

NOTES:

- INSPECT PER HAARP ANTENNA SYSTEM INSTALLATION INSPECTION PROCEDURE, ITEM 114.
- INSPECT DIPOLES PER DIPOLE GEOMETRY TEST PROCEDURES, ITEM 115.
- SEE SHEET 3.
- SEE SHEET 16.
- SEE SHEET 16.
- SEE SHEET 18.

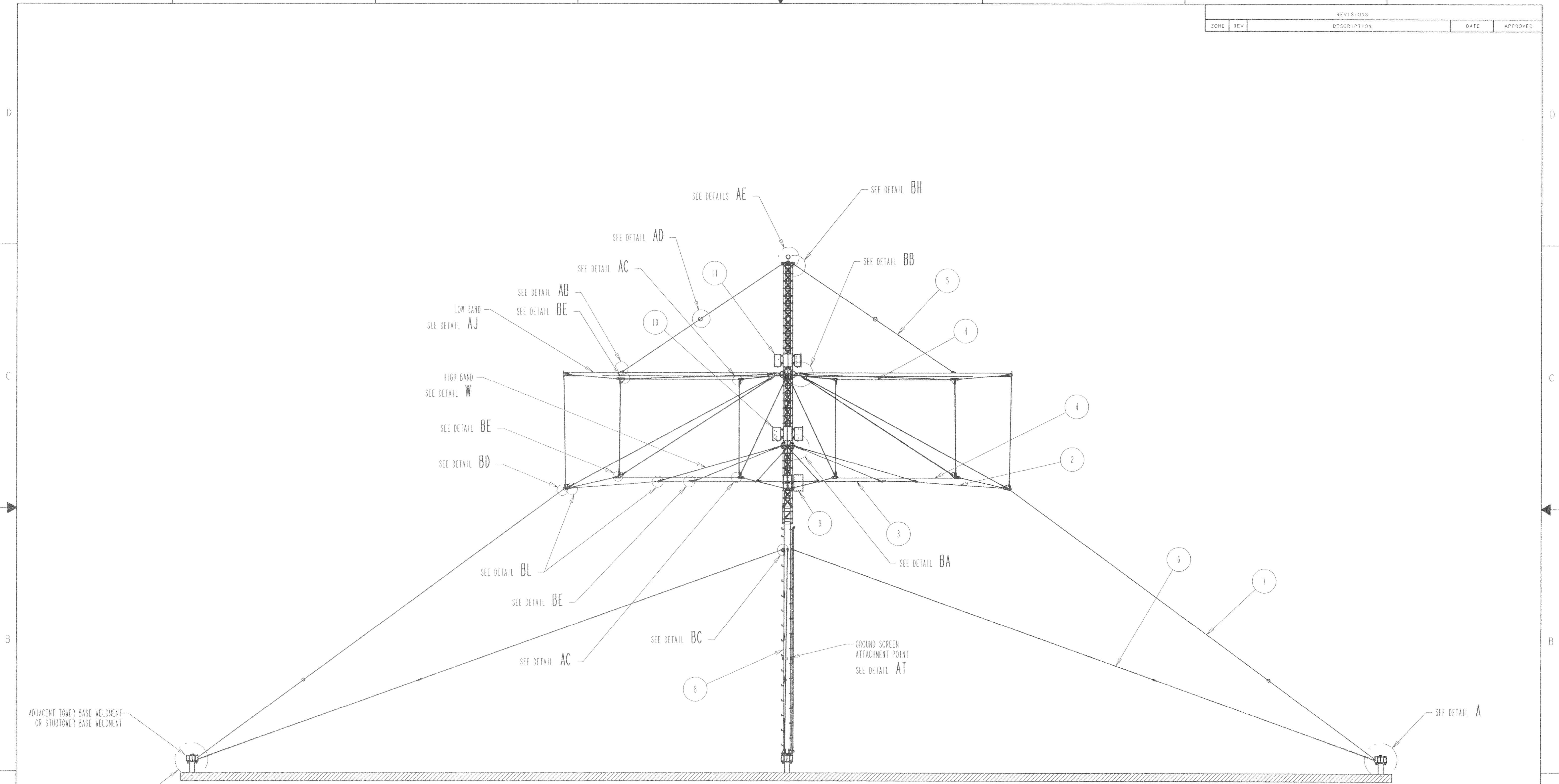
REVISIONS			
ZONE	REV	DESCRIPTION	DATE

QTY	REQD	ITEM NO.	CAGE CODE	SYM	PART OR IDENTIFYING NO.	KIT NUMBER	NOMENCLATURE OR DESCRIPTION
48	129	06032	SCD		2077-6453-009	0003-7239-202	BOLT, HEX HD, TAP, .38-16 UNC X 2.50 LG, GALV
384	128		SCD		2310-0416-001	0003-6854-203 & -204	WASHER, FLAT, .38, SST
192	127		SCD		2100-2244-001	0003-6854-203 & -204	NUT, HEX, FIBERLOCK, .38-16 UNC-2A, SST
384	126		SCD		2100-2251-001	0003-6859-202	NUT, HEX, FIBERLOCK, .75-10 UNC-2A, SST
384	125		SCD		2078-4213-001	0003-6859-202	BOLT, HEX HEAD, .75-10 UNC-2B X 2.50 LG, SST
1440	124				0003-7133-201	0003-7216-201	TUBE, PROTECTIVE (1.25 ID)
384	123				0003-7133-202	0003-7216-201	TUBE, PROTECTIVE (.38 ID)
96	122				0003-7240-301	0003-6410-201	ANGLE, LATTICE, SAFETY CLIMB
1324	121		SCD		2076-4288-001	0003-6867-201	BOLT, .38-16 UNC X 1.50 LG, HS, GALV
48	120		SCD		2450-0802-002	0003-7216-201	WRAPLOCK STRAP, 100 FT ROLL
48	119		SCD		2450-0801-002	0003-7216-201	WRAPLOCK, INSTALLATION TOOL (RATCHET)
2400	118		SCD		2450-0801-001	0003-7216-201	WRAPLOCK, "D" RING
96	117				0003-7130-301	0003-7216-201	LEG, CABLE MOUNT #2
96	116				0003-7129-301	0003-7216-201	LEG, CABLE MOUNT #1
REF	115		PRO		0910-1031-101		HAARP DIPOLE GEOMETRY TEST PROCEDURE
REF	114		PRO		0910-1022-101		HAARP ANTENNA SYSTEM INSTALLATION INSPECTION PROCEDURE
1	113				0090-0140-201	1500-0394-201	INSTALLATION SPARES, HAARP
288	112		SCD		2100-0219-001	0003-6186-201/0003-7084-201	NUT, HEX, .25-20 UNC, SST
288	111		SCD		2300-0909-001	0003-6186-201/0003-7084-201	WASHER, SPLITLOCK, .25, SST
672	110		SCD		2310-0433-001	0003-6186-201/0003-7084-201 0003-6854-203 & -204	WASHER, FLAT, .25, SST
96	109		SCD		0003-7131-201	0003-7216-201	SPLICE, CABLE MOUNT
784	108	06032			0003-7215-201	0003-7216-201	MOUNT, CABLE
784	107				MS9350-15	0003-7216-201	CABLE, LOOP
784	106	06032	SCD		2077-6408-001	0003-7216-201	BOLT, HEX HD, .25-20 UNC X 1.25 LG, GALV
384	105				0003-6365-301	0003-7218-201	COAX ASSY, MONITOR TO AMUS
96	104				0003-6348-303	0003-7217-201	CONTROL CABLE, BALUN TO MONITOR
192	103				0003-6348-302	0003-7217-201	CONTROL CABLE, LB AMU TO BALUN
192	102				0003-6348-301	0003-7217-201	CONTROL CABLE, HB AMU TO BALUN
96	101				0003-6347-301	0003-7217-201	CONTROL CABLE, CONTROL BOX TO BALUN
192	100				0003-6341-301	0003-7218-201	CABLE ASSY, 7/8
192	99				0003-6346-301	0003-7218-201	CABLE ASSY, 1/8
1	98				0003-6506-401	1000-1565-201	MOUNT, MARKER
240	97		SCD		8910-0501-001	0003-6505-201	MARKER, YELLOW
1056	96		SCD		2076-4282-001	0003-6507-201	BOLT, HEX HD, .38-16 UNC X .75, GALV, HS
196	95		SCD		2076-4380-001	0003-6859-202	BOLT, HEX HD, .75-10 UNC X 4.25 LG, GALV, HS
480	94		SCD		2310-0144-001	0003-7216-201	WASHER, FLAT, .50, GALV
480	93		SCD		2077-7307-001	0003-7216-201	BOLT, HEX HD, .50-13 UNC X 1.50 LG, GALV
1176	92				0003-6518-401	0003-6856-201 THRU -203	INSULATOR ASSY NO. 2
784	91				0003-6517-401	0003-6858-201	INSULATOR ASSY NO. 1
672	90		SCD		2078-2406-001	0003-6854-203 & -204 0003-6186-201/0003-7084-201	BOLT, HEX HD, .25-20 UNC X 1.00 LG, SST
196	89				0003-6247-201	0003-6854-202	SPACER, HINGE, HB
576	88		SCD		2102-0002-006	0003-6854-201 & 202	NUT, HEX, LOCK (ANCO), .75-10 UNC, GALV
384	87		SCD		2076-4376-001	0003-6854-201 & 202	BOLT, HEX HD, .75-10 UNC X 3.25 LG, GALV, HS
192	86				0003-7236-301	0003-6854-203	FEED STRAP, LOW BAND
192	85				0003-7237-301	0003-6854-204	FEED STRAP, HIGH BAND
192	84		SCD		2078-2453-003	0003-6854-203 & -204	BOLT, HEX HD, .38-16 UNC X 1.00 LG, SST
5612	83				2350-3016-001	0003-6836-401/0003-6834-401	TAP, CRIMPIT
REF	82				0003-7228-201	0003-6836-401/0003-6834-401	SLEEVE, OFFSET
480	81		SCD		2100-0127-001	0003-7216-201	NUT, HEX, .50-13 UNC, GALV
480	80		SCD		2300-0155-001	0003-7216-201	WASHER, SPLITLOCK, .50, GALV
284	79		SCD		2077-6453-013	0003-7239-201	BOLT, HEX HD, TAP, .38-16 UNC X 3.50 LG, GALV
28	78				0003-6838-402	1500-0394-201	GROUND SCREEN CATENARY, INTERIOR
8	77				0003-6839-401	1500-0394-201	GROUND SCREEN CATENARY, CORNER
35	76				0003-6836-401	1000-1555-201	INTERIOR GROUND SCREEN ASSY
24	75				0003-6835-401	1000-1557-201	PERIMETER GROUND SCREEN ASSY
4	74				0003-6834-401	1000-1556-201	CORNER GROUND SCREEN ASSY
82	73				0003-6838-401	1500-0394-201	GROUND SCREEN CATENARY, INTERIOR
24	72				0003-6837-401	1500-0394-201	GROUND SCREEN CATENARY, PERIMETER
192	71				0003-6309-401	1000-1562-201	CHIN WELDMENT, LB
192	70				0003-6303-402	1000-1562-201	CORNER WELDMENT, LOWER, LB
192	69				0003-6303-401	1000-1562-201	CORNER WELDMENT, LOWER, LB
192	68				0003-6300-402	1000-1562-201	CORNER WELDMENT, UPPER, LB
192	67				0003-6300-401	1000-1562-201	CORNER WELDMENT, UPPER, LB
192	66				0003-6400-401	1000-1562-201	BACKBONE WELDMENT, LB
384	65				0003-6310-409	1000-1562-201	ELEMENT ASSY
192	64				0003-6310-408	1000-1562-201	ELEMENT ASSY
384	63				0003-6310-407	1000-1562-201	ELEMENT ASSY
192	62				0003-6310-406	1000-1562-201	ELEMENT ASSY
384	61	06032			0003-6310-405	1000-1562-201	ELEMENT ASSY
QTY REQD	ITEM NO.	CAGE CODE	SYM		PART OR IDENTIFYING NO.	KIT NUMBER	NOMENCLATURE OR DESCRIPTION
-401							PARTS LIST

QTY	REQD	ITEM NO.	CAGE CODE	SYM	PART OR IDENTIFYING NO.	KIT NUMBER	NOMENCLATURE OR DESCRIPTION
384	60	06032			0003-6310-404	1000-1562-201	ELEMENT ASSY
192	59				0003-6242-401	1000-1563-201	FRONT JOINT WELDMENT, HB
192	58				0003-6294-401	1000-1563-201	PLATE, CORNER, HB
284	57				0003-6514-401	1000-1563-201	FEED POINT ASSY, HB
9680	56		SCD		2100-2248-001	0003-6854-201 & -202	NUT, HEX, FIBERLOCK, .50-13 UNC, SST
5760	55				0003-6306-201	0003-6854-201 & -202	BEARING, METALLIC
5760	54				0003-6305-201	0003-6854-201 & -202	BEARING, NONMETALLIC
5760	53				0003-6304-301	0003-6854-201 & -202	WASHER, NYLON
9680	52		SCD		2078-3311-001	0003-6459-201 & -202	BOLT, HEX HD, .50-13 UNC, 2.00 L, SST
192	51				0003-6310-403	1000-1563-201	ELEMENT ASSY
384	50				0003-6310-402	1000-1563-201	ELEMENT ASSY
384	49				0003-6310-401	1000-1563-201	ELEMENT ASSY
246	48		SCD		2300-0325-001	0003-6413-201	WASHER, LOCK, HEAVY, 1.25, GALV
246	47		SCD		2100-0882-001	0003-6413-201	NUT, HEX, 1.25-7 UNC, GALV, HS
246	46		SCD		2079-7161-011	0003-6413-201	BOLT, HEX, 1.25-7 UNC X 6.50 L, GALV, HS
343	45				0003-7134-301	0003-6410-201	PLATE, LATTICE, SAFETY CLIMB
686	44				0003-6865-301	0003-6410-201	BRACKET, LATTICE, SAFETY CLIMB
539	43				0003-6419-301	0003-6410-201	BRACKET, ANGLE, SAFETY CLIMB
48	42				0001-9480-302	0003-6410-201	STOP, TOP
144	41				0001-9679-302	0003-6410-201	STRAP, CONNECTING
3594	40		SCD		2076-4284-001	0003-6867-201	BOLT, HEX HD, .38-16 UNC X 1.00, GALV, HS
384	39				0003-6136-401	0003-7220-201	PIVOT WELDMENT
384	38				0003-6133-401	0003-7220-201	BRACKET, PIVOT, HIGH BAND
1539	37		SCD		2310-0598-001	0003-7220-201	WASHER, FLAT, 3/8, HS
96	36				0003-6184-401	0003-6185-201	MOUNT, MONITOR BALUN
96	35				1000-1572-401	1000-1625-201	SWITCH/MONITOR ASSY
1580	34		SCD		2300-0153-001	0003-6343-201/0003-7239-201	WASHER, SPLITLOCK, .38, GALV
1580	33		SCD		2310-0597-001	0003-6343-201/0003-7239-201	WASHER, FLAT, .38, GALV
1580	32		SCD		2100-0123-001	0003-6343-201/0003-7239-201	NUT, HEX, .38-16 UNC, GALV
1152	31		SCD		2077-6810-001	0003-6343-201	BOLT, HEX HD, .38-16 UNC X 1.50 L, GALV
48	30				0003-6326-401	1000-1625-201	CONTROL BOX ASSY
2112	29		SCD		2100-0119-001	0003-7084-201/0003-6184-201	NUT, HEX, .25-20 UNC, GALV
2112	28		SCD		2310-0591-001	0003-7084-201/0003-6184-201	WASHER, FLAT, .25, GALV
2112	27		SCD		2300-0151-001	0003-7084-201/0003-6184-201	WASHER, SPLITLOCK, .25, GALV
1056	26		SCD		2450-0505-003	0003-7084-201/0003-6184-201	U-BOLT, .25-20 UNC, GALV
960	25				0003-6319-401	0003-6343-201	MOUNT, TOWER
4	24				0003-6409-401	1000-1558-201	STUB TOWER WELDMENT, CORNER
28	23				0003-6407-401	1000-1559-201	STUB TOWER WELDMENT, PERIMETER
4992	22		SCD		2102-0002-003	0003-6411-201	NUT, LOCK, HEAVY HEX, .375-16 UNC, GALV
1920	21		SCD		2076-4289-401	0003-6411-201	BOLT, HEX, .375-16 UNC X 1.75, GALV, HS
698	20		SCD		2102-0002-010	0003-6412-201	NUT, LOCK (ANCO), HEAVY HEX, 1.25-7 UNC, GALV
698	19		SCD		2310-0784-007	0003-6412-201	WASHER, FLAT, 1.25, GALV, HS
502	18				2076-4492-001	0003-6412-201	BOLT, HEX, 1.25-7 UNC X 4.00, GALV, HS
48	17				0003-7083-301	0003-7082-201	MOUNT, CONTROL BOX
96	16				0001-9690-402	003-6410-201	RAIL, CARRIER (20 FT)
48	15				0003-6863-401	0003-6410-201	RAIL, RADIUS
48	14				0001-9690-414	0003-6410-201	RAIL, GALV (5 FT)
48	13				0003-6132-401	1000-1565-201	LATTICE ASSY
81	12				0003-6119-401	1000-1565-201/1000-155889-201	BASE WELDMENT
192	11				1000-1569-401	1000-1625-201	LOW BAND MATCHING UNITS
192	10				1000-1568-401	1000-1625-201	HIGH BAND MATCHING UNIT
96	9				1000-1570-401	1000-1625-201	10 KW BALUN ASSY
48	8				0003-6284-401	1000-1565-201	MAST WELDMENT
192	7				0003-6861-402	0003-6858-201	GUY ASSY, UPPER
192	6				0003-6861-401	1000-1565-201	GUY ASSY, LOWER
192	5				0003-6866-401	0003-6858-201	GUY ASSY, ELEMENT
384	4				0003-6857-401	0003-6856-201	INTERELEMENT GUY ASSY LOW BAND
192	3				0003-6857-402	0003-6856-202	INTERELEMENT GUY ASSY HIGH BAND
192	2				0003-6866-402	0003-6858-201	GUY ASSY, ELEMENT
X	1	06032			-401		HAARP INSTALLATION DRAWING
QTY REQD	ITEM NO.	CAGE CODE	SYM		PART OR IDENTIFYING NO.	KIT NUMBER	NOMENCLATURE OR DESCRIPTION
-401							PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± 1/32 .XX ± .02 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		DRAWN	9/4/94	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	9/10/94		
PART DASH NO.		ENGR	9/26/94		
NEXT ASSY		DESIGN APPROVED	9/26/94	SIZE	CAGE CODE

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



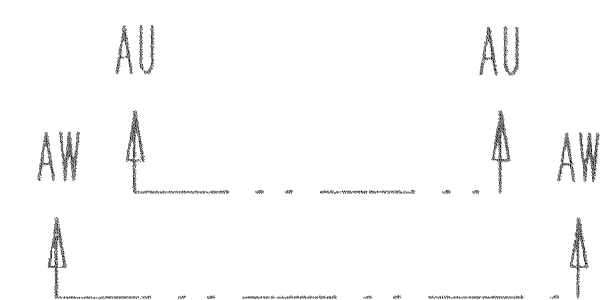
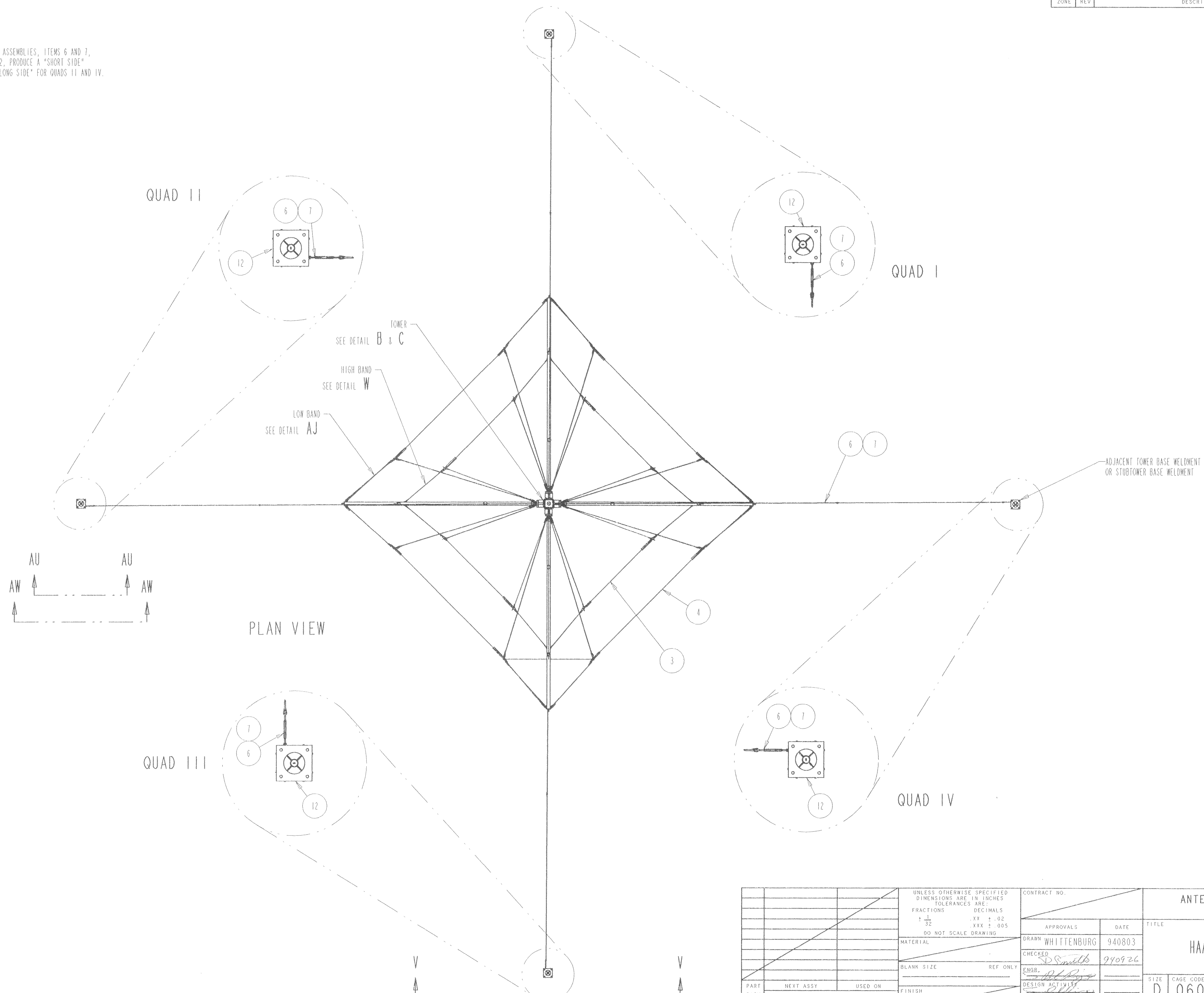
ELEVATION VIEW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
FRACTIONS .XX		APPROVALS	DATE	TITLE	
DECIMALS .005		DRAWN WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
DO NOT SCALE DRAWING		CHECKED <i>[Signature]</i>	940926	SIZE	CAGE CODE
MATERIAL	REF ONLY	ENGR. <i>[Signature]</i>	DESIGN ACTIVITY	D	06032
BLANK SIZE	FINISH			DWG. NO.	0980-0334
PART DASH NO.	APPLICATION			SCALE	RELEASE
				NONE	
				SHEET	2 OF 20

NOTES:

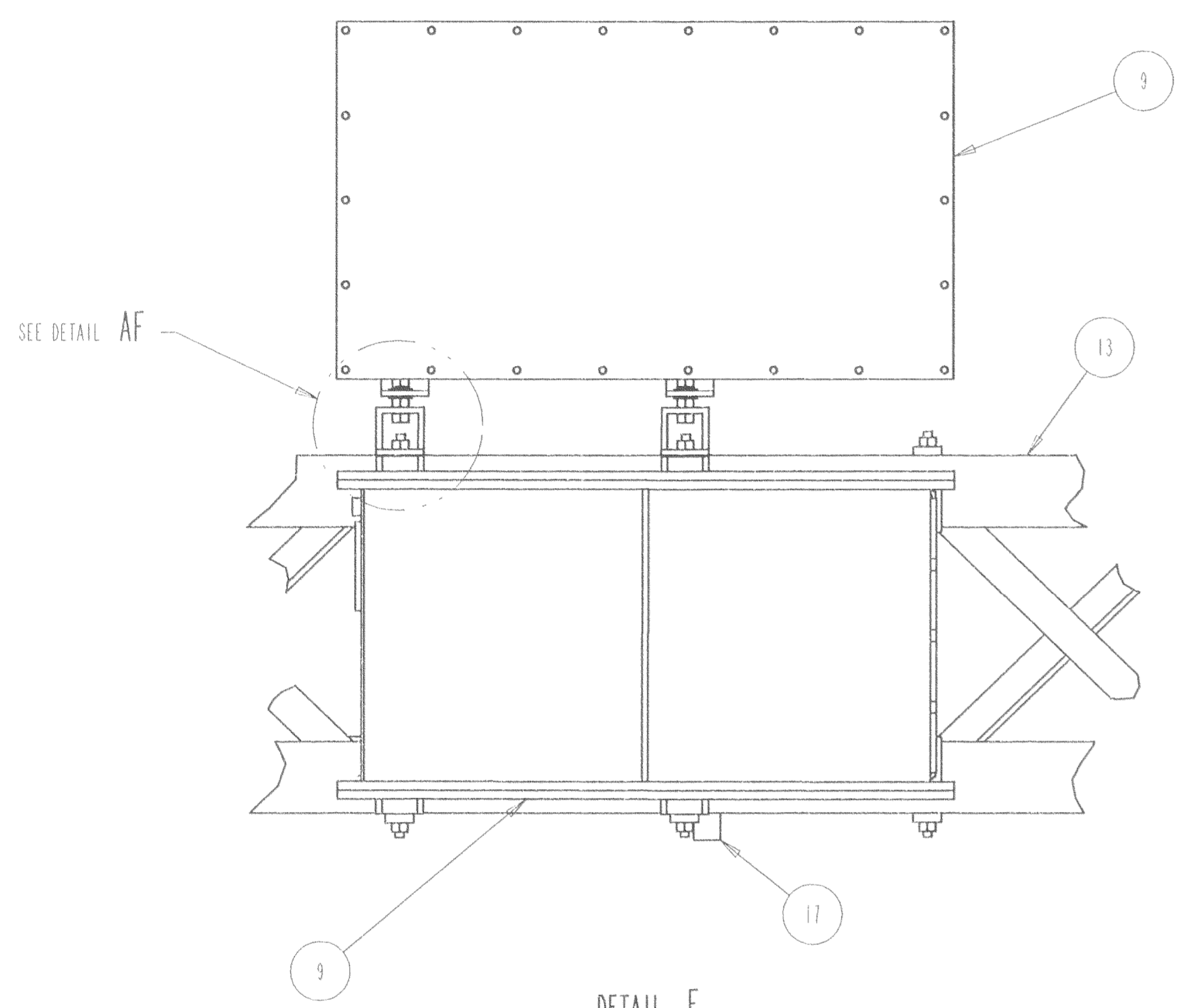
3. ATTACHMENT LOCATIONS FOR GUY ASSEMBLIES, ITEMS 6 AND 7, TO THE BASE WELDMENT, ITEM 12, PRODUCE A "SHORT SIDE" FOR QUADS I AND III, AND A "LONG SIDE" FOR QUADS II AND IV.

