

December 17, 2010

VIA UPS

ORIGINAL

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: T-Mobile Northeast LLC – exempt modification
811 Stonington Road, Stonington, Connecticut

RECEIVED
DEC 20 2010
CONNECTICUT
SITING COUNCIL

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC (“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 is modifying 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 First Selectman of Stonington.

T-Mobile plans to modify the existing facility at 811 Stonington Road, Stonington, owned by SBA (coordinates 41°21’12” N, -71°53’13” W). Attached are a compound 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 antenna configuration will be mounted at the 135’ height within the flagpole tower. T-Mobile will replace the three existing panel antennas with three different antennas. One coaxial cable will also be installed. The proposed modifications will not extend the height of the tower.

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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 4.973%; the combined site operations will result in a total power density of 24.891%.

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

Respectfully yours,

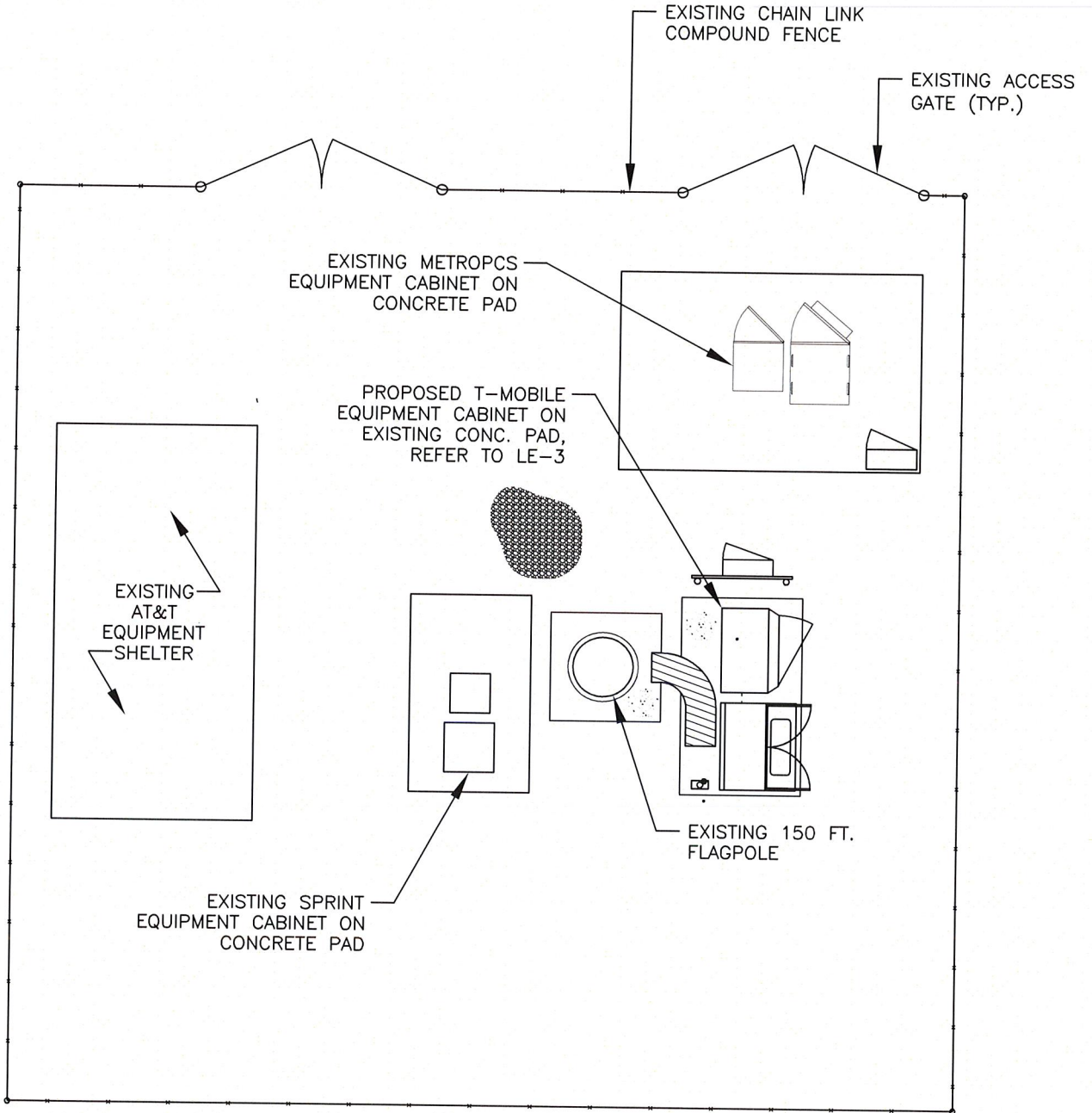


Jennifer Young Gaudet

cc: Honorable Edward Haberek, Jr., First Selectman, Town of Stonington
Phillip C. McClellan (underlying property owner)

Attachments

NORTH



NOTE: COMPOUND PLAN IS BASED ON EXISTING T-MOBILE DRAWINGS DATED 6-18-01 AND A DESIGN VISIT ON 8-3-10 AND IS SUBJECT TO A CURRENT COMPOUND FIELD SURVEY.

