



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

October 12, 2012

Stephanie Wenderoth  
Nexlink Global Services  
Suite A, Building 2  
800 Marshall Phelps Road  
Windsor, CT 06095

RE: **EM-AT&T-164-120926** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 340 Bloomfield Avenue, Windsor, Connecticut.

Dear Ms. Wenderoth:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated September 20, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding



the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,



Linda Roberts  
Executive Director

LR/CDM/cm

- c: The Honorable Donald Trinks, Mayor, Town of Windsor
- Peter Souza, Town Manager, Town of Windsor
- Eric Barz, Town Planner, Town of Windsor

**CONNECTICUT SITING COUNCIL  
NOTICE OF INTENT TO MODIFY AN EXISTING TOWER FACILITY  
EXEMPT MODIFICATION FILING FORM**

Public Utility Environmental Standards Act, Connecticut General Statutes §§ 16-50g - 16-50aa  
Regulations of Connecticut State Agencies §§ 16-50j-72(b)(2) and 16-50j-73

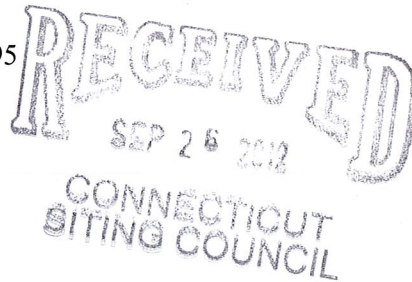
**TO BE COMPLETED BY FILER**

**EM-AT&T-164-120926**

Date: September 20, 2012

Filer Name and Contact Information

Name: Stephanie Wenderoth  
Address: Nexlink Global Services; Suite A Building 2  
800 Marshall Phelps Road, Windsor, CT 06095  
Phone Number: 401.477.2938



Wireless Carrier: AT&T

Tower Owner: AT&T

Tower Site Address: 340 Bloomfield Avenue, Windsor CT

Municipality and Name of Chief Elected Official Provided A Copy Of This Notice:  
Donald S. Trinks; Mayor

Description of Exempt Modification (including antenna and equipment changes):  
Replace existing Antennas with LTE Antennas, add new conduit, RRUs and surge arrestor.

Attachments

- Plans
- Power density calculations if applicable
- Tower structural report if applicable
- \$625.00 Filing Fee

If required:

Municipality w/i 2,500' & Name of Chief Elected Official Provided A Copy Of This Notice:

Underlying Property Owner Provided A Copy Of This Notice:

**FOR STAFF USE ONLY**

- 
- Modification will not result in an increase in tower height
  - Modification is within existing site boundaries
  - Modification will not increase noise levels at the site boundary by 6 dbA or more, or to levels that exceed State & local criteria
  - Modification will meet FCC and DEEP MPE limits
  - Modification will not result in significant adverse change in physical or environmental

characteristics of the site

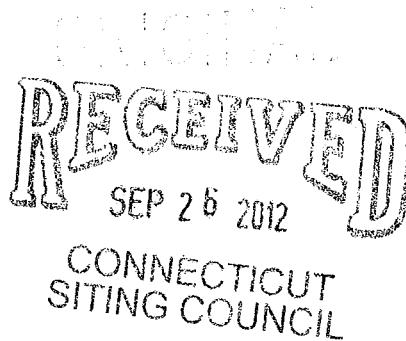
- Modification will not impair the structural integrity of the facility as determined by PE
- If yes to all of the above, approval of acknowledgement letter

September 20, 2012

VIA UPS Overnight Delivery

Ms. Linda Roberts, Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

RE: AT&T Mobility - Notice of Exempt Modification  
340 Bloomfield Avenue, Windsor CT



Dear Ms. Roberts:

This letter and attachments are submitted on behalf of AT&T Mobility ("AT&T"). AT&T is enhancing the capabilities of its wireless system in Connecticut by implementing LTE technology. In order to do so, AT&T will modify antenna and equipment configurations at a number of existing sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Mayor of Windsor.

AT&T plans to modify the existing facility at 340 Bloomfield Avenue, owned by The Town of Windsor (coordinates 41.85249 N, -72.6606 W). Attached are drawings 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 AT&T's operations at the site.

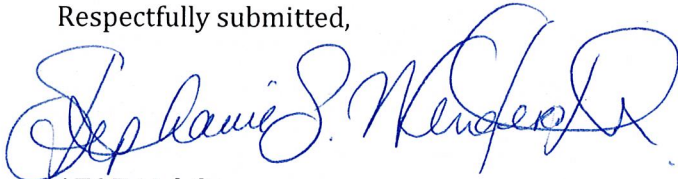
The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C. S.A. Section 16-50j-1 2(b)(2).

