STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

August 9, 2007

Steven L. Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-027-027-059-137-137-070717** – New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 46 Meadow Road, Clinton; 48 Cow Hill Road, Clinton; 78 Roberts Road, Groton; 72 Jerry Brown Road, Stonington; and 171 S. Broad Street, Stonington, Connecticut.

Dear Mr. ~~Levine~~ Steve:

At a public meeting held on July 26, 2007, the Connecticut Siting Council (Council) acknowledged your notice to modify these existing telecommunications facilities, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

1. The proposed coax lines shall be installed as depicted in Figure 1 of the structural analysis report dated July 11, 2007 for the 46 Meadow Road, Clinton tower.

2. The tower at 48 Cow Hill Road, Clinton shall be reinforced per the structural analysis report dated May 29, 2007 sealed by John Irving Mathis, P.E.

3. The tower at 78 Roberts Road, Groton shall be reinforced per the structural analysis report dated July 5, 2007 sealed by Clinton B. Stewart, P.E.

4. Signed letters from Professional Engineers shall be submitted to the Council to certify that the reinforcements to the Clinton and Groton towers are properly completed.

5. The proposed coax lines shall be installed inside the pole's shaft for the 72 Jerry Brown Road, Stonington tower.

6. All AT&T equipment at the 130-foot level of the tower shall be removed per page 3 of the structural analysis report dated July 16, 2007 sealed by J. Darrin Holt, P.E.

The proposed modifications are to be implemented as specified here and in your notice dated July 17, 2007, including the placement of all necessary equipment and shelters within the tower compounds. 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 existing facility sites that would not increase tower heights, extend the boundaries of the tower sites, increase noise levels at the tower site boundaries by six decibels, and increase the total radio frequencies electromagnetic radiation power densities measured at the tower site boundaries to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have also been carefully modeled to ensure that radio

frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on these towers.

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 any of these facilities 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/laf

c: The Honorable William W. Fritz, Jr., First Selectman, Town of Clinton
Thomas Lane, Zoning Enforcement Officer, Town of Clinton
The Honorable Dennis L. Popp, Mayor, City of Groton
Michael Murphy, City Planner, City of Groton
Debra Jenkins, Planning Chairman, City of Groton
The Honorable William S. Brown, First Selectman, Town of Stonington
Jason Vincent, Town Planner, Town of Stonington
Christopher B. Fisher, Esq., Cuddy & Feder LLP
Thomas J. Regan, Esq., Brown Rudnick Berlack Israels, LLP
Kenneth C. Baldwin, Esq., Robinson & Cole LLP
Christine Farrell, T-Mobile
SBA Inc.
Jeffrey W. Barbadora, Crown Atlantic Company LLC

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

July 18, 2007

The Honorable William W. Fritz, Jr.
First Selectman
Town of Clinton
54 East Main Street
Clinton, CT 06413

RE: **EM-CING-027-027-059-137-137-070717** – New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunication facilities located at 46 Meadow Road, Clinton; 48 Cow Hill Road, Clinton; 78 Roberts Road, Groton; 72 Jerry Brown Road, Stonington; and 171 S. Broad Street, Stonington, Connecticut.

Dear Mr. Fritz:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

The Council will consider this item at the next meeting scheduled for July 26, 2007 at 1:30 p.m. in Hearing Room Two, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the Council by July 25, 2007

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/lm

Enclosure: Notice of Intent

c: Thomas Lane, Zoning Enforcement Officer, Town of Clinton

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

EM-CING-027-027-059-137-137-070717

ORIGINAL

HAND DELIVERED

July 17, 2007

Honorable Daniel F. Caruso, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify 5 existing telecommunications facilities located in Clinton (2), Groton, and Stonington (2)

Dear Chairman Caruso and Members of the Council:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of each of the municipalities in which an affected cell site is locate.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile (GSM) communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

Attached are summary sheets detailing the planned changes, including power density calculations reflecting the change in the effect of Cingular's operations at each affected site. Also included is documentation of the structural sufficiency of each tower to accommodate the revised antenna configuration.

The changes to the facilities do not constitute modifications as defined in Connecticut General

Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facilities will not be significantly changed or altered. Rather, the planned changes to the facilities fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. In each instance, the height of the overall structure will be unaffected. Modifications to the existing sites include all or some of the following as necessary to bring each site into conformance with the plan:

- Replacement of existing panel antennas with new antennas of similar size, shape, and weight, or, installation of additional antennas of similar size, shape, and weight.
- Installation of small tower mount amplifiers ("TMA's") and/or diplexers to the platform on which the panel antennas are mounted to enhance signal reception.
- Installation of additional or larger coaxial cables as required.
- Installation of an additional equipment cabinet in existing shelters, or on existing or enlarged concrete pads.

None of these modifications will extend the height of the tower.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as noted in the following attachments.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one GSM channel for UMTS transmissions. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, Cingular Wireless respectfully submits that the proposed changes at the referenced sites constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 513-7636 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Steven L. Levine
Real Estate Consultant

Attachments

CINGULAR WIRELESS
Equipment Modification

46 Meadow Road, Clinton, CT
Site Number 2230
Exempt Modification 3/17/04

Tower Owner/Manager: SBA

Equipment configuration: Self-supporting lattice tower

Current and/or approved: Nine CSS DUO1417 antennas @ 150 ft c.l.
Nine runs 1 5/8 inch coax
Six TMA's / three combiners @ 150 ft

Planned Modifications: Remove three existing antennas
Install three Powerwave 7770 antennas @ 150 ft c.l.
Install three diplexers @ 150 ft
Install three additional runs 1 5/8 inch coax (total of 12)

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 13.8 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 15.2 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							10.90
Cingular GSM *	152	880 - 894	2	296	0.0092	0.5867	1.57
Cingular GSM *	152	1900 Band	2	427	0.0133	1.0000	1.33
Total							13.8%

* Per CSC Records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							10.90
Cingular GSM	150	880 - 894	2	296	0.0095	0.5867	1.61
Cingular GSM	150	1900 Band	2	427	0.0136	1.0000	1.36
Cingular UMTS	150	880 - 894	1	500	0.0080	0.5867	1.36
Total							15.2%

* Per CSC Records

Structural information:

The attached structural analysis demonstrates that the tower and foundation have sufficient structural capacity to accommodate the proposed modifications. (FDH Engineering, dated 7/11/07)

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

July 17, 2007

Honorable William W. Fritz, Jr.
1st Selectman, Town of Clinton
Town Hall 54 East Main St.
Clinton, CT 06413

Re: Telecommunications Facility – 46 Meadow Road, Clinton

Dear Mr. Fritz:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Cingular's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure

FDH

Structural Analysis for SBA Network Services, Inc.

195' Self-Support Tower

Site Name: Clinton 4
Site ID: CT01879-S

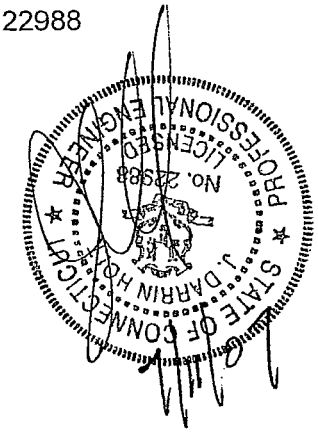
FDH Project Number 07-06312E

Prepared By:

Elliott Taylor, EI
Project Engineer

Reviewed By:

J. Darrin Holt, PhD, PE
President
CT PE License No.22988



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

July 11, 2007

Prepared pursuant to EIA/TIA-222-F June 1996 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

TABLE OF CONTENTS

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

EXECUTIVE SUMMARY

At the request of SBA Network Services, FDH Engineering performed a structural analysis of the self-support tower located in Clinton, CT to determine whether the tower is structurally adequate to support the existing and proposed loads, pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F.* Information pertaining to the existing/proposed antenna loading, current tower geometry, and member sizes was obtained from Sabre (Job No. 00-10101) permit drawings dated November 19, 1999 and SBA Network Services, Inc.

The basic design wind speed per *TIA/EIA-222-F* standards is 85 MPH without ice and 74 MPH with 1/2" radial ice. However, local building code stipulates that structures shall be designed to withstand a minimum design *3-second gust* wind speed of 115 MPH, which is equivalent to a 95 MPH *fastest mile* wind speed. As such, a wind speed of 95 MPH without ice and 83 MPH with ½" radial ice was used in this analysis.

Conclusions

With the existing and proposed antennas from New AT&T in place at 152 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards. Furthermore, provided the foundation was constructed per the foundation drawings (see Sabre Drawing No. 9014022), the foundation should be adequate to support both the proposed and existing 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, current antenna loading, and proposed antenna loading) and that the tower will be properly erected and maintained per the original design drawings.

