March 20, 2001

Sandy M. Carter
Verizon Wireless
20 Alexander Drive
P.O. Box 5029
Wallingford, CT 06492

RE: **TS-VER-023-010216-2** - Cellco Partnership d/b/a Verizon Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 96 Powder Mill Road, Canton.

Dear Ms. Carter:

At a public meeting held March 15, 2001, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated February 16, 2001.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Kathleen C. Corkum, First Selectman, Town of Canton
Frederick E. Turkington, Jr., Chief Administrative Officer, Town of Canton
Eric Barz, Town Planer, Town of Canton
Esther McNany, SBA, Inc.
Julie M. Donaldson, Esq., Hurwitz & Sagarin LLC
Christopher B. Fisher, Esq., Cuddy & Feder & Worby LLP

Network Dept.

verizon wireless

Verizon Wireless
20 Alexander Drive
Wallingford, Connecticut 06492

February 16, 2001

Mr. Mortimer A. Gelston, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: **Request by Cellco Partnership d/b/a Verizon Wireless for an Order to Approve the Shared Use of a Tower Facility located at 96 Powder Mill Road, Canton, Connecticut.**

Dear Chairman Gelston:

Pursuant to Connecticut General Statutes (C.G.S.) Sec.16-50aa, Cellco Partnership d/b/a Verizon Wireless hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed-shared use by Verizon Wireless of an existing tower located at 96 Powder Mill Road, Canton, Connecticut. The property is owned by Properties One LLC and the tower is owned and managed by SBA Towers, Inc.. As shown on the attached drawing and as further described below, Verizon Wireless proposes to install antennas on the existing tower and to locate its equipment building at the base of the tower. Verizon Wireless requests that the Council finds that the proposed shared use of the tower facility satisfy the criteria stated in C.G.S. Sec. 16-50aa, and to issue an order approving the proposed shared use.

Background

Verizon Wireless is licensed by the Federal Communications Commission to provide cellular telephone service in the Hartford County New England County Metropolitan Area (NECMA), which includes the area to be served by the proposed Canton installation.

The facility at 96 Powder Mill Road in Canton, consists of a 180 foot AGL monopole tower built by SBA Towers, Inc. and is located on a leased parcel of land owned by Properties One LLC. The monopole tower currently supports the antennas of Sprint Spectrum PCS, and AT&T. The latter are wireless carriers that provide mobile communications service to the public pursuant to their FCC licenses. Verizon Wireless and SBA Towers Inc. have agreed to the proposed-shared use of this tower pursuant to mutually acceptable terms and conditions.

Verizon Wireless proposes to install twelve (12) Swedcom Model ALP9011 antennas, approximately 43 inches in height, on a platform with their center of radiation at approximately 147 feet above ground level ("AGL"). Verizon Wireless will also install one (1) GPS antenna on the antenna platform. Equipment associated with these antennas would be located in a new approximately 12-foot x 20-foot equipment building located at the base of the tower.

C.G.S. Sec. 16-50aa provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the Council shall issue an order approving such shared use" (C.G.S. Sec. 16-50aa©(1).)

Discussion

A. Technical Feasibility. The existing tower is structurally sound and capable of supporting the proposed Verizon Wireless antennas. The tower will not require any structural modification to support the proposed attachments. A copy of the structural design is attached to this application. Verizon Wireless engineers have determined that the proposed antenna installations present minimal potential for interference to or from existing radio transmissions from this location. In addition, the applicant is unaware of any occasion where its operations have caused interference with AM, FM or television reception. The proposed shared use of this tower therefore is technically feasible.

B. Legal Feasibility. Under C.G.S. Sec. 16-50aa, the Council has been authorized to issue an order approving the proposed shared use of an existing communications tower facility such as the facility at 96 Powder Mill Road. (C.G.S. Sec. 16-50aa©(1).) This authority complements the Council's prior existing authority under C.G.S. sec. 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. C.G.S. Sec. 16-50x(a) directs the Council to "give consideration to other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the authority vested in the Council by C.G.S. Sec. 16-50aa, an order by the Council approving the shared use would permit the applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use would have a minimal environmental effect, for the following reasons:

1. The proposed installations would have an insignificant incremental visual impact, and would not cause any significant change or alteration in the physical or environmental characteristics of the existing site. The addition of the proposed antennas would not increase the height of the tower, and would not extend the existing boundaries of the tower site, including the placement of the equipment building near the base of the tower.

2. The proposed installation would not increase the noise levels at the existing facility by six decibels or more. The only noise will occur during emergency use or periodic exercising of the generator.

3. Operation of the additional antennas will not increase the total radio frequency electromagnetic radiation power density, measured at the tower base to a level at or above the applicable standard. "Worst-case" exposure calculations for a point at the base of the tower in relation to operation of Verizon Wireless's and the other existing antenna arrays is as follows:

	Applicable ANSI Stnd	Calculated "Worst-Case"	Percentage Of Stnd
Verizon Wireless	0.583 mW/cm2	0.0316 mW/cm2	5.42%
Sprint	1.000 mW/cm2	0.0154 mW/cm2	1.54%
AT&T	1.000 mW/cm2	0.0117 mW/cm2	1.17%
		Total	8.13%

The collective "worst-case" exposure would be only 8.13% of the ANSI standard, as calculated for mixed frequency sites. Power density levels from shared use of the tower facility would thus be well below the applicable ANSI standards.

4. The proposed installations would not require any water or sanitary facilities or generate discharges to water bodies. Operation of the emergency back-up generator will result in limited air emissions, pursuant to R.C.S.A. Section 22a-174-3, the generator will require the issuance of a permit from the Department of Environmental Protection Bureau of Air Management by the owner of the generator. After construction is complete, the proposed installation would not generate any traffic other than periodic maintenance visits. The proposed use of this facility would therefore have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, the tower owner and the applicant have entered into a mutual agreement to share the use of the existing tower on terms agreeable to the parties, and the proposed tower sharing is thus economically feasible.

E. Public Safety Concerns. As stated above, the existing tower is structurally capable of supporting the proposed Verizon Wireless antennas. The Applicant is not aware of any other public safety concerns relative to the proposed tower sharing of the existing tower. In fact, the provision of new or improved cellular phone service in the Town of Canton, especially Route 44, Route 179, Route 202 and in the Collinsville area in Canton, through shared use of the tower is expected to enhance the safety and welfare of area residents and travelers. The public safety benefits of wireless service are further illustrated by the decision of local authorities elsewhere in Connecticut to provide cellular phones to residents to improve local public safety and emergency communications. The proposed-shared use of this facility would likewise improve public safety in the Canton area.

Conclusion

For the reasons discussed above, the proposed shared use of the existing telecommunications tower facility at 96 Powder Mill Road satisfies the criteria stated in C.G.S. Sec. 16-50aa, and advances the General Assembly's and the Council's goal of preventing the proliferation of towers in Connecticut. The Applicant therefore requests that the Council issue an order approving the proposed shared use.

Thank you for your consideration of this matter.

Pursuant to Connecticut General Statutes Sec. 16-50v and Section 16-50v-1(a) of the Regulations of Connecticut State Agencies, Verizon Wireless has enclosed a check in the amount of $500.00 for the required filing fee.

Respectfully yours,

Sandy M. Carter

Sandy M. Carter
Manager – Regulatory
Verison Wireless

Attachments
cc: Honorable Ms. Kathleen C. Corkum, First Selectman

Network Dept.

Verizon Wireless
20 Alexander Drive
Wallingford, Connecticut 06492

February 16, 2001

Honorable Ms. Kathleen C. Corkum,
First Selectman
Town Hall
4 Market Street
Collinsville, Connecticut 06019

Dear Ms. Corkum:

This letter is to inform you that Cellco Partnership d/b/a Verizon Wireless plans to install antennas and associated equipment at the existing tower facility located at 96 Powder Mill Road in Canton, Connecticut. I am enclosing a copy of Verizon Wireless's tower sharing application to the Connecticut Siting Council.

The application fully describes Verizon Wireless's proposal. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (203) 294-8519 or Joel Rinebold, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Sandy M. Carter

Sandy M. Carter
Manager – Regulatory
Verizon Wireless

Enclosure

February 7, 2001

Sandy Carter
Regulatory Manager
Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

RE: SBA South Canton Facility
4275-029 / Powder Mill Road
96 Powder Mill Road

Dear Sandy:

Please consider this as a Letter of Authorization for Verizon to proceed with any and all necessary permits and approvals to collocate on the above referenced facility.

We acknowledge that Verizon has filed a Collocation Application with SBA and that that application has been approved. As always, we look forward to working with you. If I can be of further assistance, please call.

Sincerely,

Esther K. McNany
Territory Manager

SBA, Inc. ▪ 80 Eastern Blvd. ▪ Glastonbury, CT 06033 ▪ (860) 659-9101 Fax (860) 659-9140

NATCOMM, LLC

Consulting Engineers

February 6, 2001

Mr. Mark Gauger
Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re.: Verizon ~ SBA Collinsville II Site
96 Powder Mill Road, Canton, Connecticut
Natcomm, LLC Project No. 316C

Dear Mr. Gauger:

We have completed a review of the structural assessment and loading conditions for the existing SBA, Inc. tower at the above referenced site. The review was performed to determine the adequacy of the 180 ft. self supported monopole tower for carrying additional loads from the proposed Verizon Wireless antennas and cables. The analysis is in compliance with local codes and regulations.

The calculations are based on the proposed equipment being installed at 147 ft. above the tower base plate elevation. The dead loads of the proposed equipment, as well as live loads from wind forces and ice build-up on the tower and equipment were considered. Existing and future equipment were considered in the analysis, however, there are no current inventories available for the co-locating carriers to compare against the design parameters.