1. The height of the overall structure will be unaffected. The existing antennas will be replaced with in the existing the monopole, Additionally, AT&T will install six (6) RRU's and one (1) surge arrester, one (1) fiber cable and two (2) DC control cables within the existing monopole.
2. The proposed changes will not extend the site boundaries. AT&T will install additional equipment in the existing equipment shelter. Thus, there will no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed change will be negligible.
4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environment as calculated for a mixed frequency site. As indicated in the attached

power density calculations, AT&T's operations at the site will result in a power density of 1.69%; the combined site operations will result in a total power density of 45.38%.

Please feel free to call me with any questions or concerns regarding this matter.  
Thank you for your consideration.

Respectfully submitted,



AT&T Mobility  
Stephanie Wenderoth, Consultant  
wenderoths@nexlinkgs.com  
401.477.2938

Cc: Donald S. Trinks; Mayor  
141 Grove Street  
Windsor, Ct 06095



C Squared Systems, LLC  
65 Dartmouth Drive, Unit A3  
Auburn, NH 03032  
(603) 644-2800  
support@csquaredsystems.com

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Calculated Radio Frequency Emissions



CT5138

(Windsor Central)

340 Bloomfield Avenue, Windsor, CT 06095

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September 19, 2012

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## 1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 340 Bloomfield Avenue in Windsor, CT. The coordinates of the tower are 41° 51' 09.47" N, 72° 39' 37.76" W.

AT&T is proposing the following modifications:

- 1) Install three multiband (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

## 2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter ( $\text{mW}/\text{cm}^2$ ). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

### 3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left( \frac{1.6^2 \times \text{EIRP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance =  $\sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

#### 4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	%MPE
Cingular GSM	151	1900	2	427	0.0135	1.0000	1.35%
Cingular UMTS	151	880	1	500	0.0079	0.5867	1.34%
Verizon	120	869	9	313	0.0703	0.5793	12.14%
Verizon	120	1970	3	313	0.0234	1.0000	2.34%
Verizon	120	757	1	686	0.0171	0.5047	3.39%
T-Mobile GSM	140	1945	8	126	0.0185	1.0000	1.85%
T-Mobile UMTS	140	2100	2	711	0.0261	1.0000	2.61%
Clearwire	130	2496	2	153	0.0065	1.0000	0.65%
Clearwire	130	23000	1	211	0.0045	1.0000	0.45%
Sprint	105	N/A	N/A	N/A	N/A	N/A	11.41%
Town	var.	N/A	N/A	N/A	N/A	N/A	8.83%
AT&T UMTS	148.5	880	2	565	0.0018	0.5867	0.31%
AT&T UMTS	148.5	1900	2	1077	0.0035	1.0000	0.35%
AT&T LTE	149	734	1	1615	0.0026	0.4893	0.53%
AT&T GSM	148.5	880	1	283	0.0005	0.5867	0.08%
AT&T GSM	148.5	1900	4	646	0.0042	1.0000	0.42%
						<b>Total</b>	<b>45.38%</b>

**Table 1: Carrier Information<sup>1 2 3</sup>**

<sup>1</sup> The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

<sup>2</sup> In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

<sup>3</sup> Antenna height listed for AT&T UMTS/GSM antennas is in reference to the B&T Engineering Structural Analysis dated August 24, 2012. Antenna height listed for AT&T LTE antenna was subsequently revised from 148' to 149' to meet AT&T's spacing requirements from the antennas located below.

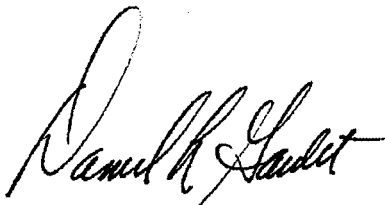
## 5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **45.38% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

## 6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet  
C Squared Systems, LLC

September 19, 2012

Date

### **Attachment A: References**

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

**Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)**

**(A) Limits for Occupational/Controlled Exposure<sup>4</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

**(B) Limits for General Population/Uncontrolled Exposure<sup>5</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz \* Plane-wave equivalent power density

