

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

February 25, 2008

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-111-080130** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 297 North Street, Plymouth, Connecticut.

Dear Attorney Baldwin:

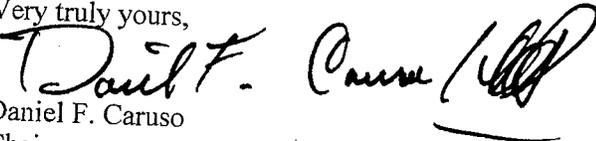
At a public meeting held on February 14, 2008, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies, with the condition that the proposed coax lines are installed inside the pole's shaft.

The proposed modifications are to be implemented as specified here and in your notice dated January 30, 2008, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. 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. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of 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.

Thank you for your attention and cooperation.

Very truly yours,


Daniel F. Caruso
Chairman

DFC/MP/cm

c: The Honorable Vincent Festa, Jr., Mayor, Town of Plymouth
William Kuehn, Town Planner, Town of Plymouth
SBA

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EM-VER-111-080130

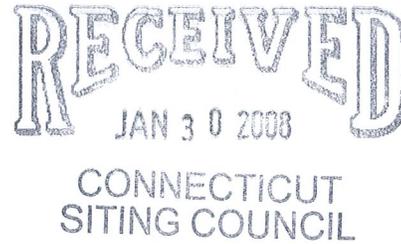
280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

ORIGINAL

January 30, 2008

Via Hand Delivery

S. Derek Phelps
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051



Re: **Notice of Exempt Modification – Antenna Swap
297 North Street, Plymouth, Connecticut**

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains a wireless telecommunications facility at the above referenced location. The Council approved Cellco’s use of this facility on October 14, 2003. Cellco intends to modify its installation by replacing six (6) DB950F85E-M antennas with six (6) LPA-80080/6CF antennas at the same 162-foot level on the tower. Attached behind Tab 1 are the specifications for the existing and proposed replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Vincent Festa, Jr., Mayor of the Town of Plymouth. Pursuant to a Council directive, a copy of this letter is also being sent to Raymond and Brenda Lagosz, the owners of the property on which the facility is located.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in any increase in the overall height of the existing structures. Cellco’s replacement antennas will be located at the same height and location as the existing antennas.
2. The proposed modifications will not involve any ground-mounted equipment and, therefore, will not require the extension of the site boundaries.



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S. Derek Phelps
January 30, 2008
Page 2

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for the facility is included behind Tab 2.

Also attached is a Detailed Structural Analysis confirming that the tower, with structural modifications, can support the proposed modifications. (See Tab 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Vincent Festa, Jr., Plymouth Mayor
Raymond & Brenda Lagosz
Sandy M. Carter



HORIZONTAL BEAMWIDTH	85°	85°	85°	85°
FREQUENCY RANGE	1850-1990 MHz	1850-1990 MHz	1850-1990 MHz	1850-1990 MHz
	16.5 dBi / 4° Tilt	15.9 dBi / 6° Tilt	17 dBi / 0° Tilt	17.7 dBi / 0° Tilt
MODEL	948G85T4E-M	948F85T6E-M	DB950F85E-M	DB950G85E-M
TYPE	Directed Dipole®	Directed Dipole®	Directed Dipole®	Directed Dipole®