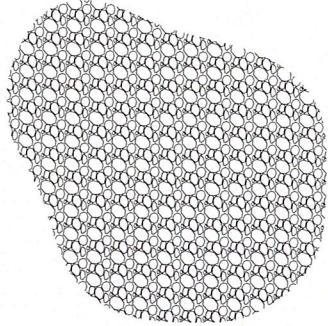
1
LE-2

COMPOUND PLAN

Scale: 1/8"=1'-0"

Approved By: OWNER/SAC: _____ DATE: _____	Client: T-MOBILE NORTHEAST LLC (“T-Mobile Northeast”), a Delaware Limited Liability Company and wholly-owned subsidiary of T-Mobile USA 35 GRIFFIN ROAD SOUTH, BLOOMFIELD, CT 06002	Project: SBA TOWERS CT01493 CO-LO
Approved By: CONSTRUCTION: _____ DATE: _____		Address: 811 STONINGTON RD. STONINGTON, CT 06378
Approved By: RF ENGINEER: _____ DATE: _____		Site ID: CT11310A Project Name: UMTS
On Air Engineering, LLC 88 FOUNDRY POND RD., COLD SPRING, NY 10516	DEVELOPMENT LLC	Drawn: AG Chkd. by: DW Date: 10-14-10 V2 Drawing Title: COMPOUND PLAN Drawing No. LE-2

NORTH



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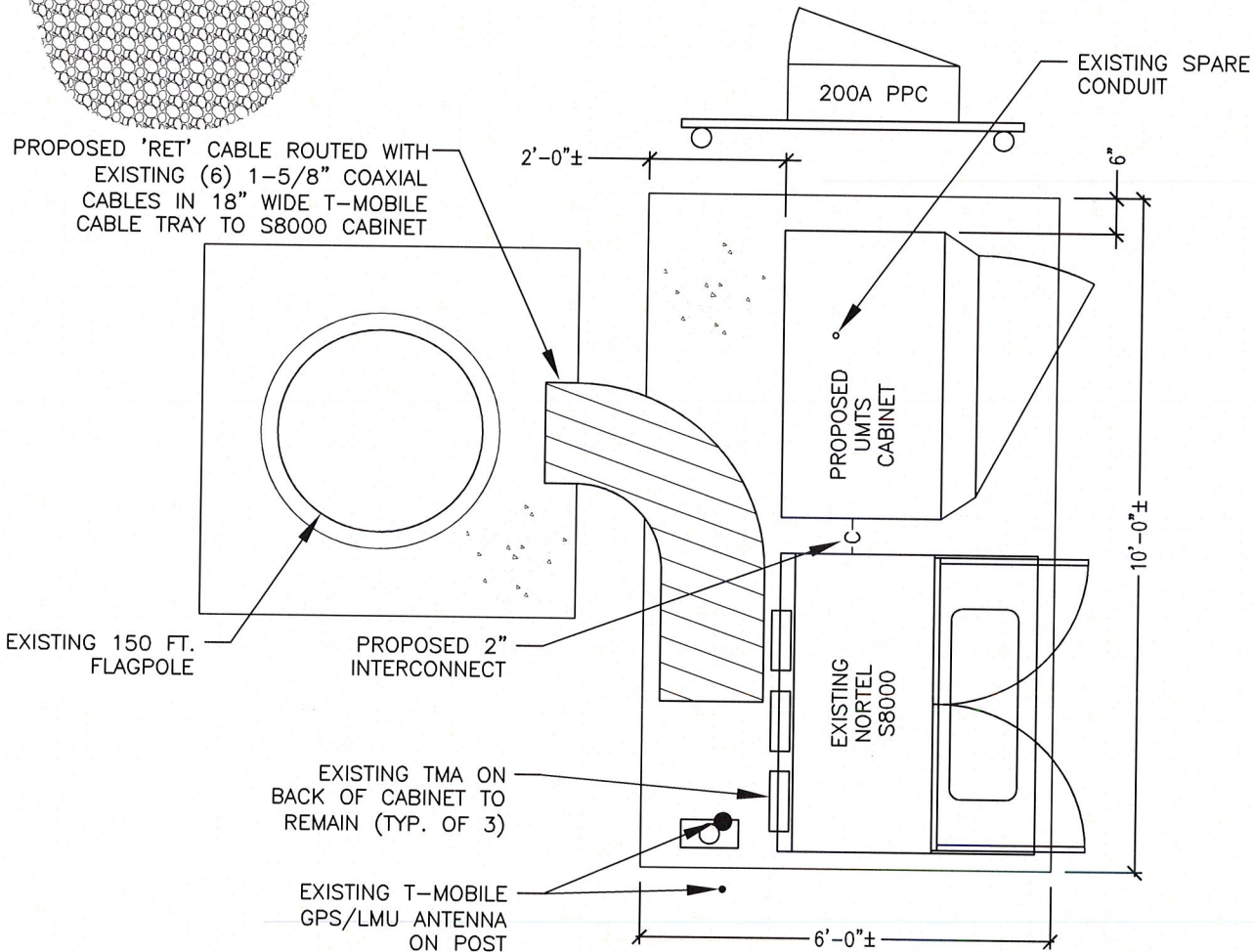
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(E) (1) NORTEL S8000 CABINET TO REMAIN