**Table 2: FCC Limits for Maximum Permissible Exposure (MPE)**

<sup>4</sup> Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

<sup>5</sup> General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

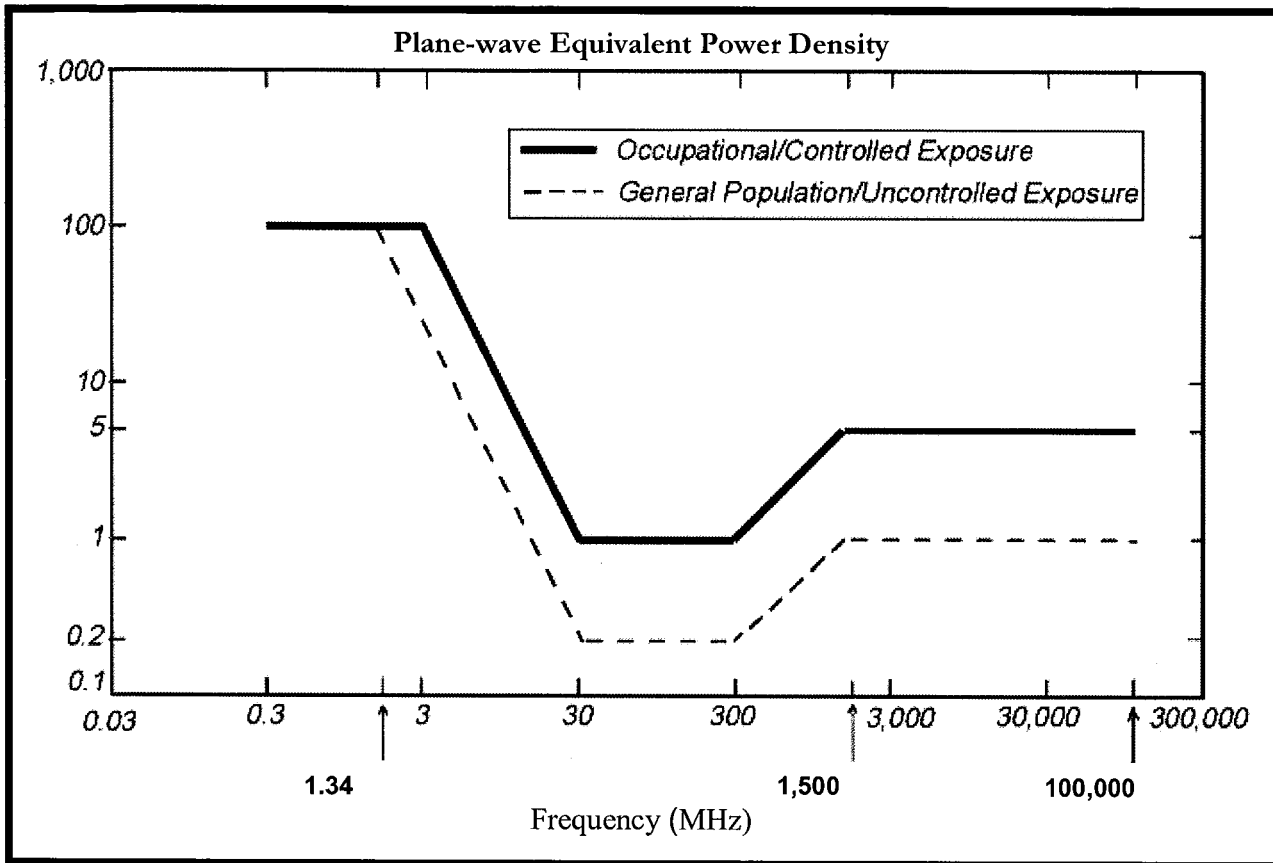
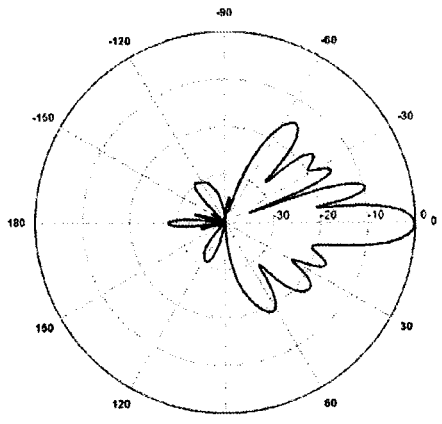
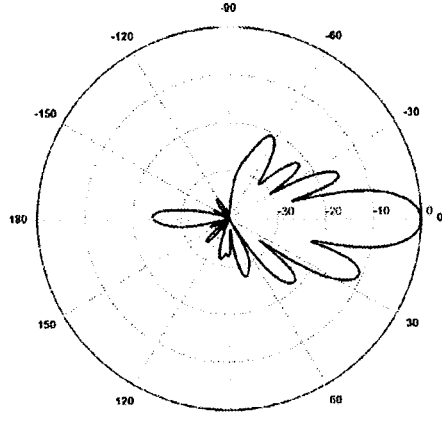
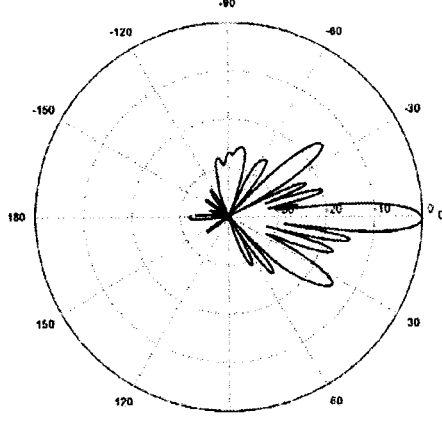


