor = 2

CORRECT ?  Yes, No, Quit >?
```

Figure 4-4. Example Input Summary

4.7 HNS BALLAST PROGRAM OUTPUT

Figure 4-5 is an example ballast program output display.

```
          HNS Ballast Program

Square Mount Ballast = 556 Lbs
Do you need roof load for engineer  Y/N ?

Engineering Roof Load = 1087 Lbs.

Hit ENTER to continue
```

Figure 4-5. Ballast Program Example Output

Ballast

The ballast weight is given in pounds. Divide the ballast weight by the weight per concrete block (or block cap) to determine the number of blocks required.

Engineering Roof Load

The engineering roof load is given in pounds. As explained under roof loading considerations, divide this number by the NPMM effective roof area shown in table 4-3 to get the roof loading per unit area.

CAUTION

If the roof loading exceeds 20 pounds per square foot* for the mount chosen, consult with a registered structural engineer or other qualified professional concerning the roof construction before installing the NPMM. Building permit departments may require a written analysis and justification of roof loads exceeding 20 pounds per square foot* depending on the type of roof construction.

Limits Exceeded Message

If the display shows the following message:

INSTALLATION PARAMETERS EXCEED LIMITS.

it means that the design limits or HNS policies for that particular mount have been exceeded. The NPMM chosen cannot be properly installed at the selected location. Possible solutions include: choosing a larger NPMM, selecting a location with a lower exposure factor, placing the NPMM closer to the ground, or choosing a pole, ground, or wall mount rather than an NPMM.

4.8 BEFORE INSTALLING NPMM

Verify that there are no state, county, or local laws, ordinances, or regulations that conflict with this section. In the event of conflict, the state, county, or local requirements supersede this section.

In special locations such as on promontories, in gorges or other areas where experience or records indicates extreme high probable wind speeds, a more detailed investigation should be performed by a qualified professional. In all locations, local building codes must be complied with.

* Some states or localities have a roof loading limit greater than 20 lb/ft^2 (for example, 30 lb/ft^2 or 55 lb/ft^2). In such a case the higher value can be used, but it must be derated for expected snow load.

