March 28, 2014

David Martin and
Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
39 Rich Road
Thompson, CT 06277
N 42° 00' 42"
W -72° 51' 09"

Dear Mr. Martin and Members of the Siting Council:

On behalf of T-Mobile, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 39 Rich Road, Thompson, CT.

The 39 Rich Road facility consists of a 150' Monopole Tower owned and operated by SBA Infrastructure, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

As part of T-Mobile's modernization project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of $625.

The changes to the facility do not constitute modifications 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 or altered. 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 overall height of the structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinets.

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

4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of T-Mobile, respectfully submits that he proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 508.251.0720 x 3804 with any questions you may have concerning this matter.

Thank you,

Kri Pelletier
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbasite.com

# T-Mobile

**Equipment Modification**

39 Rich Road, Thompson, CT 06277
Site number CTNL191D

**Tower Owner:** SBA Infrastructure, LLC

**Equipment Configuration:** Monopole

**Current and/or approved:**

- (3) RFS APXV18-209014
- (3) Com Comm. DTMA-1819-0012 TMAs
- (6) 1-5/8" Feed lines
- (1) ¼" Feed line

**Planned Modifications:**

- (3) Ericsson AIR 21 B2A B4P
- (3) Ericsson AIR 21 B4A B2P
- (3) Ericsson KRY 112 144/1 TMAs
- (12) 1 5/8" Feed lines
- (1) 1 5/8" Fiber

**Structural Information:**

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

**Power Density:**

The anticipated Maximum Composite contributions from the T-Mobile facility are 0.555% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 40.325% of the allowable FCC established general public limit sampled at the ground level.

| Site Composite MPE % | |
|---|---|
| Carrier | MPE % |
| T-Mobile | 0.555% |
| Verizon Wireless | 17.750% |
| AT&T | 22.020% |
| Total Site MPE % | 40.325% |

March 28, 2014

Paul A. Lenky
First Selectman
Town of Thompson
815 Riverside Drive
North Grosvenordale, CT 06255

RE: Telecommunications Facility @ 39 Rich Road, Thompson, CT

Dear Mr. Lenky,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,

Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbasite.com

FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

# Structural Analysis for SBA Network Services, Inc.

**149' Monopole Tower**

**SBA Site Name: Thompson 1**
**SBA Site ID: CT11559-A**
**T-Mobile Site ID: CTNL191D**

FDH Project Number 1424KW1400

**Analysis Results**

| | | |
|---|---|---|
| Tower Components | 63.0% | Sufficient |
| Foundation | 67.7% | Sufficient |

Prepared By:

Jeffrey B. Ray, EI
Project Engineer

Reviewed By:

Brad R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

**FDH Engineering, Inc.**
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com


March 18, 2014

*Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures & 2005 Connecticut State Building Code*

## TABLE OF CONTENTS

## EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in North Grosvenordale, 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* and *2005 Connecticut State Building Code (CSBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, and member sizes was obtained from:

- Fred A. Nudd Corporation (Project No. 308-13019) original design drawings dated April 25, 2008
- FDH, Inc. (Project No. 08-08058T) TIA Inspection Report dated September 15, 2008
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CSBC* is 85 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

### Conclusions

With the existing and proposed antennas from T-Mobile in place at 146.5 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CSBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Nudd Project No. 308-13019), the foundations 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.

### Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and *2005 CSBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The existing coax should be used with the proposed loading.
2. The proposed TMAs should be installed directly behind the proposed panel antennas.

## 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 the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

### Table 1 - Appurtenance Loading

### Existing Loading:

| Antenna Elevation (ft) | Description | Coax and Lines | Carrier | Mount Elevation (ft) | Mount Type |
|---|---|---|---|---|---|
| 148.7 | (3) RFS APXV18-209014<br>(3) Com Comm. DTMA-1819-0012 TMAs | (6) 1-5/8"<br>(1) 1/4" | T-Mobile | 146.5 | (1) 12.5' Low Profile Platform |
| 137 | (3) Antel BXA-70063-6CF<br>(3) Antel BXA-171085-12BF<br>(4) Antel LPA-80080-6CF<br>(2) Antel LPA-4019<br>(6) RFS FD9R6004/2C-3 Diplexers | (12) 1-5/8" | Verizon | 136 | (1) 12.5' Low Profile Platform |
| 127 | (9) Powerwave 7770<br>(3) KMW AM-X-CD-17-65-00T<br>(12) Powerwave LGP21401 TMAs<br>(1) Raycap DC2-48-60-18-8F Surge Arrestor | (12) 1-5/8"<br>(2) 3/4" DC<br>(1) 7/16" Fiber<br>(1) 1/2" RET | Cingular | 127 | (1) Low Profile Platform |
| | (6) Ericsson RRUS-11 RRUs | | | | (1) Collar Mount<br>(Valmont Part No. UPC1) |

