ViaSat

Series 8010
7-Meter Earth Station
Antenna Site Preparation
110° and 180° Azimuth Mounts

Site Preparation Manual

Manual Part No. 42S045D
March 2003

Notice

All Rights Reserved

Table of Contents

LIST OF TABLES

SAFETY SUMMARY

Notice

Any service, adjustment, maintenance, or repair of this product must be performed only by authorized technical service personnel.

Prior to installation and use of this product review all safety markings and instructions. When safety precautions or important information is presented in this manual, the information will normally be presented just prior to the point where the hazard is likely to be encountered.

The following symbols are used throughout this manual to bring attention to practices, procedures, and conditions important to the safety of the operator and equipment or to obtaining desirable results from the equipment.

WARNING

This symbol warns of electrical shock hazards to personnel. Failure to comply with the instructions of such a warning may result in severe injury or death resulting from electrical shock.

WARNING

This symbol warns of non-electrical hazards to personnel. Failure to comply with the instructions of such a warning may result in severe injury or death.

CAUTION

This symbol warns of hazards to equipment. Failure to comply with the instructions of such a caution may result in damage or destruction of equipment.

GROUNDING REQUIRED

This symbol is used to bring attention to installation grounding requirements.

NOTE

Notes are used to provide clarification, or to alert the reader of possible erroneous results, which may occur if a procedure is not followed as written.

Chapter 1

General Information

1.1 Introduction to Manual

This manual contains information needed to properly locate and install the foundation for the 7-meter (7M) earth station antenna (110° and 180° travel). Chapter 1 provides general information and provides antenna site selection criteria for the 110° and 180° antenna, Chapter 2 provides the foundation installation information for the 110° mount, and Chapter 3 provides the foundation installation information for the 180° mount. All warnings and cautions should be reviewed before any procedures are performed. Failure to do so may result in personal injury or equipment damage.

1.2 Site Selection

Selection of the antenna site is one of the most important factors to considered for trouble-free, high quality signal reception from and transmission to the desired satellites. For optimal signal reception and transmission, it is imperative that the antenna site provide the proper mechanical and boresight clearance, and the absence of signal interference.

1.2.1 Mechanical Clearance

The site must allow clearance for all antenna movements (both azimuth and elevation) necessary for aiming, commissioning, and maintenance purposes. Refer to the outline dimensions provided in chapters 2 and 3 for the plan and elevation views to determine the required clearances.

1.2.2 Boresight Clearance

A clear line-of-sight is required between the antenna and any desired satellites. There must be no trees, buildings, power lines, fences, or other obstructions between any desired satellite and any portion of the reflector. Anything which obstructs the view of the satellite from even a small portion of the reflector will result in degraded performance.

1.2.3 Absence of Signal Interference

It is critical that the antenna site selected be free of strong microwave or other signal interference. Microwave systems in the vicinity of an antenna site can cause interference. If a known source of interference (e.g., a Bell System microwave tower) is close by, it may be necessary to have a signal survey performed to determine if the selected site is suitable.

1.3 Foundation Design and Construction

Antenna foundation preparation is critical to antenna performance. It is imperative that competent engineering assistance be engaged to assure that the foundation is properly designed for the local site conditions and building codes. This applies to the included foundation plans, as well as to any custom foundation design which may be required.

CAUTION

Since soil and environmental conditions, building codes, installation practices, and other factors vary among different localities, those persons installing antenna mounts are cautioned to secure professional engineering services for the design and construction supervision of antenna mount foundations.

The antenna mount anchor bolt orientations and foundation loads tables are furnished to be used to establish required dimensions and location of bolts relative to one another and as a guide to antenna mount characteristics that must be considered in the professional design of a foundation.

ViaSat does not represent, nor recommend, that any particular design or size of foundation is appropriate for any particular locality or installation.

1.3.1 Orientation

The foundation heading establishes the center of azimuth travel of the antenna, and determines the ability to point the antenna to the desired satellites. The foundation must be oriented such that the desired satellite pointing angles can be achieved within the chosen azimuth sector or sectors.

A true north-south reference may be established by reference to:

- a magnetic compass heading (corrected for declination or variation), or
- a survey from registered benchmarks, or
- a sighting of Polaris (North Star).

The survey should be performed by a qualified surveyor, since it is used to position the foundation pad and to establish the heading of the foundation anchor bolt pattern.

1.3.2 Power Requirements

The power requirements will vary depending upon the options purchased with the 7-meter antenna. For motorized antenna mounts, ViaSat provides an internal main breaker/disconnect in the Model 8861 and 8862 Outdoor Control Units. The service and breaker supplying power to the Outdoor Control Unit should be at least as large as the internal breaker, which is as follows:

Table 1-1. Power Requirements

Antenna Motorization - Domestic (60 Hz)	
Azimuth Axis	208V ac, 3-phase, 3.2 amp max (single speed-110°) 208V ac, 3-phase, 3.6 amp max (single speed-180°) 208V ac, 3-phase, 17.8 amp max (dual speed) 208V ac, 3-phase, 14.8 amp max (variable speed 110° and 180°)
Elevation Axis	208V ac, 3-phase, 3.2 amp (single speed) 208V ac, 3-phase, 17.8 amp max (dual speed) 208V ac, 3-phase, 14.8 amps max (variable speed)
Polarization Axis	208V ac, 3-phase, 0.24 amp
Antenna Motorization - International (50 Hz)	
Azimuth Axis	380V ac, 3-phase, 1.5 amp max (single speed 110°) 380V ac, 3-phase, 2.0 amp max (single speed 180°) 380V ac, 3-phase, 7.7 amp max (dual speed) 380V ac, 3-phase, 7.8 amp max (variable speed 110° and 180°) 415V ac, 3-phase, 7.8 amp max (variable speed 110° and 180°)
Elevation Axis	380V ac, 3-phase, 1.5 amp (single speed) 380V ac, 3-phase, 7.7 amp max (dual speed) 380V ac, 3-phase, 7.8 amp max (variable speed 110° and 180°) 415V ac, 3-phase, 7.8 amp max (variable speed 110° and 180°)
Polarization Axis	380V ac, 3-phase, 0.15 amp 415V ac, 3-phase, 0.15 amp
NOTE	

Table 1-1. Power Requirements	
Circuit breaker selection should take into consideration that motor starting amp surge may be as high as 6 times the full load running current. The combined azimuth and elevation connections must be completed by an electrical contractor and must meet all state and local electrical codes	
De-Ice System	
Full Reflector Power	208V - 240V ac, 3-phase, 21.6 kVa
Half Reflector Power	208V - 240V ac, 3-phase, 10.8 kVa
Feed and Subreflector	208V - 240V ac, 3-phase, 1.0 kVa

Table 1-2. Circuit Breaker Requirements	
Antenna Motorization Total	40 amp, 3-phase
Model 8861 single speed	20 amp, 3-phase
Model 8862 variable speed	50 amp, 3-phase
De-Ice System Total	100 amp, 3-phase

Power for antenna de-icing must be considered separately from the motorized drive requirements above .

1.3.3 Electrical Grounding

Proper electrical grounding shall be provided by the installing contractor to meet local applicable codes. Depending on local soil conditions, this may take the form of a buried grid or a suitable copper stake. The antenna mount shall be electrically connected to the ground.

1.3.4 Control, Power, and RF Cables

Provisions must be made to provide suitable support for control, power, and RF cables either by buffed conduit or overhead cable tray. Lightening arrestors must be provided across all cables leaving the antenna per applicable local codes and N.F.P.A. codes.

1.3.5 Conduit Placement

If underground conduit is to be used for cabling and waveguide, it must be placed in the foundation prior to pouring the concrete. Power and control cable conduit should be at least 3 inches [7.6 cm] diameter with at least a 36 inches [91.5 cm] bend radius. Waveguide conduit should be at least 4 inch

[10.2 cm] diameter with at least a 36 inch [91.5 cm] bend radius. Refer to the individual foundation sections of the manual for specific recommendations of conduit placement.

1.3.6 Loads and Deflections

The pointing accuracy of the installed antenna is determined by the stiffness of the antenna and the foundation. The suggested foundation plan for each mount type has been designed using the stated assumptions with loading based on the corresponding loads table. The foundation should be designed for a maximum tilt of 0.1 degrees when the survival wind loads are applied to the antenna.

1.3.7 Soil Bearing

The minimum safe soil bearing capacity for monolithic foundations shall be not less than 2,000 lb. per sq. foot [96 kPa], The bottom of the foundation pad must extend below the frost line.

1.3.8 Anchor Bolts and Template

Anchor bolt locations must be within 1/16 inch [.16 mm] of the dimensions given. The anchor bolt template kit includes the plates and tie bars necessary to accurately position all of the anchor bolts for the foundation. The surface of the concrete foundation at the mount base plates should be level within 0.5 inch [1,2 cm].

1.3.9 Reinforcing Bars

Reinforcing bars shall conform to ASTM A615 grade 60. Do not weld anchor bolts to reinforcing bars. This will remove the temper and reduce the strength of the anchor bolts.

1.3.10 Concrete Strength

All concrete shall be building code standard weight 3000 lb. per sq. inch [20685 kPa] compressive strength at 28 days.

Blank

DWG NO. 260527 SH REV F

APPLICATION		
QTY REQD	NEXT ASSY	USED ON

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
F	REVISED AND REDRAWN PER ECR 9657 BHS 12/1/92	2 DEC. 92	E. D. R.

CLEARANCE REQUIREMENTS FOR 7 METER 110 DEGREE EARTH STATION ANTENNA

NOTES:

1. NO BUILDINGS, WALLS, FENCES, OR OTHER PERMANENT FIXTURES SHOULD BE PLANNED FOR INSTALLATION ANY CLOSER THAN 2 METERS OF THE ANTENNA AND FOUNDATION ENVELOPE WITHOUT CONSULTATION WITH THE FACTORY.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

TOLERANCES
3 PLACE DECIMAL ± .005
2 PLACE DECIMAL ± .02
1 PLACE DECIMAL ± .1
FRACTIONS ± ANGLES ±0° 30'

MAX SURFACE ROUGHNESS 125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES AND CORNERS .010 MAX

FINISH NONE

ACAD DRAWING

CONTRACT NO.

DWN.	S.B.	11/3/81
ENGR.	T.A.	11/20/81
CHK	H.L.H.	11/4/81
PROD		
APVD		
APVD		

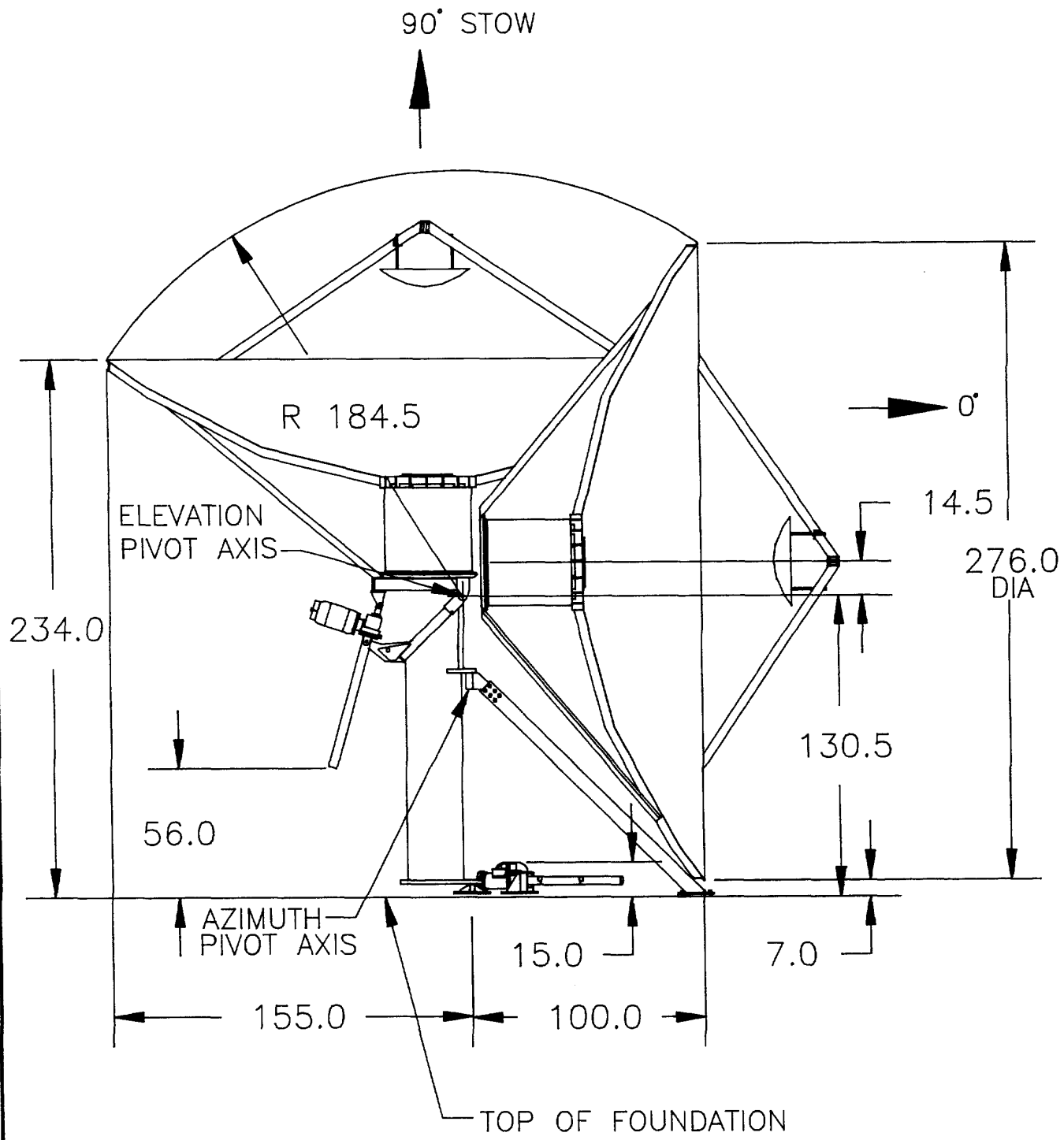
ViaSat
4356 Communications Dr.
Norcross, GA 30093

OUTLINE DRAWING 7 METER ANTENNA MODEL 8010-110

SIZE	CAGE CODE	DWG NO.	REV
A	1Q601	260527	F

SCALE 1/1 SHEET 1 OF 6

DWG NO. 260527 | SH 2 | REV F

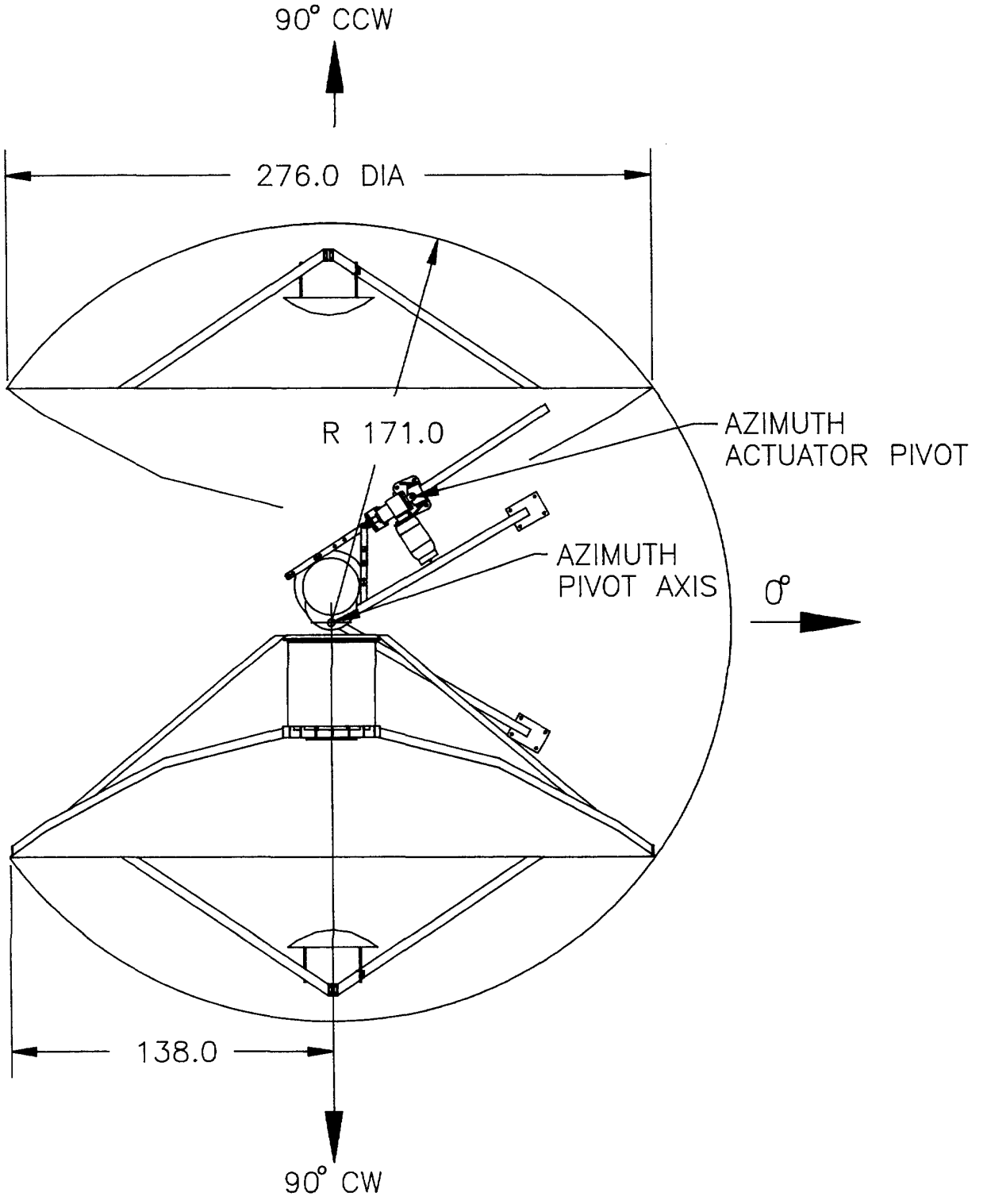


7 METER ANTENNA CLEARANCE REQUIREMENTS

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 260527	REV F
DWN S.BEKER	CHK H.L.HOWARD	SCALE 1/60		SHEET 2	

ACAD DRAWING

DWG NO. 260527 | SHT 3 | REV F

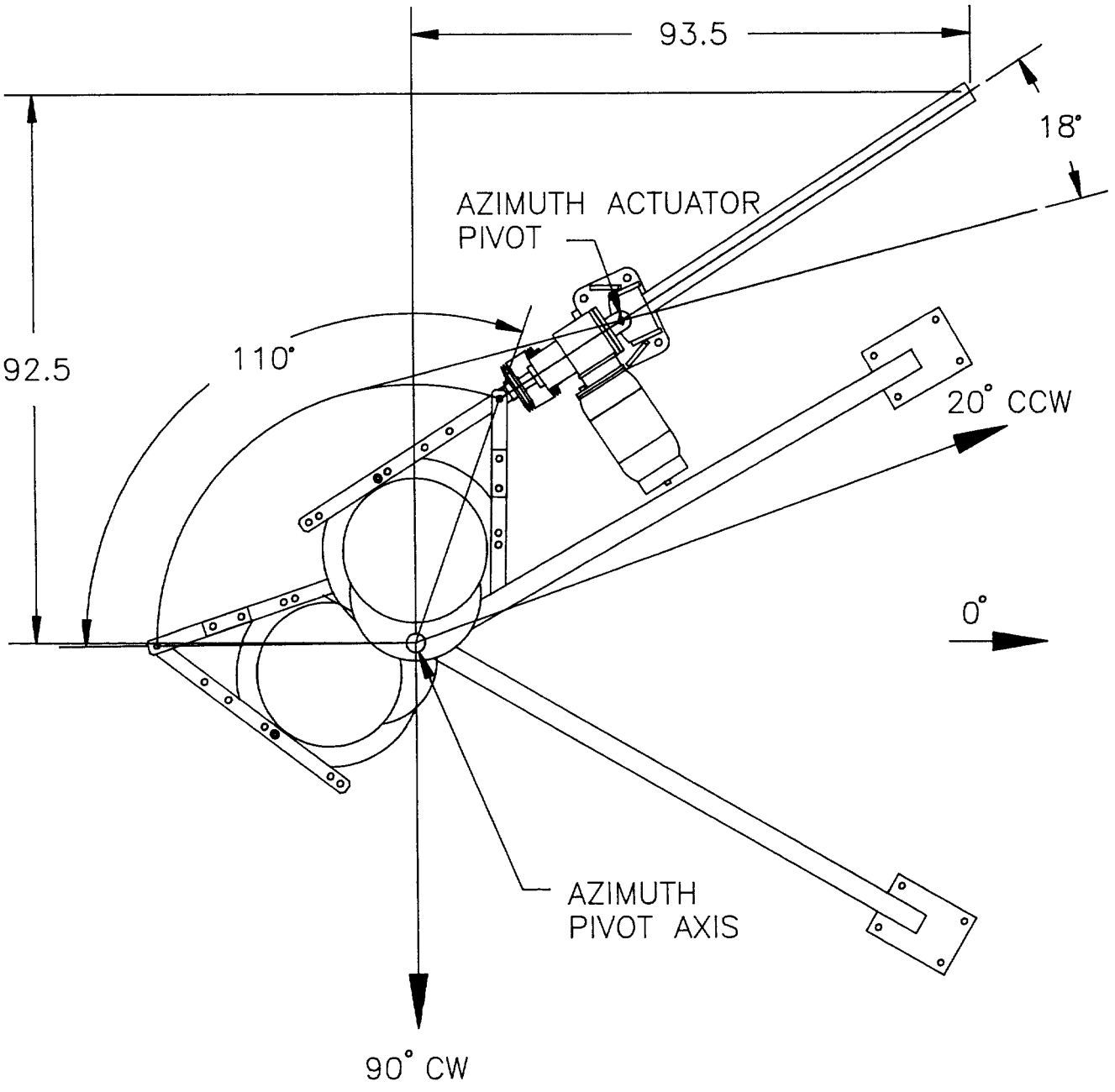


7 METER ANTENNA CLEARANCE REQUIREMENTS
SEE SHEETS 4, 5, AND 6 FOR 110 DEGREE OVERLAPPING SECTORS

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 260527	REV F
DWN S.BEKER	CHK H.L.HOWARD	SCALE 1/60		SHEET 3	

