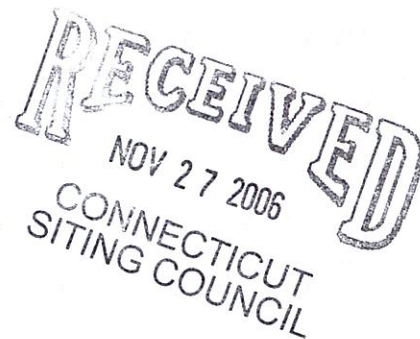




ORIGINAL



30 Cold Spring Road
Rocky Hill, CT 06062
Karina.Fournier@T-mobile.com
860-796-3988

EM-T-MOBILE-010-061127

November 27, 2006

BY HAND

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

RE: **Notice of Exempt Modification**
 Hard Hill Road Bethlehem, CT
 Latitude: 41 40 2 / Longitude: 73 10 14

Dear Chairman Caruso and Members of the Siting Council:

Omnipoint Communications, Inc. a.k.a. T-Mobile (formerly Voicestream Wireless Corp.) hereby requests an order from the Connecticut Siting Council ("Council") to approve the proposed ("SBA Bethlehem"), in Bethlehem, CT owned by SBA. T-Mobile and SBA have agreed to the shared use of the SBA Bethlehem, as detailed below.

Please accept this letter as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b) (2).

SBA Bethlehem

SBA Bethlehem facility consists of a one hundred ninety five (195') foot monopole ("Tower") owned and operated by SBA. T-Mobile proposes to locate antennas at a centerline mounting height of one hundred fifty five (155') feet. The equipment will be located within the compound at the base of the tower.

SBA Bethlehem

As shown on the enclosed plans prepared by including a site plan and tower elevation of the November 13, 2006, annexed hereto as Exhibit 1, T-Mobile proposes a shared use of the Facility by placing antennas on the tower and equipment needed to provide personal communications services ("PCS") within the existing site plan. T-Mobile will install three (3) antennas at the one hundred fifty five (155') foot level of the Tower. Three (3) associated unmanned equipment cabinets will be located at the base of the tower.

The proposed modification is structurally feasible. A structural analysis of the tower is attached as Exhibit 2. The structural analysis shows that the tower can safely accommodate the proposed T-Mobile installation.

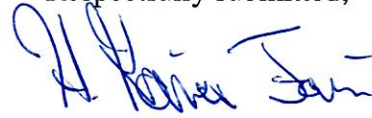
The planned modifications to this facility fall within the activities explicitly provided for in R.C.S.A. §16-50j-72(b)(2).

1. The proposed modification will not result in any increase in the overall height of the existing structure.
2. The proposed modification will not affect ground-mounted equipment and will not require the extension of the site boundaries.
3. The proposed modification will not increase noise levels at the facility by six decibels or more.
4. Operation of T-Mobile's antennas at this site would not exceed the total radio frequency electromagnetic radiation power density level adopted by the FCC and Connecticut Department of Health. The "worst case" exposure calculated for the operation of this facility for T-Mobile would be approximately 19.607% of the standard. See Radio Frequency Memo dated September 26, 2006, annexed hereto as Exhibit 3.

Conclusion

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

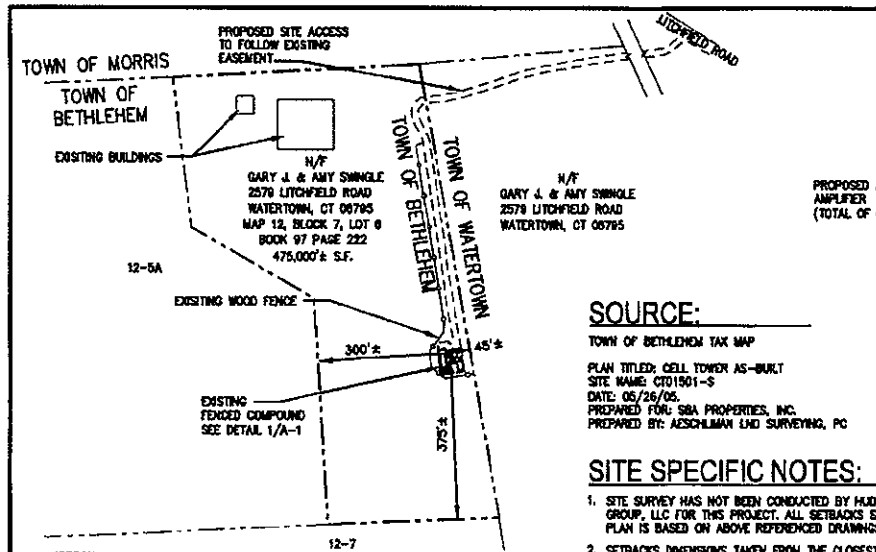
Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Karina Fournier".

Karina Fournier
Zoning Dept.
T-Mobile
30 Cold Spring Road
Rocky Hill, CT 06067
(860) 796-3988

cc: Bethlehem First Selectmen, Leo S. Bulvanoski
Watertown Town Manager, Meredith S. Robson

Exhibit 1



SOURCE:

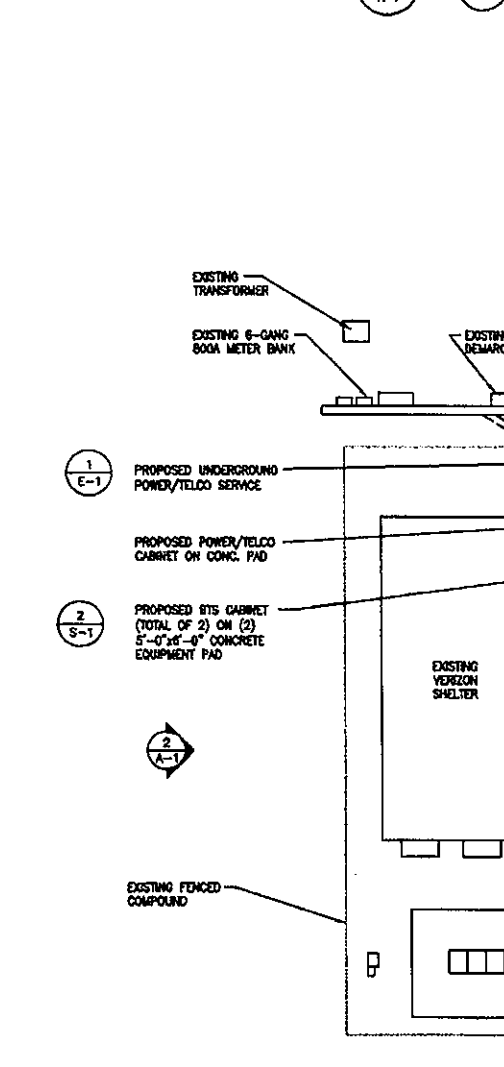
TOWN OF BETHLEHEM TAX MAP
PLAN TITLED: CELL TOWER AS-BUILT
SITE NAME: CTD1501-S
DATE: 05/26/06
PREPARED FOR: SBA PROPERTIES, INC.
PREPARED BY: AESCHLIMAN AND SURVEYING, PC

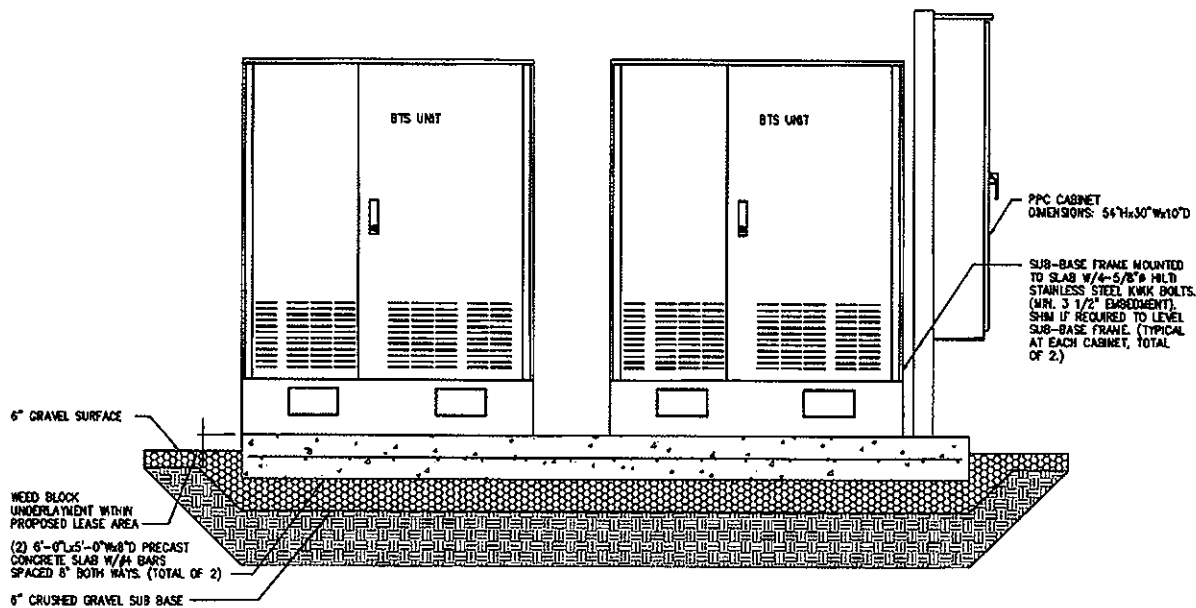
SITE SPECIFIC NOTES:

1. SITE SURVEY HAS NOT BEEN CONDUCTED BY HUDSON DESIGN GROUP, LLC FOR THIS PROJECT. ALL SETBACKS SHOWN ON THIS PLAN IS BASED ON ABOVE REFERENCED DRAWINGS.
2. SETBACKS DIMENSIONS TAKEN FROM THE CLOSEST B/S CABINET.

ANTENNA MOUNTING PLAN

SCALE: NOT TO SCALE

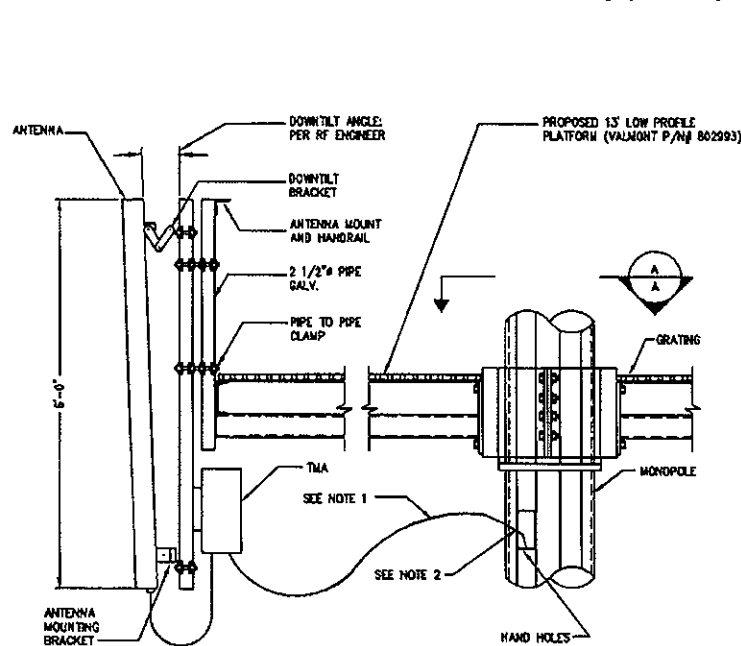




SECTION AT EQUIPMENT PAD

SCALE: 3/4"=1'-0"