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

**Attachment C: AT&T Antenna Data Sheets and Electrical Patterns**

<p><b>700 MHz</b></p> <p>Manufacturer: Powerwave            Model #: P65-17-XLH-RR            Frequency Band: 698-806 MHz            Gain: 14.3 dBd            Vertical Beamwidth: 8.4°            Horizontal Beamwidth: 70°            Polarization: Dual Linear ± 45°            Size L x W x D: 96.0" x 12.0" x 6.0"</p>	
<p><b>850 MHz</b></p> <p>Manufacturer: Kathrein-Scala            Model #: 800-10121            Frequency Band: 824-896 MHz            Gain: 11.5 dBd            Vertical Beamwidth: 14.5°            Horizontal Beamwidth: 86°            Polarization: ± 45°            Size L x W x D: 54.5" x 10.3" x 5.9"</p>	
<p><b>1900 MHz</b></p> <p>Manufacturer: Kathrein-Scala            Model #: 800-10121            Frequency Band: 1850-1990 MHz            Gain: 14.3 dBd            Vertical Beamwidth: 6.6°            Horizontal Beamwidth: 85°            Polarization: ± 45°            Size L x W x D: 54.5" x 10.3" x 5.9"</p>	





Nexlink Global Services, Inc.  
 800 Marshall Phelps Road  
 Windsor, CT 06095

August 24, 2012



**B+T GRP**  
 1717 S. Boulder, Suite 300  
 Tulsa, OK 74119

B+T No.: 84435.000.0001

**STRUCTURAL ANALYSIS**  
**150' Monopole Tower**

AT&T DESIGNATION:                    Site ID:                    14488  
    Site FA:                    10092835  
    Site Name:                WindsorCentral  
    AT&T Project:            MOD LTE W3 020912

ANALYSIS CRITERIA:                    Codes:                    TIA/EIA-222-F (80 mph fastest mile)  
    IBC 2003  
    State Building Code, 2005 CT supplement

SITE DATA:                                340 Bloomfield Avenue, Windsor , CT, Hartford County  
    Latitude 41.85249°, Longitude -72.6606°  
    Market MA/RI/VT/NH/ME/CT

Ms. Stephanie Wenderoth,

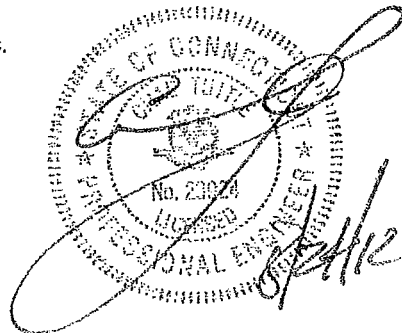
B+T Group is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

**Analysis Results**

Tower Stress Level with Proposed Equipment:                    **91.7%**                    **Pass**  
 Foundation Ratio with Proposed Equipment:                    **90.9%**                    **Pass**

We at B+T Group appreciate the opportunity of providing our continuing professional services to you and Nexlink Global Services, Inc.. If you have any questions or need further assistance on this or any other project please give us a call.

Respectfully Submitted by:            B+T Engineering, Inc.  
 Analysis Prepared by:                    Raul Ortiz Jr., E.I.T.  
 Analysis Reviewed by:                    Chad E. Tuttle, P.E.



**ANALYSIS RESULTS:**

**Table 1 - Section Capacity (Summary)**

Component (Tower Section)	% Capacity	Pass / Fail
150 - 117	44.2	Pass
117 - 76	91.7	Pass
76 - 41	86.1	Pass
41 - 0	90.6	Pass

**Table 2 - Tower Component Stresses vs. Capacity**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	78.5	Pass
1	Base Plate	Base	85.0	Pass
1	Base Foundation	Base	90.9	Pass

<b>Structure Rating (max from all components) =</b>	<b>91.7%</b>
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Notes:

- 1.) See additional documentation in "Appendix B - Calculations" for calculation supporting the % capacity consumed.