ACAD DRAWING

DWG NO. 260527 | SH 4 | REV F

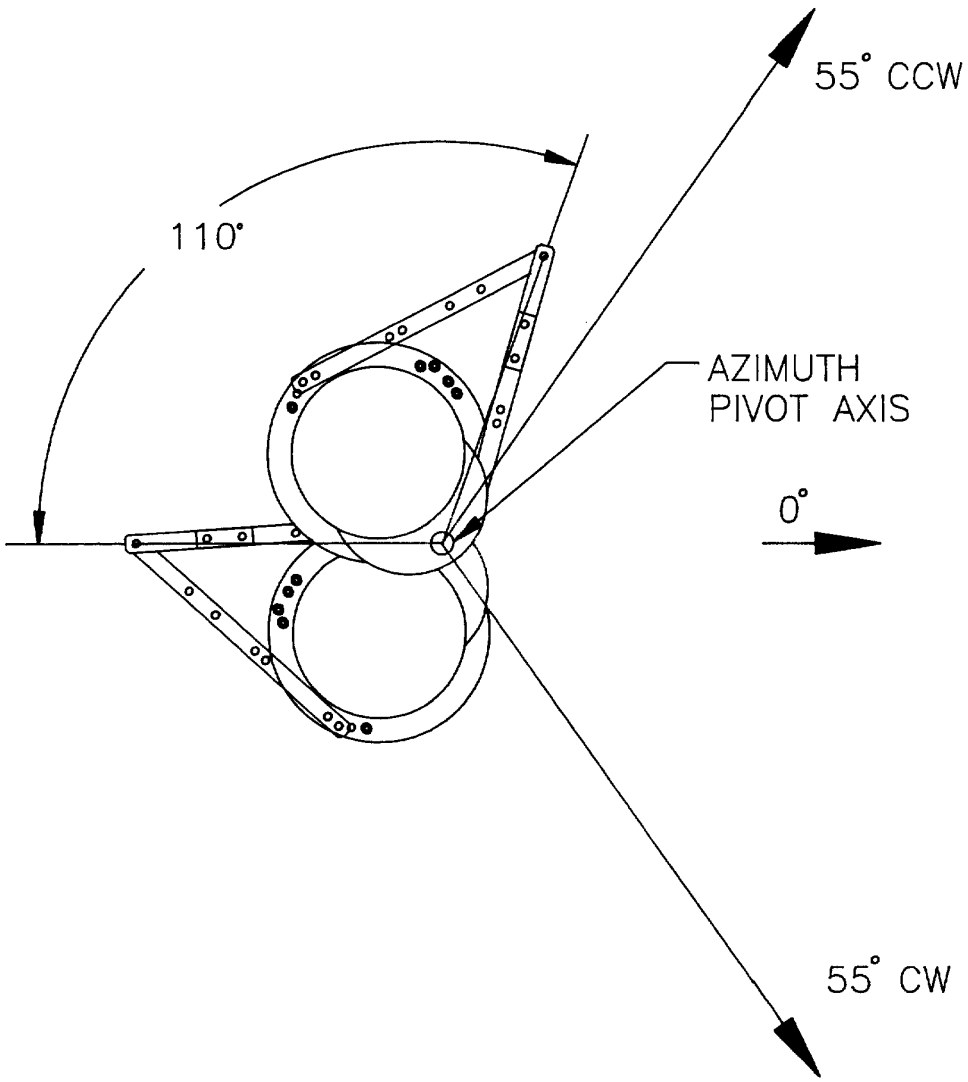


7 METER 110 DEGREE AZIMUTH
ACTUATOR CLEARANCE REQUIREMENTS
RIGHT SECTOR: 90° RIGHT (CW) TO 20° LEFT (CCW)

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 260527	REV F
DWN S.BEKER	CHK H.L.HOWARD	SCALE 1/25		SHEET 4	

ACAD DRAWING

DWG NO. 260527 | SH 5 | REV F



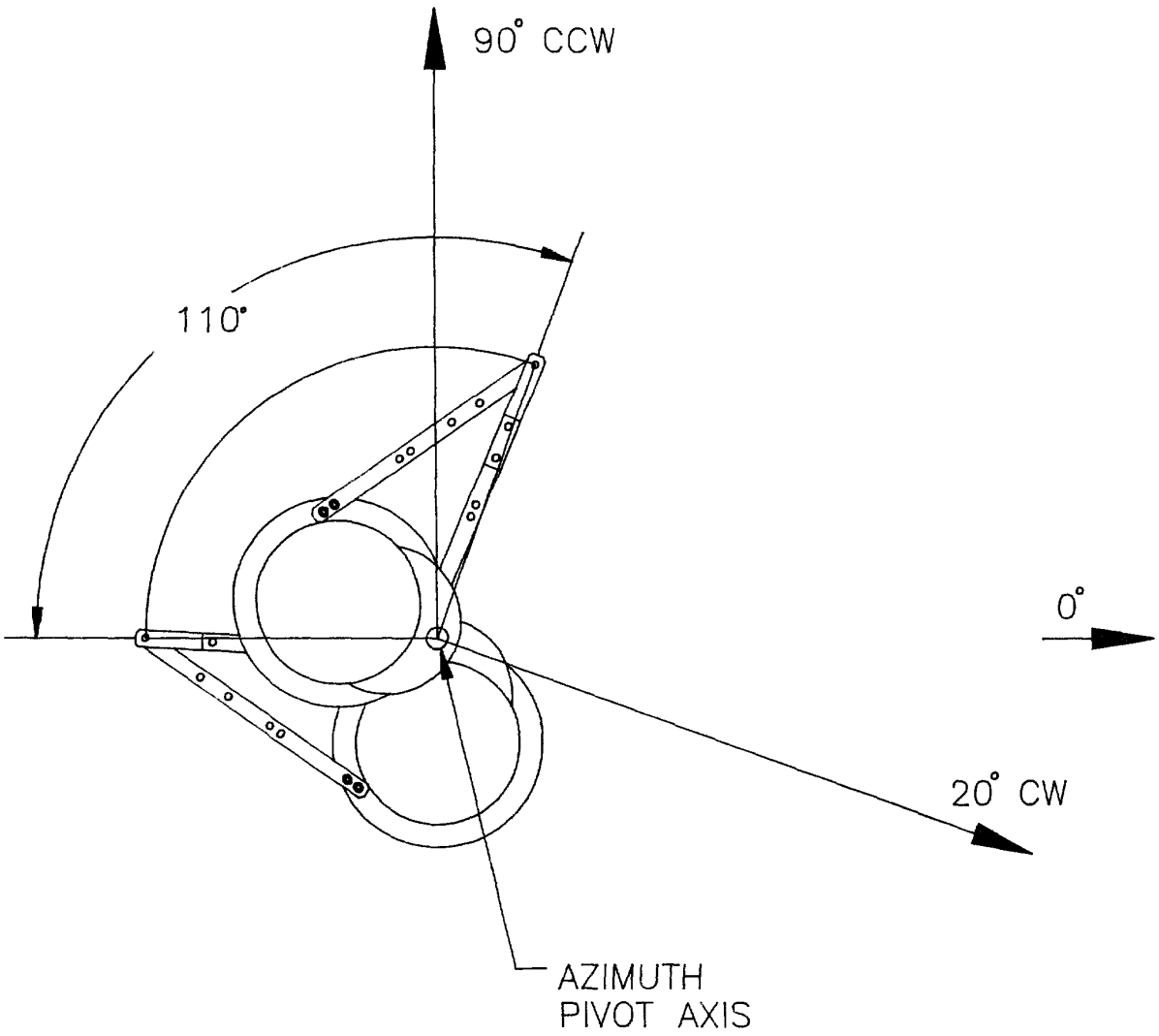
7 METER 110 DEGREE AZIMUTH
ACTUATOR CLEARANCE REQUIREMENTS

CENTER SECTOR: 55° RIGHT (CW) TO 55° LEFT (CCW)

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 260527	REV F
DWN S.BEKER	CHK H.L.HOWARD	SCALE 1/25		SHEET 5	

ACAD DRAWING

DWG NO. 260527 | SH 6 | REV F



7 METER 110 DEGREE AZIMUTH
ACTUATOR CLEARANCE REQUIREMENTS

LEFT SECTOR: 20° RIGHT (CW) TO 90° LEFT (CCW)

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 260527	REV F
DWN S.BEKER	CHK H.L.HOWARD	SCALE 1/25		SHEET 6	

ACAD DRAWING

APPLICATION			REVISIONS			
QTY REQD	NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED
			A	REVISED & REDRAWN PER ECR 9657 BHS 11/24/92	2 DEC. 92	E.O.B.

DWG NO. 478115 REV A SH

CLEARANCE REQUIREMENTS FOR 7 METER 180 DEGREE EARTH STATION ANTENNA

NOTES:

1. NO BUILDINGS, WALLS, FENCES, OR OTHER PERMANENT FIXTURES SHOULD BE PLANNED FOR INSTALLATION ANY CLOSER THAN 2 METERS OF THE ANTENNA AND FOUNDATION ENVELOPE WITHOUT CONSULTATION WITH THE FACTORY.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
TOLERANCES
3 PLACE DECIMAL ± .005
2 PLACE DECIMAL ± .02
1 PLACE DECIMAL ± .1
FRACTIONS ± ANGLES ±0° 30'
MAX SURFACE ROUGHNESS 125 ALL MACHINED SURFACES EXCEPT AS NOTED
BREAK SHARP EDGES AND CORNERS .010 MAX

FINISH NONE

ACAD DRAWING

CONTRACT NO.

DWN.	E. BRAGG	6/1/92
ENGR.	E. BRAGG	6/1/92
CHK	N. KNUTSON	6/1/92
PROD		
APVD		
APVD		

ViaSat

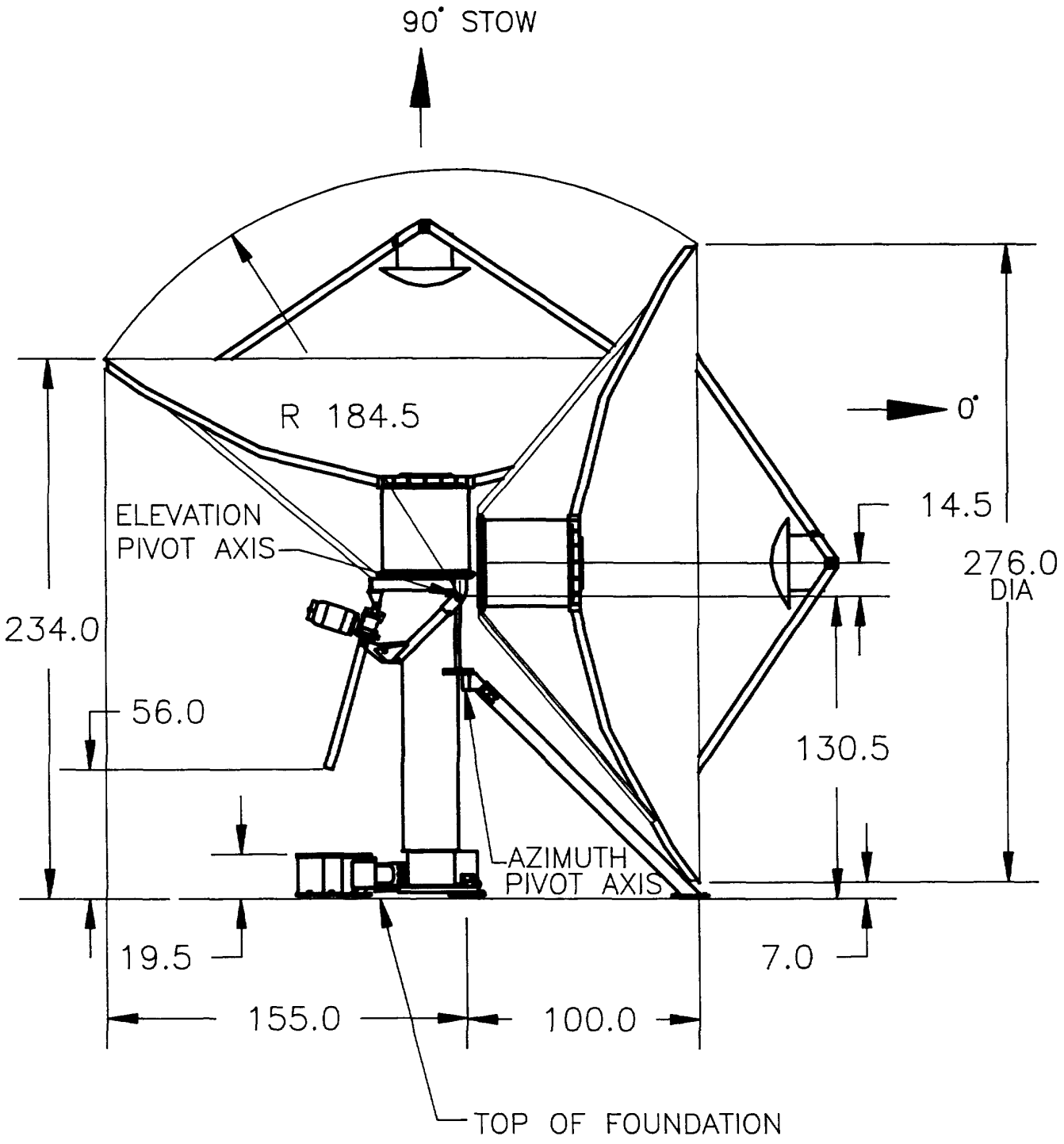
4356 Communications Dr.
Norcross, GA 30093

OUTLINE DRAWING 7 METER ANTENNA MODEL 8010-180

SIZE	CAGE CODE	DWG NO.	REV
A	1Q601	478115	A

SCALE 1/1 SHEET 1 OF 4

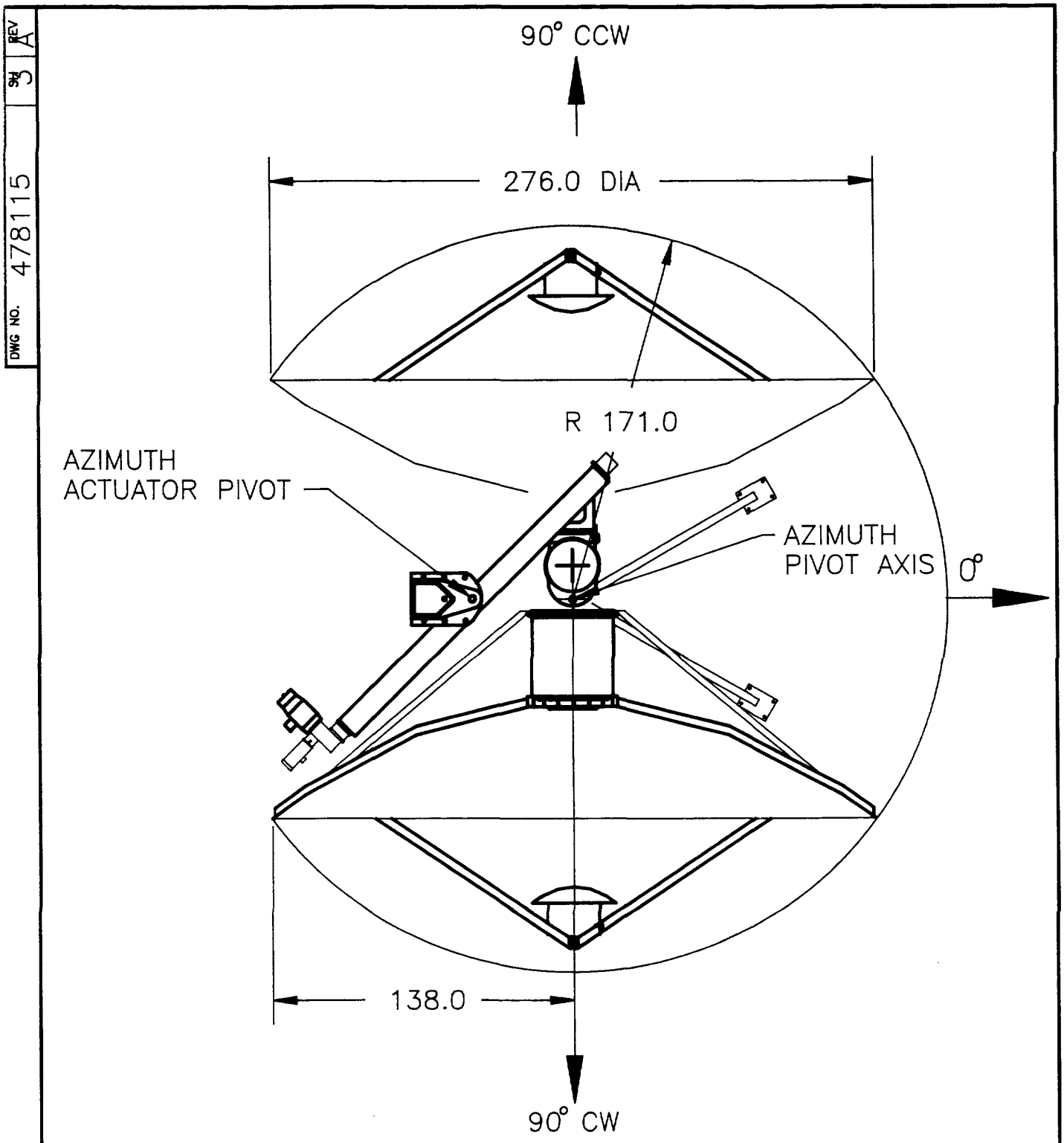
DWG NO. 478115 | SH 2 | REV A



7 METER ANTENNA CLEARANCE REQUIREMENTS

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 478115	REV A
DWN E.D. BRAGG 6/1/92	CHK N. KNUTSON	SCALE 1/60		SHEET 2	

ACAD DRAWING

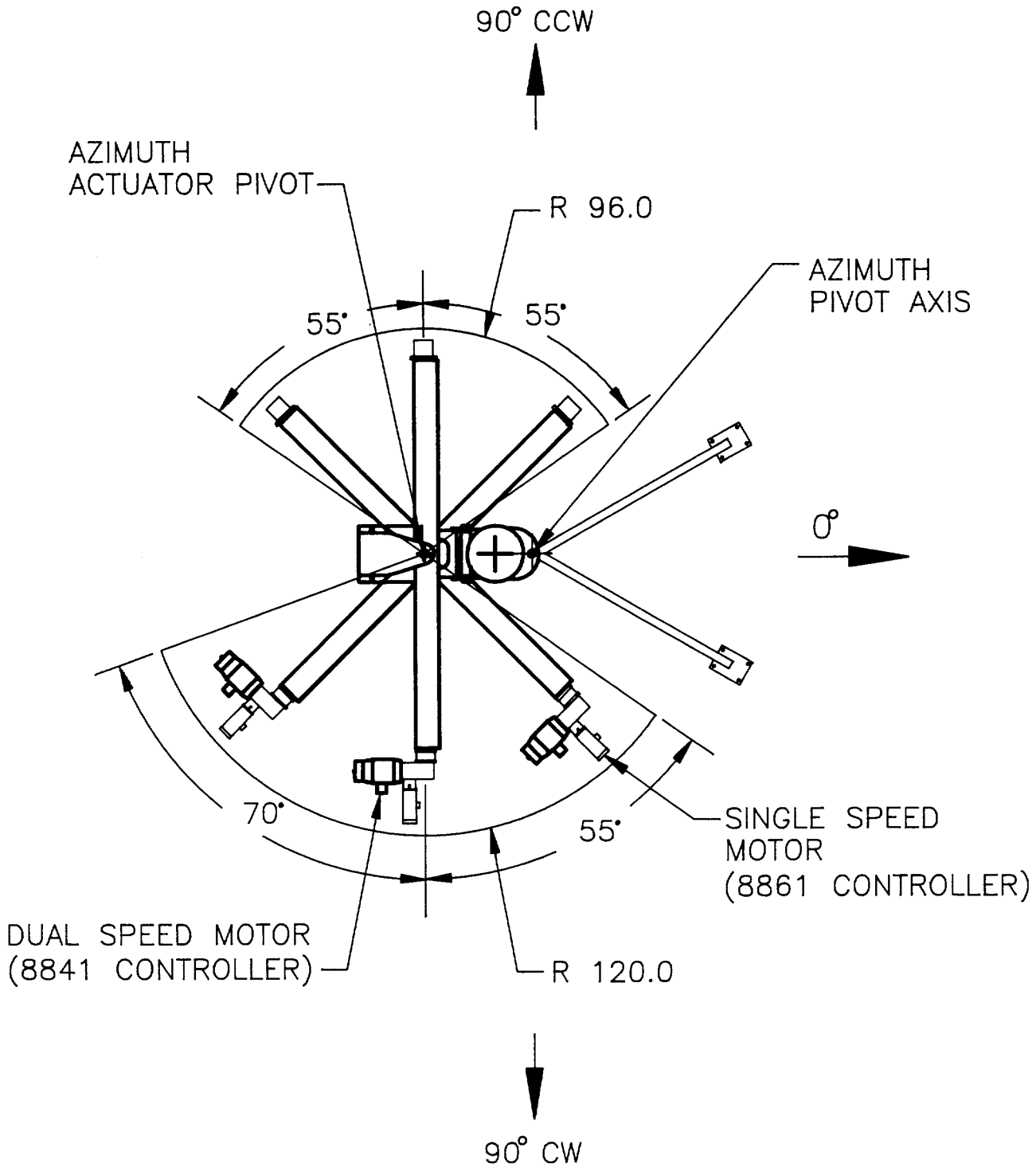


7 METER ANTENNA CLEARANCE REQUIREMENTS

	SIZE A		DWG NO. 478115	REV A
DWN E.D. BRAGG 6/1/92	CHK N. KNUTSON	SCALE 1/60		SHEET 3

ACAD DRAWING

DWG NO. 478115 | SH 4 | REV A



7 METER 180 DEGREE AZIMUTH
ACTUATOR CLEARANCE REQUIREMENTS

ViaSat	4356 Communications Dr. Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 478115	REV A
DWN E.D.BRAGG 6/1/92	CHK N. KNUTSON	SCALE 1/60		SHEET 4	

ACAD DRAWING

Chapter 2

Foundation Installation (110° Mount)

2.1 General

The pointing accuracy of the installed antenna is determined by the stiffness of the mount, the reflector, and the foundation. Therefore, antenna foundation preparation is an essential part of antenna installation.

