

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

www.ct.gov/csc

August 14, 2009

Jennifer Young Gaudet
HPC Development LLC
53 Lake Avenue Ext.
Danbury, CT 06811

RE: **EM-T-MOBILE-103-090713** – Omnipoint Communications, Inc. (T-Mobile) notice of intent to modify an existing telecommunications facility located at 10 Willard Road, Norwalk, Connecticut.

Dear Mrs. Gaudet:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

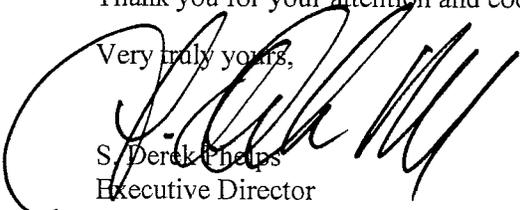
- The six new vertical runs of 1 5/8 inch diameter cables shall be stacked directly in front of the row of six existing cables;
- The existing outrigger framing at the 175-foot level of the tower shall be removed from the tower;
- The T-Mobile antennas and transmission lines shall be installed in accordance with the structural analysis report dated July 7, 2009 and sealed by James E. Boltz, P.E.;
- Not more than 45 days after completion of construction, the Council shall be notified in writing that the antennas and transmission lines were installed as specified;
- Not more than 45 days after completion of construction, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the existing outrigger framing at the 175-foot level of tower has been removed.

The proposed modifications are to be implemented as specified here and in your notice dated July 10, 2009, 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.

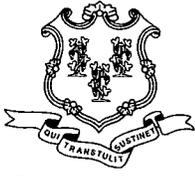
Very truly yours,



S. Derek Phelps
Executive Director

SDP/MP/laf

c: The Honorable Richard Moccia, Mayor, City of Norwalk
Michael Greene, Director of Planning and Zoning, City of Norwalk
Christopher B. Fisher, Esq., Cuddy & Feder LLP



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 14, 2009

The Honorable Richard Moccia
Mayor
City of Norwalk
City Hall
125 East Avenue
P. O. Box 5125
Norwalk, CT 06856-5125

RE: **EM-T-MOBILE-103-090713** – Omnipoint Communications, as subsidiary of T-Mobile USA, Inc. notice of intent to modify an existing telecommunications facility located at 10 Willard Road, Norwalk, Connecticut.

Dear Mayor Moccia:

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.

If you have any questions or comments regarding this proposal, please call me or inform the Council by July 28, 2009.

Thank you for your cooperation and consideration.

Very truly yours,



S. Derek Phelps
Executive Director

SDP/jb

Enclosure: Notice of Intent

c: Michael Greene, Director of Planning and Zoning, City of Norwalk



EM-T-MOBILE-103-090713

ORIGINAL

July 10, 2009

RECEIVED
JUL 13 2009
CONNECTICUT
SITING COUNCIL

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

Re: Omnipoint Communications, Inc. – exempt modification
10 Willard Road, Norwalk, Connecticut

Dear Mr. Phelps:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC, successor-in-interest to Omnipoint Communications, Inc. (“T-Mobile”). T-Mobile is enhancing the capabilities of its wireless system in Connecticut by implementing UMTS technology. In order to do so, T-Mobile will modify antenna and equipment configurations at a number of its existing 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 Mayor of Norwalk.

T-Mobile plans to modify the existing facility at 10 Willard Road, Norwalk (coordinates 41°07’39” N, -73°23’24” W). The tower and underlying ground are owned by AT&T Corporation. Attached are a compound and equipment building plan and tower elevation depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also included is a power density calculation reflecting the modification to T-Mobile’s operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected. Both T-Mobile’s existing and proposed antennas will be located at an approximate center line of 262’ AGL on the approximately 350’ lattice tower. T-Mobile will add three panel antennas and up to six TMAs, for a total of six antennas and up to twelve TMAs. Six additional coaxial cables will be added. The proposed modifications will not extend the height of the tower.

Mr. S. Derek Phelps
July 10, 2009
Page 2

2. The proposed changes will not extend the site boundaries. T-Mobile currently has one cabinet within the shared equipment building, and will install one additional cabinet adjacent to the equipment building within the existing fenced compound. Thus, there will be no effect on the site boundaries.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.
4. The changes to the facility 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. As indicated on the attached power density calculation, T-Mobile's operations at the site will result in a power density of 1.0136%; the combined site operations will result in a total power density of 25.0236%.

Please feel free to call me at (860) 798-7454 with questions concerning this matter.
Thank you for your consideration.