Recommendation

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

1. The proposed coax lines should be installed as shown in **Figure 1**.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

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:

No.	Centerline Elevation (ft)	Coax and Lines[1]	Carrier	Mount Type	Description
1-12	192	(12) 1-5/8" [2]	T-Mobile	Sector	(12) EMS RR901702DP (6) Allen Telecom FE15501P77/75 TMAs
13-24	182	(12) 1-5/8" [3]	Sprint	Sector	(12) Decibel DB980G90 Panels
25-36	162	(12) 1-5/8"	VzW	Sector	(6) Decibel DB844H80E-XY (6) Decibel DB948F85T2E-M
37-48	152	(12) 1-5/8" [4]	New AT&T	Sector	(12) CSS DUO-1417-8686 (6) ADC Cleargain Dual Band 800/1900 TMAs (3) CSS Dual Band Combiners

1 See **Figure 1** for coax location.
2 Currently, T-Mobile has (6) panels, (6) TMA, and (6) coax installed at 192 ft. According to information provided by SBA, T-Mobile may install (12) panels, (6) TMA, and (12) coax at 192 ft. Analysis performed with full loading in place.
3 Currently Sprint has (6) panels and (6) coax installed at 182 ft. According to information provided by SBA, Sprint may install (12) panels and (12) coax at 182 ft. Analysis performed with full loading in place.
4 New AT&T will alter their existing loading at 152'. See the proposed loading below.

Proposed Loading:

No.	Centerline Elevation (ft)	Coax and Lines	Carrier	Mount Type	Description
1-12	152	(15) 1-5/8" [1]	New AT&T	Sector	(9) CSS DUO-1417-8686 (3) Powerwave 7770.00 (6) ADC Cleargain Dual Band 800/1900 TMAs (3) CSS Dual Band Combiners (3) Powerwave LGP 13519 Diplexers

1 This represents the full loading for New AT&T at 152 ft. According to information provided by SBA, New AT&T will remove (3) DUO-1417-8686 antenna and add (3) Powerwave 7770.00 antennas, (3) Powerwave LGP 13519 diplexers, and (3) 1-5/8" coax for a total loading of (12) antenna, (6) TMA, (3) combiners, (3) diplexers, and (15) coax at 152 ft.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

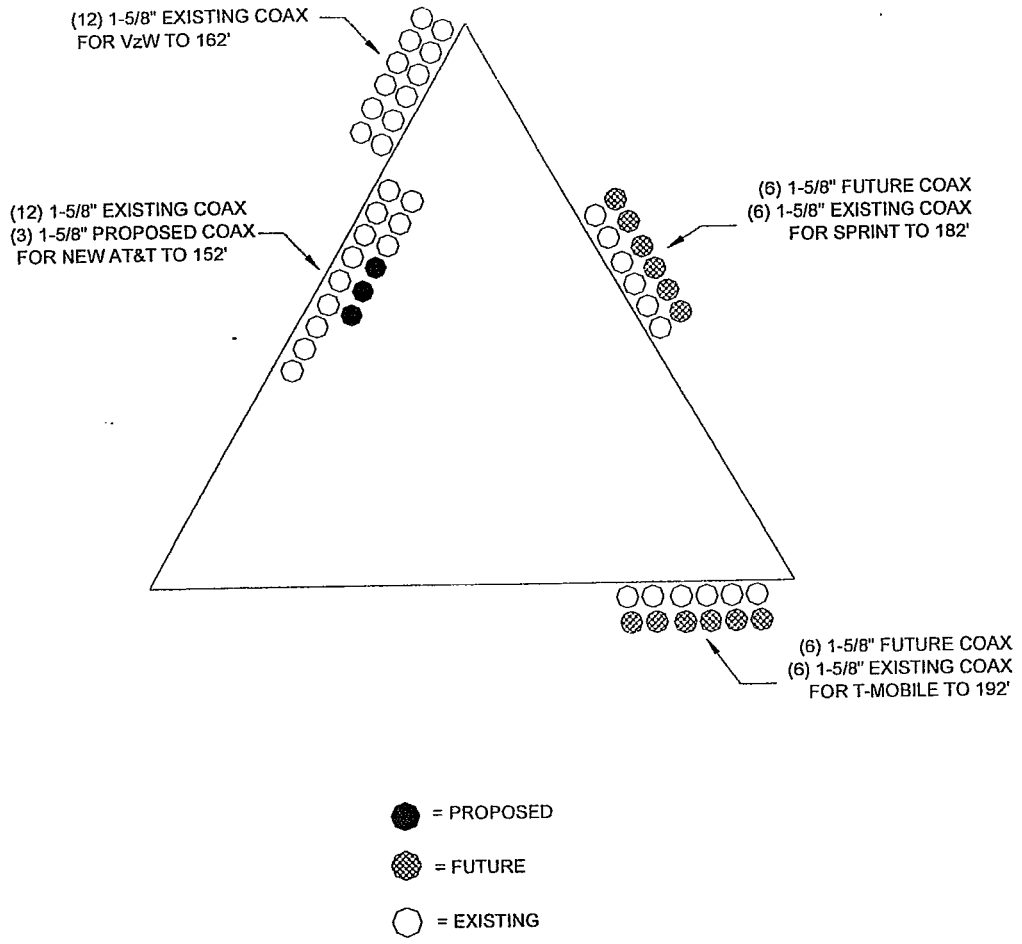


Figure 1 – Coax Location

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

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
Legs	50 ksi
Diagonals	36 ksi
Horizontals	36 ksi

Table 3 displays the ratio (as a percentage) of actual force in the member to their allowable capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its allowable 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
T1	195 - 180	Leg	P2.38x.154	43.1	Pass
		Diagonal	L1 3/4x1 3/4x3/16	32.4	Pass
T2	180 - 160	Leg	P3.5x.226	64.0	Pass
		Diagonal	L1 3/4x1 3/4x3/16	57.7	Pass
		Top Girt	L1 3/4x1 3/4x3/16	8.3	Pass
T3	160 - 140	Leg	P3.5x.3	91.3	Pass
		Diagonal	L2x2x3/16	83.6	Pass
T4	140 - 120	Leg	P4.5x.337	90.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	72.2	Pass
T5	120 - 100	Leg	P5.56x.375	78.5	Pass
		Diagonal	L2 1/2x2 1/2x3/16	90.9	Pass
T6	100 - 80	Leg	P6.63x.280	99.6	Pass
		Diagonal	L3x3x5/16	45.7	Pass
T7	80 - 60	Leg	P6.63x.432	84.8	Pass
		Diagonal	L3x3x1/4	89.0	Pass
T8	60 - 40	Leg	P8.63x.322	89.1	Pass
		Diagonal	L3x3 1/2x1/4	89.4	Pass
T9	40 - 20	Leg	P8.63x.322	99.7	Pass
		Diagonal	L3 1/2x3 1/2x1/4	85.7	Pass
T10	20 - 0	Leg	6.625"x.5"	72.9	Pass
		Diagonal	L3 1/2x4x1/4	90.0	Pass

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

Table 4 – Maximum Base Reactions

Load Type	Design Reactions	Current Analysis
Horizontal	29 k	34 k
Uplift	256 k	292 k
Compression	306 k	325 k
Overturning Moment	6,296 k-ft	6,228 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 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.

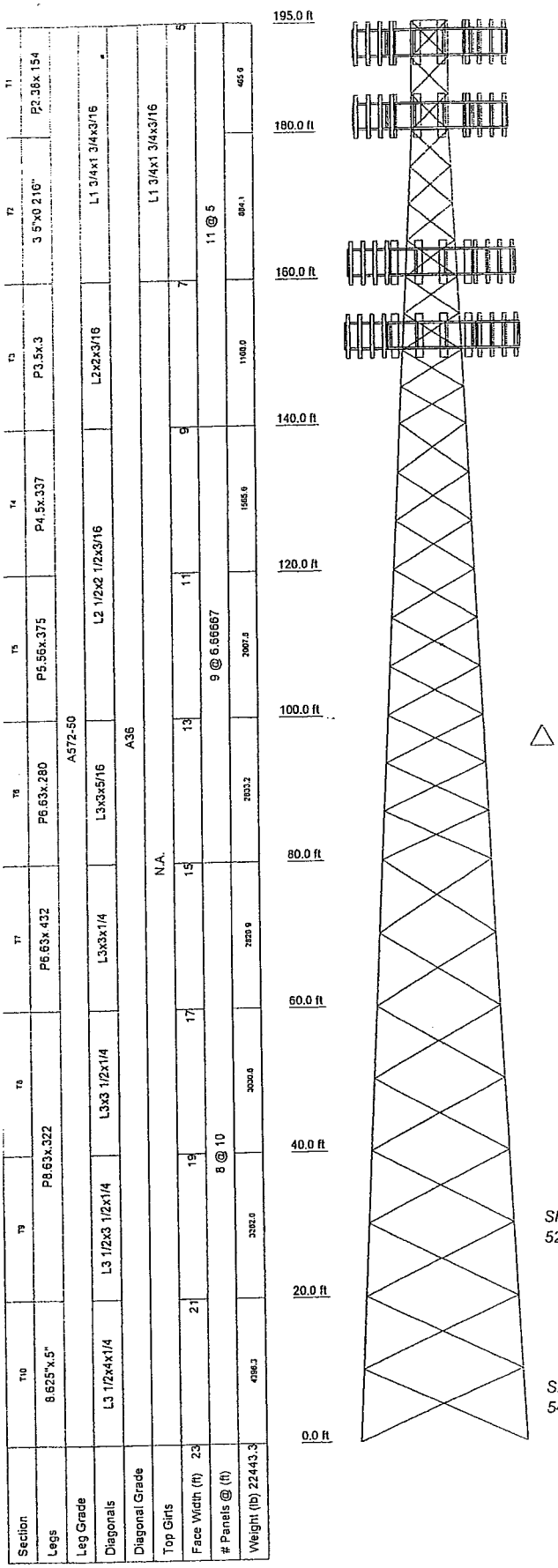
LIMITATIONS

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.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