ANTENNAS (3): (3) NEW DUAL POLE APXV18-206516L ANTENNAS TO REPLACE EXISTING (3) ANTENNAS

TMA's (3): (E) (3) TMA's TO REMAIN

DIPLEXERS (6): (N) (6) INSIDE UMTS CABINET

COAX (6): (E) (6) 1-5/8" COAX CABLES TO REMAIN FOR GSM AND SHARED UMTS; ADD (1) 'RET' CABLE



1
LE-3

EQUIPMENT PLAN

Scale: 3/8"=1'-0"

Approved By:
OWNER/SAC: _____ DATE: _____

Approved By:
CONSTRUCTION: _____ DATE: _____

Approved By:
RF ENGINEER: _____ DATE: _____

Client:

T-MOBILE NORTHEAST LLC

(*T-Mobile Northeast*), a Delaware Limited Liability Company and wholly-owned subsidiary of T-Mobile USA

35 GRIFFIN ROAD SOUTH, BLOOMFIELD, CT 06002

Project: SBA TOWERS CT01493 CO-LO

Address: 811 STONINGTON RD.
STONINGTON, CT 06378

Site ID: CT11310A

Project Name: UMTS

On Air Engineering, LLC
88 FOUNDRY POND RD., COLD SPRING, NY 10516



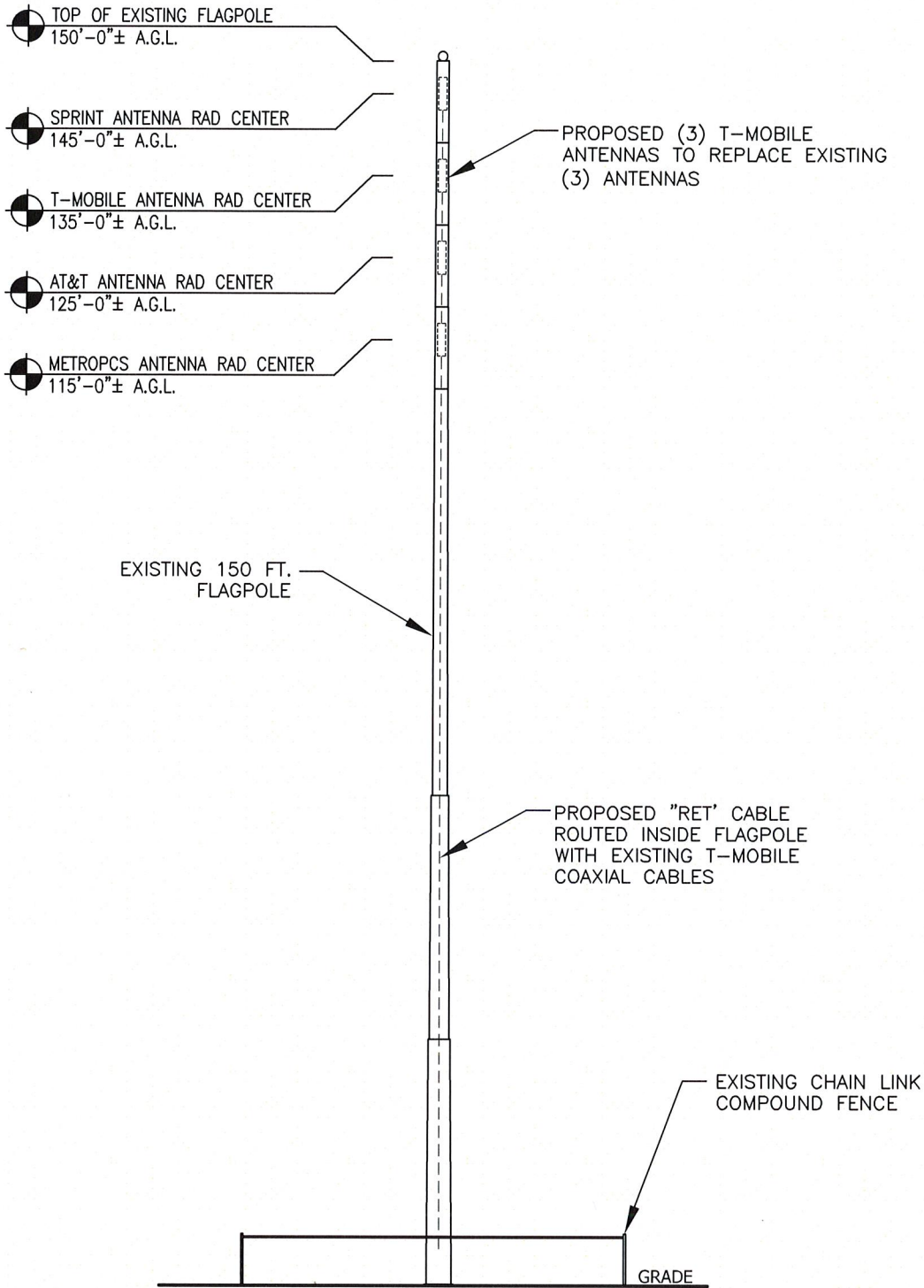
Drawn: AG

Chkd. by: DW

Date: 10-14-10 V2

Drawing Title: EQUIPMENT PLAN

Drawing No. LE-3



NOTE: FLAGPOLE CARRIER LOCATIONS IS BASED ON CLIMBING INVENTORY PROVIDED BY T-MOBILE

1
LE-4

ELEVATION

Scale: 1"=20'-0"

