

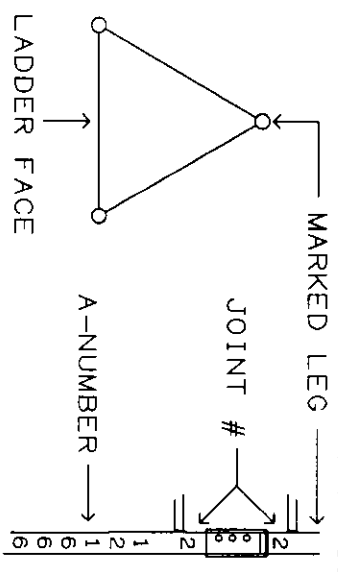
SECTION DATA						LEG BOLT (TOP)		
SPAN HEIGHT	SEC#	LEN	LEGS	BRACES	PART#	BOLT DIAM	BOLT LEN	BOLTS /SEC
160' - 175'	18	15'	1 "	1/2 "	100391			
20' - 160'	18	20'	1 "	1/2 "	100391	3/8 "	2- 1/2 "	9
0' - 20'	18	20'	1 "		186819	3/8 "	2- 1/2 "	9

B SITE NAME REVISION		BAJ	10/14/2005	APPROVED/ENG.	WBR	10/14/2005
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND.	N/A	
		DRAWN BY		BAJ		
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		ENG. FILE NO. A-121666-		F-1008198		
		DRAWING NO.		195904		
		PAGE		2 OF 12		

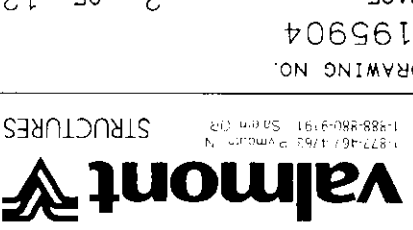
U P C WIND #3 WTG07 TEMP MET  
KAHEAWA WIND FARM MAUI, HI  
#18 X 175'

From: F1008198.DFT - 10/14/2005 10:50  
Printed from 195904\_020B.DWG - 10/14/2005 10:57 @ 12/12/2005 11:52 ARCHIVE

TOWER SECTION ASSEMBLY SEQUENCE  
TOP VIEW  
SIDE VIEW



THE MARKED LEG OF EACH SECTION IS STAMPED WITH THE TOWER SERIAL # AT THE TOP OF EACH SECTION AND THE JOINT # AT EACH END OF THE SECTION. JOINTS ARE NUMBERED CONSECUTIVELY STARTING WITH 1 AT THE TOP OF THE BASE SECTION. ASSEMBLE TOWER WITH MARKED LEGS TOGETHER IN PROPER SEQUENCE. (NO BRACKETS ON 18" SECTIONS.)



B SITE NAME REVISION		BAJ	10/14/2005	APPROVED/ENG.	WBR	10/14/2005
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND	N/A	
		DRAWN BY		COPYRIGHT 2005		
		DRAWING NO.		195904		
		ENG. FILE NO.		A-121666-		
		ARCHIVE		F-1008198		
		PAGE		3 OF 12		

U P C WIND #3 WTG07 TEMP MET  
KAHAWA WIND FARM MAUI, HI  
#18 X 175'

GUY HARDWARE DETAIL

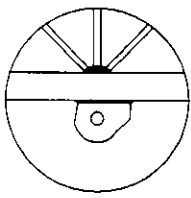
HT.	GUY SIZE	LUG PART#	SHCKL SIZE	THMBLE SIZE	TURN-BCKLE	PREFORM	INITIAL TENSION **					
							@-30°F	@ 0°F	@ 30°F	@ 60°F	@ 90°F	@120°F
160'	3/8" EHS.	105062	5/8"	7/16"	5/8"	BG-2147	1906#	1794#	1670#	1540#	1412#	1293#
100'	5/16" EHS.	105062	5/8"	7/16"	5/8"	BG-2146	1553#	1419#	1271#	1120#	972#	849#
50'	1/4" EHS.	105062	5/8"	3/8"	5/8"	BG-2144	1042#	907#	785#	665#	552#	436#

\*\* TENSIONS SHOWN ARE FOR GUY LINE (A). INTERPOLATION IS PERMITTED FOR OTHER TEMPERATURES.  
TOLERANCE IS +/- 10% OF INITIAL TENSION SHOWN.  
NOTE: ALL GUY CABLE AND PREFORMS ARE LEFT HAND LAY.