2.2 Antenna Considerations

The foundation heading is critical to the performance of the motorized antenna and the non-motorized antenna. The foundation heading establishes the center of azimuth travel.

Proper electrical grounding shall be provided by the installing contractor to meet local applicable codes. Depending on local soil conditions, this may take the form of a buried grid or a suitable copper stake. The antenna mount shall be electrically connected to the ground.

Provisions must be made to provide suitable support for power, RF, and control cables either by buried conduit or overhead cable tray. If conduit is supplied, it shall be at least 4-inches (10.2 cm) in diameter with at least a 36-inch (0.9 m) radius bend. Lightning arrestors must be provided across all cables leaving the antenna per applicable local codes and N.F.P.A. codes. (Refer to Section 2 for information on required operational clearances.)

2.3 Foundation Design Considerations

The antenna mount is designed to safely support the antenna in winds up to 125 mi/h (200 km/h). It is recommended that the foundation be designed for a maximum tilt of 0.15 degrees when the 125 mi/h (200 km/h) wind loads are applied to the antenna. It is imperative that competent engineering assistance be engaged to assure that the foundation is properly designed for the local site conditions and building codes. ViaSat, Inc. does not imply or warrant that the foundation design shown is appropriate for any particular locality or site condition.

The loading for the above conditions is presented in drawing 263030. The load directional signal convention is illustrated above the tabular listing on sheet 2. The foundation loading information should be used in implementing the design.

NOTE

Refer to additional pad requirements necessary to support the optional Model 8862 Controller. Refer to drawing 263383.

The foundation plan given in drawing 263383 presents a typical pad foundation design and conduit placement. If a special foundation design or load frame is required, a qualified structural engineer who is familiar with local structural codes should be employed.

2.4 Foundation Construction

The Model 8010-7M - 110° Anchor Bolt/Template kit includes sixteen foundation anchor bolts and an anchor bolt location template. The template accurately locates the three main anchor plates for the mount and a fourth anchor plate for the azimuth jack screw base (see drawing 263031).

A true north-south reference line for the purpose of foundation orientation may be established by reference to:

1. A magnetic compass heading (corrected for declination or variation)
2. A survey from registered benchmarks
3. A sighting of Polaris (North Star)

This line is used to position the foundation pad and to establish the heading of the foundation anchor bolt pattern (see Figure 3-3). The survey should be done by a qualified surveyor.

Refer to drawing 263383 sheet 4 for the recommended foundation size. Drawings 263383 and 263030 provide the installation information. These recommendations are based on the soil conditions listed and do not consider any special clearance requirements.

APPLICATION			REVISIONS			
QTY REQD	NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED
			G	REVISED AND REDRAWN PER ECR 10763 BHS 11/19/93	11/19/93	Earl S. Bangs

REV G
SH 1
DWG NO. 263383

IMPORTANT NOTICE

VIASAT DOES NOT REPRESENT OR WARRANT THAT ANY PARTICULAR DESIGN OR SIZE OR FOUNDATION IS APPROPRIATE FOR ANY PARTICULAR LOCALITY OR INSTALLATION.

VIASAT, INC.

CONTRACT NO.		
DWN. S.BEKER	10/22/81	
ENGR. R.PIERCE	10/22/81	
CHK R.PIERCE	10/22/81	
PROD		
APVD		
APVD		

ViaSat

4356 Communications Dr.
Norcross, GA 30093

FOUNDATION PLAN AND OPTIONAL CONDUIT PLACEMENT, 7M-110°

SIZE	CAGE CODE	DWG NO.	REV
A	1Q601	263383	G

SCALE 1/1 SHEET 1 OF 8

ACAD DRAWING
42S045D

REV G | SH 2 | DWG NO. 263383

NOTES:

1. FOOTINGS DESIGNED FOR 125 MPH WINDS.
2. REINFORCING BARS SHALL CONFORM WITH ASTM A-615-68, GRADE 60.
3. CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
4. SOIL BEARING CAPACITY TO BE A MINIMUM OF 2000 PSF $(9765\ KG/M)^2$.
5. DO NOT WELD ANCHOR BOLTS.
6. FROST LINE TO BE A MAXIMUM OF 24 INCHES BELOW GRADE.
7. USE FOUNDATION TEMPLATE 263031 TO INSURE PROPER ANCHOR BOLT LOCATION.
8. PROPER ELECTRICAL GROUNDING SHALL BE PROVIDED BY THE INSTALLING CONTRACTOR TO MEET LOCAL APPLICABLE CODES. THIS MAY TAKE THE FORM OF A BURIED GRID OR A SUITABLE COPPER STAKE, DEPENDING ON LOCAL SOIL CONDITIONS. THE MOUNT SHALL BE ELECTRICALLY CONNECTED TO THE GROUND.
9. PROVISIONS MUST BE MADE TO PROVIDE SUITABLE SUPPORT POWER, RF AND CONTROL CABLES EITHER BY BURIED CONDUIT OR OVERHEAD RACEWAY. IF CONDUIT IS SUPPLIED IT SHALL BE AT LEAST 3 INCHES DIA.
10. NO BUILDINGS, WALLS, FENCES OR OTHER PERMANENT FIXTURES SHOULD BE PLANNED FOR INSTALLATION ANY CLOSER THAN 2 METERS OF THE ANTENNA AND FOUNDATION ENVELOPE WITHOUT CONSULTATION WITH THE FACTORY.
11. PAD REQUIRED FOR OPTIONAL 8862 CONTROLLER INSTALLATION.

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/1		SHEET 2	

ACAD DRAWING

DWG NO. 263383 | SH 3 | REV G

NOTES:

12. 4" DIA PVC CONDUIT WITH A MINIMUM BEND RADIUS OF 36" FOR IFL CABLE.

13. AC POWER CONDUIT FOR ANTENNA MOTORS AND DEICING TO BE SIZED BY ELECTRICAL CONTRACTOR TO MEET LOCAL, STATE, AND NATIONAL ELECTRICAL CODES.

14. EXTERNAL AC POWER DISCONNECT BOX NOT SUPPLIED BY SCIENTIFIC–ATLANTA. SOME LOCAL CODES MAY REQUIRE EXTERNAL UNIT. THE 8861/8862 CONTROLLER HAS AN INTERNAL MAIN BREAKER/DISCONNECT.

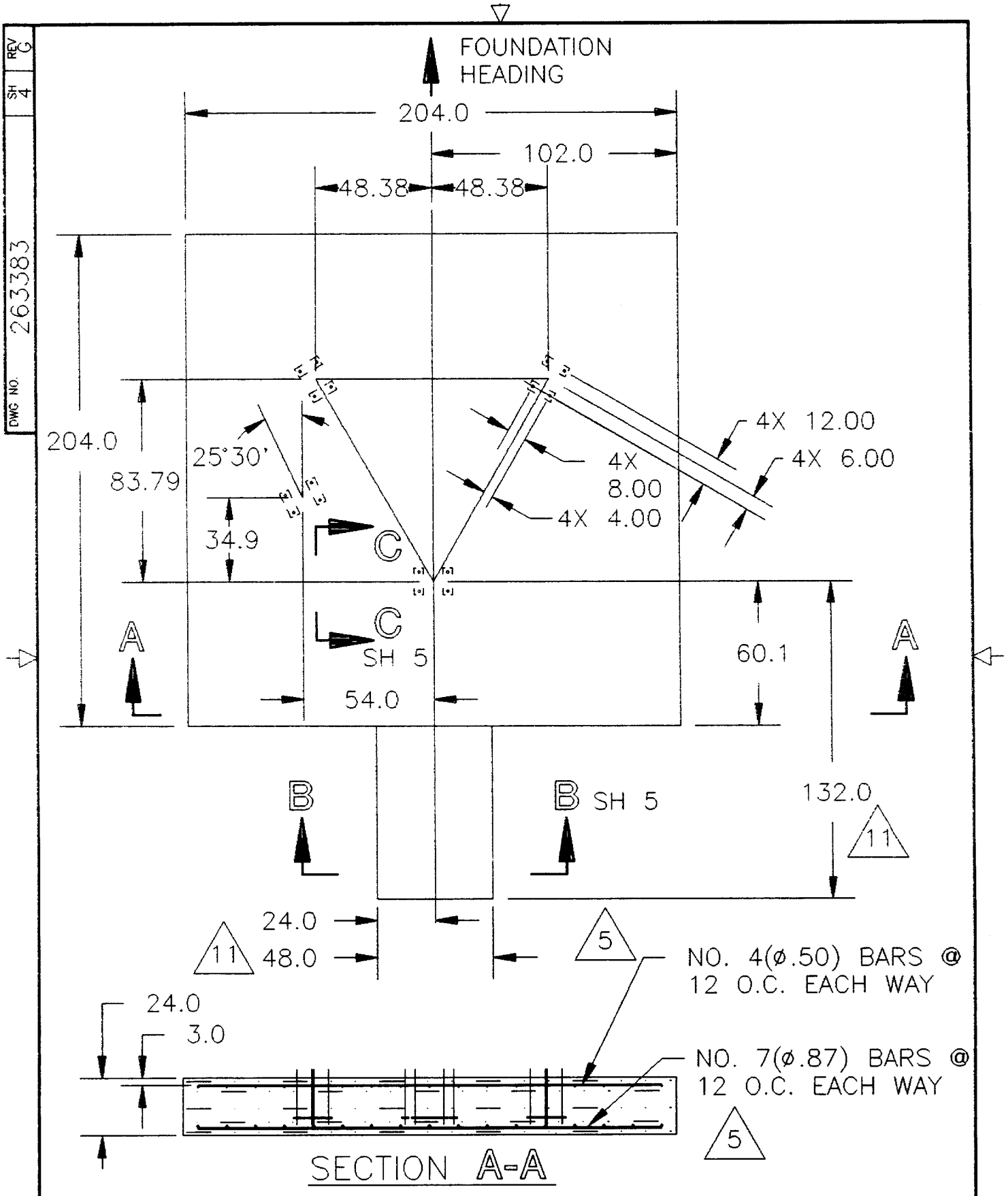
15. GROUND CABLE PIG TAILS SHALL BE IN PVC CONDUIT AND NOT TIED TO FOUNDATION REBAR.

16. DO NOT RUN CONDUIT UNDER ANY ANTENNA OR ACTUATOR SUPPORT AREA.

17. OPTIONAL 6" DIA PVC CONDUIT WITH A MINIMUM BEND RADIUS OF 36" FOR TRANSMIT WAVEGUIDE.

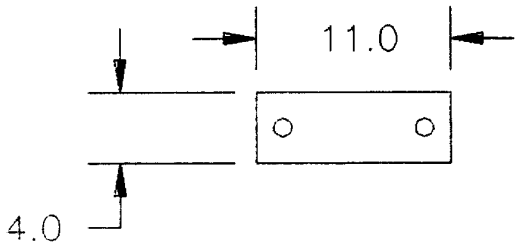
ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/1		SHEET 3	