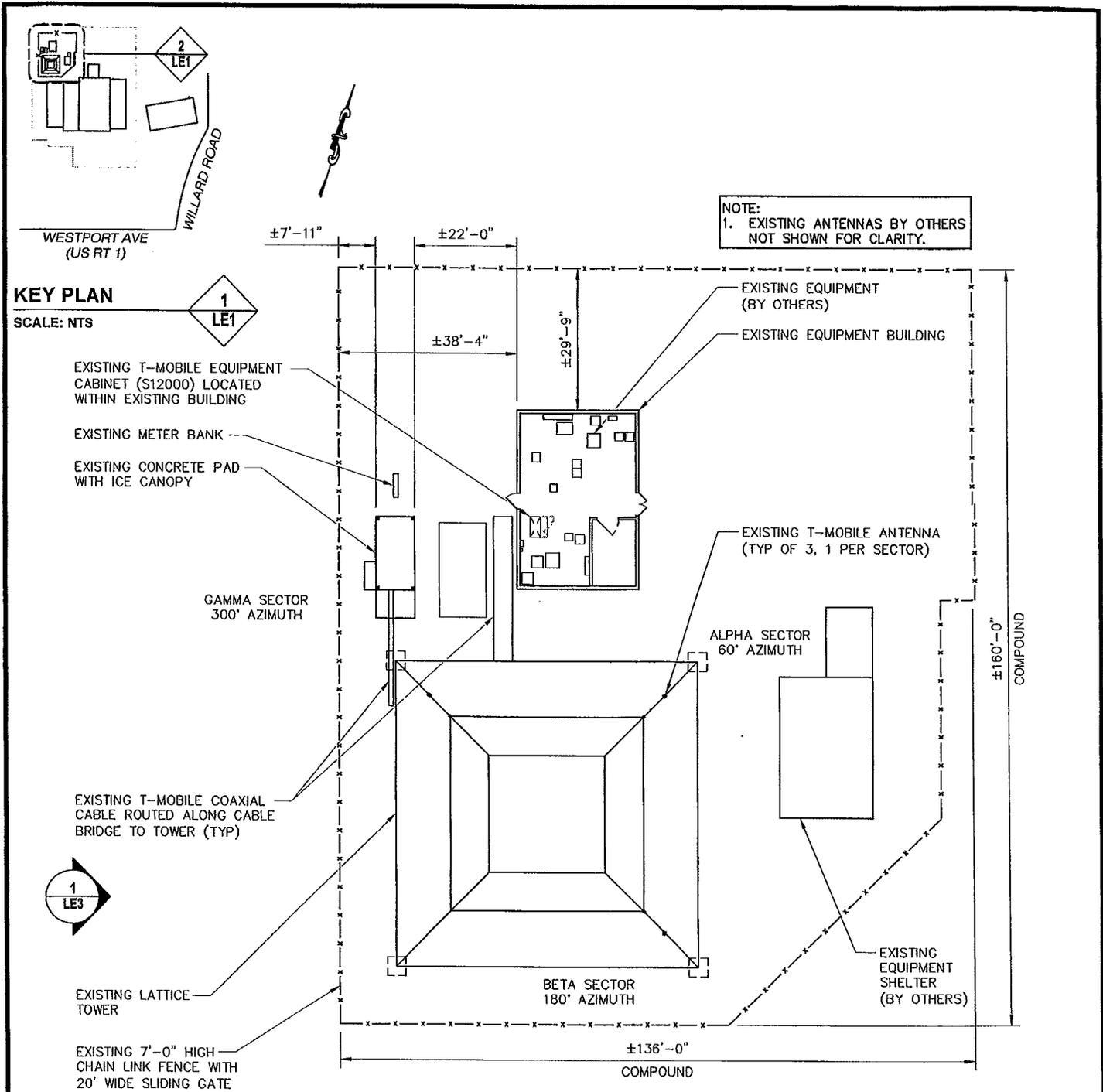
Respectfully yours,



Jennifer Young Gaudet

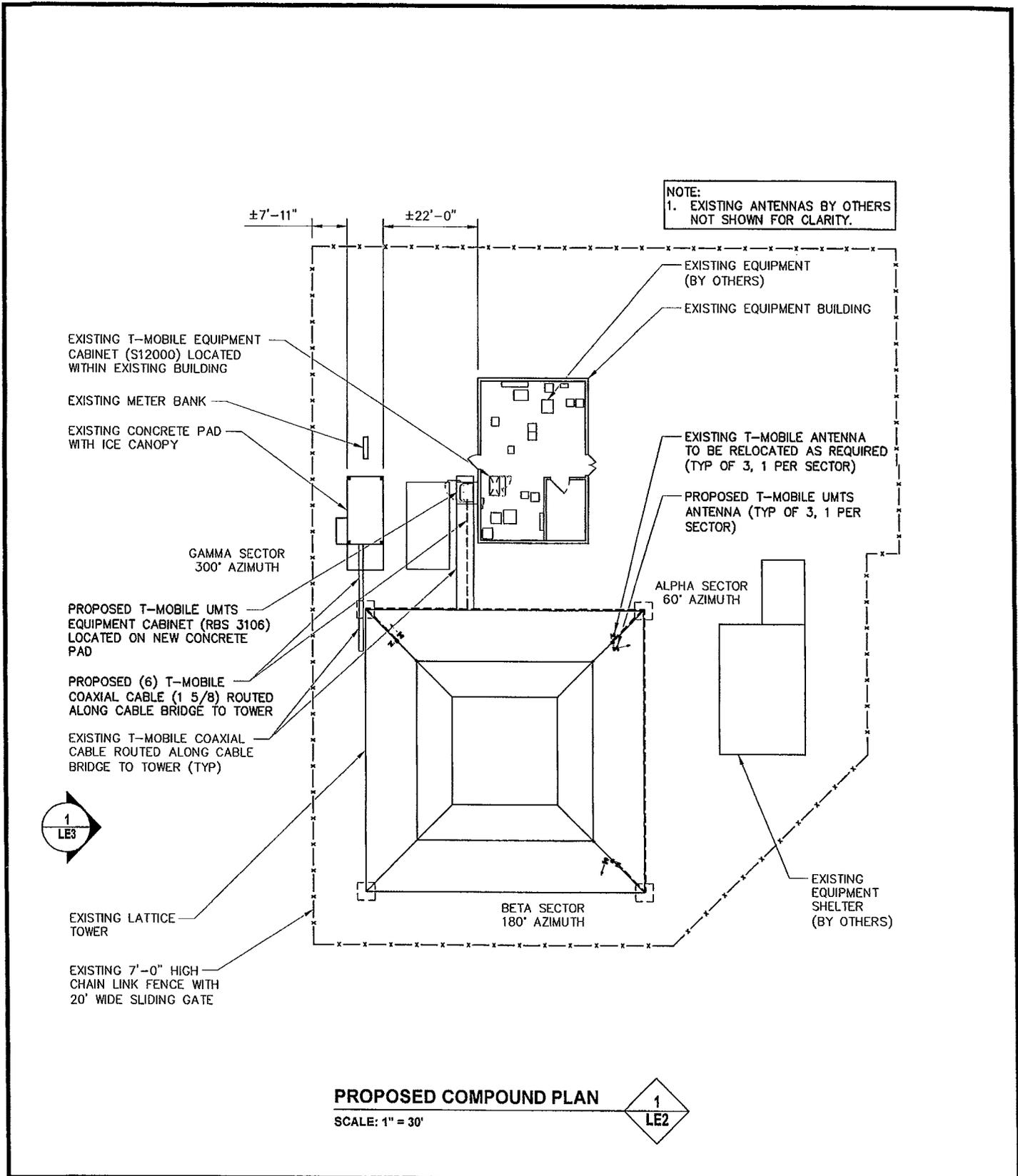
cc: Honorable Richard A. Moccia, Mayor, City of Norwalk
AT&T Corporation (underlying property owner)