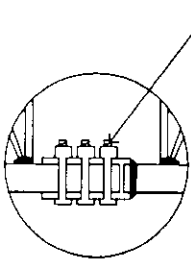
GUY LENGTH DATA

HT.	GUY SIZE	# GUY (A)	THEORETICAL LENGTH ***		
			SOUTHEAST (B)	SOUTHWEST (C)	NORTHWEST
160'	3/8" EHS.	3	218.0'	220.4'	193.3'
100'	5/16" EHS.	3	173.6'	175.6'	154.2'
50'	1/4" EHS.	3	145.3'	146.7'	134.1'

\*\*\* THEORETICAL LENGTH SHOWN IS NOT THE CUT LENGTH.  
ADD 5% TO 10% TO VALUE LISTED TO ARRIVE AT CUT LENGTH.  
QUANTITY OF CABLE SHIPPED IS THEORETICAL LENGTH +10%.



VIEW A  
TYPICAL GUY  
CONNECTION LUG



VIEW B  
TYPICAL LEG  
CONNECTION

A-325 BOLTS  
SEE LEG CONNECT  
TABLE FOR SIZE

REV	DESCRIPTION OF REVISIONS	DATE	APPROVED/ENG.	APPROVED/FOUND.	COPYRIGHT	DRAWN BY	ENG. FILE NO.
B	SITE NAME REVISION	10/14/2005	BAJ	10/14/2005	WBR	10/14/2005	F-1008198

1-877-467-4753 Valmont Structures  
1-888-880-9191 Salem, OR

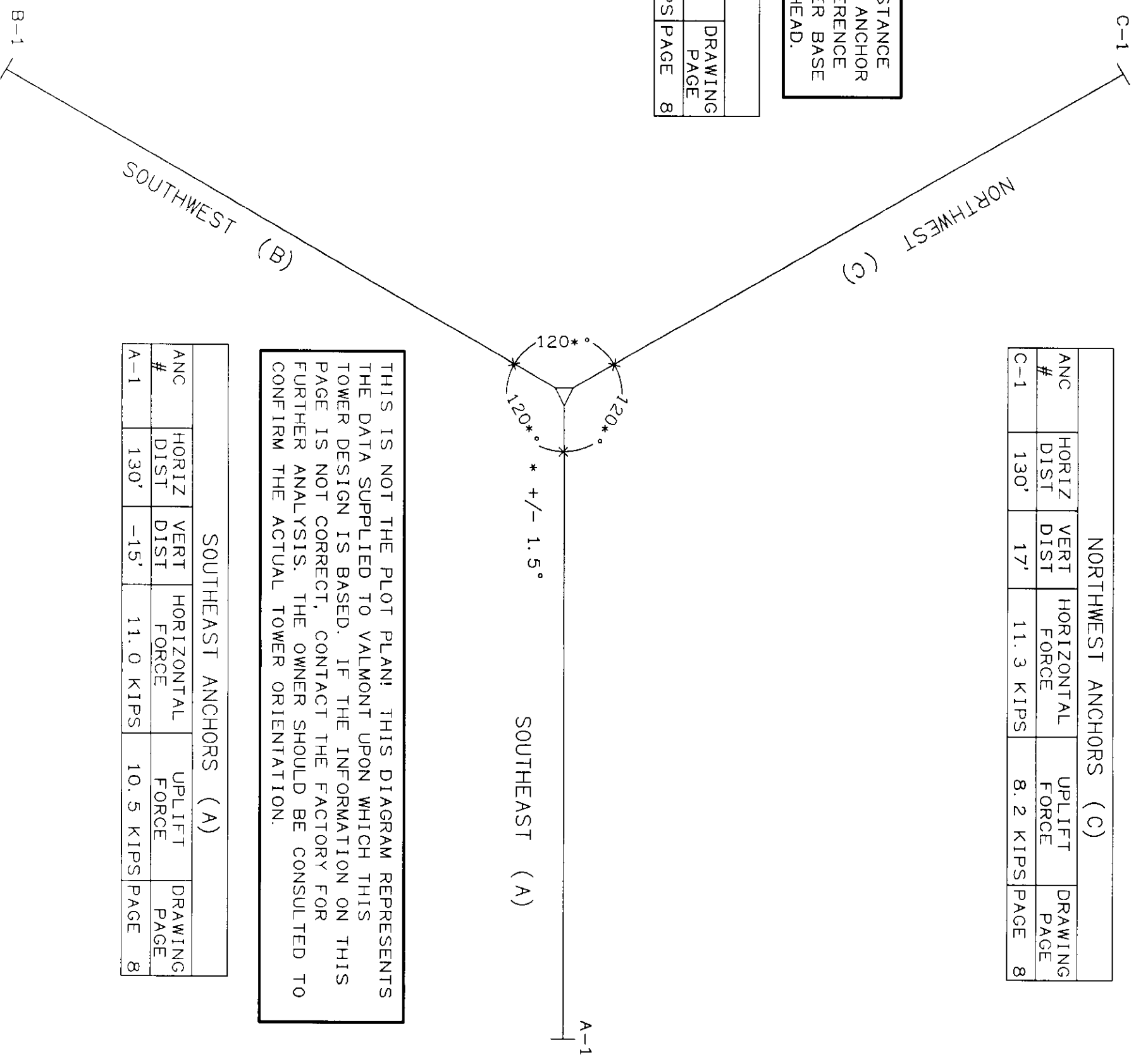
U P C WIND #3 WTG07 TEMP MET  
KAHEAWA WIND FARM MAUI, HI  
#18 X 175'

NOTE: THE HORIZONTAL DISTANCE IS THE DISTANCE MEASURED FROM THE TOWER BASE PIN TO THE ANCHOR HEAD. THE VERTICAL DISTANCE IS THE DIFFERENCE BETWEEN THE GROUND ELEVATION AT THE TOWER BASE AND THE GROUND ELEVATION AT THE ANCHOR HEAD.