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		Drawing Title: ELEVATION
		Drawing No. LE-4

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

150 ft Monopole

**SBA Site Name: North Stonington 2
SBA Site ID: CT01493-S**

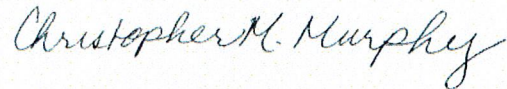
FDH Project Number 10-10198E S1 (R1)

Prepared By:



David Chickering, EI
Project Engineer

Reviewed By:



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

FDH Engineering, Inc.
2730 Rowland Rd.
Raleigh, NC 27615
(919) 755-1012
info@fdh-inc.com

November 9, 2010



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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing monopole located in Stonington, CT to determine whether the tower is structurally adequate to support both 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 (Eng. File No. A-116225) original design drawings dated October 20, 1999, and SBA Network Services.

The *basic design wind speed* per *TIA/EIA-222-F* standards is 85 mph without ice and 74 mph with 1/2" radial ice.

Conclusions

With the existing and proposed loading from T-Mobile at 135 ft. (see **Table 1**), the tower meets the requirements of the *TIA/EIA-222-F* standards provided the **Recommendation** listed below is satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (See PiROD Drawing No. 205502-B), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e. the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been 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 recommendation:

1. Proposed coax should be installed inside the monopole's shaft.

APPURTENANCE LISTING

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

Table 1 – Appurtenance Loading

Existing Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
1-3	145	(2) Decibel DBXLH-9090B-VTM (1) Decibel DBXTH-6565B-1VTM	(6) 7/8" (6) 1-5/8"	Sprint	145	Inside Fiberglass Shroud
4-6	135	(3) EMS RR90-1N02DP	(6) 1-5/8"	T-Mobile	135	Inside Fiberglass Shroud
7-9	125	(3) EMS MB100RR650-200DPAL	(12) 7/8"	Cingular	125	Inside Fiberglass Shroud
10-12	115	(3) Kathrein 742 351	(6) 7/8" (1) 3/8"	Metro PCS	115	Inside Fiberglass Shroud

¹ Coax installed inside the pole's shaft unless otherwise noted.

² The existing loading for T-Mobile at 135' will be altered. See the proposed loading listed below.

Proposed Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
1-3	135 ¹	(3) RFS APXV18-206516L	(6) 1-5/8"	T-Mobile	135	Inside Fiberglass Shroud

¹ This represents the final configuration for T-Mobile at 135'. According to information provided by SBA, T-Mobile will remove their existing antennas and install (3) RFS APXV18-206516L antennas at 135'.

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
Tower Shaft Sections	42 ksi
Base Plate	36 ksi (Assumed)
Anchor Bolts	105 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 4** displays the maximum foundation reactions.

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

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

Table 3 – Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	150 - 110	Fiberglass Shroud + PiROD Weldment	Varies	21.9	Pass
L2	110 - 80	Pole	P24x3/8	34.5	Pass
L3	80 - 50	Pole	P24x3/8	65.2	Pass
L4	50 - 20	Pole	P30x3/8	72.9	Pass
L5	20 - 0	Pole	P36x3/8	69.0	Pass
		Anchor Bolts	(28) 1" \emptyset w/ BC = 39"	55.5	Pass
		Base Plate	42.375" \emptyset PL x 1.25" thk.	OK	Pass

*Capacities include 1/3 allowable increase for wind.

**Based on the design methodology of the manufacturer, the base plate has been sufficiently designed to resist the full capacity of the bolts and shaft.

Table 4 – Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	18 k	19 k
Shear	8 k	8 k
Moment	658 k-ft	671 k-ft

GENERAL COMMENTS

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

Technical Memo

To: Transcend
From: Amir Uzzaman - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11310A
Date: December 15, 2010

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a MP at 811 Stonington Road, Stonington, 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:

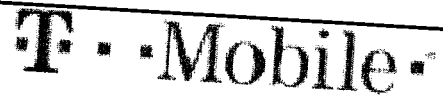
- 1) The emissions from T-Mobile transmitters are in the (1935-1944.8), (1983-1984), (2140-2145)MHz frequency Band.
- 2) The antenna array consists of three sectors, with 1 antenna per sector.
- 3) The model number for GSM antenna is APXV18-206516.
- 3) The model number for UMTS antenna is APXV18-206516.
- 4) GSM antenna center line height is 135 ft.
- 4) UMTS antenna center line height is 135 ft.
- 5) The maximum transmit power from any GSM sector is 1646.34 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 2125.64 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 MP at 811 Stonington Road, Stonington, CT, is 0.04973 mW/cm². This value represents 4.973% 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 19.918%. The combined Power Density for the site is 24.891% of the M.P.E. standard.