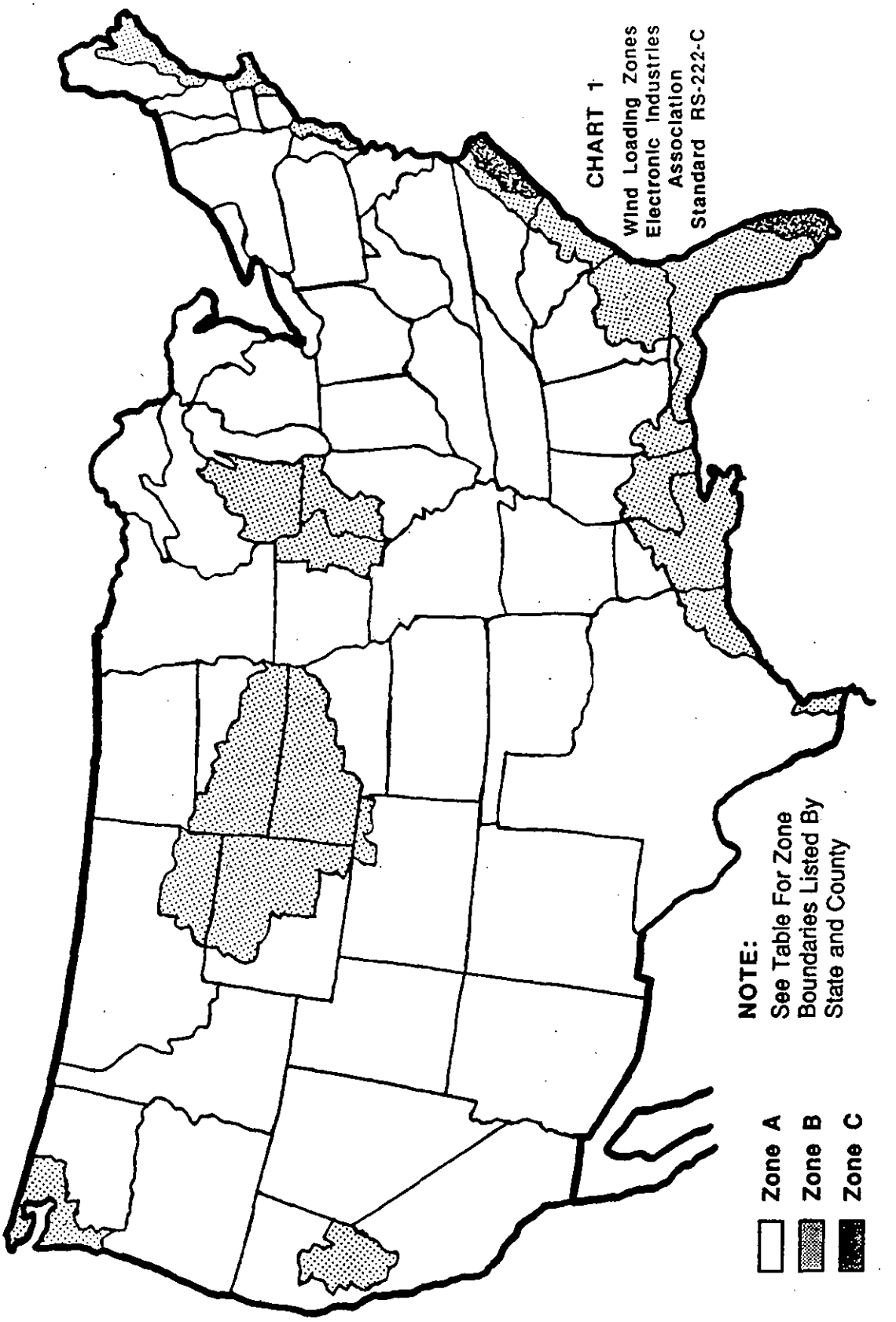


Figure 4-6. Wind Zone Map of Continental United States

Table 4-5. Design Wind Loading Zones for States and Counties (for Continental United States only)

(Tabulation by counties of zone boundaries for Chart I)

NOTE: States not listed and District of Columbia occur entirely within Zone A.

State and County	Zone	State and County	Zone	State and County	Zone
ALABAMA		Bradford	B	St. Johns	B
Counties not listed	A	Brevard	B	St. Lucie	B
Baldwin	B	Calhoun	B	Santa Rosa	B
Clarke	B	Charlotte	B	Sarasota	B
Escambia	B	Citrus	B	Seminole	B
Mobile	B	Clay	B	Sumter	B
Washington	B	Collier	B	Suwannee	B
		Columbia	B	Taylor	B
CALIFORNIA		DeSoto	B	Union	B
Counties not listed	A	Dixie	B	Volusia	B
Amador	B	Duval	B	Wakulla	B
Butte	B	Escambia	B	Walton	B
Calaveras	B	Flagler	B	Washington	B
Colusa	B	Franklin	B	Broward	C
Contra Costa	B	Glades	B	Dade	C
Eldorado	B	Gilchrist	B	Monroe	C
Glenn	B	Gulf	B	Palm Beach	C
Napa	B	Hamilton	B		
Nevada	B	Hardee	B	GEORGIA	
Placer	B	Hendry	B	Counties not listed	A
Sacramento	B	Hernando	B	Appling	B
San Joaquin	B	Highlands	B	Atkinson	B
Solano	B	Hillsborough	B	Bacon	B
Sutter	B	Indian River	B	Ben Hill	B
Tehama	B	Jefferson	B	Berrien	B
Yolo	B	Lafayette	B	Bibb	B
Yuba	B	Lake	B	Bleckley	B
		Lee	B	Brantley	B
COLORADO		Leon	B	Brooks	B
Counties not listed	A	Levy	B	Bryan	B
Logan	B	Liberty	B	Bulloch	B
Phillips	B	Madison	B	Camden	B
Sedgwick	B	Manatee	B	Candler	B
Weld	B	Marion	B	Charlton	B
		Martin	B	Chatham	B
DELAWARE		Nassau	B	Clinch	B
Counties not listed	A	Okaloosa	B	Coffee	B
Sussex	B	Okeechobee	B	Colquitt	B
		Orange	B	Cook	B
FLORIDA		Osceola	B	Crisp	B
Counties not listed	A	Pasco	B	Dodge	B
Alachua	B	Pinellas	B	Dooly	B
Baker	B	Polk	B	Dougherty	B
Bay	B	Putnam	B	Echols	B

Table 4-5. Design Wind Loading Zones for States and Counties (Continued)

State and County	Zone	State and County	Zone	State and County	Zone
Effingham	B	Hancock	B	Washington	B
Emanuel	B	Henderson	B	Winneshiek	B
Evans	B	Henry	B		
Glynn	B	Jo Daviess	B	LOUISIANA	
Houston	B	Kane	B	Counties not listed	A
Irwin	B	Knox	B	Acadia	B
Jeff Davis	B	Lake	B	Allen	B
Johnson	B	Lee	B	Ascension	B
Lanier	B	McDonough	B	Assumption	B
Laurens	B	McHenry	B	Avoyelles	B