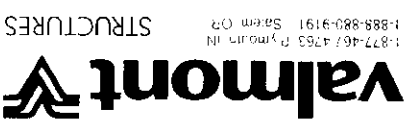
SOUTHWEST ANCHORS (B)					
ANC #	HORIZ DIST	VERT DIST	HORIZONTAL FORCE	UPLIFT FORCE	DRAWING PAGE
B-1	130'	-18'	10.9 KIPS	10.7 KIPS	8

NORTHWEST ANCHORS (C)					
ANC #	HORIZ DIST	VERT DIST	HORIZONTAL FORCE	UPLIFT FORCE	DRAWING PAGE
C-1	130'	17'	11.3 KIPS	8.2 KIPS	8

SOUTHEAST ANCHORS (A)					
ANC #	HORIZ DIST	VERT DIST	HORIZONTAL FORCE	UPLIFT FORCE	DRAWING PAGE
A-1	130'	-15'	11.0 KIPS	10.5 KIPS	8



THIS IS NOT THE PLOT PLAN! THIS DIAGRAM REPRESENTS THE DATA SUPPLIED TO VALMONT UPON WHICH THIS TOWER DESIGN IS BASED. IF THE INFORMATION ON THIS PAGE IS NOT CORRECT, CONTACT THE FACTORY FOR FURTHER ANALYSIS. THE OWNER SHOULD BE CONSULTED TO CONFIRM THE ACTUAL TOWER ORIENTATION.



From: F1008198.DFT - 10/14/2005 10:50		ENG. FILE NO. A-121666-		ARCHIVE		Printed from 195904_0508.DWG - 10/14/2005 10:57 @ 12/12/2005 11:52	
DRAWING NO. 195904		PAGE 5 OF 12		DRAWN BY BAJ		COPYRIGHT 2005	
APPROVED/ENG. WBR		DATE 10/14/2005		APPROVED/FOUND. N/A		1 877-467-1763 Pymou: IN 1-888-880-9191 Salem, OH	
B SITE NAME REVISION		BAJ		10/14/2005		valmont STRUCTURES	
REV		DESCRIPTION OF REVISIONS		INITI			
U P C WIND #3 WTC07 TEMP MET KAHAWA WIND FARM MAUI, HI #18 X 175'							