Attachments

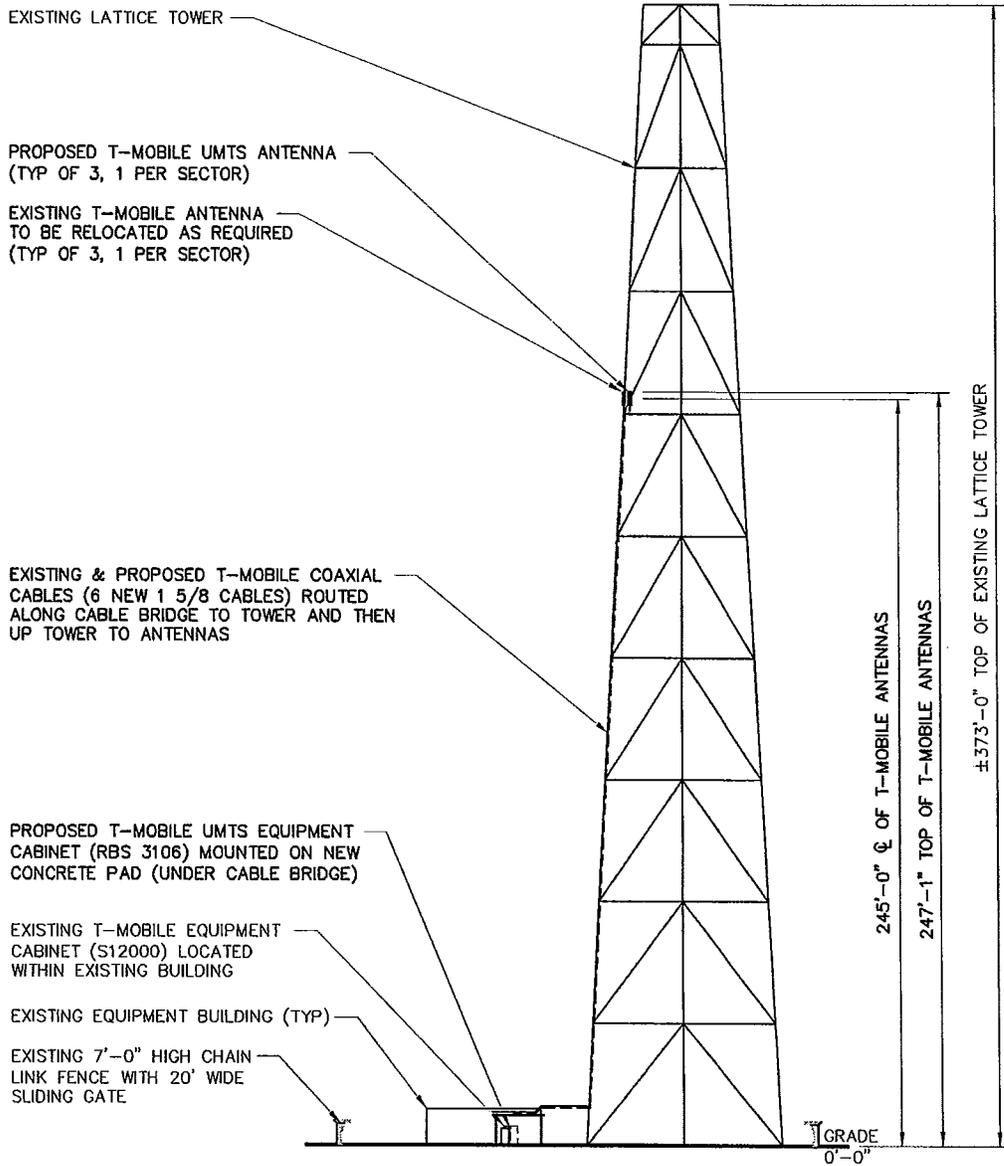


- NOTES:**
- LEASE EXHIBITS ARE A CONCEPTUAL DESIGN OF LEASE AGREEMENT ONLY. ACTUAL CONSTRUCTION DOCUMENTS MAY VARY TO COMPLY WITH BUILDING CODES.
 - THE INFORMATION SHOWN IS TAKEN FROM A SURVEY PERFORMED BY "KMB DESIGN GROUP, LLC." DURING SITE VISIT.
 - ELECTRIC/ TELCO SERVICES SHALL BE CONFIRMED PRIOR TO CONSTRUCTION DOCUMENT PHASE.
 - 24 HR. 7 DAYS PER WEEK ACCESS IS REQUIRED FOR SERVICE TECHNICIAN.