Review of the structural analysis report completed by Valmont – Microflect Engineering dated July 25, 2000 has shown that the tower is adequate to support the proposed Verizon equipment loading with the existing and future loading as indicated in the report. The structural report specifies a total of 12 generic antennas (Model No. DB896) at this elevation. The proposed antenna model to be installed is ALP 9011.

A comparison of the specifications for the two antenna models has shown that the proposed equipment will impose significantly less wind load on the tower and will ultimately reduce the overturning moment at the base of the structure. This evaluation is based on information provided by the antenna manufacturers.

In conclusion, the existing monopole tower located at 96 Powder Mill Road, Canton, CT is suitable for installation of the proposed Verizon Wireless equipment based on the generic antenna models used for existing and future carriers. If there are any questions regarding this matter, please feel free to call.

Sincerely,

Walter E. Pierson, P.E.
Project Engineer

c.c. F. Tomcak, Natcomm, LLC.
C.F. Centore, Natcomm, LLC.

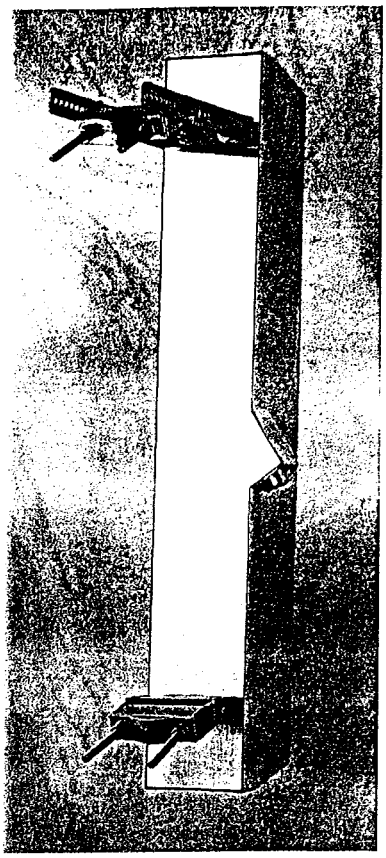
Swedcom

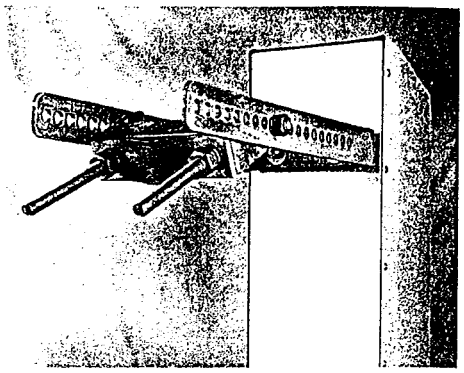
ALP-E 9011-Din

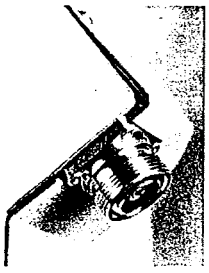
Enhanced Log-Periodic Antenna

Features:

- ❑ Small Size
- ❑ Aesthetically Pleasing
- ❑ Suitable For TDMA/CDMA
- ❑ High Return Loss
- ❑ Low Intermodulation
- ❑ High FTB
- ❑ Broadbanded
- ❑ Side-lobe Suppression
- ❑ Sturdy Design
- ❑ Down-Tilt Brackets Incl.







The distance between the center of the bolts (on the back of the antenna) are shown in the drawing above.

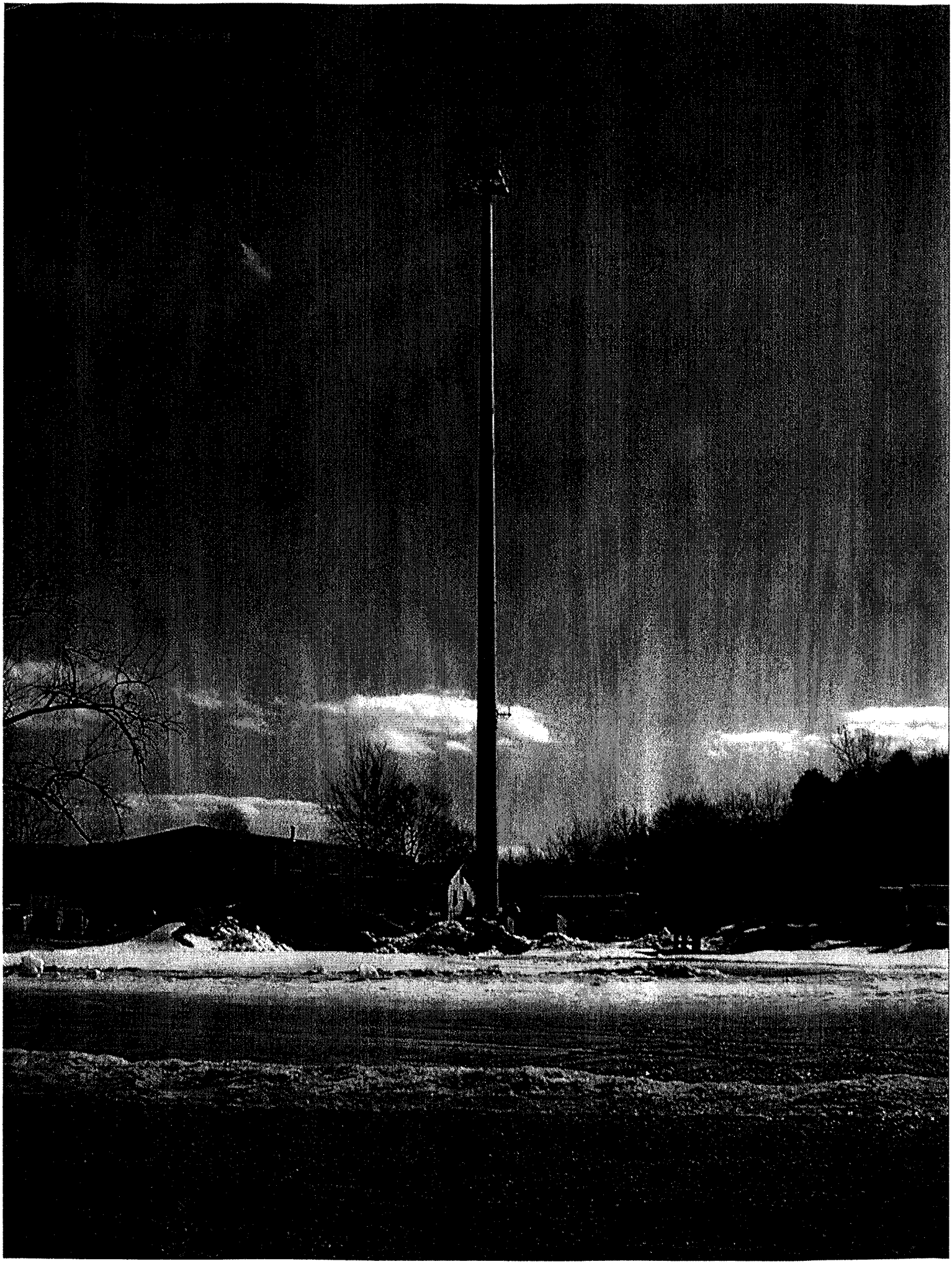
Bolt diameter is: **3/8-16** [comes with lock nut].

Frequency Range:	**800-900 MHz**
Impedance:	**50 ohm**
Connector Type:	**7/16 Din**
Return Loss:	**20 dB**
Polarization:	**Vertical**
Gain:	**> 11 dBd**
Front To Back Ratio:	**> 30 dB**
Side-Lobe Suppression:	**18 dB**
Intermodulation (2x25W):	**IM3 > 146 dB**
	IM5 > 153 dB
	IM7/9 > 163 dB
Power Rating:	**500 W**
H-Plane (-3 dB point):	**85 - 92°**
V-Plane (-3 dB point):	**16 - 18°**
Lightning Protection:	**DC Grounded**

Overall Height:	**43 in**	**[1092 mm]**
Width:	**6.5 in**	**[165 mm]**
Depth:	**8 in**	**[203 mm]**
Weight Including Tilt-Brackets:	**20 lbs**	**[9.1 Kg]**
Rated Wind Velocity:	**113 mph**	**[180 Km/h]**
Wind Area (CxA/Side):	**2.3 sq. ft.**	**[0.22 sq.m]**
Lateral Thrust At Rated Wind Worst Case:	**112 lbs**	**[500 N]**

Radiating Elements:	**Aluminum**
Extrusion:	**Aluminum**
Radome:	**Grey PVC**
Tilt-Bracket:	**Hot Dip Galvanized Steel**
Antenna Bolts:	**Stainless Steel**

The ALP-E 9011-Din is made in U.S.A.



verizon wireless

WIRELESS COMMUNICATIONS FACILITY

COLLLINSVILLE 2
96 POWDER MILL RD.
CANTON, CONNECTICUT 06059

PROJECT SUMMARY

SITE NAME:	COLLINSVILLE 2
SITE ADDRESS:	98 POWDER MILL RD. CANTON, CONNECTICUT 06059
SITE OWNER:	SBA, INC. 80 EASTERN BLVD. GLASTONBURY, CT 06033 (860) 659-9101
PROPERTY OWNER:	PROPERTIES ONE, LLC P.O. BOX 125, 54 CHURCH STREET COLLINSVILLE, CONNECTICUT 06022
APPLICANT:	CELLCO PARTNERSHIP 20 ALEXANDER DR. WALLINGFORD, CT 06492 (203) 294-7440
CENTER OF TOWER:	LATITUDE: 41°-50'-02.93" LONGITUDE: 72°-55'-59.24"

GENERAL NOTES

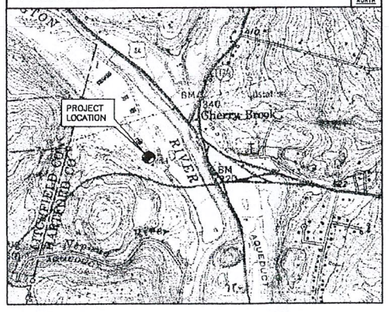
1. PROPOSED ANTENNA AND MOUNTING PLATFORM ELEVATIONS WERE PROVIDED BY VERIZON WIRELESS. EXISTING PLATFORM HEIGHT INFORMATION PROVIDED BY THE SITE OWNER.