ZONE		REV	DESCRIPTION	DATE	APPROVED
REVISIONS					

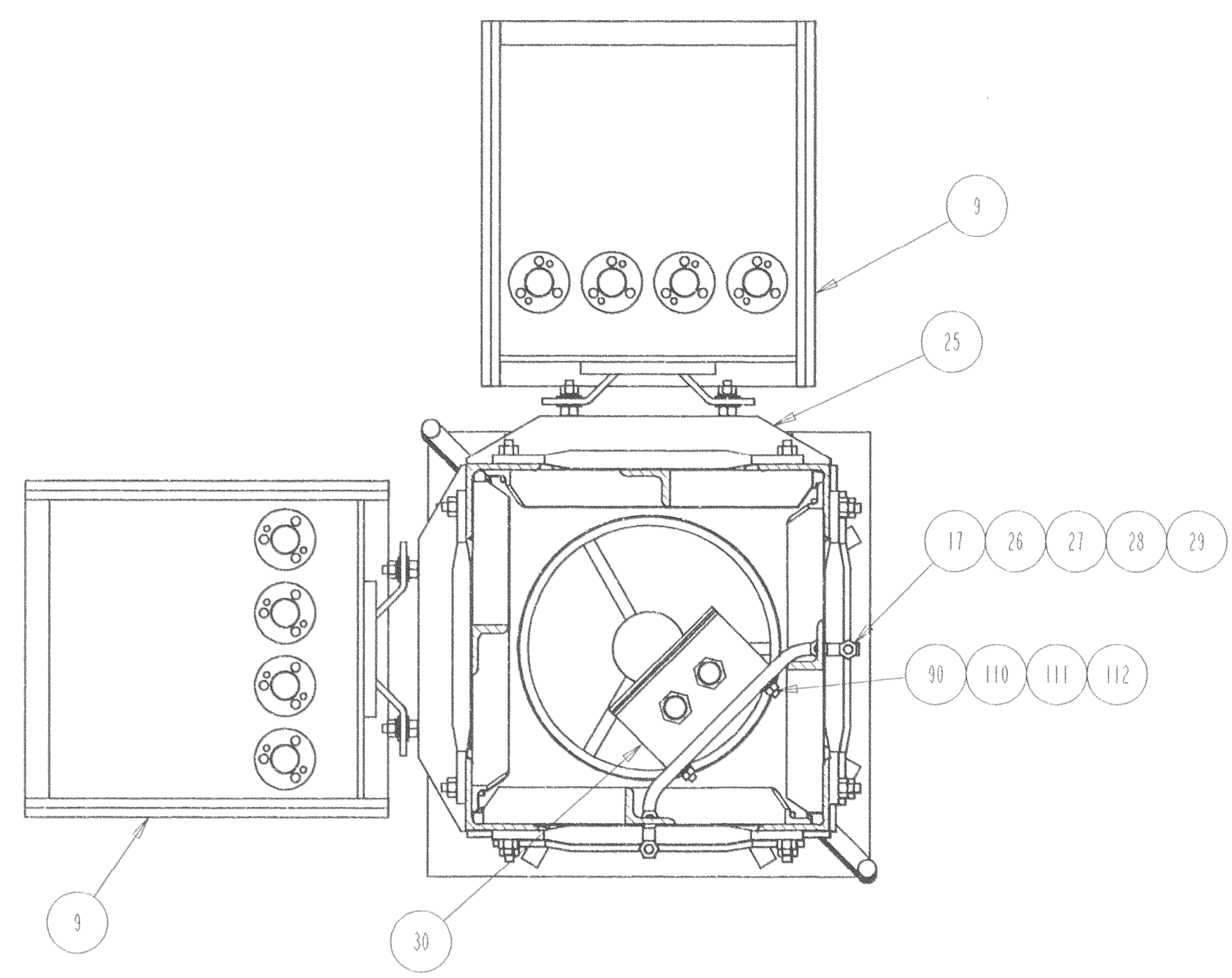


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± 1/32 .XX ± .02 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940926	SIZE	CAGE CODE
PART DASH NO.		ENGR.		D	06032
NEXT ASSY		DESIGN		DWG. NO.	0980-0334
USED ON		SCALE	NONE	RELEASE	
APPLICATION		SHEET		3 OF 20	REV. -

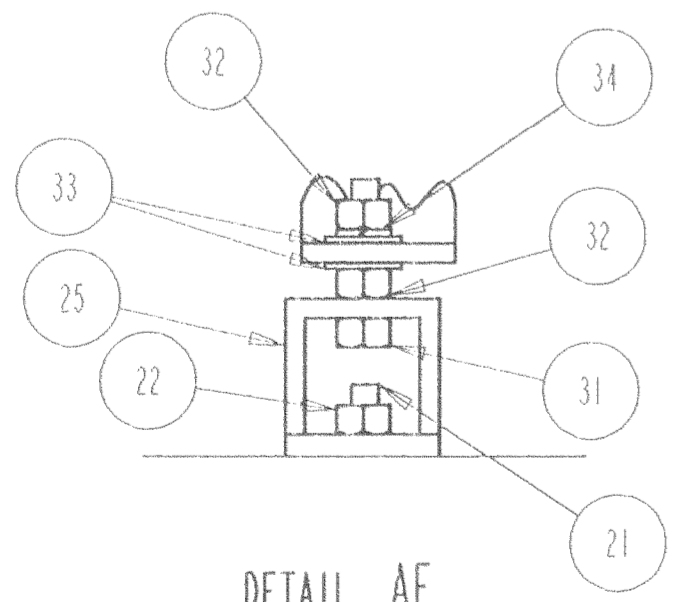
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DETAIL E
BALUN ATTACHMENT
FROM BASE OF LATTICE, REPLACE HORIZONTAL BRACES (Ø .75 ROD)
5 AND 6 WITH MOUNT, ITEM 25



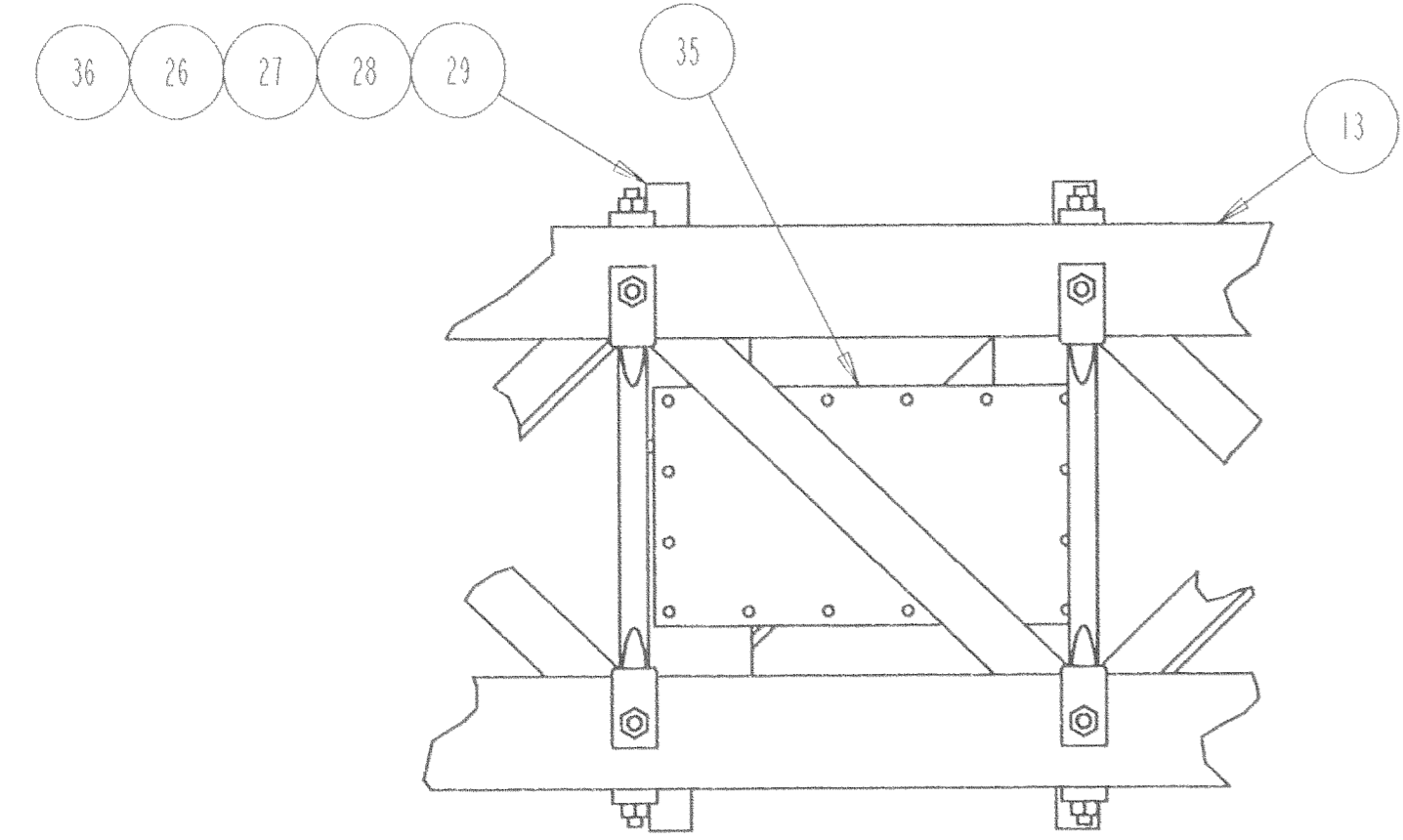
SECTION F-F
CONTROL BOX ATTACHMENT
CONTROL MOUNT, ITEM 17, TO BE U-BOLTED, 2 PLACES
TO HORIZONTAL BRACE 6.
TORQUE ALL .25 HARDWARE IN THIS VIEW TO 9 FT-LBS



DETAIL AF
TYPICAL BOX ATTACHMENT POINT
TORQUE ALL .38 HARDWARE TO 30 FT-LBS.

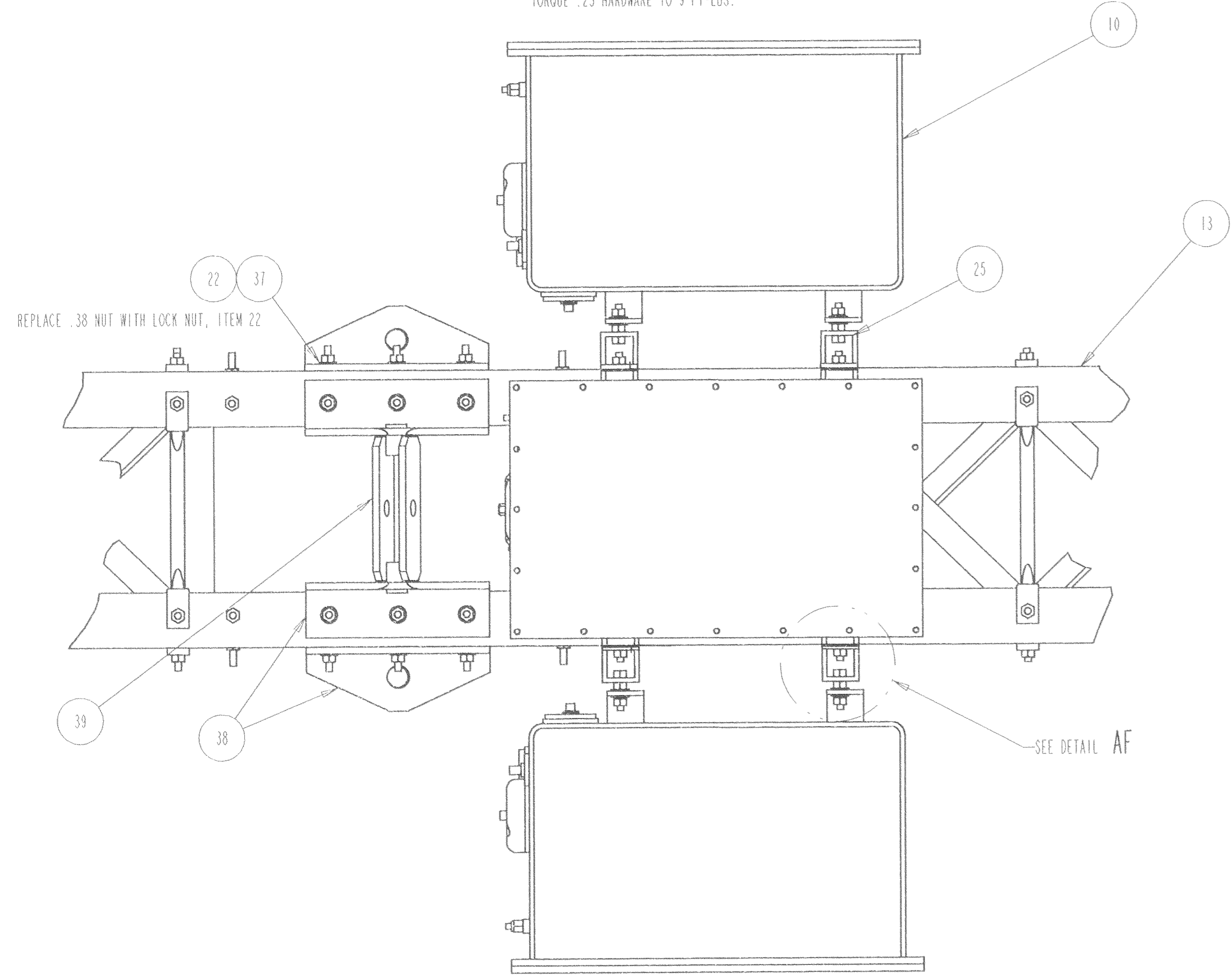
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS .1 DECIMALS .XX ± .02 XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		DRAWN	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940826	SIZE	
PART DASH NO.		ENGR.		D	CAGE CODE
NEXT ASSY		DESIGN ACTIVELY		06032	DWG. NO.
APPLICATION				0980-0334	REV.
				SCALE NONE	RELEASE
					SHEET 5 OF 20

ZONE		REV	REVISIONS	DATE	APPROVED
			DESCRIPTION		



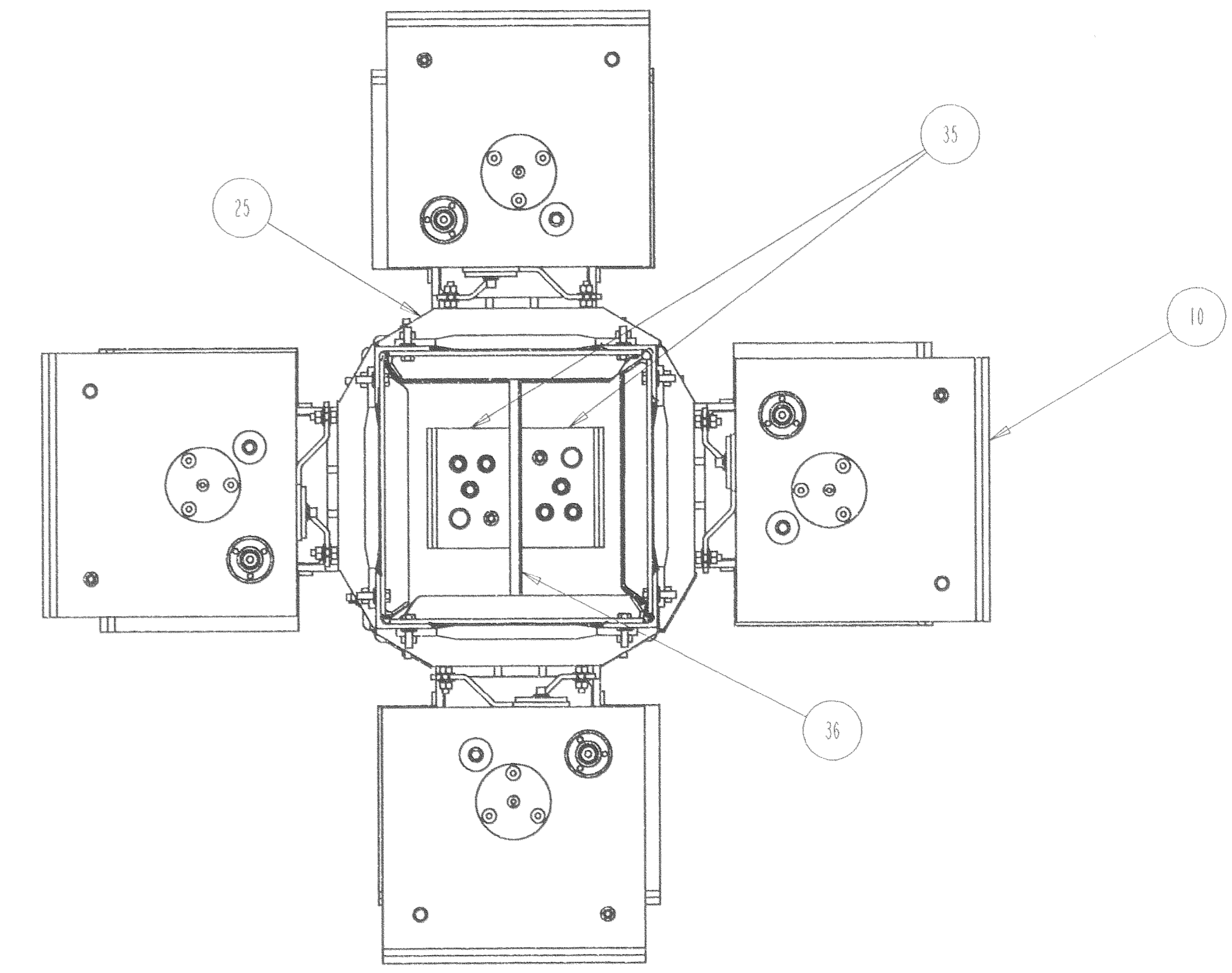
DETAIL J
MONITOR BALUN ATTACHMENT

TORQUE ALL .38 HARDWARE TO 30 FT-LBS
FASTEN MOUNTING BRACKET, ITEM 36, TO HORIZONTAL
BRACES 14 AND 15 WITH .25 U-BOLTS, ITEM 26,
TORQUE .25 HARDWARE TO 9 FT-LBS.



DETAIL G
HIGH BAND AMU ATTACHMENT

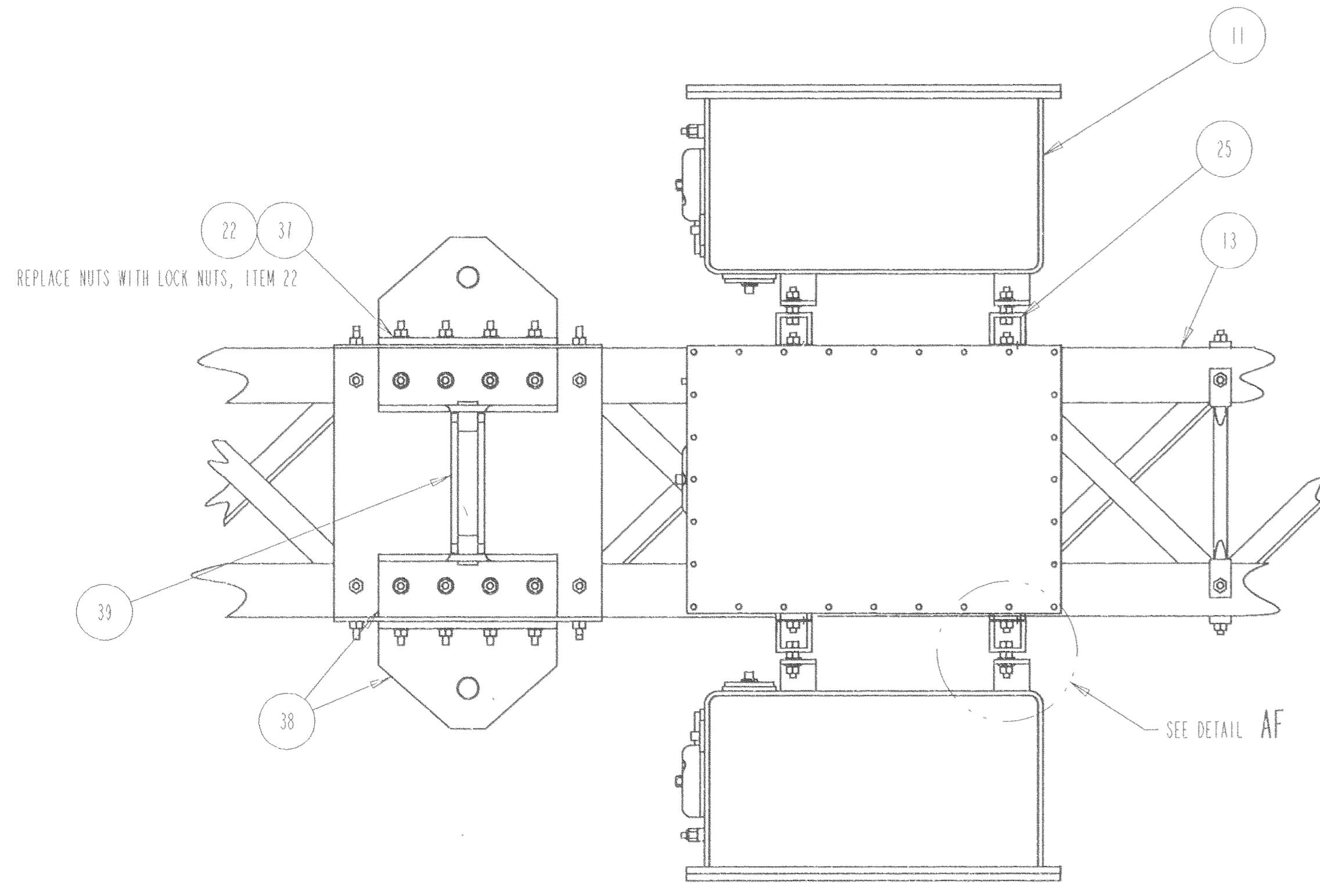
TORQUE ALL .38 HARDWARE TO 30 FT-LBS
PIVOT WELDMENT, ITEM 39, TO ROTATE FREELY
FROM BASE OF LATTICE. REPLACE HORIZONTAL BRACES (2) .75 ROD)
10 AND 11 WITH MOUNT, ITEM 25.



SECTION K-K
HIGH BAND AMUS AND MONITOR BALUNS
VIEW LOOKING UP

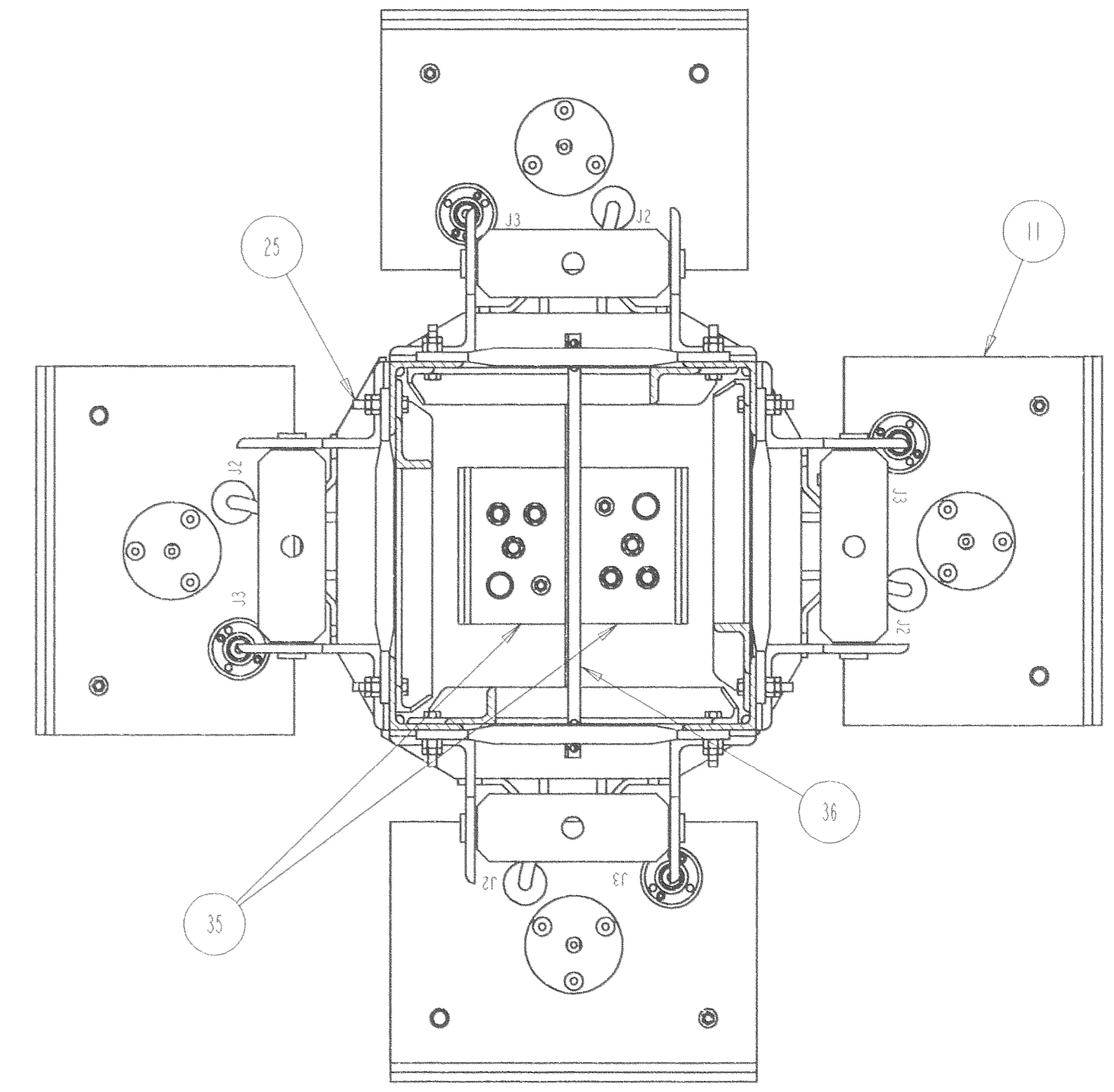
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± 1/32 .XX ± .02 .XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940806	SIZE	CAGE CODE
PART DASH NO.		ENGR.		D	06032
NEXT ASSY		DESIGN ACTIVITIES		DWG. NO.	0980-0334
USED ON				SCALE	NONE
APPLICATION				RELEASE	
				SHEET	6 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DETAIL L
LOW BAND AMU ATTACHMENT

TORQUE .38 HARDWARE TO 30 FT-LBS
FROM BASE OF LATTICE, REPLACE HORIZONTAL BRACES (Ø .75 ROD)
18 AND 19 WITH MOUNT, ITEM 25.
PIVOT WELDMENT, ITEM 39, TO ROTATE FREELY.