	TITLE:	KEY & COMPOUND PLAN	PROJECT:	WILLARD ROAD			
	CLIENT:		ADDRESS:	10 WILLARD ROAD NORWALK, CT 06851 FAIRFIELD COUNTY			
	SITE NO: CT11011D	KMB NO: 350.0004.036	DRAWN BY: KAM	CHECKED BY:	3	07-10-09	JLS
					2	12-17-08	JLS
				1	12-03-08	KCD	
				0	11-25-08	KAM	
				LE1			

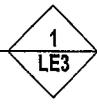


	TITLE: COMPOUND PLAN	PROJECT: WILLARD ROAD				
	CLIENT: 	ADDRESS: 10 WILLARD ROAD NORWALK, CT 06851 FAIRFIELD COUNTY	3	07-10-09	JLS	
SITE NO: CT11011D	KMB NO: 350.0004.036	DRAWN BY: KAM	CHECKED BY: 	1	12-03-08	KCD
				0	11-25-08	KAM
			LE2			



WEST ELEVATION

SCALE: 1" = 60'



TITLE: **ELEVATION**

CLIENT: **Omnipoint**
COMMUNICATIONS, INC.
 ONE TOWER PLAZA
 33 GUILFORD ROAD SUITE
 3100 GUILFORD, CT 06031

PROJECT: **WILLARD ROAD**

ADDRESS: **10 WILLARD ROAD
 NORWALK, CT 06851
 FAIRFIELD COUNTY**

3	07-10-09	JLS
2	12-17-08	JLS
1	12-03-08	KCD
0	11-25-08	KAM
LE3		

SITE NO: **CT11011D**

KMB NO: **350.0004.036** DRAWN BY: **KAM** CHECKED BY:



Mr. Larry Montee
AT&T Corporation National Tower Engineering
1200 Peachtree Street, Atlanta, GA 30309

July 07, 2009

Re: Structural Analysis of AT&T's Existing 350-ft Lattice Steel Tower near Norwalk, CT
AT&T Corp. Site I.D: Norwalk, CT; Omnipoint Communications Site No. CT-11011D Fairfield County, CT
Location: 10 Willard Road, Norwalk, CT 06851; Lat. N 41° 07' 42", Long. W 73° 23' 25"

Dear Mr. Montee,

Communication Structures Engineering, Inc. has completed a structural review of the existing 350-ft Modified Type 'L' self-supported lattice steel tower located at this AT&T Corporation site known as Norwalk, CT. Per your request, we have performed a structural analysis of this tower to check its capability to support the existing loads as well as the new loads from the proposed **Omnipoint Communications Inc. (d.b.a. T-Mobile USA)** panel antennas & transmission line additions. In accordance with AT&T's Requirements the specific loading criteria that we utilized for this analysis were those prescribed by "2003 International Building Code" and "ANSI/TIA/EIA-222-F", "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." In accordance with the above Code & Standards the wind speed that we utilized for the analysis of this structure was the "3 second gust wind speed" of 105-mph (equivalent to a "fastest-mile wind speed" of 85-mph) as specified for Fairfield County, CT

EXISTING TOWER INFORMATION & DATA

The 350-ft Type 'L' tower at this site was originally built in 1968 for Southern New England Telephone (SNET) to support four KS15676 Horn Antennas. The tower was later modified several times. All of the original Horn Antennas have now been removed from this structure. In addition, AT&T recently ordered the abandoned steel outrigger framing at 175-ft AGL to be removed from this tower to reduce wind loading on the structure. Consequently, the structural loads from the outrigger framing were not included in our analysis.

CSEI utilized the original 1968 tower design, & tower foundation drawings, to conduct our structural review of this tower. The available modification drawings were also used for our analysis. The existing antenna information that was provided to us by AT&T Corporation was used to determine the existing tower & equipment loads for this analysis. AT&T's Tenant Specification Document, which was submitted by Omnipoint, was utilized to determine the now proposed Omnipoint antenna & cable requirements for this location.

DESIGN CRITERIA

See the attached page for the applicable Design Criteria and Antenna Configuration that were used for this structural analysis.

STRUCTURAL ANALYSIS PROCEDURE

The referenced design criteria combined with wind tunnel test data from tests conducted on AT&T towers, and antenna platforms were utilized to determine the applicable loads for this structure. A structural frame analysis was performed by applying these loads to a computer model of the tower framing that was modeled on STAAD III software. The load carrying frame members of this structure were then reviewed to check their compliance with the AISC ASD "Specification for Structural Steel Buildings".

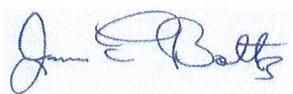
RESULTS OF STRUCTURAL ANALYSIS

CSEI's analysis found that all of the existing tower members had maximum stress levels that were less than the 100% allowable stresses permitted by the AISC Specification. The tower foundation was also found to be in compliance with "ANSI/TIA/EIA-222-F" design criteria. We have therefore concluded that this existing tower is capable of supporting the existing loads as well as the proposed T-Mobile additions in compliance with the "2003 International Building Code" & "ANSI/TIA/EIA-222-F" design criteria. This tower will not require any structural modifications or changes to support the listed equipment provided that the following conditions are satisfied. However, if the conditions that follow are not upheld, the results of our structural analysis will be invalid:

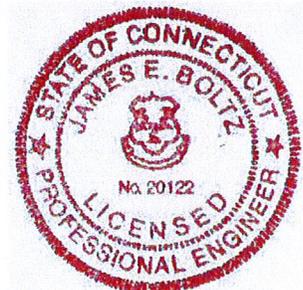
- 1.) The six new vertical runs of 1.625 inch dia. cables must be stacked directly in front of the existing row of six existing cables.
- 2.) The existing outrigger framing at 175-ft AGL has been (or now will be) removed from this tower.
- 3.) The T-Mobile antennas & transmission lines shall be installed in accord with the CSEI drawings that will be prepared for this project.