1 All coax is located inside the poles shaft unless otherwise noted

### Proposed Loading:

| Antenna Elevation (ft) | Description | Coax and Lines | Carrier | Mount Elevation (ft) | Mount Type |
|---|---|---|---|---|---|
| 148.7 | (3) Ericsson Air B2A B4P<br>(3) Ericsson Air B4A B2P<br>(3) Ericsson KRY 122 144/1 TMAs | (12) 1-5/8"<br>(1) 1-5/8" FIber | T-Mobile | 146.5 | (1) 12.5' Low Profile Platform |

## RESULTS

The following yield strength of steel for individual members was used for analysis:

**Table 2 - Material Strength**

| Member Type | Yield Strength |
|---|---|
| Tower Shaft Sections | 65 ksi |
| Base Plate | 50 ksi |
| 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 | 149 - 107 | Pole | TP35.8125x25.875x0.25 | 40.2 | Pass |
| L2 | 107 - 62 | Pole | TP45.875x34.1295x0.3125 | 59.2 | Pass |
| L3 | 62 - 18 | Pole | TP55.625x43.8405x0.375 | 60.0 | Pass |
| L4 | 18 - 0 | Pole | TP59.0625x53.2252x0.4375 | 55.6 | Pass |
| | | Anchor Bolts | (18) 2"ø w/ BC = 66" | 63.0 | Pass |
| | | Base Plate | PL 72"Ø x 2.75" Thk | 38.1 | Pass |

*Capacities include 1/3 allowable increase for wind.

**Table 4 - Maximum Base Reactions**

| Base Reactions | Current Analysis *(TIA/EIA-222-F)* | Original Design *(TIA/EIA-222-F)* |
|---|---|---|
| Axial | 38 k* | 38 k |
| Shear | 26 k | 36 k |
| Moment | 2,745 k-ft | 4,056 k-ft |

* Per our experience with foundations of similar type, the axial loading should not control the foundation analysis.

## GENERAL COMMENTS

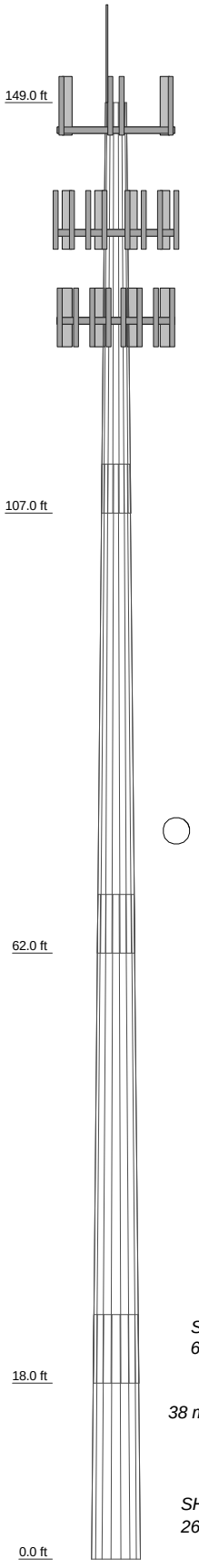
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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.

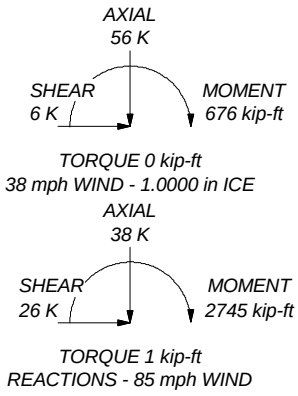
## LIMITATIONS

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.

# APPENDIX

| Section | Length (ft) | Number of Sides | Thickness (in) | Socket Length (ft) | Top Dia (in) | Bot Dia (in) | Grade | Weight (K) |
|---|---|---|---|---|---|---|---|---|
| 1 | 42.00 | 18 | 0.2500 | 5.00 | 25.8750 | 35.8125 | | 3.5 |
| 2 | 50.00 | 18 | 0.3125 | 6.00 | 34.1295 | 45.8750 | | 6.7 |
| 3 | 50.00 | 18 | 0.3750 | 7.00 | 43.8405 | 55.6250 | | 10.0 |
| 4 | 25.00 | 18 | 0.4375 | | 53.2252 | 59.0625 | | 6.6 |
| | | | | | | | A572-65 | |




## DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|---|---|---|---|
| Lightning Rod | 149 | (2) FD9R6004/2C-3 Diplexer | 136 |
| AIR 21 B2A/B4P w/Mount Pipe | 146.5 | (2) FD9R6004/2C-3 Diplexer | 136 |
| AIR 21 B2A/B4P w/Mount Pipe | 146.5 | (2) FD9R6004/2C-3 Diplexer | 136 |
| AIR 21 B2A/B4P w/Mount Pipe | 146.5 | (1) 12.5' Low Profile Platform | 136 |
| AIR 21 B4A/B2P w/Mount Pipe | 146.5 | (3) 7770 w/ Mount Pipe | 127 |
| AIR 21 B4A/B2P w/Mount Pipe | 146.5 | (3) 7770 w/ Mount Pipe | 127 |
| AIR 21 B4A/B2P w/Mount Pipe | 146.5 | (3) 7770 w/ Mount Pipe | 127 |
| KRY 112 144/1 | 146.5 | AM-X-CD-17-65-00T-RET w/ Mount Pipe | 127 |
| KRY 112 144/1 | 146.5 | | |
| KRY 112 144/1 | 146.5 | AM-X-CD-17-65-00T-RET w/ Mount Pipe | 127 |
| (1) 12.5' Low Profile Platform | 146.5 | | |
| BXA-70063/6CF w/ Mount Pipe | 136 | AM-X-CD-17-65-00T-RET w/ Mount Pipe | 127 |
| BXA-70063/6CF w/ Mount Pipe | 136 | | |
| BXA-70063/6CF w/ Mount Pipe | 136 | (2) RRUS 11 | 127 |
| BXA-171085-12BF w/ Mount Pipe | 136 | (2) RRUS 11 | 127 |
| BXA-171085-12BF w/ Mount Pipe | 136 | (2) RRUS 11 | 127 |
| BXA-171085-12BF w/ Mount Pipe | 136 | (4) LGP21401 TMA | 127 |
| LPA-80080/6CF w/ Mount Pipe | 136 | (4) LGP21401 TMA | 127 |
| (2) LPA-80080/6CF w/ Mount Pipe | 136 | (4) LGP21401 TMA | 127 |
| LPA-80080/6CF w/ Mount Pipe | 136 | DC2-48-60-18-8F Surge Arrestor | 127 |
| LPA-4019 W/ Mount Pipe | 136 | (1) Low Profile Platform | 127 |
| LPA-4019 W/ Mount Pipe | 136 | Collar Mount | 127 |

## MATERIAL STRENGTH

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

## TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 60%


FDH Engineering, Inc.
6521 Meridien Drive, Suite 107
Raleigh, North Carolina
Phone: 9197551012
FAX: 9197551031


Tower Analysis

| | | | |
|---|---|---|---|
| Job: Thompson 1, CT11559-A | | | |
| Project: 1424KW1400 | | | |
| Client: SBA Network Services, Inc. | Drawn by: Jeffrey B. Ray | App'd: | |
| Code: TIA/EIA-222-F | Date: 03/18/14 | Scale: NTS | |
| Path: | | Dwg No. E-1 | |

EBI Consulting
environmental | engineering | due diligence

# RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
# EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTNL191D

MCF Town Lot FT

38 Rich Road
Thompson, CT 06227

**March 26, 2014**

**EBI Project Number: 62141772**

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

March 26, 2014

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Re: Emissions Values for Site: **CTNL191D - MCF Town Lot FT**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 38 Rich Road, Thompson, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (µW/cm2). The general population exposure limit for the cellular band is 567 µW/cm2, and the general population exposure limit for the PCS and AWS bands is 1000 µW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 38 Rich Road, Thompson, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM / UMTS channels (1935.000 MHz to 1945.000 MHz / 1983.000 MHz to 1984.000 MHz ) were considered for each sector of the proposed installation.
2) 4 UMTS / LTE channels (2110.000 to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation 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.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

6) The antenna mounting height centerline of the proposed antennas is **148.7 feet** above ground level (AGL)
7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

| Site ID | CTNL191D - MCF Town Lot FT |
|---|---|
| Site Addresss | 38 Rich Road, Thompson, CT 06227 |
| Site Type | Monopole |

**Sector 1**

| Antenna Number | Antenna Make | Antenna Model | Status | Frequency Band | Technology | Power Out Per Channel (Watts) | Number of Channels | Composite Power | Antenna Gain in direction of sample point (dBd) | Antenna Height (ft) | analysis height | Cable Size | Cable Loss (dB) | Additional Loss | ERP | Power Density Value | Power Density Percentage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | Ericsson | AIR21 B4A/B2P | Active | AWS - 2100 MHz | LTE | 60 | 2 | 120 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 48.326044 | 0.853177 | 0.08532% |
| 1b | Ericsson | AIR21 B4A/B2P | Not Used | - | - | | | 0 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 0 | 0 | 0.00000% |
| 2a | Ericsson | AIR21 B2A / B4P | Active | PCS - 1950 MHz | GSM / UMTS | 30 | 2 | 60 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 24.163022 | 0.426589 | 0.04266% |
| 1b | Ericsson | AIR21 B4A/B2P | Passive | AWS - 2100 MHz | UMTS | 40 | 2 | 80 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 32.217363 | 0.568785 | 0.05688% |
| | | | | | | | | | | | | | | Sector total Power Density Value: | | 0.185% | |