APPENDIX

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) RR90-17-DP	192	(2) DB844H80E-XY	162
(4) RR90-17-DP	192	(2) DB844H80E-XY	162
(4) RR90-17-DP	192	(2) DB844H80E-XY	162
(6) TMA	192	(2) DB948F85T2E-M	162
(3) PiROD 12' Universal T-Frame Sector Mount	192	(4) DUO1417-8686	152
		(6) TMA	152
(4) DB980G90T2E-M	182	(3) Combiners	152
(4) DB980G90T2E-M	182	(3) PiROD 12' Universal T-Frame Sector Mount	152
(4) DB980G90T2E-M	182		
(3) PiROD 12' Universal T-Frame Sector Mount	182	(4) DUO1417-8686	152
		DUO1417-8686	152
(2) DB948F85T2E-M	162	(3) Powerwave 7770.00	152
(2) DB948F85T2E-M	162	(3) Diplexers	152
(3) PiROD 12' Universal T-Frame Sector Mount	162		

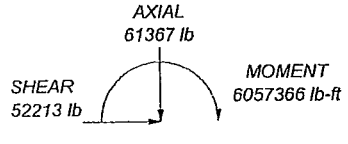
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

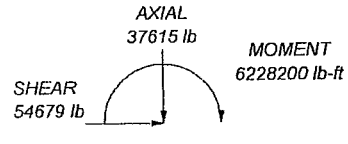
TOWER DESIGN NOTES

1. Tower designed for a 95 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 83 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 99.7%

MAX. CORNER REACTIONS AT BASE:
DOWN: 325221 lb
UPLIFT: -291810 lb
SHEAR: 33682 lb



TORQUE 669 lb-ft
83 mph WIND - 0.5000 in ICE



TORQUE 854 lb-ft
REACTIONS - 95 mph WIND

FDH Engineering
2730 Rowland Road
Raleigh, NC
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: Clinton 4, CT		Site: CT01879-S
Project: 07-06312E		
Client: SBA	Drawn by: ET	App'd:
Code: TIA/EIA-222-F	Date: 07/11/07	Scale: NTS
Path:		Dwg No. E-1

CINGULAR WIRELESS
Equipment Modification

48 Cow Hill Road, Clinton, CT
Site Number 2024
Docket 148; Exempt Modification 7/02

Tower Owner/Manager: Verizon Wireless

Equipment configuration: Self-supporting lattice tower

Current and/or approved:
Nine CSS DUO1417 antennas @ 190 ft c.l.
Nine runs 7/8 inch coax
Six TMA's / three diplexers @ 190 ft

Planned Modifications:
Remove all nine existing antennas
Install six Powerwave 7770 antennas @ 190 ft c.l.
Remove three diplexers
Install six new diplexers @ 190 ft
Remove all nine runs coax
Install twelve new runs 1 5/8 inch coax

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 24.2 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 23.2 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							19.58
CingularTDMA *	190	880 - 894	16	100	0.0159	0.5867	2.72
Cingular GSM *	190	880 - 894	2	296	0.0059	0.5867	1.01
Cingular GSM *	190	1900 Band	2	427	0.0085	1.0000	0.85
Total							24.2%

* Per CSC Records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							19.58
Cingular GSM	190	880 - 894	3	296	0.0088	0.5867	1.51
Cingular GSM	190	1900 Band	3	427	0.0128	1.0000	1.28
Cingular UMTS	190	880 - 894	1	500	0.0050	0.5867	0.85
Total							23.2%

* Per CSC Records

Structural information:

The attached structural analysis indicates that the foundation is adequate to accommodate the proposed modifications, but that the tower would be over-stressed. (Vertical Structures, dated 5/29/07) The analysis, however, lists several re-enforcing measures that would rectify the over-stress condition. Cingular will have the tower re-enforced per these recommendations prior to performing the proposed UMTS modifications and respectfully requests a conditional approval.

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

July 17, 2007

Honorable William W. Fritz, Jr.
1st Selectman, Town of Clinton
Town Hall 54 East Main St.
Clinton, CT 06413

Re: Telecommunications Facility – 48 Cow Hill Road, Clinton

Dear Mr. Fritz:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Cingular's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure

May 29, 2007

Thomas Stevens
Crown Castle International
46 Broadway
Albany, NY 12204
(518) 433-6242

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
kmeehan@verticalstructures.com

Subject: Structural Analysis Report

Carrier Designation	**Cingular Change-Out** **Carrier Site Number: 2024** **Carrier Site Name: Clinton-Cow Hill Road**
Crown Castle Designation	**Crown Castle BU Number: 806363** **Crown Castle Site Name: HRT 105** **Crown Castle JDE Job Number: 88732**
Engineering Firm Designation	**Vertical Structures Project Number: 2007-004-054**
Site Data	**48 Cow Hill Road, Clinton, CT, Middlesex County** **Latitude 41°-17'-20.0", Longitude -72°-32'-18.0".** **212' Rohn SSMW Self-Supporting Tower**

Dear Mr. West,

Vertical Structures is pleased to submit this structural analysis report to determine the structural integrity of the aforementioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 239693, and Application Number 45893, Revision 1. The purpose of the analysis is to determine the suitability of the tower for the following load case:

Load Case 1 (LC1): Proposed Equipment (Table 1) + Existing/Reserved Equipment (Table 2)

Based on our analysis we have determined the tower superstructure is insufficient for LC1. However, the foundation is adequate. This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a 95 MPH basic "fastest mile" wind speed, equivalent to a 115 MPH basic "3-second gust" wind speed per IBC Table 1609.3.1.

Vertical Structures appreciates the opportunity of providing our continuing professional services to you and Crown Castle International. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

Kyle Meehan
Project Engineer

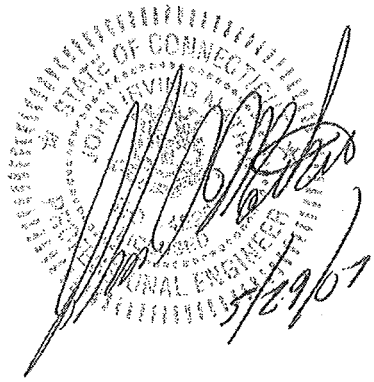


TABLE OF CONTENTS

1.) INTRODUCTION

The 212' tall self-supporting tower was designed and manufactured by Rohn in 1992 for Bell Atlantic Metromobile. The three (3) sided tower is constructed of pipe legs with pipe k-bracing and is founded on a 40'-3" square by 4'-6" thick mat bearing 4' below grade.

2.) ANALYSIS CRITERIA

The HRT 105 tower was analyzed in accordance with the current EIA-222-F publication, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." The proposed, existing and reserved antennas, cables and mounts considered in this analysis are listed in Tables 1 and 2. Applied forces in this study were derived from a 95 MPH basic "fastest mile" wind speed with no ice and a reduced 82 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The tower was originally designed for a 90 MPH basic "fastest mile" wind speed with no ice and a reduced 78 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The original design loads are listed in Table 3. All cables are assumed to be routed in accordance with the drawing in Appendix B.

Table 1 – Proposed Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
190	6	Powerwave Technologies	7770.00			12	1 5/8
	6	Powerwave Technologies	LGP13519 Diplexer				

Table 2 – Existing and Reserved Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
208	9	Swedcom	ALP 9212-N	Rohn	(3) 15' Sector Frames	15	1 5/8
	6	Decibel	DB948F85T2E-M				
197	6 + 3*	Decibel	DB980H90E-M	Rohn	(3) 15' Sector Frames	6 + 3*	1 5/8
190	9**	CSS	DUO4-8670		(3) 14' Angle Sector Frames	9**	7/8
	6	ADC	1800/1900 TMA				
180	3	Decibel	978QNB120E-M		(3) 12' Angle T-Frames	15 + 6* 3	1 5/8 7/8
	3 + 6*	Allgon	7250.01				
175	12	Decibel	DB844H90E-XY	Rohn	(3) 15' Sector Frames	12	1 1/4
165	2	RFS/Celwave	1142-2C	Rohn	(2) 6' Sidearms	2	7/8
145	2	RFS/Celwave	1142-2C	Rohn	(2) 6' Sidearms	2	7/8
137	3	EMS Wireless	RR90-17-02DP		(3) 2' Sidearms	6	1 1/4
	6		TMA				
133	1	Andrew	PL6-59W		(1) Pipe Mount	1	EW52
125	1	RFS/Celwave	1142-2C	Rohn	(1) 6' Sidearm	1	7/8

*Indicates reserved equipment.
**Indicates antennas and cables to be removed. Existing mounts and TMAs to be reused.

Table 3 – Design Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
212	4	Celwave	PD10017	Rohn	(6) 6' Sidearms		
	12	Sinclair	SRL410C4				
200	2		6' Grid Dish				
190	9	Swedcom	ALP9212N		(3) Sector Mounts		
100	1	Decibel	DB222		(1) Sidearm		
90	1	Decibel	DB225		(1) Sidearm		
80	2	Decibel	DB225-2		(2) Sidearms		
60	1	Decibel	DB225-2		(1) Sidearm (1) Sidearm (1) Sidearm		
	1	Decibel	DB212-2				
	1	Decibel	DB225				
50	1	Decibel	DB212-2		(1) Sidearm		
40	1	Decibel	DB212		(1) Sidearm		

3.) ANALYSIS PROCEDURE

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Online Application	Cingular Change-Out Revision #1	45893	CCI iSite
Tower Drawings	Rohn Drawing No. C921279	262274	CCI iSite
Foundation Drawings	Rohn Drawing No. A921278-1	262273	CCI iSite
Geotechnical Report	Dr. Clarence Welti Report Dated July 6, 1992	262276	CCI iSite

3.1) Analysis Methods

RISA Tower (Version 4.7), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/EIA/TIA-222-F or the local building code requirements. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1. Tower and structures were built in accordance with the manufacturer's specifications.
2. The tower and structures have been maintained in accordance with manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and any referenced drawings.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and Vertical Structures should be allowed to review any new information to determine its effect on the structural integrity of the tower.