SITE DIRECTIONS

FROM : TO :

VICINITY MAP

NOT TO SCALE



SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	00
C-1	COMPOUNDPLAN&TOWER ELEVATIONS	00

REVISIONS

00	02/12/01	SITING COUNCIL

Cellco Partnership
d.b.a. verizon wireless

Natcomm, LLC • Engineering Consultants

Natcomm, LLC.
83-2 North Branford Road
Branford, Connecticut 06405

Tel (203) 488-0580
Fax (203) 488-8587

Consulting Engineers • Project Management
Civil • Structural • Mechanical • Electrical

STATE OF CONNECTICUT
CHARLES F. CENTOLELLA
No. 16694
PROFESSIONAL ENGINEER

COLLINSVILLE 2

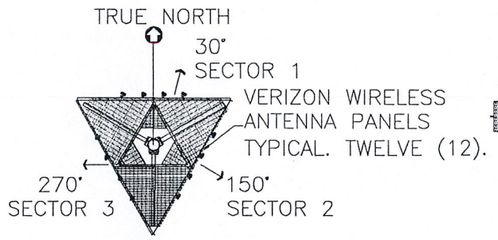
96 POWDER MILL RD.
CANTON, CT. 06059

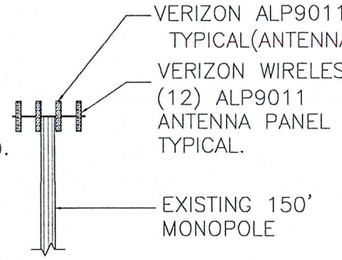
PROJECT NO:	316A
DRAWN BY:	DFB
CHECKED BY:	JJP
SCALE:	AS NOTED
DATE:	02/12/01

TITLE PAGE

T-1

DWG. 1 OF 2

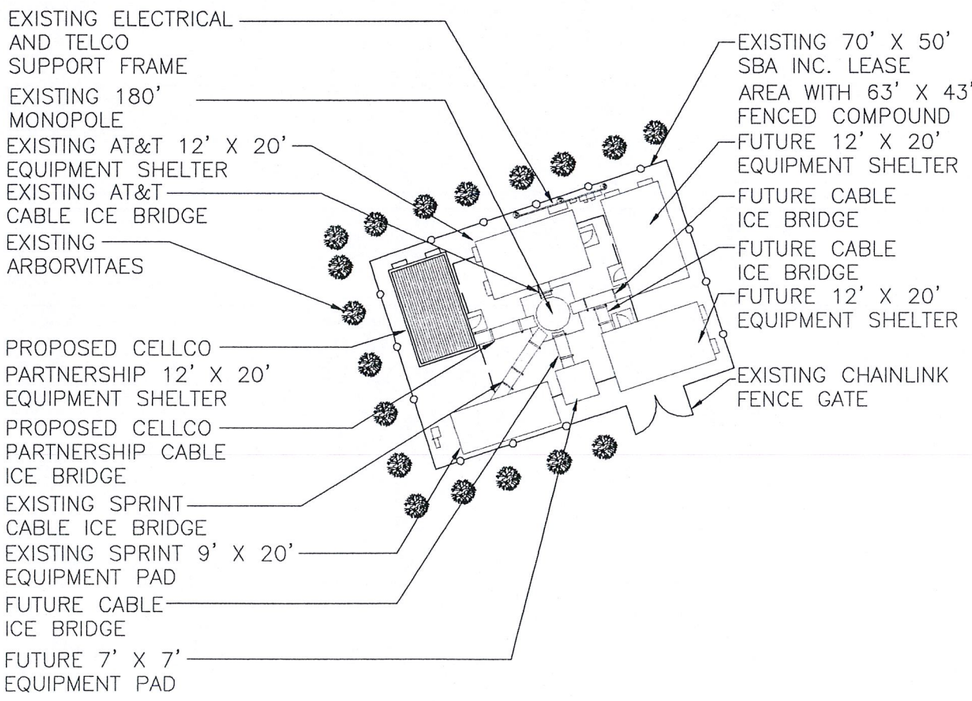




3 / C-1 **MONOPOLE ANTENNA MOUNTING CONFIGURATION**

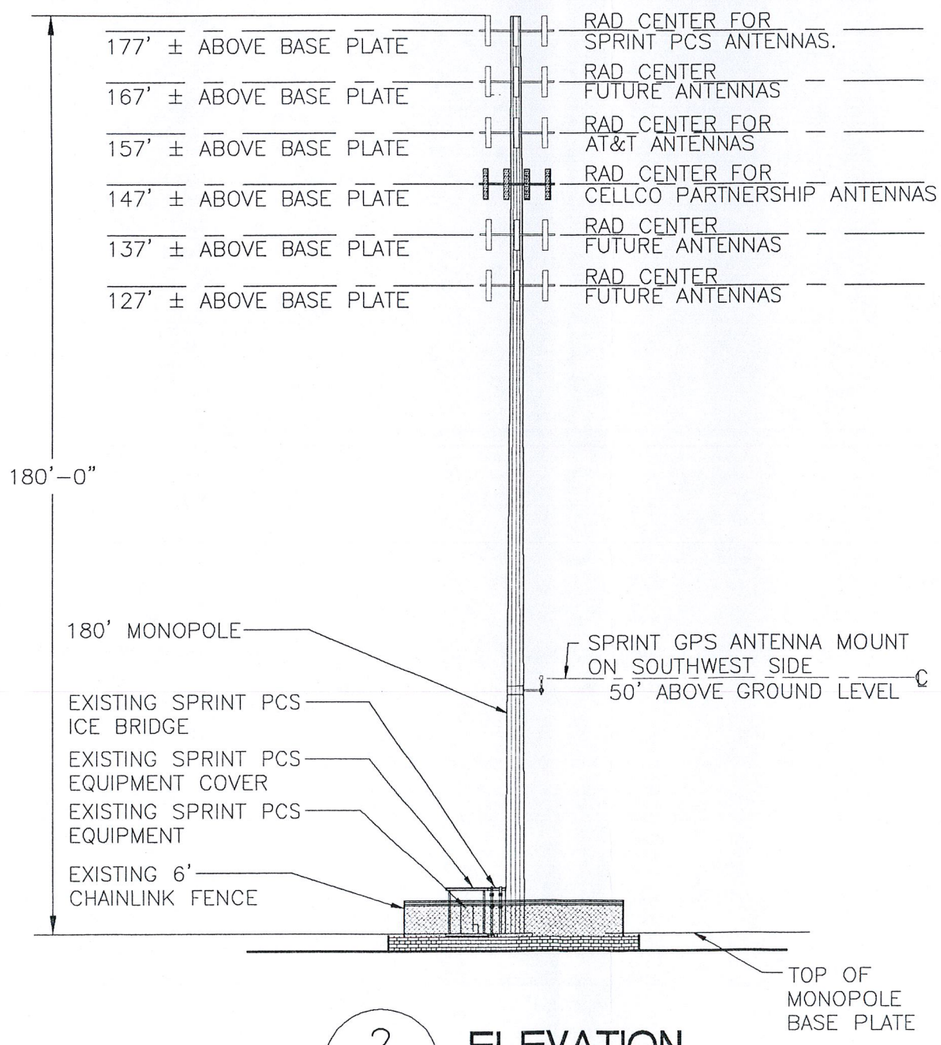
SCALE: NONE

LAT: 41° 50' 02.93"
LONG.: 72° 55' 59.24"
BASED ON CT SITING COUNCIL



1 / C-1 **COMPOUND PLAN**

NOT TO SCALE



2 / C-1 **ELEVATION**

NOT TO SCALE

REVISIONS		
00	02/12/01	SITING COUNCIL

Cellco Partnership
d.b.a. verizon wireless

Natcomm, LLC • Engineering Consultants
Natcomm, LLC.
83-2 North Branford Road
Branford, Connecticut 06405
Tel. (203) 488-0580
Fax (203) 488-8587
Consulting Engineers • Project Management
Civil • Structural • Mechanical • Electrical

COLLINSVILLE 2

96 POWDER MILL RD.
CANTON, CT. 06059

PROJECT NO:	316A
DRAWN BY:	DFB
CHECKED BY:	JJP
SCALE:	AS NOTED
DATE:	02/12/01

COMPOUND PLAN & ELEVATION

C-1

DWG. 2 OF 2

valmont

MICROFLECT

VALMONT/MICROFLECT
3575 25TH ST. SE - P.O. BOX 12985
SALEM, OREGON 97302-1190
PHONE: 1-800-547-2151
ENGINEER: Chris Blaumer, E.I.T. (X267)
Reviewed by: TWB