2
S-1



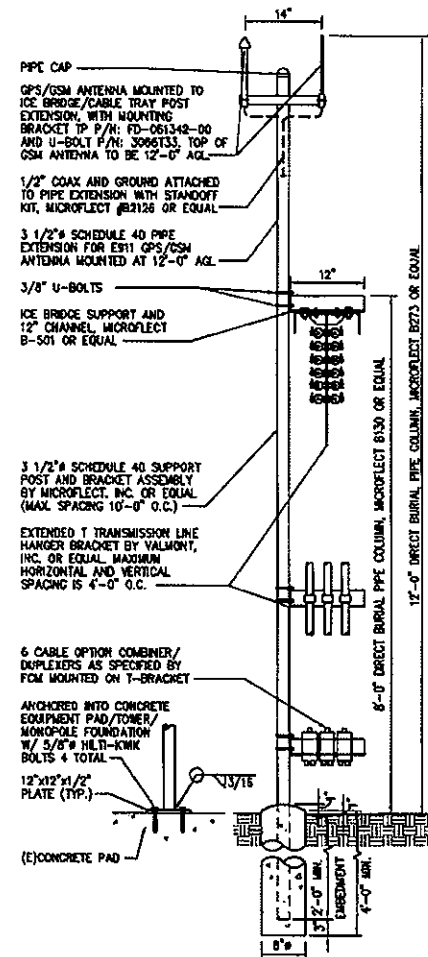
NOTES:

1. SECURE CABLES TO GRATING WITH TIE WRAPS AT 3'-0" O.C.
2. PROVIDE KELLOWS GRIP AROUND CABLES AND FASTEN TO EXISTING J-HOOKS INSIDE MONOPOLE.
3. ANTENNA MOUNTS AND COMPONENTS SHALL CONFORM TO TOWER STRUCTURAL CALCULATIONS AND TOWER MANUFACTURER'S RECOMMENDATIONS. SEE REPORT BY VERTICAL STRUCTURES, INC. JOB # 2006-007-033, DATED: 10-19-06

ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

3
S-1



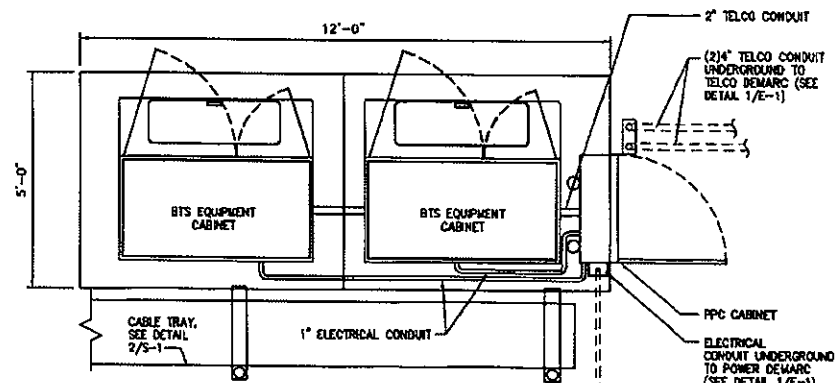
ICE BRIDGE DETAIL

SCALE: 3/4"=1'-0"

4
S-1

STRUCTURAL NOTES

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, ANSI/ASCE7, EIA/TIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL WIDE-FLANGE SHAPES SHALL CONFORM TO ASTM 992A. ALL OTHER SHAPES AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE NOTED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE A, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 5/8" DIA UN. UN.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 85 PERCENT ZINC BY WEIGHT, ZRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AWS AND DII. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AWS "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIATION OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUTS SHALL BE FORMED STEEL CHANNEL STRUT TRAWING AS MANUFACTURED BY UNISTRUT CORP. WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 3/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2" DIAMETER STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE MULTI-STEP HY-20 AND OR HY-150 SYSTEMS (AS SPECIFIED AN DING.) OR ENGINEERS APPROVED EQUAL WITH 4-1/4" MIN. EMBEDMENT DEPTH.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-5-325, GROUP II, TYPE 4, CLASS I, MULTI KNUK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE THREE AND ONE HALF (3 1/2) INCHES.
15. GRAVEL SUB BASE AND CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL.
16. CONCRETE FOR FENCE AND ICE BRIDGE SUPPORT SHALL BE 5000 PSI AIR ENTRAINED (4 % ± 5 %) NORMAL WEIGHT CONCRETE.
17. ALL CAST IN PLACE CONCRETE SHALL BE MIXED AND PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318 AND ACI 301.
18. THE FOLLOWING MINIMUM CONCRETE COVER OVER REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
CONCRETE CAST AGAINST EARTH ... 3 INCHES.
CONCRETE EXPOSED TO EARTH OR WATER
#8 AND LARGER 2 INCHES
#6 AND SMALLER 1 1/2 INCHES
ALL EXPOSED EDGES SHALL BE PROVIDED WITH A 3/8"x3/4" CHAMFER UNLESS NOTED OTHERWISE.
19. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.

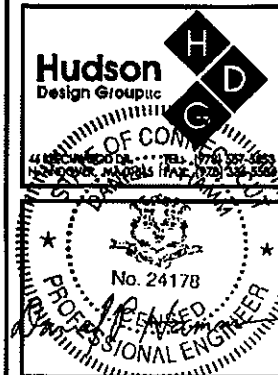


PLAN AT EQUIPMENT PAD

SCALE: 1/2"=1'-0"

1
S-1

OMNIPONT COMMUNICATIONS, INC.
A WHOLLY-OWNED SUBSIDIARY
OF T-MOBILE USA, INC.
100 FILLEY STREET
BLOOMFIELD, CT 06002
OFFICE: (860)-692-7100
FAX: (860)-692-7159



APPROVALS

LEASING _____

R.F. _____

ZONING _____

CONSTRUCTION _____

A/E _____

PROJECT NO: CTNH357C

DRAWN BY: AT

CHECKED BY: DPH

SUBMITTALS

NO.	DATE	DESCRIPTION
1	11/13/06	CONSTRUCTION

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF OMNIPONT COMMUNICATIONS, INC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