Connecticut Market



Worst Case Power Density
Site: CT11310A
Site Address: 811 Stonington Road
Town: Stonington
Tower Height: 150 ft.
Tower Style: MP

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	APXV18-206516	Antenna Model	
Cable Size	7/8	Cable Size	7/8
Cable Length		Cable Length	
Antenna Height		Antenna Height	
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	17.6 dBi	Antenna Gain	17.6 dBi
Cable Loss per foot	0.0186 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	2.9760 dB	Total Cable Loss	1.8560 dB
Total Attenuation	7.4760 dB	Total Attenuation	3.3560 dB
Total EIRP per Channel (In Watts)	53.13 dBm	Total EIRP per Channel (In Watts)	60.26 dBm
Total EIRP per Sector (In Watts)	205.79 W	Total EIRP per Sector (In Watts)	1062.82 W
nsg	1646.34 W	nsg	63.27 dBm
	10.1240		2125.64 W
Power Density (S) = 0.021705 mW/cm ²		Power Density (S) = 0.028024 mW/cm ²	
T-Mobile Worst Case % MPE = 4.9729%			

Equation Used:

$$S = \frac{(1000)(grf)^2 (Power) \cdot 10^{(nsg/10)}}{4\pi (R)^2}$$

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Co-Location Total

Carrier	% of Standard
Sprint	12.0080 %
MetroPCS	3.6200 %
Cingular	2.3200 %
Cingular	1.9700 %
MetroPCS	
Nextel	
Other Antenna Systems	
Total Excluding T-Mobile	19.9180 %
T-Mobile	4.9729
Total % MPE for Site	24.8909%

December 17, 2010

VIA UPS

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New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

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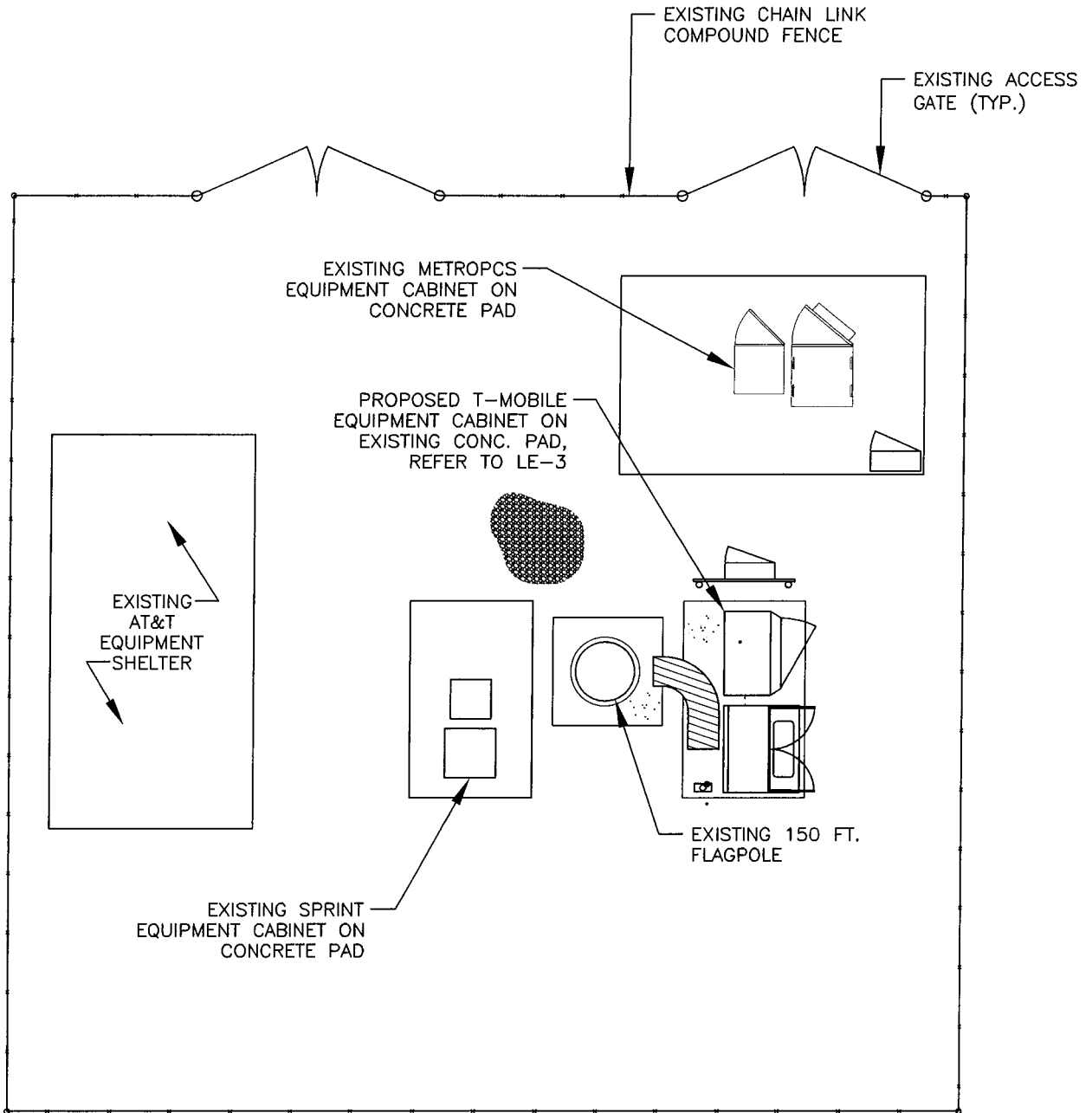
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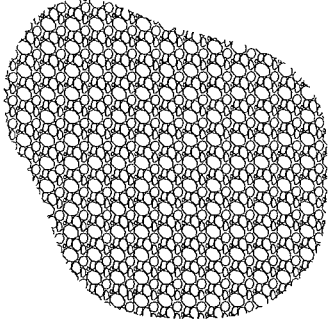
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On Air Engineering, LLC 88 FOUNDRY POND RD., COLD SPRING, NY 10516	DEVELOPMENT <small>ENGINEERING & ARCHITECTURE</small>	Drawn: AG Chkd. by: DW Date: 10-14-10 V2 Drawing Title: COMPOUND PLAN Drawing No.: LE-2