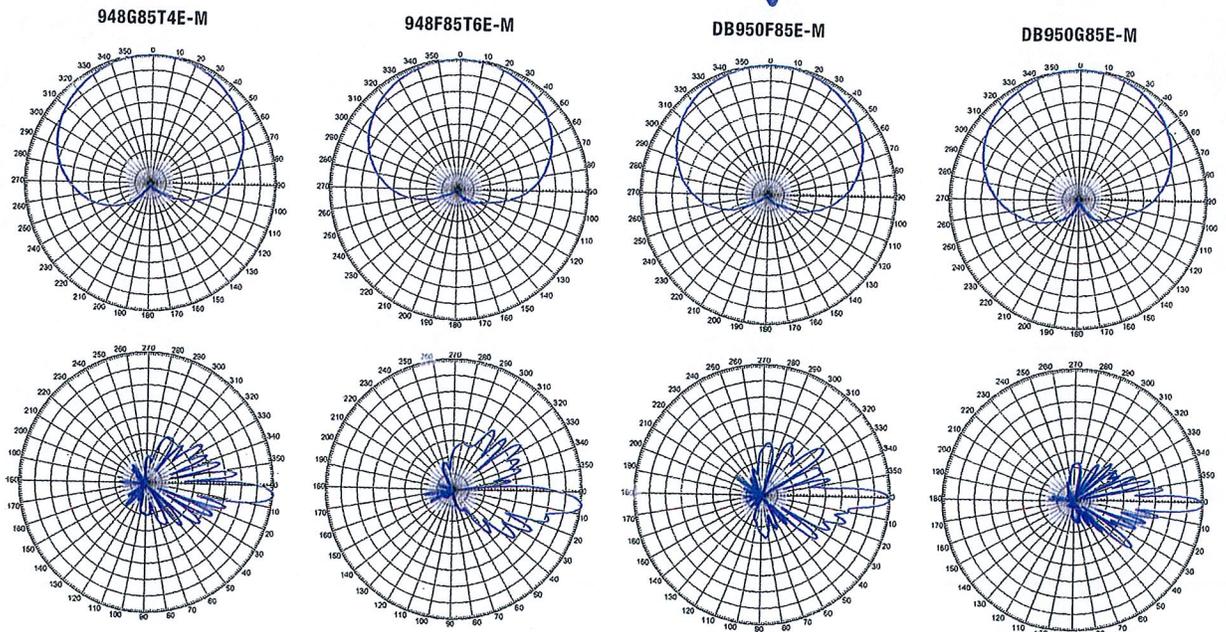
ELECTRICAL SPECIFICATIONS				
Frequency Range (MHz)	1850-1990	1850-1990	1850-1990	1850-1990
Gain (dBd/dBi)	14.4 / 16.5	13.8 / 15.9	14.9 / 17	15.6 / 17.7
Horizontal Beamwidth (Deg.)	85	85	85	85
Elevation Beamwidth (Deg.)	7	8	6.5	6
USLS (dB)	N/A	>20	>18	6
Null Fill (dB) - Below Peak	N/A	15	12	N/A
Beam Tilt (Deg.)	4	6	0	0
VSWR	<1.33:1	<1.33:1	<1.33:1	<1.33:1
Front-To-Back Ratio (dB)	40	40	40	40
Isolation (dB)	N/A	N/A	N/A	N/A
Max. Input Power (Watts)	250	250	250	250
Polarization	Vertical	Vertical	Vertical	Vertical
Connector Location	Bottom	Bottom	Bottom	Bottom
Connector Type	7-16 DIN - Female			

MECHANICAL SPECIFICATIONS				
Length (inch/mm)	48 / 1,219	48 / 1,219	60 / 1,524	60 / 1,524
Width (inch/mm)	3.5 / 89	3.5 / 89	3.5 / 89	3.5 / 89
Depth (inch/mm)	7 / 178	7 / 178	7 / 178	7 / 178
Net Weight (lbs/kg)	8.5 / 3.9	8.5 / 3.9	11.5 / 5.2	11.5 / 5.2
Max. Flat Plate Area (ft²/m²)	1.18 / 0.11	1.18 / 0.11	1.51 / 0.14	1.51 / 0.14
Max. Wind Load at 100 mph (lbf/N)	65 / 285	65 / 285	84 / 373	84 / 373
Max. Wind Speed (mph/kmh)	125 / 201	125 / 201	125 / 201	125 / 201
Radome Material	ABS, UV Resistant	ABS, UV Resistant	ABS, UV Resistant	ABS, UV Resistant
Reflector Material	Pass. Aluminum	Pass. Aluminum	Pass. Aluminum	Pass. Aluminum
Radiator Material	Low Loss Circuit Board			
Hardware Material	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel
Color	Light Gray	Light Gray	Light Gray	Light Gray
Std. Mounting Hardware	DB390	DB390	DB390	DB390
Optional Downtilt Kit	DB5098	DB5098	DB5098	DB5098
Optional Special Mounting	DB5094-AZ	DB5094-AZ	DB5094-AZ	DB5094-AZ

Specifications are subject to change. Please see our website for the latest information.
*TELETILT® compatible.

Azimuth Pattern

Elevation Pattern



Scale: 10° radials, 5 dB per division

Vertically Polarized, Log Periodic 80° / 14 dBd

LPA-80080/6CF

When ordering replace "___" with connector type.