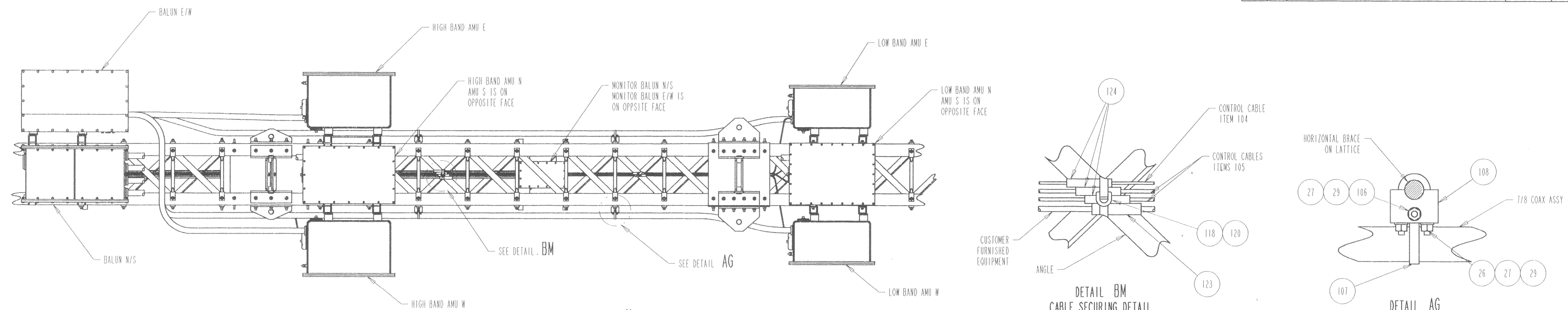


DETAIL H-H
LOW BAND AMUS AND MONITOR BALUNS

VIEW IS LOOKING UP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± .1 ± .02 ± .02 ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		DRAWN	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	9/10/26	SIZE	
PART DASH NO.		ENGR.		D	CAGE CODE
NEXT ASSY		DESIGN ACTIVITY		06032	DWG. NO.
APPLICATION				0980-0334	REV.
				SCALE	7 OF 20
				NONE	

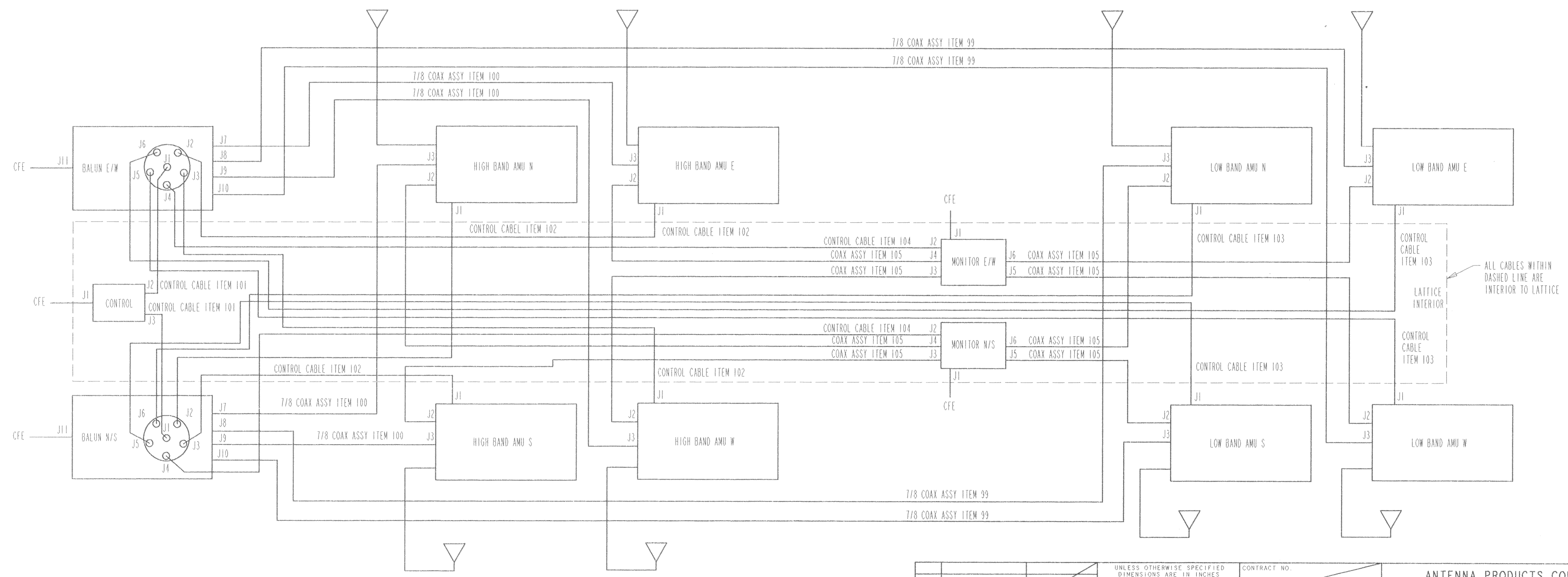
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DETAIL M
CABLING DETAIL AND BLOCK DIAGRAM
 ACTUAL CABLE ROUTINGS OPTIONAL
 SOME CABLING NOT SHOWN FOR CLARITY

DETAIL BM
CABLE SECURING DETAIL
 WEAVE CABLES OUTSIDE LATTICE ANGLE APPROX EVERY 3-5 FT. APPLY PROTECTIVE TUBES, ITEMS 123 & 124, OVER CABLES AND SECURE USING WRAPLOCK STRAPPING, ITEMS 118 & 120.

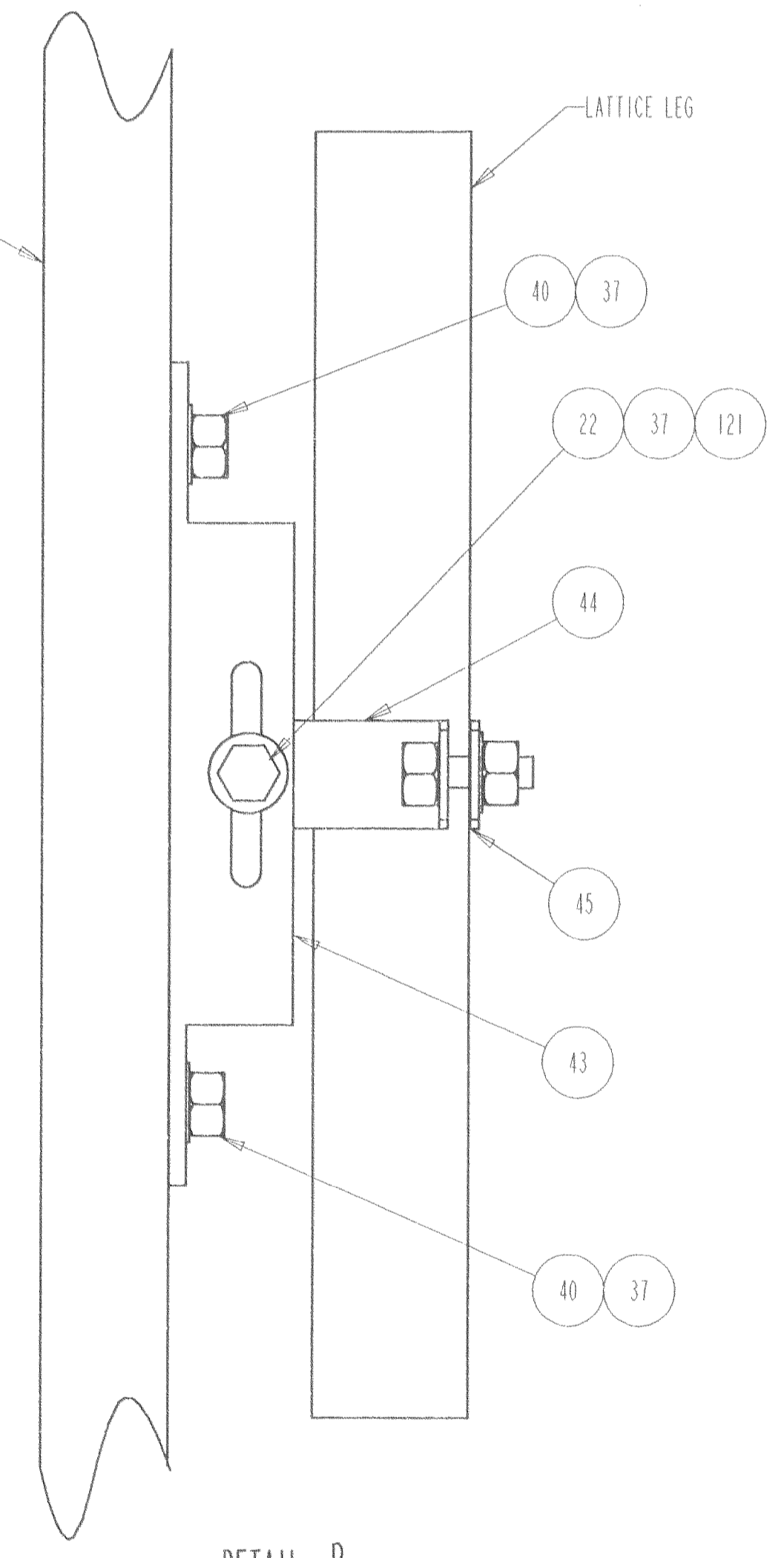
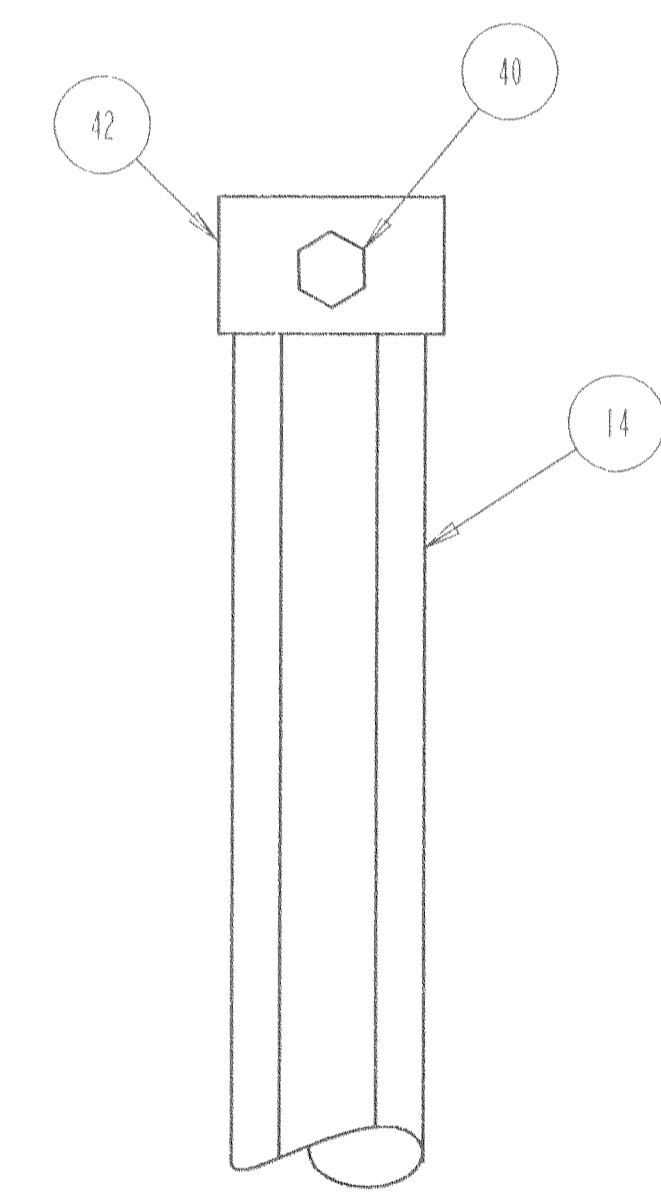
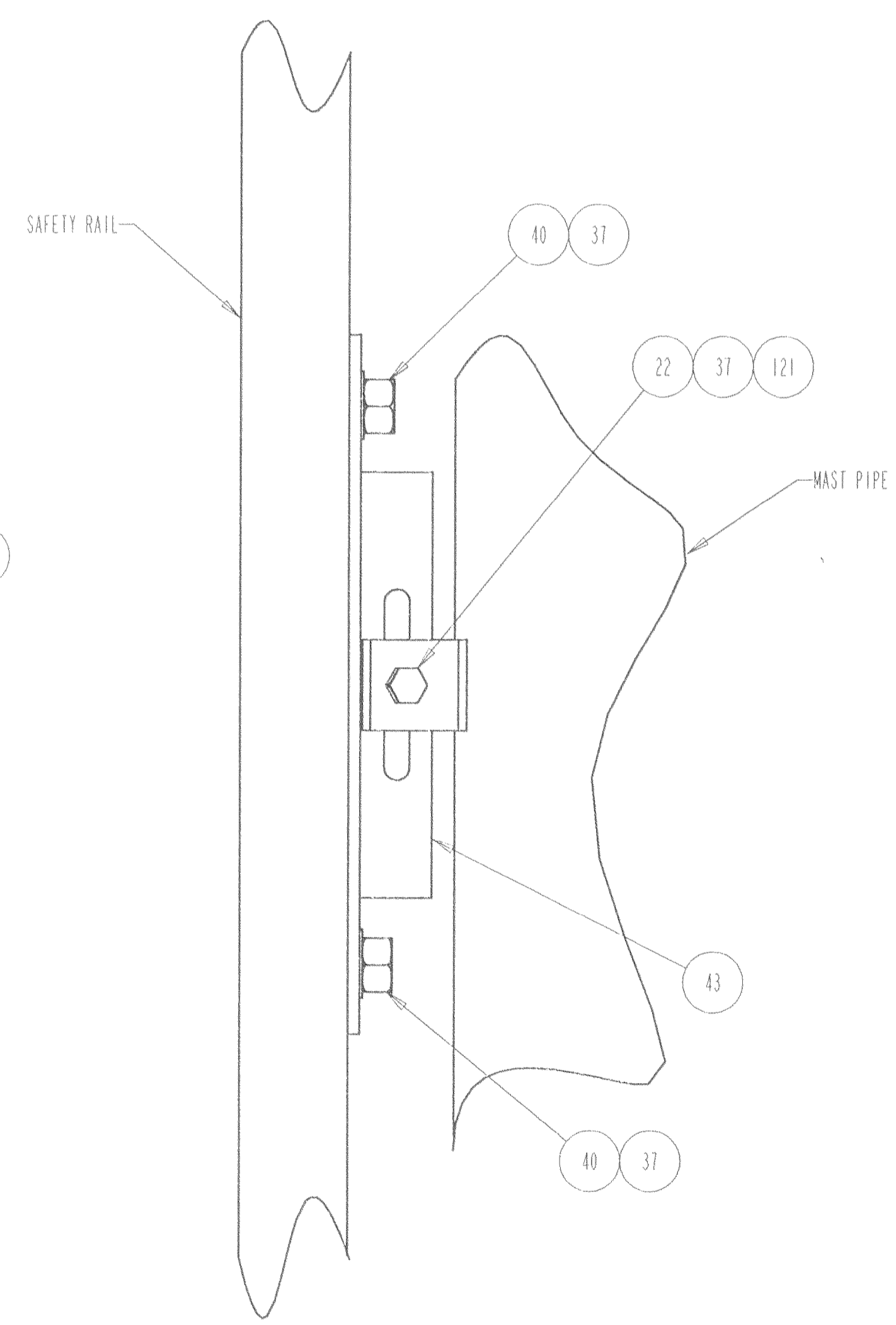
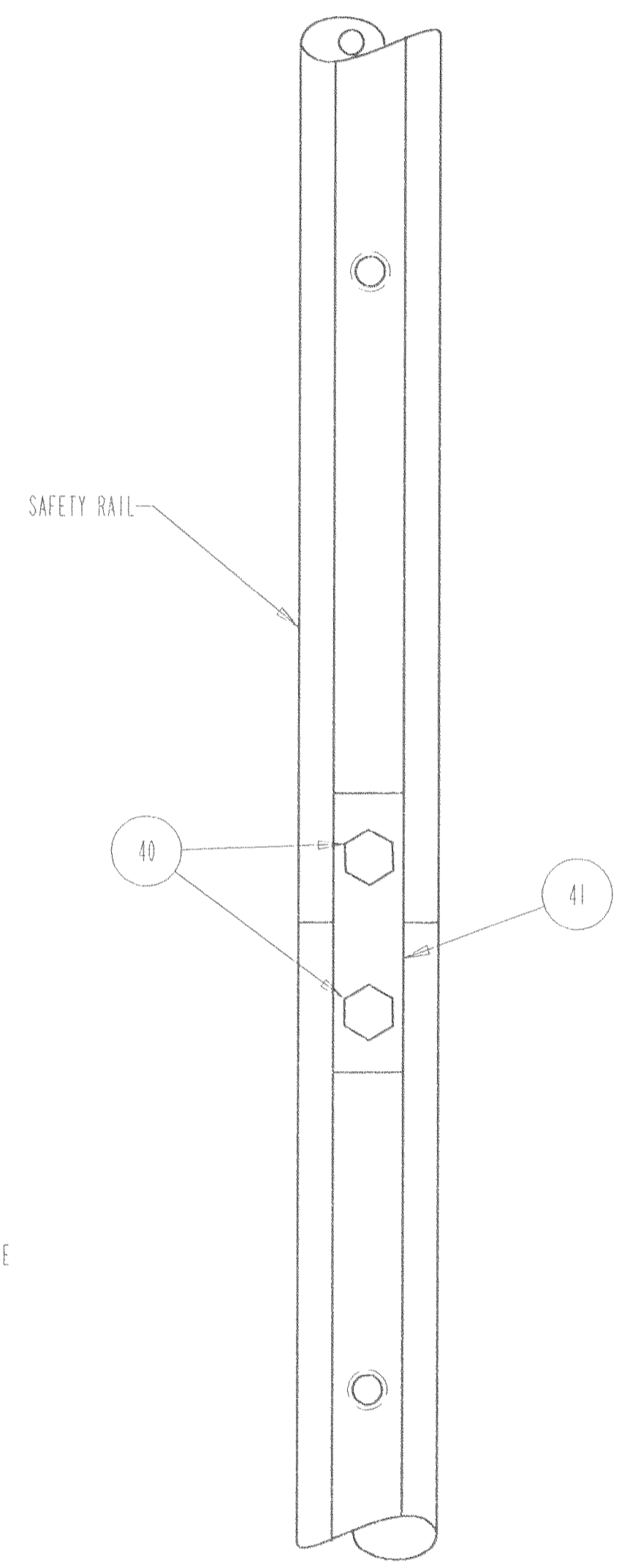
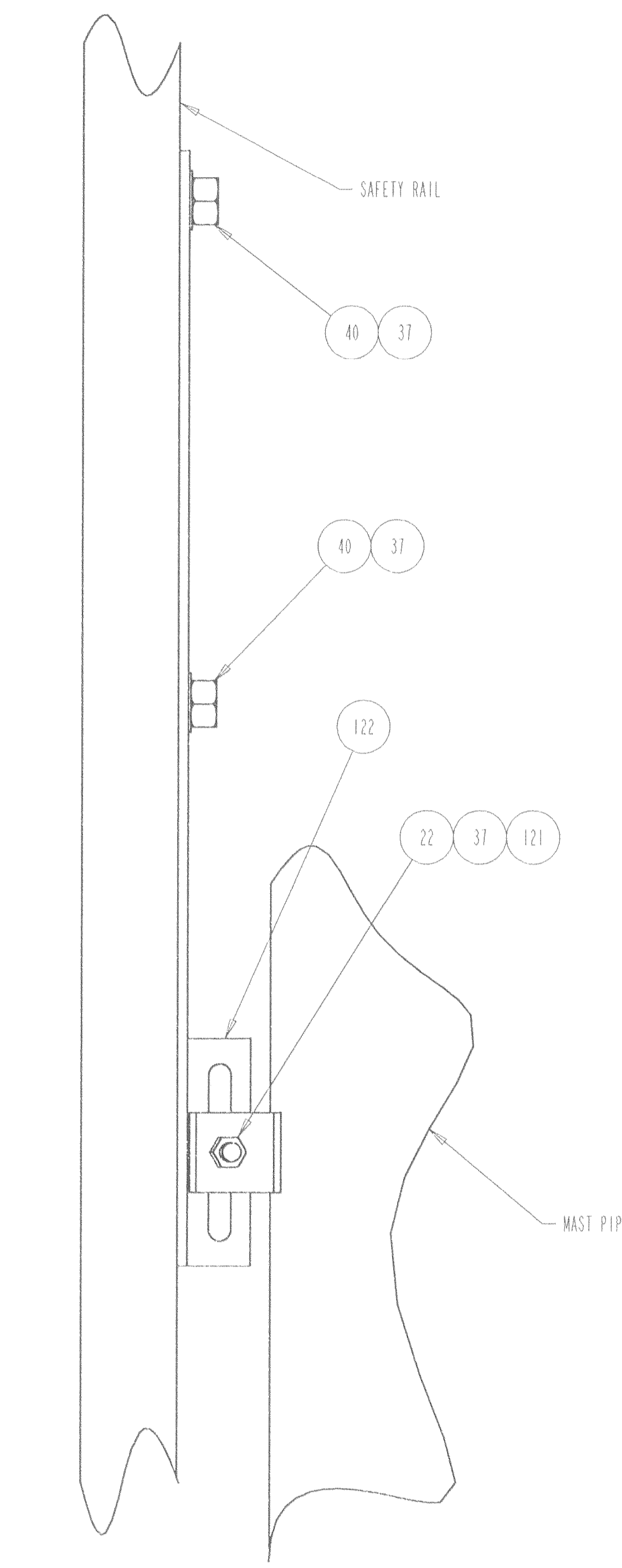
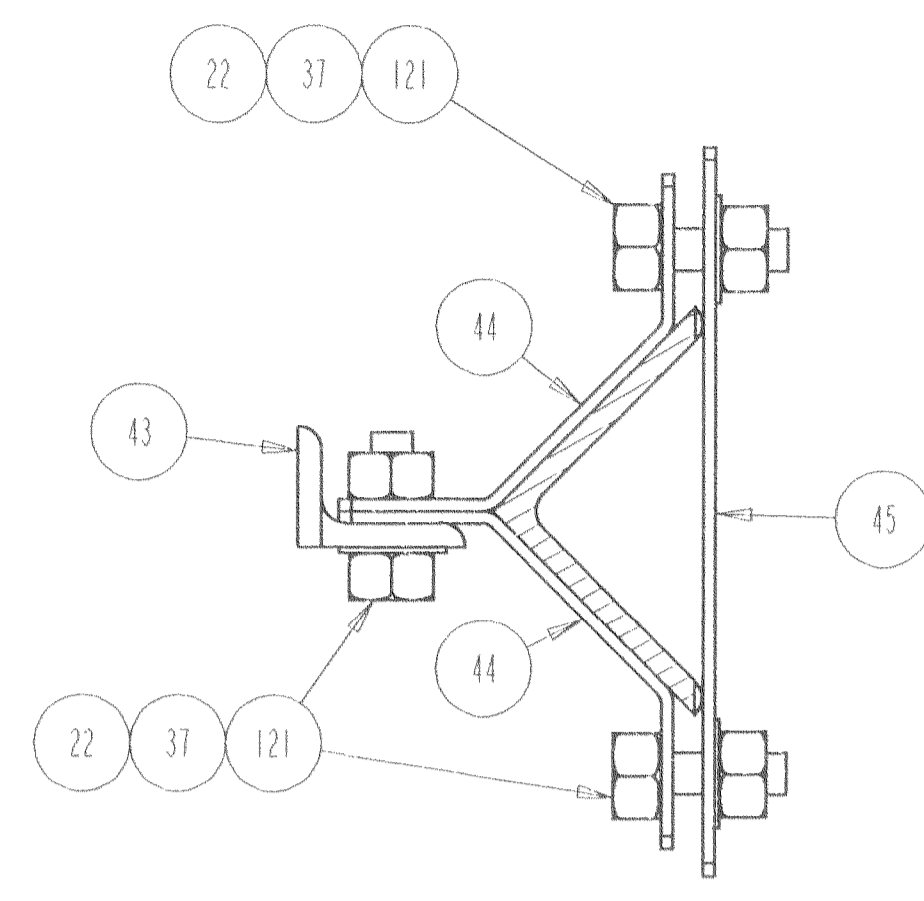
DETAIL AG
CABLE MOUNT DETAIL
 REPEAT THIS ASSY AS REQUIRED FOR EACH COAX, EVENLY SPACED APPROX 3-5 FT APART ALONG ITS LENGTH TORQUE .25 HARDWARE TO 9 FT-LBS.



CABLING DETAIL AND BLOCK DIAGRAM FOR DETAIL M

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/32 .005 .001 .005 .0005 .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940926	SIZE	CAGE CODE
PART DASH NO.		ENGR.		D	06032
NEXT ASSY		DESIGN ACTIVITY		DWG. NO.	0980-0334
APPLICATION				SCALE	RELEASE
				NONE	
				SHEET	8 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DETAIL AV
SAFETY RAIL ATTACHMENT TO MAST, 2 PLACES
TORQUE .38 HARDWARE TO 30 FT-LBS

DETAIL P
SAFETY RAIL SPLICE
TORQUE BOLTS, ITEM 40, TO 30 FT-LBS
3 PLACES.

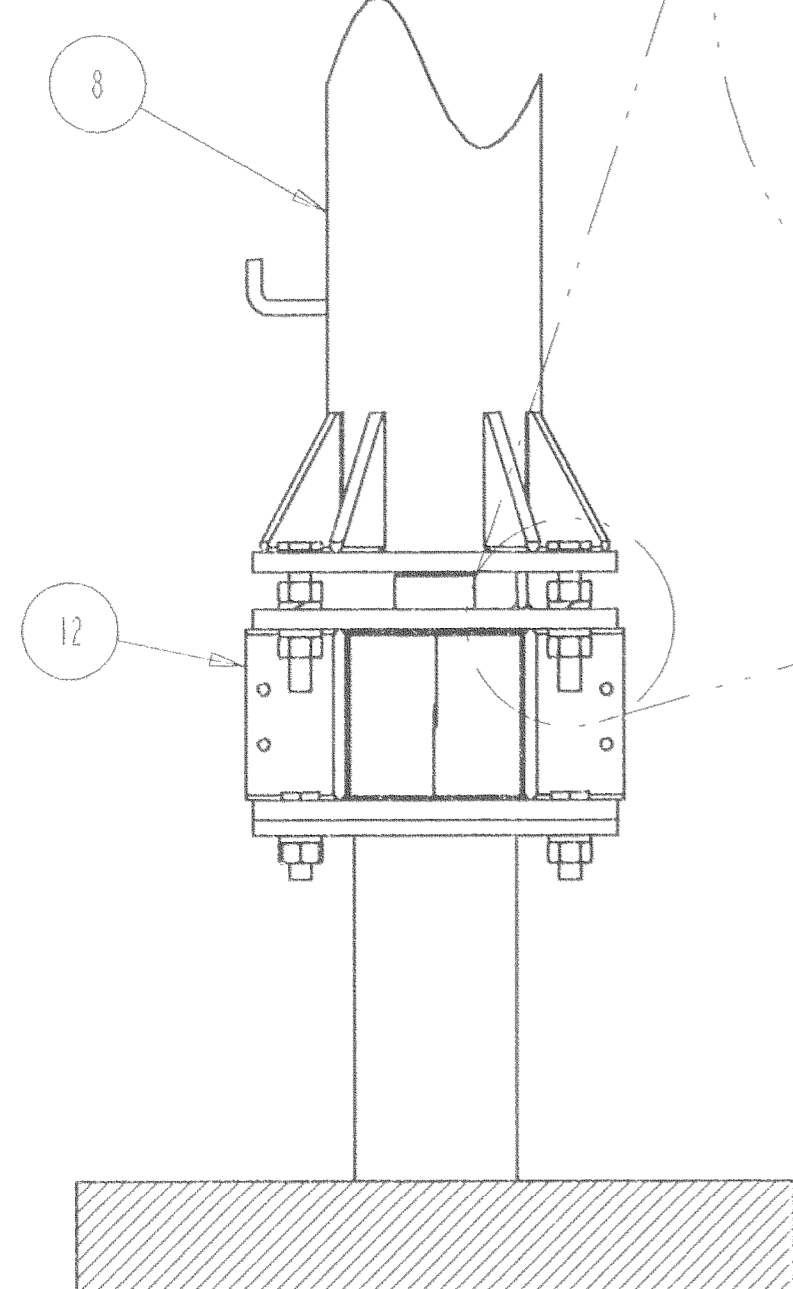
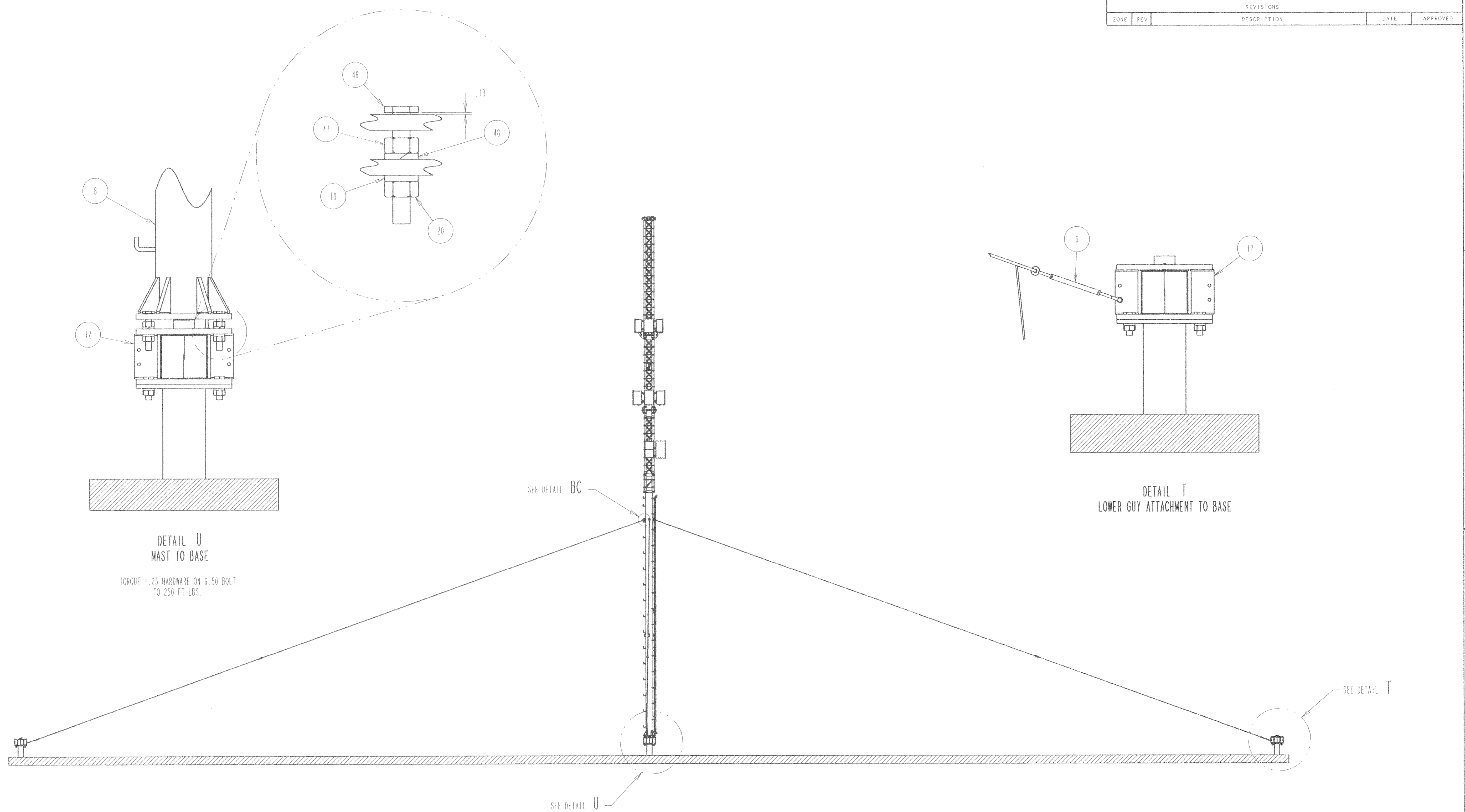
DETAIL N
SAFETY RAIL ATTACHMENT TO MAST, 4 PLACES
TORQUE .38 HARDWARE TO 30 FT-LBS