**Recommendations:**

N/A

## ANALYSIS PROCEDURE:

Table 4 - Documents Provided

Document	Description	Date	Source
Tower Data	BTE Management Job No. 15085	7/12/2012	On File
Foundation Information	SA Report by GPD, Project # 2010273.56	7/21/2010	Siterra
Geotech Report	GPD, Project # 2010273.56	7/21/2010	Siterra
Loading	BTE Management Job No. 15085	7/12/2012	On File
	Equipment Mod Form	2/9/2012	Siterra
	GPD, Project # 2010273.56	7/21/2010	Siterra
Previous Structural Analysis	GPD, Project # 2010273.56	7/21/2010	Siterra
	Paul J. Ford Project # A00007-T144	7/26/2007	Siterra

## ANALYSIS METHOD:

tnxTower, a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix B.

## 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 the manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Appendix A of this report.
4. Mount areas and weights are assumed based on photographs provided.
5. Refer to the base level drawing for transmission line distribution.
6. The tower data not found in the Tower Mapping was taken from the previous analysis.
7. Existing loading was taken from the Tower Mapping.
8. The material grade for the tower was taken from the previous analysis.
9. Foundation and soil properties were taken from the previous analysis.
10. Size of the proposed lines was assumed.

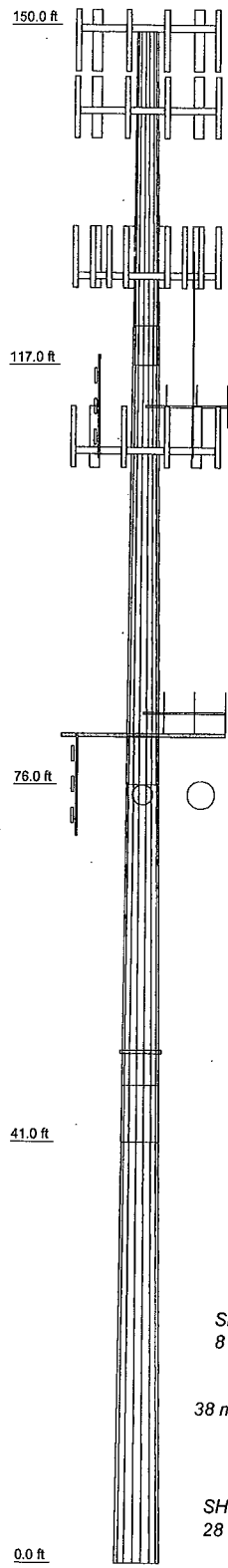
If any of these assumptions have been made in error, B+T Group should be notified to determine the effect on the structural integrity of the tower.

**APPENDIX A**  
**TOWER ANALYSIS LOADING**



**APPENDIX B**  
**CALCULATIONS**

Section	1	2	3	4
Length (ft)	33,000	44,800	39,750	46,570
Number of Sides	18	18	18	18
Thickness (in)	0.219	0.250	0.344	0.375
Socket Length (ft)	3,800	4,750	5,570	42,777
Top Dia (in)	24,190	29,222	36,603	52,250
Bot Dia (in)	30,371	38,038	44,583	8.9
Grade		A607-65		
Weight (K)	2.1	4.0	5.9	8.9