Mechanical specifications

Length	1800 mm	70.9 in
Width	140 mm	5.5 in
Depth	335 mm	13.2 in
Depth with z-bracket	375 mm	14.8 in
4) Weight	9.5 kg	21.0 lbs
Wind Area		
Fore/Aft	0.25 m ²	2.7 ft ²
Side	0.60 m ²	6.5 ft ²
Rated Wind Velocity (Safety factor 2.0)	>295 km/hr >183 mph	
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	415 N	93.3 lbs
Side	870 N	195.6 lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting and Downtilting

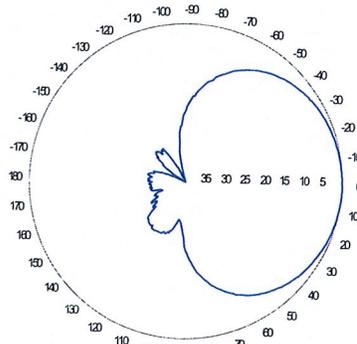
Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in). If the lock-down brace is used, the maximum diameter is Ø88.9 mm (3.5 in)

Mounting Bracket & Downtilt Bracket Kit
#21699999

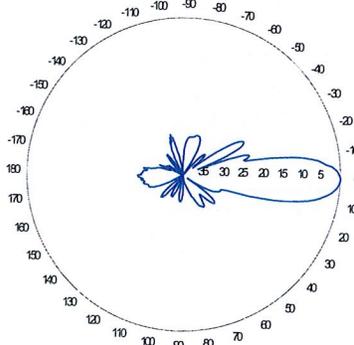
Electrical specifications

Frequency Range	806-960 MHz
Impedance	50Ω
3) Connector(s)	NE or E-DIN 1 port / center
1) VSWR	≤ 1.4:1
Polarization	Vertical
1) Gain	14 dBd
2) Power Rating	500 W
1) Half Power Angle	
H-Plane	80°
E-Plane	10°
1) Electrical Downtilt	0°
1) Null Fill	10%
Lightning Protection	Direct Ground

Radiation pattern¹⁾



Horizontal

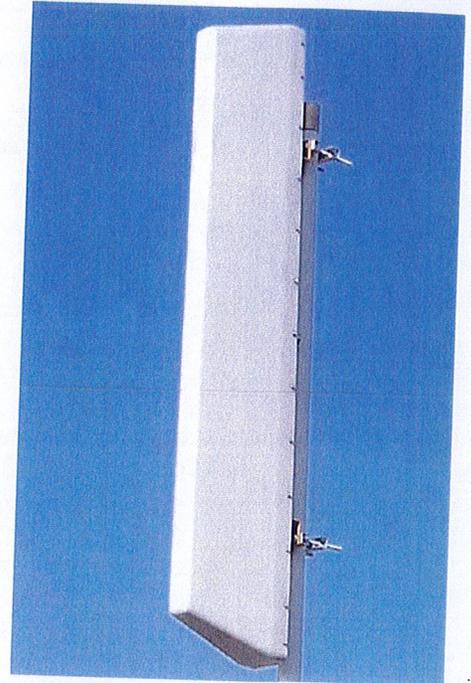


Vertical

Featuring upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

This Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

CF Denotes a Center-Fed Connector.

806-960 MHz

1) Typical values.
2) Power rating limited by connector only.
3) NE indicates an elongated N connector. E-DIN indicates an elongated DIN connector.
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Site Name: Plymouth NW Tower Height: Verizon @ 165Ft.		General		Power	Density		
Carrier	channels	ERP watt/ch	distance (feet)	S (mW/cm ²)	f (MHz)	Smax	Percent MPE
*VoiceStream	4	257	175	0.0121	1930	1.0000	1.21
*Sprint	11	355	195	0.0369	1962.5	1.0000	3.69
*Nextel	9	100	185	0.0095	851	0.5673	1.67
Verizon	9	485	165	0.05769	1970	1.0000	5.77
Verizon	9	200	165	0.02379	875	0.5830	4.08
*Source: Siting Council Records							
						Total %MPE	16.42

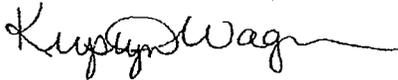
**Structural Analysis for
SBA Network Services, Inc.**

195' Monopole Tower

**Site Name: Plymouth 2
SBA Site ID: CT01497-S**

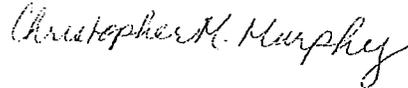
FDH Project Number 08-0137E

Prepared By:



Krystyn Wagner, EI
Project Engineer

Reviewed By:



Christopher M. Murphy, PE
Vice President
CT PE License No. 25842

FDH Engineering, Inc.
PO Box 99556
Raleigh, NC 27615
(919)-755-1012
info@fdh-inc.com

January 9, 2008



Prepared pursuant to ANSI/TIA-222-G Structural Standards for Antenna Supporting Structures and Antennas

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EXECUTIVE SUMMARY

At the request of SBA Network Services, FDH Engineering performed a structural analysis of the existing monopole located in Plymouth, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads, pursuant to the *Structural Standards for Antenna Supporting Structures and Antennas, ANSI/TIA-222-G* standards. Information pertaining to the current and proposed antenna loading and structural configuration was obtained from Fred A. Nudd Corp (Project No. 7109) original design drawings dated November 4, 1999, Vertical Structures, Inc. (Job No. 2003-007-016) structural analysis report dated September 9, 2003, and SBA Network Services.