Lee	B	Mercer	B	Beauregard	B
Liberty	B	Ogle	B	Calcasieu	B
Long	B	Rock Island	B	Cameron	B
Lowndes	B	Stark	B	Catahoula	B
Macon	B	Stephenson	B	Concordia	B
McIntosh	B	Warren	B	East Baton Rouge	B
Mitchell	B	Whiteside	B	East Feliciana	B
Montgomery	B	Winnebago	B	Evangeline	B
Peach	B			Grant	B
Pierce	B	IOWA		Iberia	B
Pulaski	B	Counties not listed	A	Iberville	B
Screven	B	Allamakee	B	Jefferson	B
Sumter	B	Benton	B	Jefferson Davis	B
Tattnall	B	Black Hawk	B	Lafayette	B
Telfair	B	Buchanan	B	La Fourche	B
Thomas	B	Cedar	B	La Salle	B
Tift	B	Clayton	B	Livingston	B
Toombs	B	Clinton	B	Orleans	B
Treutlen	B	Davis	B	Plaquemines	B
Turner	B	Delaware	B	Pointe Coupee	B
Twiggs	B	Des Moines	B	Rapides	B
Ware	B	Dubuque	B	St. Bernard	B
Wayne	B	Fayette	B	St. Charles	B
Wheeler	B	Henry	B	St. Helena	B
Wilcox	B	Iowa	B	St. James	B
Wilkinson	B	Jackson	B	St. John the Baptist	B
Worth	B	Jefferson	B	St. Landry	B
		Johnson	B	St. Martin	B
ILLINOIS		Jones	B	St. Mary	B
Counties not listed	A	Keokuk	B	St. Tammany	B
Boone	B	Lee	B	Tangipahoa	B
Bureau	B	Linn	B	Tensas	B
Carroll	B	Louisa	B	Terrebonne	B
Cook	B	Muscatine	B	Vermilion	B
De Kalb	B	Scott	B	Vernon	B
Du Page	B	Van Buren	B	Washington	B
Fulton	B	Wapello	B	West Baton Rouge	B
				West Feliciana	B

Table 4-5. Design Wind Loading Zones for States and Counties (Continued)

State and County	Zone	State and County	Zone	State and County	Zone
MAINE		Jefferson Davis	B	Cherry	B
Counties not listed	A	Jones	B	Cheyenne	B
Cumberland	B	Lamar	B	Dawes	B
Hancock	B	Lawrence	B	Deuel	B
Knox	B	Lincoln	B	Garden	B
Lincoln	B	Marion	B	Grant	B
Penobscot	B	Pearl River	B	Holt	B
Sagadahoc	B	Perry	B	Hooker	B
Waldo	B	Pike	B	Keith	B
Washington	B	Rankin	B	Keyapaha	B
York	B	Simpson	B	Kimball	B
		Smith	B	Knox	B
MARYLAND		Stone	B	Logan	B
Counties not listed	A	Walthall	B	Loup	B
Worcester	B	Wayne	B	McPherson	B
		Wilkinson	B	Morrill	B
MASSACHUSETTS				Pierce	B
Counties not listed	A	MISSOURI		Rock	B
Barnstable	B	Counties not listed	A	Scotts Bluff	B
Bristol	B	Clark	B	Sheridan	B
Dukes	B	Knox	B	Sioux	B
Essex	B	Lewis	B	Thomas	B
Middlesex	B	Scotland	B		
Nantucket	B			NEW JERSEY	
Norfolk	B	MONTANA		Counties not listed	A
Plymouth	B	Counties not listed	A	Atlantic	B
Suffolk	B	Big Horn	B	Bergen	B
		Carbon	B	Cape May	B
MISSISSIPPI		Carter	B	Hudson	B
Counties not listed	A	Custer	B	Monmouth	B