**Sector 2**

| Antenna Number | Antenna Make | Antenna Model | Status | Frequency Band | Technology | Power Out Per Channel (Watts) | Number of Channels | Composite Power | Antenna Gain in direction of sample point (dBd) | Antenna Height (ft) | analysis height | Cable Size | Cable Loss (dB) | Additional Loss | ERP | Power Density Value | Power Density Percentage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | Ericsson | AIR21 B4A/B2P | Active | AWS - 2100 MHz | LTE | 60 | 2 | 120 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 48.326044 | 0.853177 | 0.08532% |
| 1b | Ericsson | AIR21 B4A/B2P | Not Used | - | - | | | 0 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 0 | 0 | 0.00000% |
| 2a | Ericsson | AIR21 B2A / B4P | Active | PCS - 1950 MHz | GSM / UMTS | 30 | 2 | 60 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 24.163022 | 0.426589 | 0.04266% |
| 1b | Ericsson | AIR21 B4A/B2P | Passive | AWS - 2100 MHz | UMTS | 40 | 2 | 80 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 32.217363 | 0.568785 | 0.05688% |
| | | | | | | | | | | | | | | Sector total Power Density Value: | | 0.185% | |

**Sector 3**

| Antenna Number | Antenna Make | Antenna Model | Status | Frequency Band | Technology | Power Out Per Channel (Watts) | Number of Channels | Composite Power | Antenna Gain in direction of sample point (dBd) | Antenna Height (ft) | analysis height | Cable Size | Cable Loss (dB) | Additional Loss | ERP | Power Density Value | Power Density Percentage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | Ericsson | AIR21 B4A/B2P | Active | AWS - 2100 MHz | LTE | 60 | 2 | 120 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 48.326044 | 0.853177 | 0.08532% |
| 1b | Ericsson | AIR21 B4A/B2P | Not Used | - | - | | | 0 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 0 | 0 | 0.00000% |
| 2a | Ericsson | AIR21 B2A / B4P | Active | PCS - 1950 MHz | GSM / UMTS | 30 | 2 | 60 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 24.163022 | 0.426589 | 0.04266% |
| 1b | Ericsson | AIR21 B4A/B2P | Passive | AWS - 2100 MHz | UMTS | 40 | 2 | 80 | -3.95 | 148.7 | 142.7 | None | 0 | 0 | 32.217363 | 0.568785 | 0.05688% |
| | | | | | | | | | | | | | | Sector total Power Density Value: | | 0.185% | |

**Site Composite MPE %**

| Carrier | MPE % |
|---|---|
| T-Mobile | 0.555% |
| Verizon Wireless | 17.750% |
| AT&T | 22.020% |
| **Total Site MPE %** | **40.325%** |

EBI Consulting
environmental | engineering | due diligence

## Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

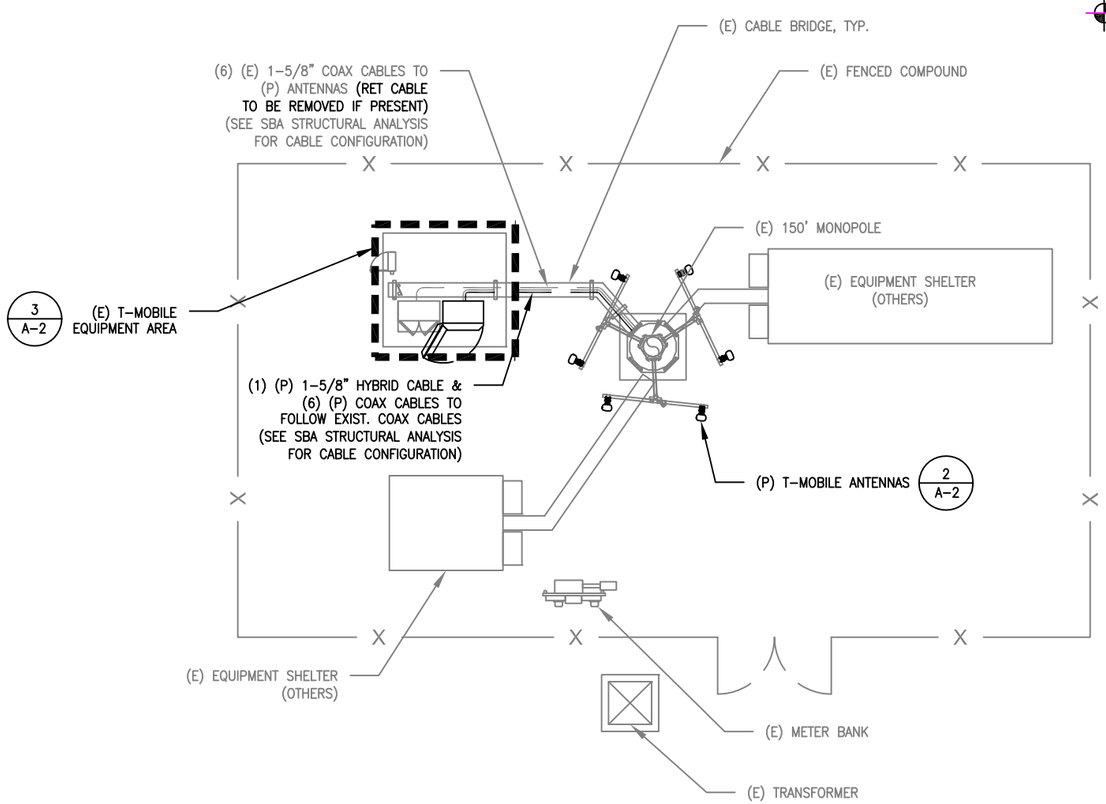
The anticipated Maximum Composite contributions from the T-Mobile facility are **0.555% (0.185% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