ACAD DRAWING
42S045D

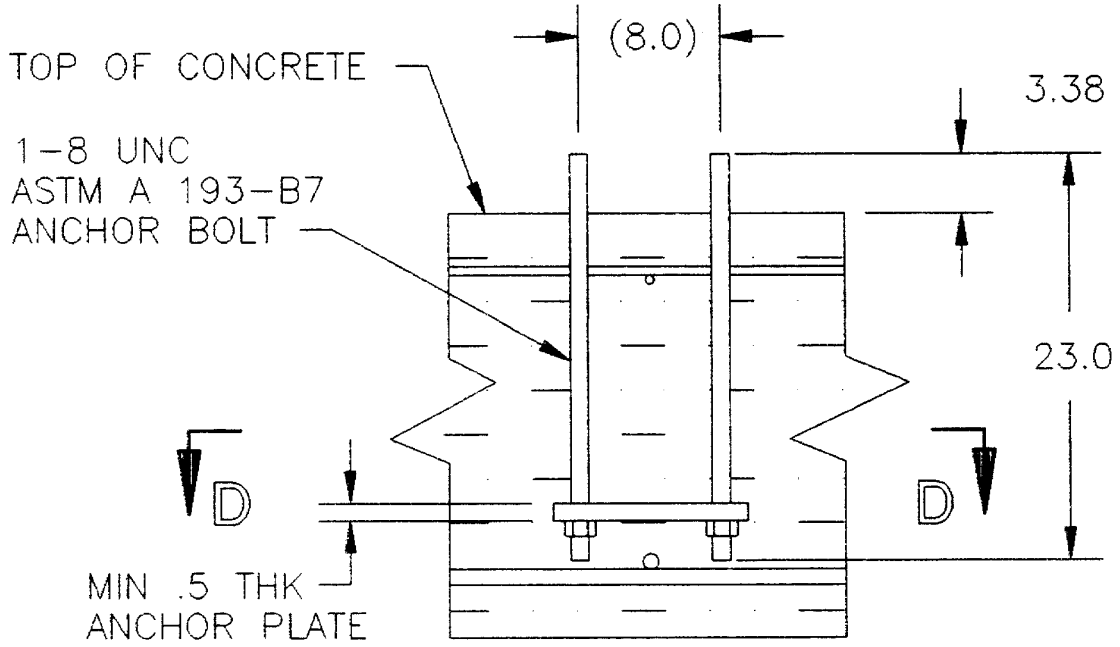


ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/50		SHEET 4	

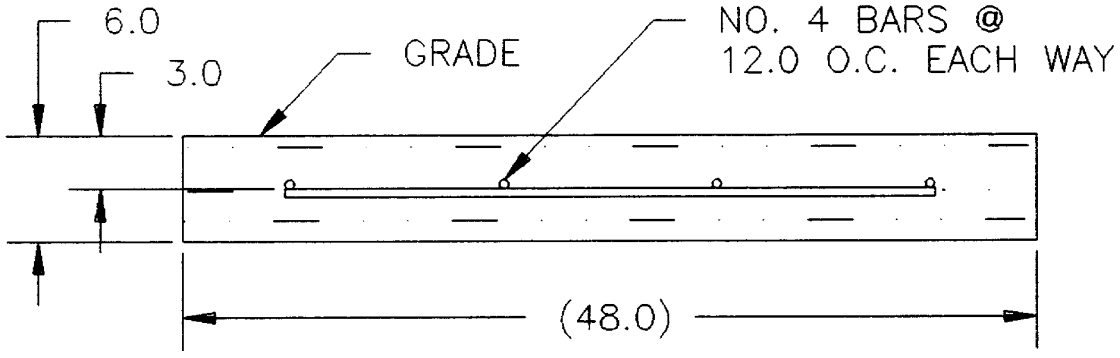
ACAD DRAWING



DETAIL D-D



SECTION C-C

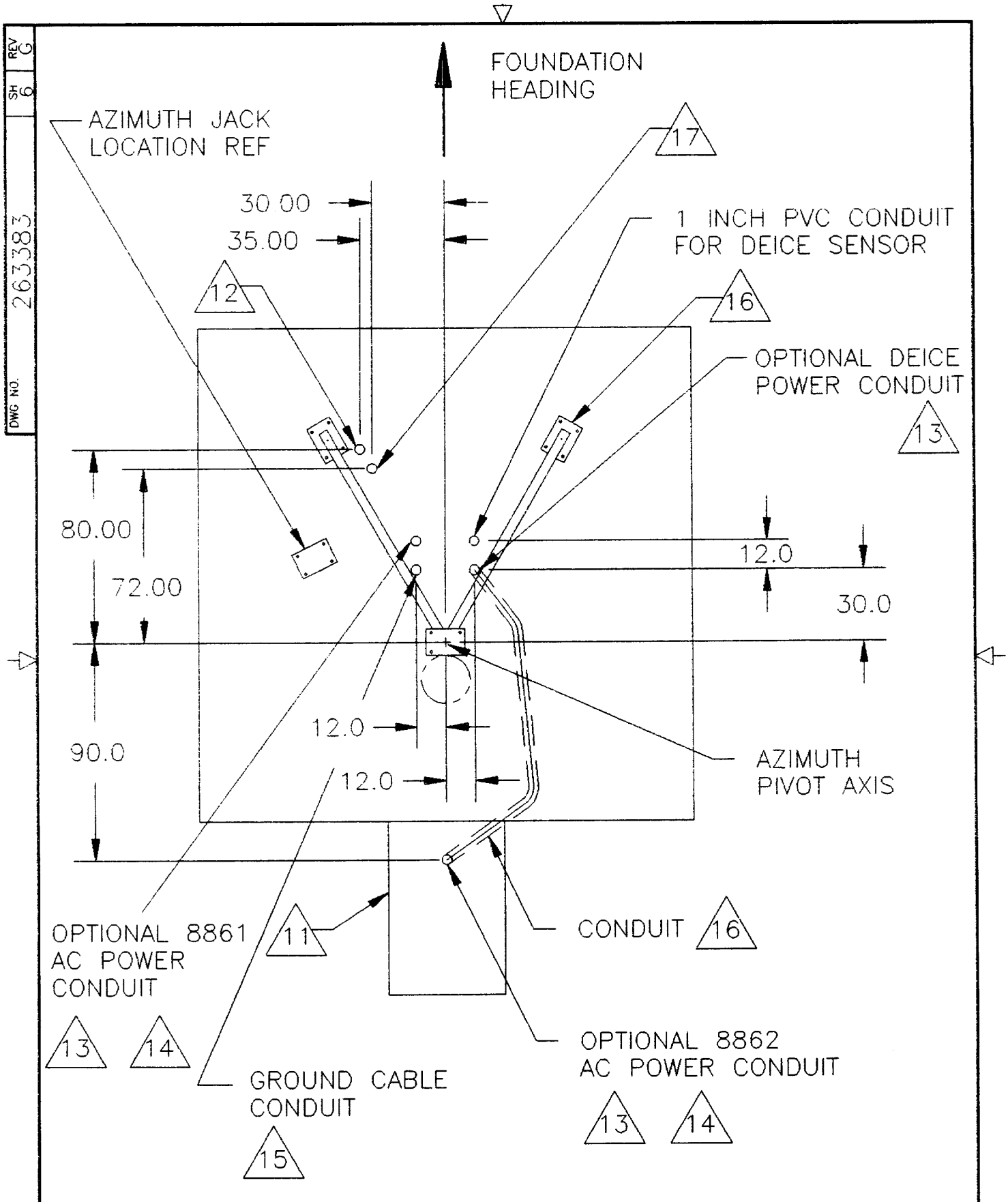


SECTION B-B

11

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/10		SHEET 5	

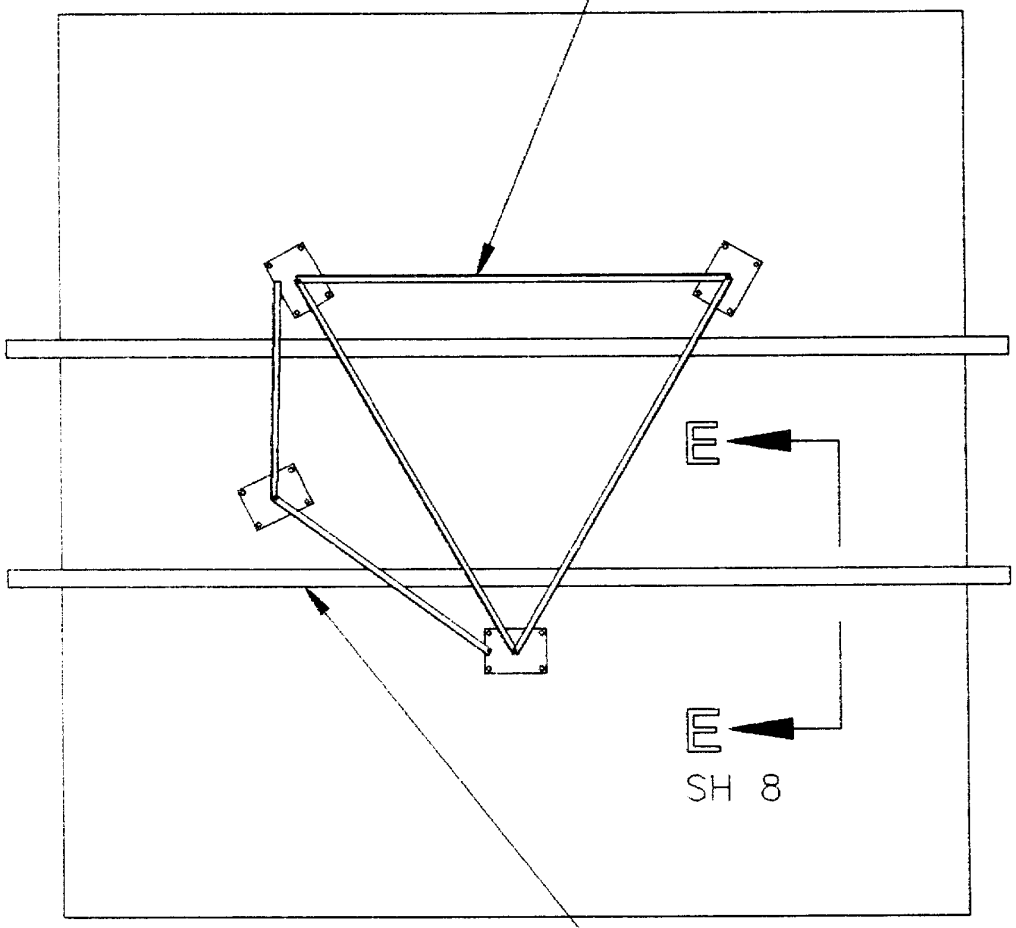
ACAD DRAWING
42S045D



ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/50		SHEET 6	

ACAD DRAWING

REV G | SH 7 | WG NO. 263383

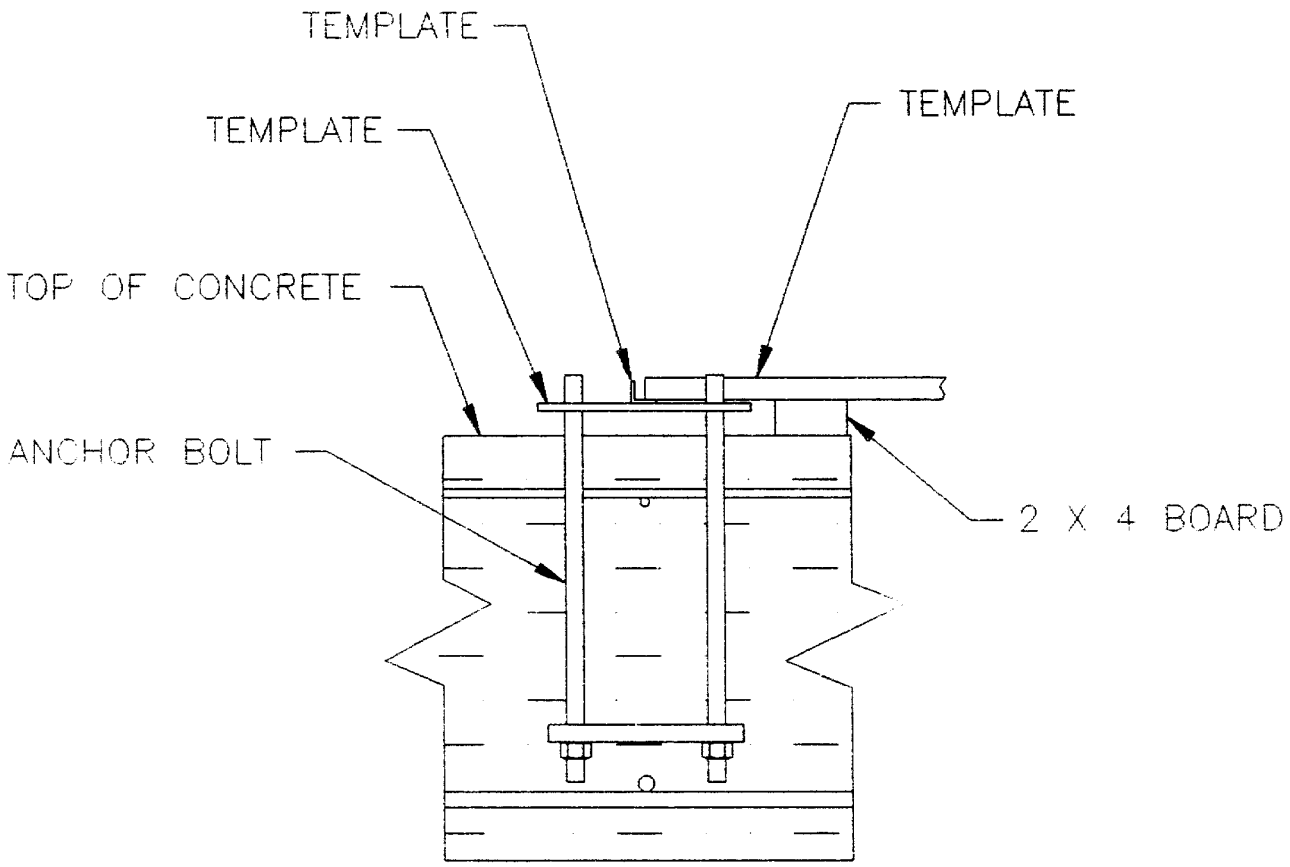


SUGGESTED TEMPLATE SUPPORT

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/40		SHEET 7	

ACAD DRAWING

REV C | SH 8 | DWG NO 263383



SECTION E-E

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 263383	REV G
DWN S.BEKER	CHK R.PIERCE	SCALE 1/10		SHEET 8	

ACAD DRAWING

AF 10918

APPLICATION		
QTY REQD	NEXT ASSY	USED ON
		8010-A
		8010C/KU

DWG NO. 263030 SH 1 REV C

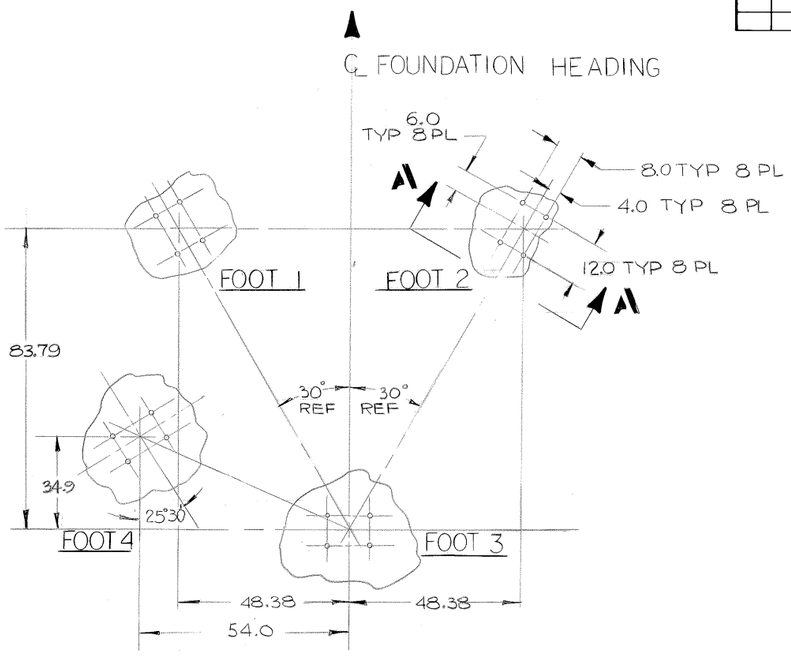
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	(1) 3.38 WAS 4.0 (2) 17.1 WAS 16.5 (3) ADDED NOTE 3 DCN 3143, ECR 3206-816 Ray Jones 4-8-83	V Thoms 4-8-83	R Perin 4-8-83
	B	TITLE WAS: FOUNDATION LOADS MODEL 8010A 7.0M EARTH STATION DCN SN 3270 ECR 3558/940	V Thoms 3-6-83	4-7-83
	C	ADDED USED ON & CHG TITLE PER ECR 7840	1/29/90	

IMPORTANT NOTICE

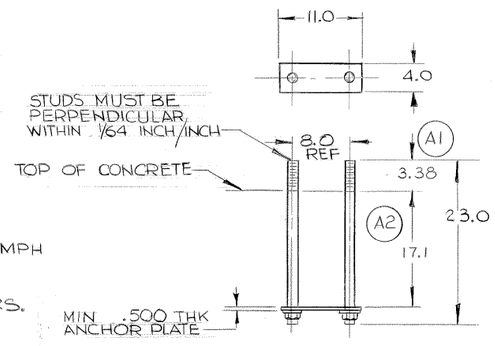
SINCE SOIL CONDITIONS, BUILDING CODES AND OTHER FACTORS VARY AMONG DIFFERENT LOCALITIES, THOSE INSTALLING ANTENNA MOUNTS ARE CAUTIONED TO SECURE PROFESSIONAL ENGINEERING SERVICES FOR THE DESIGN AND CONSTRUCTION SUPERVISION OF ANTENNA MOUNT FOUNDATIONS.

THIS ANTENNA MOUNT STUD ORIENTATION AND WORST CASE LOADING TABLE IS FURNISHED TO BE USED TO ESTABLISH REQUIRED DIMENSIONS AND LOCATIONS OF STUDS RELATIVE TO EACH OTHER AND AS A GUIDE TO ANTENNA MOUNT CHARACTERISTICS THAT MUST BE CONSIDERED IN THE PROFESSIONAL DESIGN OF A FOUNDATION.

SCIENTIFIC-ATLANTA, INC. DOES NOT REPRESENT OR WARRANT THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY PARTICULAR LOCALITY OR INSTALLATION.



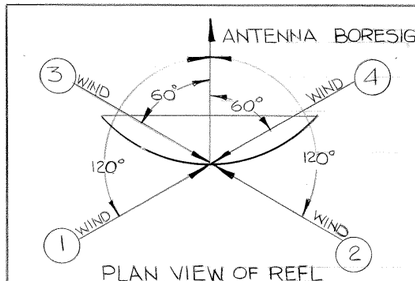
ANCHOR BOLT LOCATIONS



VIEW A-A
TYP 8 PL

NOTE

1. TOTAL STIFFNESS OF FOUNDATION AND SOIL TOGETHER MUST BE SUCH AS TO GIVE A MAXIMUM OF 0.15° TILT OF THE FOUNDATION ANCHORS IN A 125 MPH WIND.
2. DO NOT WELD ANCHOR BOLTS TO REINFORCING BARS. DO NOT HIT OR TRY TO BEND ANCHOR BOLT.
3. ANTENNA FEET SHALL BE LEVEL WITHIN $\frac{1}{4}$ INCH.



PLAN VIEW OF REFL

THE WIND DIRECTON IS ALWAYS ASSUMED TO BE PARALLEL TO THE GROUND.
THE ANTENNA IS AT 0° ELEVATION.
WIND LOADCASES ARE AS FOLLOWS:

1. 125 MPH WIND FROM 120° LEFT OF BORESIGHT
2. 125 MPH WIND FROM 120° RIGHT OF BORESIGHT
3. 125 MPH WIND FROM 60° LEFT OF BORESIGHT
4. 125 MPH WIND FROM 60° RIGHT OF BORESIGHT

WIND LOAD CASES

ITEM OR FIND NO.	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FSCM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED: ALL CAPACITORS ARE IN MICROFARADS AND ALL RESISTORS ARE IN OHMS, ±10% AND 1/4 WATT

LAST REFERENCE DESIGNATION USED

C CR J K
Q R S U

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

TOLERANCES
3 PLACE DECIMAL ±.005
2 PLACE DECIMAL ±.02
1 PLACE DECIMAL ±.1
FRACTIONS ± ANGLES ±0° 30'

MAX SURFACE ROUGHNESS 125 ALL MACHINED SURFACES EXCEPT AS NOTED

BREAK SHARP EDGES AND CORNERS .010 MAX

FINISH

CONTRACT NO.

DWN	S Baker	10/2/81
ENGR	R. Perrin	10/19/81
CHK	R. Perrin	10/19/81
PROD	B.	
APVD		
APVD		

ViaSat 4311 Communications Drive Norcross GA 30093

FOUNDATION LOADS MODEL 8010-A, C & C/KU 7.0 M EARTH STATION ANT

SIZE D | FSCM NO. 1Q601 | DWG NO. 263030 | REV C

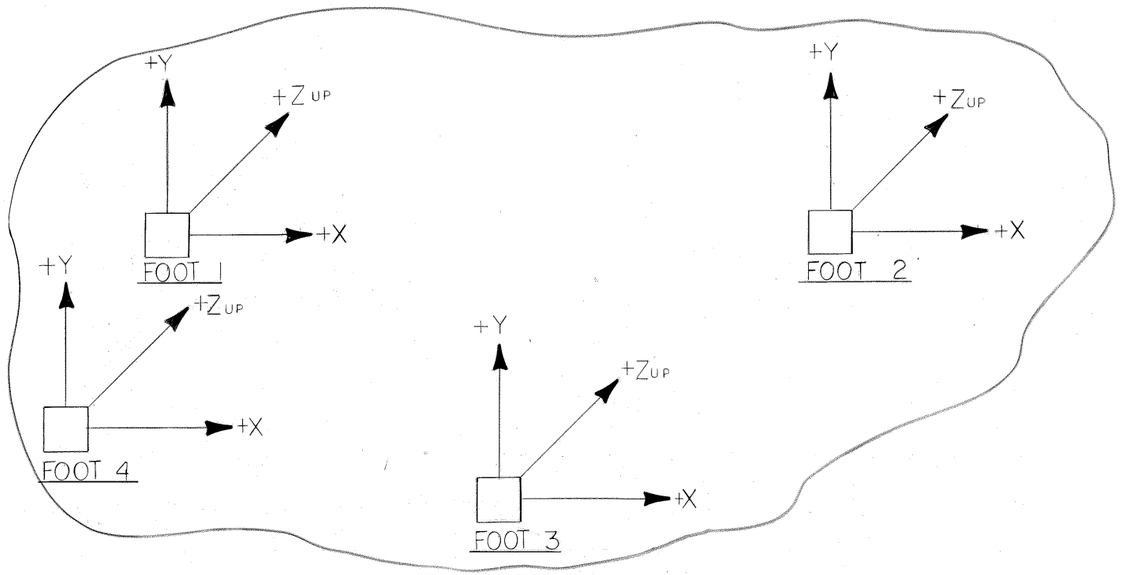
SCALE NONE | SHEET 1 OF 2

DIETZGEN CORP. SA P/N 88026

AE

42S045D

APPLICATION			REVISIONS				
QTY REQD	NEXT ASSY	USED ON	ZONE	REV	DESCRIPTION	DATE	APPROVED
		8010-A		A	SEE SHEET 1. Ray Jones 4-8-83	V Thorne 4-8-83	E Pearce 4-8-83
		8010C/KU		B	SEE SH 1 J Beker	V Thorne 5-6-83	Pearce 7-7-83
				C	SEE SHEET 1	10/29/90	



LOAD DIRECTIONAL SIGN CONVENTION

LOAD CASE	ANTENNA ORIENTATION	FOOT 1 FX	FOOT 1 FY	FOOT 1 FZ	FOOT 2 FX	FOOT 2 FY	FOOT 2 FZ	FOOT 3 FX	FOOT 3 FY	FOOT 3 FZ	FOOT 4 FX	FOOT 4 FY	FOOT 4 FZ
1	77.5° Right	3547	-6007	7045	330	582	-683	25963	-23575	-6362	-25934	25999	0
2	of Foundation	-1266	2143	-2514	2860	5042	-5914	-25255	23172	8428	25923	-25989	0
3	Heading	-11165	18907	-22173	-13418	-23660	27746	-17162	15527	-5572	15042	-15079	0
4		-8880	15039	-17636	-14612	-25765	30214	12368	-11592	-12577	-14895	14933	0
1	57.5° Right	2675	-4525	5326	1555	2724	-3208	25444	-25297	-2118	-24976	25613	0
2	of Foundation	-1519	2569	-3024	1997	3496	-4117	-24796	24400	-7142	24951	-25587	0
3	Heading	-5991	10131	-11927	-15514	-27169	31985	-16667	18781	-20057	14551	-14921	0
4		-4165	7044	-8292	-15704	-27503	32377	12213	-10014	-24084	-14270	14634	0
1	30° Right	1821	-3089	3651	2417	4187	-4949	8711	-18382	1297	-8097	18137	0
2	of Foundation	-2401	4074	-4815	943	1633	-1930	-8324	17034	6746	8090	-18121	0
3	Heading	1637	-2781	3287	-15078	-26116	30866	-6142	16861	-34153	4713	-10558	0
4		3461	-5872	6940	-14450	-25029	29580	3483	-3639	-36521	-4628	10368	0
1	0° (Along	520	-890	1053	2767	4735	-5605	9627	-19278	4552	-9141	18599	0
2	Foundation	-2808	4806	-5689	-478	-819	970	-9629	17771	4719	9143	-18604	0
3	Heading)	9333	-15971	18905	-10749	-18395	21774	-5436	18097	-40680	5276	-10735	0
4		10775	-18439	21827	-9358	-16014	18956	5435	-3283	-40783	-5276	10735	0
1	30° Left	-878	1521	-1799	2400	4074	-4815	14813	-21996	6614	-14649	21028	0
2	of Foundation	-2482	4298	-5081	-1820	-3089	3651	-15215	20695	1429	14670	-21059	0
3	Heading	14411	-24961	29500	-3459	-5871	6939	-7200	18694	-36440	8383	-12035	0
4		15118	-26186	30948	-1639	-2781	3287	9925	-5883	-34236	-8537	12255	0
1	57.5° Left	-1949	3414	-4020	1542	2606	-3069	25576	-27107	7089	-25811	25969	0
2	of Foundation	-1603	2807	-3305	-2698	-4562	5371	-26237	26276	-2066	25851	-26009	0
3	Heading	15674	-27450	32316	4152	7021	-8266	-12664	19446	-24049	14766	-14856	0
4		15544	-27222	32047	6005	10155	-11955	17127	-11259	-20091	-15056	15148	0
1	77.5° Left	-2772	4888	-5733	1143	1936	-2271	25372	-28483	-8004	-26015	26029	0
2	of Foundation	-417	735	-863	-3424	-5801	6803	-26095	28115	-5939	26040	-26053	0
3	Heading	14559	-25671	30106	8948	15155	-17772	-12440	18092	-12333	14952	-14960	0
4		13471	-23752	27855	11096	18790	-22036	17236	-14449	-5819	-15100	15107	0

125 MPH WIND LOADS

THE DEADWEIGHT OF THE ANTENNA IS 4500 LBS AND ACTS IN THE -Z DIRECTION AT FOOT 3

7.0 METER FOUNDATION LOADS
(125MPH WIND & DEADWEIGHT..)
ALL LOADS IN LBS

ITEM OR FIND NO.	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FSCM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED: ALL CAPACITORS ARE IN MICRO-FARADS AND ALL RESISTORS ARE IN OHMS, ±10% AND 1/4 WATT

LAST REFERENCE DESIGNATION USED

C CR J K
Q R S U

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

TOLERANCES
3 PLACE DECIMAL ±.005
2 PLACE DECIMAL ±.02
1 PLACE DECIMAL ±.1

FRACTIONS ± ANGLES ±0° 30'

MAX SURFACE ROUGHNESS ALL MACHINED SURFACES EXCEPT AS NOTED 125

BREAK SHARP EDGES AND CORNERS .010 MAX

FINISH

CONTRACT NO.