CTNH357C

SBA BETHLEHEM

HARD HILL ROAD
BETHLEHEM, CT 06751

STRUCTURAL NOTES,
PLANS, SECTIONS
& DETAILS

SHEET NUMBER

S-1



ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIBBON STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BUNDLED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THHN, OR THHW INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROMISE CREDIBLE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDESIRABLE USE PVC SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE HEMA OR ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH T-MOBILE BTS SITE GROUNDING STANDARD.
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 BARE THINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURIED HYDROGRO COMPRESSION TYPE CONNECTORS OR GALVANIZED STEEL. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS BEND AT LEAST 1/2 RADIUS BENDS. IF WIRE CAN BE BENT AT 6" BENDS WHEN NECESSARY FROM ANY METAL OBJECTS WITHIN 4 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. CONTRACTOR SHALL PROVIDE AND INSTALL OWN DIRECTIONAL ELECTRONIC WARNER SYSTEM TO GROUND BARS AND GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
21. CONTRACTOR SHALL TEST COMPLETED GROUNDING SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
22. CONTRACTOR SHALL CONDUCT ANTIHANA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE-OUT.

Exhibit 2



October 19, 2006

Mr. Mark Luther
SBA Network Services
800 South Washington Ave.
Scranton, PA 18505
(570) 558-3450

Subject:

Structural Analysis Report
T-Mobile Co-Locate
SBA Site Name: Morris, CT
SBA Site Number: CT-01501-S
195' Nudd MJ-180 Monopole Tower
Vertical Structures Job Number: 2006-007-033

APPROVED

T-Mobile Site No: CTNH357C

A & E Manager: DEREK CREASER

Date: 10/24/06

Antenna Make: RFS Model No.: APXV18-

Number Antennas: 3 Rad. Center (AGL): 155 Feet

Coax Cables: Number: 6 ☐ 7/8" ☒ 1-5/8" ☐ 2-1/4"

☒ Tower and Foundation Acceptable: No Upgrades Required

☐ Tower Upgrades Required

☐ Foundation Upgrades Required

☐ Special Coax Placement or Bundling Required

Dear Mr. Luther,

Vertical Structures is pleased to provide you with the results of the structural analysis performed on the 195' tall monopole tower at the Morris site in Connecticut. The purpose of the analysis was to determine the suitability of the tower upon adding three (3) proposed RFS APXV18-209014-C panel antennas and six (6) proposed Remec S20057A1 tower mounted amplifiers mounted on a proposed low-profile platform at 155' for T-Mobile when combined with the existing and reserved equipment on the structure. This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon an 80 MPH basic "fastest mile" wind speed, equivalent to a 100 MPH basic "3-second gust" wind speed per IBC Table 1609.3.1.

Based on our analysis we have determined the tower superstructure and foundation are sufficient for the proposed loading.

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

Respectfully submitted,

Pankaj Taneja

Pankaj Taneja
Project Engineer

[Signature]
10/19/06



October 19, 2006

Mr. Mark Luther
SBA Network Services
800 South Washington Ave.
Scranton, PA 18505
(570) 558-3450

Subject: **Structural Analysis Report
T-Mobile Co-Locate
SBA Site Name: Morris, CT
SBA Site Number: CT-01501-S
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Vertical Structures Job Number: 2006-007-033**

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Respectfully submitted,

Pankaj Taneja
Project Engineer

TABLE OF CONTENTS

INTRODUCTION	3
ANALYSIS CRITERIA	3
Table 1 – Proposed and Existing Loads.....	3
Table 2 – Original Design Loads	3
ANALYSIS PROCEDURE	4
Table 3 – Resources Utilized	4
Analysis Methods	4
Assumptions.....	4
ANALYSIS RESULTS	5
Table 4 – Tower Component Capacities	5
APPENDIX A	
Output from Computer Programs	

INTRODUCTION

The subject tower is located in Morris, Connecticut. The 195' Nudd MJ-180 monopole tower was designed and manufactured by Fred A. Nudd Corporation in 2000. The existing structure consists of four (4) 18-sided tapered polygonal tubes joined via slip joint connections and one (1) straight pipe section joined via a bolted flange connection. The tower is founded on a 4' diameter by 12'-6" deep drilled pier embedded 8' into rock. The tower was previously reworked in accordance with o2wireless Solutions Job No. 2230-043 to accommodate additional loading.

ANALYSIS CRITERIA

The Morris Street monopole 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 future antennas, cables and mounts considered in this analysis are listed in Table 1. Applied forces in this study were derived from an 80 MPH basic "fastest mile" wind speed with no ice and a reduced 69 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The tower was originally designed for an 80 MPH basic "fastest mile" wind speed with no ice and a reduced 69 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The original design loads are listed in Table 2. All cables are assumed to be routed up the interior of the pole unless otherwise noted.

Table 1 – Proposed and Existing Loads

Mount Elevation	Carrier Name	Status	Antennas	Mounts	Feedlines
195'	Sprint	Existing	(6) Decibel DB980H90E-M Panels	14' L.P. Platform	(6) 1 5/8" Coax
185'	Nextel	Existing	(12) Decibel DB844H80 Panels	12' L.P. Platform	(12) 1 5/8" Coax
175'	Verizon Wireless	Existing	(12) Antel LPA-185080/12CF Panels	14' L.P. Platform	(12) 1 5/8" Coax
165'	Cingular	Existing	(12) Powerwave Technologies 7770.00 Panels	14' L.P. Platform	(24) 1 5/8" Coax
		Existing	(24) Powerwave Technologies LGP 2140X TMAs		
155'	T-Mobile	Proposed	(3) RFS APXV18-209014-C Panels	14' L.P. Platform	(6) 1 5/8" Coax
			(6) Remec S20057A1 TMAs		

Table 2 – Original Design Loads

Mount Elevation	Carrier Name	Status	Antennas	Mounts	Feedlines
195'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 1 5/8" Coax
185'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 1 5/8" Coax
175'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 1 5/8" Coax
165'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 1 5/8" Coax
155'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 1 5/8" Coax

ANALYSIS PROCEDURE

Table 3 – Resources Utilized

Resource	Remarks
Proposed Loads	SBA E-mail
Existing Loads	Vertical Structures Job No. 2006-007-005
Tower Drawings	Nudd Drawing No. DD-7627-1
Foundation Drawings	Nudd Drawing No. DD-7627-1
Geotechnical Report	Jaworski Geotech Project No. 99290G

Analysis Methods

RISA Tower (Version 4.6), a commercially available software program, 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.