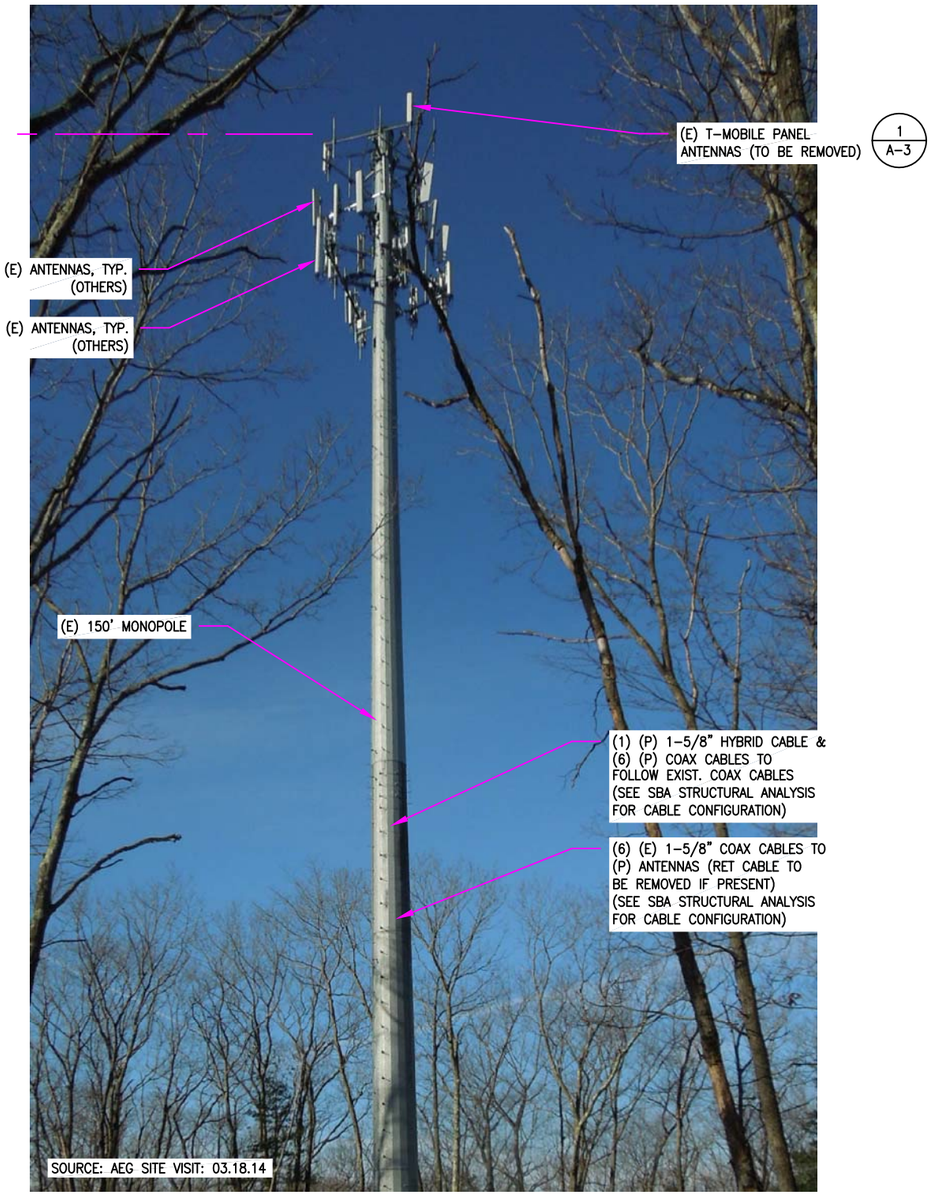
The anticipated composite MPE value for this site assuming all carriers present is **40.325%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

**EBI Consulting**
21 B Street
Burlington, MA 01803




STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED
PROFESSIONAL ENGINEER

1 A-1 **PARTIAL COMPOUND PLAN**
SCALE: 1/16"=1'-0"
0' 8'-0" 16'-0" 32'-0"

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

2 A-1 **EXISTING ELEVATION**
SCALE: NTS

*NOTE:
ANTENNA ELEVATION BASED ON CLIENT-PROVIDED INFORMATION

ADVANCED ENGINEERING GROUP, P.C.
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SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752
PHONE: 508-251-0720