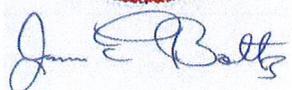
If Omnipoint or any other carriers add any future equipment to this tower, this structure should be re-analyzed at that time. CSEI would be happy to respond to any questions regarding this structural analysis.

Sincerely,


James E. Boltz, P.E. (CT P.E. #20122)

Attachments: 1.) Design Criteria for Existing 350-ft AT&T Tower at Norwalk, CT
2.) Structural Calculations for Existing 350-ft Tower at Norwalk, CT





DESIGN CRITERIA

AT&T Tower Site: Norwalk, CT

LOCATION: At 10 Willard Road, Norwalk, CT 06851; Fairfield County, CT
Latitude N 41° 07' 42", Longitude W 73° 23' 25"

DESIGN STANDARDS

2003 INTERNATIONAL BUILDING CODE 105 MPH (3 Second Gust Wind Speed) & ANSI/TIA/EIA-222-F 85 MPH (Fastest Mile Wind Speed)

In addition to the loads from the existing tower framing and platforms the loads from the following antennas and their associated transmission lines were considered in the analysis.

ANTENNA CONFIGURATION (Used for Structural Analysis)

Existing Antennas and Transmission Lines - To Remain on Tower

- 1.) One 10-ft omni antenna at 368-ft above tower base plate & one run of 0.875 inch dia. coax cable.
- 2.) One 12-ft omni antenna and one 3-ft panel antenna at 360-ft above tower base plate and one associated run of 0.875 inch diameter coaxial cable.
- 3.) One 20-ft omni antenna at 358-ft above tower base plate and one run of 1.625 inch dia. coax cable.
- 4.) Two 4-bay dipole antennas at 357-ft above tower base plate with one associated run of 1.25 inch diameter coaxial cable and one associated run of 0.875 inch diameter coaxial cable.
- 5.) One 4-ft omni antenna and one 12-ft omni antenna at 357-ft above tower base plate and two associated runs of 1.625 inch diameter coaxial cable.
- 6.) Three Til-Tek TA2335 DAB-4 panel antennas at 355-ft above tower base plate & three runs of 1.625" dia. coax. cable.
- 7.) One 8-ft omni antenna and one 20-ft omni antenna at 353-ft above tower base plate & two runs of 0.875 "dia. cable.
- 8.) Six Powerwave 7770.00 panel antennas and 12 TMAs at 345-ft above tower base plate and twelve associated runs of 1.625 inch diameter coaxial cable.
- 9.) One 12-ft omni antenna at 307-ft above tower base plate and one run of 1.25 inch dia. coax cable.
- 10.) **(Omnipoint Communications) Three APX16PV-16PVL panel antennas and 6 TMAs at 262-ft above plate tower base and six associated runs of 1.625 inch diameter coaxial cable.**
- 11.) One 2-ft square panel antenna at 262-ft above tower base plate and one run of 1.625 inch dia. coax cable.
- 12.) One 1-ft square panel antenna at 255-ft above tower base plate and one run of 0.875 inch dia. coax cable.
- 13.) Six Sprint/Nextel DB980F90 panel antennas at 240-ft above tower base plate & six runs of 1.625 " dia. coax cable.
- 14.) One 2-ft parabolic antenna at 45-ft above tower base plate and one run of 0.50 inch dia. cable.
- 15.) Two 1.2M satellite parabolic antennas one at 31-ft and one at 27-ft above tower base plate and two associated runs of 0.375 inch diameter coaxial cable.
- 16.) One GPS antenna at 14-ft above tower base plate and one associated 0.50 inch diameter coaxial cable.
- 17.) (Metro PCS) Six Kathrein 800 10504 panel antennas at 230-ft above tower base plate and twelve associated runs of 1.625 inch diameter coaxial cable.
- 18.) (Metro PCS) One GPS antenna and one transmission line at approximately 25-ft above tower base plate.
- 19.) (MediaFlo) One Dielectric TLP-08M-1E UHF Antenna at approximately 300-ft above tower base plate and one associated run of 3.125 inch diameter transmission line.
- 20.) (MediaFlo) Two Patriot 2MCV90-T0757-42 (1.8M) Parabolic Antennas at approximately 50-ft above tower base plate and two associated runs of transmission lines less than 0.75 inch diameter.

New (Proposed) Omnipoint Communications Antennas - To Be Added on Tower

- 1.) **Three RFS APX16DWV-16DWVS-A20 Panel Antennas with mounts at 262-ft above tower base plate and six associated runs of 1.625 inch diameter coax cable. The new coaxial cables shall be installed directly behind the six existing T-Mobile coaxial cables such that they are shielded from wind loading.**
- 2.) **Six RFS ATMAA1412D-1A20 Tower Mounted Amplifiers at 262-ft above tower base plate.**



Communication Structures Engineering, Inc.