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 Table 1 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.

ANALYSIS RESULTS

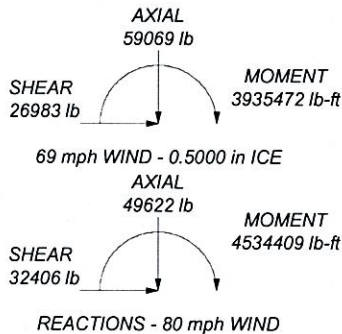
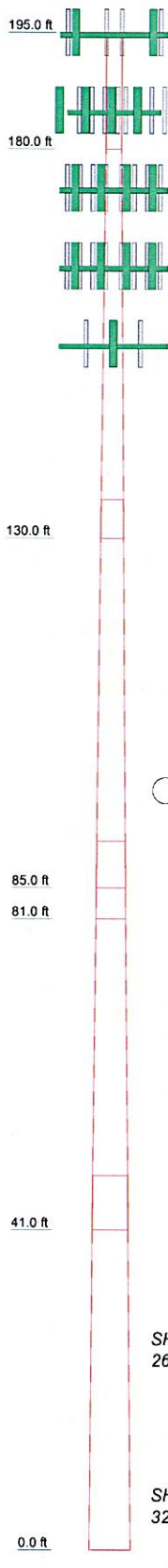
The Morris tower superstructure is found to be adequate for the intended loading at the wind and ice conditions considered. Calculated foundation reactions are within the original design limits. Table 4 summarizes the condition of the tower. Capacities up to 105% are considered acceptable based on the analysis procedures used.

Table 4 – Tower Component Capacities

Section Number	Elevation	Percent Capacity Used		
		Pole	Flange Plate	Splice Bolts
1	195' – 180'	23.2	90.6	61.1
2	180' – 130'	84.1	-	-
3	130' – 85'	90.7	-	-
4	85' – 81'	95.5	-	-
5	81' – 41'	84.8	-	-
6	41' – 0'	93.3	-	-
Anchor Bolts – Tension		89.3		
Base Plate – Bending		86.3		
Foundation – Moment		93.0		

APPENDIX A

Section	Length (ft)	Number of Sides	Thickness (in)	Lap Splice (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	15.00	1	0.2810				A36	1068.2
2	50.00	18	0.2500	5.00	24.0000	35.9444	A36	4012.7
3	50.00	18	0.3125	6.00	34.2500	46.1944	A572-65	6735.0
4	10.00	18	0.3125	6.00	44.1361	46.5250	A572-65	1519.4
5	40.00	18	0.3750	7.00	46.5250	55.4556	A572-65	8200.0
6	48.00	18	0.3750		53.1427	64.5000	A572-65	11362.4
								32897.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Nudd 14' Low Profile Platform (VSI) (Sprint)	195	(4) LPA-185080/12CF w/ mount pipe (Verizon Wireless)	175
(2) DB980H90E-M w/Mount Pipe (Sprint)	195	14' Low-Profile Platform (Cingular)	165
(2) DB980H90E-M w/Mount Pipe (Sprint)	195	(4) 7770.00 w/ mount pipe (Cingular)	165
(2) DB980H90E-M w/Mount Pipe (Sprint)	195	(4) 7770.00 w/ mount pipe (Cingular)	165
(2) DB980H90E-M w/Mount Pipe (Sprint)	195	(4) 7770.00 w/ mount pipe (Cingular)	165
(2) 5x2" Antenna Mount Pipe (Sprint)	195	(8) LGP2140X (Cingular)	165
(2) 5x2" Antenna Mount Pipe (Sprint)	195	(8) LGP2140X (Cingular)	165
(2) 5x2" Antenna Mount Pipe (Sprint)	195	(8) LGP2140X (Cingular)	165
12' L.P. Platform (Nextel)	185	14' Low-Profile Platform (T-Mobile)	155
(4) DB844H80 w/Mount Pipe (Nextel)	185	APXV18-209014-C w/ Mount Pipe (T-Mobile)	155
(4) DB844H80 w/Mount Pipe (Nextel)	185	(2) S20057A1 (T-Mobile)	155
(4) DB844H80 w/Mount Pipe (Nextel)	185	APXV18-209014-C w/ Mount Pipe (T-Mobile)	155
14' Low-Profile Platform (Verizon Wireless)	175	(2) S20057A1 (T-Mobile)	155
(4) LPA-185080/12CF w/ mount pipe (Verizon Wireless)	175	APXV18-209014-C w/ Mount Pipe (T-Mobile)	155
(4) LPA-185080/12CF w/ mount pipe (Verizon Wireless)	175	(2) S20057A1 (T-Mobile)	155

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 95.5%

 Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job: Morris, CT (CT-01501-S)		
	Project: Vertical Structures Job #2006-007-033		
	Client: SBA	Drawn by: ptaneja	App'd:
	Code: TIA/EIA-222-F	Date: 10/19/06	Scale: NTS
	Path:	Dwg No. E-1	

<i>RISA Tower</i> <i>Vertical Structures, Inc.</i> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	1 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Litchfield County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 69 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	√ SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	195.00-180.00	15.00	0.00	Round	24.0000	24.0000	0.2810		A36 (36 ksi)
L2	180.00-130.00	50.00	5.00	18	24.0000	35.9444	0.2500	1.0000	A572-65 (65 ksi)
L3	130.00-85.00	50.00	6.00	18	34.2500	46.1944	0.3125	1.2500	A572-65 (65 ksi)
L4	85.00-81.00	10.00	0.00	18	44.1361	46.5250	0.3125	1.2500	A572-65 (65 ksi)
L5	81.00-41.00	40.00	7.00	18	46.5250	55.4556	0.3750	1.5000	A572-65 (65 ksi)
L6	41.00-0.00	48.00		18	53.1427	64.5000	0.3750	1.5000	A572-65