DETAIL S
SAFETY RAIL STOP SLEEVE
TORQUE BOLT, ITEM 40, TO 30 FT-LBS

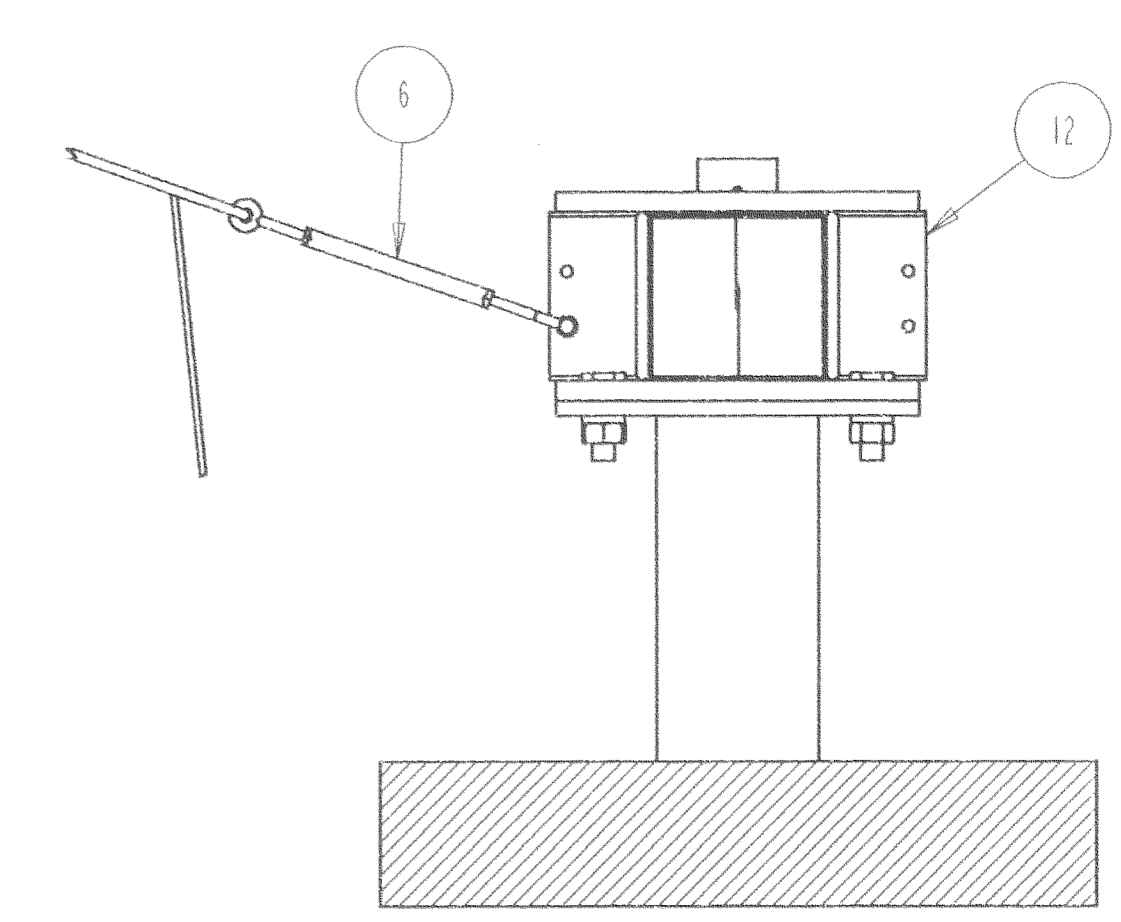
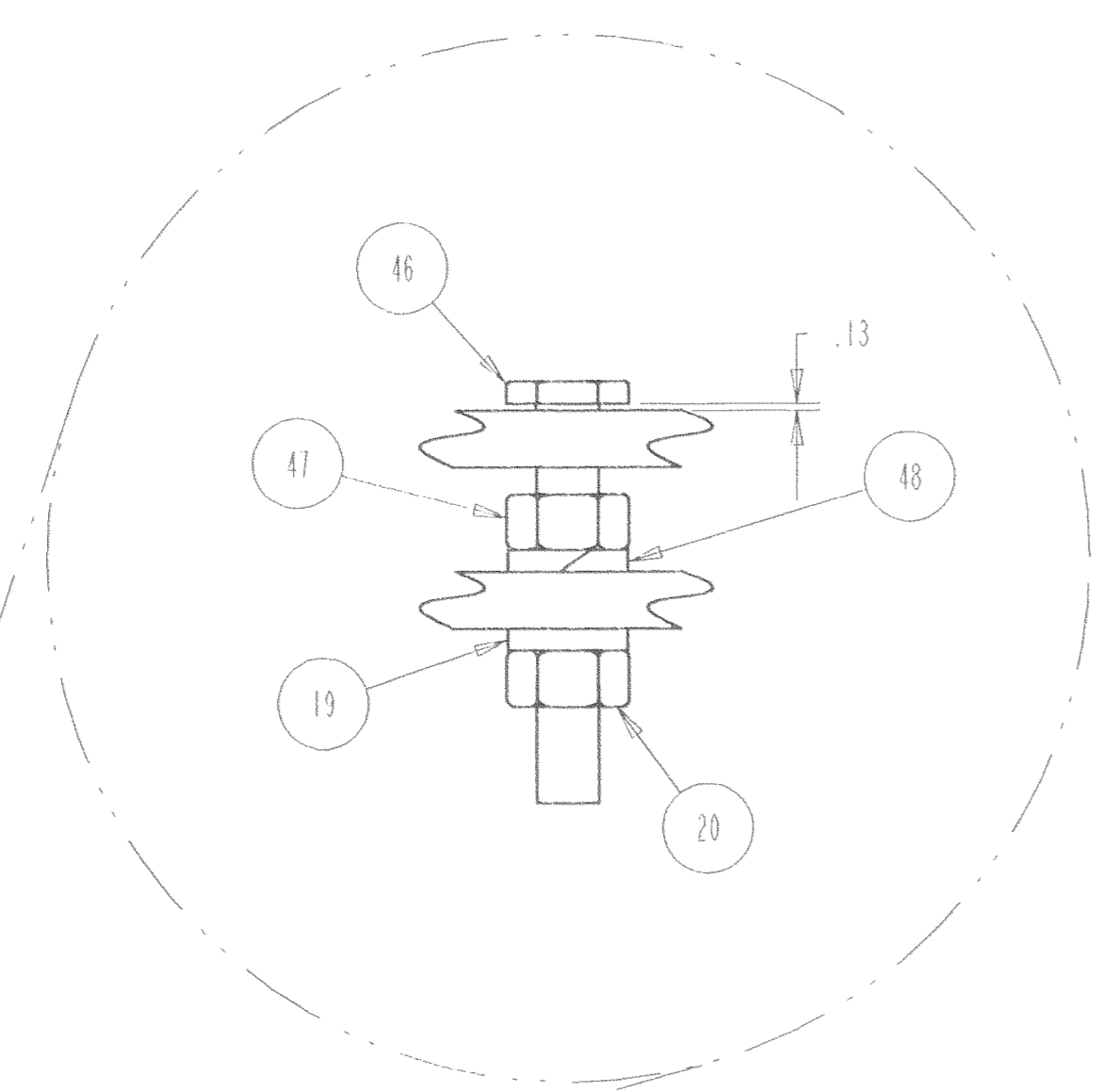
DETAIL R
SAFETY RAIL ATTACHMENT TO LATTICE, 7 PLACES
TORQUE .38 HARDWARE TO 30 FT-LBS
PLACE ATTACHMENT, DETAIL R, 1 APPROXIMATELY EVERY 5 FT.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± 1/32 .XX ± .02 XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		DRAWN	WHITTENBURG	940803	HAARP INSTALLATION DRAWING
FINISH		CHECKED	<i>VS Smith</i>	940926	
PART DASH NO.	NEXT ASSY	USED ON	ENGR.	DESIGN ACTIVITIES	SIZE CAGE CODE DWG. NO. REV.
APPLICATION			<i>VS Smith</i>	<i>VS Smith</i>	D 06032 0980-0334 -
SCALE NONE				RELEASE	SHEET 9 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DETAIL U
MAST TO BASE
TORQUE 1.25 HARDWARE ON 6.50 BOLT
TO 250 FT-LBS.



DETAIL T
LOWER GUY ATTACHMENT TO BASE

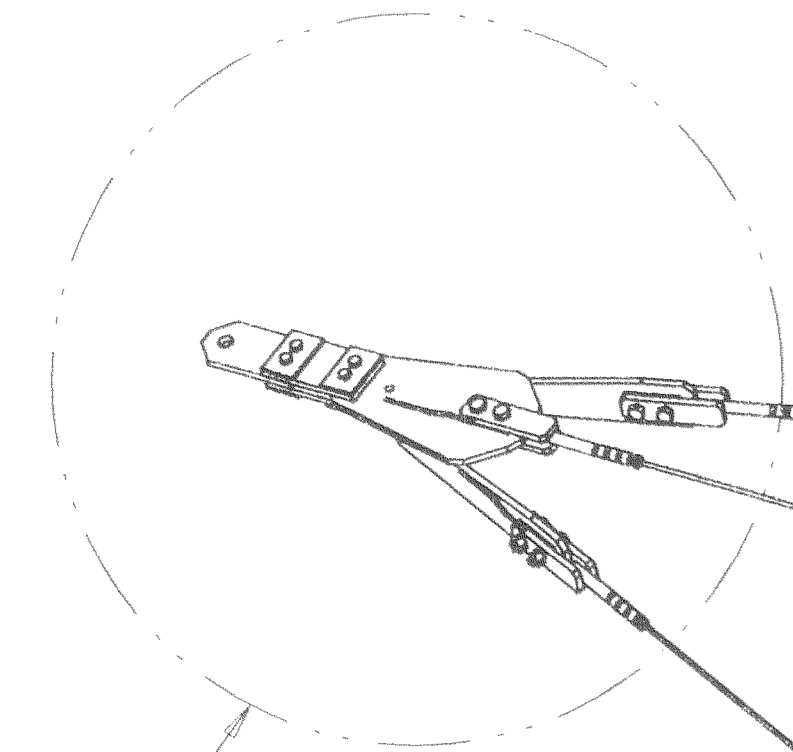
VIEW V-V
TOWER ERECTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± 1/32 .XX ± .02 .XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		DRAWN	WHITTENBURG	940803	HAARP INSTALLATION DRAWING
FINISH		CHECKED	<i>D. Smith</i>	940926	
PART NO.	NEXT ASSY	USED ON	ENGR.	DESIGN ACTIVITY	SIZE
APPLICATION			SCALE		CAGE CODE
			RELEASE		DWG. NO.
			SHEET		REV.
			10 OF 20		-
			SCALE NONE		0980-0334

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

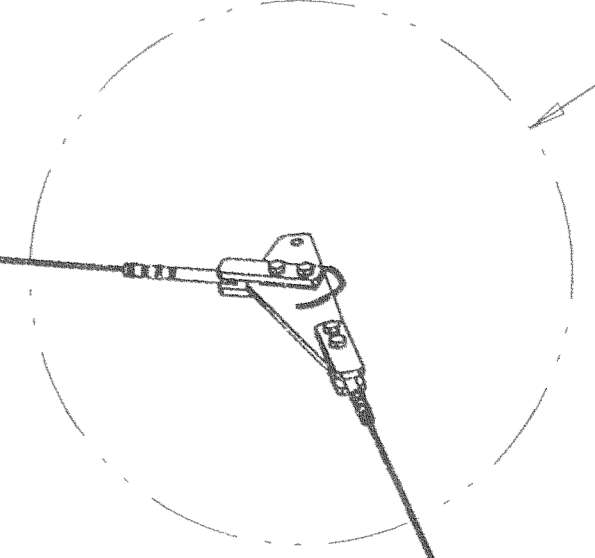
INBOARD

SEE DETAIL Y



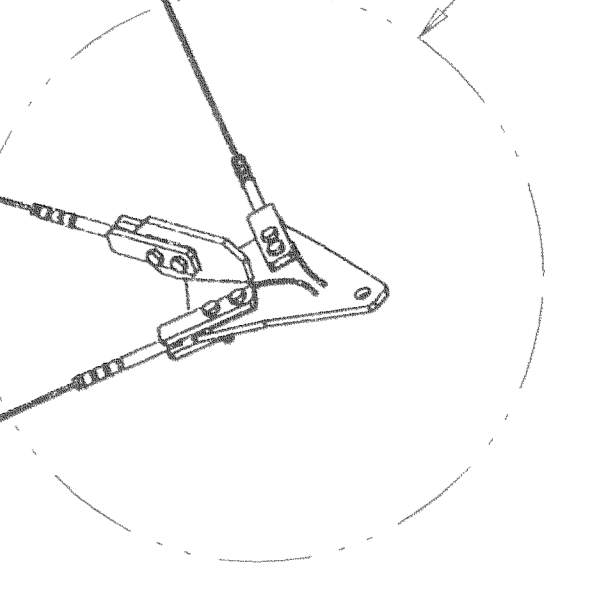
RIGHT

SEE DETAIL Z



50
-402

SEE DETAIL AA



OUTBOARD

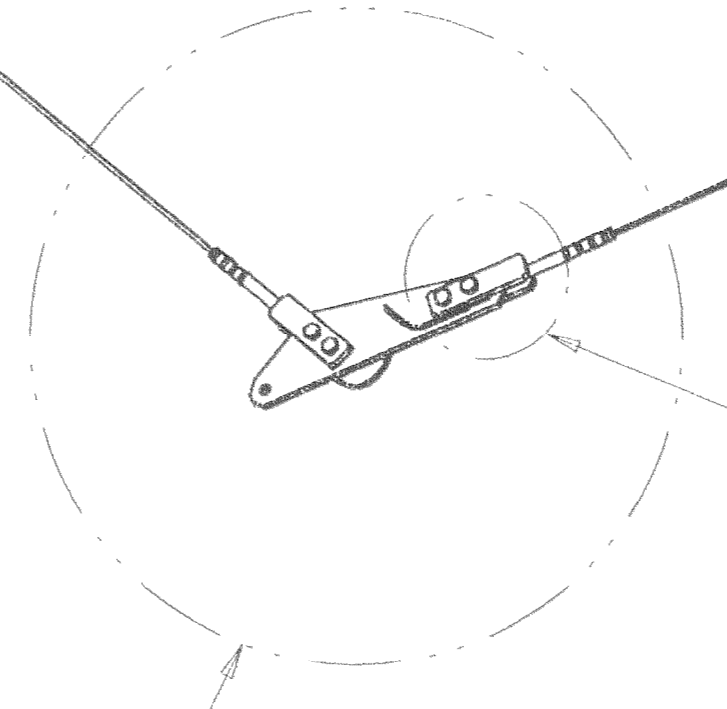
49
-401

51
-403

49
-401

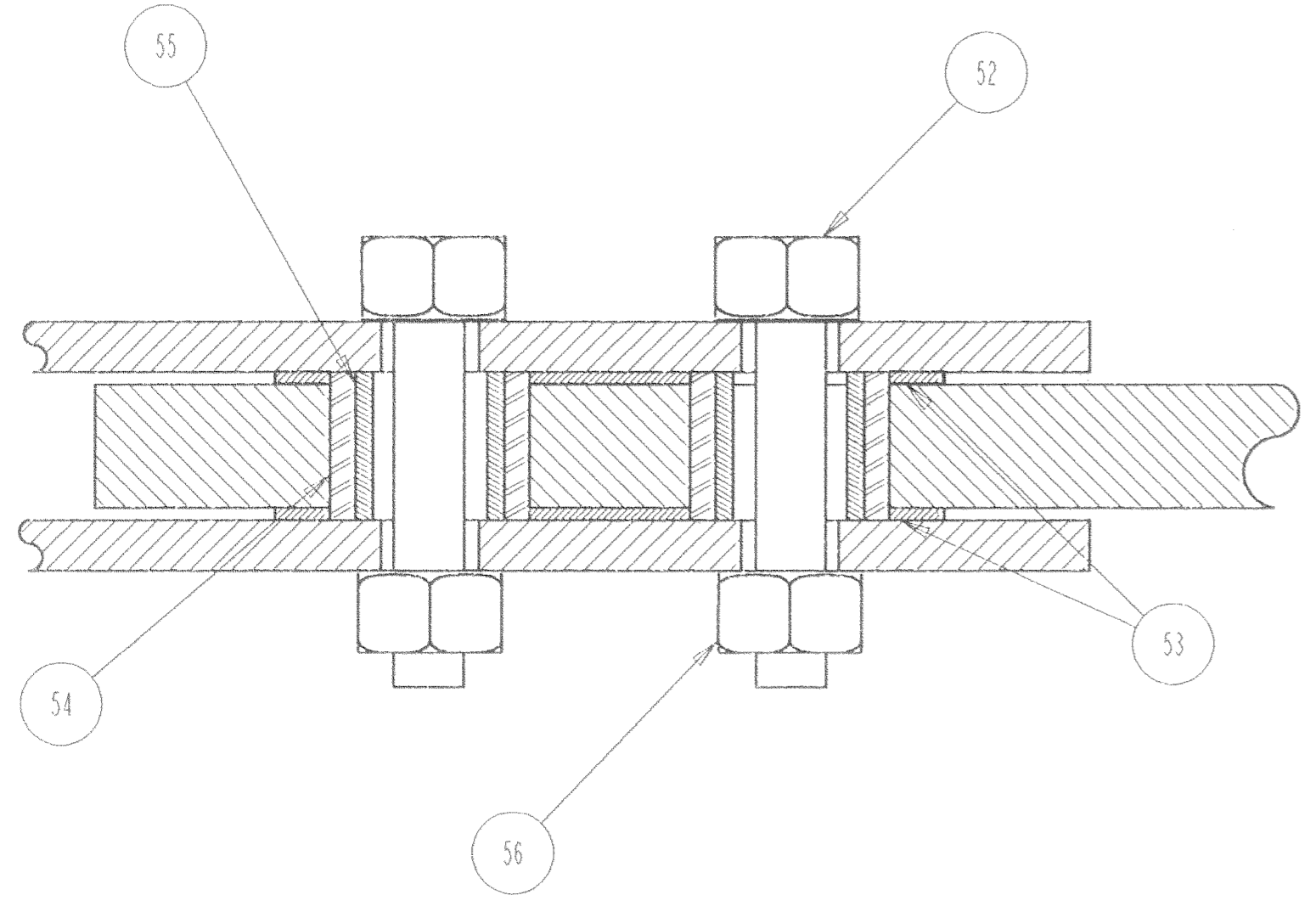
50
-402

SEE DETAIL X



LEFT

SEE DETAIL AH

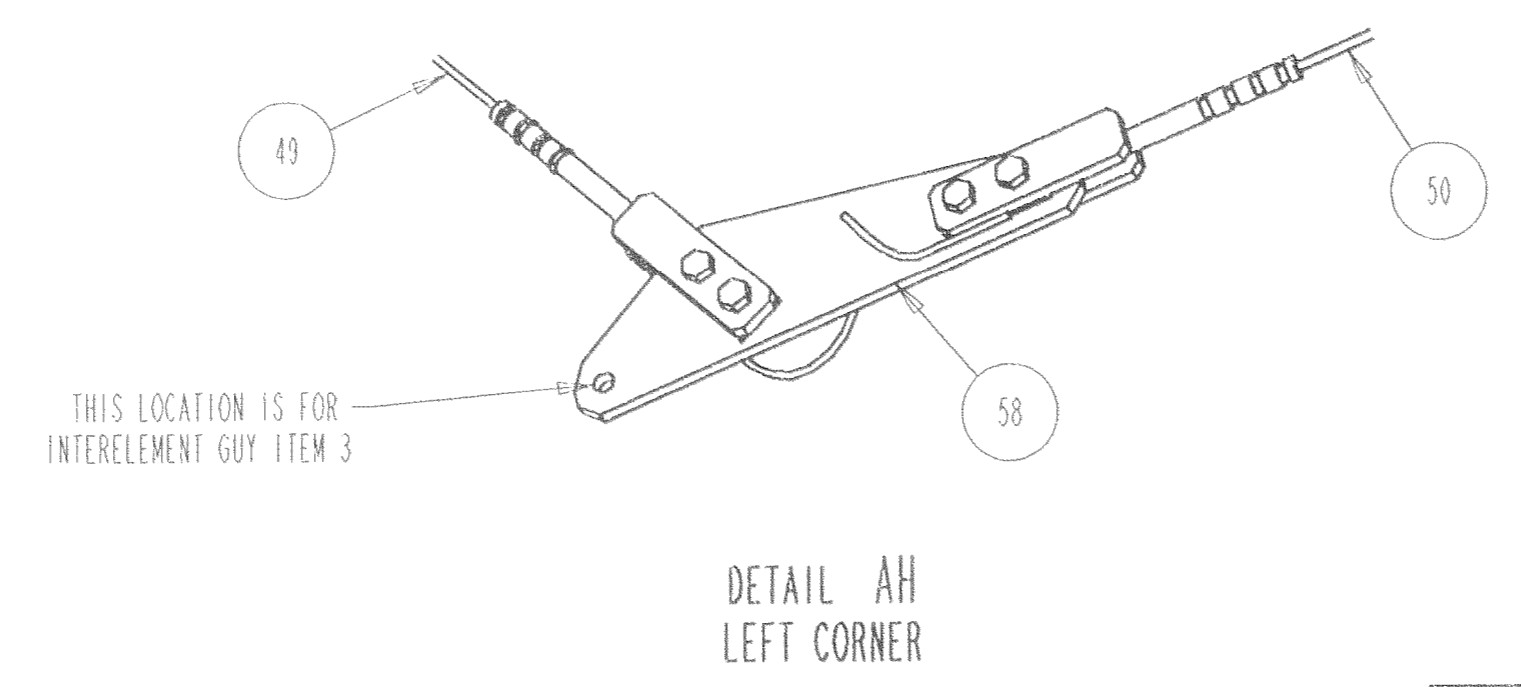
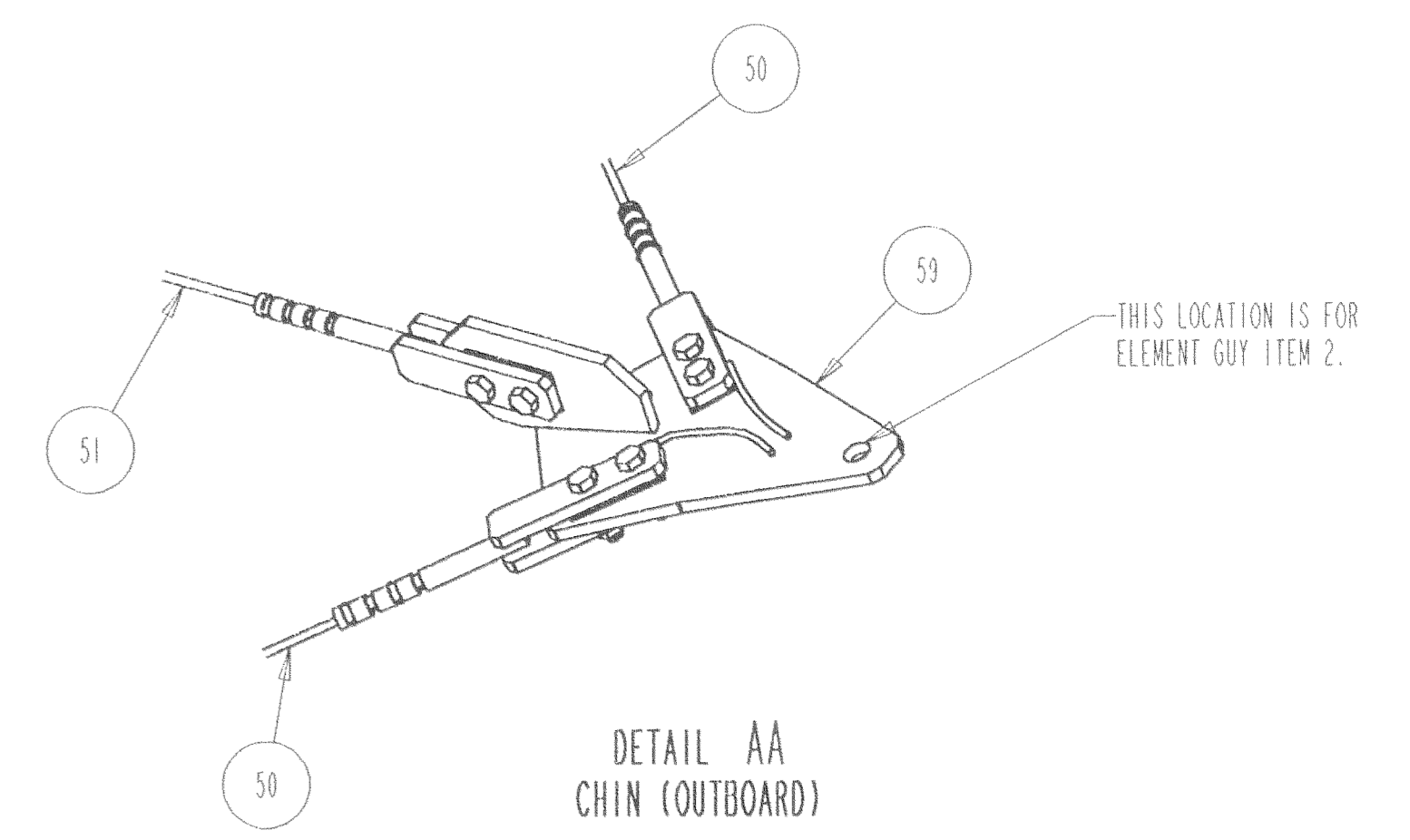
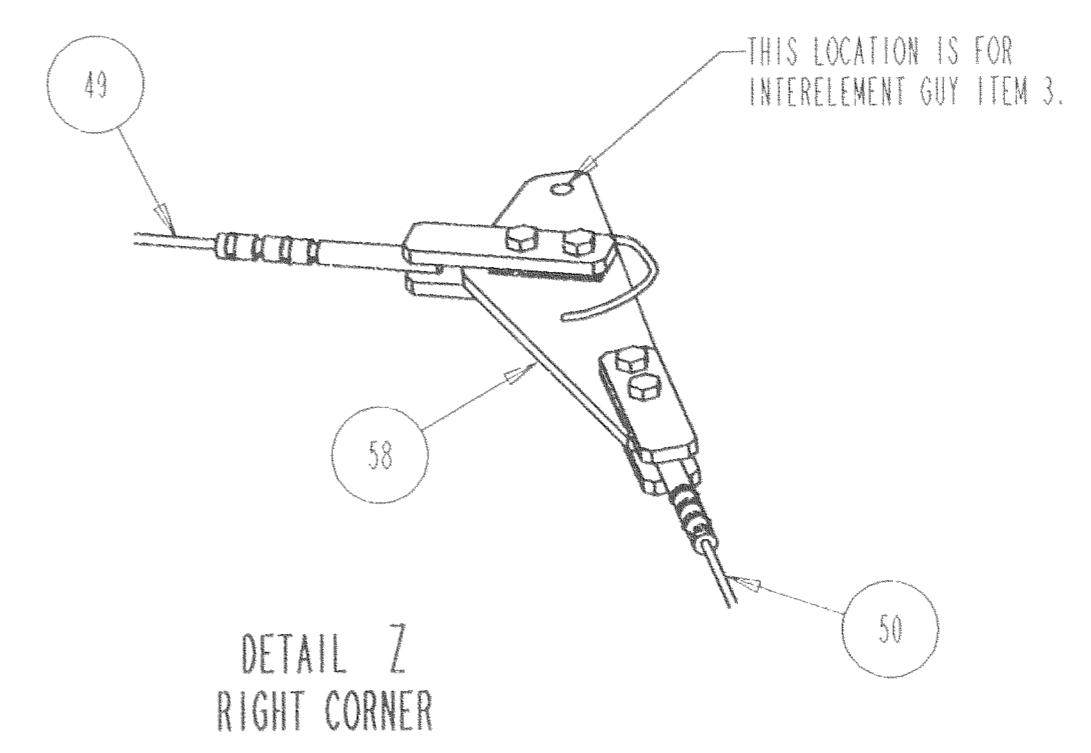
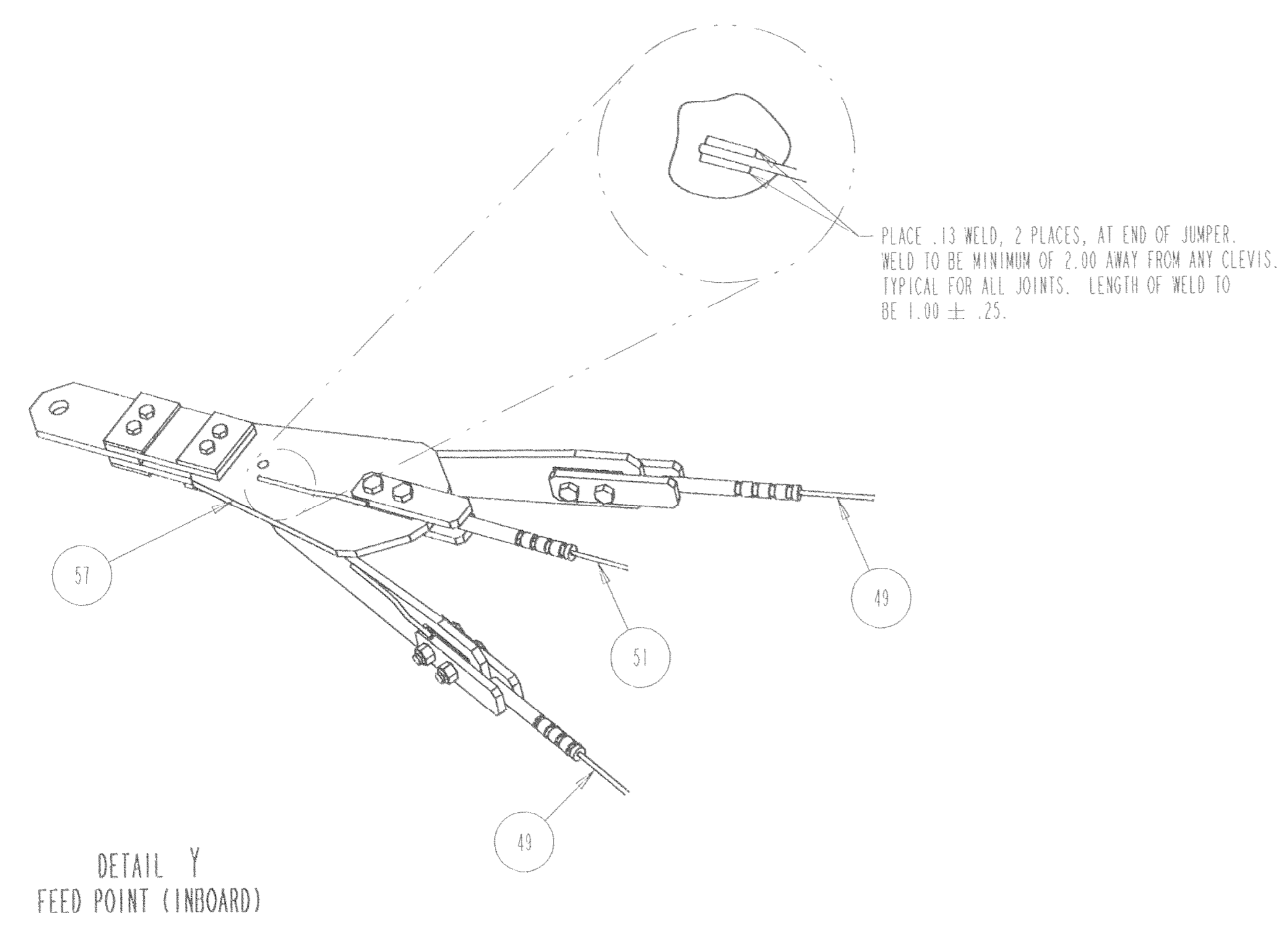