4.) ANALYSIS RESULTS

Table 5 – Tower Component Stresses vs. Capacity (LC1)

Notes	Component	Elevation (feet)	% Capacity	Pass/Fail
RISA Tower Analysis Summary:				
	Leg (T9)	61.0 – 40.7	108.3	Fail X
1	Diagonal (T4)	162.1 – 141.9	104.8	Pass
	Horizontal (T9)	61.0 – 40.7	76.4	Pass
	Top Girt (T1)	212.6 – 202.5	1.4	Pass
	Redund Horz 1 Bracing (T11)	20.3 – 0	76.9	Pass
	Redund Diag 1 Bracing (T11)	20.3 – 0	169.0	Fail X
	Redund Hip 1 Bracing (T11)	20.3 – 0	0.8	Pass
	Redund Hip Diagonal Bracing (T11)	20.3 – 0	0.9	Pass
	Inner Bracing (T5)	141.9 – 121.7	7.7	Pass
	Bolt Checks	20.3 – 0	90.0	Pass
Additional Component Analysis Summary:				
2	Anchor Bolts (Tension)		82.4	Pass
2	Foundation (Compared to Design Loads)		<100.0	Pass
		Structure Rating =	**169.0**	**Fail X**

1) Indicates an overstress of less than 5% and is considered acceptable based on the analysis procedure used.
2) Indicates calculations supporting % capacity are included in Appendix C.

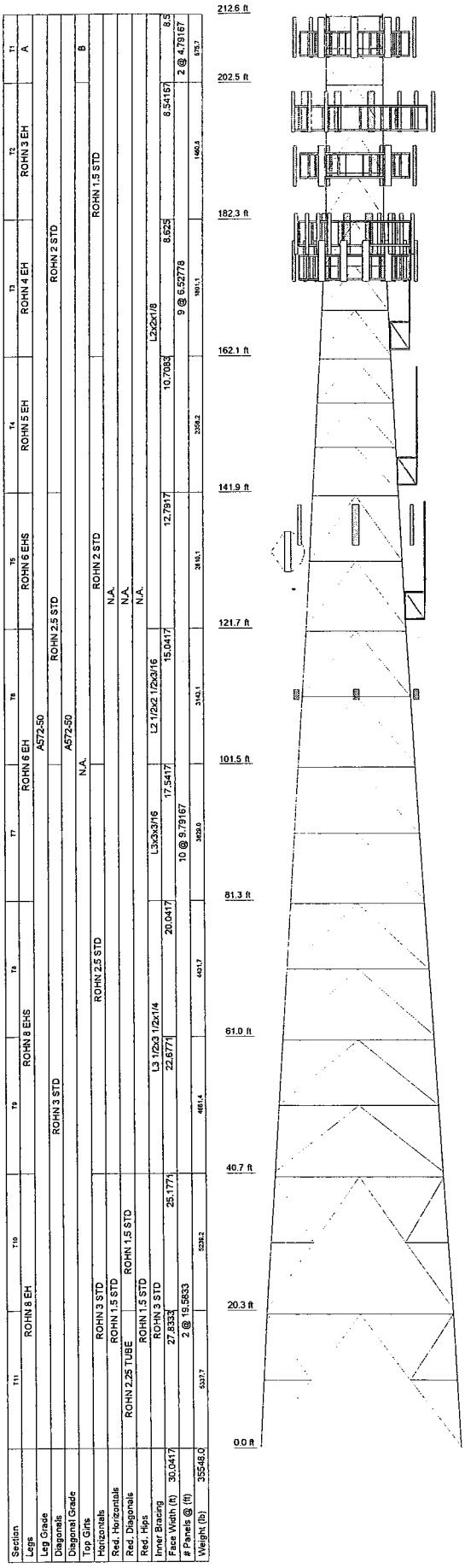
4.1) Required Modifications

Results indicate that the tower superstructure is insufficient to accommodate LC1. Modifications (A) through (C) are required to remedy the deficiencies identified in this analysis. If requested, Vertical Structures will supply the construction drawings and material necessary to make the required modifications.

(A) Reinforce the legs between 91.3' and 81.3'.

(B) Reinforce the legs between 50.7' and 40.7'.

(C) Reinforce the redundant diagonals between 40.1' and 0'.



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	212	12' Angle T-Frame Sector Mount (1) (VSI)	180
Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	208	12' Angle T-Frame Sector Mount (1) (VSI)	180
Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	208	(3) 7250.01 w/Mount Pipe	180
Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	208	(3) 7250.01 w/Mount Pipe	180
(3) ALP 9212-N w/Mount Pipe	208	(3) 7250.01 w/Mount Pipe	180
(3) ALP 9212-N w/Mount Pipe	208	978QNB120E-M w/Mount Pipe	180
(3) ALP 9212-N w/Mount Pipe	208	978QNB120E-M w/Mount Pipe	180
(2) DB948F85T2E-M w/Mount Pipe	208	978QNB120E-M w/Mount Pipe	180
(2) DB948F85T2E-M w/Mount Pipe	208	Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	175
(2) DB948F85T2E-M w/Mount Pipe	208	Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	175
Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	197	Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	175
Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	197	(4) DB844H90E-XY w/Mount Pipe	175
Rohn 6'x15' Boom Gate (1) No Mount Pipes (VSI)	197	(4) DB844H90E-XY w/Mount Pipe	175
(3) DB980H90E-M w/Mount Pipe	197	(4) DB844H90E-XY w/Mount Pipe	175
(3) DB980H90E-M w/Mount Pipe	197	Rohn 6' Side-Arm Pipe (1) (VSI)	165
(3) DB980H90E-M w/Mount Pipe	197	Rohn 6' Side-Arm Pipe (1) (VSI)	165
(2) 6' Empty Mount Pipe	197	1142-2C	165
(2) 6' Empty Mount Pipe	197	1142-2C	165
(2) 6' Empty Mount Pipe	197	Rohn 6' Side-Arm Pipe (1) (VSI)	145
14' Angle Sector Frames (Cingular)	190	Rohn 6' Side-Arm Pipe (1) (VSI)	145
14' Angle Sector Frames (Cingular)	190	1142-2C	145
14' Angle Sector Frames (Cingular)	190	1142-2C	145
(2) 7770.00 w/ mount pipe (Cingular)	190	2' Sidearm Mount	137
(2) 7770.00 w/ mount pipe (Cingular)	190	2' Sidearm Mount	137
(2) 7770.00 w/ mount pipe (Cingular)	190	2' Sidearm Mount	137
(2) LGP13519 Diplexer (Cingular)	190	RR90-17-02DP w/Mount Pipe	137
(2) LGP13519 Diplexer (Cingular)	190	RR90-17-02DP w/Mount Pipe	137
(2) LGP13519 Diplexer (Cingular)	190	RR90-17-02DP w/Mount Pipe	137
(2) DB 800/1900 Full Band Masthead (VSI) (Cingular)	190	(2) Generic TMA	137
(2) DB 800/1900 Full Band Masthead (VSI) (Cingular)	190	(2) Generic TMA	137
(2) DB 800/1900 Full Band Masthead (VSI) (Cingular)	190	5'3"x4" Pipe Mount	133
4' x 2" Antenna Mount Pipe (Cingular)	190	PL6-59W	133
4' x 2" Antenna Mount Pipe (Cingular)	190	Rohn 6' Side-Arm Pipe (1) (VSI)	125
4' x 2" Antenna Mount Pipe (Cingular)	190	1142-2C	125
12' Angle T-Frame Sector Mount (1) (VSI)	180	Intermediate Side Lights (VSI)	111
		Intermediate Side Lights (VSI)	111
		Intermediate Side Lights (VSI)	111

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2.5 STD	B	ROHN 1.5 STD

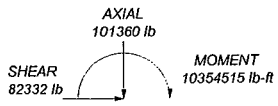
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

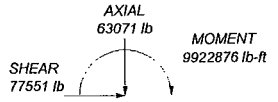
TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 95 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 82 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 169%

MAX. CORNER REACTIONS AT BASE:
DOWN: 431779 lb
UPLIFT: -356020 lb
SHEAR: 49176 lb



TORQUE 28003 lb-ft
82 mph WIND - 0.5000 in ICE



TORQUE 35430 lb-ft
REACTIONS - 95 mph WIND

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job:	*HRT 105, CT BU#806363*
Project:	*Vertical Structures #2007-004-054*
Client: Crown Castle	Drawn by: Kyle Meehan App'd:
Code: TIA/EIA-222-F	Date: 05/29/07 Scale: NTS
Path: \\Ias1\meehan\2007-004-054\RISA\806363.eri	Dwg No. E-1