COMMUNICATION STRUCTURES ENGINEERING, INC.
5579-B Chamblee Dunwoody Rd. /Suite 517
Dunwoody, GA 30338 (770) 951-8080

STRUCTURAL CALCULATIONS
FOR
AT&T Owned 350-ft Type 'L' Tower
Norwalk, CT
Omnipoint Communications Site No. CT-11011D

Fairfield County, CT

Issue Date: July 07, 2009



TABLE OF CONTENTS

	<u>Pages</u>
Design Criteria	1A
Tower Loading	1
Computer Model	2
Member Capacity Checks	3 TO 8
Foundation Review	9

DESIGN CRITERIA

AT&T Tower Site: Norwalk, CT

**LOCATION: At 10 Willard Road, Norwalk, CT 06851; Fairfield County, CT
Latitude N 41° 07' 42", Longitude W 73° 23' 25"**

DESIGN STANDARDS

**2003 INTERNATIONAL BUILDING CODE 105 MPH (3 Second Gust Wind Speed)
& ANSI/TIA/EIA-222-F 85 MPH (Fastest Mile Wind Speed)**

In addition to the loads from the existing tower framing and platforms the loads from the following antennas and their associated transmission lines were considered in the analysis.

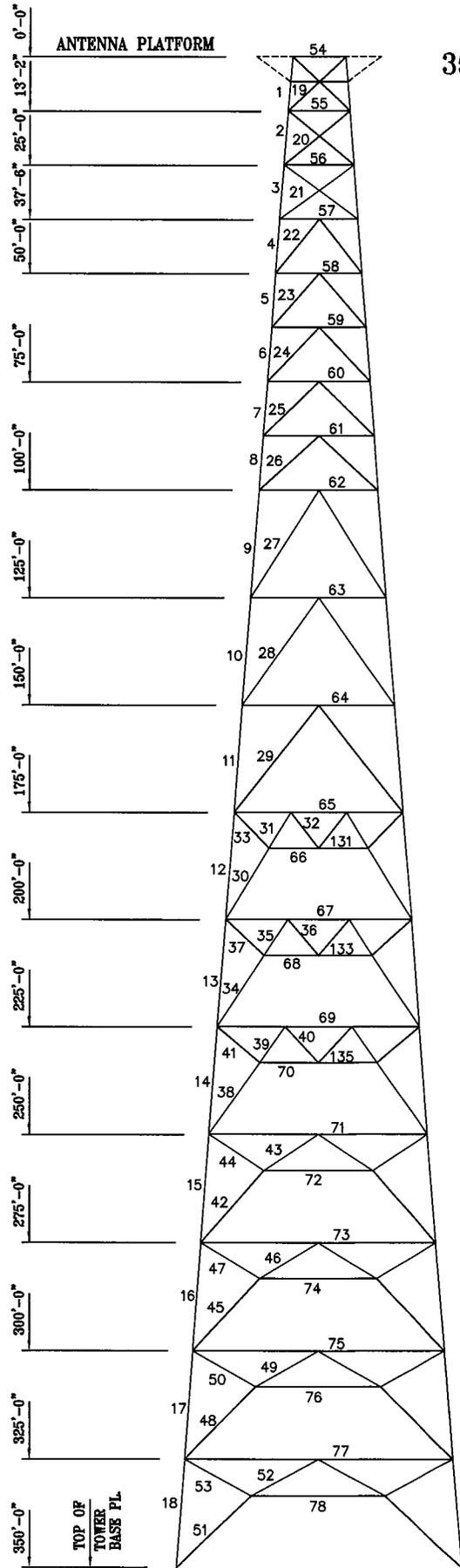
ANTENNA CONFIGURATION (Used for Structural Analysis)

Existing Antennas and Transmission Lines - To Remain on Tower

- 1.) One 10-ft omni antenna at 368-ft above tower base plate & one run of 0.875 inch dia. coax cable.
- 2.) One 12-ft omni antenna and one 3-ft panel antenna at 360-ft above tower base plate and one associated run of 0.875 inch diameter coaxial cable.
- 3.) One 20-ft omni antenna at 358-ft above tower base plate and one run of 1.625 inch dia. coax cable.
- 4.) Two 4-bay dipole antennas at 357-ft above tower base plate with one associated run of 1.25 inch diameter coaxial cable and one associated run of 0.875 inch diameter coaxial cable.
- 5.) One 4-ft omni antenna and one 12-ft omni antenna at 357-ft above tower base plate and two associated runs of 1.625 inch diameter coaxial cable.
- 6.) Three Tii-Tek TA2335 DAB-4 panel antennas at 355-ft above tower base plate & three runs of 1.625" dia. coax. cable.
- 7.) One 8-ft omni antenna and one 20-ft omni antenna at 353-ft above tower base plate & two runs of 0.875 "dia. cable.
- 8.) Six Powerwave 7770.00 panel antennas and 12 TMAs at 345-ft above tower base plate and twelve associated runs of 1.625 inch diameter coaxial cable.
- 9.) One 12-ft omni antenna at 307-ft above tower base plate and one run of 1.25 inch dia. coax cable.
- 10.) (Omnipoint Communications) Three APX16PV-16PVL panel antennas and 6 TMAs at 262-ft above plate tower base and six associated runs of 1.625 inch diameter coaxial cable.**
- 11.) One 2-ft square panel antenna at 262-ft above tower base plate and one run of 1.625 inch dia. coax cable.
- 12.) One 1-ft square panel antenna at 255-ft above tower base plate and one run of 0.875 inch dia. coax cable.
- 13.) Six Sprint/Nextel DB980F90 panel antennas at 240-ft above tower base plate & six runs of 1.625 " dia. coax cable.
- 14.) One 2-ft parabolic antenna at 45-ft above tower base plate and one run of 0.50 inch dia. cable.
- 15.) Two 1.2M satellite parabolic antennas one at 31-ft and one at 27-ft above tower base plate and two associated runs of 0.375 inch diameter coaxial cable.
- 16.) One GPS antenna at 14-ft above tower base plate and one associated 0.50 inch diameter coaxial cable.
- 17.) (Metro PCS) Six Kathrein 800 10504 panel antennas at 230-ft above tower base plate and twelve associated runs of 1.625 inch diameter coaxial cable.
- 18.) (Metro PCS) One GPS antenna and one transmission line at approximately 25-ft above tower base plate.
- 19.) (MediaFlo) One Dielectric TLP-08M-1E UHF Antenna at approximately 300-ft above tower base plate and one associated run of 3.125 inch diameter transmission line.
- 20.) (MediaFlo) Two Patriot 2MCV90-T0757-42 (1.8M) Parabolic Antennas at approximately 50-ft above tower base plate and two associated runs of transmission lines less than 0.75 inch diameter.