### DESIGNED APPURTENANCE LOADING

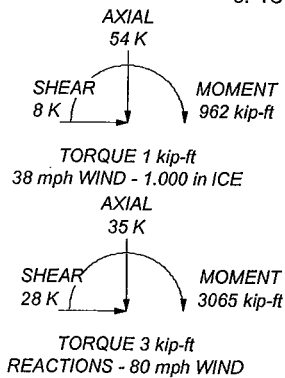
TYPE	ELEVATION	TYPE	ELEVATION
Mount (ATI-E)	150	(2) 6' x 2" Mount Pipe (T-Mobile-E)	142
(2) 800 10121 w/ Mount Pipe (ATI-E)	150	Platform Mount (LP 714-1) (T-Mobile-E)	142
(2) 800 10121 w/ Mount Pipe (ATI-E)	150	(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	126
(4) LGP 13519 (ATI-E)	150	(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	126
(4) LGP 13519 (ATI-E)	150	(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	126
(4) LGP 13519 (ATI-E)	150	(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	126
(4) RET (ATI-E)	150	P65-16-XL-4A w/Mount Pipe (VZW-E)	126
(4) RET (ATI-E)	150	P65-16-XL-4A w/Mount Pipe (VZW-E)	126
(4) RET (ATI-E)	150	P65-16-XL-4A w/Mount Pipe (VZW-E)	126
P65-17-XLH-RR w/ Mount Pipe (ATI-P)	150	MG D3 800TO w/Mount Pipe (VZW-E)	126
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI-P)	150	MG D3 800TO w/Mount Pipe (VZW-E)	126
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI-P)	150	MG D3 800TO w/Mount Pipe (VZW-E)	126
RRUS-11 (ATI-P)	150	(2) 6.5"x5"x.5" TMA (VZW-E)	126
RRUS-11 (ATI-P)	150	(2) 6.5"x5"x.5" TMA (VZW-E)	126
RRUS-11 (ATI-P)	150	Platform Mount (LP 403-1) (VZW-E)	126
Surge Arrestor (ATI-P)	150	(2) DB950F65E-M w/ Mount Pipe (Sprint-E)	109
10' Dipole (City-E)	150	UMWD-06516-XD w/ Mount Pipe (Sprint-E)	109
Platform Mount (LP 714-1) (E)	150	UMWD-06516-XD w/ Mount Pipe (Sprint-E)	109
APX16DWV-16DWVS-C w/ Mount Pipe (T-Mobile-E)	142	UMWD-06516-XD w/ Mount Pipe (Sprint-E)	109
APX16DWV-16DWVS-C w/ Mount Pipe (T-Mobile-E)	142	(2) DB950F65E-M w/ Mount Pipe (Sprint-E)	109
APX16DWV-16DWVS-C w/ Mount Pipe (T-Mobile-E)	142	4' Yagi (City-E)	109
RR90-17-02DP w/ Mount Pipe (T-Mobile-E)	142	18' Omni (City-E)	109
RR90-17-02DP w/ Mount Pipe (T-Mobile-E)	142	8' Dipole (City-E)	109
RR90-17-02DP w/ Mount Pipe (T-Mobile-E)	142	Platform Mount (LP 714-1) (E)	109
Ericsson 7"x6"x3" TMA (T-Mobile-E)	142	6' x 2" Mount Pipe (E)	109
Ericsson 7"x6"x3" TMA (T-Mobile-E)	142	(3) 6' x 2" Mount Pipe (E)	109
Ericsson 7"x6"x3" TMA (T-Mobile-E)	142	6' x 2" Mount Pipe (E)	109
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	142	4' Yagi (E)	81
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	142	10' Dipole (E)	81
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	142	4' x 2" Pipe Mount (E)	81
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	142	4' x 2" Pipe Mount (E)	81
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	142	Side Arm Mount (SO 701-3) (E)	81
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	142	Pipe Mount (PM 601-1) (E)	74
(2) 6' x 2" Mount Pipe (T-Mobile-E)	142	HP2-23 (E)	74
(2) 6' x 2" Mount Pipe (T-Mobile-E)	142	GPS_A (E)	50
(2) 6' x 2" Mount Pipe (T-Mobile-E)	142	Side Arm Mount (SO 702-1) (E)	50

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

### TOWER DESIGN NOTES

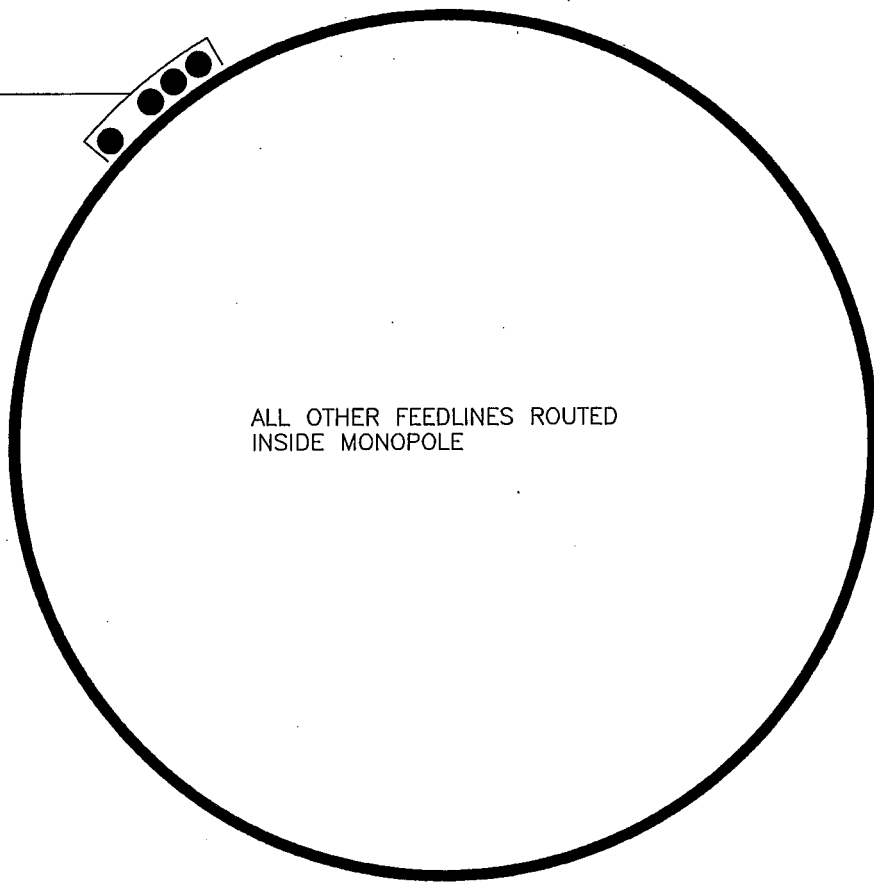
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 91.7%