DETAIL X
TYPICAL CLEVIS ATTACHMENT
TORQUE .50 HARDWARE TO 45 FT-LBS

DETAIL W
HIGH BAND ASSY

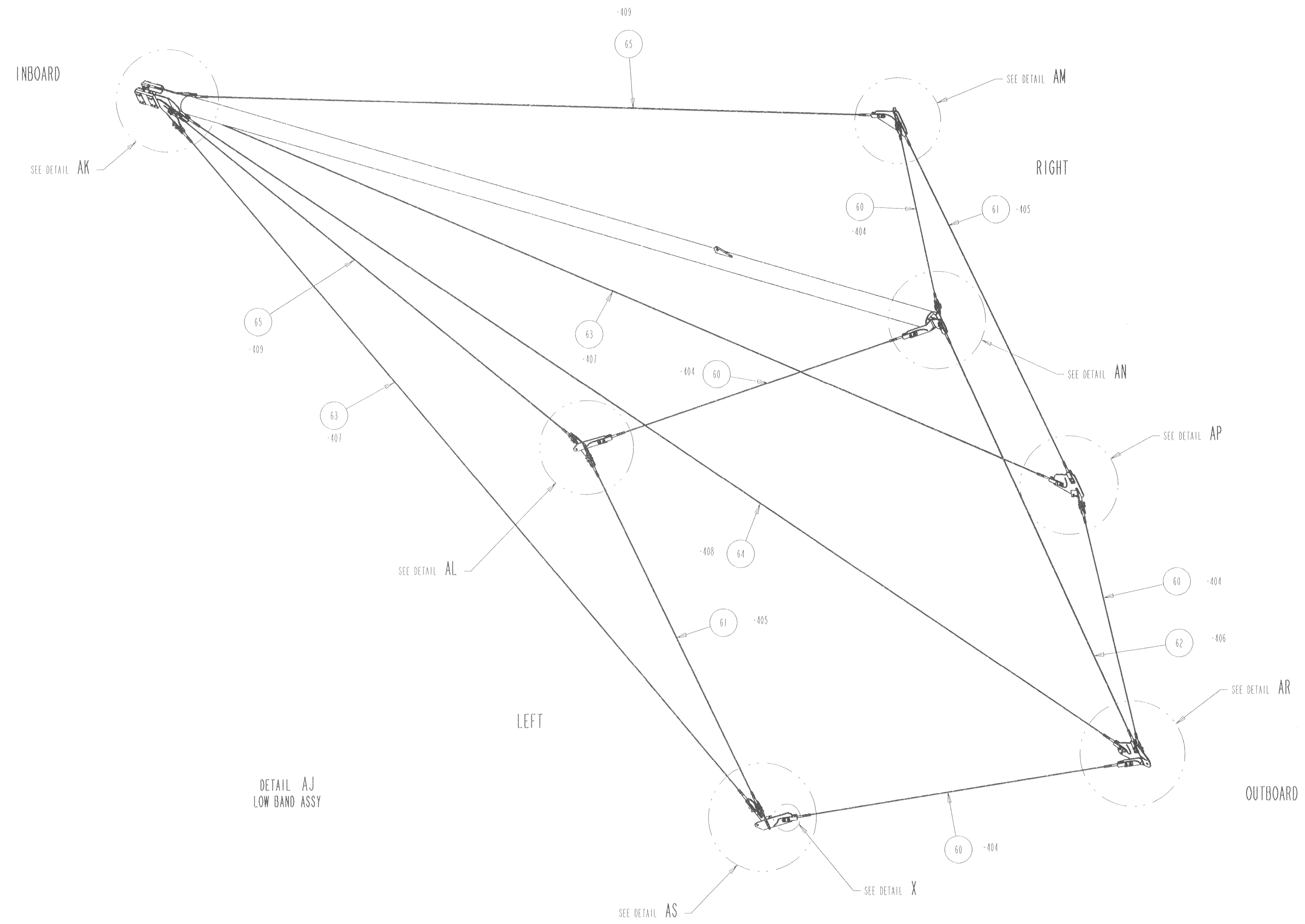
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/32 .02 XXX .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940926	SIZE	CAGE CODE
PART DASH NO.		ENGR.		D	06032
NEXT ASSY		DESIGN ACTIVITY		DWG. NO.	0980-0334
APPLICATION				SCALE	RELEASE
				NONE	
				SHEET	11 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
FRACTIONS DECIMALS		APPROVALS DATE		TITLE	
± 1/32 .XX ± .02		WHITTENBURG 940803		HAARP INSTALLATION DRAWING	
XXX ± .005		CHECKED <i>S. Smith</i> 940926		SIZE CAGE CODE DWG. NO. REV.	
DO NOT SCALE DRAWING		ENGR. <i>D. Miller</i>		D 06032 0980-0334 -	
MATERIAL		DESIGN ACTIVITIES		SCALE NONE RELEASE SHEET 12 OF 20	
BLANK SIZE REF ONLY		FINISH			
PART DASH NO.	NEXT ASSY USED ON APPLICATION				

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS 1/32 XX ± .02 DECIMALS .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		DRAWN	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940806	SIZE CAGE CODE DWG. NO. REV.	
PART NO.	NEXT ASSY	ENGR.		D	06032 0980-0334 -
APPLICATION		DESIGN ACTIVITY		SCALE NONE	RELEASE SHEET 13 OF 20

8

7

6

5

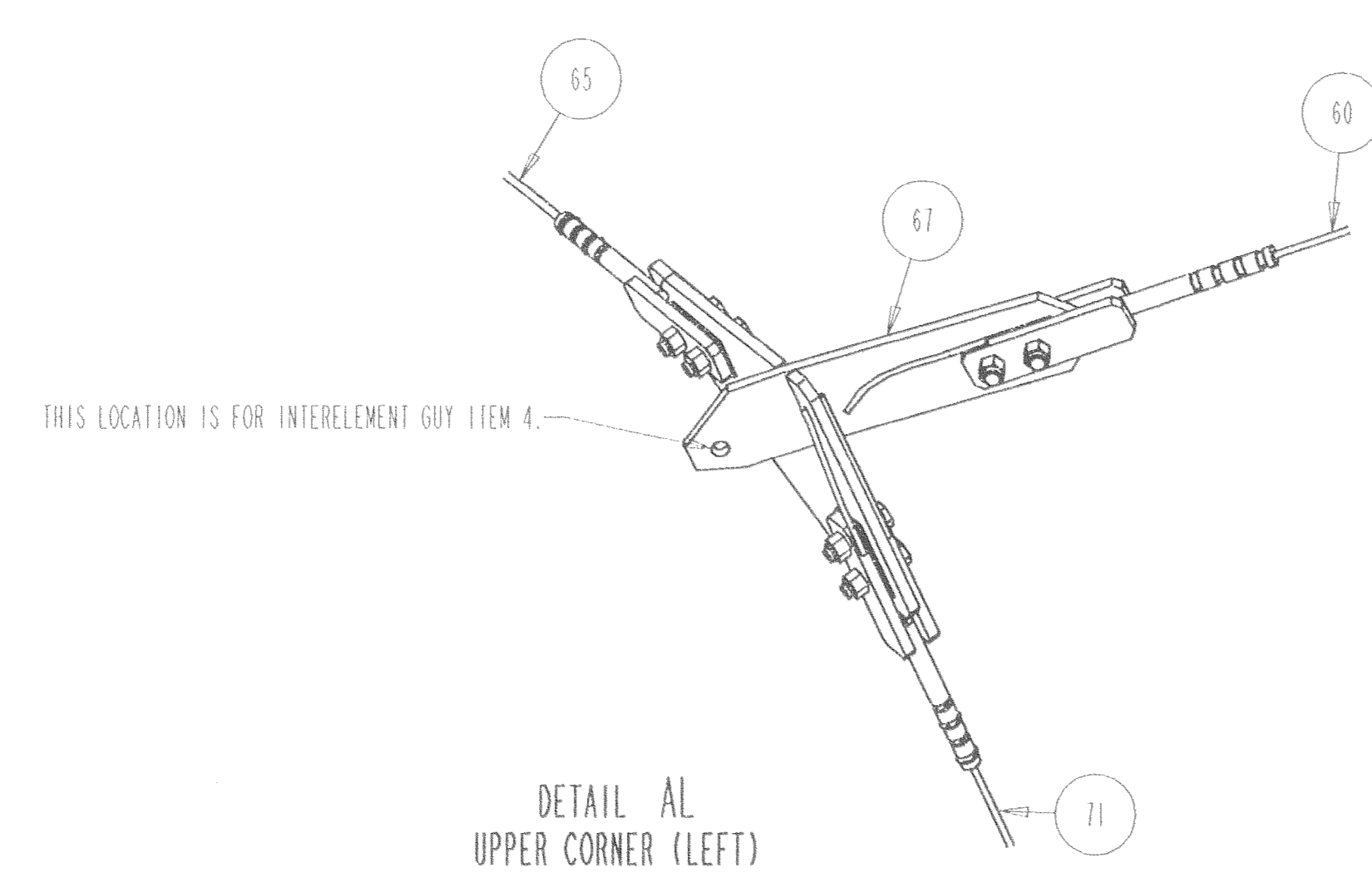
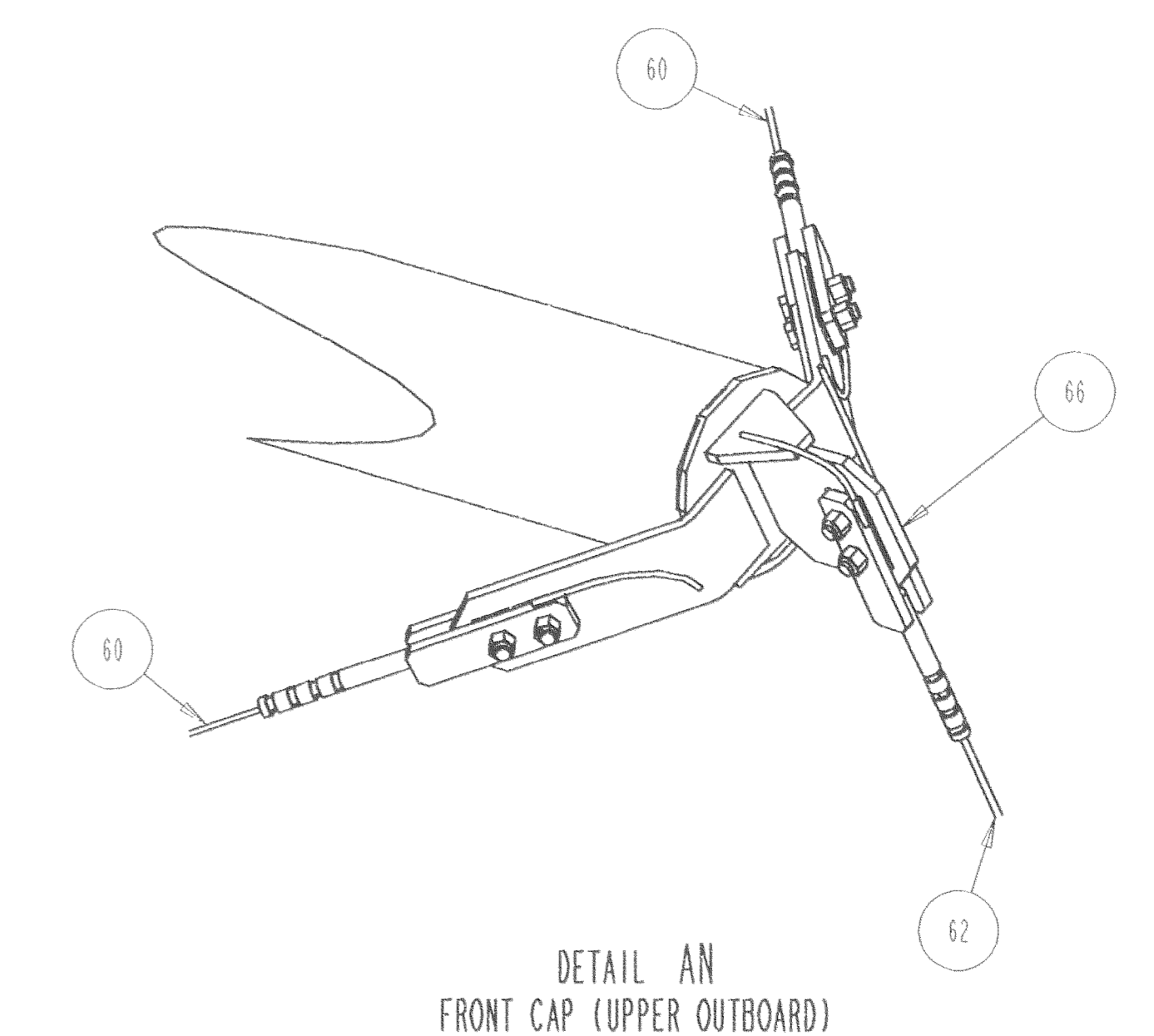
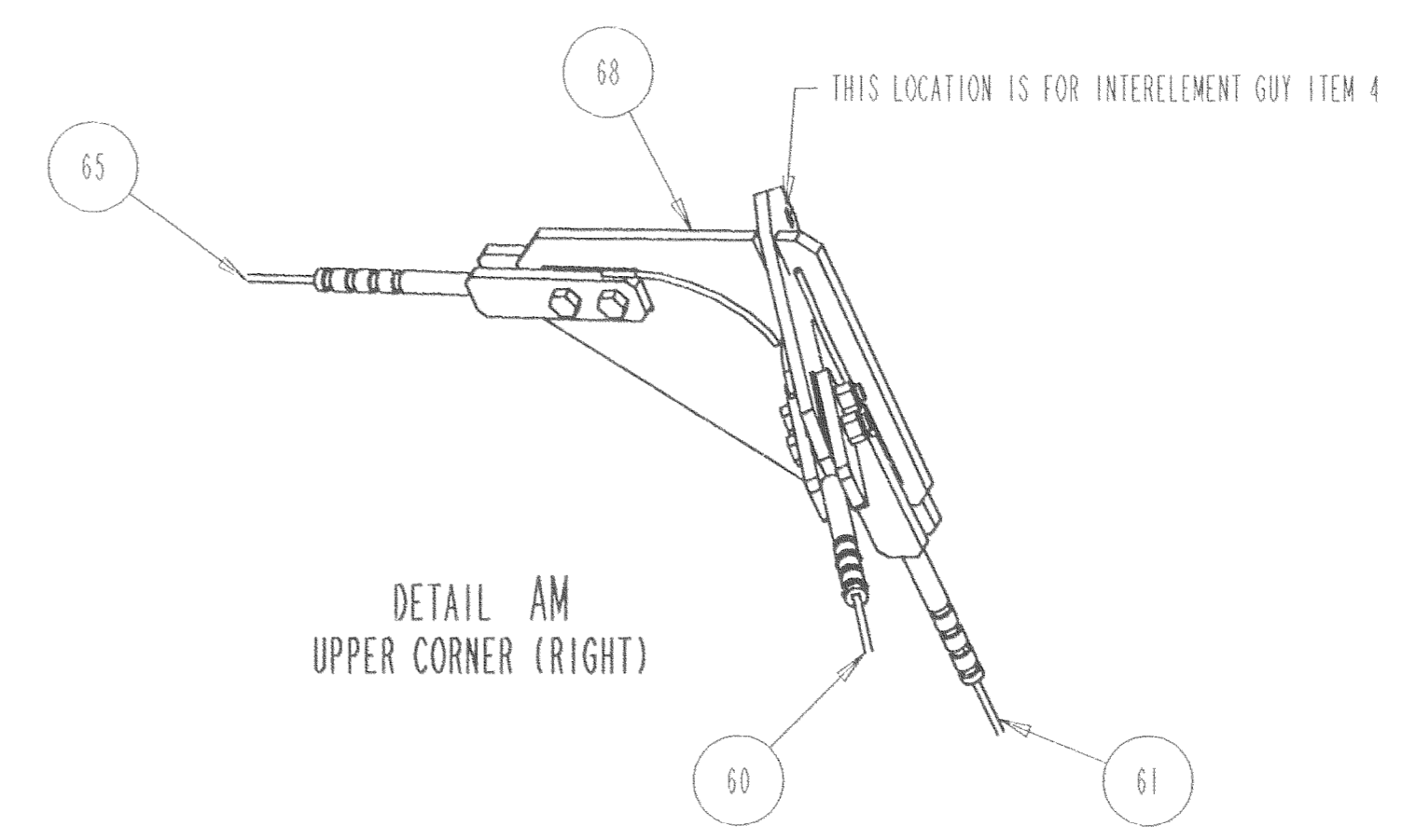
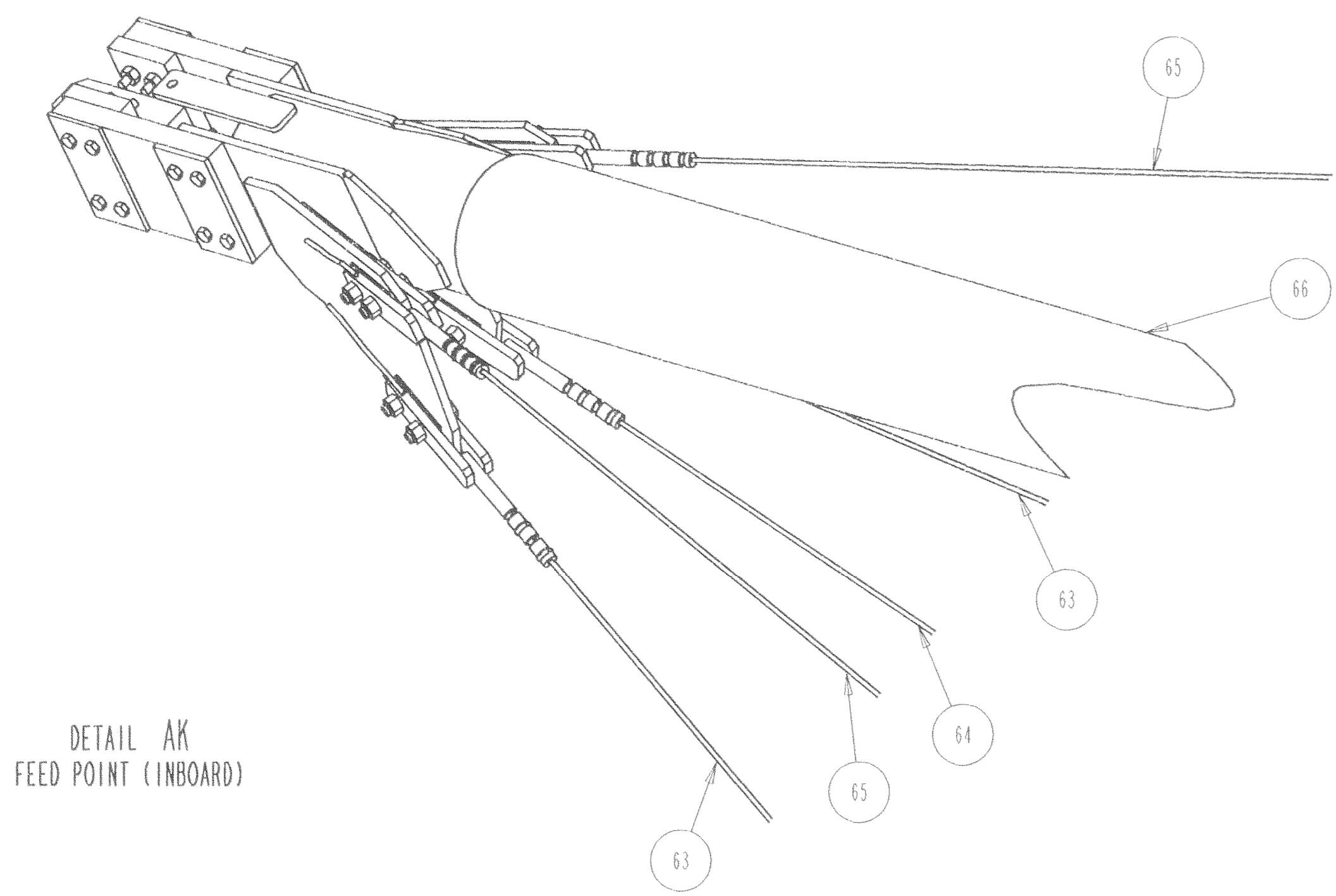
4

3

2

1

REVISIONS			
ZONE	REV	DESCRIPTION	DATE



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/32 .XX ± .02 .XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940926	SIZE	CAGE CODE
NEXT ASSY		ENGR		D	06032
APPLICATION		DESIGN ACTIVITY		DWG. NO.	0980-0334
PART DASH NO.				SCALE	RELEASE
				NONE	
				SHEET	14 OF 20