Adams	B	Fallon	B	Ocean	B
Amite	B	Powder River	B		
Claiborne	B	Rosebud	B	NORTH CAROLINA	
Clarke	B	Treasure	B	Counties not listed	A
Copiah	B	Yellowstone	B	Beaufort	B
Covington	B			Bertie	B
Forrest	B	NEBRASKA		Bladen	B
Franklin	B	Counties not listed	A	Camden	B
George	B	Antelope	B	Chowan	B
Greene	B	Arthur	B	Columbus	B
Hancock	B	Banner	B	Cumberland	B
Harrison	B	Blaine	B	Currituck	B
Hinds	B	Boyd	B	Duplin	B
Jackson	B	Box Butte	B	Greene	B
Jasper	B	Brown	B	Lenoir	B
Jefferson	B	Cedar	B	Martin	B

Section 5
5.5 FT X 5.5 FT NON-PENETRATING MAST MOUNT (NPMM)

5.1 SHIPPING CONFIGURATION

The 5.5' x 5.5' NPMM (HNS P/N 3000353-0001, Prodelin P/N 800-113) is shipped as one carton, and four frames banded together and shipped without a carton as follows:

Prodelin P/N	Description	Weight	Dimensions
• 0800-111	1.0M Non-Penetrating Mast Mount	50 lbs	6" x 6" x 58"
• 0490-224	Weldment, Frame 1.0M ARM/NPMM Qty 4	58 lbs	approx. 33.5" x 33.5" x 7.5"

The contents of the carton (0800-111) are:

Prodelin P/N	Description
0200-510	Kit, HWDE. 1.0M ARM/NPMM
0225-372	Angle, Brace 1.0M NPMM
0490-223	Weldment, Mast 1.0M NPMM
4091-004	Carton, 1.0M NPMM
5003-008	Pad, Neoprene Rubber 1/16 x 33.5 x 67
5005-150	0800-111 Checklist

5.2 BALLAST

For the 0.75M, 1.0M, and 1.2M antennas, there is no minimum ballast amount for the 5.5-ft x 5.5-ft NPMM. Use the ballast program of DIU Configuration Editor v3.0 to calculate the actual ballast required.

Refer to figure 5-1 and perform the following steps:

STEP 1. Select a site for the NPMM over a strong area of the roof (over a beam, support column, or near a wall.) Check that the surface level is or within 5 degrees of level. Clear the roof area (or installation area) where the NPMM will sit of debris or rocks (per chapter 6, section 4.2 on page 6-4-5). **The 5.5 x 5.5 NPMM is not suitable for use on a roof which has steel flanges on 16" centers; use the ARM instead.**

STEP 2. Install any roof sealant material if required.

STEP 3. Place the included rubber mats over the installation surface.

STEP 4. Place the four frames on the rubber mats. Orient each frame so that the tab for the angle brace (shown in detail D of figure 5-2) is at the outside corner. Loosely bolt the frames together near the outer edges as shown in detail B of figure 5-2.