DWN	J Beker	10/12/81
ENGR	R. Peirce	10/19/81
CHK	R. Peirce	10/19/81
PROD		
APVD		
APVD		

ViaSat
4311 Communications Drive
Norcross GA 30093

FOUNDATION LOADS
MODEL 8010-A, C & C/KU
7.0M EARTH STATION ANT

SIZE	FSCM NO.	DWG NO.	REV
D	1Q601	263030	C

SCALE NONE SHEET 2

Chapter 3

Foundation Installation (180° Mount)

3.1 General

The pointing accuracy of the installed antenna is determined by the stiffness of the mount, the reflector, and the foundation. Therefore, antenna foundation preparation is an essential part of antenna installation.

3.2 Antenna Considerations

The foundation heading is critical to the performance of the motorized antenna and the non-motorized antenna. The foundation heading establishes the center of azimuth travel.

Proper electrical grounding shall be provided by the installing contractor to meet local applicable codes. Depending on local soil conditions, this may take the form of a buried grid or a suitable copper stake. The antenna mount shall be electrically connected to the ground.

Provisions must be made to provide suitable support for power, RF, and control cables either by buried conduit or overhead cable tray. If conduit is supplied, it shall be at least 4-inches (10.2 cm) in diameter with at least a 36-inch (0.9 m) radius bend. Lightning arrestors must be provided across all cables leaving the antenna per applicable local codes and N.F.P.A. codes. (Refer to Section 2 or 4 for information on required operational clearances.)

3.3 Foundation Design Considerations

The antenna mount is designed to safely support the antenna in winds up to 125 mi/h (200 km/h). It is recommended that the foundation be designed for a maximum tilt of 0.15 degrees when the 125 mi/h (200 km/h) wind loads are applied to the antenna. It is imperative that competent engineering assistance be engaged to assure that the foundation is properly designed for the local site conditions and building codes. Scientific-Atlanta, Inc. does not imply or warrant that the foundation design shown is appropriate for any particular locality or site condition.

The loading for the above conditions is presented in Figure 4.1. The load directional signal convention is illustrated above the tabular listing. The foundation loading information should be used in implementing the design.

NOTE

Refer to additional pad requirements necessary to support the optional Model 8862 Controller. Refer to drawing 475796.

Drawing 475796 presents a typical pad foundation design and conduit placement. If a special foundation design or load frame is required, a qualified structural engineer who is familiar with local structural codes should be employed.

3.4 Foundation Construction

The Model 8010-7M - 180° Anchor Bolt/Template kit includes eighteen foundation anchor bolts and an anchor bolt location template. The template accurately locates the three main anchor plates for the mount and a fourth anchor plate for the azimuth jack screw base (see drawing 475793).

A true north-south reference line for the purpose of foundation orientation may be established by reference to:

1. A magnetic compass heading (corrected for declination or variation)
2. A survey from registered benchmarks
3. A sighting of Polaris (North Star)

This line is used to position the foundation pad and to establish the heading of the foundation anchor bolt pattern (see drawing 475793). The survey should be done by a qualified surveyor.

Refer to drawing 475796 Sheet 4 for the recommended foundation size. The drawings in this chapter provide installation information. These recommendations are based on the soil conditions listed and do not consider any special clearance requirements.

APPLICATION			REVISIONS			
QTY REQD	NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED

REV SH1 DWG NO. 481943

IMPORTANT NOTICE

SINCE SOIL CONDITIONS, BUILDING CODES AND OTHER FACTORS VARY AMONG DIFFERENT LOCALITIES, THOSE INSTALLING ANTENNA MOUNTS ARE CAUTIONED TO SECURE PROFESSIONAL ENGINEERING SERVICES FOR THE DESIGN AND CONSTRUCTION SUPERVISION OF ANTENNA MOUNT FOUNDATIONS.
THIS ANTENNA MOUNT STUD ORIENTATION AND WORST CASE LOADING TABLE IS FURNISHED TO BE USED TO ESTABLISH REQUIRED DIMENSIONS AND LOCATIONS OF STUDS RELATIVE TO EACH OTHER AND AS A GUIDE TO ANTENNA MOUNT CHARACTERISTICS THAT MUST BE CONSIDERED IN THE PROFESSIONAL DESIGN OF A FOUNDATION.

VIASAT INC. DOES NOT REPRESENT OR WARRANT THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY LOCALITY OR INSTALLATION.

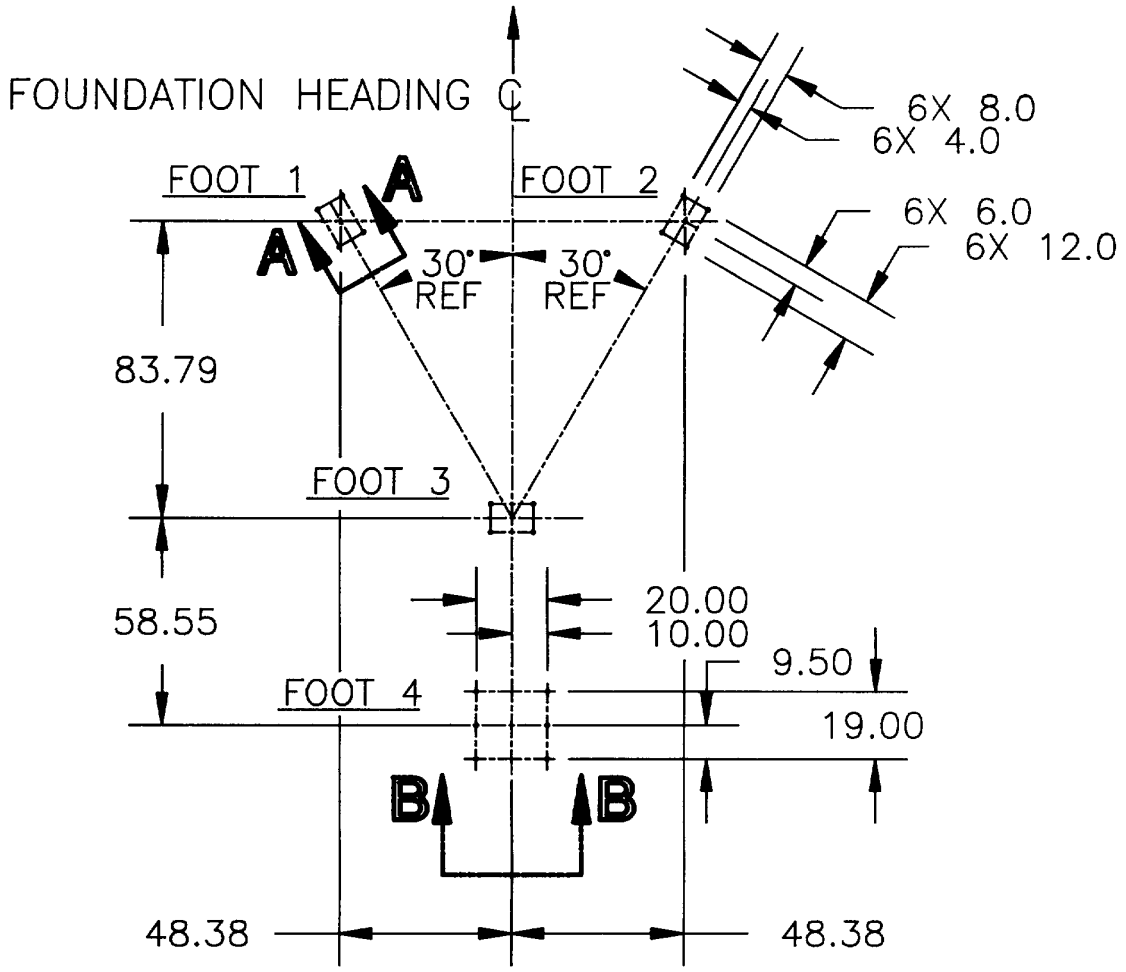
NOTE

1. TOTAL STIFFNESS OF FOUNDATION AND SOIL TOGETHER MUST BE SUCH AS TO GIVE A MAXIMUM OF 0.15° TILT OF THE FOUNDATION ANCHORS IN A 125 MPH WIND.
2. DO NOT WELD ANCHOR BOLTS TO REINFORCING BARS. DO NOT HIT OR TRY TO BEND ANCHOR BOLT.
3. ANTENNA FEET SHALL BE LEVEL WITHIN 1/4 INCH.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED TOLERANCES 3 PLACE DECIMAL ± .005 2 PLACE DECIMAL ± .02 1 PLACE DECIMAL ± .1 FRACTIONS ± ANGLES ±0° 30' MAX SURFACE ROUGHNESS 125 ALL MACHINED SURFACES EXCEPT AS NOTED BREAK SHARP EDGES AND CORNERS .010 MAX	CONTRACT NO.	**ViaSat**	4356 Communications Dr. Norcross, Georgia 30093
	DWN Cecil Bradford 7/16/92	FOUNDATION LOADS MODEL 8010 – 180 7.0M EARTH STATION ANT.	
	ENGR Earl D. Bragg 17 JULY 92		
	CHK Earl D. Bragg 17 JULY 92		
	PROD		
	APVD	SIZE A / CAGE CODE 1Q601 / DWG NO. 481943 / REV	
FINISH	APVD	SCALE NONE	SHEET 1 OF 19

ACAD DRAWING

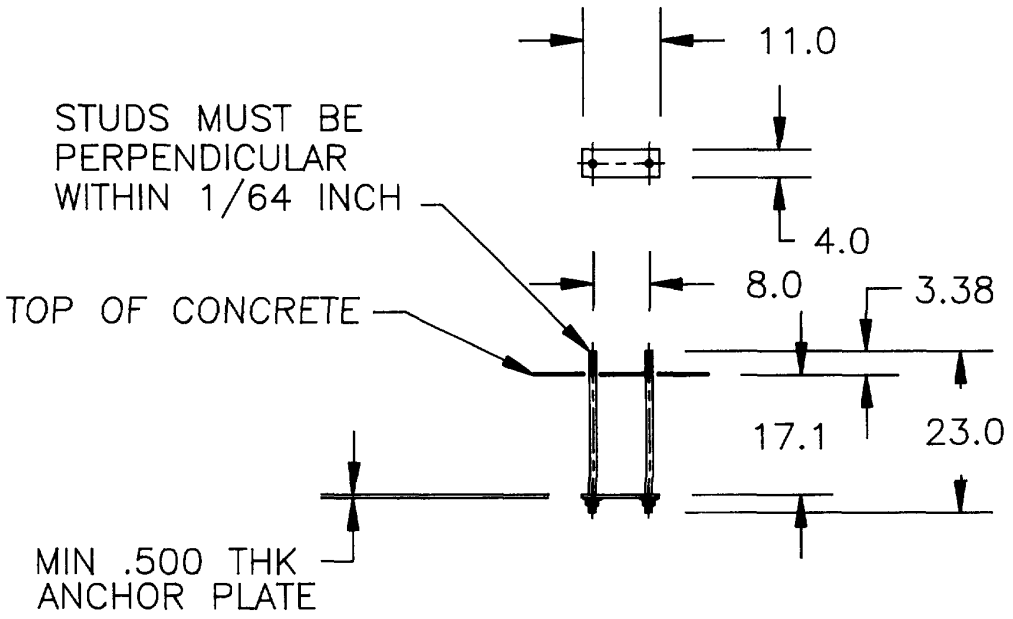
DWG NO. 481943 SH 2 REV



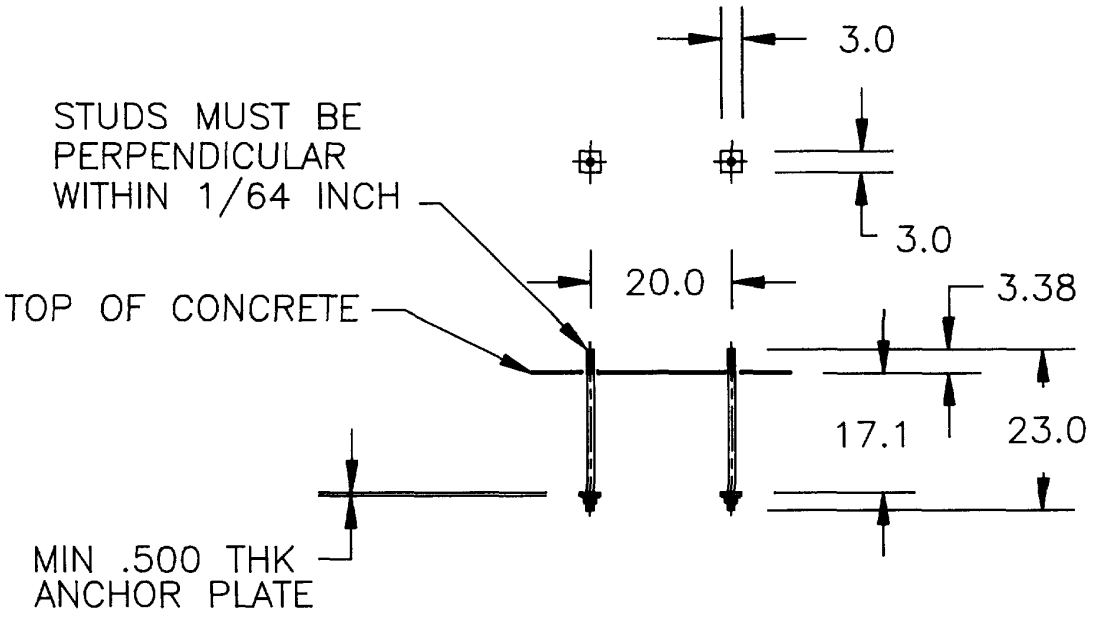
ANCHOR BOLT LOCATIONS

ViaSat	4356 Communications Drive Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 481943	REV
DWN Cecil Bradford	CHK Earl D. Bragg	SCALE NONE		SHEET 2 OF 19	

ACAD DRAWING



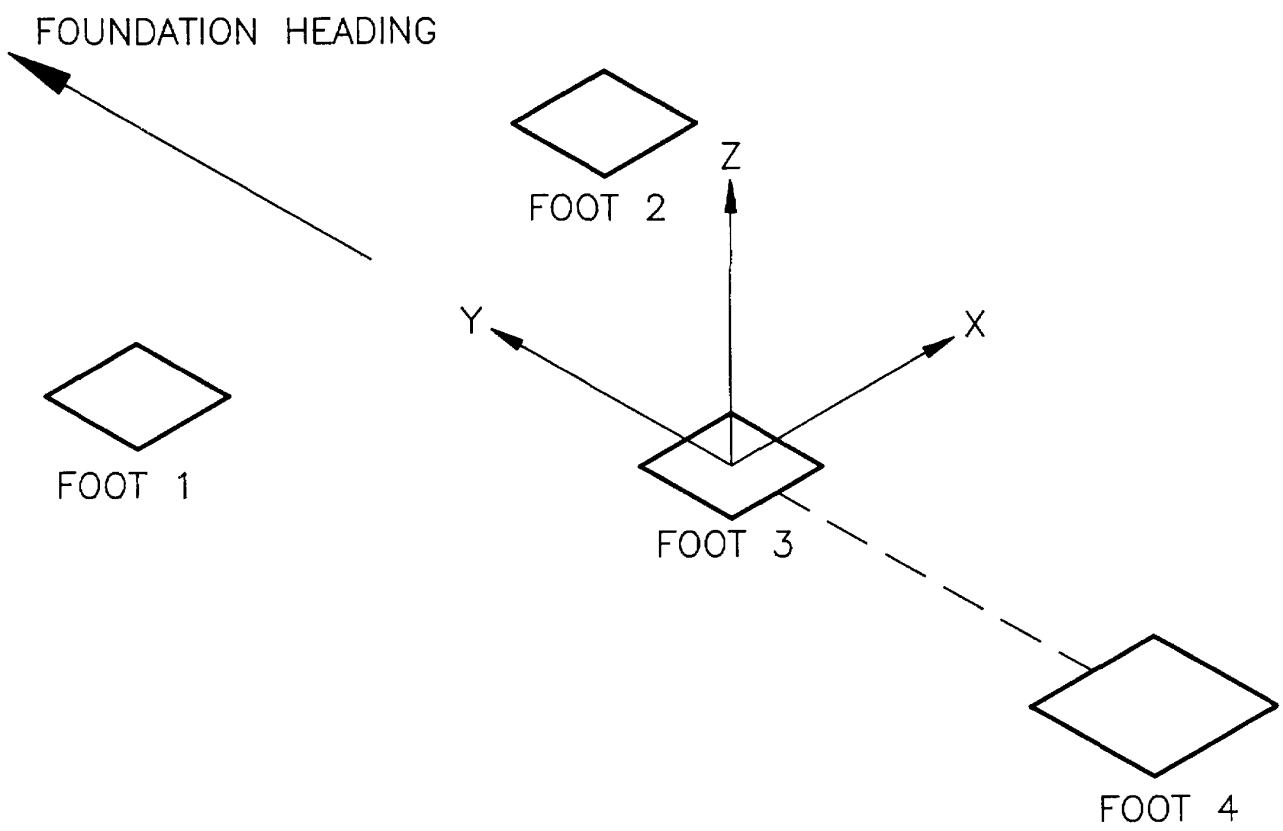
SECTION: A-A
TYP 6X



SECTION: B-B
TYP 3X

ViaSat	4356 Communications Drive Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 481943	REV
DWN Cecil Bradford	CHK Earl D. Brazy	SCALE NONE		SHEET 3 OF 19	

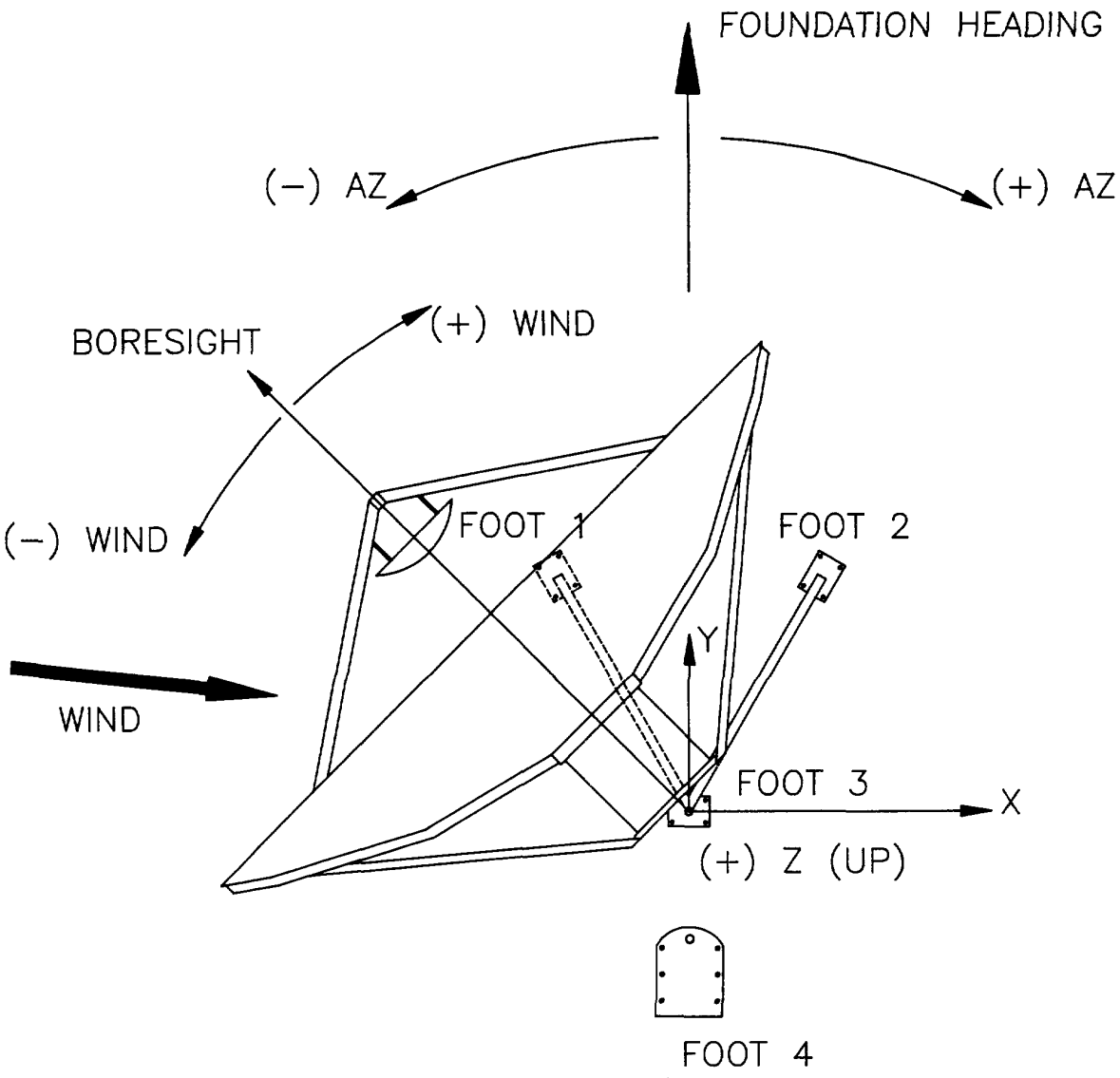
ACAD DRAWING



FOUNDATION LOADING SIGN CONVENTION

ViaSat	4356 Communications Drive Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 481943	REV
DWN Carol Bradford	CHK Earl D. Bragg	SCALE NONE		SHEET 4 OF 19	