COMMUNICATION POLE DESIGN CALCULATIONS

AUG 0 3 2000

SBA
VALMONT ORDER #12156-00
SITE NAME: 4275-029, South Canton, CT
POLE HEIGHT: 180

valmont
MICROFLECT

BY_____ DATE _____
CHKD. BY _____ DATE _____

SHEET NO. _____

7/25/00

ENGINEERING DATA

for

SBA

4275-029, South Canton, CT

VALMONT ORDER 12156-00

EIA/TIA-222-F
BASIC WIND: 80.0 MPH
WIND & ICE: 69.3 MPH AND 0.5 IN. ICE
TWIST & SWAY: NOT REQUIRED

QTY	DESCRIPTION	HEIGHT	DATA W.O. ICE EPA	DATA W.O. ICE WT	DATA W/ ICE EPA	DATA W/ ICE WT
1	Lightning Rod, 7'	@ 180.0 '	1.05	35	1.73	44
12	DB896	@ 177.0 '	54.60	264	58.92	660
1	Platform, Valmont w/o rails, 13.42'	@ 177.0 '	24.80	2000	26.20	2500
12	DB896	@ 167.0 '	54.60	264	58.92	660
1	Platform, Valmont w/o rails, 13.42'	@ 167.0 '	24.80	2000	26.20	2500
12	DB896	@ 157.0 '	54.60	264	58.92	660
1	Platform, Valmont w/o rails, 13.42'	@ 157.0 '	24.80	2000	26.20	2500
12	DB896	@ 147.0 '	54.60	264	58.92	660
1	Platform, Valmont w/o rails, 13.42'	@ 147.0 '	24.80	2000	26.20	2500
12	DB896	@ 137.0 '	54.60	264	58.92	660
1	Platform, Valmont w/o rails, 13.42'	@ 137.0 '	24.80	2000	26.20	2500
12	DB896	@ 127.0 '	54.60	264	117.84	660
1	Platform, Valmont w/o rails, 13.42'	@ 127.0 '	24.80	2000	26.20	2500

AUG 0 3 2000

VALP SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00

I N P U T D A T A L I S T SEE FILE ACTLQUOT FOR SPOOL OUTPUT

SHAP	HEXD	180.00							5
STEE	7565	0.00	0.00	1.00	0.00	4.00		0	
CONS		1.00	1.50	0.5000		5.00	1.00	1	2
WIND	C		1.69	0.00	0.80				
POLE	DIA	60.000	0.1950						
SEC	HEIG	52.75	98.00	137.00	0.00	0.00	0		
THIC	NESS	0.50000	0.43750	0.28125	0.25000	0.00000	0.00000		
BCON		2.0							
ROUT							33.00	1	10
LOAD	ARM	180.00	183.50	0.00	45.0			0	1
LOAD	ARM	177.00	180.10	0.00	45.0			0	2
LOAD	ARM	177.00	177.00	0.00	45.0			0	3
LOAD	ARM	167.00	170.10	0.00	45.0			0	4
LOAD	ARM	167.00	167.00	0.00	45.0			0	5
LOAD	ARM	157.00	160.10	0.00	45.0			0	6
LOAD	ARM	157.00	157.00	0.00	45.0			0	7
LOAD	ARM	147.00	150.10	0.00	45.0			0	8
LOAD	ARM	147.00	147.00	0.00	45.0			0	9
LOAD	ARM	137.00	140.10	0.00	45.0			0	10
LOAD	ARM	137.00	137.00	0.00	45.0			0	11
LOAD	ARM	127.00	130.10	0.00	45.0			0	12
LOAD	ARM	127.00	127.00	0.00	45.0			0	13
LCID	LOD1	80.00	45.00	1.00	0.000	0.00	0.00		1
FORC	DATA			35.00	1.05	1-Lightning Rod, 7			1
FORC	DATA			264.00	54.60	12-DB896			2
FORC	DATA			2000.00	24.80	1-Platform, Valmon			3
FORC	DATA			264.00	54.60	12-DB896			4
FORC	DATA			2000.00	24.80	1-Platform, Valmon			5
FORC	DATA			264.00	54.60	12-DB896			6
FORC	DATA			2000.00	24.80	1-Platform, Valmon			7
FORC	DATA			264.00	54.60	12-DB896			8
FORC	DATA			2000.00	24.80	1-Platform, Valmon			9
FORC	DATA			264.00	54.60	12-DB896			10
FORC	DATA			2000.00	24.80	1-Platform, Valmon			11
FORC	DATA			264.00	54.60	12-DB896			12
FORC	DATA			2000.00	24.80	1-Platform, Valmon			13
LCID	LOD2	69.00	45.00	1.00	0.000	0.50	0.00		1
FORC	DATA			44.00	1.73	1-Lightning Rod, 7			1
FORC	DATA			660.00	58.92	12-DB896			2
FORC	DATA			2500.00	26.20	1-Platform, Valmon			3
FORC	DATA			660.00	58.92	12-DB896			4
FORC	DATA			2500.00	26.20	1-Platform, Valmon			5
FORC	DATA			660.00	58.92	12-DB896			6
FORC	DATA			2500.00	26.20	1-Platform, Valmon			7
FORC	DATA			660.00	58.92	12-DB896			8
FORC	DATA			2500.00	26.20	1-Platform, Valmon			9
FORC	DATA			660.00	58.92	12-DB896			10
FORC	DATA			2500.00	26.20	1-Platform, Valmon			11
FORC	DATA			660.00	58.92	12-DB896			12
FORC	DATA			2500.00	26.20	1-Platform, Valmon			13
QUOT	POLE								
BASE	HXD6		0.00	45000.00	60012.00	2.250	18.00	1	3360

```
OPTI              0.00                          0.00     175.35      1.30          98
QUAN  TITY         1.0                                               22.00    21     0
HEF
HEF   GALV         0.0      0.000      0.000     0.000     0.000     0.000
HEF   STEP         0.0      0.000      1.250    12.000    72.000          VAL
HEF   HHOL         1.0      0.000      1.000     0.000     0.000     0.000
HEF   HHOL         3.0      0.000      4.000     0.000     0.000     0.000
HEF   HHOL        15.0      0.000      5.000     0.000     0.000     0.000
HEF   HHOL         5.0      0.000      3.000     0.000     0.000     0.000
HEF   IDEN12156-00
CHEF SAFC          1.0      1.000      0.000     0.000     0.000     0.000
CHEF GLUG          2.0      0.000      0.000     0.000     0.000     0.000
CHEF PLT1          1.0    177.00       30.0      111.0       4.0
CHEF PLT1          1.0    167.00       30.0      111.0       4.0
CHEF PLT1          1.0    157.00       30.0      111.0       4.0
CHEF PLT1          1.0    147.00       30.0      111.0       4.0
CHEF PLT1          1.0    137.00       30.0      111.0       4.0
CHEF PLT1          1.0    127.00       30.0      111.0       4.0
END   ATA
```

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

*** SUMMARY *** VERSION CPL-01

DESIGN SUMMARY (DOES NOT INCLUDE EMBEDMENT)

HEIGHT (FT)	POLE SHAFT WEIGHT (LBS)	POLE TAPER (IN/FT)	GROUND LINE DIAMETER (IN)	TOP DIAMETER (IN)	SHAPE
180.00	36542.	0.1950	60.000	26.837	16-SIDED SYMMETRICAL POLYGON

CONNECTIONS BETWEEN SECTIONS	/FIRST/	/SECOND/	/THIRD/
HEIGHT	52.75'	98.00'	137.00'
TYPE	LAP SPLICE	LAP SPLICE	LAP SPLICE
OVERLAP LENGTH	88"	76"	63"

SECTION CHARACTERISTICS	/FIRST/	/SECOND/	/THIRD/	/FOURTH/
BASE DIAMETER (IN)	60.000**	52.015	43.560	36.246
TOP DIAMETER (IN)	49.713	41.765	34.722	26.837
THICKNESS (IN)	0.50000	0.43750	0.28125	0.25000
LENGTH	52' 9"	52' 7"	45' 4"	48' 3"
WEIGHT (LBS)	15524.	11568.	5364.	4087.

** AT GROUNDLINE

ANALYSIS SUMMARY

	GROUND LINE	MAX. STRESS 1ST SECTION	MAX. STRESS 2ND SECTION	MAX. STRESS 3RD SECTION	MAX. STRESS 4TH SECTION	POLE TOP
GOVERNING LOADING CASE	LOD1	LOD1	LOD1	LOD1	LOD1	LOD1
HEIGHT (FT)	0.00	0.00	52.75	98.00	137.00	180.00
RESULTANT MOMENT (IN-KIPS)	59085.	59085.	35862.	18617.	6053.	2.
SHEAR FORCE (LBS)	38730.	38730.	32790.	27765.	20605.	48.
VERTICAL FORCE (LBS)	50161.	50161.	32875.	22248.	14938.	35.
COMBINED STRESS (KSI)	42.23	42.23	41.20	47.29	25.25	0.02
ALLOWABLE STRESS (KSI)	52.00	52.00	52.00	51.03	52.00	52.00
ALLOWABLE/COMBINED STRESS	1.23	1.23	1.26	1.08	2.06	999.99
TOTAL DEFLECTION (IN)	0.00	0.00	9.88	35.20	71.56	122.70

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

*** GROUNDLINE REACTIONS ***

FOR: 180.00 FOOT

LOADING CASE IDENTIFIER	MOMENTS (IN-KIPS) ABOUT X-AXIS	ABOUT Y-AXIS	RESULTANT (X & Y)	TORSIONAL	AXIAL FORCE (LBS)	SHEAR (LBS) IN X-DIRECTION	IN Y-DIRECTION	RESULTANT (X & Y)	NOTES
LOD1	41779.	41779.	59085.	-165.	50161.	27386.	27386.	38730.	A C
LOD2	33569.	33569.	47474.	-132.	60687.	21386.	21386.	30244.	B

NOTE: POSITIVE AXIAL FORCE IS DOWNWARD. AXIAL FORCE INCLUDES THE WEIGHT OF THE ABOVE-GROUND PORTION OF THE POLE SHAFT TIMES THE APPROPRIATE OVERLOAD FACTOR, IN ADDITION TO THE CONCENTRATED VERTICAL LOADING.