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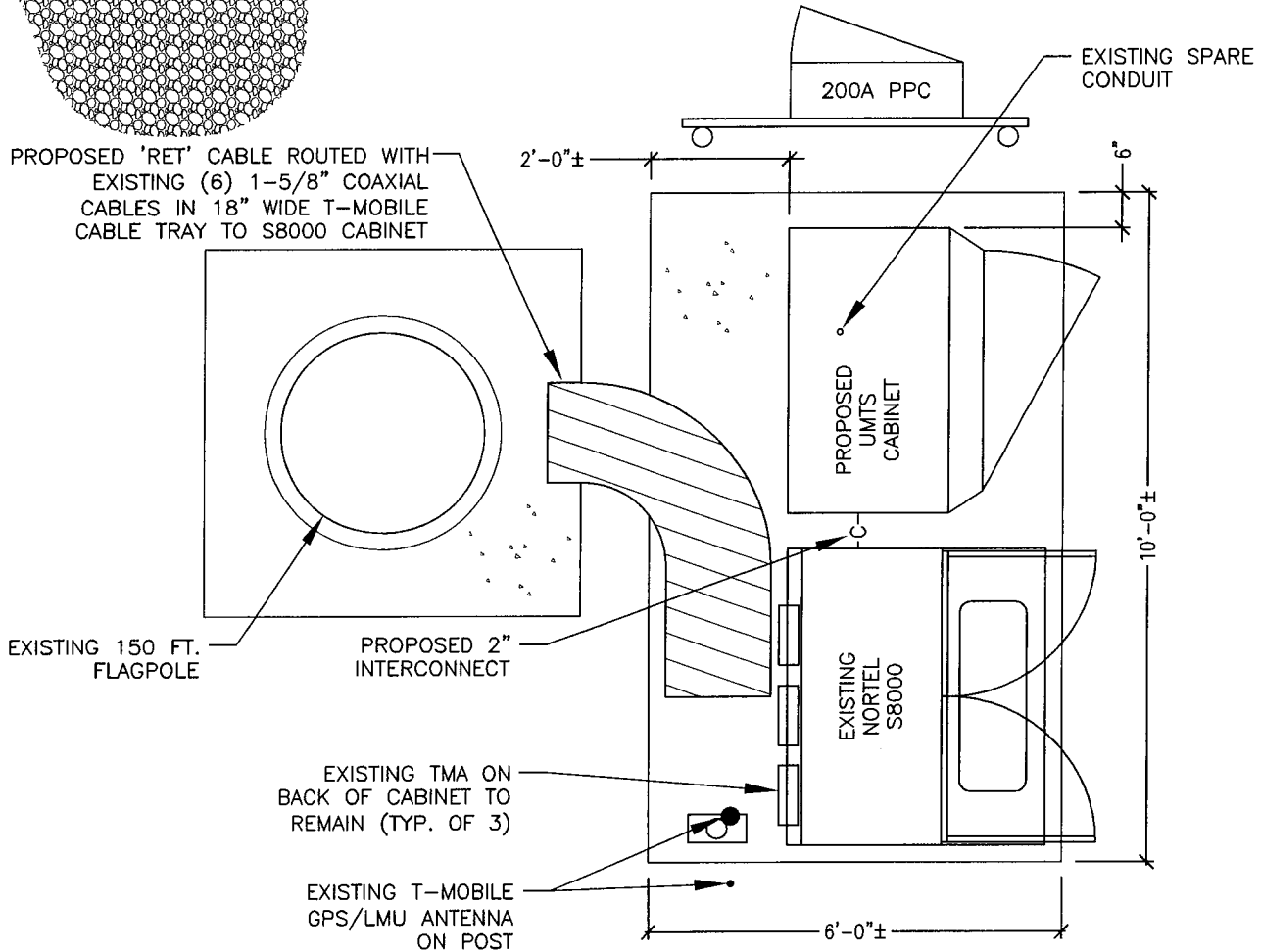
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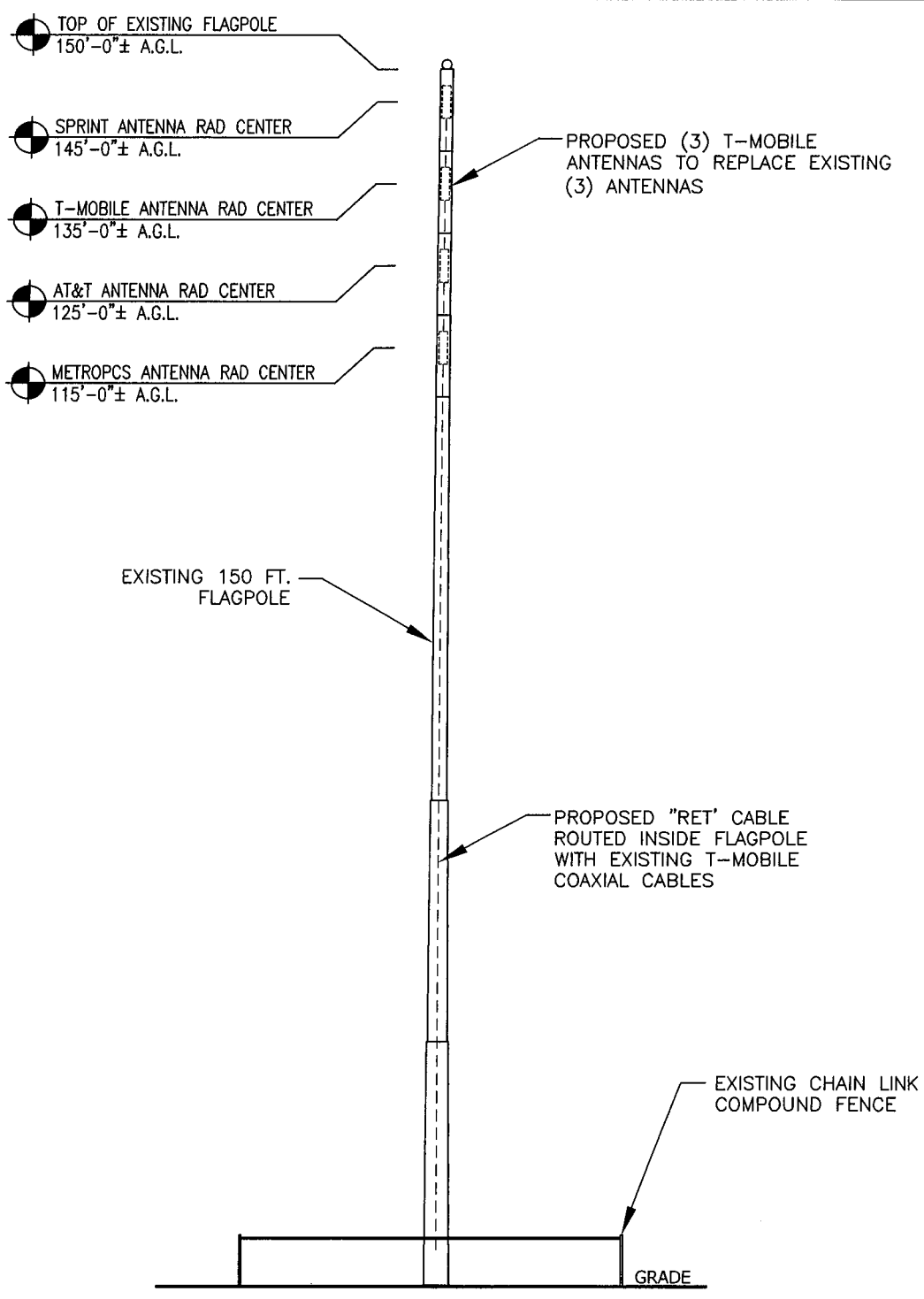