STEP 5. As shown in detail A, figure 5-3, attach the mast pipe to the four frames. Use four 3/8-16 x 1.25" bolts, eight flatwashers, four lockwashers, and four nuts as shown. Do not tighten this hardware yet.

STEP 6. Install the four angle braces as shown in details D and C of figure 5-2. Note that one 4-inch bolt attaches two angle braces to the mast pipe.

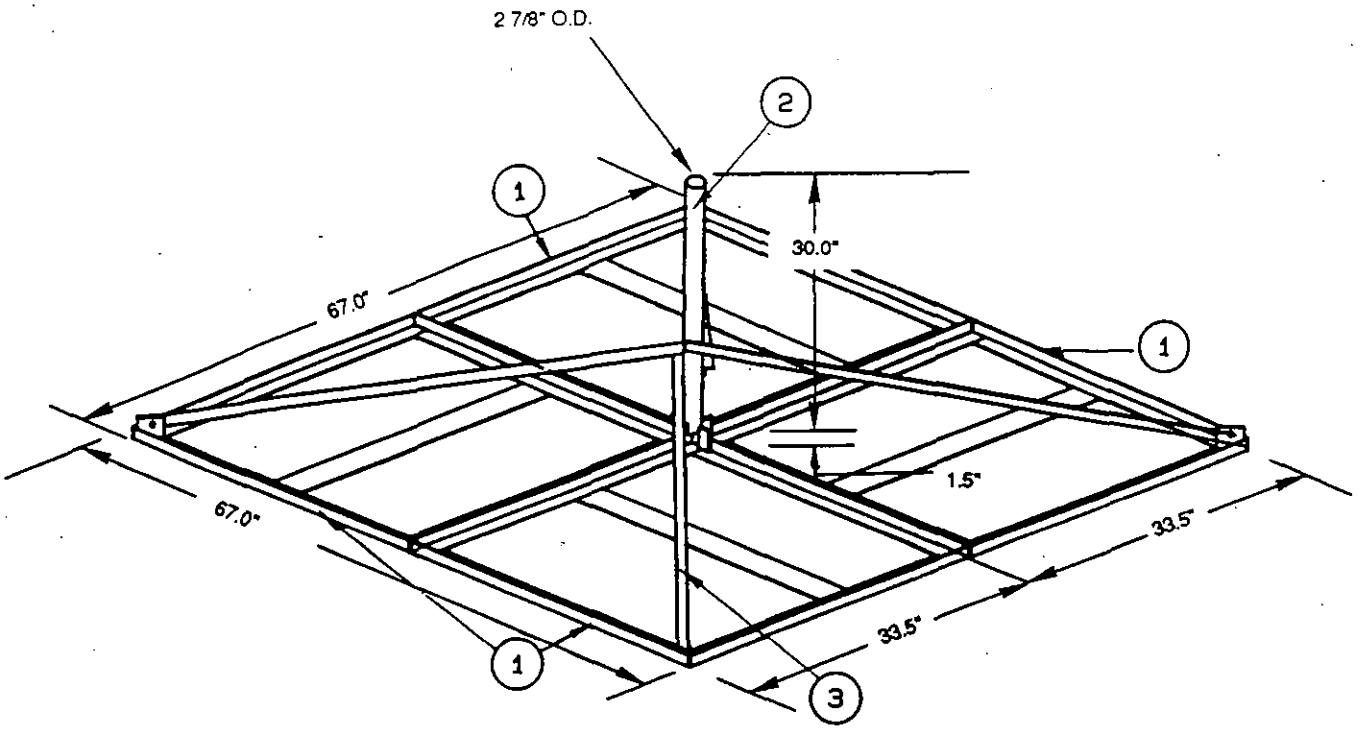
STEP 7. Tighten all hardware.

STEP 8. Apply the concrete block cap ballast. If the number of concrete block caps required is insufficient to cover entire NPMM area, make sure that the outer corners have ballast.