CINGULAR WIRELESS
Equipment Modification

78 Roberts Road, Groton, CT
Site Number 2182
Exempt Modifications 11/2/00 and 8/15/02

Tower Owner/Manager: Crown Castle

Equipment configuration: Monopole

Current and/or approved: Nine CSS DUO1417 antennas @ 147 ft c.l.
Nine runs 7/8 inch coax
Six TMA's and six diplexers @ 147 ft

Planned Modifications: Remove all existing Cingular equipment on tower
Install six Powerwave 7770 antennas at 147 ft c.l.
Install six TMA's and six diplexers @ 147 ft
Install twelve runs 1 5/8 inch coax

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 22.5 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 20.7 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							14.55
Cingular TDMA *	144	880 - 894	16	100	0.0277	0.5867	4.73
Cingular GSM *	144	880 - 894	2	296	0.0103	0.5867	1.75
Cingular GSM *	144	1900 Band	2	427	0.0148	1.0000	1.48
Total							**22.5%**

* Per CSC Records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							14.55
Cingular UMTS	147	880 - 894	1	500	0.0083	0.5867	1.42
Cingular GSM	147	1900 Band	2	427	0.0142	1.0000	1.42
Cingular GSM	147	880 - 894	4	296	0.0197	0.5867	3.36
Total							20.7%

* Per CSC Records

Structural information:

The attached structural analysis indicates that the foundation is adequate to accommodate the proposed modifications, but that the baseplate of the tower would be over-stressed. (Vertical Structures, dated 5/29/07) The analysis, however, states that re-enforcing the baseplate with welded gussets would rectify the over-stress condition. Cingular will have the tower re-enforced as recommended prior to performing the proposed UMTS modifications and respectfully requests a conditional approval.

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

July 17, 2007

Mr. Mark Oefinger, Town Manager
Town of Groton
Town Hall 45 Fort Hill Rd.
Groton, CT 06340-4394

Re: Telecommunications Facility – 78 Roberts Road, Groton

Dear Mr. Oefinger:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") will be changing its equipment configuration at certain cell sites.

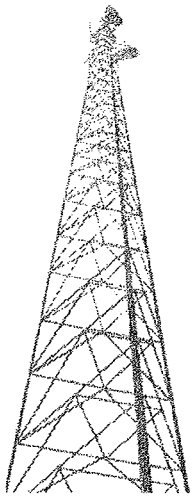
As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Cingular's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure



WALKER ENGINEERING INCORPORATED

July 05, 2007

Mr. Benjamin Goodhart
Crown Castle International
9105 Monroe Road, Suite 150
Charlotte, NC 28270
704-321-3845

Walker Engineering Inc.
400 Vestavia Pkwy, Ste. 102
Vestavia Hills, AL 35216
Voice: 205-823-1749
cstewart@walkerengineer.com

Subject: **Structural Analysis Report**

Carrier Designation	***Cingular Antenna Replacement*** **Carrier Site Number: *2182*** **Carrier Site Name: *Groton-Roberts Road***
Crown Castle Designation	**Crown Castle BU Number: *881533*** **Crown Castle Site Name: *Groton Tower*** **Crown Castle JDE Job Number: *89018***
Engineering Firm Designation	**Walker Engineering: Project Number: *0705-0147VA*** **Client ID Number: *Crown-0166VA***
Site Data	***75 Roberts Road,*** ***New London County, Groton, CT*** **Latitude 41° *21' 36.792"*, Longitude -*72° 2 55.104"*** ***150 Foot - Monopole (MP)***

Dear ***Mr. Goodhart,***

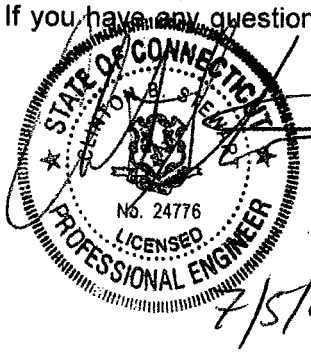
Walker Engineering is pleased to submit this **"Structural Analysis Report"** to determine the structural adequacy of the aforementioned monopole. The finite element, P-Δ structural analysis of the above subject monopole, has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of the Crown Castle Purchase Order.

The purpose of the analysis is to determine the acceptability of the monopole stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Reserved + Proposed Equipment — **In-Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing loading.

The structural analysis, for this tower, was performed in accordance with the requirements of TIA/EIA-222-**F** for a 85 mph fastest mile base windload with 3/4" ice and meeting the requirements of the 2005 Connecticut State Building Code for a 120 mph 3 second gust wind. The controlling load case is shown in Table 5.

We at *Walker Engineering* appreciate the opportunity of providing our continuing professional services to you and Crown Castle International. If you have any questions or need further assistance on this or any other projects please give us a call.



Respectfully submitted,

Clint Stewart, P.E.

7/5/07

TABLE OF CONTENTS

1) INTRODUCTION

1.1) Self-Supporting Monopole Description:

The structure is a 150-foot, three-section, eighteen sided, tapered monopole, designed and manufactured by EEI in 2001.

2) ANALYSIS CRITERIA

2.1) Structural Analysis Criteria:

Specific Code: TIA/EIA-222-F 85 mph fastest mile (ASCE 7-02 120 mph 3 second gust).
Conditions: 75% of base windload with 3/4" radial ice.
Original Design: TIA/EIA-222-E 85 mph, and 75% of base windload with 1/2" radial ice.

2.2) Information Available:

Information available at the time of this analysis is included in Table 4. This information was sufficient for an analysis of the monopole, subject to the conditions stated in the "Assumptions" section of this report.

Table 1a – Proposed Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
147	Six Six Six	Powerwave Tech. Powerwave Tech. ADC	7770.00 LGP13519 DIPLXR DB 800/1900 FB MSTHD	++	++	Twelve *(Inside)*	1-5/8"

Notes: Proposed loading obtained from Crown Castle RF configuration application (*See Table 4*).

Table 1b – SLA Antenna and Cable Information[1]

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
147	Twelve	-	84" x 14" Panel	++	++	Twelve *(Inside)*	1-5/8"

Notes: [1]SLA Loading is the controlling Load Case. See results in Table 5.

Table 2 – Existing/Reserved Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
147	Nine* Nine* Nine*	CSS ADC -	DUO1417-8686-4-0 CG-1900/W800 Full-DIN TMA DIPLXR	++	L.P. Platform	Nine* *(Inside)*	7/8"
135	Six Six	Antel	LPA-185063/8CF LPA-80063/4CF	++	L.P. Platform	Twelve *(Inside)*	1-5/8"
125	Six Six	EMS Wireless -	RR90-17-02DPL2 TMA	++	L.P. Platform	Twelve *(Inside)*	1-5/8"
113	Six	Decibel	980H65T2EMS	++	L.P. Platform	Six (Inside)	1-5/8"
102	-	-	-	++	L.P. Platform	-	-
70	-	-	GPS	++	Pipe Mount	One *(Outside)*	1/2"

Notes: ++: Where no specific model is given, antenna mount details have been assumed based on photographs.
*: Existing antennas, TMA's, diplexors, and coax are to be removed and replaced with the proposed equipment.

Table 3 – Original Design Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
145	Twelve	**	7120.16	Low Profile Platform	**	**
135	Twelve	**	7120.16	Low Profile Platform	**	**
125	Nine	**	7120.16	Low Profile Platform	**	**
115	Twelve	**	7120.16	Low Profile Platform	**	**
105	Twelve	**	7120.16	Low Profile Platform	**	**
95	Twelve	**	7120.16	Low Profile Platform	**	**

Notes: ** Information not included in original manufacturer's documents (*See Table 4*).

3) *ANALYSIS PROCEDURE*

3.1) *Available Documentation*:

Crown Castle provided Walker Engineering with portions of various documents to assist in our analysis. These documents are listed in Table 4.

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Crown Castle Online Application Revision #1 (dated 05/07/07)	Carrier Equipment Configuration	Application ID: 45915	Crown Castle
EEI Job No.: 8409-P01 (dated 01/02/01)	Monopole Manufacturer's Drawings	Doc ID 1405782	Site Data Manager

Notes: N/A - Information not included in the documents provided by Crown Castle International.

3.2) *Analysis Methods*:

RISATower (Version V5.0), a commercially available software program, was used to create a three-dimensional model of the monopole and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/EIA/TIA-222-F or the local building code requirements.

3.3) *Assumptions*:

1. The monopole and structures were built in accordance with the manufacturer's specifications.
2. The monopole and structures have been maintained in accordance with manufacturer's specifications and are in good condition.
3. The monopole has not received any structural modifications since the original installation, except where may be disclosed elsewhere in this report.
4. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings. Any discrepancies in loading should be brought to Walker Engineering's attention; results of this analysis cannot be used if the loading is different from the above-mentioned tables.
5. All coax cables are assumed to be routed as indicated on the coax cable plan drawing A1-0 provided by Crown Castle.
6. All proposed equipment shall be installed in accordance with the antenna and mount manufacturer's specifications.

7. As future loads are installed, the monopole should be re-evaluated on a case-by-case basis.
8. Where applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.
9. The foundation is capable of supporting the original foundation design loads.
10. The analysis is based, in part, on the information provided to this office by Crown Castle International. If the existing conditions are different than the information in this report, Walker Engineering Inc. should be contacted for resolution of any issues.