8

7

6

5

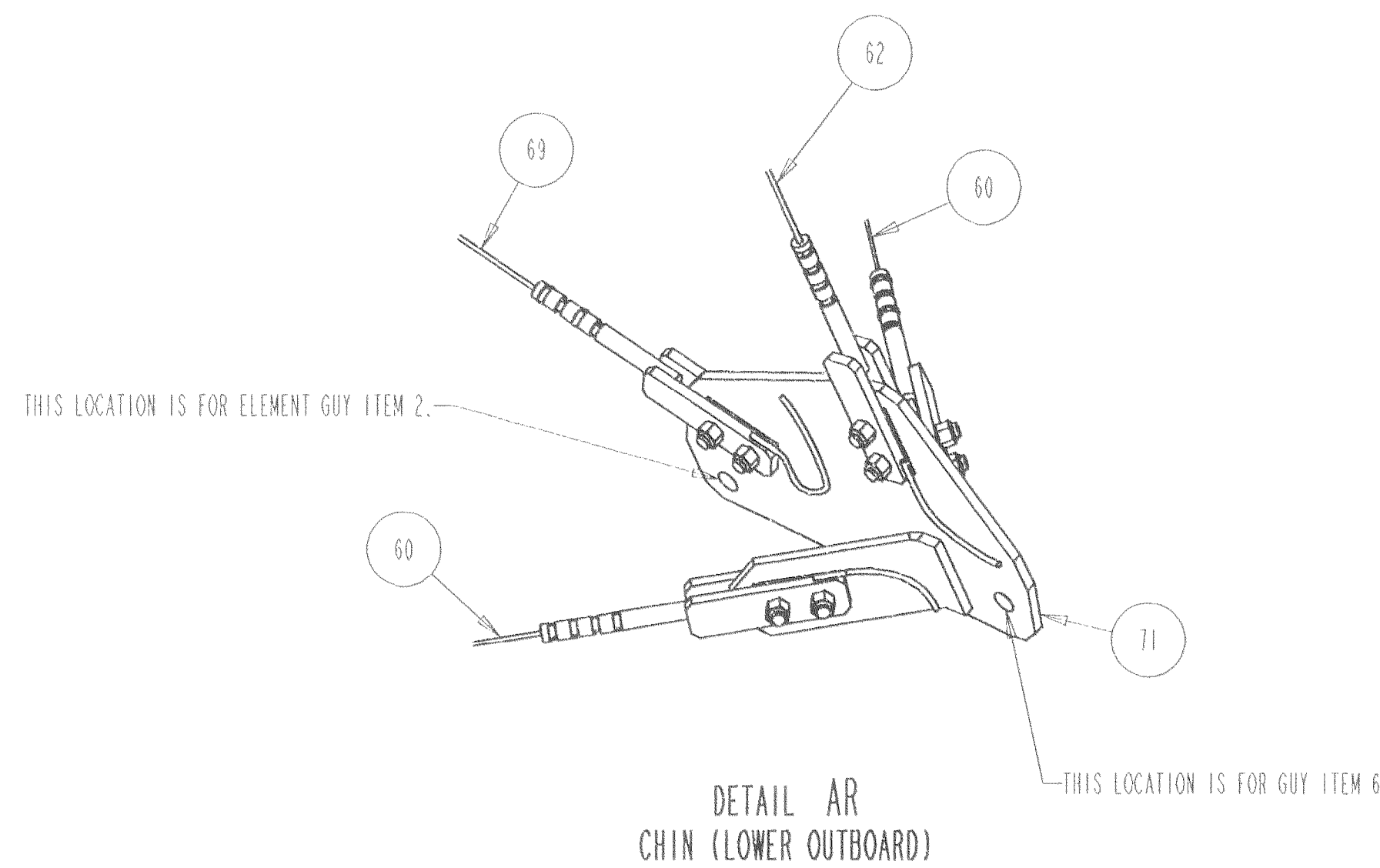
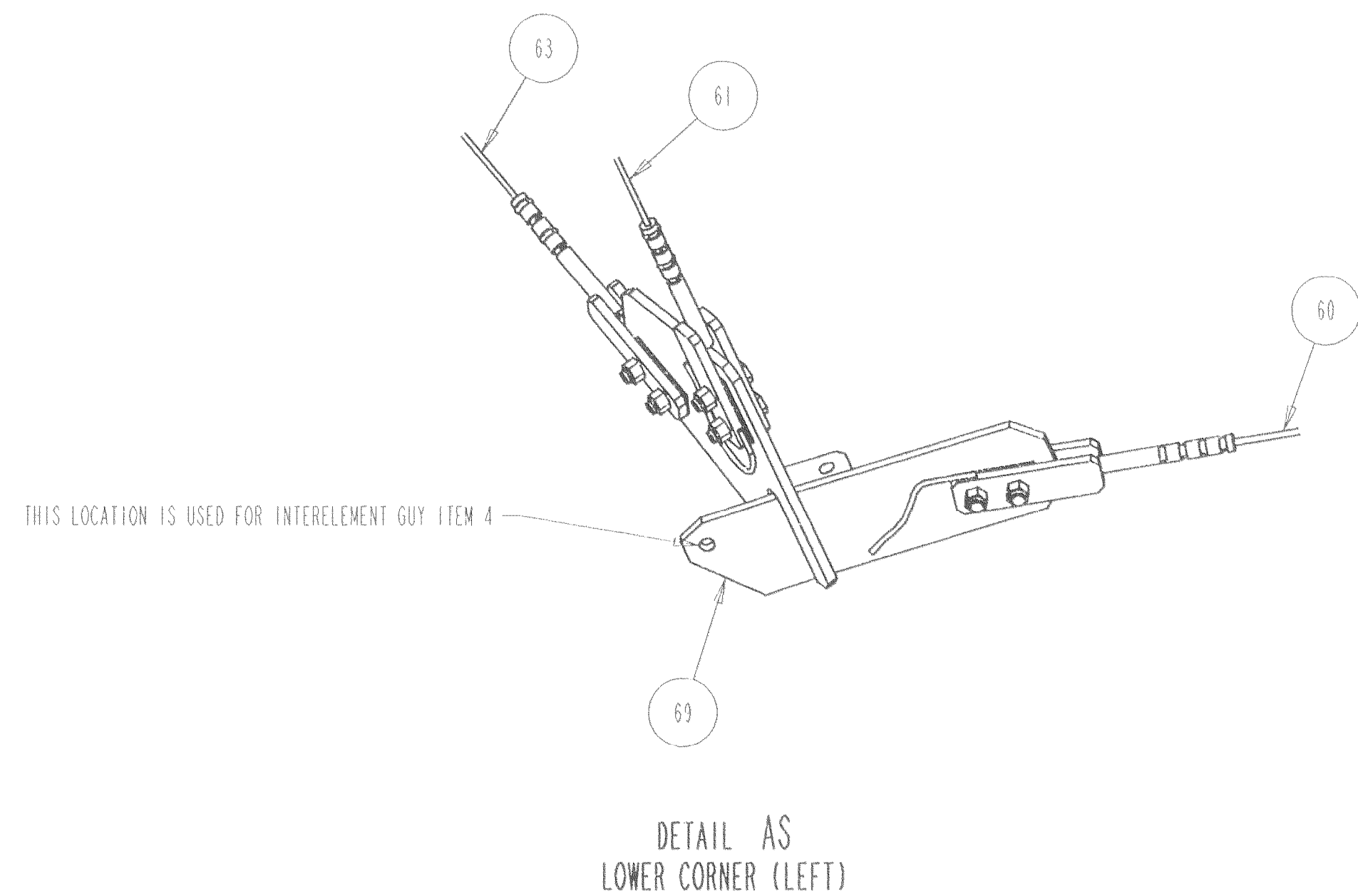
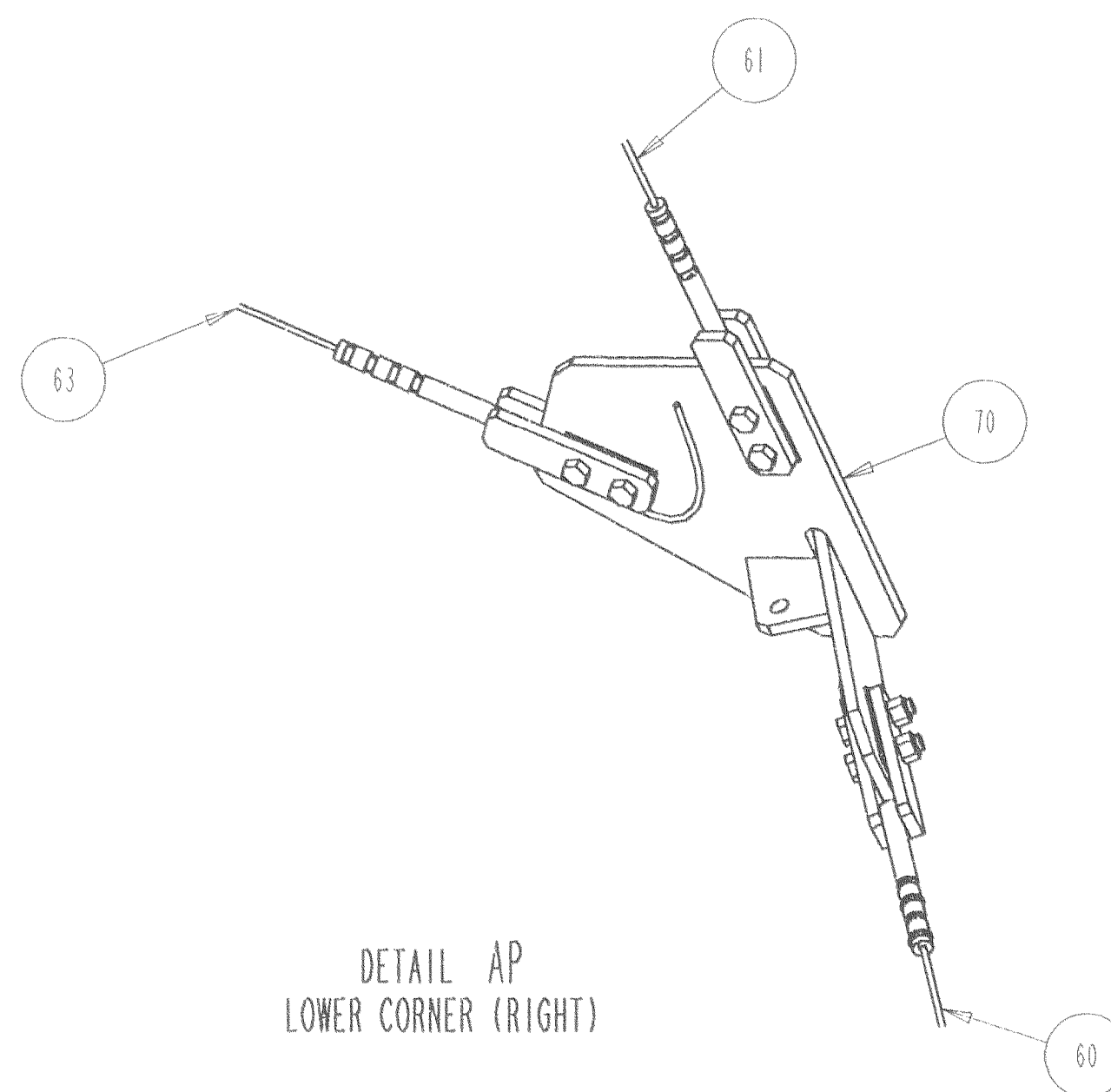
4

3

2

1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/32 .XX ± .02 .XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		DRAWN	WHITTENBURG	940803	HAARP INSTALLATION DRAWING
FINISH		CHECKED	<i>[Signature]</i>	940826	
PART DASH NO.	NEXT ASSY	USED ON	ENGR.	DESIGN ACTIVITY	SIZE
APPLICATION			<i>[Signature]</i>	<i>[Signature]</i>	D
					CAGE CODE
					06032
					DWG. NO.
					0980-0334
					REV.
					-
					SCALE
					NONE
					RELEASE
					SHEET
					15 OF 20

8

7

6

5

4

3

2

1

NOTES:

4. THE SLEEVES AT THE ENDS OF THE GROUND SCREEN WIRES ARE TO BE MAINTAINED IN AN "UP" ON ONE SCREEN TOWARD "DOWN" ON AN ADJACENT SCREEN ORIENTATION AT ALL INTERIOR GROUND SCREEN CATENARIES. THE CORNER SCREENS AND SOME GROUND SCREENS MUST BE ROTATED AND/OR "FLIPPED" TO ACHIEVE THE NECESSARY ORIENTATION.

5. SEE FOLLOWING DETAILS FOR GROUND SCREEN ATTACHMENTS:
 DETAIL AY: CATENARY TO TOWER ATTACHMENT.
 DETAIL AZ: PERIMETER AND CORNER CATENARY TO GROUND SCREEN.
 DETAIL BF: INTERIOR CATENARY TO GROUND SCREENS.

LEGEND

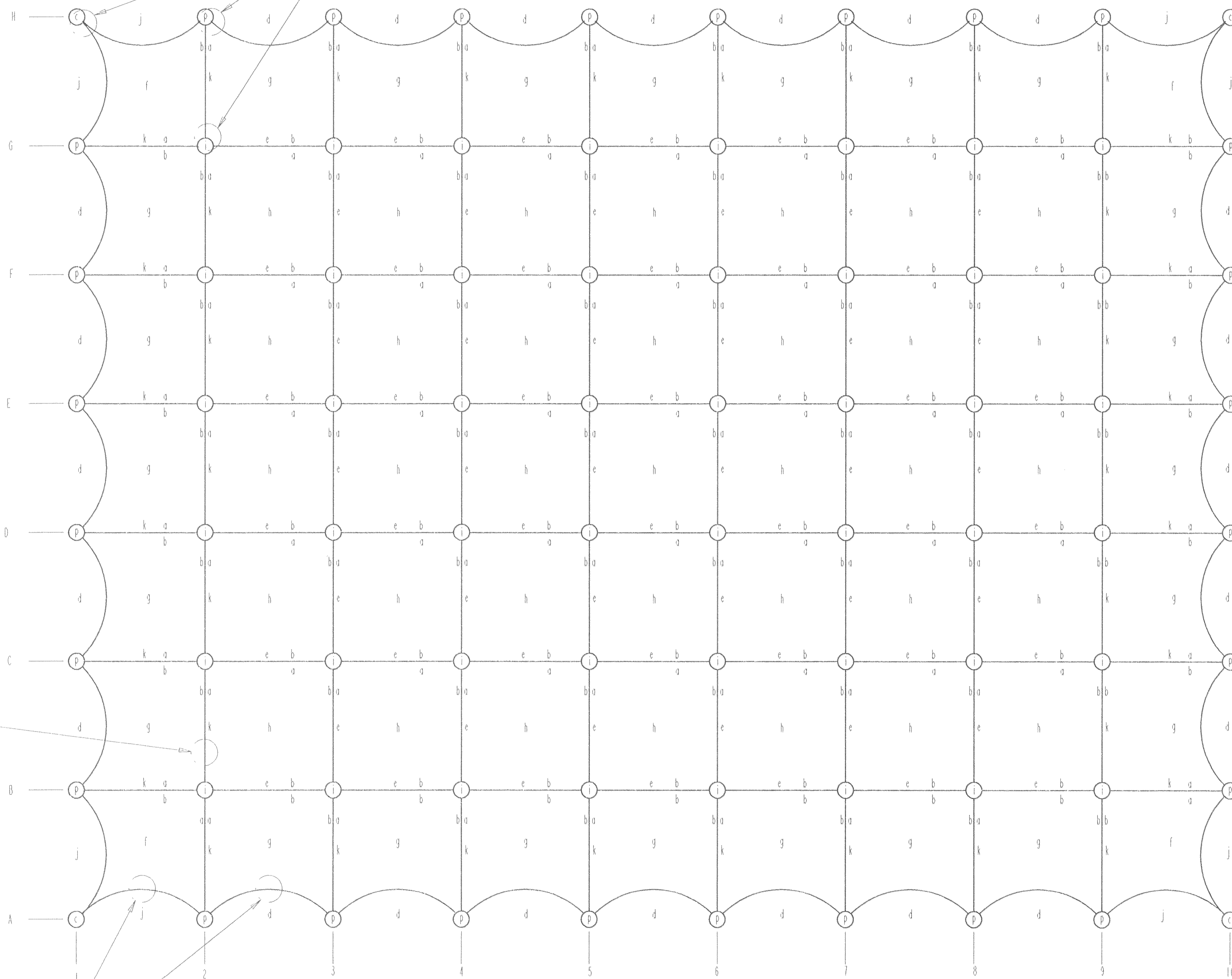
ID	FIND NO.	DESCRIPTION
a	-	INDICATES LOCATION OF SCREEN SIDE WITH THE SHORT ("A") TAG
b	-	INDICATES LOCATION OF SCREEN SIDE WITH THE LONG ("B") TAG
c	24	CORNER STUB TOWER
d	72	PERIMETER GROUND SCREEN CATENARY
e	73	INTERIOR GROUND SCREEN CATENARY -401
f	74	CORNER GROUND SCREEN ASSY
g	75	PERIMETER GROUND SCREEN ASSY
h	76	INTERIOR GROUND SCREEN ASSY
i	-	ANTENNA TOWER
j	77	CORNER GROUND SCREEN CATENARY
k	85	INTERIOR GROUND SCREEN CATENARY -402
p	23	PERIMETER TOWER

DETAIL AT
GROUND SCREEN LAYOUT

SEE DETAIL BF

SEE DETAIL AZ

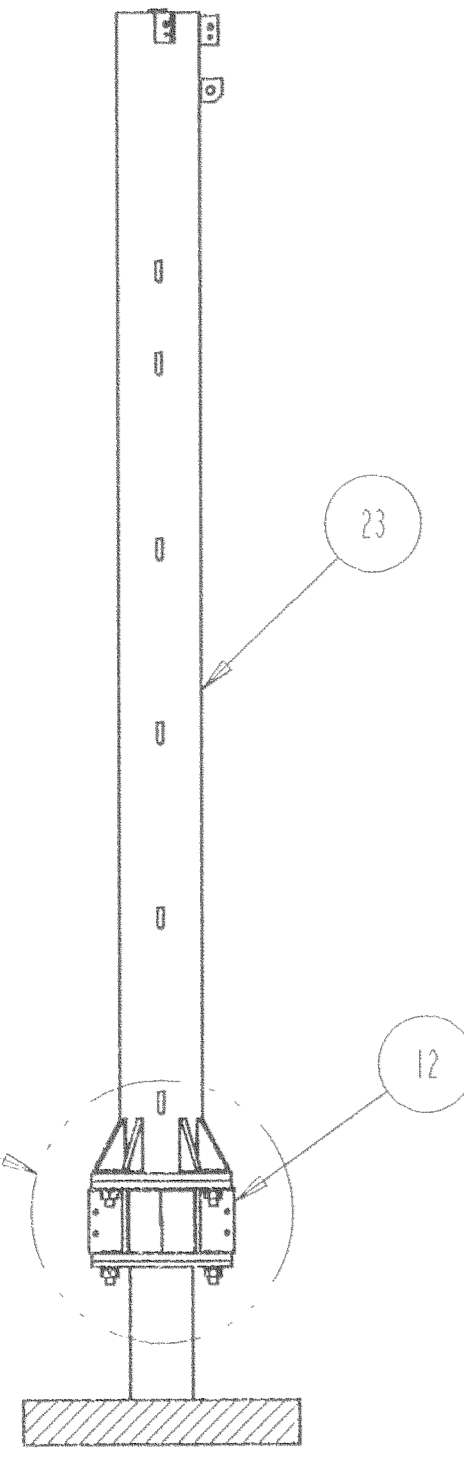
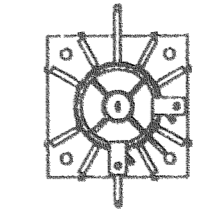
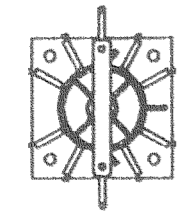
SEE DETAIL AY



REVISIONS			
ZONE	REV	DESCRIPTION	DATE

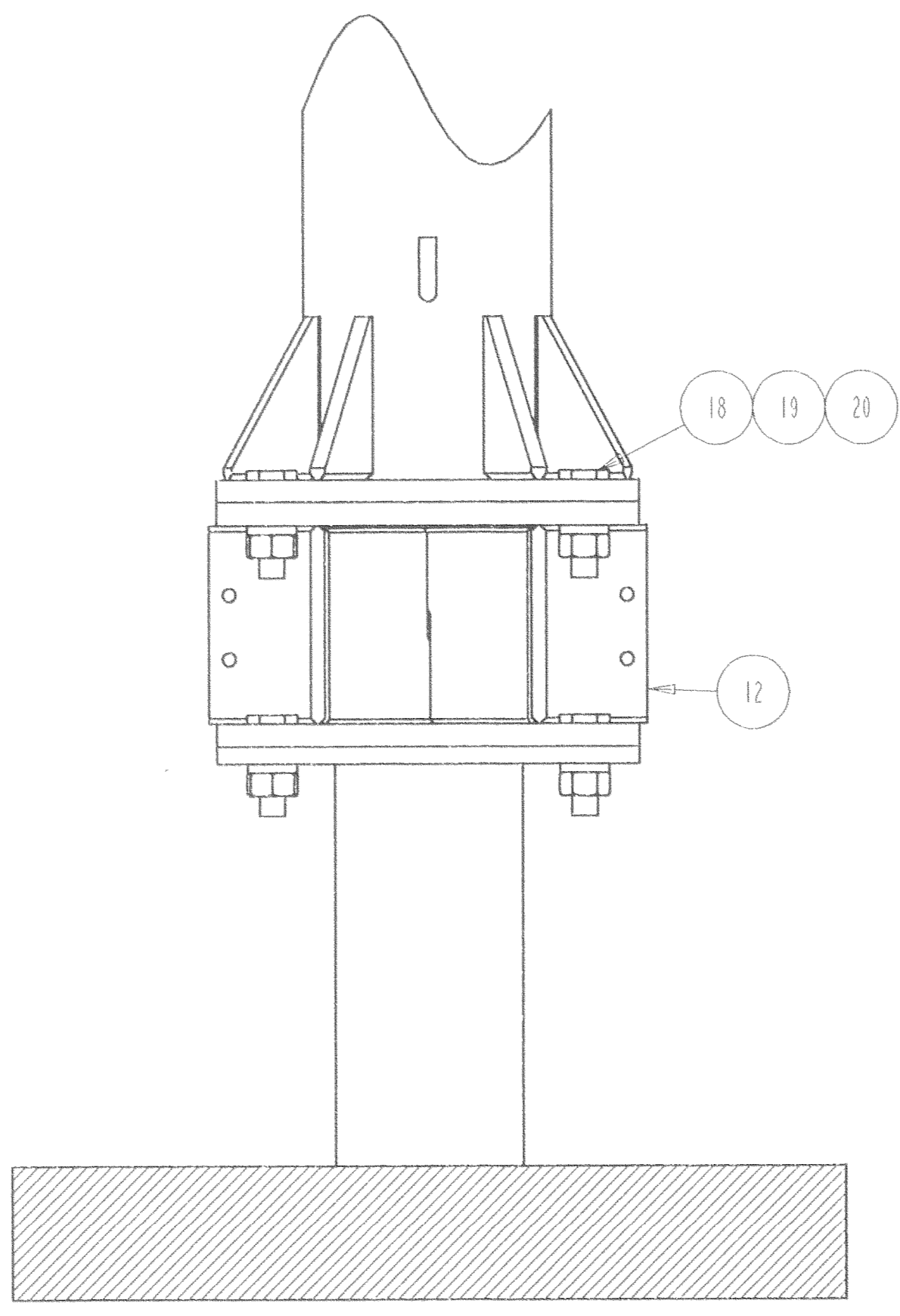
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/32 .001 1/16 .002 1/8 .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940926	SIZE	CAGE CODE
NEXT ASSY		ENGR		D	06032
USED ON		DESIGN ACTIVITY		DWG. NO.	0980-0334
APPLICATION				SCALE	NONE
				RELEASE	
				SHEET	16 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



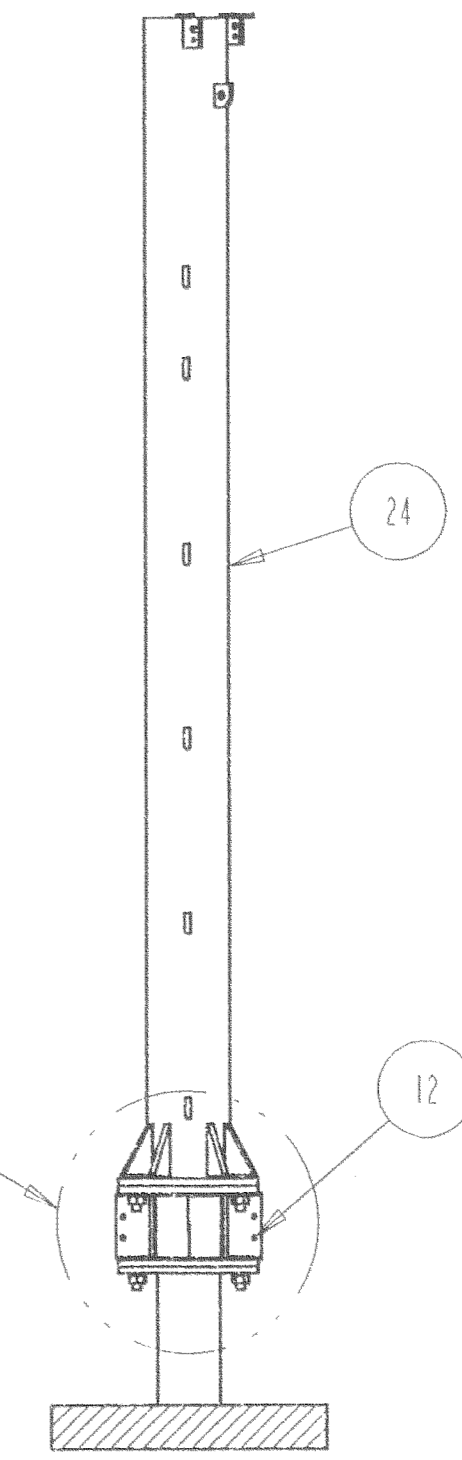
DETAIL AW
PERIMETER STUB TOWER ATTACHMENT

SEE DETAIL AX



DETAIL AX
STUB TOWER ATTACHMENT TO BASE

TORQUE 1.25-7 NUTS TO 500 FT-LBS



DETAIL AU
CORNER STUB TOWER ATTACHMENT

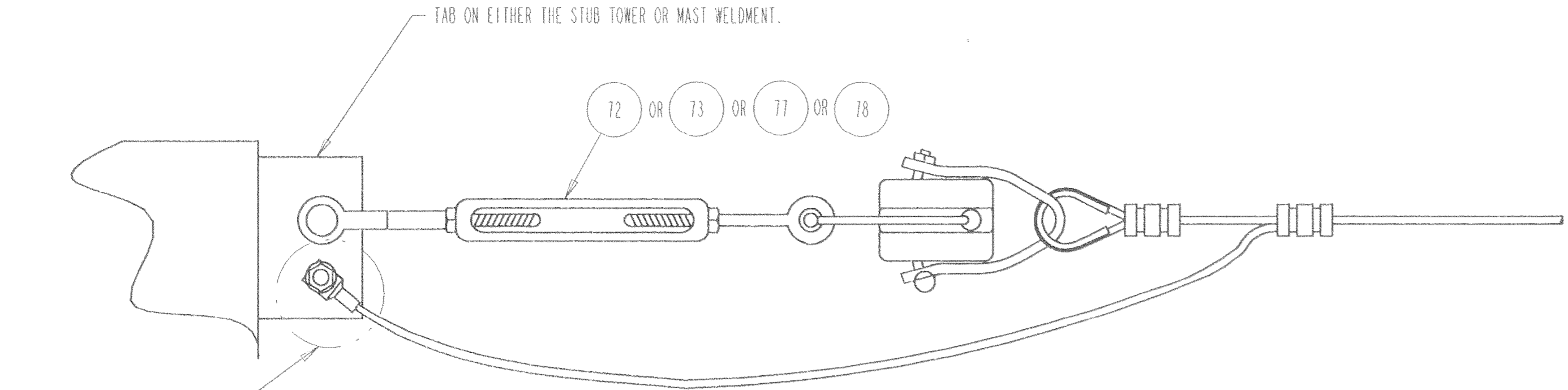
SEE DETAIL AX

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS ARE DECIMALS ± 1/32 .XX ± .02 XXX ± .005 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	FILE	
BLANK SIZE REF ONLY		DRAWN	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	8/4/92	SIZE CAGE CODE DWG. NO. REV.	
PART DASH NO.	NEXT ASSY	USED ON	ENGR.	D	06032 0980-0334 -
APPLICATION			DESIGN ACTIVITY	SCALE NONE	RELEASE SHEET 17 OF 22

NOTES:

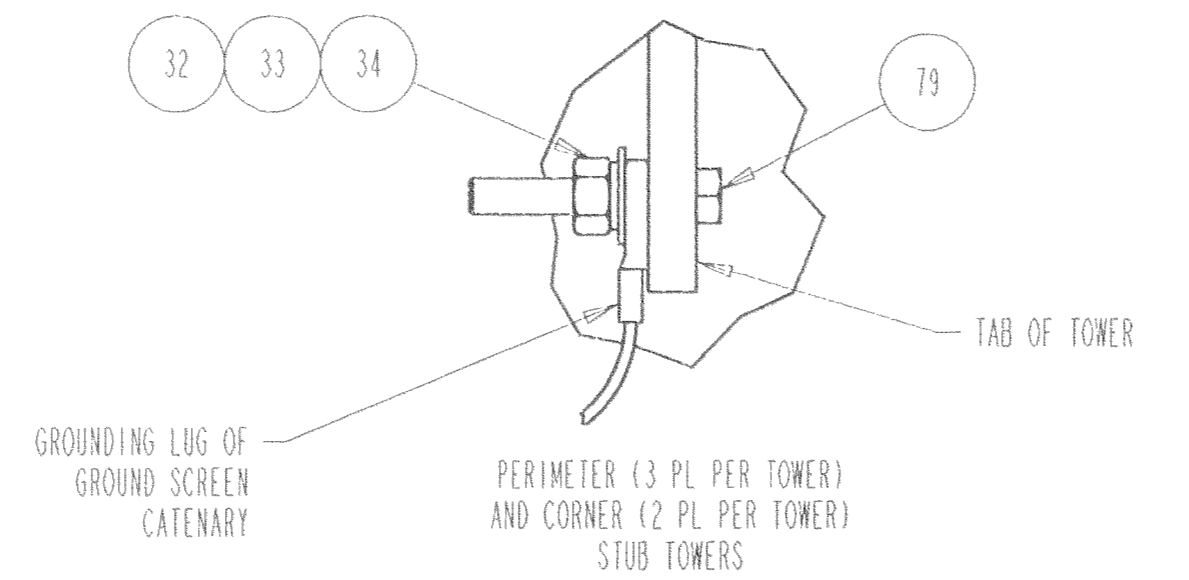
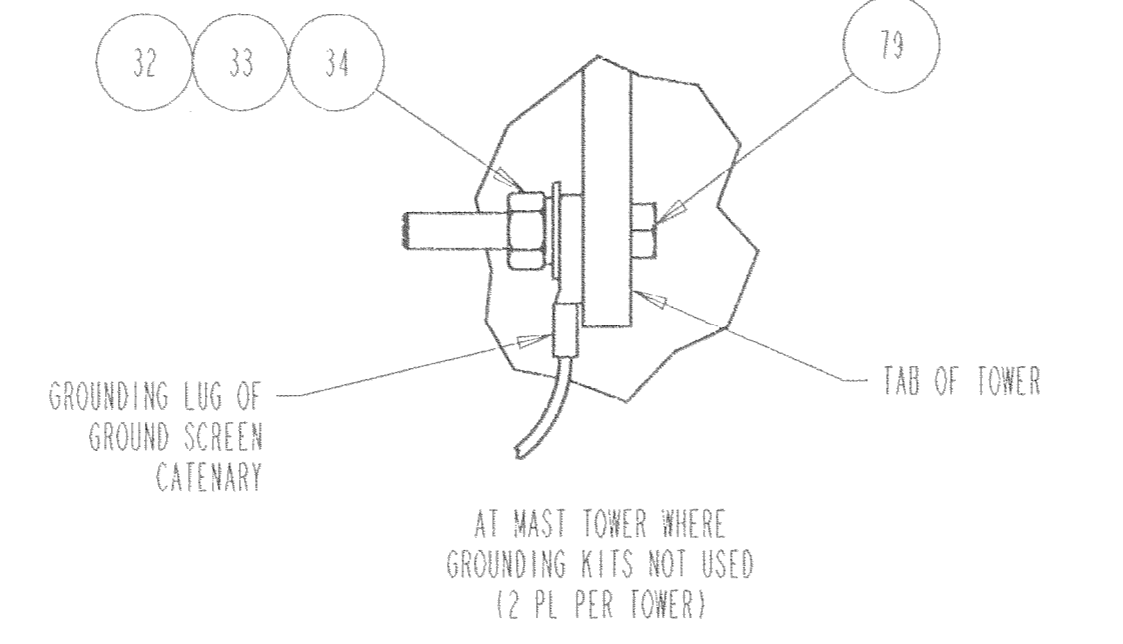
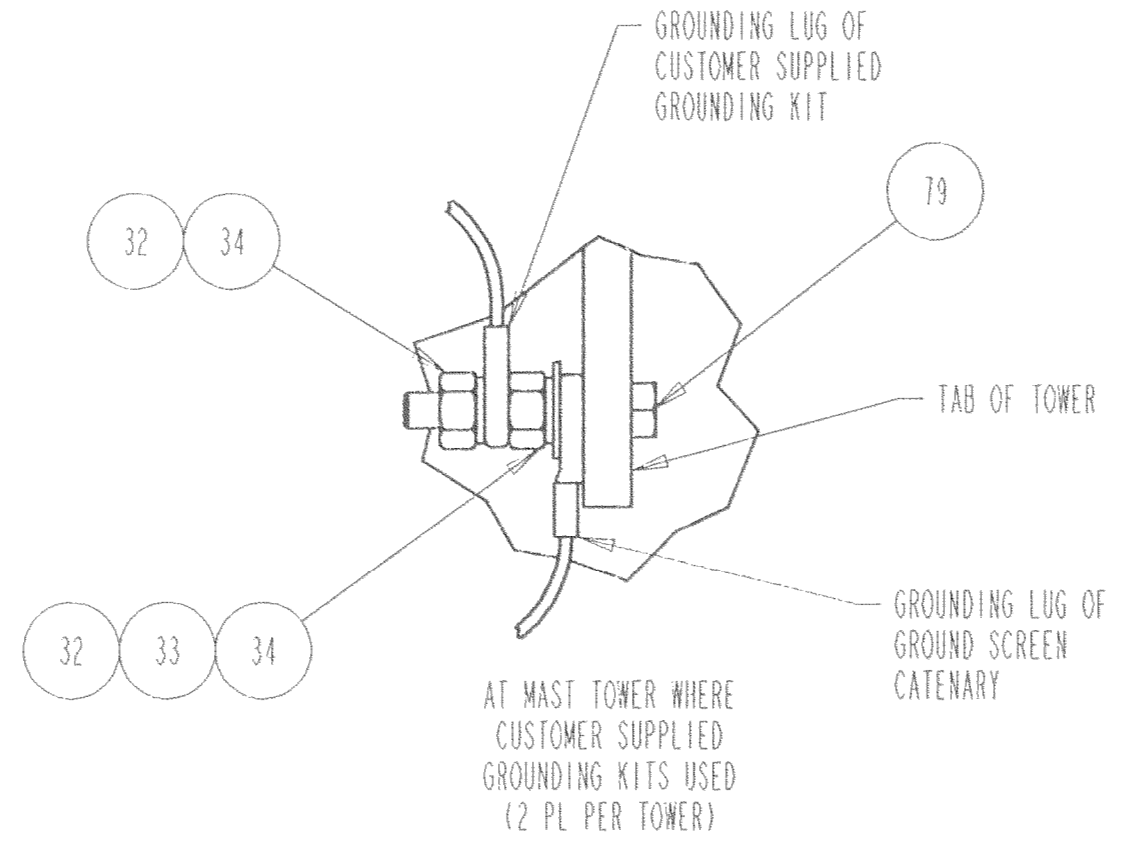
6. PRIOR TO CRIMPING SLEEVE, ITEM 82, AND TAP, ITEM 83, CLEAN WIRE WITH DENATURED ALCOHOL TO REMOVE ALL FOREIGN RESIDUE. ABRASE CLEANED SURFACE OF WIRE WITH SCOTCH-BRITE TO REMOVE ALUMINUM OXIDE LAYER ONLY. CRIMP PER DETAIL AZ AND/OR BF.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

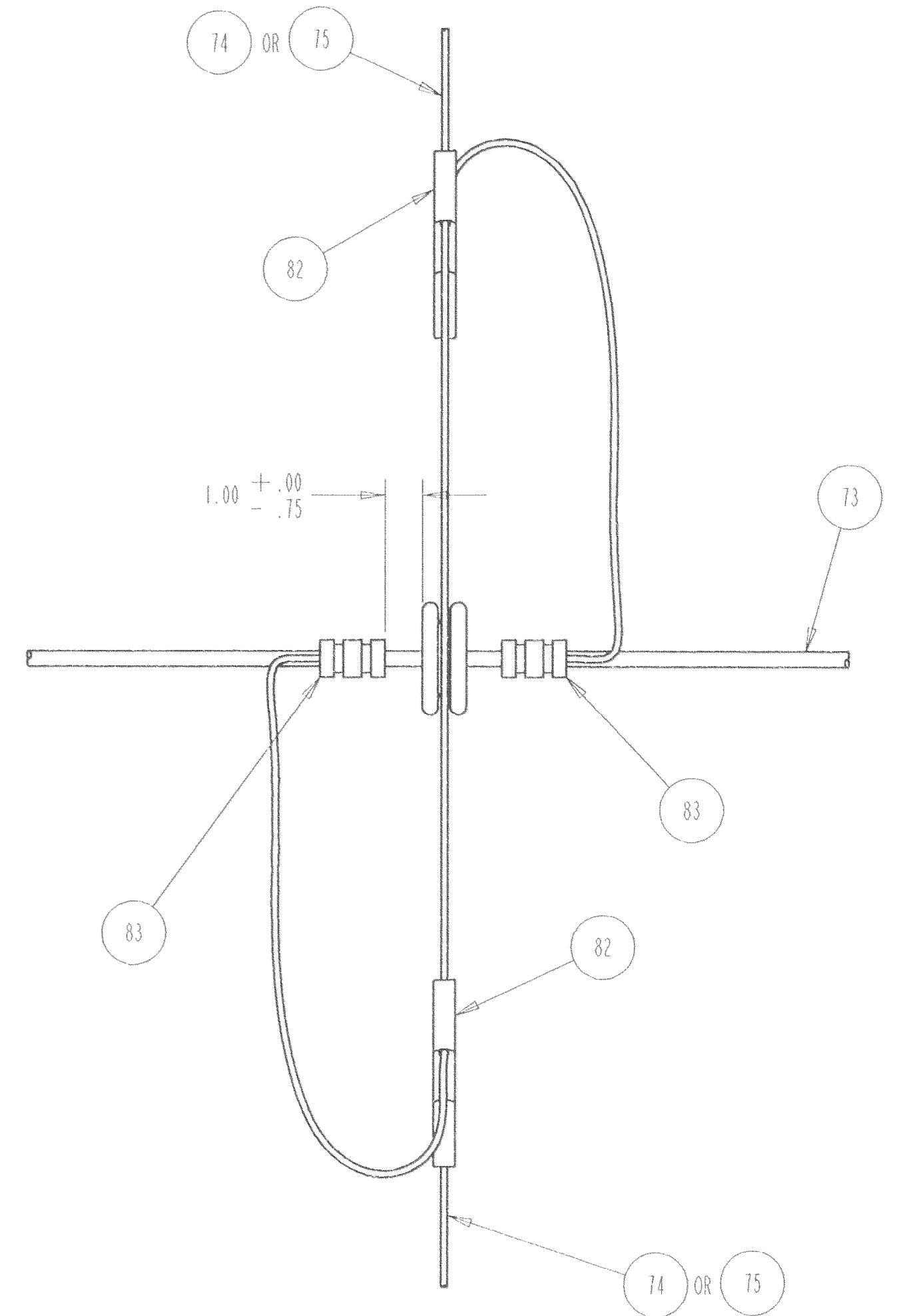
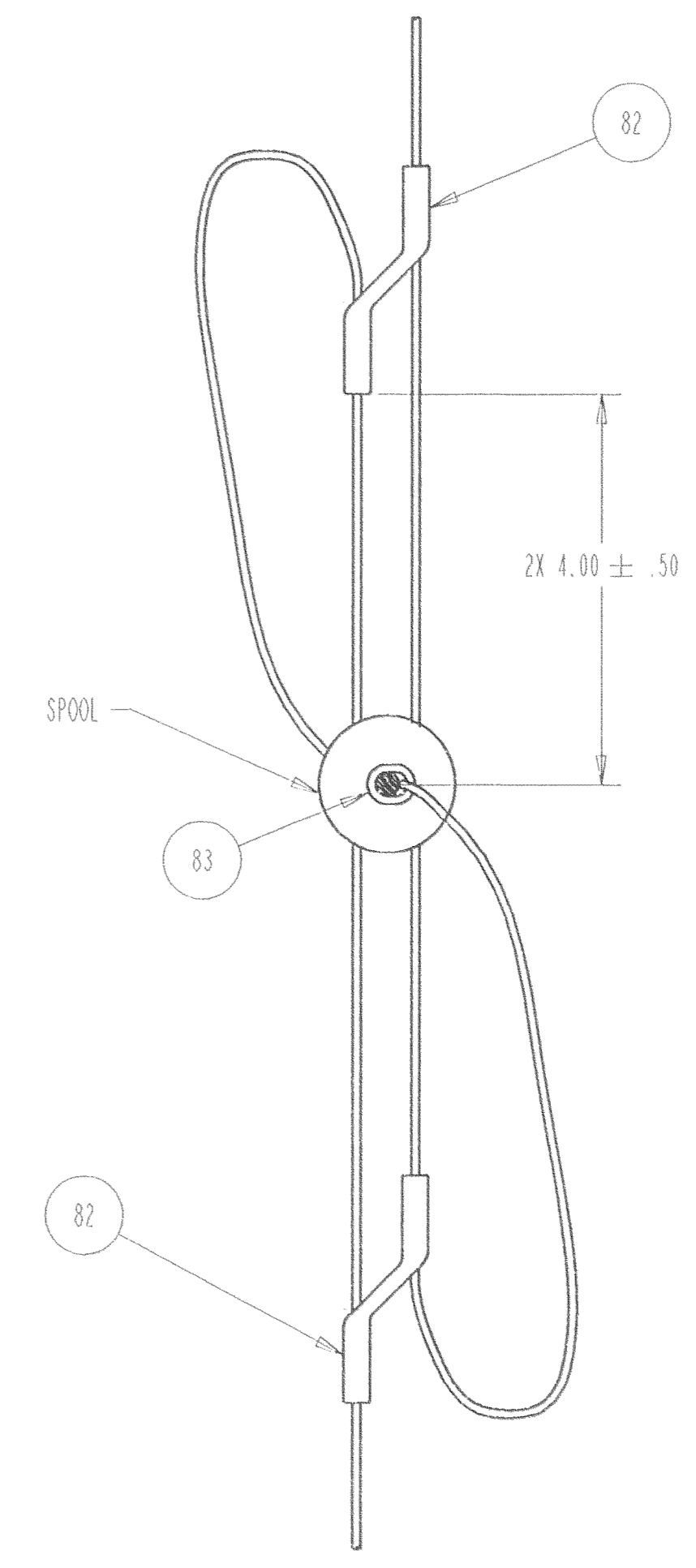


SEE DETAIL BN

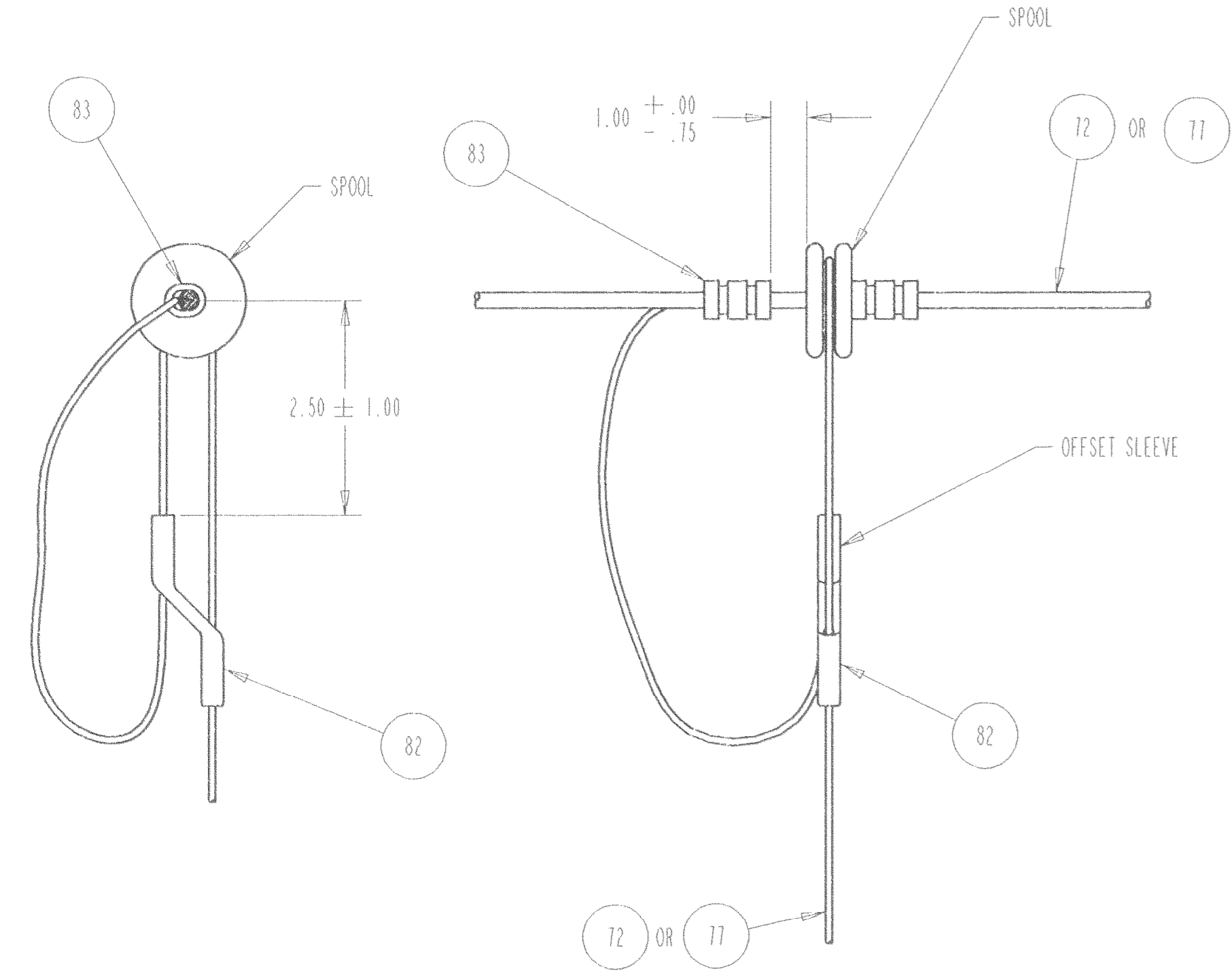
DETAIL AY
CATENARY TO TOWER ATTACHMENT
TORQUE .38 HARDWARE TO 30 FT-LBS.



DETAIL BN
GROUNDING CONFIGURATIONS
ROTATED 90°



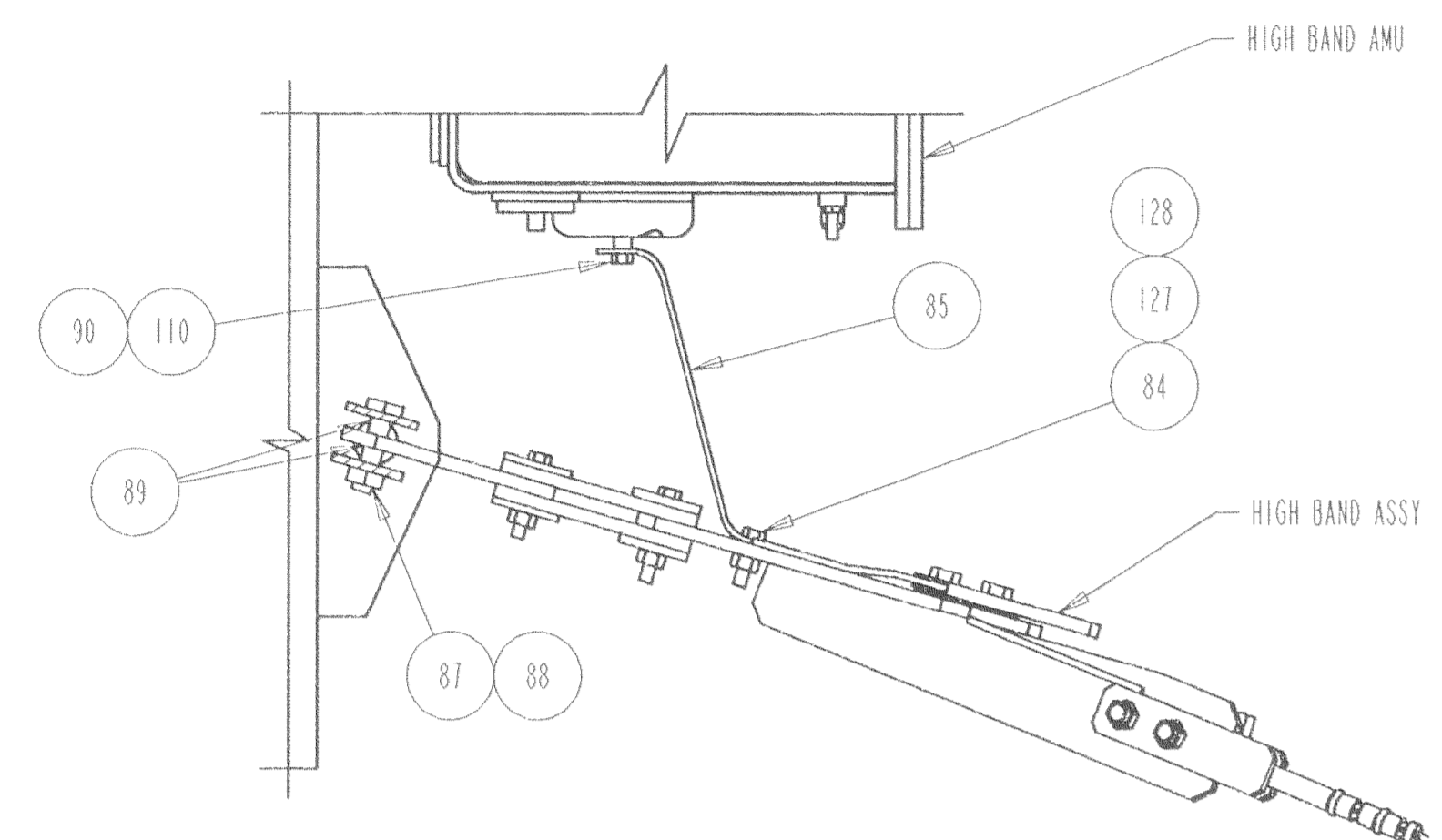
DETAIL BF
INTERIOR GROUNDSCREEN TO CATENARY ATTACHMENT



DETAIL AZ
PERIMETER GROUND SCREEN TO CATENARY ATTACHMENT

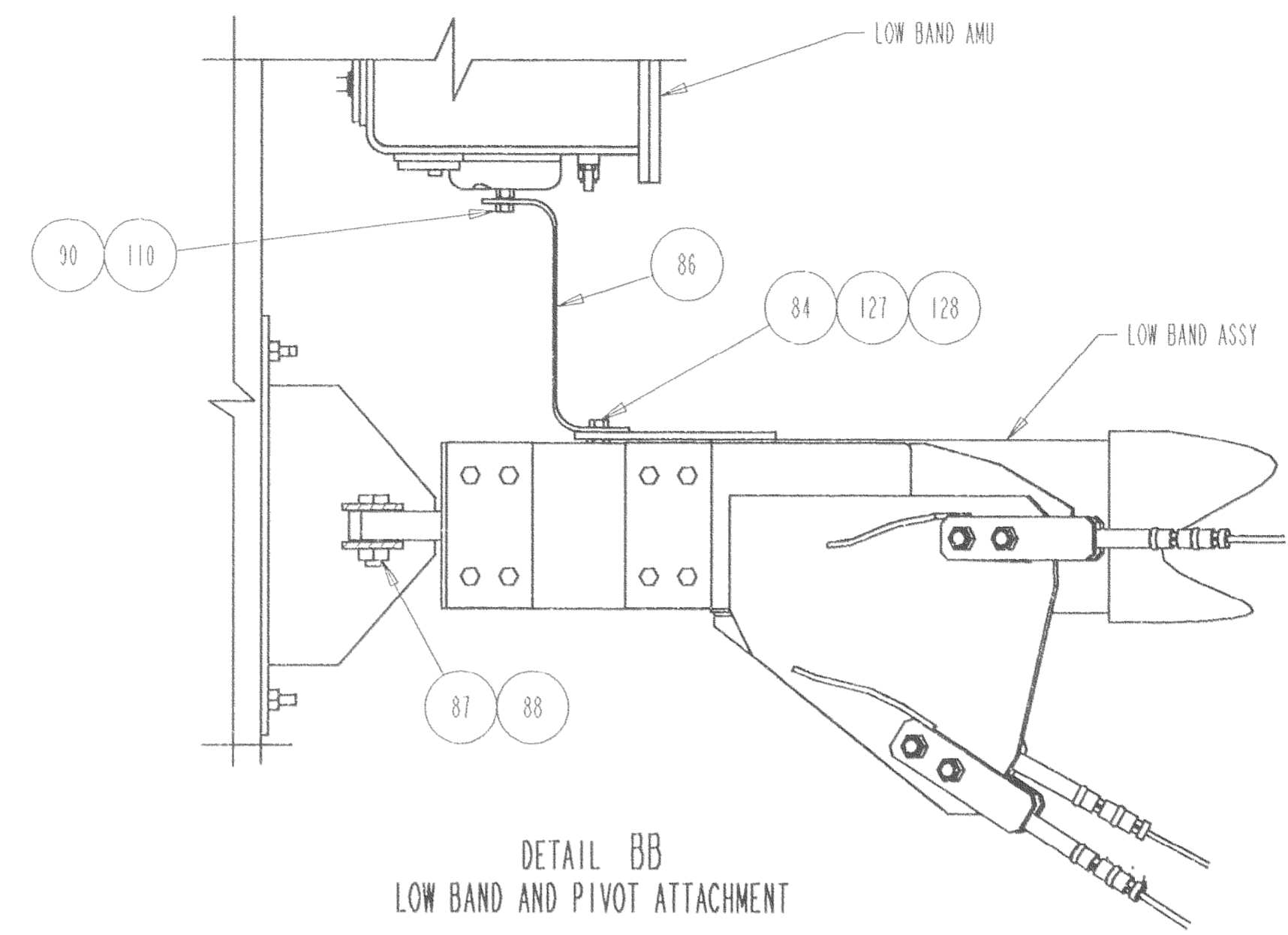
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/32 .0015 1/16 .0030 1/8 .0045 3/16 .0075 1/4 .0150 3/8 .0300 1/2 .0600 3/4 .0900 1 .1800 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940826	SIZE	CASE CODE
PART DASH NO.		ENGR.		D	06032
APPLICATION		DESIGN ACTIVITY		DWG. NO.	0980-0334
				SCALE	RELEASE
				NONE	
				SHEET	18 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



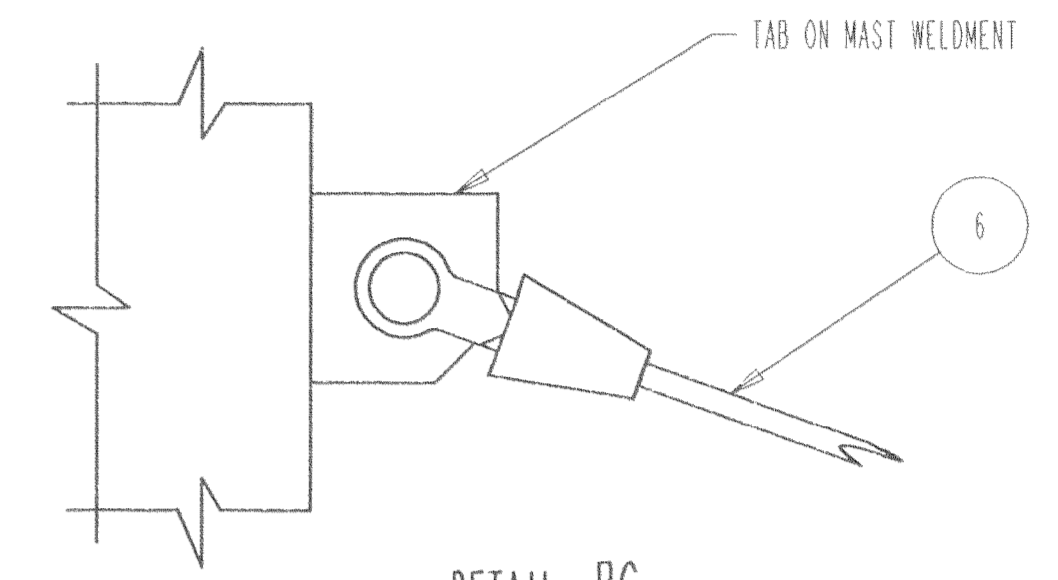
DETAIL BA
HIGH BAND ASSY AND PIVOT ATTACHMENT

TURN ITEM 87 (.75-10 NUT) UNTIL IT CONTACTS THE HINGE, THEN TIGHTEN AN ADDITIONAL 1/4 REVOLUTION (90°).
TORQUE ITEM 84 (.38-16 NUT) TO 30 FT-LBS.
TORQUE ITEM 90 (.25-20 BOLT) TO 9 FT-LBS.