GENERAL NOTES

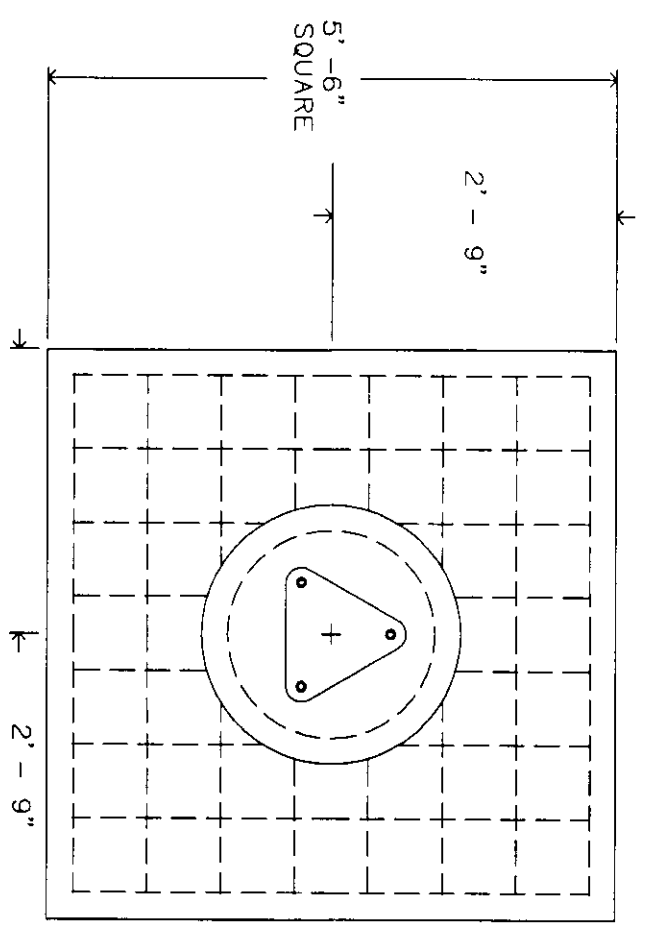
1. TOWER DESIGN CONFORMS TO STANDARD EIA/TIA-222-F FOR 120 MPH FASTEST-MILE BASIC WIND SPEED WITH NO ICE.
2. NO TWIST AND SWAY LIMITATIONS SPECIFIED OR USED FOR THIS TOWER.
3. MATERIAL: (A) SOLID RODS CONFORM TO ASTM A572 GRADE 50 REQUIREMENTS.  
(B) ANGLES CONFORM TO ASTM A36 REQUIREMENTS.  
(C) PIPE CONFORMS TO ASTM A500 GRADE B REQUIREMENTS.  
(D) ALL STEEL PLATES CONFORM TO ASTM A36 REQUIREMENTS.
4. FINISH: ALL BOLTS ARE GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT DIPPED) OR ASTM B695 CLASS 50 (MECHANICAL). GUY STRAND IS GALVANIZED IN ACCORDANCE WITH ASTM A475 OR A586. ALL OTHER STRUCTURAL MATERIALS ARE GALVANIZED IN ACCORDANCE WITH ASTM 123.
5. ANTENNAS:  
179.46' ANEMOMETER (CAAA 4.63 SQ. FT.)  
175' WIND VANE (CAAA 3.66 SQ. FT.)  
170' VARIOUS INSTRUMENTS (CAAA 6.0)
6. MIN. WELDS 5/16" UNLESS OTHERWISE SPECIFIED. ALL WELDING TO CONFORM TO AWS D1.1 SPECIFICATIONS.
7. ALL BOLTS AND NUTS MUST BE IN PLACE BEFORE THE ADJOINING SECTION(S) ARE INSTALLED.
8. ALL STRUCTURAL BOLTS ARE TO BE TIGHTENED TO A SNUG TIGHT CONDITION AS DEFINED BY AISC SPECIFICATION UNLESS OTHERWISE NOTED. A MORE QUANTITATIVE ALTERNATIVE APPROACH TO ACHIEVING A SNUG TIGHT CONDITION IS TO TIGHTEN USING THE TORQUE VALUES FROM DRAWING 123107-A.
9. EIA GROUNDING FOR TOWER.
10. ALL TRANSMISSION LINES MUST BE PLACED ON PIR0D SUPPLIED TRANSMISSION LINE BRACKETS.
11. PAINT BY OTHERS IF REQUIRED.
12. LIGHTING BY OTHERS IF REQUIRED.
13. ALL MOUNTING FOR INSTRUMENTS BY OTHERS.



REV	DESCRIPTION OF REVISIONS	DATE	APPROVED/ENG.	APPROVED/FOUND.	COPYRIGHT	DRAWN BY	ENG. FILE NO.
B	FOUNDATION PER ASSUMED SOIL	10/14/2005	WBR	WBR	10/14/2005	BAJ	F-1008198
A	SITE NAME REVISION	10/14/2005	WBR	WBR	10/14/2005	BAJ	A-121666-

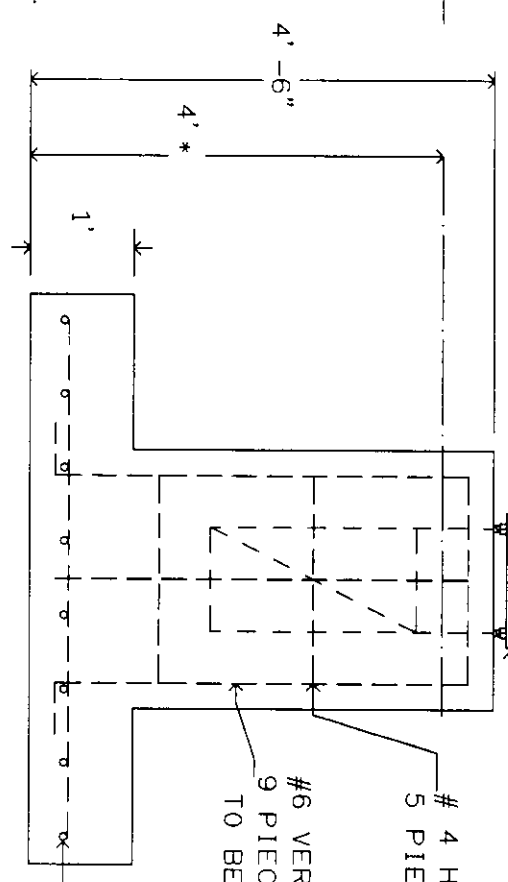
U P C WIND #3 WTG07 TEMP MET  
KAHEAWA WIND FARM MAUI, HI  
#18 X 175'

THE FOUNDATIONS DEPICTED ON THIS DRAWING WERE DESIGNED PER ASSUMED SOIL PARAMETERS. ALTHOUGH, IT IS OUR EXPECTATION THAT THE SOIL WILL EXHIBIT SUFFICIENT STRENGTH TO COMPLY WITH THE ASSUMED STRENGTHS. IT IS POSSIBLE THAT THE SOIL MAY NOT EXHIBIT THE REQUIRED STRENGTHS. THEREFORE, IT IS HIGHLY RECOMMENDED THAT THE ASSUMED PROPERTIES BE CONFIRMED BY A GEOTECHNICAL ENGINEER VIA A SOIL REPORT OR AN ON SITE INSPECTION DURING INSTALLATION.