3.4) Exceptions:

Exceptions to the above mentioned assumptions are stated explicitly in this report. This analysis may be affected if any of the assumptions are not valid or have been made in error. In such an event, Walker Engineering, Inc. shall be permitted to review any new information in order to determine its effect on the structural integrity of the monopole.

4) ANALYSIS RESULTS

4.1) Summary of Analysis Results:

Summary results of our structural analysis are presented in Table 5 below. A copy of the computer analysis is provided in Appendix A. The analysis results show that the subject ***monopole is not in conformance*** with the requirements of the relevant standards for the existing, reserved, and proposed loading. The foundation capacity is based on a comparison of the reactions from the current analysis with the original design reactions. The monopole foundation reactions from the current analysis are less than the original design loads. The monopole foundation may therefore ***be considered adequate*** to support the existing, reserved, and proposed loads.

Table 5 – Monopole Component Stresses vs. Capacity – LC1

RISA Tower Analysis Summary:(Monopole)				
			Summary	
Notes:	**Component**	**Elevation**	**% Capacity**	**Pass/Fail**
	L1	144.5 ft – 117.54 ft	59.9	Pass
	L2	117.54 ft – 87.17 ft	93.2	Pass
	L3	87.17 ft – 42.1 ft	84.5	Pass
	L4	42.1 ft – 0 ft	81.1	Pass
Individual Components:				
Notes:	**Component**	**Elevation**	**% Capacity**	**Pass/Fail**
	Anchor Rods		85.7	Pass
	Base Plate		***164.6***	***Fail***
	Base Foundation (Compared w/ Design Loads)		89.1	Pass
Structure Rating (max from all components) =				***164.6 %***

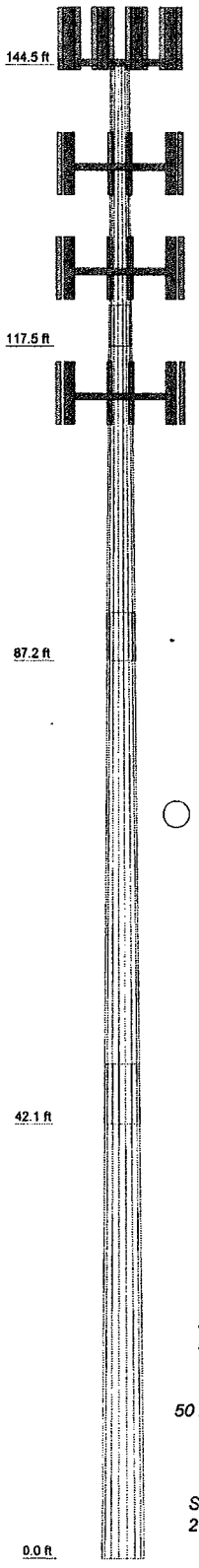
4.2) Recommendations:

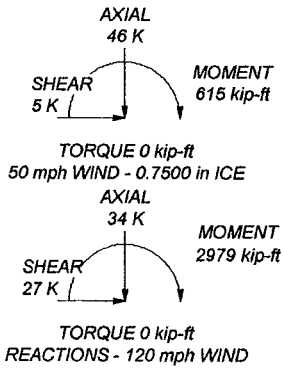
Monopole:

4.2.1) Reinforce the overstressed monopole base plate in order to support the proposed and existing loads. *This will probably consist of adding gussett plates by welding to the base plate and monopole.*

Section	1	2	3	4
Length (ft)	26.96	34.29	49.75	47.92
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3750	0.4375
Lap Splice (ft)	3.92	4.67	5.83	
Top Dia (in)	21.0000	25.6508	31.4997	40.1954
Bot Dia (in)	26.8800	33.0000	42.2000	50.5000
Grade	A572-65			
Weight (K)	1.3	2.7	7.4	10.3

21.7





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) 84" x 14" Panel (SLA)	147	(2) RR90-17-02DP w/Mount Pipe	125
(4) 84" x 14" Panel (SLA)	147	(2) RR90-17-02DP w/Mount Pipe	125
(4) 84" x 14" Panel (SLA)	147	(2) TMA	125
.Low Profile Platform Mount	145	(2) TMA	125
(2) LPA-80063/4CF w/Mount Pipe	135	(2) TMA	125
(2) LPA-80063/4CF w/Mount Pipe	135	.Low Profile Platform Mount	125
(2) LPA-80063/4CF w/Mount Pipe	135	(2) DB980H65T2E-M w/Mount Pipe	113
(2) LPA-185063/8CF w/Mount Pipe	135	(2) DB980H65T2E-M w/Mount Pipe	113
(2) LPA-185063/8CF w/Mount Pipe	135	(2) DB980H65T2E-M w/Mount Pipe	113
(2) LPA-185063/8CF w/Mount Pipe	135	.Low Profile Platform Mount	113
.Low Profile Platform Mount	135	GPS	70
(2) RR90-17-02DP w/Mount Pipe	125		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed in accordance with the TIA/EIA-222-F Standard.
3. A 120 mph 3-second peak gust ASCE 7-02 wind profile used.
4. Wind importance factor is 1.00, Exposure C.
5. Tower is also designed for a 50 mph basic wind with 0.75 in ice.

Walker Engineering, Inc.
400 Vestavia Parkway, Suite 102
Vestavia Hills, AL 35216
Phone: (205) 823-1749
FAX: (205) 823-1763
Civil-Structural

Job: *CROWN-0166VA; 0705-0147VA*			
Project: *Groton; BU# 881533*			
Client: Crown Castle International	Drawn by: cstewart	App'd:	
Code: TIA/EIA-222-F	Date: 07/05/07	Scale: NTS	
Path:		Dwg No. E-1	

CINGULAR WIRELESS
Equipment Modification

72 Jerry Brown Road, Stonington, CT
Site Number 5226
Former AT&T Wireless Cell Site
Exempt Modifications 5/10/01, 5/7/02, and 3/11/03

Tower Owner/Manager: SBA

Equipment configuration: Stealth Flagpole

Current and/or approved: Three EMS RR90-17 panel antennas @ 125 ft c.l.
Six runs 7/8 inch coax

Planned Modifications: Remove three existing antennas
Install three Powerwave 7770 antennas at 125 ft c.l.
Install six TMA's @ 125 ft

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 9.6 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 11 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							7.03
Cingular GSM *	125	1900 Band	4	275	0.0253	1.0000	2.53
Total							**9.6%**

* Per CSC Records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							7.03
Cingular UMTS	125	880 - 894	1	500	0.0115	0.5867	1.96
Cingular GSM	125	1900 Band	2	427	0.0197	1.0000	1.97
Total							**11.0%**

* Per CSC Records

Structural information:

The attached structural analysis demonstrates that the tower and foundation have adequate structural capacity to accommodate the proposed modifications. (FDH Engineering, dated 7/12/07)

FDH Engineering, Inc., 2730 Rowland Road, Suite 100, NC 27615, Ph. 919.755.1012, Fax 919.755.1031

July 12, 2007

Mark Luther
SBA Network Services, Inc.
800 S Washington Ave.
Scranton, PA 18505

RE: 120' Flag Pole with 40' Flag Mount
Site Name: Mystic, CT
SBA Site ID: CT00799-S
FDH Project Number: 07-0766E

Dear Mark:

Per your request, FDH Engineering, Inc. has reviewed the original design drawings and the proposed loading for the 120 ft. flag pole with 40 ft. flag mount located in Mystic, CT. The original design configuration by Summit Manufactoring, LLC (Job No. 4252 dated December 10, 1998) stipulates the tower was designed to accommodate the appurtenance loading outlined in **Table 1** on the following page.

The load resulting from the current configuration (see **Table 2**) combined with AT&T's proposed (3) Allgon 7770 antennas and (6) Powerwave LGP 21401 TMAs from 120' to 130' with corresponding (6) 7/8" coax line (see **Table 3**) will be below that of the original design loading. Furthermore, provided the tower foundation was constructed to support the tower's original design loading, the tower and foundation should meet *TIA/EIA-222-F* and IBC 2006 standards with the proposed and existing appurtenances in place both the proposed antennas and coax must be installed inside the pole's shaft.

Our assessment has been made assuming all information provided to FDH Engineering is accurate and that the tower as been properly erected and maintained.

In conclusion, the AT&T installations should meet or exceed all applicable standards and should therefore be considered safe. Should you require additional information, please do not hesitate to contact our office.

Sincerely,

Elliott Taylor, EI
Project Engineer

Reviewed by:

J. Darrin Holt, PhD, PE
President
CT PE License No. 22988

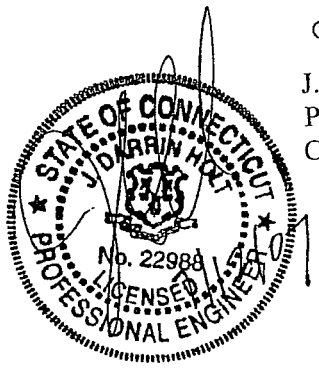


Table 1 – Design Appurtenance Loading

No.	Centerline Elevation (ft)	Coax and Lines	Description
1	155	---	(1) 10' x 15' Flag
2	120	---	(1) 40' Flag Mount
3-5	100	(3) 1-5/8" (assumed)	(3) Decibel DB878H + mount
---	50	(1) 1-5/8" (assumed)	(1) GPS on a band on mount

Table 2 – Existing Appurtenance Loading

No.	Centerline Elevation (ft)	Coax and Lines	Carrier	Description
---	155	---	---	(1) 10' x 15' Flag
1-6	140-150	(12) 7/8" [1]	Nextel	(6) EMS RR90-17-XXXP
7-9	130-140	(6) 1-5/8" [1]	T-Mobile	(3) EMS RR90-17-XXXP
10-12	120-130	(6) 7/8" [2]	AT&T	(3) EMS RR90-17-XXXP

1 The existing antennas and coax are installed inside the pole's shaft.
2 The existing loading for AT&T to be altered. See proposed loading below.