ACAD DRAWING



PLAN VIEW

ViaSat	4356 Communications Drive Norcross, GA 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 481943	REV
DWN Cecil Bradford	CHK Ed O. Bugg	SCALE 1/60		SHEET 5 OF 19	

ACAD DRAWING

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
-90	None	0	-887	1534	-1897	-885	-1531	1683	1773	-2	-5009	0	-0	-1083
-90	None	30	-632	1093	-1382	-631	-1091	1169	1263	-2	-4998	0	-0	-1094
-90	None	60	-170	293	-447	-169	-293	237	338	-1	-4981	0	-0	-1113
-90	None	90	378	-653	659	377	653	-867	-755	1	-4962	-0	0	-1136
125 MPH, 59° F														
-90	-30	0	17739	-30679	35729	17414	30116	-35274	-6011	4282	-4905	-4391	-4383	-1856
-90	30	0	17205	-29755	34651	17476	30224	-35399	-14321	-4203	-3861	4391	4397	-1697
-90	-60	0	19410	-33570	39105	18694	32328	-37858	-1137	10128	-5539	-10445	-10436	-2014
-90	60	0	18161	-31407	36583	18820	32549	-38112	-20904	-10043	-3138	10445	10452	-1638
-90	-90	0	-2037	3526	-4220	-603	-1040	1113	-13499	-15689	-2407	16140	16137	-791
-90	90	0	262	-456	425	-1168	-2024	2255	17046	15684	-7611	-16140	-16138	-1375
-90	-120	0	-4620	7993	-9437	-2723	-4706	5394	-13915	-17734	-1596	18159	18155	-667
-90	120	0	-1753	3028	-3647	-3639	-6297	7245	20453	17719	-8578	-18159	-18158	-1325
-90	-150	0	-10940	18922	-22204	-9772	-16899	19631	-3981	-12056	-3218	12366	12360	-514
-90	150	0	-9125	15778	-18537	-10259	-17745	20615	19421	12010	-7422	-12366	-12368	-961
-90	0	0	17587	-30416	35423	17560	30369	-35568	-10241	40	-4379	-0	7	-1781
-90	0	30	14412	-24926	29005	14390	24886	-29171	-7698	34	-17405	-0	6	-1685
-90	0	60	7586	-13121	15213	7575	13099	-15410	-3243	19	-28402	0	3	-1449
-90	0	90	6161	-10655	12342	6151	10637	-12525	-9379	15	-4753	-0	3	-1368
-90	180	90	-5406	9349	-11027	-5397	-9334	10794	7869	-13	-5168	0	-2	-905
-90	180	60	-7890	13646	-16045	-7877	-13623	15802	11005	-19	-4427	0	-3	-806
-90	180	30	-12436	21506	-25225	-12415	-21471	24969	13012	-30	-1267	0	-5	-629
-90	180	0	-14190	24540	-28770	-14167	-24501	28507	10424	-33	-5461	0	-6	-581

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
-60	None	0	-1029	1781	-2185	-513	-887	932	1544	-894	-3949	0	-0	-1105
-60	None	30	-734	1270	-1588	-366	-632	634	1100	-637	-4241	-0	-0	-1110
-60	None	60	-198	343	-505	-99	-171	95	295	-171	-4776	0	0	-1119
-60	None	90	438	-758	780	218	377	-546	-656	380	-5411	0	0	-1129
125 MPH, 59° F														
-60	-30	0	20180	-34918	40664	9433	16295	-19149	-12831	3168	-26417	4321	2504	-1403
-60	30	0	20348	-35207	41003	10782	18631	-21875	-5042	7260	-23986	-4322	-2485	-1448
-60	-60	0	21587	-37355	43508	9285	16036	-18848	-18961	769	-29570	10282	5946	-1395
-60	60	0	21988	-38043	44316	12451	21516	-25245	-412	10533	-23875	-10283	-5925	-1501
-60	-90	0	-723	1256	-1568	2332	4038	-4817	15689	6386	1267	-15832	-9139	-1188
-60	90	0	-1339	2312	-2808	-3360	-5814	6683	-12601	-8176	-9159	15833	9138	-1022
-60	-120	0	-3352	5805	-6878	1661	2882	-3464	18631	6333	5197	-17771	-10259	-1160
-60	120	0	-4042	6988	-8269	-5349	-9253	10700	-12917	-9652	-7766	17770	10255	-970
-60	-150	0	-11401	19731	-23140	-3566	-6154	7092	17575	1603	10752	-12121	-7002	-1010
-60	150	0	-11872	20538	-24088	-8042	-13901	16134	-4046	-9478	2530	12122	6992	-881
-60	0	0	20397	-35294	41103	10175	17579	-20647	-9003	5252	-25334	0	10	-1427
-60	0	30	16717	-28927	33665	8338	14405	-16943	-6779	3961	-34592	-0	8	-1386
-60	0	60	8803	-15233	17672	4390	7584	-8976	-2872	1685	-37466	-0	5	-1279
-60	0	90	7147	-12366	14335	3565	6159	-7301	-8171	4738	-12103	-0	3	-1236
-60	180	90	-6273	10854	-12778	-3128	-5405	6211	6860	-3978	1285	0	-3	-1023
-60	180	60	-9155	15840	-18601	-4567	-7890	9114	9597	-5566	4989	-0	-5	-977
-60	180	30	-14426	24962	-29249	-7195	-12430	14421	11369	-6605	13570	0	-7	-895
-60	180	0	-16460	28480	-33358	-8210	-14184	16470	9138	-5321	11456	1	-8	-873

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
-30	None	0	-894	1548	-1912	1	3	-108	895	-1552	-3170	-0	-1	-1117
-30	None	30	-638	1104	-1394	1	2	-106	637	-1106	-3687	0	-0	-1118
-30	None	60	-172	298	-452	0	1	-106	171	-296	-4627	-0	-0	-1121
-30	None	90	381	-659	664	-0	-1	-104	-380	660	-5743	-0	0	-1124
125 MPH, 59° F														
-30	-30	0	17204	-29785	34657	-741	-1313	1405	-8984	8166	-41165	4322	1165	-1201
-30	30	0	18007	-31172	36278	723	1219	-1552	-1457	10000	-39821	-4321	-1150	-1210
-30	-60	0	17986	-31141	36238	-1726	-3020	3395	-14625	7654	-44737	10283	2763	-1202
-30	60	0	19872	-34399	40046	1706	2918	-3537	3309	12034	-41591	-10282	-2747	-1223
-30	-90	0	792	-1365	1493	3115	5390	-6397	14466	1683	-267	-15833	-4242	-1134
-30	90	0	-2584	4467	-5323	-3113	-5386	6184	-12676	-4788	-6068	15832	4241	-1099
-30	-120	0	-1139	1978	-2408	3856	6678	-7897	16714	644	5126	-17770	-4762	-1126
-30	120	0	-5286	9143	-10782	-3852	-6660	7675	-13394	-6412	-2113	17771	4759	-1085
-30	-150	0	-8784	15211	-17855	2458	4270	-5077	14298	-4392	17713	-12122	-3252	-1086
-30	150	0	-11437	19795	-23212	-2447	-4216	4831	-6416	-9307	13134	12121	3243	-1059
-30	0	0	17721	-30679	35701	-10	-48	-72	-5258	9150	-40728	-0	7	-1207
-30	0	30	14527	-25149	29243	-7	-39	-84	-3967	6905	-47217	0	6	-1197
-30	0	60	7652	-13248	15348	-4	-22	-98	-1688	2945	-44130	0	4	-1169
-30	0	90	6210	-10751	12445	-4	-18	-91	-4741	8226	-17504	0	3	-1154
-30	180	90	-5451	9436	-11119	3	15	-116	3980	-6908	6023	-0	-2	-1094
-30	180	60	-7954	13770	-16178	6	24	-123	5568	-9666	11906	0	-4	-1081
-30	180	30	-12536	21701	-25433	7	34	-127	6609	-11477	24464	-0	-6	-1057
-30	180	0	-14301	24757	-28999	8	39	-131	5326	-9258	23878	-1	-6	-1052

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
0	None	0	-517	896	-1150	517	896	-1150	-0	-1793	-2887	0	-0	-1119
0	None	30	-369	639	-850	369	639	-850	0	-1277	-3485	0	-0	-1120
0	None	60	-99	172	-305	99	172	-305	0	-342	-4574	0	-0	-1121
0	None	90	220	-381	340	-220	-381	340	-0	763	-5863	-0	-0	-1122
125 MPH, 59° F														
0	-30	0	9538	-16532	19175	-10807	-18725	21736	-3717	10511	-46056	4321	-4	-1161
0	30	0	10807	-18725	21736	-9538	-16532	19175	3717	10511	-46056	-4321	-4	-1161
0	-60	0	9451	-16383	18999	-12424	-21525	25004	-8860	11391	-49145	10283	-4	-1164
0	60	0	12424	-21525	25004	-9451	-16383	18999	8860	11391	-49145	-10283	-4	-1164
0	-90	0	2181	-3770	4299	3216	5564	-6601	13369	-1793	-2885	-15832	-0	-1119
0	90	0	-3216	5564	-6601	-2181	-3770	4299	-13369	-1793	-2885	15832	-0	-1119
0	-120	0	1483	-2558	2888	5195	8992	-10601	14800	-3334	2522	-17771	0	-1114
0	120	0	-5195	8992	-10601	-1483	-2558	2888	-14800	-3334	2522	17771	0	-1114
0	-150	0	-3717	6448	-7620	7968	13800	-16206	10197	-7922	18619	-12122	2	-1099
0	150	0	-7968	13800	-16206	3717	6448	-7620	-10197	-7922	18619	12122	2	-1099
0	0	0	10240	-17745	20591	-10240	-17745	20591	0	10588	-46327	-0	-4	-1161
0	0	30	8394	-14547	16856	-8394	-14547	16856	-0	7993	-51810	-0	-4	-1158
0	0	60	4422	-7664	8825	-4422	-7664	8825	0	3413	-46552	0	-3	-1146
0	0	90	3589	-6219	7150	-3589	-6219	7150	-0	9507	-19468	-0	-1	-1137
0	180	90	-3150	5458	-6472	3150	5458	-6472	0	-7983	7747	0	0	-1108
0	180	60	-4597	7966	-9397	4597	7966	-9397	0	-11170	14420	0	1	-1102
0	180	30	-7244	12553	-14746	7244	12553	-14746	0	-13269	28429	0	2	-1091
0	180	0	-8263	14319	-16806	8263	14319	-16806	-0	-10708	28397	0	2	-1089

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
30	None	0	-1	3	-108	894	1548	-1912	-895	-1552	-3170	0	-1	-1117
30	None	30	-1	2	-106	638	1104	-1394	-637	-1106	-3687	-0	-0	-1118
30	None	60	-0	1	-106	172	298	-452	-171	-296	-4627	0	-0	-1121
30	None	90	0	-1	-104	-381	-659	664	380	660	-5743	0	0	-1124
125 MPH, 59° F														
30	-30	0	-723	1219	-1552	-18007	-31172	36278	1457	10000	-39821	4321	-1150	-1210
30	30	0	741	-1313	1405	-17204	-29785	34657	8984	8166	-41165	-4322	1165	-1201
30	-60	0	-1706	2918	-3537	-19872	-34399	40046	-3309	12034	-41591	10282	-2747	-1223
30	60	0	1726	-3020	3395	-17986	-31141	36238	14625	7654	-44737	-10283	2763	-1202
30	-90	0	3113	-5386	6184	2584	4467	-5323	12676	-4788	-6068	-15832	4241	-1099
30	90	0	-3115	5390	-6397	-792	-1365	1493	-14466	1683	-267	15833	-4242	-1134
30	-120	0	3852	-6660	7675	5286	9143	-10782	13394	-6412	-2113	-17771	4759	-1085
30	120	0	-3856	6678	-7897	1139	1978	-2408	-16714	644	5126	17770	-4762	-1126
30	-150	0	2447	-4216	4831	11437	19795	-23212	6416	-9307	13134	-12121	3243	-1059
30	150	0	-2458	4270	-5077	8784	15211	-17855	-14298	-4392	17713	12122	-3252	-1086
30	0	0	10	-48	-72	-17721	-30679	35701	5258	9150	-40728	0	7	-1207
30	0	30	7	-39	-84	-14527	-25149	29243	3967	6905	-47217	-0	6	-1197
30	0	60	4	-22	-98	-7652	-13248	15348	1688	2945	-44130	-0	4	-1169
30	0	90	4	-18	-91	-6210	-10751	12445	4741	8226	-17504	-0	3	-1154
30	180	90	-3	15	-116	5451	9436	-11119	-3980	-6908	6023	0	-2	-1094
30	180	60	-6	24	-123	7954	13770	-16178	-5568	-9666	11906	-0	-4	-1081
30	180	30	-7	34	-127	12536	21701	-25433	-6609	-11477	24464	0	-6	-1057
30	180	0	-8	39	-131	14301	24757	-28999	-5326	-9258	23878	1	-6	-1052

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
60	None	0	513	-887	932	1029	1781	-2185	-1544	-894	-3949	-0	-0	-1105
60	None	30	366	-632	634	734	1270	-1588	-1100	-637	-4241	0	-0	-1110
60	None	60	99	-171	95	198	343	-505	-295	-171	-4776	-0	0	-1119
60	None	90	-218	377	-546	-438	-758	780	656	380	-5411	-0	0	-1129
125 MPH, 59° F														
60	-30	0	-10782	18631	-21875	-20348	-35207	41003	5042	7260	-23986	4322	-2485	-1448
60	30	0	-9433	16295	-19149	-20180	-34918	40664	12831	3168	-26417	-4321	2504	-1403
60	-60	0	-12451	21516	-25245	-21988	-38043	44316	412	10533	-23875	10283	-5925	-1501
60	60	0	-9285	16036	-18848	-21587	-37355	43508	18961	769	-29570	-10282	5946	-1395
60	-90	0	3360	-5814	6683	1339	2312	-2808	12601	-8176	-9159	-15833	9138	-1022
60	90	0	-2332	4038	-4817	723	1256	-1568	-15689	6386	1267	15832	-9139	-1188
60	-120	0	5349	-9253	10700	4042	6988	-8269	12917	-9652	-7766	-17770	10255	-970
60	120	0	-1661	2882	-3464	3352	5805	-6878	-18631	6333	5197	17771	-10259	-1160
60	-150	0	8042	-13901	16134	11872	20538	-24088	4046	-9478	2530	-12122	6991	-881
60	150	0	3566	-6154	7092	11401	19731	-23140	-17575	1603	10752	12121	-7002	-1010
60	0	0	-10175	17579	-20647	-20397	-35294	41103	9003	5252	-25334	-0	10	-1427
60	0	30	-8338	14405	-16943	-16717	-28927	33665	6779	3961	-34592	0	8	-1386
60	0	60	-4390	7584	-8976	-8803	-15233	17672	2872	1685	-37466	0	5	-1279
60	0	90	-3565	6159	-7301	-7147	-12366	14335	8171	4738	-12103	0	3	-1236
60	180	90	3128	-5405	6211	6273	10854	-12778	-6860	-3978	1285	-0	-3	-1023
60	180	60	4567	-7890	9114	9155	15840	-18601	-9597	-5566	4989	0	-5	-977
60	180	30	7195	-12430	14421	14426	24962	-29249	-11369	-6605	13570	-0	-7	-895
60	180	0	8210	-14184	16470	16460	28480	-33358	-9138	-5321	11456	-1	-8	-873

7 Meter 180° Antenna Foundation Loads
Forces in Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Fx	Foot 1 Fy	Foot 1 Fz	Foot 2 Fx	Foot 2 Fy	Foot 2 Fz	Foot 3 Fx	Foot 3 Fy	Foot 3 Fz	Foot 4 Fx	Foot 4 Fy	Foot 4 Fz
Weight only														
90	None	0	885	-1531	1683	887	1534	-1897	-1773	-2	-5009	0	-0	-1083
90	None	30	631	-1091	1169	632	1093	-1382	-1263	-2	-4998	0	-0	-1094
90	None	60	169	-293	237	170	293	-447	-338	-1	-4981	0	-0	-1113
90	None	90	-377	653	-867	-378	-653	659	755	1	-4962	-0	0	-1136
125 MPH, 59° F														
90	-30	0	-17927	31005	-36310	-17224	-29787	34689	6079	3760	-2833	4321	-4314	-1851
90	30	0	-16963	29336	-34363	-17720	-30647	35692	14254	-3681	-5932	-4321	4328	-1702
90	-60	0	-19890	34401	-40275	-18209	-31487	36677	1293	8910	-702	10283	-10274	-2004
90	60	0	-17623	30476	-35695	-19363	-33490	39011	20748	-8825	-7974	-10283	10289	-1648
90	-90	0	2867	-4964	5688	-237	-416	377	13203	-13383	-11562	-15832	15830	-810
90	90	0	-1096	1900	-2321	2013	3486	-4172	-16749	13378	1543	15832	-15831	-1356
90	-120	0	5585	-9665	11177	1745	3010	-3627	13540	-14820	-13165	-17771	17767	-691
90	120	0	777	-1338	1462	4628	8011	-9457	-20077	14804	2991	17771	-17769	-1302
90	-150	0	11567	-20010	23259	9137	15796	-18560	3746	-10228	-10475	-12122	12116	-529
90	150	0	8464	-14635	16987	10928	18903	-22182	-19186	10182	-164	12122	-12124	-947
90	0	0	-17560	30369	-35568	-17587	-30416	35423	10241	40	-4379	-0	7	-1781
90	0	30	-14390	24886	-29171	-14412	-24926	29005	7698	34	-17405	-0	6	-1685
90	0	60	-7575	13099	-15410	-7586	-13121	15213	3243	19	-28402	0	3	-1449
90	0	90	-6151	10637	-12525	-6161	-10655	12342	9379	15	-4753	-0	3	-1368
90	180	90	5397	-9334	10794	5406	9349	-11027	-7869	-13	-5168	0	-2	-905
90	180	60	7877	-13623	15802	7890	13646	-16045	-11005	-19	-4427	0	-3	-806
90	180	30	12415	-21471	24969	12436	21506	-25225	-13012	-30	-1267	0	-5	-629
90	180	0	14167	-24501	28507	14190	24540	-28770	-10424	-33	-5461	0	-6	-581

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
-90	None	0	-3	-13	-10	33	-28	-8	1	517	0	-209	-455	-0
-90	None	30	2	-7	-7	28	-22	-5	1	368	0	-269	-407	-0
-90	None	60	9	3	-3	16	-10	-1	0	99	0	-374	-323	-0
-90	None	90	18	14	3	3	3	4	-0	-220	0	-497	-224	0
125 MPH, 59° F														
-90	-30	0	345	405	176	-368	418	175	-1249	-1753	0	-928	-564	4671
-90	30	0	324	392	176	-379	420	172	1226	-4177	0	-7038	5715	-4671
-90	-60	0	382	443	190	-390	449	191	-2954	-332	0	3014	-4676	11112
-90	60	0	334	413	188	-416	453	182	2929	-6097	0	-11520	10261	-11112
-90	-90	0	-48	-40	-11	6	-22	-16	4576	-3937	0	-11432	11081	-17169
-90	90	0	42	14	-9	61	-35	-0	-4574	4972	0	11016	-11992	17169
-90	-120	0	-101	-98	-34	48	-74	-40	5172	-4059	0	-12361	12142	-19317
-90	120	0	12	-32	-33	121	-95	-21	-5168	5965	0	12889	-13812	19317
-90	-150	0	-206	-239	-103	214	-246	-104	3516	-1161	0	-6927	6873	-13154
-90	150	0	-135	-197	-102	258	-257	-92	-3503	5665	0	10270	-10803	13154
-90	0	0	336	401	177	-376	422	175	-12	-2987	0	-4007	2594	0
-90	0	30	311	347	143	-273	328	145	-10	-2245	0	-3481	2172	0
-90	0	60	213	207	72	-94	148	80	-6	-946	0	-2194	1138	-0
-90	0	90	117	140	62	-133	148	61	-4	-2735	0	-1757	787	0
-90	180	90	-80	-112	-56	139	-141	-52	4	2295	0	763	-1235	-0
-90	180	60	-125	-167	-81	195	-202	-77	6	3210	0	1300	-1667	-0
-90	180	30	-219	-274	-126	285	-308	-122	9	3795	0	2260	-2438	-0
-90	180	0	-247	-312	-145	328	-353	-139	10	3040	0	2526	-2652	-0