**SITE NUMBER: CTNL191D**
**SITE NAME: NL191/MCF TOWNLOT FT**
39 Rich Rd., Thompson, CT 06277

**T-MOBILE NORTHEAST LLC**
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

| NO. | DATE | REVISIONS | BY | CHK | APP'D |
|---|---|---|---|---|---|
| 0 | 03/21/14 | CONSTRUCTION | SO | SB | MRC |

SCALE: AS SHOWN | DESIGNED BY: MRC | DRAWN BY: SO

**T-MOBILE**
COMPOUND PLAN AND ELEVATION

| JOB NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTNL191D | A-1 | 0 |

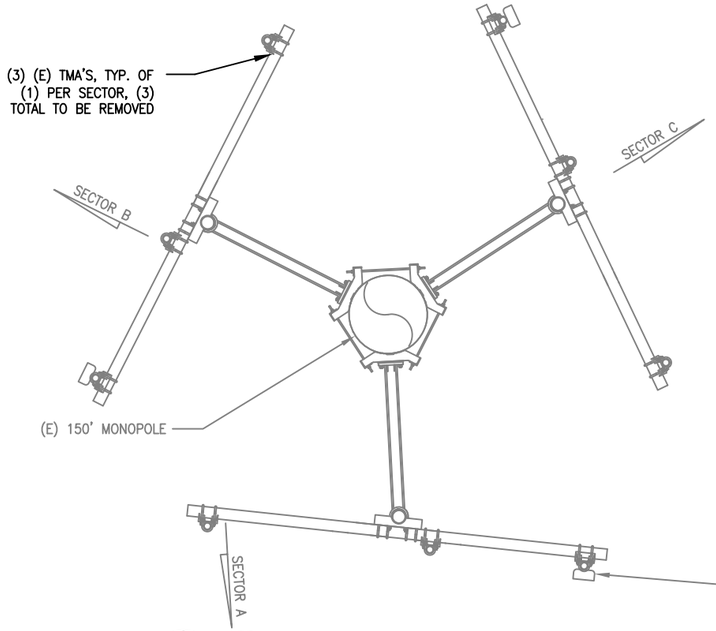
## EXISTING ANTENNA SCHEDULE

| SECTOR | MAKE | MODEL# | SIZE (INCHES) |
|---|---|---|---|
| SECTOR A: | RFS | APXV18-209014 | 6.65x3.15x53 |
| SECTOR B: | RFS | APXV18-209014 | 6.65x3.15x53 |
| SECTOR C: | RFS | APXV18-209014 | 6.65x3.15x53 |

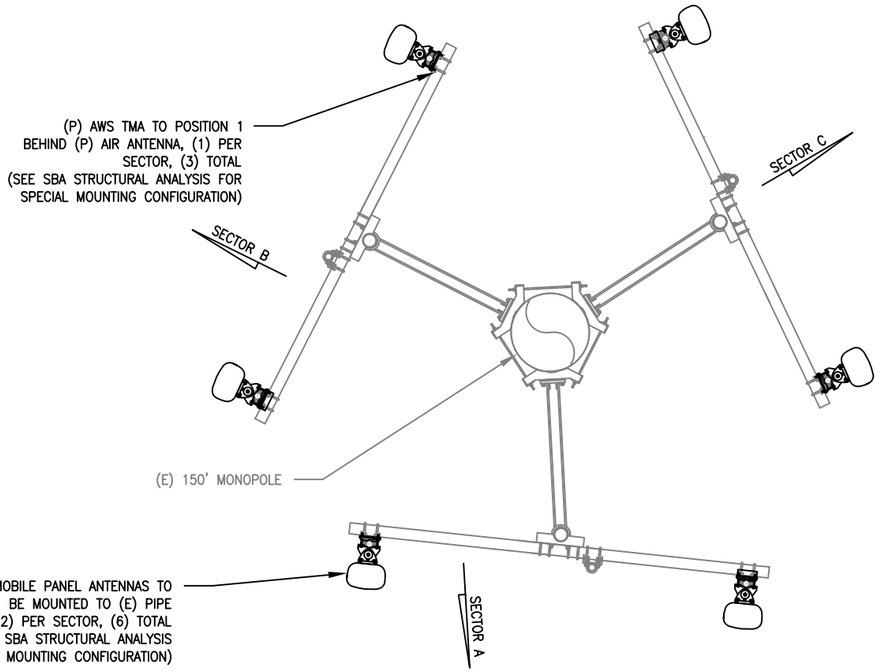
## PROPOSED ANTENNA SCHEDULE

| SECTOR | MAKE | MODEL# | SIZE (INCHES) |
|---|---|---|---|
| SECTOR A: | ERICSSON | AIR21 B2A/B4P | 12x8x56 |
| | ERICSSON | AIR21 B4A/B2P | 12x8x56 |
| SECTOR B: | ERICSSON | AIR21 B2A/B4P | 12x8x56 |
| | ERICSSON | AIR21 B4A/B2P | 12x8x56 |
| SECTOR C: | ERICSSON | AIR21 B2A/B4P | 12x8x56 |
| | ERICSSON | AIR21 B4A/B2P | 12x8x56 |