New (Proposed) Omnipoint Communications Antennas - To Be Added on Tower

- 1.) **Three RFS APX16DWV-16DWVS-A20 Panel Antennas with mounts at 262-ft above tower base plate and six associated runs of 1.625 inch diameter coax cable. The new coaxial cables shall be installed directly behind the six existing T-Mobile coaxial cables such that they are shielded from wind loading.**
- 2.) **Six RFS ATMAA1412D-1A20 Tower Mounted Amplifiers at 262-ft above tower base plate.**



350'-0" MODIFIED 'L' TOWER ANALYSIS MODEL FOR NORWALK, CT



Communication Structures Engineering, Inc.
5579-B Chamblee Dunwoody Rd. / Suite 517
Dunwoody, Georgia 30338
(770) 951-6080

MEMBER CAPACITY CHECK FOR NORWALK, CT

ALL LOADS ARE IN KIPS, Fy = 36ksi, DESIGN LOAD = MEMBER LOAD X 0.75 (TO ALLOW FOR 1/3 INCREASE IN STRESSES)

DIAGONAL MEMBERS

MEMBER TYPE	MEMBER SIZE	AREA SQ. IN.	Lx FEET	Ly FEET	Lz FEET	rx	ry	rz	b/t	kl/r	Fa	MEMBER CAPACITY	MEMBER LOAD	DESIGN LOAD	DL/MC
19	L 3 1/2 X 3 1/2 X 5/16	2.09	9.89	13.85	9.89	1.08	1.080	0.690	11.200	159.66	5.86	12.24	5.61	4.21	0.34
20	L 3 1/2 X 3 1/2 X 5/16	2.09	10.17	14.93	10.17	1.08	1.080	0.690	11.200	163.37	5.59	11.69	8.34	6.26	0.53
21	L 3 1/2 X 3 1/2 X 5/16	2.09	11.1	15.77	11.10	1.08	1.080	0.690	11.200	175.70	4.84	10.11	9.16	6.87	0.68
22	2L 2 1/2 X 2 1/2 X 1/4	2.38	7.97	15.94		0.77	1.190		10.000	145.05	7.10	16.89	13.31	9.98	0.59
23	2L 2 1/2 X 2 1/2 X 1/4	2.38	8.27	16.54		0.77	1.190		10.000	148.78	6.75	16.06	15.34	11.51	0.72
24	2L 2 1/2 X 2 1/2 X 1/4	2.38	8.59	17.16		0.77	1.190		10.000	152.62	6.41	15.26	13.41	10.06	0.66
25	2L 2 1/2 X 2 1/2 X 1/4	2.38	8.91	17.81		0.77	1.190		10.000	156.65	6.09	14.48	16.88	12.66	0.87
26	2L 2 1/2 X 2 1/2 X 1/4	2.38	9.24	18.49		0.77	1.190		10.000	160.87	5.77	13.73	15.14	11.36	0.83
27	2L 3 X 2 1/2 X 5/16 SLB	3.24	8.83	17.67		0.74	1.460		9.600	135.52	8.13	26.35	29.11	21.83	0.83
28	2L 3 X 2 1/2 X 5/16 SLB	3.24	9.14	18.27		0.74	1.460		9.600	138.55	7.78	25.20	33.32	24.99	0.99
29	2L 3 1/2 X 2 1/2 X 5/16 SLB	3.55	9.38	18.74		0.73	1.730		11.200	141.42	7.47	26.51	35.12	26.34	0.99
30	2L 3 1/2 X 3 X 5/16 SLB	3.87	8.61	17.23		0.91	1.660		11.200	122.80	9.88	38.23	50.64	37.98	0.99
31	2L 3 X 2 X 1/4 LLB	2.38	8.07	8.07		0.96	0.891		12.000	108.69	11.85	28.20	32.75	24.56	0.87
32	2L 3 X 3 X 5/16	3.55	10.52	10.52		0.92	1.400		9.600	130.41	8.78	31.17	35.66	26.75	0.86
33	2L 2 1/2 X 2 X 1/4 LLB	2.13	10.06	10.06		0.78	0.935		10.000	140.90	7.52	16.02	21.34	16.01	1.00
34	2L 3 1/2 X 3 X 3/8 SLB	4.59	8.91	17.82		0.90	1.670		9.330	124.95	9.56	43.89	52.36	39.27	0.89
35	2L 3 X 2 1/2 X 1/4 LLB	2.63	9.9	9.90		0.95	1.130		12.000	123.51	9.77	25.70	33.90	25.43	0.99
36	2L 3 1/2 X 3 1/2 X 5/16	4.18	10.91	10.91		1.08	1.600		11.200	120.75	10.17	42.53	37.44	28.08	0.66
37	2L 2 1/2 X 2 1/2 X 1/4	2.38	10.3	10.30		0.77	1.190		10.000	144.92	7.11	16.92	22.65	16.99	1.00
38	2L 3 1/2 X 3 X 3/8 SLB	4.59	9.09	18.18		0.90	1.670		9.330	126.54	9.33	42.81	54.47	40.85	0.95
39	2L 3 X 2 1/2 X 1/4 LLB	2.63	9.12	9.12		0.95	1.130		12.000	115.81	10.88	28.60	35.05	26.29	0.92
40	2L 3 1/2 X 3 1/2 X 5/16	4.18	11.32	11.32		1.08	1.600		11.200	123.55	9.77	40.83	39.27	29.45	0.72
41	2L 3 X 2 X 1/4 LLB	2.38	11.25	11.25		0.96	0.891		12.000	139.38	7.69	18.29	24.46	18.35	1.00