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
-60	None	0	-11	-15	-8	20	-21	-8	261	450	0	-499	-326	-0
-60	None	30	-4	-9	-6	18	-17	-5	186	321	0	-518	-303	0
-60	None	60	8	2	-2	14	-9	-1	50	86	0	-552	-261	-0
-60	None	90	22	15	2	9	0	4	-111	-191	0	-592	-212	-0
125 MPH, 59° F														
-60	-30	0	510	442	126	-91	252	170	-924	-3742	0	-3615	4508	-4596
-60	30	0	502	449	136	-130	280	175	-2118	-1470	0	170	-2132	4597
-60	-60	0	552	470	129	-74	253	180	-224	-5530	0	-6313	9197	-10938
-60	60	0	533	487	153	-165	320	192	-3072	-120	0	2694	-6604	10939
-60	-90	0	-30	-2	13	-63	39	3	-1863	4576	0	6428	-12481	16842
-60	90	0	7	-29	-29	103	-81	-18	2385	-3675	0	-7425	11827	-16842
-60	-120	0	-101	-57	1	-66	17	-18	-1847	5434	0	7424	-14151	18903
-60	120	0	-52	-89	-51	139	-131	-43	2815	-3767	0	-8114	13117	-18903
-60	-150	0	-284	-234	-60	20	-116	-90	-468	5126	0	5413	-10385	12894
-60	150	0	-254	-256	-93	150	-211	-106	2764	-1180	0	-5192	8223	-12895
-60	0	0	509	448	132	-111	268	174	-1532	-2626	0	-1730	1198	-0
-60	0	30	453	385	106	-56	202	145	-1155	-1977	0	-1567	995	0
-60	0	60	288	228	53	20	81	79	-492	-838	0	-1156	486	0
-60	0	90	177	157	46	-40	94	61	-1382	-2383	0	-997	290	0
-60	180	90	-133	-126	-42	57	-94	-52	1160	2001	0	-185	-714	-0
-60	180	60	-202	-188	-61	76	-133	-76	1623	2799	0	-11	-930	0
-60	180	30	-341	-307	-95	98	-199	-122	1926	3316	0	302	-1317	-1
-60	180	0	-386	-349	-108	114	-228	-139	1552	2665	0	388	-1424	-1

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
-30	None	0	-13	-12	-4	5	-9	-5	453	261	0	-656	-163	0
-30	None	30	-5	-6	-3	7	-9	-4	322	186	0	-659	-157	-0
-30	None	60	7	3	-1	11	-7	-0	86	50	0	-665	-147	0
-30	None	90	23	14	0	15	-5	3	-192	-111	0	-672	-135	0
125 MPH, 59° F														
-30	-30	0	531	359	45	197	27	120	-2382	-2620	0	-1764	3613	-4597
-30	30	0	541	379	57	161	59	130	-2917	-425	0	50	-3194	4596
-30	-60	0	564	372	40	234	9	123	-2232	-4266	0	-3030	8335	-10939
-30	60	0	587	420	70	149	85	146	-3510	965	0	1287	-7863	10938
-30	-90	0	7	32	24	-72	60	16	-491	4219	0	2664	-12625	16842
-30	90	0	-33	-55	-31	83	-79	-26	1396	-3697	0	-3976	12298	-16842
-30	-120	0	-58	-6	23	-113	70	4	-188	4875	0	3093	-14192	18903
-30	120	0	-106	-112	-44	80	-102	-48	1870	-3906	0	-4355	13772	-18903
-30	-150	0	-271	-167	-9	-142	19	-54	1281	4170	0	1985	-9889	12895
-30	150	0	-302	-235	-52	-20	-90	-87	2715	-1871	0	-3097	9191	-12894
-30	0	0	539	371	51	180	43	126	-2669	-1534	0	-858	211	0
-30	0	30	478	322	40	183	18	106	-2014	-1157	0	-835	166	-0
-30	0	60	301	195	18	146	-16	59	-859	-492	0	-770	43	-0
-30	0	90	188	130	18	62	16	44	-2399	-1383	0	-739	-10	-0
-30	180	90	-143	-103	-17	-32	-25	-37	2015	1161	0	-604	-259	0
-30	180	60	-216	-154	-25	-55	-32	-55	2819	1624	0	-576	-312	-0
-30	180	30	-363	-253	-38	-108	-40	-88	3348	1928	0	-523	-409	1
-30	180	0	-411	-287	-43	-121	-47	-100	2700	1553	0	-510	-433	1

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
0	None	0	-7	-2	1	-7	2	-1	523	-0	0	-701	0	-0
0	None	30	-1	0	1	-1	-0	-1	373	0	0	-701	-0	-0
0	None	60	9	5	-0	9	-5	0	100	0	0	-702	-0	-0
0	None	90	20	10	-2	20	-10	2	-222	-0	0	-702	-0	0
125 MPH, 59° F														
0	-30	0	403	175	-49	429	-205	37	-3066	-1084	0	-712	3416	-4597
0	30	0	429	205	-37	403	-175	49	-3066	1084	0	-712	-3416	4597
0	-60	0	416	169	-61	476	-238	31	-3322	-2584	0	-713	8128	-10938
0	60	0	476	238	-31	416	-169	61	-3322	2584	0	-713	-8128	10938
0	-90	0	48	61	28	-62	66	26	523	3899	0	-701	-12508	16842
0	90	0	-62	-66	-26	48	-61	-28	523	-3899	0	-701	12508	-16842
0	-120	0	8	52	40	-127	105	27	972	4317	0	-700	-14035	18903
0	120	0	-127	-105	-27	8	-52	-40	972	-4317	0	-700	14035	-18903
0	-150	0	-174	-48	45	-261	148	-2	2311	2974	0	-696	-9576	12894
0	150	0	-261	-148	2	-174	48	-45	2311	-2974	0	-696	9576	-12894
0	0	0	419	191	-43	419	-191	43	-3088	0	0	-712	-0	0
0	0	30	379	174	-38	379	-174	38	-2331	-0	0	-711	-0	0
0	0	60	249	117	-23	249	-117	23	-995	0	0	-708	-0	-0
0	0	90	146	67	-15	146	-67	15	-2773	-0	0	-707	-0	0
0	180	90	-106	-47	12	-106	47	-12	2328	0	0	-698	0	-0
0	180	60	-162	-73	18	-162	73	-18	3258	0	0	-696	0	-0
0	180	30	-277	-126	29	-277	126	-29	3870	0	0	-693	0	-0
0	180	0	-313	-142	33	-313	142	-33	3123	-0	0	-694	0	-0

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
30	None	0	5	9	5	-13	12	4	453	-261	0	-656	163	-0
30	None	30	7	9	4	-5	6	3	322	-186	0	-659	157	0
30	None	60	11	7	0	7	-3	1	86	-50	0	-665	147	-0
30	None	90	15	5	-3	23	-14	-0	-192	111	0	-672	135	-0
125 MPH, 59° F														
30	-30	0	161	-59	-130	541	-379	-57	-2917	425	0	50	3194	-4596
30	30	0	197	-27	-120	531	-359	-45	-2382	2620	0	-1764	-3613	4597
30	-60	0	149	-85	-146	587	-420	-70	-3510	-965	0	1287	7863	-10938
30	60	0	234	-9	-123	564	-372	-40	-2232	4266	0	-3030	-8335	10939
30	-90	0	83	79	26	-33	55	31	1396	3697	0	-3976	-12298	16842
30	90	0	-72	-60	-16	7	-32	-24	-491	-4219	0	2664	12625	-16842
30	-120	0	80	102	48	-106	112	44	1870	3906	0	-4355	-13772	18903
30	120	0	-113	-70	-4	-58	6	-23	-188	-4875	0	3093	14192	-18903
30	-150	0	-20	90	87	-302	235	52	2715	1871	0	-3097	-9191	12894
30	150	0	-142	-19	54	-271	167	9	1281	-4170	0	1985	9889	-12895
30	0	0	180	-43	-126	539	-371	-51	-2669	1534	0	-858	-211	-0
30	0	30	183	-18	-106	478	-322	-40	-2014	1157	0	-835	-166	0
30	0	60	146	16	-59	301	-195	-18	-859	492	0	-770	-43	0
30	0	90	62	-16	-44	188	-130	-18	-2399	1383	0	-739	10	0
30	180	90	-32	25	37	-143	103	17	2015	-1161	0	-604	259	-0
30	180	60	-55	32	55	-216	154	25	2819	-1624	0	-576	312	0
30	180	30	-108	40	88	-363	253	38	3348	-1928	0	-523	409	-1
30	180	0	-121	47	100	-411	287	43	2700	-1553	0	-510	433	-1

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
60	None	0	20	21	8	-11	15	8	261	-450	0	-499	326	0
60	None	30	18	17	5	-4	9	6	186	-321	0	-518	303	-0
60	None	60	14	9	1	8	-2	2	50	-86	0	-552	261	0
60	None	90	9	-0	-4	22	-15	-2	-111	191	0	-592	212	0
125 MPH, 59° F														
60	-30	0	-130	-280	-175	502	-449	-136	-2118	1470	0	170	2132	-4597
60	30	0	-91	-252	-170	510	-442	-126	-924	3742	0	-3615	-4508	4596
60	-60	0	-165	-320	-192	533	-487	-153	-3072	120	0	2694	6604	-10939
60	60	0	-74	-253	-180	552	-470	-129	-224	5530	0	-6313	-9197	10938
60	-90	0	103	81	18	7	29	29	2385	3675	0	-7425	-11827	16842
60	90	0	-63	-39	-3	-30	2	-13	-1863	-4576	0	6428	12481	-16842
60	-120	0	139	131	43	-52	89	51	2815	3767	0	-8114	-13117	18903
60	120	0	-66	-17	18	-101	57	-1	-1847	-5434	0	7424	14151	-18903
60	-150	0	150	211	106	-254	256	93	2764	1180	0	-5192	-8223	12895
60	150	0	20	116	90	-284	234	60	-468	-5126	0	5413	10385	-12894
60	0	0	-111	-268	-174	509	-448	-132	-1532	2626	0	-1730	-1198	0
60	0	30	-56	-202	-145	453	-385	-106	-1155	1977	0	-1567	-995	-0
60	0	60	20	-81	-79	288	-228	-53	-492	838	0	-1156	-486	-0
60	0	90	-40	-94	-61	177	-157	-46	-1382	2383	0	-997	-290	-0
60	180	90	57	94	52	-133	126	42	1160	-2001	0	-185	714	0
60	180	60	76	133	76	-202	188	61	1623	-2799	0	-11	930	-0
60	180	30	98	199	122	-341	307	95	1926	-3316	0	302	1317	1
60	180	0	114	228	139	-386	349	108	1552	-2665	0	388	1424	1

7 Meter 180° Antenna Foundation Loads
Moments in Foot-Pounds

17 Jul, 1992

Az Angl	Wind From	El Angl	Foot 1 Mx	Foot 1 My	Foot 1 Mz	Foot 2 Mx	Foot 2 My	Foot 2 Mz	Foot 3 Mx	Foot 3 My	Foot 3 Mz	Foot 4 Mx	Foot 4 My	Foot 4 Mz
Weight only														
90	None	0	33	28	8	-3	13	10	1	-517	0	-209	455	-0
90	None	30	28	22	5	2	7	7	1	-368	0	-269	407	-0
90	None	60	16	10	1	9	-3	3	0	-99	0	-374	323	-0
90	None	90	3	-3	-4	18	-14	-3	-0	220	0	-497	224	0
125 MPH, 59° F														
90	-30	0	-390	-428	-173	323	-395	-179	-1097	1773	0	-963	525	-4597
90	30	0	-357	-410	-174	346	-403	-173	1074	4157	0	-7003	-5676	4597
90	-60	0	-442	-472	-186	331	-420	-196	-2599	377	0	2933	4585	-10938
90	60	0	-364	-429	-187	386	-437	-183	2574	6051	0	-11439	-10169	10938
90	-90	0	103	66	6	49	-5	21	3903	3851	0	-11279	-10907	16842
90	90	0	-36	-9	10	-55	31	-1	-3902	-4885	0	10862	11818	-16842
90	-120	0	170	130	27	21	41	46	4322	3949	0	-12167	-11922	18903
90	120	0	-1	39	34	-111	88	20	-4318	-5856	0	12695	13592	-18903
90	-150	0	291	281	96	-129	204	111	2983	1092	0	-6805	-6735	12894
90	150	0	181	222	100	-212	232	94	-2970	-5596	0	10148	10666	-12894
90	0	0	-376	-422	-175	336	-401	-177	-12	2987	0	-4007	-2594	0
90	0	30	-273	-328	-145	311	-347	-143	-10	2245	0	-3481	-2172	0
90	0	60	-94	-148	-80	213	-207	-72	-6	946	0	-2194	-1138	-0
90	0	90	-133	-148	-61	117	-140	-62	-4	2735	0	-1757	-787	0
90	180	90	139	141	52	-80	112	56	4	-2295	0	763	1235	-0
90	180	60	195	202	77	-125	167	81	6	-3210	0	1300	1667	-0
90	180	30	285	308	122	-219	274	126	9	-3795	0	2260	2438	-0
90	180	0	328	353	139	-247	312	145	10	-3040	0	2526	2652	-0

APPLICATION			REVISIONS			
QTY REQD	NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED
			E	REVISED AND REDRAWN PER ECR 12450 BHS 11/7/95	10 NOV. 95	

REV E | SH 1 | DWG NO. 475796

IMPORTANT NOTICE

VIASAT DOES NOT REPRESENT OR WARRANT THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY PARTICULAR LOCALITY OR INSTALLATION.

VIASAT, INC.

CONTRACT NO.		
DWN. S.MOORE	2/2/92	
ENGR. E.BRAGG	2/2/92	
CHK E.BRAGG	2/2/92	
PROD		
APVD		
APVD		

ViaSat

4356 Communications Dr.
Norcross, Georgia 30093

FOUNDATION PLAN AND CONDUIT PLACEMENT, 7M–180°

SIZE	CAGE CODE	DWG NO.	REV
A	1Q601	475796	E

SCALE 1/1 SHEET 1 OF 8

ACAD DRAWING

DWG NO. 475796 SH 2 REV E

NOTES:

1. FOOTINGS DESIGNED FOR 201 KM/H [125 MPH] WINDS.
2. REINFORCING BARS SHALL CONFORM WITH ASTM A-615-68, GRADE 60.
3. CONCRETE SHALL BE 20.7 MPa [3000 PSI] COMPRESSIVE STRENGTH AT 28 DAYS.
4. SOIL BEARING CAPACITY TO BE A MINIMUM OF 95.8 KPa [2000 PSF].
5. ANCHOR BOLTS ARE 1 INCH DIAMETER AND SHALL CONFORM ASTM A197-B7 OR ASTM A325.
   DO NOT WELD ANCHOR BOLTS.
6. FROST LINE TO BE A MAXIMUM OF 61 CM [24 INCHES] BELOW GRADE.
7. USE TEMPLATE 475793 TO INSURE PROPER ANCHOR BOLT LOCATION.
8. PROPER ELECTRICAL GROUNDING SHALL BE PROVIDED BY THE INSTALLING CONTRACTOR TO MEET LOCAL APPLICABLE CODES. THIS MAY TAKE THE FORM OF A BURIED GRID OR A SUITABLE COPPER STAKE, DEPENDING ON LOCAL SOIL CONDITIONS. THE MOUNT SHALL BE ELECTRICALLY CONNECTED TO THE GROUND.
9. PROVISIONS MUST BE MADE TO PROVIDE SUITABLE SUPPORT FOR POWER, RF AND CONTROL CABLES EITHER BY BURIED CONDUIT OR OVERHEAD RACEWAY. IF PVC CONDUIT IS SUPPLIED IT SHALL BE AT LEAST 7.6 CM [3 INCHES] IN DIAMETER.
10. NO BUILDINGS, WALLS, FENCES OR OTHER PERMANENT FIXTURES SHOULD BE PLANNED FOR INSTALLATION ANY CLOSER THAN 2 METERS OF THE ANTENNA AND FOUNDATION ENVELOPE WITHOUT CONSULTATION WITH THE FACTORY.

△11 PAD REQUIRED FOR OPTIONAL 8862 CONTROLLER INSTALLATION.

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796	REV E
DWN S.MOORE	CHK E.D.BRAGG	SCALE 1/1		SHEET 2	

ACAD DRAWING

NOTES:

12. PROVISIONS MUST BE MADE TO PROVIDE SUITABLE SUPPORT FOR IFL WAVEGUIDE EITHER BY BURIED CONDUIT OR OVERHEAD RACEWAY. IF PVC CONDUIT IS SUPPLIED IT SHALL BE AT LEAST 15.2 CM [6 INCH] DIAMETER WITH A MINIMUM BEND RADIUS OF 91.5 CM [36 INCHES].

13. AC POWER CONDUIT FOR ANTENNA MOTORS AND DEICING TO BE SIZED BY ELECTRICAL CONTRACTOR TO MEET LOCAL, STATE, AND NATIONAL ELECTRICAL CODES.

14. EXTERNAL AC POWER DISCONNECT BOX NOT SUPPLIED BY VIASAT. SOME LOCAL CODES MAY REQUIRE EXTERNAL UNIT. THE 8861/8862 CONTROLLER HAS AN INTERNAL MAIN BREAKER/DISCONNECT.

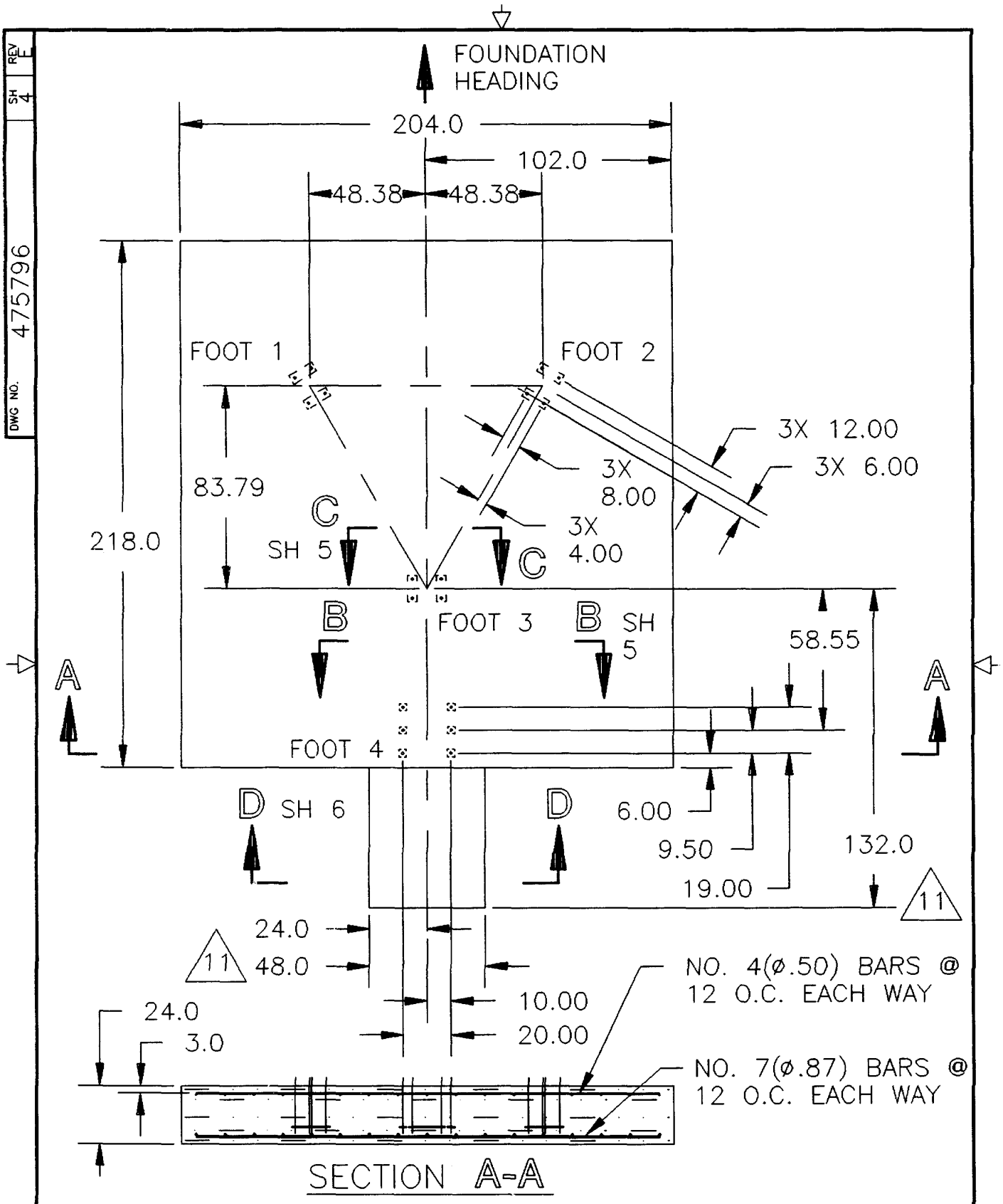
15. GROUND CABLE PIG TAILS SHALL BE IN PVC CONDUIT AND NOT TIED TO FOUNDATION REBAR.

16. DO NOT RUN CONDUIT UNDER ANY ANTENNA OR ACTUATOR SUPPORT AREA.

17. 7.6 CM [3 INCH] DIAMETER CONDUIT WITH A MINIMUM BEND RADIUS OF 91.5 CM [36 INCHES] FOR AZIMUTH ACTUATOR MOTOR POWER.