Table 3 – Proposed Appurtenance Loading

No.	Centerline Elevation (ft)	Coax and Lines	Carrier	Description
1-3	120-130	(6) 7/8" [1]	AT&T	(3) Allgon 7770 (6) Powerwave LGP 21401

1 This represents the full loading for AT&T from 120 to 130 ft. Currently, AT&T has (3) EMS RR90-17-XXXP and (6) 1-5/8" coax installed fom 120 to 130 ft. According to information provided by SBA, AT&T will replace the (3) EMS RR90-17-XXXP antennas with (3) Allgon 7770 and (6) Powerwave LGP 21401 TMAs for a total loading of (3) antennas, (6) TMAs, and (6) coax.

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

July 17, 2007

Honorable William S. Brown
1st Selectman, Town of Stonington
Town Hall 152 Elm St.
Stonington, CT 06378-0352

Re: Telecommunications Facility – 72 Jerry Brown Road, Stonington

Dear Mr. Brown:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Cingular's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure

CINGULAR WIRELESS
Equipment Modification

171 S. Broad Street, Stonington, CT
Site Number 2231
Exempt Modification 3/17/04

Tower Owner/Manager: SBA

Equipment configuration: Self-supporting lattice tower

Current and/or approved:
Nine CSS DUO1417 antennas @ 120 ft c.l.
Nine runs 1 5/8 inch coax
Six TMA's and three diplexers
Remaining AT&T antennas, decommissioned

Planned Modifications:
Remove three CSS antennas
Install three Powerwave 7770 antennas at 120 ft c.l.
Install three additional diplexers @ 120 ft (total of 6)
Install three additional runs 1 5/8 inch coax (total of 12)
Remove decommissioned AT&T antennas

Decommissioning / Removal of AT&T Antennas

Per an earlier notice of exempt modification, Cingular informed the Council that the former AT&T installation would be decommissioned. It has come to our attention that the AT&T antennas remain on the tower, despite the Council's directive to remove the AT&T equipment. We apologize for this oversight. The AT&T antennas will be removed from the tower when the proposed UMTS work is performed. SBA, however, has acquired the associated mount and coax cables from Cingular and has asked Cingular to leave them on the tower when the antennas are removed.

Power Density:

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 43.2 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 45.3 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							38.57
Cingular GSM *	120	880 - 894	2	296	0.0148	0.5867	2.52
Cingular GSM *	120	1900 Band	2	427	0.0213	1.0000	2.13
Total							43.2%

* Per CSC Records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							38.57
Cingular UMTS	120	880 - 894	1	500	0.0125	0.5867	2.13
Cingular GSM	120	1900 Band	2	427	0.0213	1.0000	2.13
Cingular GSM	120	880 - 894	2	296	0.0148	0.5867	2.52
Total							45.3%

* Per CSC Records

Structural information:

The attached structural analysis demonstrates that the tower and foundation have adequate structural capacity to accommodate the proposed modifications. (FDH Engineering, dated 7/16/07)

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

July 17, 2007

Honorable William S. Brown
1st Selectman, Town of Stonington
Town Hall 152 Elm St.
Stonington, CT 06378-0352

Re: Telecommunications Facility – 171 South Broad Street, Stonington

Dear Mr. Brown:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review Cingular's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

FDH

Structural Analysis for SBA Network Services, Inc.

180' Self-Support Tower

Site Name: Stonington 2
Site ID: CT03241-S

2231

FDH Project Number 07-06310E

Prepared By:

Elliott Taylor, EI
Project Engineer

Reviewed By:

J. Darrin Holt, PhD, PE
President
CT PE License No. 22988

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

July 16, 2007

Prepared pursuant to EIA/TIA-222-F June 1996 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

TABLE OF CONTENTS

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

EXECUTIVE SUMMARY

At the request of SBA Network Services, FDH Engineering performed a structural analysis of the self-support tower located in Pawcatuck, CT to determine whether the tower is structurally adequate to support the existing and proposed loads, pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F.* Information pertaining to the existing/proposed antenna loading, current tower geometry, and member sizes was obtained from PiROD (Drawing No. 206086-B) original design drawings dated February 25, 2000 and SBA Network Services, Inc.

The basic design wind speed per *TIA/EIA-222-F* standards is 85 MPH without ice and 74 MPH with 1/2" radial ice. However, local building code stipulates that structures shall be designed to withstand a minimum design *3-second gust* wind speed of 120 MPH, which is equivalent to a 100 MPH *fastest mile* wind speed. As such, a wind speed of 100 MPH without ice and 87 MPH with ½" radial ice was used in this analysis.

Conclusions

With the existing and proposed antennas from New AT&T in place at 120 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards. Furthermore, provided the foundation was constructed per the original design drawings (see PiROD Drawing No. 206086-B), the foundation should be adequate to support both the proposed and existing 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, current antenna loading, and proposed antenna loading) and that the tower was properly erected and maintained per the original design drawings.

Recommendation

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

1. The proposed coax lines should be installed as shown in **Figure 1.**
2. The existing loading for AT&T at 130 ft must be removed prior to the installation of the proposed loading.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

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:

No.	Centerline Elevation (ft)	Coax and Lines[1]	Carrier	Mount Type	Description
1-3	180	(3) 7/8"	Police Dept.	8' Box Arm	(2) Cellwave PD220 (1) Cellwave PD1142
4-5	157	(2) 7/8"	Police Dept.	Standoff	(2) Cellwave DB212
6-17	150	(12) 1-5/8"	VzW	T-Frame	(6) Decibel DB844H80E-XY (6) Decibel DB984F85T2E-M
18-29	140	(12) 1-5/8" [2]	T-Mobile	T-Frame	(12) EMS RR901702DP panels (6) Allen Telecom FE15501P77/75 TMAs
30-41	130	(12) 1-5/8" [3] (1) 1/2"	Old AT&T	T-Frame	(12) 52" Allgon Panels (1) 2' Dish
42-53	120	(12) 1-5/8" [4]	New AT&T	T-Frame	(12) CSS DUO-1417-8686 Panels (6) ADC Cleargain Band TMAs (3) CSS Combiners
54	90	(1) 7/8"	Police Dept.	T-Frame	(1) Cellwave PD1167
55	86	(1) 7/8"	Police Dept.	Standoff	(1) Decibel DB212
56	53	(1) 7/8"	Police Dept.	Standoff	(1) Decibel DB437
57	52	(1) 7/8"	Police Dept.	Standoff	(1) Decibel DB212
58	51	(1) 7/8"	Police Dept.	Standoff	(1) Decibel DB437

1 See **Figure 1** for coax location.
2 Currently, T-Mobile has (6) antenna and (6) coax installed at 140 ft. According to information provided by SBA, T-Mobile may install up to (12) EMS RR90-17-02DP and (12) 1-5/8" coax at 140 ft. Analysis performed with full loading in place.
3 The existing loading for Old AT&T at 130 ft must be removed prior to the installation of the proposed loaidng.
4 The existing loading for New AT&T will be altered. See the proposed loading below.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

Proposed Loading:

No.	Centerline Elevation (ft)	Coax and Lines	Carrier	Mount Type	Description
1-12	120	(15) 1-5/8" [1]	New AT&T	T-Frame	(9) CSS DUO-1417-8686 (3) Powerwave 7770.00 (6) ADC Cleargain Band TMAs (3) CSS Combiners (3) LGP 13519 Diplexers

1 This represents the full loading for New AT&T at 120 ft. According to information provided by SBA, New AT&T will remove (3) CSS DUO-1417-8686 antennas and add (3) Powerwave 7770.00, (3) LGP 13519 diplexers, and (3) 1-5/8" coax for a total loading of (12) antenna, (6) TMA, (3) combiners, (3) diplexers, and (15) coax at 120 ft.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