1
LE-3

EQUIPMENT PLAN

Scale: 3/8"=1'-0"

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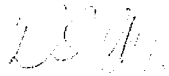
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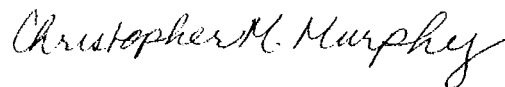
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Prepared By:



David Chickering, EI
Project Engineer

Reviewed By:



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

FDH Engineering, Inc.

2730 Rowland Rd.
Raleigh, NC 27615
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November 9, 2010

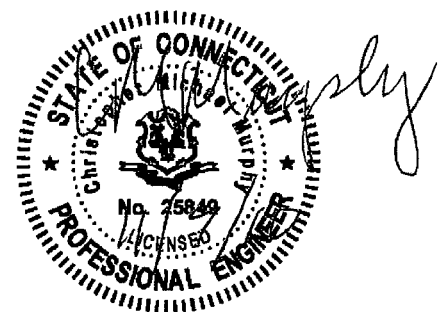


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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing monopole located in Stonington, CT to determine whether the tower is structurally adequate to support both 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 (Eng. File No. A-116225) original design drawings dated October 20, 1999, and SBA Network Services.

The *basic design wind speed* per *TIA/EIA-222-F* standards is 85 mph without ice and 74 mph with 1/2" radial ice.