Note: Analysis performed with modifications shown in the Vertical Structures structural analysis report dated September 9, 2003, in place.

The *basic design wind speed* per *ANSI/TIA-222-G* standards is 80 MPH without ice and 70 MPH with ½" radial ice.

Conclusions

With the existing and proposed antennas installation from Verizon in place at 165 ft., the tower meets the requirements of *ANSI/TIA-222-G*. Furthermore, provided the foundation was constructed per the original foundation drawings (see Fred A. Nudd Project No. 7109), the foundation should have the necessary capacity to support both the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH is accurate (i.e., the steel data, tower layout, existing and proposed antenna loading) and that the tower was properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *ANSI/TIA-222-G* standards are met with the existing and/or proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. If the actual layout determined in the field deviates from this layout, FDH should be contacted to perform a revised analysis.

Table 1 – Appurtenance Loading

Existing Loading:

Antenna	Centerline Elevation (ft)	Coax and Lines ¹	Carrier	Mount Type	Description
1-6	196	(6) 1-5/8"	Sprint	Low Profile Platform	(6) Decibel DB980H90T3-M
7-15	185	(9) 1-5/8"	Nextel	Low Profile Platform	(9) Decibel DB844H90E-XY
16-21	175	(12) 1-5/8"	Omnipoint	Low Profile Platform	(6) EMS RR90-17-02DP
22-33	165	(12) 1-5/8" ²	Verizon	Low Profile Platform	(12) Decibel DB950F85E-M

¹ The existing coax is located inside the pole's shaft, unless otherwise noted.

² The existing loading for Verizon will be altered. See proposed loading below.

Proposed Loading:

Antenna	Centerline Elevation (ft)	Coax and Lines	Carrier	Mount Type	Description
1-12	165	(12) 1-5/8" ¹	Verizon	Low Profile Platform	(6) Decibel DB950F85E-M (6) Antel LPA-80080/6CF

¹ This represents the final loading for Verizon at 165 ft. According to information provided by SBA, Verizon will replace their existing loading with the loading shown above. The final configuration at 165 ft will be (12) antennas and (12) coax.

RESULTS

Based on information obtained from the original design drawings, the yield strength of steel for individual members was as follows:

Table 2 - Material Strength

Member Type	Yield Strength
Pole Sections	65 ksi
Base Plate	45 ksi
Anchor Bolts	105 ksi

Table 3 displays the ratio (as a percentage) of actual force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 105% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 – Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	195 - 180	Pole	TP24x24x0.281	24.4	Pass
L2	180 - 130	Pole	TP35.25x24x0.25	64.3	Pass
L3	130 - 125	Pole	TP35.9725x33.625x0.25	72.2	Pass
L4	125 - 85	Pole	TP45.3625x35.9725x0.3125	68.3	Pass
L5	85 - 81	Pole	TP45.7207x43.329x0.3125	72.5	Pass
L6	81 - 41	Pole	TP55.2875x45.7207x0.375	64.6	Pass
L7	41 - 0	Pole	TP64.5x52.8633x0.375	71.3	Pass

* The working capacity shown does not take into account the shaft modifications given in the Vertical Structures structural analysis report dated September 9, 2003.

Table 4 – Maximum Base Reactions

Load Type	Current Analysis (ANSI/TIA-222-G)	Original Design (TIA/EIA-222-F)
Axial	55.2 k	---
Shear	32.1 k	35.5 k
Moment	3,870 k-ft	4,878 k-ft