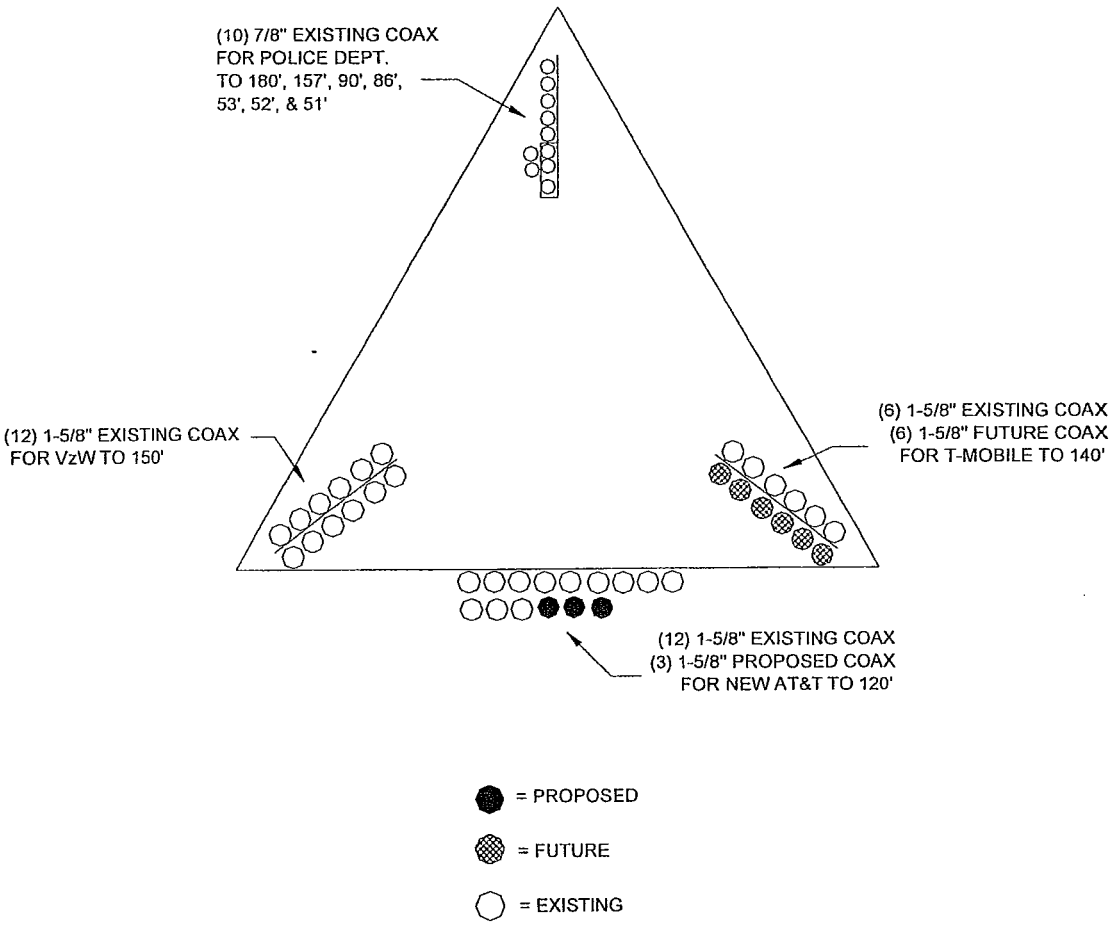


Figure 1 – Coax Location

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

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
Legs	50 ksi
Diagonals	36 & 50 ksi
Horizontals	36 & 50 ksi

Table 3 displays the ratio (as a percentage) of actual force in the member to their allowable capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its allowable 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
T1	180 - 170	Leg	1 1/2	14.1	Pass
		Diagonal	3/4	19.9	Pass
		Top Girt	3/4	20.4	Pass
		Bottom Girt	3/4	10.4	Pass
T2	170 - 150	Leg	1 1/2	53.7	Pass
		Diagonal	3/4	43.7	Pass
		Top Girt	3/4	8.8	Pass
		Bottom Girt	3/4	5.0	Pass
T3	150 - 130	Leg	2	79.8	Pass
		Diagonal	1	49.0	Pass
		Top Girt	1	14.1	Pass
		Bottom Girt	1	77.4	Pass
T4	130 - 120	Leg	Pirod 105244	67.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	80.3	Pass
T5	120 - 100	Leg	Pirod 105217	76.1	Pass
		Diagonal	L3x3x3/16	73.9	Pass
		Horizontal	L3x3x3/16	33.8	Pass
T6	100 - 80	Leg	Pirod 105218	77.1	Pass
		Diagonal	L3x3x3/16	73.6	Pass
T7	80 - 60	Leg	Pirod 105219	73.9	Pass
		Diagonal	L3x3x5/16	60.7	Pass

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
T8	60 - 40	Leg	Pirod 105219	88.9	Pass
		Diagonal	L3x3x5/16	79.3	Pass
T9	40 - 20	Leg	Pirod 105220	80.9	Pass
		Diagonal	L3 1/2x3 1/2x5/16	58.3	Pass
T10	20 - 0	Leg	Pirod 105220	91.9	Pass
		Diagonal	L3 1/2x3 1/2x5/16	81.4	Pass

Table 4 – Maximum Base Reactions

Load Type	Design Reactions	Current Analysis
Horizontal	66 k	43 k
Uplift	380 k	347 k
Compression	422 k	415 k
Overturning Moment	6,249 k-ft	6,140 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 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

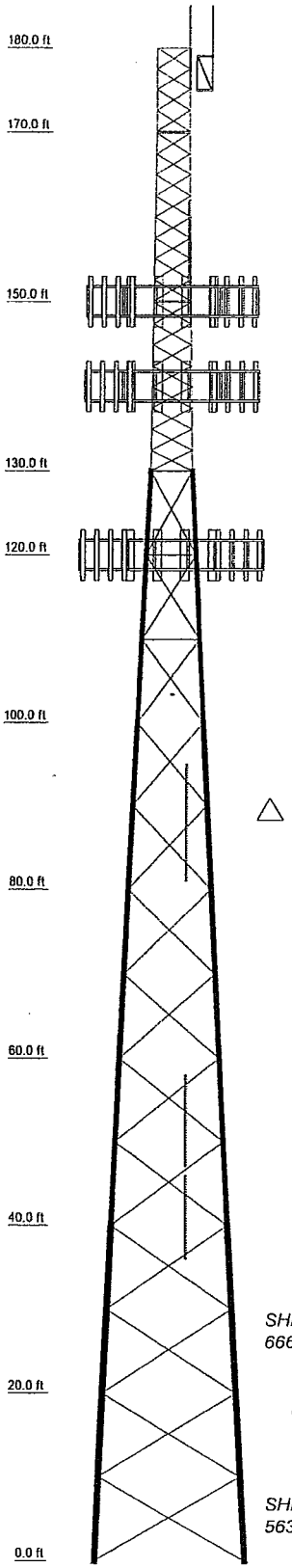
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided 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.

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

APPENDIX

2730 Rowland Road, Suite 100 Raleigh, NC 27615 Ph: (919) 755-1012 Fax: (919) 755-1031 info@fdh-inc.com

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 105220		Pirod 105219		Pirod 105218	Pirod 105217	A	SR 2	SR 1 1/2	
Leg Grade	A572-50									
Diagonals	L3 1/2x3 1/2x5/16		L3x3x5/16		L3x3x3/16		B	SR 1	SR 3/4	
Diagonal Grade	A36							A572-50		
Top Girts	N.A.							SR 1	SR 3/4	
Bottom Girts	N.A.							SR 1	SR 3/4	
Horizontals	N.A.					L3x3x3/16		N.A.		
Face Width (ft)	18	16	14	12	10	8	6	4.5	4	
# Panels @ (ft)		4 @ 4		13 @ 10		8 @ 2.48958		12 @ 2.47917		
Weight (lb) 26099.2	4892.2	4747.5	3894.9	3763.4	2758.5	2480.9	1015.5	1405.8	754.2	396.3



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) PD220	180	(4) DUO1417-8686	120
PD1142-30	180	(4) DUO1417-8686	120
(3) Pirod 8' Box Arm (1)	180	DUO1417-8686	120
(2) DB212-1	157	(3) Powerwave 7770.00	120
(2) Pirod 4' Side Mount Standoff (1)	157	(6) TMA	120
(2) DB844H80E-XY	150	(3) Combiners	120
(2) DB844H80E-XY	150	(3) Diplexors	120
(2) DB844H80E-XY	150	(3) Pirod 12' T-Frame Sector Mount (1)	120
(2) DB984F85T2E-M	150		
(2) DB984F85T2E-M	150	PD1167	90
(2) DB984F85T2E-M	150	Pirod 4' Side Mount Standoff (1)	90
(3) Pirod 12' T-Frame Sector Mount (1)	150	DB212-1	86
		Pirod 4' Side Mount Standoff (1)	86
(4) RR90-17-DP	140	DB437	53
(4) RR90-17-DP	140	Pirod 4' Side Mount Standoff (1)	53
(4) RR90-17-DP	140	DB212-1	52
(6) TMA	140	Pirod 4' Side Mount Standoff (1)	52
(3) Pirod 12' T-Frame Sector Mount (1)	140	DB437	41
		Pirod 4' Side Mount Standoff (1)	41

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pirod 105244	B	L2 1/2x2 1/2x3/16

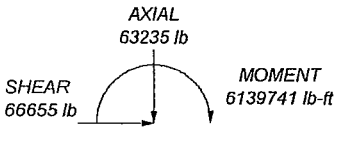
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

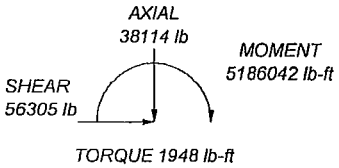
TOWER DESIGN NOTES

1. Tower designed for a 100 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 87 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 91.9%

MAX. CORNER REACTIONS AT BASE:
DOWN: 414943 lb
UPLIFT: -347319 lb
SHEAR: 42693 lb



TORQUE 2485 lb-ft
87 mph WIND - 0.5000 in ICE



TORQUE 1948 lb-ft
REACTIONS - 100 mph WIND

FDH Engineering
2730 Rowland Road
Raleigh, NC
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: *Stonington 2, CT*		*Site: CT03241-S*
Project: *07-06310E*		
Client: SBA	Drawn by: ET	App'd:
Code: TIA/EIA-222-F	Date: 07/16/07	Scale: NTS
Path:		Dwg No. E-1