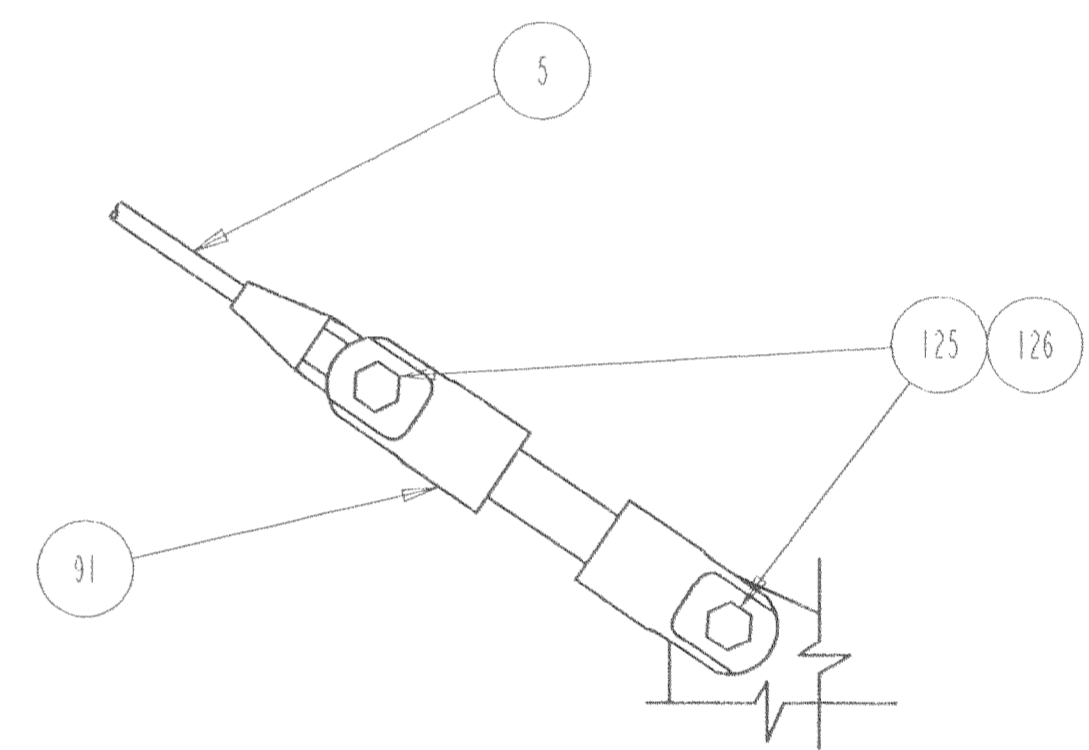
DETAIL BB
LOW BAND AND PIVOT ATTACHMENT

TURN ITEM 87 (.75-10 NUT) UNTIL IT CONTACTS THE HINGE, THEN TIGHTEN AN ADDITIONAL 1/4 REVOLUTION (90°).
TORQUE ITEM 86 (.38-16 NUT) TO 30 FT-LBS.
TORQUE ITEM 90 (.25-20 BOLT) TO 9 FT-LBS.



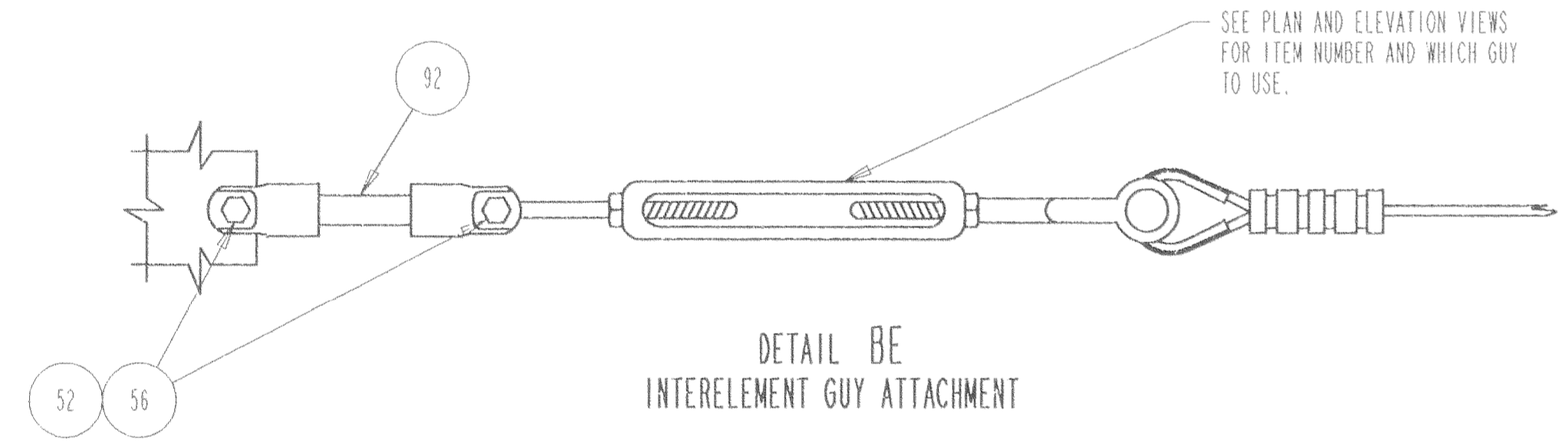
DETAIL BC
LOWER GUY TO TOWER ATTACHMENT

SPELTER SOCKET TO ROTATE FREELY ABOUT CHAMFERED CORNER OF MAST TAB



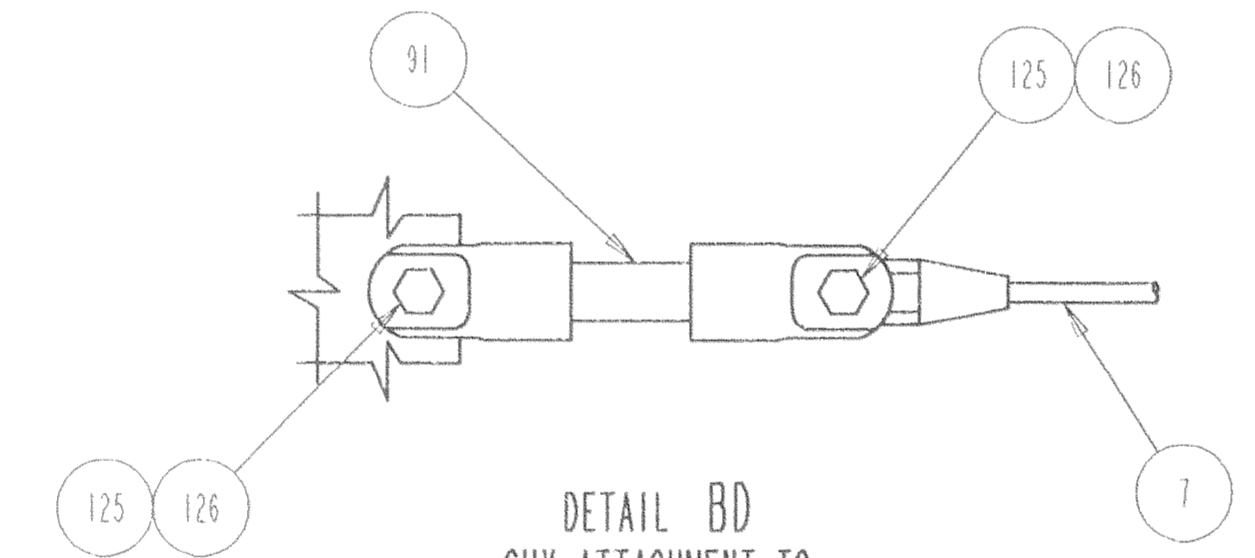
DETAIL AB
GUY TO BACKBONE ATTACHMENT

TIGHTEN .75 HARDWARE UNTIL NUT CONTACTS ALUMINUM SURFACE OF INSULATOR, ITEM 91



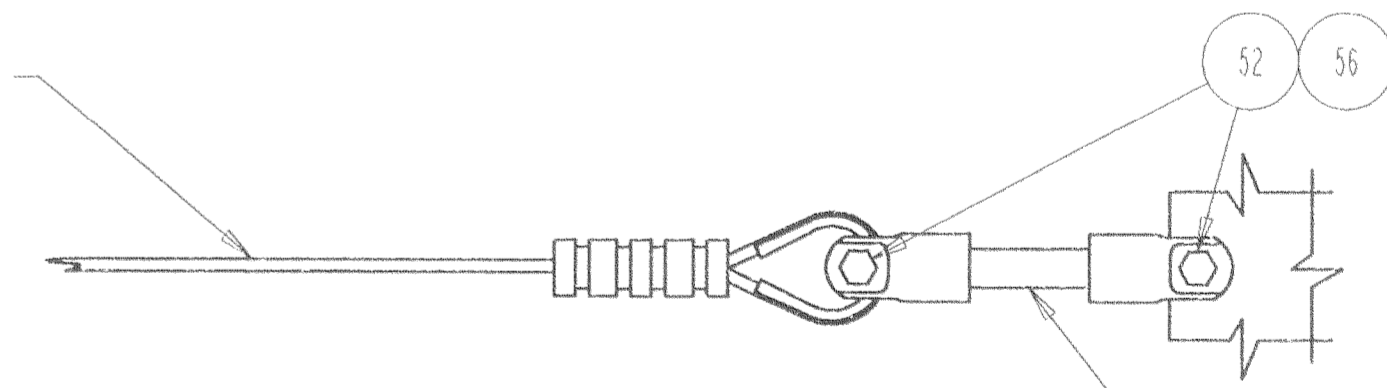
DETAIL BE
INTERELEMENT GUY ATTACHMENT

TIGHTEN .50 HARDWARE UNTIL NUT CONTACTS ALUMINUM SURFACE OF INSULATOR, ITEM 92



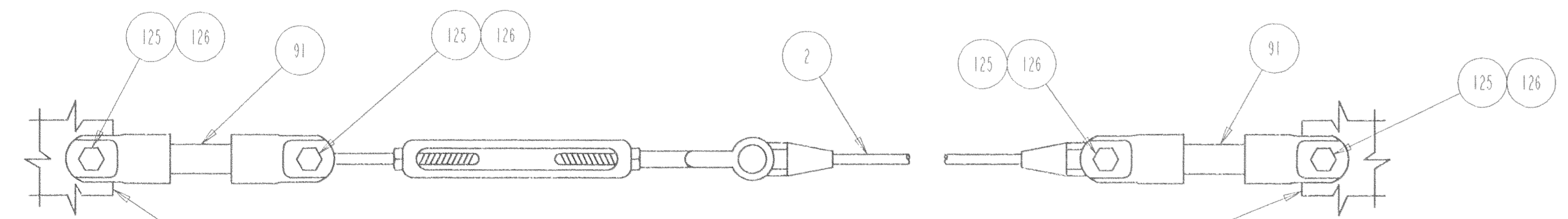
DETAIL BD
GUY ATTACHMENT TO LOW BAND "CHIN" JOINT

TIGHTEN .75 HARDWARE UNTIL NUT CONTACTS ALUMINUM SURFACE OF INSULATOR, ITEM 91



DETAIL AC
TYPICAL INTERELEMENT GUY ATTACHMENT

TIGHTEN .50 HARDWARE UNTIL NUT CONTACTS ALUMINUM SURFACE OF INSULATOR, ITEM 92

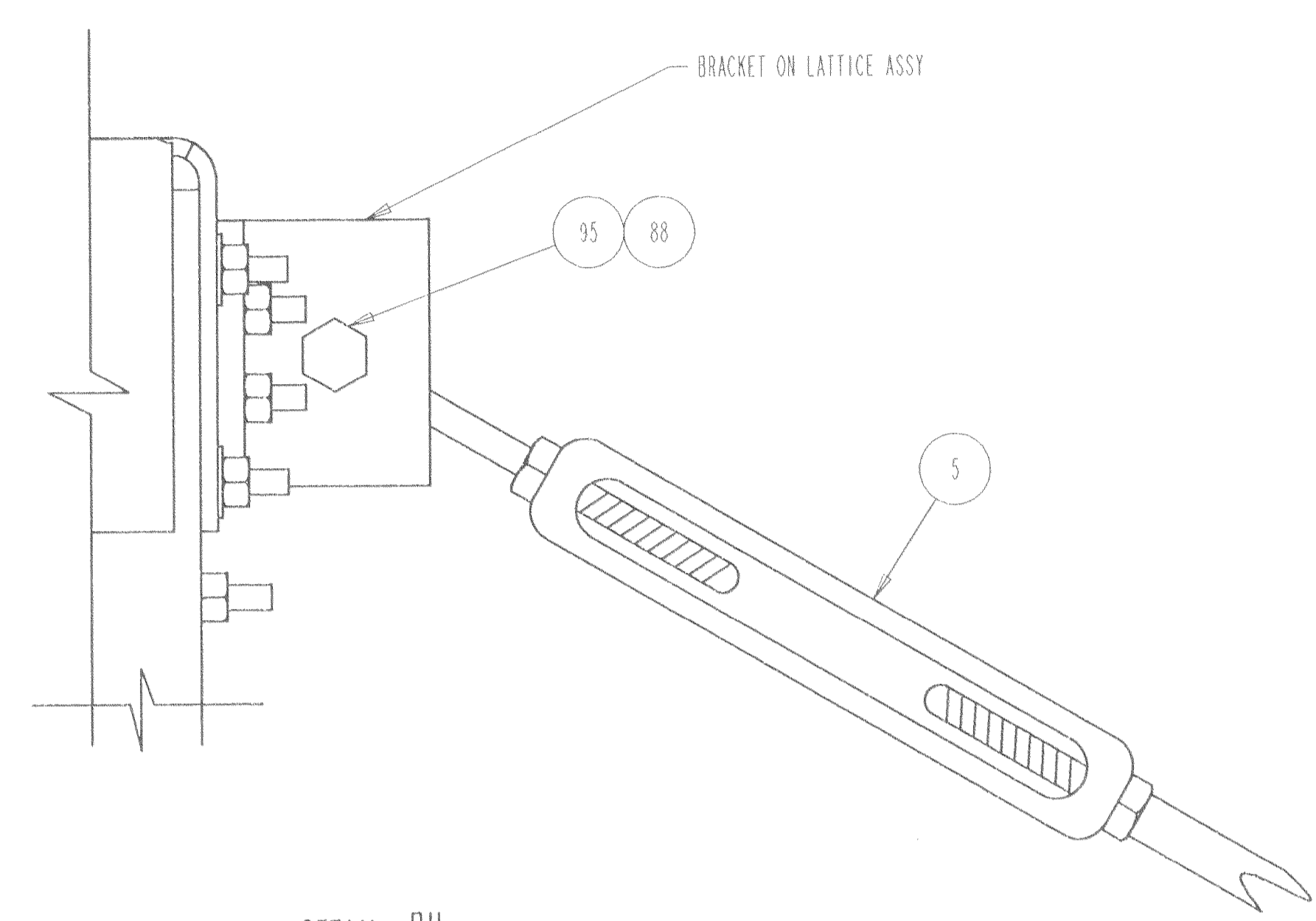


DETAIL BL
GUY ATTACHMENT BETWEEN LOW BAND AND HIGH BAND

TIGHTEN .75 HARDWARE UNTIL NUT CONTACTS ALUMINUM SURFACE OF INSULATOR, ITEM 91

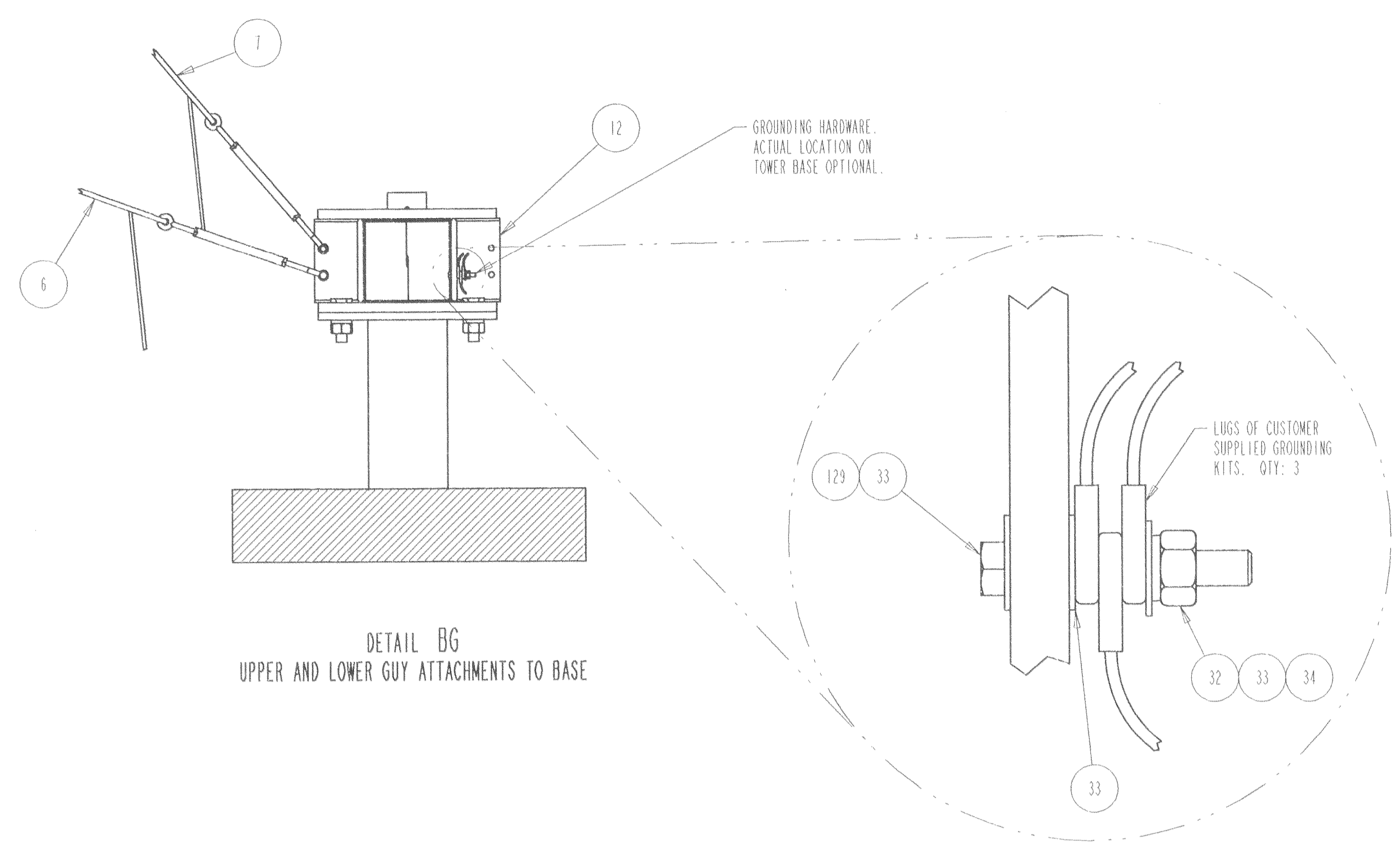
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ± 1/32 .XX ± .02 DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE REF ONLY		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	940826	SIZE	CAGE CODE
PART DASH NO.		ENGR.		D	06032
NEXT ASSY USED ON APPLICATION		DESIGN ACTIVITY		DWG. NO.	0980-0334
				SCALE	RELEASE
					SHEET 19 OF 20

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DETAIL BH
LATTICE TOWER GUY ATTACHMENT FOR
LOW BAND BACKBONE ELEMENT

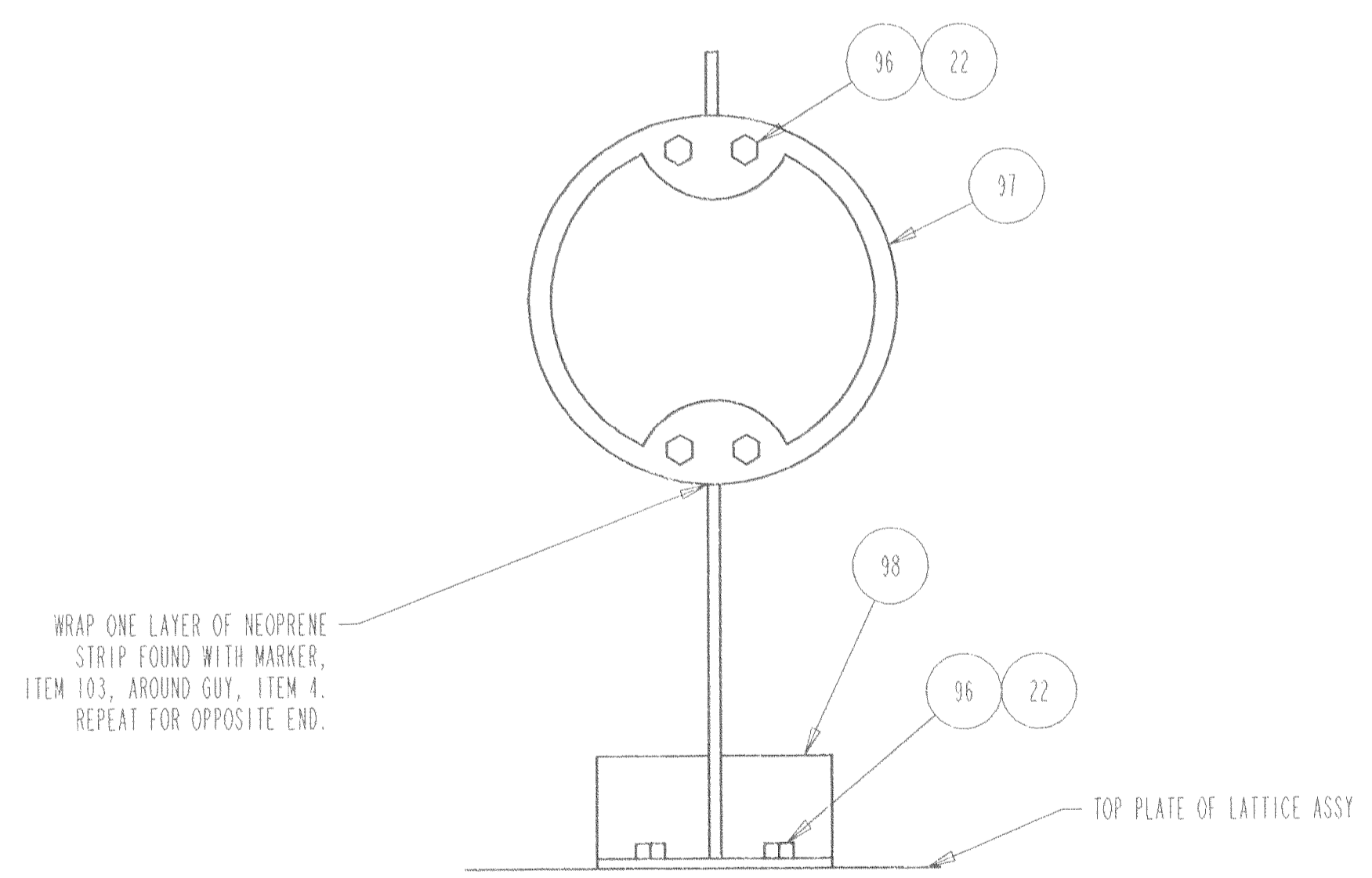
TURN ITEM 88 (.75-10 NUT) UNTIL IT CONTACTS THE BRACKET,
THEN TIGHTEN AN ADDITIONAL 1/4 REVOLUTION (90°)



DETAIL BG
UPPER AND LOWER GUY ATTACHMENTS TO BASE

GROUNDING HARDWARE.
ACTUAL LOCATION ON
TOWER BASE OPTIONAL.

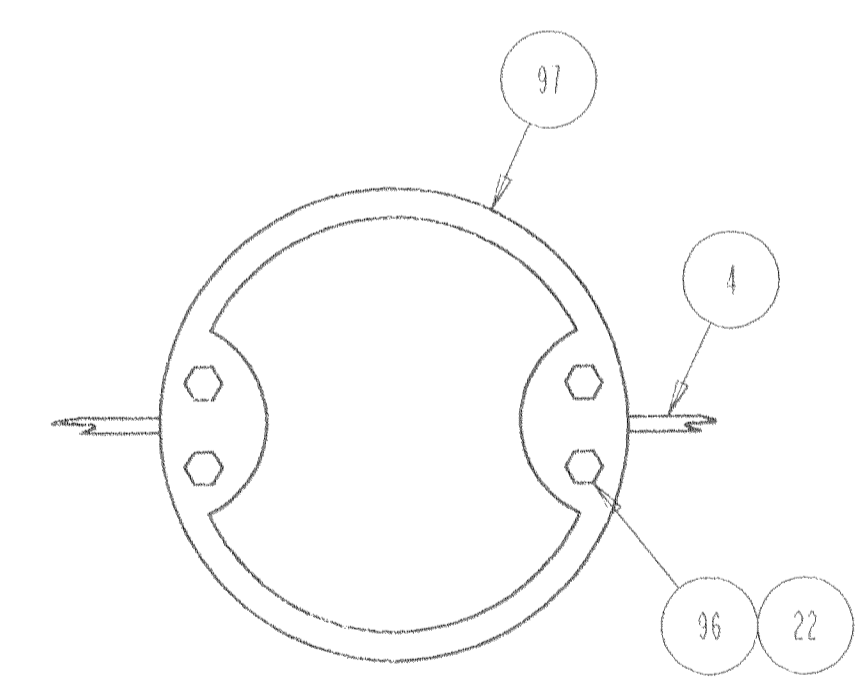
LUGS OF CUSTOMER
SUPPLIED GROUNDING
KITS. QTY: 3



DETAIL AE
YELLOW MARKER MOUNT ATTACHMENT
TO LATTICE TOP PLATE

TORQUE .38 HARDWARE AT TOP PLATE TO 30 FT-LBS.
SECURE MARKER HALVES USING .38 HARDWARE

WRAP ONE LAYER OF NEOPRENE
STRIP FOUND WITH MARKER,
ITEM 103, AROUND GUY, ITEM 4.
REPEAT FOR OPPOSITE END.



DETAIL AD
YELLOW MARKER AND GUY ATTACHMENT

SECURE MARKER HALVES USING .38 HARDWARE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS $\pm \frac{1}{32}$.XX $\pm .02$.XXX $\pm .005$ DO NOT SCALE DRAWING		CONTRACT NO.		ANTENNA PRODUCTS CORPORATION MINERAL WELLS, TEXAS 76067	
MATERIAL		APPROVALS	DATE	TITLE	
BLANK SIZE		WHITTENBURG	940803	HAARP INSTALLATION DRAWING	
FINISH		CHECKED	9/10/26	SIZE	
PART DASH NO.		ENGR		D	CAGE CODE
NEXT ASSY		DESIGN		06032	DWG. NO.
USED ON					0980-0334
APPLICATION				SCALE	RELEASE
				NONE	SHEET 20 OF 20