RISATower Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	2 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
(65 ksi)									

Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	I/Q	w	w/t
	in	in ²	in ⁴	in	in	in ³	in ⁴	in ²	in	
L1	24.0000	20.9282	1473.6284	8.3965	12.0000	122.8024	2943.2423	10.4632	0.0000	0
	24.0000	20.9282	1473.6284	8.3965	12.0000	122.8024	2943.2423	10.4632	0.0000	0
L2	24.3702	18.8456	1342.9976	8.4313	12.1920	110.1540	2687.7623	9.4246	3.7840	15.136
	36.4989	28.3235	4559.1580	12.6715	18.2598	249.6834	9124.3150	14.1644	5.8862	23.545
L3	35.9912	33.6617	4898.1536	12.0478	17.3990	281.5196	9802.7523	16.8341	5.4780	17.53
	46.9070	45.5091	12103.7119	16.2881	23.4668	515.7812	24223.3501	22.7589	7.5802	24.257
L4	46.2724	43.4675	10546.7236	15.5574	22.4211	470.3923	21107.3249	21.7379	7.2179	23.097
	47.2427	45.8370	12367.2399	16.4054	23.6347	523.2662	24750.7529	22.9229	7.6384	24.443
L5	47.2427	54.9300	14780.5555	16.3833	23.6347	625.3752	29580.5596	27.4702	7.5284	20.076
	56.3111	65.5597	25128.7929	19.5536	28.1714	891.9952	50290.6510	32.7861	9.1002	24.267
L6	55.6444	62.8068	22094.3508	18.7325	26.9965	818.4149	44217.7740	31.4094	8.6931	23.182
	65.4950	76.3248	39651.3314	22.7644	32.7660	1210.1365	79354.8371	38.1696	10.6920	28.512

Tower Elevation	Gusset Area	Gusset Thickness	Gusset Grade	Adjust. Factor	Adjust. Factor	Weight Mult.	Double Angle	Double Angle
ft	ft ²	in		A _f	A _r		Stitch Bolt Spacing Diagonals in	Stitch Bolt Spacing Horizontals in
L1 195.00-180.00				1	1	1		
L2 180.00-130.00				1	1	1		
L3 130.00-85.00				1	1	1		
L4 85.00-81.00				1	1	1		
L5 81.00-41.00				1	1	1		
L6 41.00-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _A A _A	Weight
				ft		ft ² /ft	plf
LDF7-50A (1-5/8 FOAM) (Sprint)	C	No	Inside Pole	195.00 - 5.00	6	No Ice 1/2" Ice	0.00 0.82
LDF7-50A (1-5/8 FOAM) (Nextel)	C	No	Inside Pole	185.00 - 5.00	12	No Ice 1/2" Ice	0.00 0.82
LDF7-50A (1-5/8 FOAM) (Verizon Wireless)	C	No	Inside Pole	175.00 - 5.00	12	No Ice 1/2" Ice	0.00 0.82
LDF7-50A (1-5/8 FOAM) (Cingular)	C	No	Inside Pole	165.00 - 5.00	24	No Ice 1/2" Ice	0.00 0.82
LDF7-50A (1-5/8	C	No	Inside Pole	155.00 - 5.00	6	No Ice	0.00

<i>RISA Tower</i> <i>Vertical Structures, Inc.</i> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	3 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
FOAM) (T-Mobile)					1/2" Ice	0.00	0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	195.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	123.00
L2	180.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1992.60
L3	130.00-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	2214.00
L4	85.00-81.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	196.80
L5	81.00-41.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1968.00
L6	41.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1771.20

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	195.00-180.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	123.00
L2	180.00-130.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1992.60
L3	130.00-85.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	2214.00
L4	85.00-81.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	196.80
L5	81.00-41.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1968.00
L6	41.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1771.20

RISATower Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	4 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	195.00-180.00	0.0000	0.0000	0.0000	0.0000
L2	180.00-130.00	0.0000	0.0000	0.0000	0.0000
L3	130.00-85.00	0.0000	0.0000	0.0000	0.0000
L4	85.00-81.00	0.0000	0.0000	0.0000	0.0000
L5	81.00-41.00	0.0000	0.0000	0.0000	0.0000
L6	41.00-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
Nudd 14' Low Profile Platform (VSI)	C	None		0.0000	195.00	No Ice 1/2" Ice	32.00 42.00	1350.00 1750.00
(2) DB980H90E-M w/Mount Pipe (Sprint)	A	From Centroid-Face	4.04 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice	4.27 4.86	34.05 69.84
(2) DB980H90E-M w/Mount Pipe (Sprint)	B	From Centroid-Face	4.04 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice	4.27 4.86	34.05 69.84
(2) DB980H90E-M w/Mount Pipe (Sprint)	C	From Centroid-Face	4.04 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice	4.27 4.86	34.05 69.84
(2) 5'x2" Antenna Mount Pipe (Sprint)	A	From Centroid-Face	4.04 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice	1.19 1.50	18.25 27.32
(2) 5'x2" Antenna Mount Pipe (Sprint)	B	From Centroid-Face	4.04 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice	1.19 1.50	18.25 27.32
(2) 5'x2" Antenna Mount Pipe (Sprint)	C	From Centroid-Face	4.04 0.00 0.00	0.0000	195.00	No Ice 1/2" Ice	1.19 1.50	18.25 27.32
12' L.P. Platform (Nextel)	C	None		0.0000	185.00	No Ice 1/2" Ice	25.00 29.00	1700.00 2530.00
(4) DB844H80 w/Mount Pipe (Nextel)	A	From Centroid-Face	3.43 2.02 0.00	30.0000	185.00	No Ice 1/2" Ice	3.58 4.20	35.55 77.48
(4) DB844H80 w/Mount Pipe (Nextel)	B	From Centroid-Face	3.43 2.02 0.00	30.0000	185.00	No Ice 1/2" Ice	3.58 4.20	35.55 77.48
(4) DB844H80 w/Mount Pipe (Nextel)	C	From Centroid-Face	3.43 2.02 0.00	30.0000	185.00	No Ice 1/2" Ice	3.58 4.20	35.55 77.48
14' Low-Profile Platform (Verizon Wireless)	C	None		0.0000	175.00	No Ice 1/2" Ice	25.00 31.00	1000.00 1300.00
(4) LPA-185080/12CF w/mount pipe (Verizon Wireless)	A	From Centroid-Face	4.04 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	3.55 3.99	32.40 72.35