NOTE:
1. REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

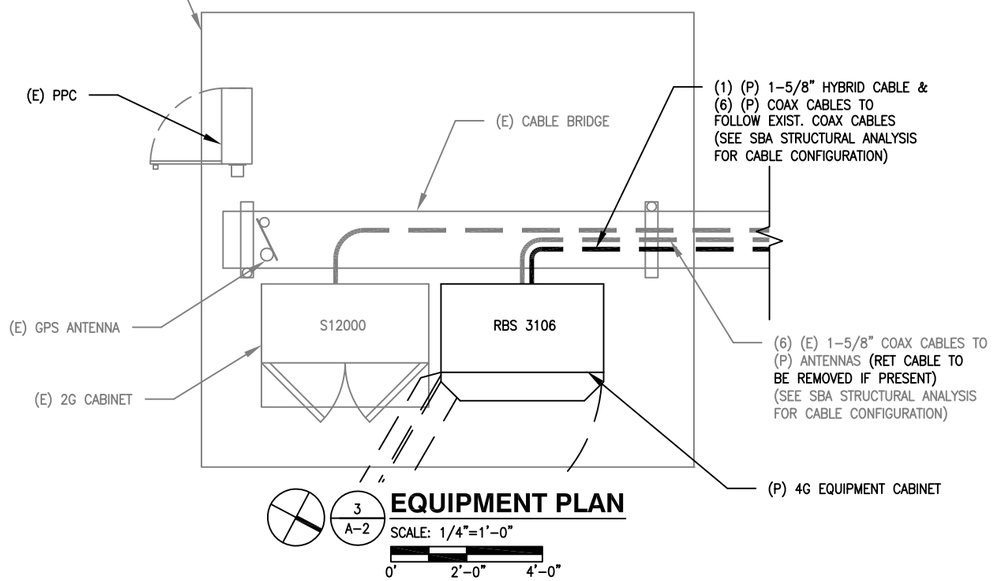



1 A-2 **EXISTING ANTENNA PLAN**
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0"




2 A-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0"

* SPECIAL INSTALLATION NOTE:
PROPOSED ANTENNAS SHALL BE VERTICALLY CENTERED ON EXISTING FRAME RAIL. ADJUST ANTENNA MOUNTING PIPE AS REQUIRED.




3 A-2 **EQUIPMENT PLAN**
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0"


4 A-3 **EXISTING EQUIPMENT AREA.**
N.T.S.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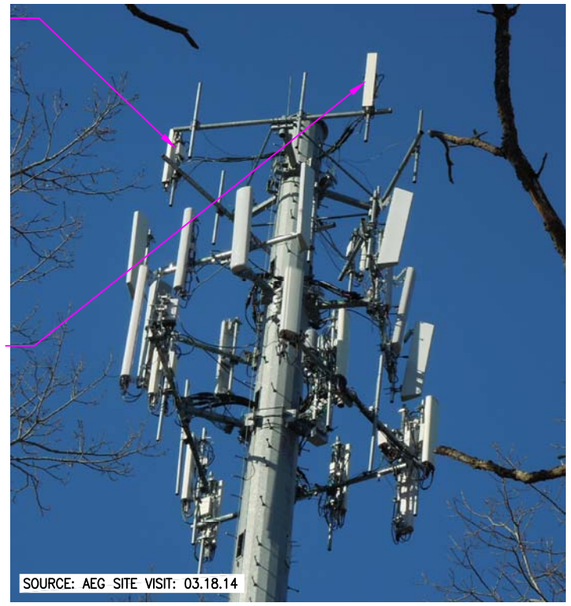
**T-MOBILE**