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

DESIGNED APPURTENANCE LOADING

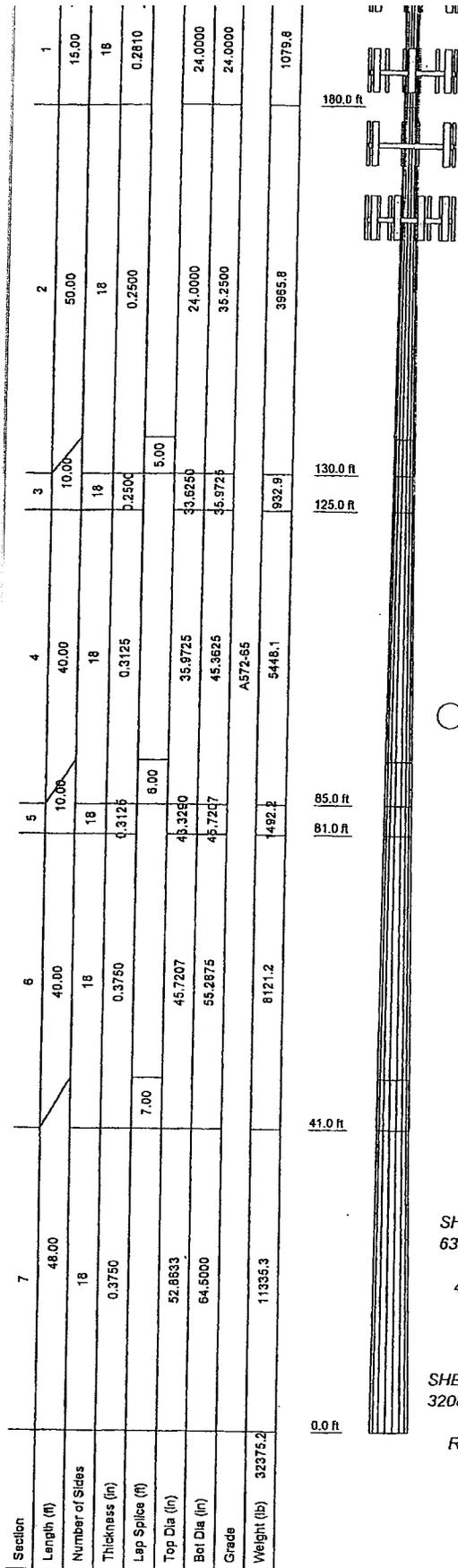
TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980H90T3E-M (Sprint)	196	15' Low Profile Platform (Monopole) (Omniport)	175
(2) DB980H90T3E-M (Sprint)	196	(2) DB950F85E-M (Verizon)	165
(2) DB980H90T3E-M (Sprint)	196	(2) DB950F85E-M (Verizon)	165
15' Low Profile Platform (Monopole) (Sprint)	196	(2) DB950F85E-M (Verizon)	165
(3) DB844H90E-XY (Nextel)	185	15' Low Profile Platform (Monopole) (Verizon)	165
(3) DB844H90E-XY (Nextel)	185	(2) Antel LPA-80080/6cf (Verizon (Proposed))	165
(3) DB844H90E-XY (Nextel)	185	(2) Antel LPA-80080/6cf (Verizon (Proposed))	165
15' Low Profile Platform (Monopole) (Nextel)	185	(2) Antel LPA-80080/6cf (Verizon (Proposed))	165
(2) RR90-17-02DP (Omniport)	175	(2) Antel LPA-80080/6cf (Verizon (Proposed))	165
(2) RR90-17-02DP (Omniport)	175		
(2) RR90-17-02DP (Omniport)	175		

MATERIAL STRENGTH

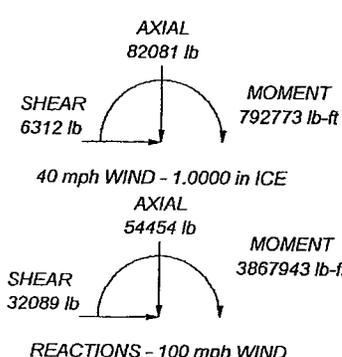
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. BASE: (24) 2" Anchor Bolts (Fy = 105 ksi) on 58" Bolt Circle (Fy = 45 ksi, thickness = 1.5") with (24) stiffeners installed (5" x 1" x 1'-6")
7. TOWER RATING: 72.4%



180.0 ft
130.0 ft
125.0 ft
85.0 ft
81.0 ft
41.0 ft
0.0 ft



<p>FDH Engineering 2730 Rowland Road, Suite 100 Raleigh, NC 27615 Phone: (919) 755-1012 FAX: (919) 755-1031</p>	Job: Plymouth 2 (CT01497-S)		
	Project: 08-0137E		
	Client: SBA	Drawn by: Krystyn Wagner	App'd:
	Code: TIA-222-G	Date: 01/11/08	Scale: NTS
Tower Analysis		Path:	Dwg No. E-