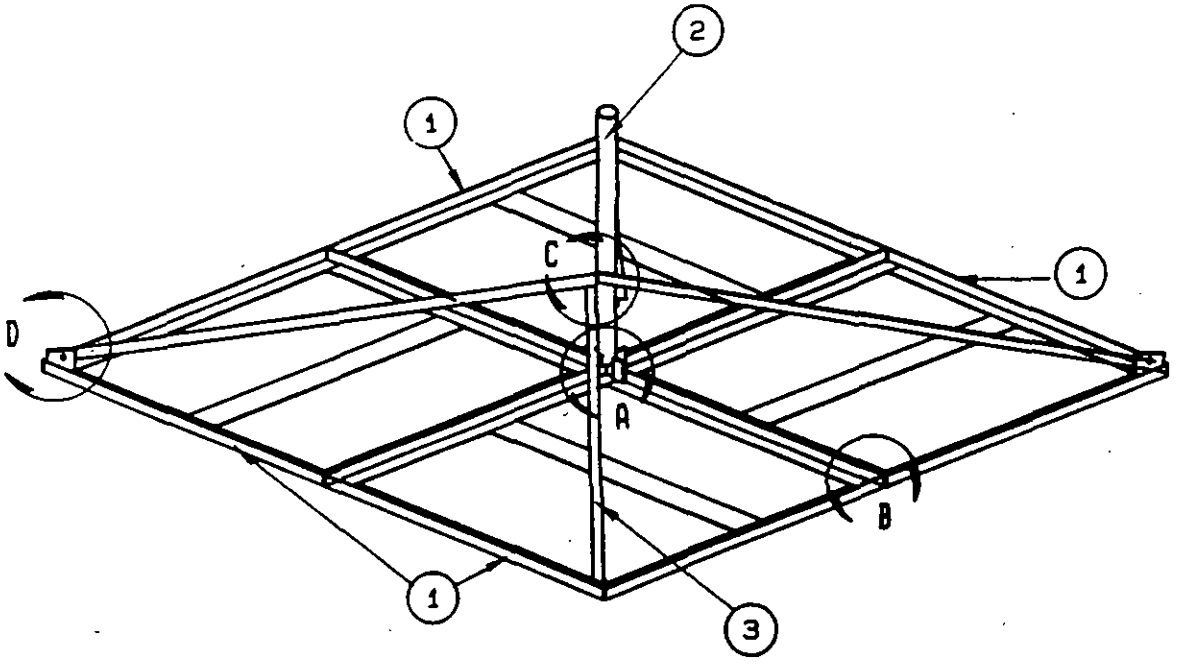
STEP 9. Continue with the appropriate antenna assembly instructions located in chapter 7.

Table 5-1. Parts List for Figure 5-1

Item No.	Note	Part No.	Description	Quantity
1	-	0490-224	Frame	4
2	-	0490-223	Mast Pipe	1
3	-	0225-372	Angle Brace	4