KEY TO THE SPECIAL NOTE ENTRIES
A INDICATES LOAD CASE WITH MAXIMUM OVERTURNING MOMENT
B INDICATES LOAD CASE WITH MAXIMUM AXIAL FORCE
C INDICATES LOAD CASE WITH MAXIMUM RESULTANT SHEAR

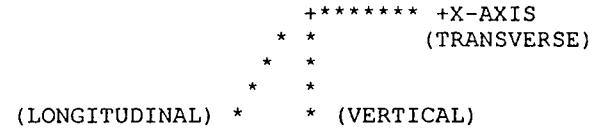
*** INPUT LOADS ***

LOADING CASE LOD1

BASIC VELOCITY IS 80.00 M.P.H.; ICE THICKNESS 0.00 INCHES
FORCE COEFFICIENT INCREASED TO ACCOUNT FOR PROJECTIONS (EIA NOTE #3)
- MULTIPLIER IS 1.3, BUT RESULT NOT TO EXCEED 1.2-
WIND ORIENTATION IS 45.0 DEGREES CLOCKWISE FROM -X- AXIS
POLE WEIGHT OVERLOAD FACTOR IS 1.000 EXPOSURE C GUST FACTOR 1.69
ARM LOCATION IS MEASURED CLOCKWISE FROM -X- AXIS
POSITIVE -Y- AXIS IS 90 DEGREES CLOCKWISE FROM -X- AXIS

FOUNDATION ROTATION OF 0.50 DEGREES

ORIENTATION OF SYSTEM



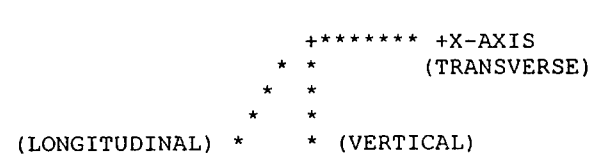
ARM NO.	ARM MOUNTING HEIGHT (FT)	HEIGHT OF LOAD APPLICATION POINT (FT)	ARM LENGTH (FT)	LOCATION OF ARM IN XY PLANE (DEGREES)	FORCE-Y (LBS)	FORCE-X (LBS)	FORCE-Z (LBS)	EPA (SQ. FT.)
1	180.00	183.50	0.00	45.00	34	34	35	1.0
2	177.00	180.10	0.00	45.00	1742	1742	264	54.6
3	177.00	177.00	0.00	45.00	787	787	2000	24.8
4	167.00	170.10	0.00	45.00	1713	1713	264	54.6
5	167.00	167.00	0.00	45.00	774	774	2000	24.8
6	157.00	160.10	0.00	45.00	1684	1684	264	54.6
7	157.00	157.00	0.00	45.00	761	761	2000	24.8
8	147.00	150.10	0.00	45.00	1653	1653	264	54.6
9	147.00	147.00	0.00	45.00	746	746	2000	24.8
10	137.00	140.10	0.00	45.00	1621	1621	264	54.6
11	137.00	137.00	0.00	45.00	732	732	2000	24.8
12	127.00	130.10	0.00	45.00	1587	1587	264	54.6
13	127.00	127.00	0.00	45.00	716	716	2000	24.8

*** INPUT LOADS ***

LOADING CASE LOD2

BASIC VELOCITY IS 69.00 M.P.H.; ICE THICKNESS 0.50 INCHES
FORCE COEFFICIENT INCREASED TO ACCOUNT FOR PROJECTIONS (EIA NOTE #3)
- MULTIPLIER IS 1.3, BUT RESULT NOT TO EXCEED 1.2-
WIND ORIENTATION IS 45.0 DEGREES CLOCKWISE FROM -X- AXIS
POLE WEIGHT OVERLOAD FACTOR IS 1.000 EXPOSURE C GUST FACTOR 1.69
ARM LOCATION IS MEASURED CLOCKWISE FROM -X- AXIS
POSITIVE -Y- AXIS IS 90 DEGREES CLOCKWISE FROM -X- AXIS

ORIENTATION OF SYSTEM



FOUNDATION ROTATION OF 0.50 DEGREES

ARM NO.	ARM MOUNTING HEIGHT (FT)	HEIGHT OF LOAD APPLICATION POINT (FT)	ARM LENGTH (FT)	LOCATION OF ARM IN XY PLANE (DEGREES)	FORCE-Y (LBS)	FORCE-X (LBS)	FORCE-Z (LBS)	EPA (SQ. FT.)
1	180.00	183.50	0.00	45.00	41	41	44	1.7
2	177.00	180.10	0.00	45.00	1398	1398	660	58.9
3	177.00	177.00	0.00	45.00	619	619	2500	26.2
4	167.00	170.10	0.00	45.00	1376	1376	660	58.9
5	167.00	167.00	0.00	45.00	608	608	2500	26.2
6	157.00	160.10	0.00	45.00	1352	1352	660	58.9
7	157.00	157.00	0.00	45.00	598	598	2500	26.2
8	147.00	150.10	0.00	45.00	1327	1327	660	58.9
9	147.00	147.00	0.00	45.00	587	587	2500	26.2
10	137.00	140.10	0.00	45.00	1301	1301	660	58.9
11	137.00	137.00	0.00	45.00	575	575	2500	26.2
12	127.00	130.10	0.00	45.00	1274	1274	660	58.9
13	127.00	127.00	0.00	45.00	563	563	2500	26.2

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE

*** PROPERTIES ***

CONNECTION LOCATIONS	HEIGHT (FEET)	DIAMETER ACROSS FLATS (IN)	WALL THK. (IN)	D/T ACROSS FLATS	W/T ACROSS FLATS	MOMENTS OF INERTIA (IN4)	AREA (IN2)
BASE	0.00	60.000	0.5000	120.0	21.90	42535.	94.76
	5.00	59.025	0.5000	118.0	21.51	40478.	93.20
	10.00	58.050	0.5000	116.1	21.12	38488.	91.65
	15.00	57.075	0.5000	114.1	20.73	36565.	90.10
	20.00	56.100	0.5000	112.2	20.35	34707.	88.55
	25.00	55.125	0.5000	110.2	19.96	32913.	86.99
	30.00	54.150	0.5000	108.3	19.57	31182.	85.44
	35.00	53.175	0.5000	106.3	19.18	29512.	83.89
	40.00	52.200	0.5000	104.4	18.79	27904.	82.34
	45.00	51.225	0.5000	102.4	18.41	26355.	80.78
SEC BASE	45.43	51.140	0.5000	102.3	18.37	26223.	80.65
	50.00	50.250	0.5000	100.5	18.02	24864.	79.23
SEC TOP	52.75	50.588	0.4375	115.6	21.03	22287.	69.89
	55.00	50.150	0.4375	114.6	20.83	21707.	69.27
	60.00	49.175	0.4375	112.4	20.39	20454.	67.92
	65.00	48.200	0.4375	110.2	19.94	19251.	66.56
	70.00	47.225	0.4375	107.9	19.50	18096.	65.20
	75.00	46.250	0.4375	105.7	19.06	16988.	63.84
	80.00	45.275	0.4375	103.5	18.61	15927.	62.48
	85.00	44.300	0.4375	101.3	18.17	14910.	61.12
	90.00	43.325	0.4375	99.0	17.72	13938.	59.76
SEC BASE	91.68	42.998	0.4375	98.3	17.58	13621.	59.31
	95.00	42.350	0.4375	96.8	17.28	13009.	58.40
SEC TOP	98.00	42.327	0.2813	150.5	27.97	8443.	37.67
	100.00	41.937	0.2813	149.1	27.69	8210.	37.32
	105.00	40.962	0.2813	145.6	27.00	7647.	36.44
	110.00	39.987	0.2813	142.2	26.31	7110.	35.57
	115.00	39.012	0.2813	138.7	25.62	6599.	34.70
	120.00	38.037	0.2813	135.2	24.93	6113.	33.82
	125.00	37.062	0.2813	131.8	24.24	5652.	32.95
ARM	127.00	36.672	0.2813	130.4	23.97	5474.	32.60
ARM	127.00	36.672	0.2813	130.4	23.97	5474.	32.60
	130.00	36.087	0.2813	128.3	23.55	5214.	32.08
SEC BASE	131.75	35.746	0.2813	127.1	23.31	5066.	31.77
	135.00	35.112	0.2813	124.8	22.86	4800.	31.20
SEC TOP	137.00	35.222	0.2500	140.9	26.06	4319.	27.85
ARM	137.00	35.222	0.2500	140.9	26.06	4319.	27.85
ARM	137.00	35.222	0.2500	140.9	26.06	4319.	27.85
	140.00	34.637	0.2500	138.5	25.59	4105.	27.38
	145.00	33.662	0.2500	134.6	24.82	3766.	26.61
ARM	147.00	33.272	0.2500	133.1	24.50	3636.	26.30
ARM	147.00	33.272	0.2500	133.1	24.50	3636.	26.30
	150.00	32.687	0.2500	130.7	24.04	3446.	25.83
	155.00	31.712	0.2500	126.8	23.26	3144.	25.05
ARM	157.00	31.322	0.2500	125.3	22.95	3029.	24.74
ARM	157.00	31.322	0.2500	125.3	22.95	3029.	24.74
	160.00	30.737	0.2500	122.9	22.49	2861.	24.28

	165.00	29.762	0.2500	119.0	21.71	2595.	23.50
ARM	167.00	29.372	0.2500	117.5	21.40	2494.	23.19
ARM	167.00	29.372	0.2500	117.5	21.40	2494.	23.19
	170.00	28.787	0.2500	115.1	20.93	2346.	22.72
	175.00	27.812	0.2500	111.2	20.16	2114.	21.95
ARM	177.00	27.422	0.2500	109.7	19.85	2026.	21.64
ARM	177.00	27.422	0.2500	109.7	19.85	2026.	21.64
ARM	180.00	26.837	0.2500	107.3	19.38	1898.	21.17
TOP	180.00	26.837	0.2500	107.3	19.38	1898.	21.17

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

LOADING CASE LOD1 *** REACTIONS *** SHEAR FORCE AT BASE (LB) = 38730.
TOTAL VERTICAL FORCE AT BASE (LB) = 50161.