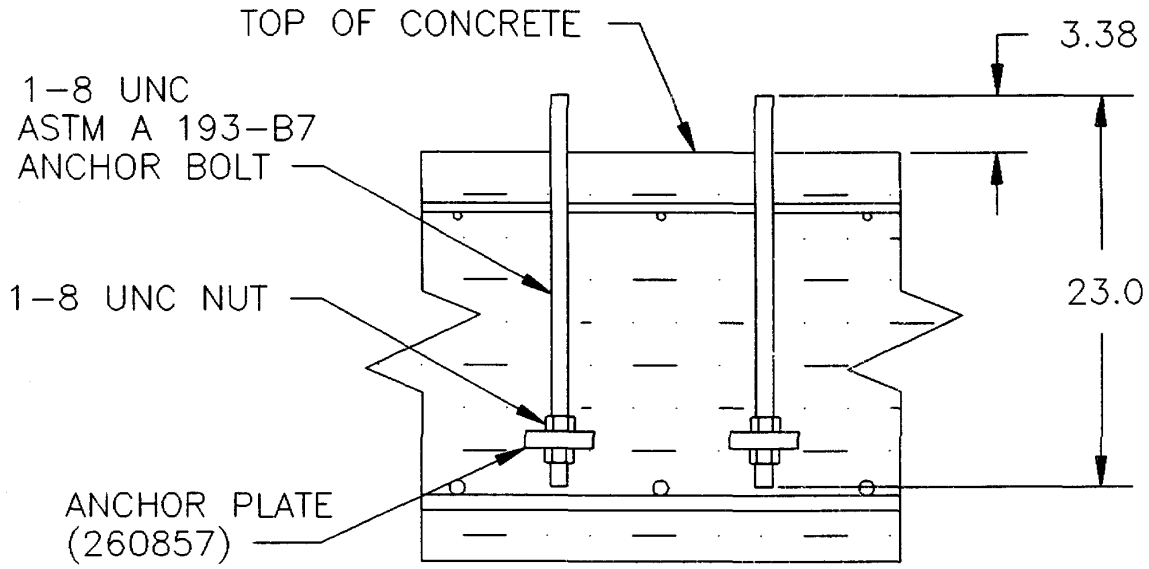
ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796	REV E
DWN S.MOORE	CHK E.D.BRAGG	SCALE 1/1		SHEET 3	

ACAD DRAWING



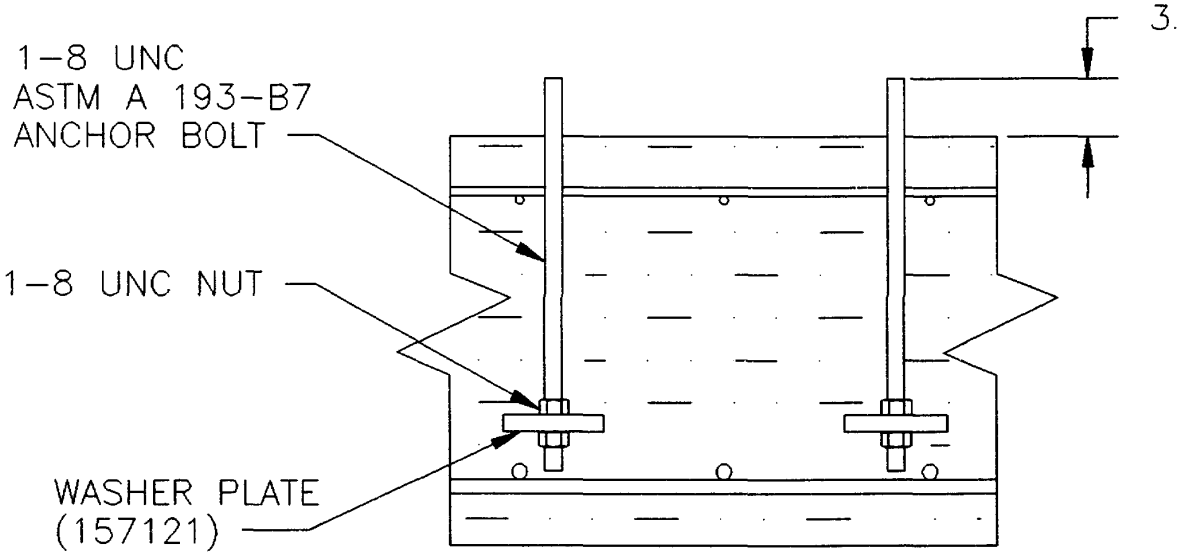
ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796	REV E
DWN S.MOORE	CHK E.D.BRAGG	SCALE 1/50		SHEET 4	

ACAD DRAWING



SECTION C-C

FOOT 1, 2 AND 3
VIEW ROTATED 180°



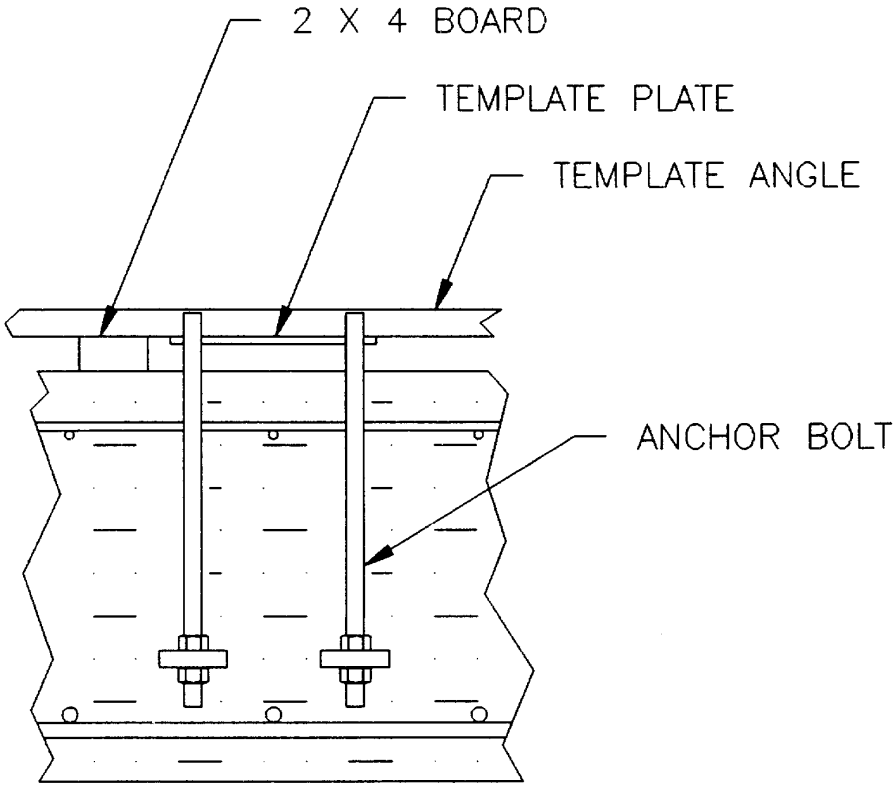
SECTION B-B

FOOT 4
VIEW ROTATED 180°

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796
DWN S.MOORE	CHK E.D.BRAGG	SCALE 1/10		SHEET 5

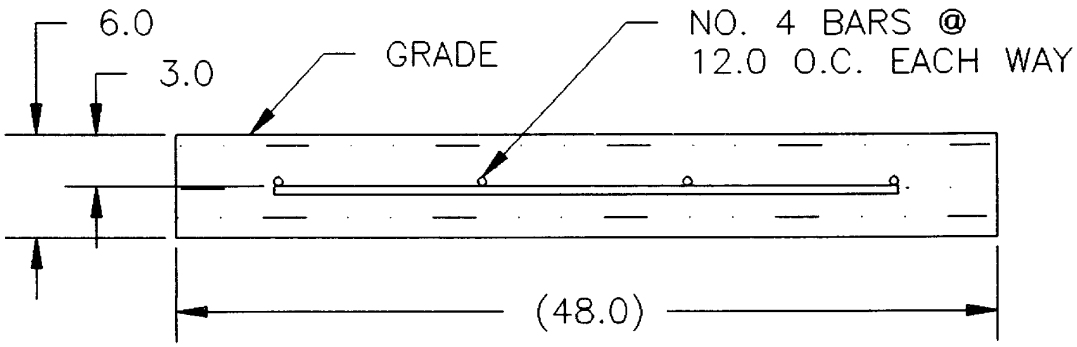
ACAD DRAWING

DWG NO. 475796 SH 6 REV E



SECTION E-E

VIEW ROTATED 90° CCW

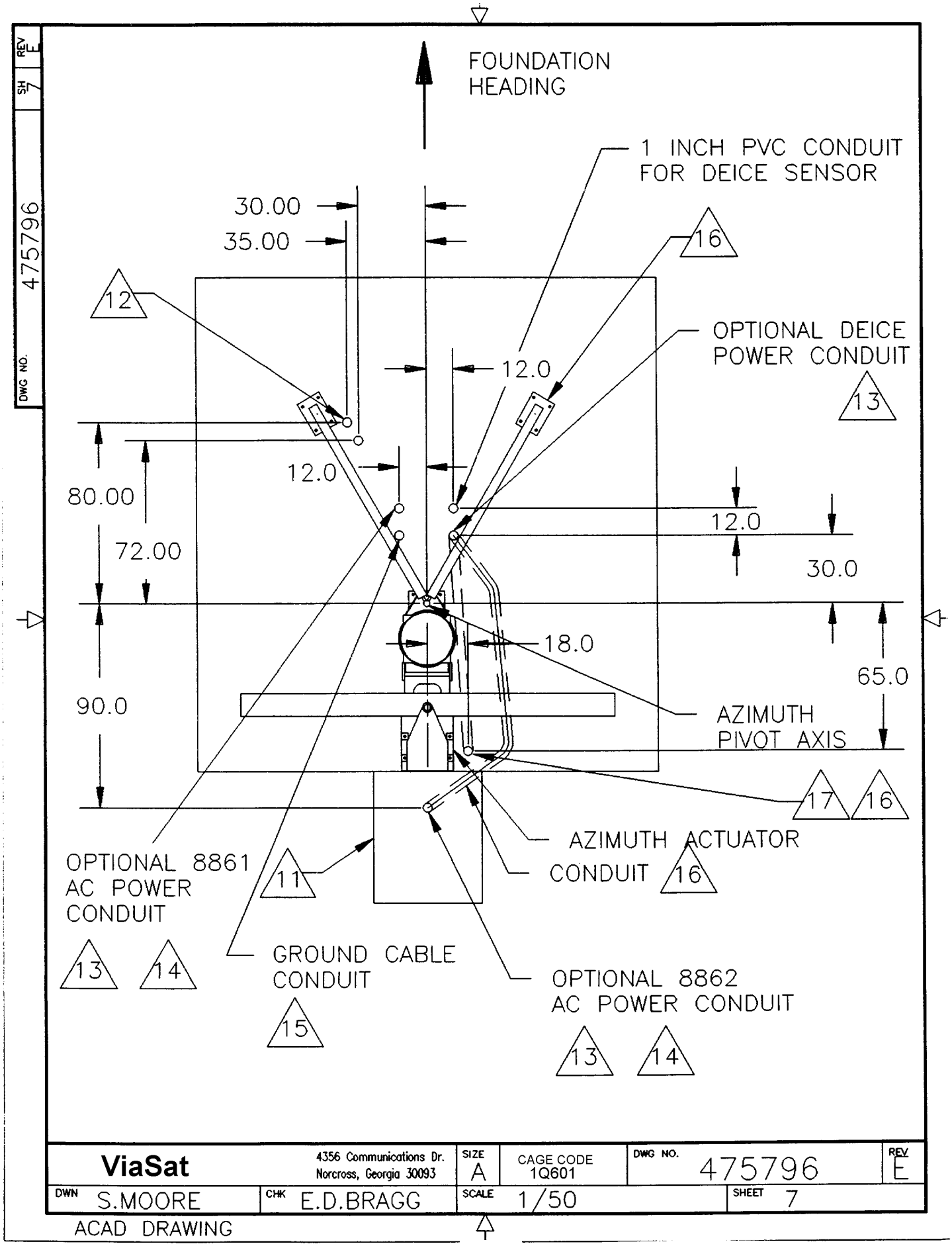


SECTION D-D

11

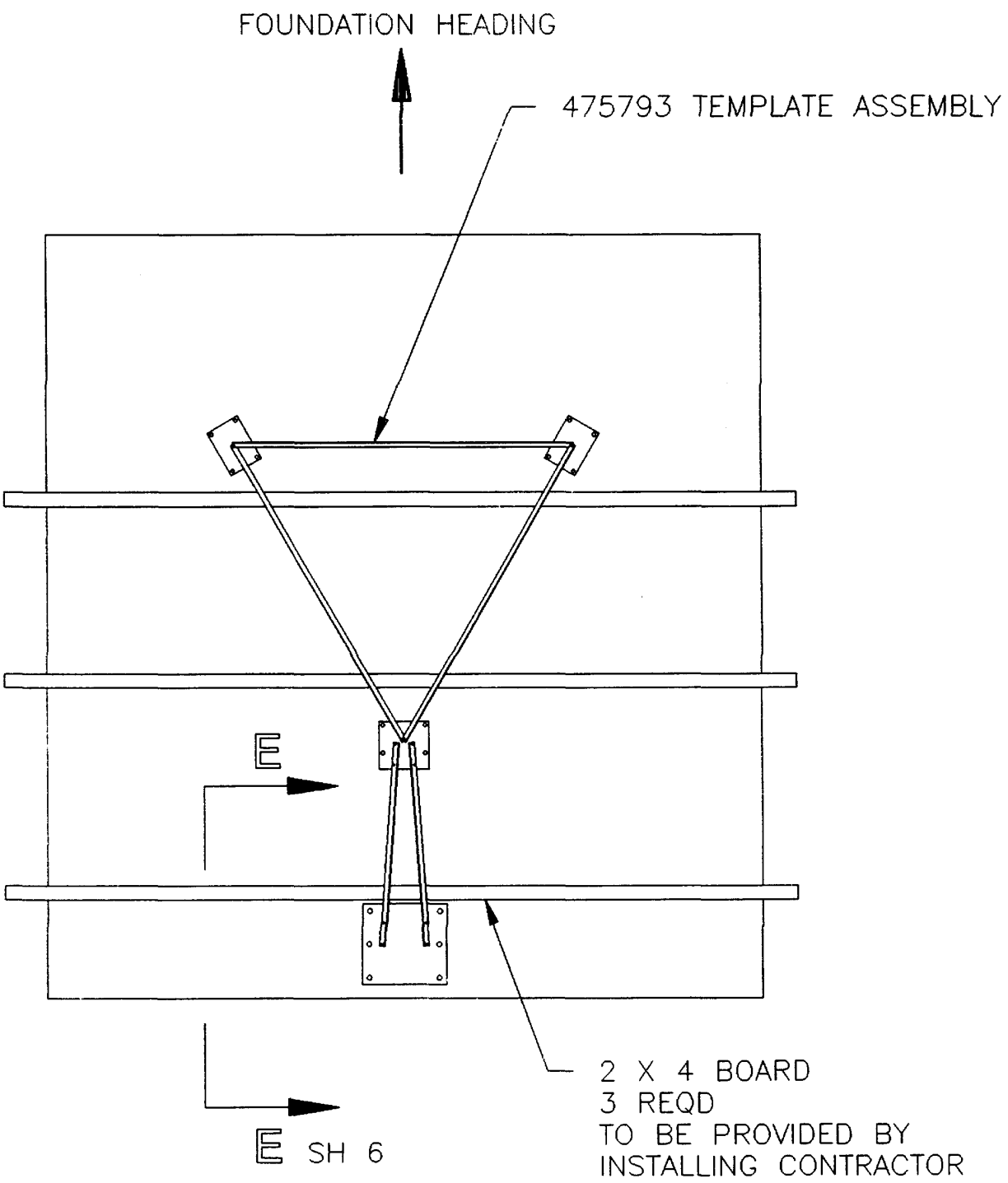
ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796	REV E
DWN S,MOORE	CHK E.D.BRAGG	SCALE 1/10		SHEET 6	

ACAD DRAWING



ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796	REV E
DWN S.MOORE	CHK E.D.BRAGG	SCALE 1/50		SHEET 7	

ACAD DRAWING



SUGGESTED TEMPLATE SUPPORT

ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475796	REV E
DWN S.MOORE	CHK E.D.BRAGG	SCALE 1/40		SHEET 8	

ACAD DRAWING

REV C	SH 1	DWG NO. 475793

APPLICATION			REVISIONS			
QTY REQD	NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED
			C	REVISED AND REDRAWN PER ECR 9463	10/20/92	

PARTS LIST

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	475795	TEMPLATE BASE
2	1	260853	TEMPLATE, LH
3	1	260854	TEMPLATE, RH
4	2	268360	ANGLE, TEMPLATE
5	1	478590	TEMPLATE, BASE
6	11	173817	SCREW, HEX HD, 1/4-20 X 3/4
7	11	088711	NUT, HEX, 1/4-20

CONTRACT NO.		
DWN. G.GRESENS	10/25/91	
ENGR. E.D.BRAGG	1/8/92	
CHK E.D.BRAGG	1/8/92	
PROD		
APVD		
APVD		

ViaSat

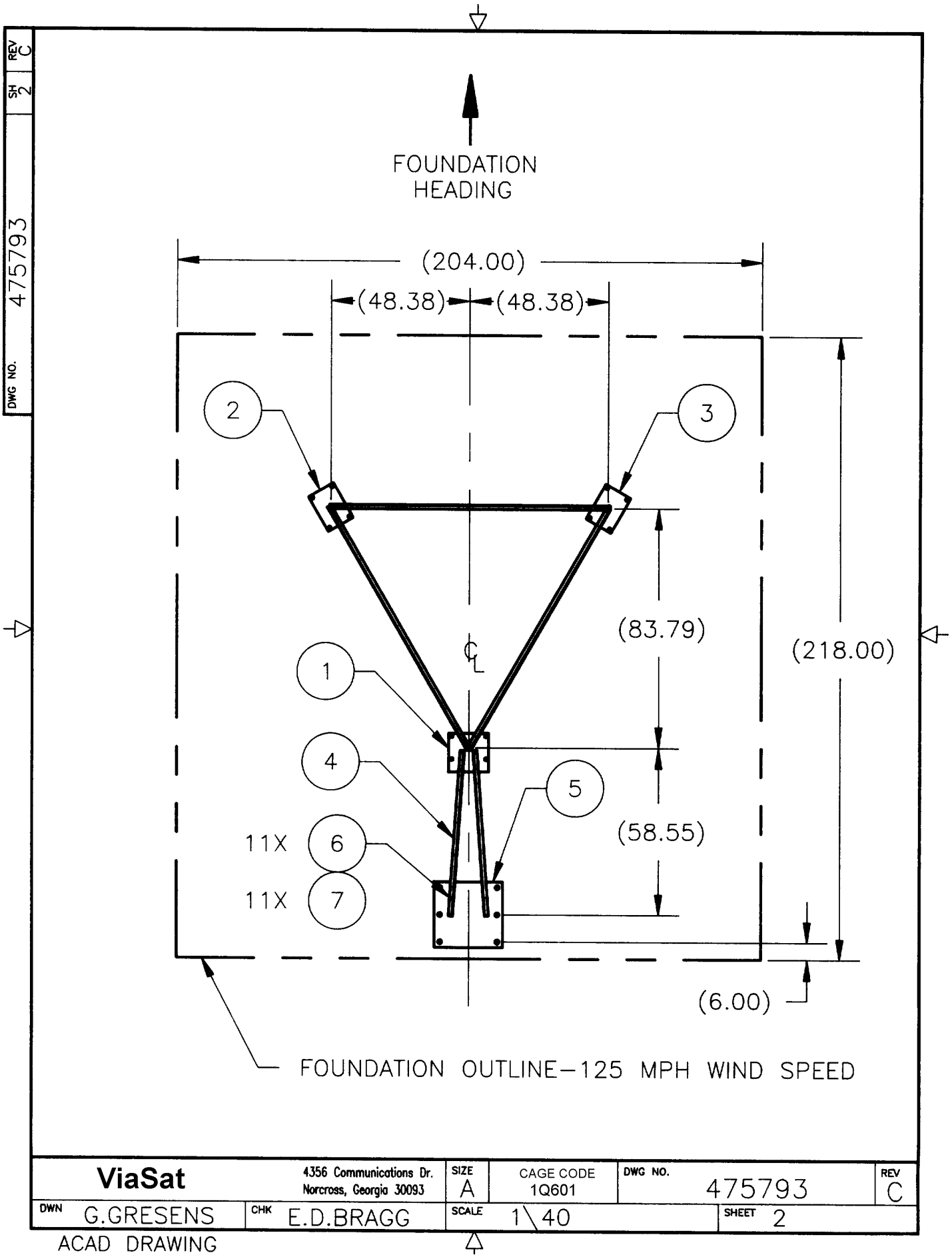
4356 Communications Dr.
Norcross, Georgia 30093

TEMPLATE, FOUNDATION-
7 METER 180°

SIZE	CAGE CODE	DWG NO.	REV
A	1Q601	475793	C

SCALE 1/1 SHEET 1 OF 2

ACAD DRAWING



ViaSat	4356 Communications Dr. Norcross, Georgia 30093	SIZE A	CAGE CODE 1Q601	DWG NO. 475793	REV C
DWN G.GRESENS	CHK E.D.BRAGG	SCALE 1\40		SHEET 2	

ACAD DRAWING