NORWALK, CT

SHEET NO. _____

JOB NO. _____

BY _____

FOUNDATION REVIEW

MAXIMUM DOWNWARD LOAD = 611.30K

MAXIMUM UPLIFT LOAD = 473.50K

FULL BOUYANCY

$$\text{WT. OF SLAB} = 24.5^2 (3.5') (0.09) = 189.07K$$

$$\text{WT. OF PIER} = (4^2 + (4' \times 10.25') + 10.25^2) \left(\frac{12.5'}{3} \right) = 675.26 \text{ FT}^3$$

$$675.26 (0.09) = 60.77K$$

$$\frac{4}{3} \text{ CONCRETE } (189.07K + 60.77K) = \boxed{249.84K}$$

WT. OF SOIL

$$(38.36^2 + (38.36' \times 24.5') + 24.5^2) \left(\frac{12'}{3} \right) = 12046.23 \text{ FT}^3$$

$$(12046.23 - 675.26) (0.05) = \boxed{568.55K}$$

CASE 1

$$\frac{249.84 + 568.55K}{1.5} = 545.60K > 473.50K \text{ O.K.}$$

CASE 2

$$\frac{249.84}{1.25} + \frac{568.55K}{2.0} = 484.15K > 473.50K \text{ O.K.}$$

PIER STEEL

$$1.3 (542.4) - 0.9 (68.9K) = 643.11K$$

$$\frac{643.11K}{0.85 \times 40} = 18.92 \text{ m}^2, \text{ 24 \# 11 BARS} = 35.64 \text{ m}^2 \text{ O.K.}$$

ANCHOR BOLTS

$$6 - 2\frac{1}{2}'' \phi = 29.45 \text{ m}^2 (19 \text{ ksi}) = 559.55K > 473.50K \text{ O.K.}$$

Technical Memo

To: HPC
From: Farid Marbough - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11011D
Date: July 9, 2009

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Utility Monopole at 10 Willard Road (SNET LL), Norwalk(Westport), CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

- 1) The emissions from T-Mobile transmitters are in the (1940-1949.8), (2140-2145), (2110-2120)MHz frequency Band.
- 2) The antenna array consists of three sectors, with 2 antennas per sector.
- 3) The model number for GSM antenna is APX16PV-16PVL.
- 3) The model number for UMTS antenna is APX16DWV-16DWV.
- 4) GSM antenna center line height is 262.5 ft.
- 4) UMTS antenna center line height is 262.5 ft.
- 5) The maximum transmit power from any GSM sector is 1486.62 Watts Effective Radiated Power (EIRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 1552.99 Watts Effective Radiated Power (EIRP) assuming 2 channels per sector.
- 6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
- 7) Power levels emitting from the antennas are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile antenna installation on a Utility Monopole at 10 Willard Road (SNET LL), Norwalk(Westport), CT, is 0.01014 mW/cm². This value represents 1.014% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm²) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.

The combined Power Density from other carriers is 24.01%. The combined Power Density for the site is 25.024% of the M.P.E. standard.

Connecticut Market



Worst Case Power Density

Site: CT11011D
Site Address: 10 Willard Road (SNET LL)
Town: Norwalk(Westport)
Tower Height: 373 ft.
Tower Style: Utility Monopole

GSM Data		UMTS Data	
Base Station TX output	20 W	Base Station TX output	40 W
Number of channels	8	Number of channels	2
Antenna Model	APX16PV-16PVL	Antenna Model	APX16DWV-16DWV
Cable Size	1 5/8 in.	Cable Size	1 5/8 in.
Cable Length	312 ft.	Cable Length	312 ft.
Antenna Height	262.5 ft.	Antenna Height	262.5 ft.
Ground Reflection	1.6	Ground Reflection	1.6
Frequency	1945.0 MHz	Frequency	2.1 GHz
Jumper & Connector loss	4.50 dB	Jumper & Connector loss	1.50 dB
Antenna Gain	17.8 dBi	Antenna Gain	18.0 dBi
Cable Loss per foot	0.0116 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	3.6192 dB	Total Cable Loss	3.6192 dB
Total Attenuation	8.1192 dB	Total Attenuation	5.1192 dB
Total EIRP per Channel (In Watts)	52.69 dBm 185.83 W	Total EIRP per Channel (In Watts)	58.90 dBm 776.50 W
Total EIRP per Sector (In Watts)	61.72 dBm 1486.62 W	Total EIRP per Sector (In Watts)	61.91 dBm 1552.99 W
nsg	9.6808	nsg	12.8808
Power Density (S) = 0.004957 mW/cm ²		Power Density (S) = 0.005179 mW/cm ²	
T-Mobile Worst Case % MPE =		1.0136%	
Equation Used : $S = \frac{(1000)(grf)^2 (Power)^{10^{(nsg/10)}}}{4\pi (R)^2}$			
Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997			

Co-Location Total	
Carrier	% of Standard
Verizon	
Cingular	1.1800 %
Sprint	0.8400 %
AT&T Wireless	
Nextel	
MetroPCS	4.1900 %
Other Antenna Systems	17.8000 %
Total Excluding T-Mobile	24.0100 %
T-Mobile	1.0136
Total % MPE for Site	25.0236%