4	Note 1	8032-010	3/8-16 x 1.25" Bolt	12
5	Note 1	8032-032	3/8-16 x 4.00" Bolt	2
6	Note 1	8201-042	3/8" Flatwasher	28
7	Note 1	8202-042	3/8" Lockwasher	14
8	Note 1	8102-007	3/8-16 Hex Nut	14
Note 1. Items 4 thru 8 Shipped as 0200-510 Kit, HDWE, 1.0M ARM/NPMM				



A) DIMENSIONS



B) ASSEMBLY DETAIL LOCATIONS

PES3-960

Figure 5-1. 5.5 ft x 5.5 ft NPMM Assembly

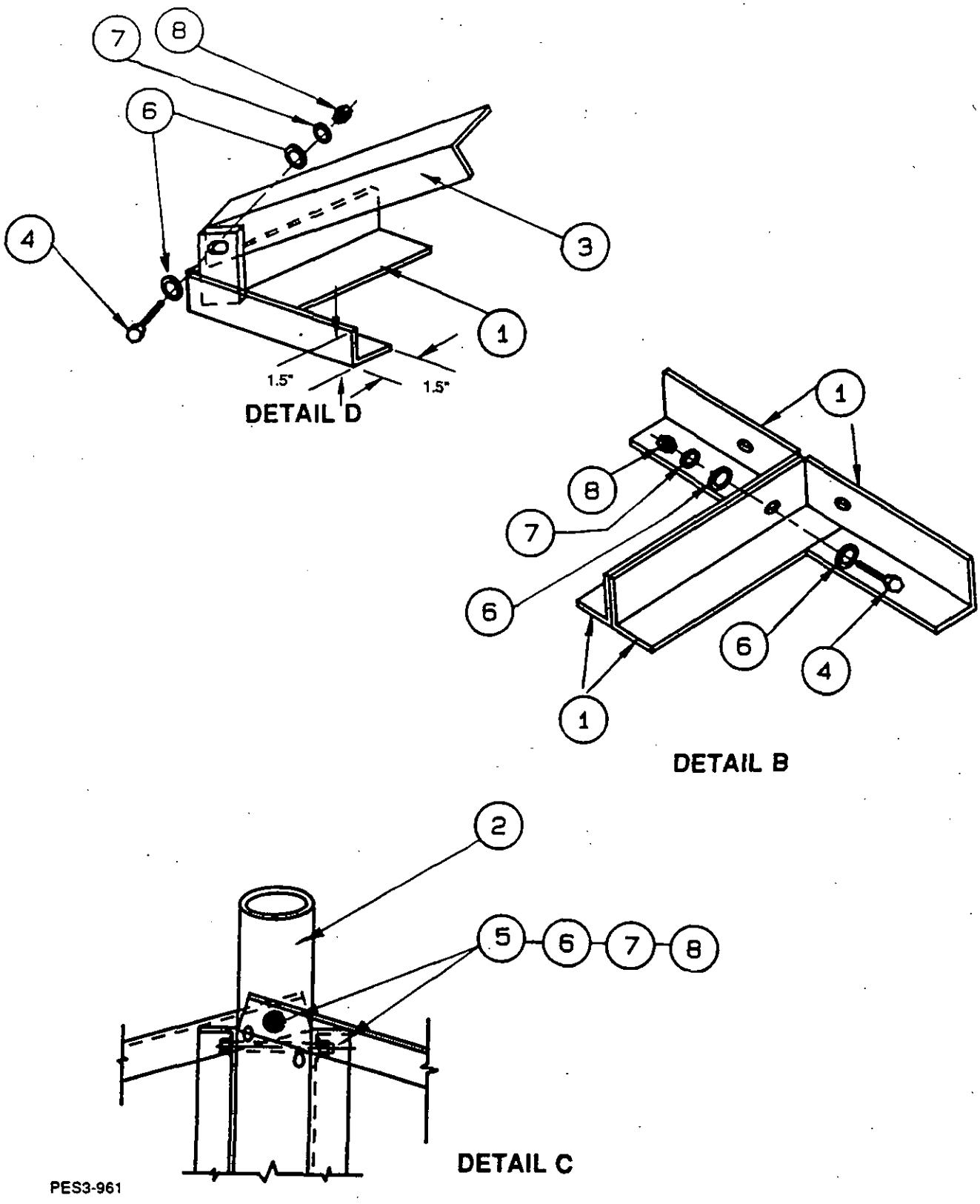
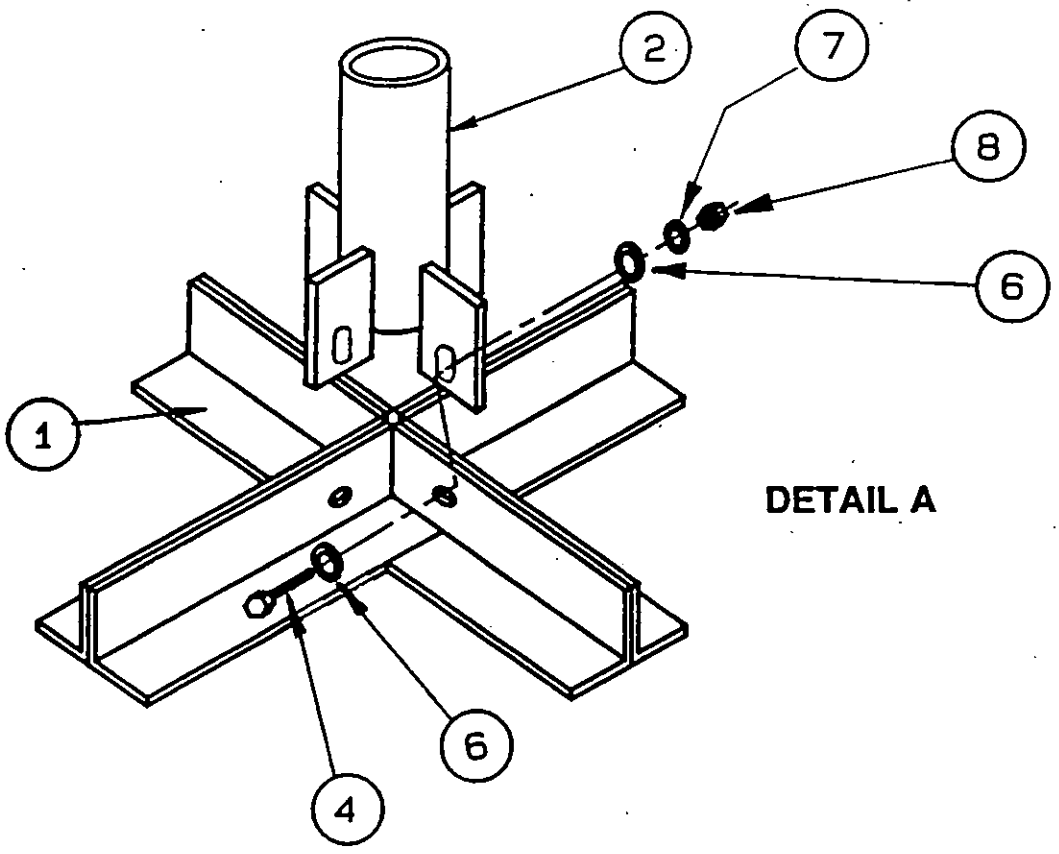
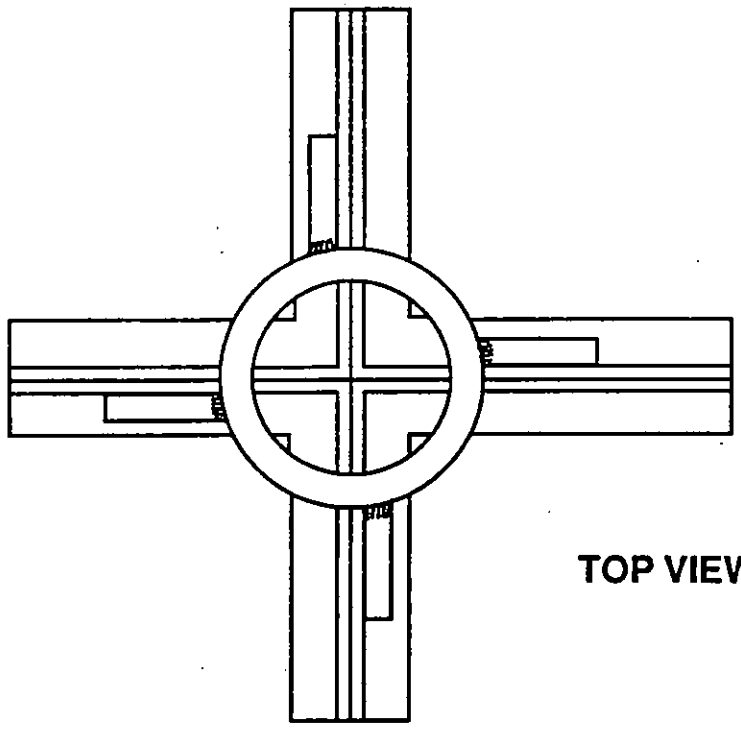


Figure 5-2. NPMM Assembly Details B, C, and D



DETAIL A



TOP VIEW

PES3-962

Figure 5-3. NPMM Assembly Detail A