PLANS AND ANTENNA SCHEDULES

| JOB NUMBER | DRAWING NUMBER | REV |
|---|---|---|
| CTNL191D | A-2 | 0 |

(3) (E) TMA'S. TYP. OF (1) PER SECTOR, (3) TOTAL TO BE REMOVED

(3) (E) ANTENNAS TYP. OF (1) PER SECTOR, (3) TOTAL TO BE REMOVED

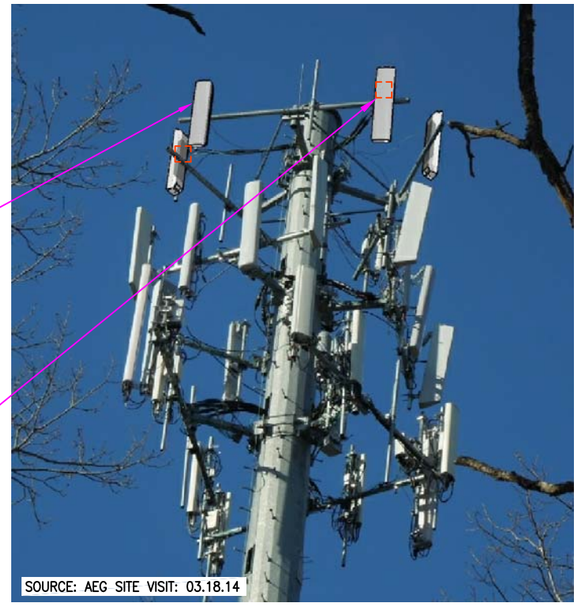



## 1/A-3 EXISTING ANTENNA MOUNT TYP.
N.T.S.

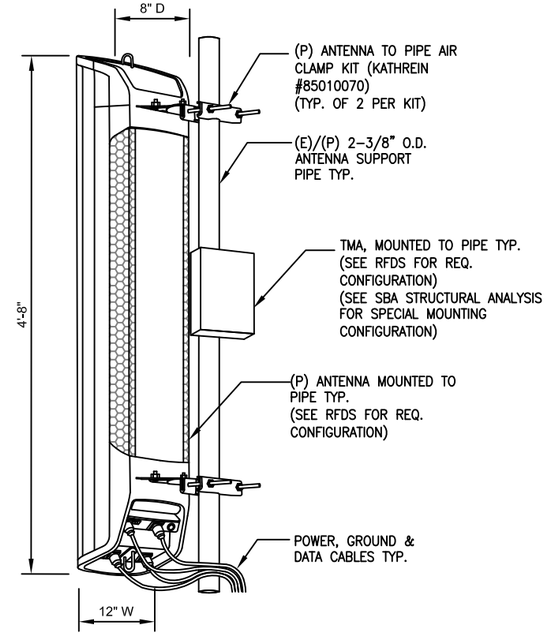
3/A-3 *(P) ANTENNA TYP. OF (2) PER SECTOR, (6) TOTAL (SEE SBA STRUCTURAL ANALYSIS FOR SPECIAL MOUNTING CONFIGURATION)

(P) AWS TMA TO POSITION 1 BEHIND (P) AIR ANTENNA, (1) PER SECTOR, (3) TOTAL (SEE SBA STRUCTURAL ANALYSIS FOR SPECIAL MOUNTING CONFIGURATION)

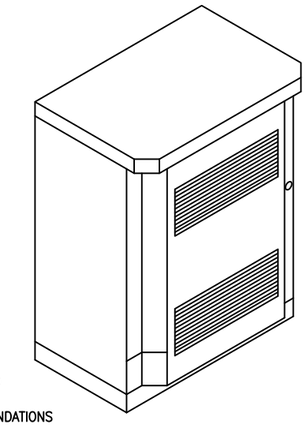
* SPECIAL INSTALLATION NOTE: PROPOSED ANTENNAS SHALL BE VERTICALLY CENTERED ON EXISTING FRAME RAIL. ADJUST ANTENNA MOUNTING PIPE AS REQUIRED.




## 2/A-3 PROPOSED ANTENNA MOUNT TYP.
N.T.S.



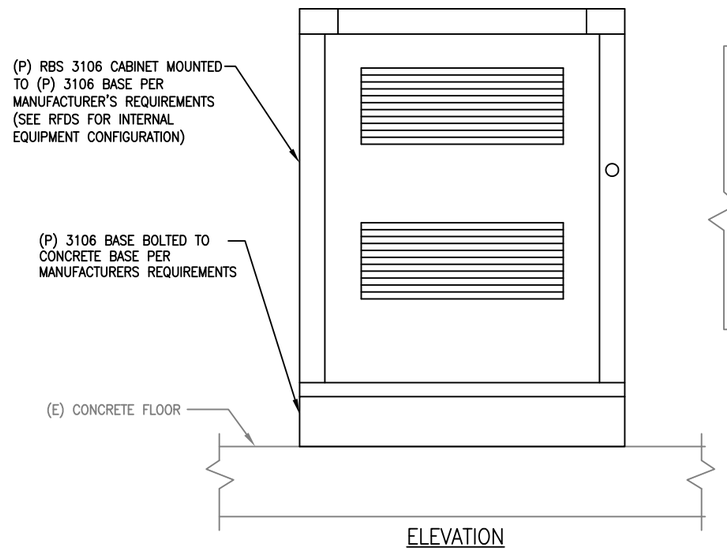

## 3/A-3 ANTENNA MOUNT TYP.
SCALE: NTS



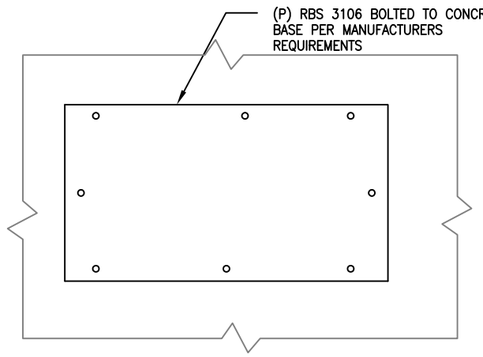
NOTE:
ANCHOR (P) EQUIPMENT TO (E) CONCRETE PAD PER MANUFACTURER'S RECOMMENDATIONS

| DIMENSIONS | | |
|---|---|---|
| CABINET | DEPTH x WIDTH x HEIGHT | APPROX. MAX. WEIGHT |
| OUTDOOR RBS3106 | 36.45" x 51.18" x 64.17" | 1874 LBS. |

## 4/A-3 PROPOSED EQUIPMENT CABINET
SCALE: N.T.S.




ELEVATION




PLAN

## 5/A-3 RBS 3106 MOUNTING DETAIL
SCALE: N.T.S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DETAILS

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