	*** MOMENTS ABOUT -X- AXIS (IN-KIPS) ***				*** MOMENTS ABOUT -Y- AXIS (IN-KIPS) ***			
HEIGHT	LOAD	WIND	DEFL	TOTAL	LOAD	WIND	DEFL	TOTAL
0.00	27175.	12747.	1858.	41779.	27175.	12747.	1858.	41779.
5.00	26302.	11990.	1836.	40128.	26302.	11990.	1836.	40128.
10.00	25429.	11258.	1810.	38497.	25429.	11258.	1810.	38497.
15.00	24556.	10551.	1778.	36885.	24556.	10551.	1778.	36885.
20.00	23683.	9869.	1743.	35294.	23683.	9869.	1743.	35294.
25.00	22810.	9211.	1702.	33723.	22810.	9211.	1702.	33723.
30.00	21937.	8576.	1658.	32170.	21937.	8576.	1658.	32170.
35.00	21063.	7964.	1611.	30638.	21063.	7964.	1611.	30638.
40.00	20190.	7374.	1560.	29124.	20190.	7374.	1560.	29124.
45.00	19317.	6808.	1505.	27631.	19317.	6808.	1505.	27631.
45.43	19241.	6760.	1501.	27502.	19241.	6760.	1501.	27502.
50.00	18444.	6265.	1449.	26158.	18444.	6265.	1449.	26158.
52.75	17964.	5977.	1417.	25358.	17964.	5977.	1417.	25358.
55.00	17571.	5746.	1392.	24709.	17571.	5746.	1392.	24709.
60.00	16698.	5251.	1333.	23282.	16698.	5251.	1333.	23282.
65.00	15825.	4780.	1272.	21877.	15825.	4780.	1272.	21877.
70.00	14952.	4333.	1209.	20494.	14952.	4333.	1209.	20494.
75.00	14079.	3910.	1145.	19134.	14079.	3910.	1145.	19134.
80.00	13206.	3510.	1079.	17796.	13206.	3510.	1079.	17796.
85.00	12333.	3134.	1012.	16480.	12333.	3134.	1012.	16480.
90.00	11460.	2782.	945.	15187.	11460.	2782.	945.	15187.
91.68	11167.	2669.	922.	14758.	11167.	2669.	922.	14758.
95.00	10587.	2452.	876.	13916.	10587.	2452.	876.	13916.
98.00	10063.	2265.	836.	13164.	10063.	2265.	836.	13164.
100.00	9714.	2145.	809.	12668.	9714.	2145.	809.	12668.
105.00	8841.	1860.	741.	11442.	8841.	1860.	741.	11442.
110.00	7968.	1599.	670.	10237.	7968.	1599.	670.	10237.
115.00	7095.	1359.	598.	9052.	7095.	1359.	598.	9052.
120.00	6222.	1140.	525.	7887.	6222.	1140.	525.	7887.
125.00	5349.	943.	451.	6742.	5349.	943.	451.	6742.
127.00	5000.	870.	421.	6290.	5000.	870.	421.	6290.
127.00	5000.	870.	421.	6290.	5000.	870.	421.	6290.
130.00	4470.	766.	379.	5615.	4470.	766.	379.	5615.
131.75	4213.	709.	356.	5277.	4213.	709.	356.	5277.
135.00	3736.	609.	313.	4657.	3736.	609.	313.	4657.
137.00	3442.	552.	287.	4280.	3442.	552.	287.	4280.
137.00	3442.	552.	287.	4280.	3442.	552.	287.	4280.
137.00	3442.	552.	287.	4280.	3442.	552.	287.	4280.
140.00	2997.	472.	252.	3720.	2997.	472.	252.	3720.
145.00	2403.	353.	199.	2955.	2403.	353.	199.	2955.
147.00	2166.	311.	178.	2655.	2166.	311.	178.	2655.
147.00	2166.	311.	178.	2655.	2166.	311.	178.	2655.
150.00	1808.	254.	149.	2211.	1808.	254.	149.	2211.
155.00	1358.	173.	109.	1639.	1358.	173.	109.	1639.
157.00	1178.	145.	93.	1416.	1178.	145.	93.	1416.
157.00	1178.	145.	93.	1416.	1178.	145.	93.	1416.
160.00	909.	109.	72.	1090.	909.	109.	72.	1090.
165.00	606.	61.	45.	711.	606.	61.	45.	711.

167.00	484.	46.	34.	564.	484.	46.	34.	564.
167.00	484.	46.	34.	564.	484.	46.	34.	564.
170.00	305.	27.	22.	354.	305.	27.	22.	354.
175.00	151.	7.	9.	166.	151.	7.	9.	166.
177.00	90.	2.	4.	96.	90.	2.	4.	96.
177.00	90.	2.	4.	96.	90.	2.	4.	96.
180.00	2.	0.	0.	2.	2.	0.	0.	2.
180.00	2.	0.	0.	2.	2.	0.	0.	2.

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

LOADING CASE LOD1 *** DEFLECTIONS AND STRESSES **

HEIGHT	WITHOUT SECONDARY MOMENTS	WITH SECONDARY MOMENTS X-DIR.	Y-DIR.	TOTAL	ROTATION (DEGREES)	APPLIED STRESSES (KSI) BENDING	AXIAL	TORSION	SHEAR	COMBINED	ALLOWABLE STRESS	ALLOWABLE DIVIDED BY COMBINED
0.00	0.0	0.0	0.0	0.0	0.00	41.70	0.53	-0.07	0.83	42.23	52.00	1.231
5.00	0.1	0.1	0.1	0.1	0.17	41.41	0.52	-0.07	0.83	41.93	52.00	1.240
10.00	0.3	0.2	0.2	0.3	0.33	41.09	0.51	-0.07	0.83	41.60	52.00	1.250
15.00	0.7	0.6	0.6	0.8	0.50	40.74	0.50	-0.08	0.83	41.25	52.00	1.261
20.00	1.3	1.0	1.0	1.4	0.67	40.37	0.50	-0.08	0.83	40.87	52.00	1.272
25.00	2.1	1.5	1.5	2.2	0.84	39.97	0.49	-0.08	0.83	40.46	52.00	1.285
30.00	3.0	2.2	2.2	3.2	1.01	39.53	0.48	-0.09	0.83	40.01	52.00	1.300
35.00	4.1	3.0	3.0	4.3	1.19	39.06	0.47	-0.09	0.84	39.54	52.00	1.315
40.00	5.4	4.0	4.0	5.6	1.36	38.55	0.46	-0.09	0.84	39.02	52.00	1.333
45.00	6.8	5.1	5.1	7.2	1.54	38.00	0.45	-0.10	0.84	38.46	52.00	1.352
45.43	7.0	5.2	5.2	7.3	1.55	37.95	0.45	-0.10	0.84	38.41	52.00	1.354
50.00	8.4	6.3	6.3	8.9	1.71	37.41	0.45	-0.10	0.84	37.86	52.00	1.374
52.75	9.4	7.0	7.0	9.9	1.81	40.73	0.47	-0.11	0.95	41.20	52.00	1.262
55.00	10.2	7.6	7.6	10.8	1.90	40.40	0.47	-0.11	0.95	40.86	52.00	1.273
60.00	12.2	9.1	9.1	12.8	2.09	39.61	0.46	-0.12	0.95	40.07	52.00	1.298
65.00	14.4	10.7	10.7	15.1	2.28	38.76	0.45	-0.12	0.95	39.21	52.00	1.326
70.00	16.7	12.5	12.5	17.6	2.47	37.85	0.44	-0.13	0.96	38.29	52.00	1.358
75.00	19.3	14.4	14.4	20.3	2.66	36.86	0.44	-0.13	0.96	37.30	52.00	1.394
80.00	22.0	16.4	16.4	23.2	2.85	35.80	0.43	-0.14	0.96	36.23	52.00	1.435
85.00	24.9	18.6	18.6	26.3	3.04	34.65	0.42	-0.15	0.96	35.07	52.00	1.483
90.00	28.0	20.9	20.9	29.6	3.22	33.41	0.41	-0.15	0.97	33.82	52.00	1.538
91.68	29.1	21.7	21.7	30.7	3.28	32.97	0.41	-0.16	0.97	33.38	52.00	1.558
95.00	31.3	23.4	23.4	33.0	3.40	32.06	0.41	-0.16	0.97	32.46	52.00	1.602
98.00	33.4	24.9	24.9	35.2	3.53	46.70	0.59	-0.25	1.49	47.29	51.03	1.079
100.00	34.8	26.0	26.0	36.7	3.64	45.79	0.59	-0.25	1.49	46.38	51.25	1.105
105.00	38.5	28.7	28.7	40.6	3.89	43.37	0.59	-0.27	1.50	43.96	51.82	1.179
110.00	42.5	31.7	31.7	44.9	4.14	40.74	0.58	-0.28	1.50	41.33	52.00	1.258
115.00	46.7	34.9	34.9	49.3	4.37	37.87	0.58	-0.29	1.51	38.45	52.00	1.352
120.00	51.1	38.2	38.2	54.0	4.60	34.73	0.58	-0.31	1.52	35.31	52.00	1.473
125.00	55.8	41.7	41.7	58.9	4.80	31.29	0.58	-0.32	1.53	31.87	52.00	1.632
127.00	57.7	43.1	43.1	61.0	4.88	29.82	0.58	-0.33	1.54	30.40	52.00	1.710
127.00	57.7	43.1	43.1	61.0	4.88	29.82	0.58	-0.33	1.54	30.40	52.00	1.710
130.00	60.6	45.3	45.3	64.1	5.00	27.50	0.50	-0.28	1.34	28.01	52.00	1.857
131.75	62.3	46.6	46.6	65.9	5.06	26.35	0.50	-0.29	1.34	26.86	52.00	1.936
135.00	65.6	49.1	49.1	69.4	5.17	24.11	0.50	-0.30	1.35	24.62	52.00	2.112
137.00	67.7	50.6	50.6	71.6	5.23	24.70	0.54	-0.33	1.49	25.25	52.00	2.060
137.00	67.7	50.6	50.6	71.6	5.23	24.70	0.54	-0.33	1.49	25.25	52.00	2.060
137.00	67.7	50.6	50.6	71.6	5.23	24.70	0.54	-0.33	1.49	25.25	52.00	2.060
140.00	70.8	52.9	52.9	74.9	5.33	22.21	0.45	-0.27	1.25	22.67	52.00	2.294
145.00	76.1	56.9	56.9	80.5	5.47	18.69	0.45	-0.28	1.26	19.15	52.00	2.716
147.00	78.3	58.6	58.6	82.8	5.52	17.19	0.45	-0.29	1.26	17.65	52.00	2.947
147.00	78.3	58.6	58.6	82.8	5.52	17.19	0.45	-0.29	1.26	17.65	52.00	2.947
150.00	81.5	61.0	61.0	86.3	5.59	14.84	0.36	-0.22	1.00	15.21	52.00	3.420
155.00	87.1	65.2	65.2	92.2	5.69	11.70	0.35	-0.24	0.99	12.06	52.00	4.313
157.00	89.3	66.9	66.9	94.6	5.72	10.36	0.35	-0.24	0.99	10.72	52.00	4.852
157.00	89.3	66.9	66.9	94.6	5.72	10.36	0.35	-0.24	0.99	10.72	52.00	4.852