RISATower Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	5 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
(4) LPA-185080/12CF w/ mount pipe (Verizon Wireless)	B	From Centroid- Face	4.04 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	3.55 3.99	5.99 6.94	32.40 72.35
(4) LPA-185080/12CF w/ mount pipe (Verizon Wireless)	C	From Centroid- Face	4.04 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	3.55 3.99	5.99 6.94	32.40 72.35
14' Low-Profile Platform (Cingular)	C	None		0.0000	165.00	No Ice 1/2" Ice	25.00 31.00	25.00 31.00	1000.00 1300.00
(4) 7770.00 w/ mount pipe (Cingular)	A	From Centroid- Face	4.04 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(4) 7770.00 w/ mount pipe (Cingular)	B	From Centroid- Face	4.04 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(4) 7770.00 w/ mount pipe (Cingular)	C	From Centroid- Face	4.04 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(8) LGP2140X (Cingular)	A	From Centroid- Face	4.04 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	1.23 1.38	0.37 0.48	17.50 24.46
(8) LGP2140X (Cingular)	B	From Centroid- Face	4.04 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	1.23 1.38	0.37 0.48	17.50 24.46
(8) LGP2140X (Cingular)	C	From Centroid- Face	4.04 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	1.23 1.38	0.37 0.48	17.50 24.46
14' Low-Profile Platform (T-Mobile)	C	None		0.0000	155.00	No Ice 1/2" Ice	25.00 31.00	25.00 31.00	1000.00 1300.00
APXV18-209014-C w/ Mount Pipe (T-Mobile)	A	From Centroid- Face	4.04 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.62 4.00	3.21 3.84	36.95 67.79
(2) S20057A1 (T-Mobile)	A	From Centroid- Face	4.04 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	0.82 0.95	0.39 0.49	11.00 16.41
APXV18-209014-C w/ Mount Pipe (T-Mobile)	B	From Centroid- Face	4.04 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.62 4.00	3.21 3.84	36.95 67.79
(2) S20057A1 (T-Mobile)	B	From Centroid- Face	4.04 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	0.82 0.95	0.39 0.49	11.00 16.41
APXV18-209014-C w/ Mount Pipe (T-Mobile)	C	From Centroid- Face	4.04 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	3.62 4.00	3.21 3.84	36.95 67.79
(2) S20057A1 (T-Mobile)	C	From Centroid- Face	4.04 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	0.82 0.95	0.39 0.49	11.00 16.41

Load Combinations

Comb. No.	Description
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<i>RISA Tower</i> <i>Vertical Structures, Inc.</i> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	6 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

<i>Comb. No.</i>	<i>Description</i>
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Force lb</i>	<i>Major Axis Moment lb-ft</i>	<i>Minor Axis Moment lb-ft</i>
L1	195 - 180	Pole	Max Tension	5	0.06	0.08	-0.00
			Max. Compression	14	-7208.37	0.00	0.00
			Max. Mx	5	-4026.60	-73081.86	0.00
			Max. My	2	-4026.60	0.00	73081.86
			Max. Vy	5	7926.10	-73081.86	0.00
			Max. Vx	2	-7926.10	0.00	73081.86
			Max. Torque	22			-0.00
			Max Tension	1	0.00	0.00	0.00
L2	180 - 130	Pole	Max. Compression	14	-20263.21	0.00	0.00
			Max. Mx	5	-12991.16	-840074.12	0.00
			Max. My	2	-12991.16	0.00	840074.12
			Max. Vy	5	21822.12	-840074.12	0.00
			Max. Vx	2	-21822.12	0.00	840074.12
			Max. Torque	22			-0.01
			Max Tension	1	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00

RISATower Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	7 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L4	85 - 81	Pole	Max. Compression	14	-29763.40	0.00	0.00
			Max. Mx	5	-21969.40	-	0.00
						1881440.71	
			Max. My	2	-21969.40	0.00	1881440.71
			Max. Vy	5	25502.21	-	0.00
						1881440.71	
			Max. Vx	2	-25502.21	0.00	1881440.71
			Max. Torque	22			-0.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32974.61	0.00	0.00
			Max. Mx	5	-25011.55	-	0.00
						2141139.55	
L5	81 - 41	Pole	Max. My	2	-25011.55	0.00	2141139.55
			Max. Vy	5	26419.57	-	0.00
						2141139.55	
			Max. Vx	2	-26419.57	0.00	2141139.55
			Max. Torque	22			-0.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42291.53	0.00	0.00
			Max. Mx	5	-33799.53	-	0.00
						3056527.39	
			Max. My	2	-33799.53	0.00	3056527.39
			Max. Vy	5	29059.19	-	0.00
						3056527.39	
L6	41 - 0	Pole	Max. Vx	2	-29059.19	0.00	3056527.39
			Max. Torque	22			-0.03
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-59069.35	0.00	0.00
			Max. Mx	5	-49602.16	-	0.00
						4534382.39	
			Max. My	2	-49602.16	0.00	4534382.39
			Max. Vy	5	32436.20	-	0.00
						4534382.39	
			Max. Vx	2	-32436.20	0.00	4534382.39
			Max. Torque	22			-0.03