2'-6" ROUND PIER, CENTERED  
AROUND THE CIRCULAR REBAR CAGE

\* DEPTH SHOWN IS  
MINIMUM ALLOWABLE.  
ACTUAL DEPTH MUST  
BE MIN. 6" BELOW  
LOCAL FROST LEVEL.



BASE CAGE P/N 102973. INSTALL CENTERED IN PIER,  
WITH ALL THREADS EXPOSED. PACK NON-SHRINK  
STRUCTURAL GROUT UNDER FOUNDATION PLATE P/N 102974  
AFTER LEVELLING PLATE - BEFORE ERECTING TOWER.

# 4 HORIZONTAL TIES - SEE (C) ON PAGE 8.  
5 PIECES REQ., EQUALLY SPACED.

#6 VERTICAL REBAR, SEE (B) ON PAGE 8.  
9 PIECES REQ., EQUALLY SPACED,  
TO BE PLACED INSIDE TIES.

#4 HORIZONTAL BARS - SEE (A) ON PAGE 8.  
8 EACH WAY, EVENLY SPACED.

NOTE: ALL REBAR IS EQUALLY SPACED AND  
REQUIRES MIN. 3" CONCRETE COVER.

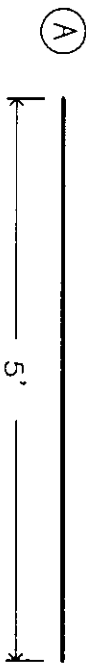
TOWER BASE FOUNDATION  
1.8 CU. YDS. CONCRETE REQUIRED



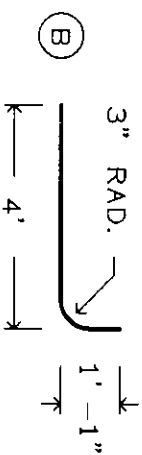
1-877-467-4153 Pymouth, IN  
1-588-880-9191 St. Paul, OR

REV		DESCRIPTION OF REVISIONS		DATE	INITIALS
A	FOUNDATION PER ASSUMED SOIL	10/14/2005	TMW	10/14/2005	WBR
B	SITE NAME REVISION	10/14/2005	BAJ	10/14/2005	WBR
DRAWN BY		COPYRIGHT		APPROVED/FOUND.	
BAJ		2005		10/14/2005	
DRAWING NO.		195904		195904	

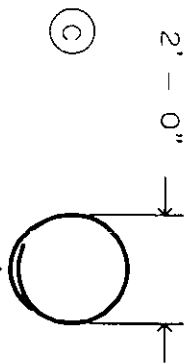
U P C WIND #3 WTG07 TEMP MET  
 KAHEAWA WIND FARM MAUI, HI  
 #18 X 175'



#4 REBAR - 16 PIECES REQUIRED TOTAL  
 APPROX WT = 3.3# EACH, 52# TOTAL



#6 REBAR - 9 PIECES REQUIRED TOTAL  
 APPROX UNBENT LENGTH = 4'-11-1/2"  
 APPROX WT = 7.4# EACH, 67# TOTAL

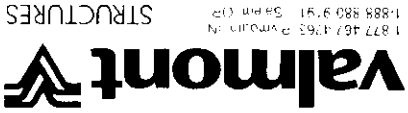


#4 REBAR - 5 PIECES REQUIRED TOTAL

LAP DIMENSION: 1'-9-3/8"  
 PLACE REBAR RINGS SO THAT LAPS ON  
 ADJACENT RINGS ARE 180 DEGREES APART  
 APPROX UNBENT LENGTH = 8'-0-7/8"  
 APPROX WT = 5.4# EACH, 27# TOTAL

TOTAL APPROXIMATE REBAR WEIGHT = 146#  
 REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS

TOWER BASE FOUNDATION  
 REBAR DETAIL - NOT TO SCALE

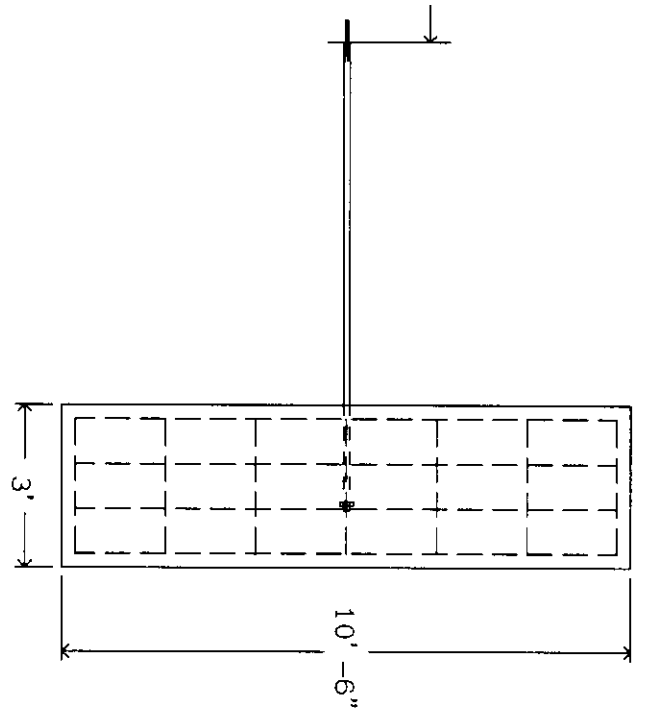


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Printed from 195904_090B.DWG - 10/14/2005 13:49 @ 12/12/2005 11:53		ARCHIVE		PAGE 9 OF 12	
REV		DESCRIPTION OF REVISIONS		DRAWN BY	
A		FOUNDATION PER ASSUMED SOIL		BAJ	
B		SITE NAME REVISION		BAJ	
APPROVED/ENG.		DATE		APPROVED/FOUND.	
WBR 10/14/2005		10/14/2005		WBR 10/14/2005	
APPROVED/ENG.		DATE		APPROVED/FOUND.	
WBR 10/14/2005		10/14/2005		WBR 10/14/2005	
COPYRIGHT 2005		DATE		APPROVED/FOUND.	
DRAWN BY		DATE		APPROVED/FOUND.	
BAJ		10/14/2005		WBR 10/14/2005	
DRAWING NO.		DATE		APPROVED/FOUND.	
195904		10/14/2005		WBR 10/14/2005	
1-877-467-4163 Pyramon IN		DATE		APPROVED/FOUND.	
1-889-880-9191 Schem OR		DATE		APPROVED/FOUND.	
STRUCTURES		DATE		APPROVED/FOUND.	
valmont		DATE		APPROVED/FOUND.	

U P C WIND #3 WTG07 TEMP MET  
KAHEAWA WIND FARM MAUI, HI  
#18 X 175'

VERTICAL CENTERLINE OF ANCHOR HEAD MUST BE PLUMB  
+/- 2 DEGREES. ANCHOR RODS MUST BE STRAIGHT. CENTER-  
LINE OF ANCHOR AND RODS MUST BE IN LINE WITH CENTER-  
LINE OF TOWER +/- 1/2 DEGREE (ALL ANCHORS.)

SEE PAGE 4 FOR ACTUAL  
← DISTANCE TO TOWER BASE  
AND RELATIVE HEIGHT.