THEORETICAL FAILURE POINT @ 98

160.00	92.7	69.5	69.5	98.2	5.76	8.28	0.25	-0.16	0.70	8.54	52.00	6.089
165.00	98.4	73.7	73.7	104.3	5.82	5.77	0.24	-0.17	0.70	6.02	52.00	8.635
167.00	100.7	75.5	75.5	106.7	5.83	4.70	0.24	-0.18	0.69	4.95	52.00	10.502
167.00	100.7	75.5	75.5	106.7	5.83	4.70	0.24	-0.18	0.69	4.95	52.00	10.502
170.00	104.2	78.1	78.1	110.4	5.85	3.07	0.13	-0.09	0.38	3.21	52.00	16.200
175.00	110.0	82.4	82.4	116.5	5.87	1.55	0.12	-0.10	0.36	1.68	52.00	30.967
177.00	112.3	84.1	84.1	119.0	5.88	0.92	0.12	-0.10	0.36	1.05	52.00	49.621
177.00	112.3	84.1	84.1	119.0	5.88	0.92	0.12	-0.10	0.36	1.05	52.00	49.621
180.00	115.8	86.8	86.8	122.7	5.88	0.02	0.00	0.00	0.00	0.02	52.00	99.990
180.00	115.8	86.8	86.8	122.7	5.88	0.02	0.00	0.00	0.00	0.02	52.00	99.990

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

LOADING CASE LOD2 *** REACTIONS *** SHEAR FORCE AT BASE (LB) = 30244.
TOTAL VERTICAL FORCE AT BASE (LB) = 60687.

	*** MOMENTS ABOUT -X- AXIS (IN-KIPS) ***				*** MOMENTS ABOUT -Y- AXIS (IN-KIPS) ***			
HEIGHT	LOAD	WIND	DEFL	TOTAL	LOAD	WIND	DEFL	TOTAL
0.00	21799.	9728.	2043.	33569.	21799.	9728.	2043.	33569.
5.00	21102.	9152.	2017.	32271.	21102.	9152.	2017.	32271.
10.00	20404.	8595.	1987.	30987.	20404.	8595.	1987.	30987.
15.00	19707.	8057.	1953.	29717.	19707.	8057.	1953.	29717.
20.00	19010.	7537.	1913.	28461.	19010.	7537.	1913.	28461.
25.00	18313.	7036.	1870.	27219.	18313.	7036.	1870.	27219.
30.00	17616.	6552.	1823.	25991.	17616.	6552.	1823.	25991.
35.00	16919.	6086.	1772.	24776.	16919.	6086.	1772.	24776.
40.00	16222.	5636.	1717.	23576.	16222.	5636.	1717.	23576.
45.00	15525.	5205.	1660.	22389.	15525.	5205.	1660.	22389.
45.43	15464.	5168.	1655.	22287.	15464.	5168.	1655.	22287.
50.00	14827.	4791.	1600.	21218.	14827.	4791.	1600.	21218.
52.75	14444.	4571.	1566.	20581.	14444.	4571.	1566.	20581.
55.00	14130.	4395.	1539.	20064.	14130.	4395.	1539.	20064.
60.00	13433.	4017.	1476.	18926.	13433.	4017.	1476.	18926.
65.00	12736.	3657.	1411.	17804.	12736.	3657.	1411.	17804.
70.00	12039.	3316.	1343.	16698.	12039.	3316.	1343.	16698.
75.00	11342.	2993.	1274.	15609.	11342.	2993.	1274.	15609.
80.00	10645.	2688.	1203.	14536.	10645.	2688.	1203.	14536.
85.00	9948.	2401.	1130.	13479.	9948.	2401.	1130.	13479.
90.00	9250.	2131.	1057.	12438.	9250.	2131.	1057.	12439.
91.68	9017.	2045.	1032.	12093.	9017.	2045.	1032.	12093.
95.00	8553.	1879.	982.	11415.	8553.	1879.	982.	11415.
98.00	8135.	1736.	938.	10809.	8135.	1736.	938.	10809.
100.00	7856.	1644.	908.	10409.	7856.	1644.	908.	10409.
105.00	7159.	1427.	832.	9418.	7159.	1427.	832.	9418.
110.00	6462.	1226.	754.	8442.	6462.	1226.	754.	8442.
115.00	5765.	1042.	674.	7481.	5765.	1042.	674.	7481.
120.00	5068.	875.	592.	6535.	5068.	875.	592.	6535.
125.00	4371.	724.	509.	5603.	4371.	724.	509.	5603.
127.00	4092.	668.	475.	5235.	4092.	668.	475.	5235.
127.00	4092.	668.	475.	5235.	4092.	668.	475.	5235.
130.00	3651.	588.	428.	4668.	3651.	588.	428.	4668.
131.75	3446.	544.	402.	4392.	3446.	544.	402.	4392.
135.00	3064.	468.	354.	3887.	3064.	468.	354.	3887.
137.00	2830.	424.	325.	3579.	2830.	424.	325.	3579.
137.00	2830.	424.	325.	3579.	2830.	424.	325.	3579.
137.00	2830.	424.	325.	3579.	2830.	424.	325.	3579.
140.00	2457.	362.	286.	3105.	2457.	362.	286.	3105.
145.00	1983.	272.	226.	2480.	1983.	272.	226.	2480.
147.00	1793.	240.	202.	2234.	1793.	240.	202.	2234.
147.00	1793.	240.	202.	2234.	1793.	240.	202.	2234.
150.00	1491.	195.	170.	1856.	1491.	195.	170.	1856.
155.00	1131.	133.	123.	1388.	1131.	133.	123.	1388.
157.00	988.	112.	105.	1204.	988.	112.	105.	1204.
157.00	988.	112.	105.	1204.	988.	112.	105.	1204.
160.00	757.	84.	82.	923.	757.	84.	82.	923.
165.00	514.	47.	51.	612.	514.	47.	51.	612.

167.00	417.	35.	39.	491.	417.	35.	39.	491.
167.00	417.	35.	39.	491.	417.	35.	39.	491.
170.00	259.	21.	25.	305.	259.	21.	25.	305.
175.00	136.	5.	10.	151.	136.	5.	10.	151.
177.00	86.	2.	4.	92.	86.	2.	4.	92.
177.00	86.	2.	4.	92.	86.	2.	4.	92.
180.00	2.	0.	0.	2.	2.	0.	0.	2.
180.00	2.	0.	0.	2.	2.	0.	0.	2.