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P/P _a
L1	195 - 180 (1)	TP24x24x0.281	15.00	0.00	0.0	21.600	20.9282	-4026.56	452050.00	0.009
L2	180 - 130 (2)	TP35.9444x24x0.25	50.00	0.00	0.0	39.000	27.3757	-12990.90	1067650.00	0.012
L3	130 - 85 (3)	TP46.1944x34.25x0.3125	50.00	0.00	0.0	39.000	44.0874	-21969.20	1719410.00	0.013
L4	85 - 81 (4)	TP46.525x44.1361x0.3125	10.00	0.00	0.0	39.000	45.8370	-25011.40	1787640.00	0.014
L5	81 - 41 (5)	TP55.4556x46.525x0.375	40.00	0.00	0.0	39.000	63.6995	-33799.40	2484280.00	0.014
L6	41 - 0 (6)	TP64.5x53.1427x0.375	48.00	0.00	0.0	36.657	76.3248	-49602.20	2797840.00	0.018

Pole Bending Design Data

RISATower Vertical Structures, Inc. 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job	Morris, CT (CT-01501-S)	Page	8 of 8
	Project	Vertical Structures Job #2006-007-033	Date	15:08:59 10/19/06
	Client	SBA	Designed by	ptaneja

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	195 - 180 (1)	TP24x24x0.281	73082.7 5	-7.141	23.760	0.301	0.00	0.000	23.760	0.000
L2	180 - 130 (2)	TP35.9444x24x0.25	840083. 33	-43.230	39.000	1.108	0.00	0.000	39.000	0.000
L3	130 - 85 (3)	TP46.1944x34.25x0.3125	1881458 33	-46.652	39.000	1.196	0.00	0.000	39.000	0.000
L4	85 - 81 (4)	TP46.525x44.1361x0.3125	2141158 33	-49.103	39.000	1.259	0.00	0.000	39.000	0.000
L5	81 - 41 (5)	TP55.4556x46.525x0.375	3056550 00	-43.565	39.000	1.117	0.00	0.000	39.000	0.000
L6	41 - 0 (6)	TP64.5x53.1427x0.375	4534408 33	-44.964	36.657	1.227	0.00	0.000	36.657	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio P P_a	Ratio f_{bx} F_{bx}	Ratio f_{by} F_{by}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 180 (1)	TP24x24x0.281	0.009	0.301	0.000	0.309 ✓	1.333	H1-3 ✓
L2	180 - 130 (2)	TP35.9444x24x0.25	0.012	1.108	0.000	1.121 ✓	1.333	H1-3 ✓
L3	130 - 85 (3)	TP46.1944x34.25x0.3125	0.013	1.196	0.000	1.209 ✓	1.333	H1-3 ✓
L4	85 - 81 (4)	TP46.525x44.1361x0.3125	0.014	1.259	0.000	1.273 ✓	1.333	H1-3 ✓
L5	81 - 41 (5)	TP55.4556x46.525x0.375	0.014	1.117	0.000	1.131 ✓	1.333	H1-3 ✓
L6	41 - 0 (6)	TP64.5x53.1427x0.375	0.018	1.227	0.000	1.244 ✓	1.333	H1-3 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF* P_{allow} lb	% Capacity	Pass Fail
L1	195 - 180	Pole	TP24x24x0.281	1	-4026.56	602582.62	23.2	Pass
L2	180 - 130	Pole	TP35.9444x24x0.25	2	-12990.90	1423177.39	84.1	Pass
L3	130 - 85	Pole	TP46.1944x34.25x0.3125	3	-21969.20	2291973.43	90.7	Pass
L4	85 - 81	Pole	TP46.525x44.1361x0.3125	4	-25011.40	2382924.02	95.5	Pass
L5	81 - 41	Pole	TP55.4556x46.525x0.375	5	-33799.40	3311545.10	84.8	Pass
L6	41 - 0	Pole	TP64.5x53.1427x0.375	6	-49602.20	3729520.57	93.3	Pass
							Summary	
							Pole (L4)	95.5 Pass
							RATING =	95.5 Pass

Exhibit 3

Technical Memo

To: Karina Fournier
From: Farid Marbough - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CTNH357C
Date: November 21, 2006

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile PCS antenna installation on a Monopole at Hard Hill Road, Bethlehem, 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 1935-1945 MHz frequency band.
- 2) The antenna array consists of three sectors, with 1 antennas per sector.
- 3) The model number for each antenna is APXV18-209014-C.
- 4) The antenna center line height is 155 ft.
- 5) The maximum transmit power from any sector is 1019.14 Watts Effective Radiated Power (EIRP) assuming 8 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.

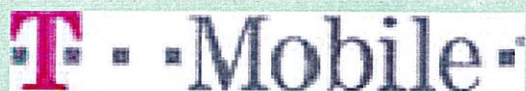
Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile PCS antenna installation on a Monopole at Hard Hill Road, Bethlehem, CT, is 0.01007 mW/cm². This value represents 1.007% 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 18.6%. The combined Power Density for the site is 19.607% of the M.P.E. standard.

New England Market



Worst Case Power Density

Site:	CTNH357C
Site Address:	Hard Hill Road
Town:	Bethlehem
Tower Height:	195 ft.
Tower Style:	Monopole
Base Station TX output	13 W
Number of channels	8
Antenna Model	APXV18-209014-C
Cable Size	1 5/8
Cable Length	180 ft.
Antenna Height	155.0 ft.
Ground Reflection	1.6
Frequency	1945.0 MHz
Jumper & Connector loss	4.50 dB
Antenna Gain	16.5 dBi
Cable Loss per foot	0.0116 dB
Total Cable Loss	2.0880 dB
Total Attenuation	6.5880 dB
Total EIRP per Channel	51.05 dBm
(In Watts)	127.39 W
Total EIRP per Sector	60.08 dBm
(In Watts)	1019.14 W
nsg	9.9120
Power Density (S) =	0.010071 mW/cm^2
T-Mobile Worst Case % MPE =	1.0071%
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	5.1400 %
Cingular	6.9300 %
Sprint PCS	2.0800 %
AT&T Wireless	
Nextel	4.4500 %
Total Excluding T-Mobile	18.6000 %
T-Mobile	1.0071
Total % MPE for Site	19.6071%