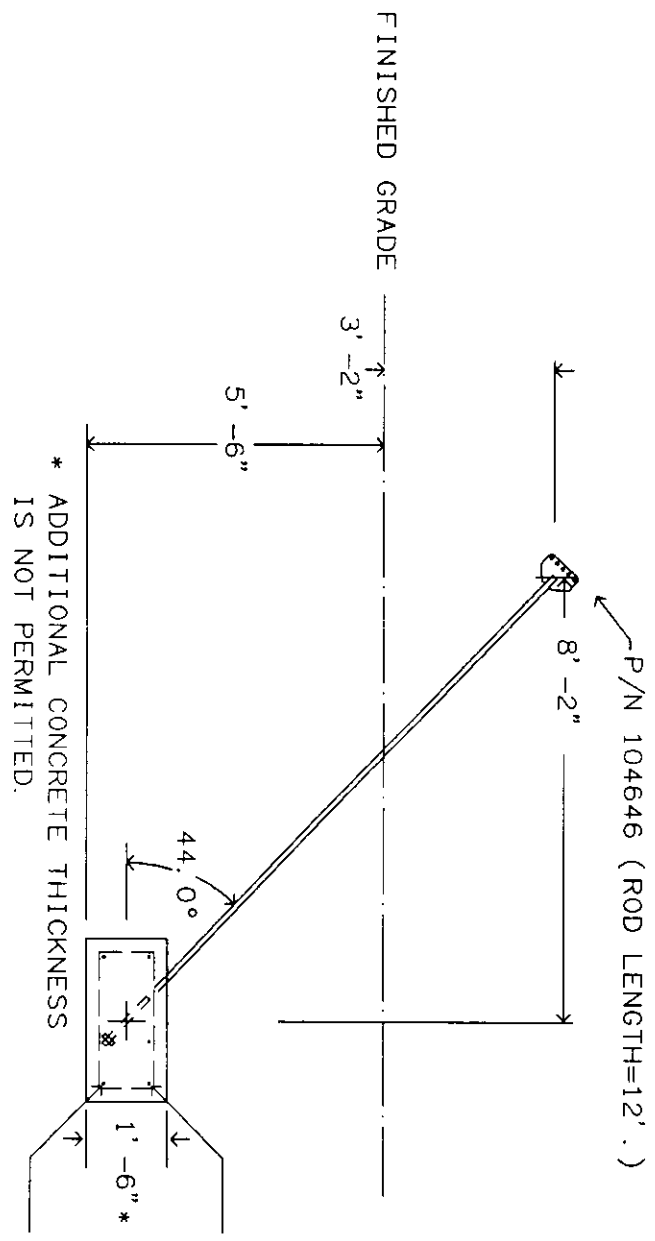


THE FOUNDATIONS DEPICTED ON THIS  
DRAWING WERE DESIGNED PER ASSUMED  
SOIL PARAMETERS. ALTHOUGH, IT IS  
OUR EXPECTATION THAT THE SOIL WILL  
EXHIBIT SUFFICIENT STRENGTH TO  
COMPLY WITH THE ASSUMED STRENGTHS.  
IT IS POSSIBLE THAT THE SOIL MAY  
NOT EXHIBIT THE REQUIRED STRENGTHS.  
THEREFORE, IT IS HIGHLY RECOMMENDED  
THAT THE ASSUMED PROPERTIES BE  
CONFIRMED BY A GEOTECHNICAL  
ENGINEER VIA A SOIL REPORT OR AN ON  
SITE INSPECTION DURING INSTALLATION.

ALL REBAR IS EQUALLY SPACED AND  
REQUIRES MIN. 3" CONCRETE COVER.

FOR GUY WIRE INSTALLATION SEE  
DRAWING #104834-B.

FOR GUY HARDWARE SIZES SEE TABLE  
ON PAGE 3.



\* ADDITIONAL CONCRETE THICKNESS  
IS NOT PERMITTED.

#4 HORIZONTAL BARS.  
SEE (A) ON PAGE 10.  
4 EA IN TOP  
2 EA IN BOTTOM

7 EA #4 BARS FORMED INTO  
RECTANGLE. SEE (B) ON PAGE 10.

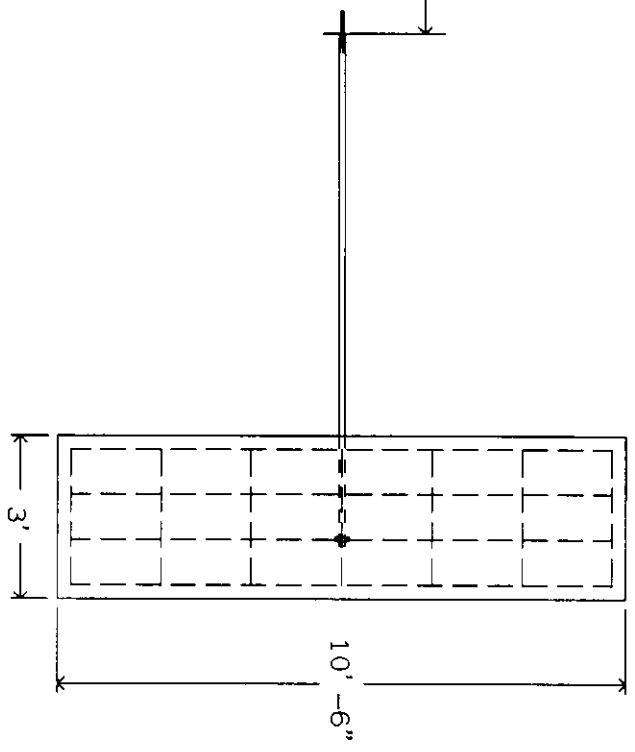
GUY ANCHOR AT LOCATIONS A-1 AND B-1 ONLY  
2 REQUIRED - 1.8 CU. YDS. CONCRETE REQUIRED EACH



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COPYRIGHT 2005		APPROVED/FOUND.		WBR 10/14/2005	
DATE		APPROVED/ENG.		WBR 10/14/2005	
DESCRIPTION OF REVISIONS		INITI		10/14/2005	
A FOUNDATION PER ASSUMED SOIL		TMW		10/14/2005	
B SITE NAME REVISION		BAJ		10/14/2005	
U P C WIND #3 WTG07 TEMP MET KAHEAWA WIND FARM MAUI, HI #18 X 175'					

VERTICAL CENTERLINE OF ANCHOR HEAD MUST BE PLUMB  
 +/- 2 DEGREES. ANCHOR RODS MUST BE STRAIGHT. CENTER-  
 LINE OF ANCHOR AND RODS MUST BE IN LINE WITH CENTER-  
 LINE OF TOWER +/- 1/2 DEGREE (ALL ANCHORS.)