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

LOADING CASE LOD2 *** DEFLECTIONS AND STRESSES **

********** DEFLECTIONS **********

HEIGHT	WITHOUT SECONDARY MOMENTS	WITH SECONDARY MOMENTS X-DIR.	Y-DIR.	TOTAL	ROTATION (DEGREES)	APPLIED STRESSES (KSI) BENDING	AXIAL	TORSION	SHEAR	COMBINED	ALLOWABLE STRESS	ALLOWABLE DIVIDED BY COMBINED
0.00	0.0	0.0	0.0	0.0	0.00	33.51	0.64	-0.06	0.64	34.15	52.00	1.523
5.00	0.1	0.0	0.0	0.1	0.13	33.30	0.63	-0.06	0.65	33.93	52.00	1.532
10.00	0.3	0.2	0.2	0.3	0.27	33.07	0.62	-0.06	0.65	33.70	52.00	1.543
15.00	0.6	0.4	0.4	0.6	0.40	32.82	0.61	-0.06	0.65	33.44	52.00	1.555
20.00	1.1	0.8	0.8	1.1	0.54	32.55	0.61	-0.06	0.65	33.16	52.00	1.568
25.00	1.6	1.2	1.2	1.8	0.68	32.26	0.60	-0.07	0.65	32.86	52.00	1.583
30.00	2.4	1.8	1.8	2.5	0.82	31.94	0.59	-0.07	0.65	32.53	52.00	1.599
35.00	3.2	2.5	2.5	3.5	0.96	31.59	0.58	-0.07	0.66	32.17	52.00	1.616
40.00	4.3	3.2	3.2	4.5	1.10	31.21	0.57	-0.07	0.66	31.78	52.00	1.636
45.00	5.4	4.1	4.1	5.8	1.24	30.80	0.56	-0.08	0.66	31.36	52.00	1.658
45.43	5.5	4.2	4.2	5.9	1.25	30.76	0.56	-0.08	0.66	31.32	52.00	1.660
50.00	6.7	5.1	5.1	7.1	1.38	30.35	0.56	-0.08	0.66	30.90	52.00	1.683
52.75	7.4	5.6	5.6	8.0	1.47	33.06	0.59	-0.09	0.74	33.65	52.00	1.545
55.00	8.1	6.1	6.1	8.7	1.53	32.80	0.59	-0.09	0.75	33.39	52.00	1.557
60.00	9.7	7.3	7.3	10.4	1.69	32.20	0.58	-0.09	0.75	32.78	52.00	1.586
65.00	11.4	8.6	8.6	12.2	1.84	31.54	0.57	-0.10	0.75	32.12	52.00	1.619
70.00	13.3	10.1	10.1	14.2	2.00	30.84	0.57	-0.10	0.75	31.40	52.00	1.656
75.00	15.3	11.6	11.6	16.4	2.15	30.07	0.56	-0.11	0.75	30.63	52.00	1.698
80.00	17.4	13.3	13.3	18.7	2.31	29.24	0.55	-0.11	0.76	29.79	52.00	1.745
85.00	19.8	15.0	15.0	21.2	2.46	28.34	0.55	-0.12	0.76	28.89	52.00	1.800
90.00	22.2	16.9	16.9	23.9	2.61	27.36	0.54	-0.12	0.76	27.90	52.00	1.864
91.68	23.1	17.5	17.5	24.8	2.66	27.01	0.54	-0.12	0.76	27.55	52.00	1.887
95.00	24.8	18.9	18.9	26.7	2.76	26.30	0.53	-0.13	0.77	26.83	52.00	1.938
98.00	26.5	20.1	20.1	28.5	2.87	38.35	0.78	-0.20	1.18	39.13	51.03	1.304
100.00	27.6	21.0	21.0	29.7	2.95	37.62	0.78	-0.20	1.18	38.41	51.25	1.334
105.00	30.5	23.3	23.3	32.9	3.16	35.70	0.78	-0.21	1.18	36.48	51.82	1.420
110.00	33.7	25.7	25.7	36.3	3.37	33.60	0.78	-0.22	1.19	34.38	52.00	1.513
115.00	37.0	28.2	28.2	39.9	3.56	31.30	0.78	-0.23	1.20	32.08	52.00	1.621
120.00	40.6	30.9	30.9	43.8	3.74	28.77	0.78	-0.25	1.21	29.55	52.00	1.760
125.00	44.3	33.8	33.8	47.8	3.92	26.00	0.78	-0.26	1.21	26.78	52.00	1.942
127.00	45.8	34.9	34.9	49.4	3.98	24.82	0.78	-0.26	1.22	25.60	52.00	2.031
127.00	45.8	34.9	34.9	49.4	3.98	24.82	0.78	-0.26	1.22	25.60	52.00	2.031
130.00	48.1	36.7	36.7	52.0	4.08	22.86	0.68	-0.22	1.06	23.54	52.00	2.209
131.75	49.5	37.8	37.8	53.5	4.13	21.93	0.68	-0.23	1.06	22.61	52.00	2.300
135.00	52.1	39.8	39.8	56.3	4.22	20.12	0.68	-0.24	1.07	20.80	52.00	2.500
137.00	53.8	41.1	41.1	58.1	4.27	20.66	0.73	-0.26	1.19	21.39	52.00	2.431
137.00	53.8	41.1	41.1	58.1	4.27	20.66	0.73	-0.26	1.19	21.39	52.00	2.431
137.00	53.8	41.1	41.1	58.1	4.27	20.66	0.73	-0.26	1.19	21.39	52.00	2.431
140.00	56.2	43.0	43.0	60.8	4.35	18.54	0.61	-0.21	1.00	19.16	52.00	2.714
145.00	60.5	46.3	46.3	65.4	4.47	15.69	0.61	-0.23	1.00	16.30	52.00	3.190
147.00	62.2	47.6	47.6	67.3	4.51	14.47	0.61	-0.23	1.00	15.08	52.00	3.447
147.00	62.2	47.6	47.6	67.3	4.51	14.47	0.61	-0.23	1.00	15.08	52.00	3.447
150.00	64.8	49.6	49.6	70.1	4.57	12.46	0.48	-0.18	0.79	12.95	52.00	4.016
155.00	69.3	53.0	53.0	75.0	4.65	9.90	0.48	-0.19	0.79	10.39	52.00	5.007
157.00	71.1	54.4	54.4	76.9	4.68	8.81	0.48	-0.19	0.79	9.30	52.00	5.594
157.00	71.1	54.4	54.4	76.9	4.68	8.81	0.48	-0.19	0.79	9.30	52.00	5.594

160.00	73.8	56.5	56.5	79.9	4.72	7.01	0.34	-0.13	0.56	7.36	52.00	7.066
165.00	78.4	60.0	60.0	84.9	4.77	4.97	0.33	-0.14	0.56	5.30	52.00	9.805
167.00	80.2	61.4	61.4	86.9	4.78	4.09	0.33	-0.14	0.55	4.43	52.00	11.741
167.00	80.2	61.4	61.4	86.9	4.78	4.09	0.33	-0.14	0.55	4.43	52.00	11.741
170.00	83.0	63.5	63.5	89.9	4.80	2.65	0.18	-0.07	0.30	2.83	52.00	18.357
175.00	87.6	67.1	67.1	94.9	4.81	1.40	0.17	-0.08	0.29	1.57	52.00	33.017
177.00	89.4	68.5	68.5	96.9	4.82	0.88	0.16	-0.08	0.29	1.05	52.00	49.325
177.00	89.4	68.5	68.5	96.9	4.82	0.88	0.16	-0.08	0.29	1.05	52.00	49.325
180.00	92.2	70.7	70.7	99.9	4.82	0.02	0.00	0.00	0.01	0.02	52.00	99.990
180.00	92.2	70.7	70.7	99.9	4.82	0.02	0.00	0.00	0.01	0.02	52.00	99.990

0 MINIMUM DEFLECTION RATIO // DEFLECTION LIMIT / DEFLECTION // IS 8150243.0

BY VALMONT INDUSTRIES FOR: SBA 180' POLE, SITE: 4275-029, SOUTH CANTON, CT 12156-00 DATE 07/25/00

*** ANCHORAGE *** VERSION MPX-15

*** ANCHOR BOLT CHARACTERISTICS GOVERNED BY LOADING CASE LOD1 ***

NUMBER OF BOLTS	DIAMETER (IN.)	LENGTH (IN.)	WEIGHT (LB.)	SHIPPED AS	PROJECTION LENGTH (IN.)	GALVANIZED LENGTH (IN.)	THREAD SIZE
28	2.250	96.	3860.	BOLTS, TEMPLATES	9.75	18.00	4.5-UNC-2A

STEEL SPECIF.	MAXIMUM BOLT FORCE (LB.)	MAXIMUM STRESS (PSI)	ALLOWABLE STRESS (PSI)	STRESS AREA (SQ. IN.)	SAFETY FACTOR	CONFIGURATION OF BOTTOM END OF ANCHORBOLT
A615	124028.	38170.	~~45000.~~ 60000	3.250	1.18	THREADED WITH HEAVY HEX HEAD NUT

$(1.18)\left(\frac{60\ ksi}{45\ ksi}\right) = 1.57\ FS > 1.03$ ok

*** BOLT COORDINATES AND FORCES ***

BOLT NO.	X-COORD	Y-COORD	MAX TENSION-LB	MAX FORCE-LB	*	BOLT NO.	X-COORD	Y-COORD	MAX TENSION-LB	MAX FORCE-LB
1	34.309	0.000	85190.	88773.	*	2	33.449	7.634	102364.	105947.
3	30.911	14.886	114316.	117899.	*	4	26.824	21.391	120445.	124028.
5	21.391	26.824	120445.	124028.	*	6	14.886	30.911	114316.	117899.
7	7.634	33.449	102364.	105947.	*	8	0.000	34.309	85190.	88773.

MAX. BOLT CIRCLE = 68.62 IN. TEMPLATE DIAMETER = 74.62 IN.

*** BASE PLATE CHARACTERISTICS GOVERNED BY LOADING CASE LOD1 ***

DRAWING NUMBER	OVERALL LENGTH (IN.)	OVERALL WIDTH (IN.)	THICKNESS (IN.)	ACTUAL WEIGHT (LB.)	RAW MATERIAL WEIGHT (LB.)	SIDE LENGTH (IN.)
HXD6-98	74.62	74.62	2.7500	2959.	4338.	14.84

TOP WIDTH (IN.)	POLE DIAM. (MAJOR DIAM.) (IN.)	CRITICAL FAILURE MODE	TOTAL LENGTH OF FAIL MODE LINE (IN.)	EFFECTIVE LENGTH (IN.)	TOTAL MOMENT ALONG FAIL LINE (IN.-LB.)
14.84	60.00	2	81.33	72.48	3834611.

STEEL SPECIF.	BENDING STRESS (PSI)	ALLOWABLE STRESS (PSI)		MAX. VERTICAL SHEAR STRESS (PSI)
A-633	41972.	60012.	$\frac{60000\ PSI}{41972\ PSI} = 1.43\ FS > 1.08$ ok	9908.

** LOADS AT POLE BASE ********** LOADING CASES**********

LOADING CASE IDENTIFICATION	LOD1	LOD2
MOMENT ABT. X-AXIS (IN-KIPS)	41779.	33569.
MOMENT ABT. Y-AXIS (IN-KIPS)	41779.	33569.
SHEAR FORCE (LB.)	38730.	30244.
VERTICAL FORCE (LB.)	50161.	60687.

]MAX CRITERION-	LOAD CASE
]MOMENT ABT. X	LOD1
]MOMENT ABT. Y	LOD1
]RES. MOMENT	LOD1
]SHEAR FORCE	LOD1
]BOLT FORCE	LOD1
]BOLT TENSION	LOD1