Conclusions

With the existing and proposed loading from T-Mobile at 135 ft. (see **Table 1**), the tower meets the requirements of the *TIA/EIA-222-F* standards provided the **Recommendation** listed below is satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (See PiROD Drawing No. 205502-B), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e. the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been 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 recommendation:

1. Proposed coax should be installed inside the monopole's shaft.

APPURTENANCE LISTING

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

Table 1 – Appurtenance Loading

Existing Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
1-3	145	(2) Decibel DBXLH-9090B-VTM (1) Decibel DBXTH-6565B-1VTM	(6) 7/8" (6) 1-5/8"	Sprint	145	Inside Fiberglass Shroud
4-6	135	(3) EMS RR90-1N02DP	(6) 1-5/8"	T-Mobile	135	Inside Fiberglass Shroud
7-9	125	(3) EMS MB100RR650-200DPAL	(12) 7/8"	Cingular	125	Inside Fiberglass Shroud
10-12	115	(3) Kathrein 742 351	(6) 7/8" (1) 3/8"	Metro PCS	115	Inside Fiberglass Shroud

¹ Coax installed inside the pole's shaft unless otherwise noted.

² The existing loading for T-Mobile at 135' will be altered. See the proposed loading listed below.

Proposed Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
1-3	135 ¹	(3) RFS APXV18-206516L	(6) 1-5/8"	T-Mobile	135	Inside Fiberglass Shroud

¹ This represents the final configuration for T-Mobile at 135'. According to information provided by SBA, T-Mobile will remove their existing antennas and install (3) RFS APXV18-206516L antennas at 135'.

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
Tower Shaft Sections	42 ksi
Base Plate	36 ksi (Assumed)
Anchor Bolts	105 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 4** displays the maximum foundation reactions.

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

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

Table 3 – Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	150 - 110	Fiberglass Shroud + PiROD Weldment	Varies	21.9	Pass
L2	110 - 80	Pole	P24x3/8	34.5	Pass
L3	80 - 50	Pole	P24x3/8	65.2	Pass
L4	50 - 20	Pole	P30x3/8	72.9	Pass
L5	20 - 0	Pole	P36x3/8	69.0	Pass
		Anchor Bolts	(28) 1" ϕ w/ BC = 39"	55.5	Pass
		Base Plate	42.375" ϕ PL x 1.25" thk.	OK	Pass

*Capacities include 1/3 allowable increase for wind.

**Based on the design methodology of the manufacturer, the base plate has been sufficiently designed to resist the full capacity of the bolts and shaft.

Table 4 – Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	18 k	19 k
Shear	8 k	8 k
Moment	658 k-ft	671 k-ft

GENERAL COMMENTS

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

Technical Memo

To: Transcend
From: Amir Uzzaman - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11310A
Date: December 15, 2010

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a MP at 811 Stonington Road, Stonington, 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 (1935-1944.8), (1983-1984), (2140-2145)MHz frequency Band.
- 2) The antenna array consists of three sectors, with 1 antenna per sector.
- 3) The model number for GSM antenna is APXV18-206516.
- 3) The model number for UMTS antenna is APXV18-206516.
- 4) GSM antenna center line height is 135 ft.
- 4) UMTS antenna center line height is 135 ft.
- 5) The maximum transmit power from any GSM sector is 1646.34 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
- 5) The maximum transmit power from any UMTS sector is 2125.64 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 MP at 811 Stonington Road, Stonington, CT, is 0.04973 mW/cm². This value represents 4.973% 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 19.918%. The combined Power Density for the site is 24.891% of the M.P.E. standard.

Connecticut Market



Worst Case Power Density

Site: CT11310A
Site Address: 811 Stonington Road
Town: Stonington
Tower Height: 150 ft.
Tower Style: MP

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	APXV18-206516	Antenna Model	APXV18-206516
Cable Size	7/8	Cable Size	7/8
Cable Length	150 ft	Cable Length	150 ft
Antenna Height	150 ft	Antenna Height	150 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	17.6 dBi	Antenna Gain	17.6 dBi
Cable Loss per foot	0.0186 dB	Cable Loss per foot	0.0116 dB
Total Cable Loss	2.9760 dB	Total Cable Loss	1.8560 dB
Total Attenuation	7.4760 dB	Total Attenuation	3.3560 dB
Total EIRP per Channel (In Watts)	53.13 dBm 205.79 W	Total EIRP per Channel (In Watts)	60.26 dBm 1062.82 W
Total EIRP per Sector (In Watts)	62.17 dBm 1646.34 W	Total EIRP per Sector (In Watts)	63.27 dBm 2125.64 W
nsg	10.1240	nsg	14.2440
Power Density (S) = 0.021705 mW/cm ²		Power Density (S) = 0.028024 mW/cm ²	
T-Mobile Worst Case % MPE =		4.9729%	
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
Sprint	12.0080 %
MetroPCS	3.6200 %
Cingular	2.3200 %
Cingular	1.9700 %
MetroPCS	
Nextel	
Other Antenna Systems	
Total Excluding T-Mobile	19.9180 %
T-Mobile	4.9729
Total % MPE for Site	24.8909%