SEE PAGE 4 FOR ACTUAL  
 ← DISTANCE TO TOWER BASE  
 AND RELATIVE HEIGHT.

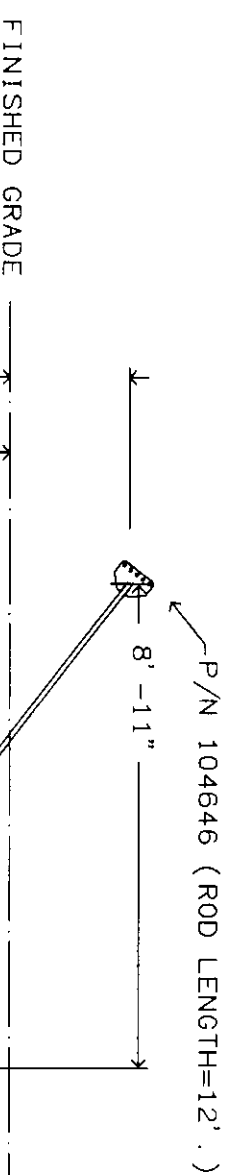


THE FOUNDATIONS DEPICTED ON THIS  
 DRAWING WERE DESIGNED PER ASSUMED  
 SOIL PARAMETERS. ALTHOUGH, IT IS  
 OUR EXPECTATION THAT THE SOIL WILL  
 EXHIBIT SUFFICIENT STRENGTH TO  
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 ENGINEER VIA A SOIL REPORT OR AN ON  
 SITE INSPECTION DURING INSTALLATION.

ALL REBAR IS EQUALLY SPACED AND  
 REQUIRES MIN. 3" CONCRETE COVER.

FOR GUY WIRE INSTALLATION SEE  
 DRAWING #104834-B.

FOR GUY HARDWARE SIZES SEE TABLE  
 ON PAGE 3.



\* ADDITIONAL CONCRETE THICKNESS  
 IS NOT PERMITTED.

#4 HORIZONTAL BARS.  
 SEE (A) ON PAGE 12.  
 4 EA IN TOP  
 2 EA IN BOTTOM  
 7 EA #4 BARS FORMED INTO  
 RECTANGLE. SEE (B) ON PAGE 12.

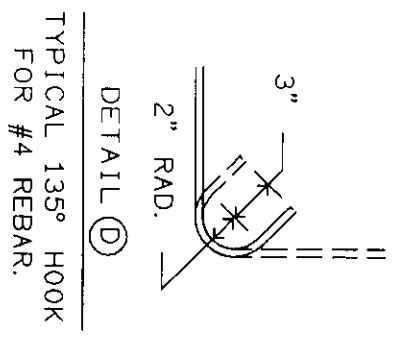
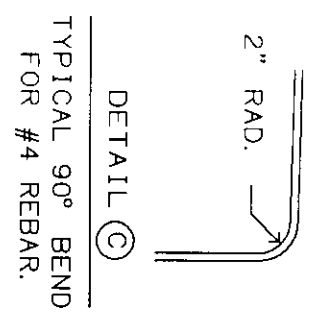
GUY ANCHOR AT LOCATION C-1 ONLY  
 1 REQUIRED - 1.8 CU. YDS. CONCRETE REQUIRED

From: F1008198.DFT - 10/14/2005 13:47		ENG. FILE NO. A-121666-		PAGE 12 OF 12	
Printed from 195904_1208.DWG - 10/14/2005 13:50 @ 12/12/2005 11:53		ARCHIVE F-1008198		DRAWING NO. 195904	
REV		DESCRIPTION OF REVISIONS		DRAWN BY BAJ	
A		FOUNDATION PER ASSUMED SOIL		COPYRIGHT 2005	
B		SITE NAME REVISION		APPROVED/FOUND. WBR 10/14/2005	
				APPROVED/ENG. WBR 10/14/2005	
				DATE	
				INITI	
				10/14/2005	
				BAJ	
				10/14/2005	

U P C WIND #3 WIG07 TEMP MET  
KAHEAWA WIND FARM MAUI, HI  
#18 X 175'

(A)  
10'  
#4 REBAR - 6 PIECES REQUIRED TOTAL.  
APPROX WT = 6.7# EACH, 40# TOTAL

(B) 2'-6"  
1'  
SEE DETAIL (C)  
SEE DETAIL (D)  
#4 REBAR - 7 PIECES REQUIRED TOTAL.  
FORMED INTO A RECTANGLE WITH 135° HOOK AT BOTH ENDS  
APPROX UNBENT LENGTH = 7'-6"  
APPROX WT = 5.0# EACH, 35# TOTAL



TOTAL APPROXIMATE REBAR WEIGHT = 75#  
REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS.

GUY ANCHOR AT LOCATION C-1 ONLY  
REBAR DETAIL - NOT TO SCALE