**B+T Group**  
 1717 S. Boulder, Suite 300  
 Tulsa, OK 74119  
 Phone: (918) 587-4630  
 FAX: (918) 295-0265

Job: **84435.000.0001 - Windsor Central, CT (Site# CT513)**  
 Project: **150' Monopole / AT&T Mobility Co-Location**  
 Client: Nexlink  
 Code: TIA/EIA-222-F  
 Path:  
 Drawn by: Rortiz  
 Date: 08/24/12  
 App'd:  
 Scale: NTS  
 Dwg No. E-1

(PROPOSED)  
(3) DC/FIBER TO 150 FT LEVEL  
(EXISTING)  
(1) 1/2" TO 51 FT LEVEL



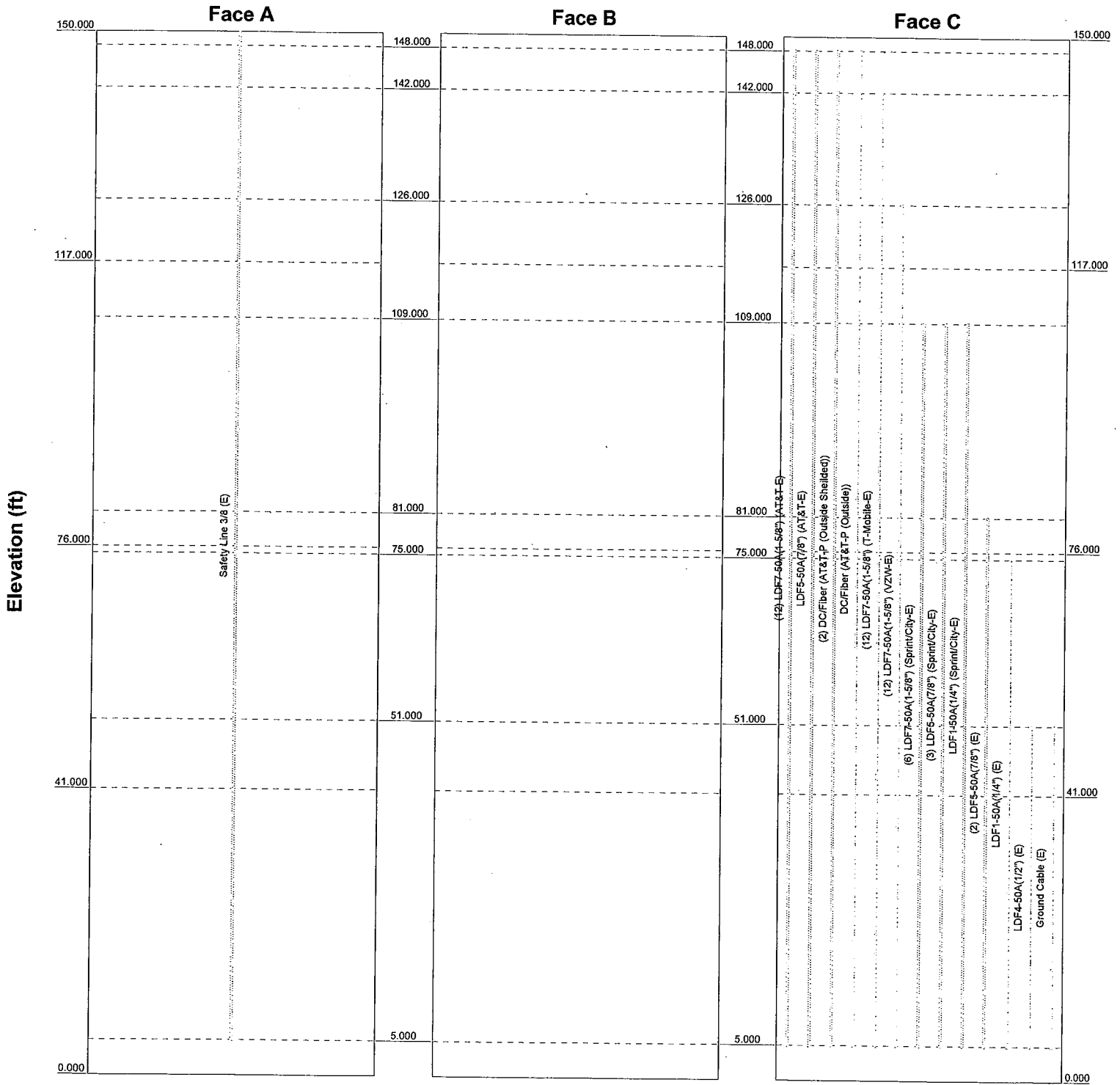
PROJECT NUMBER: 84435.000.0001



# Feedline Distribution Chart

## 0' - 150'

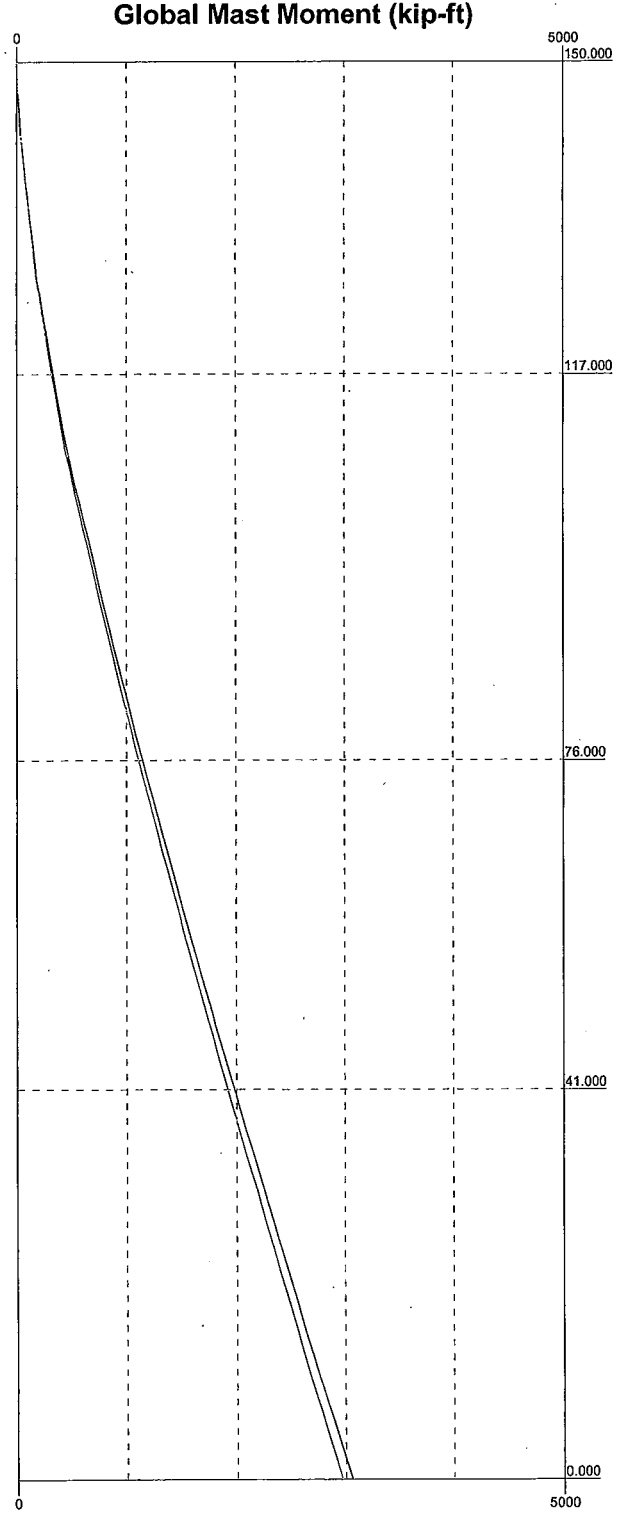
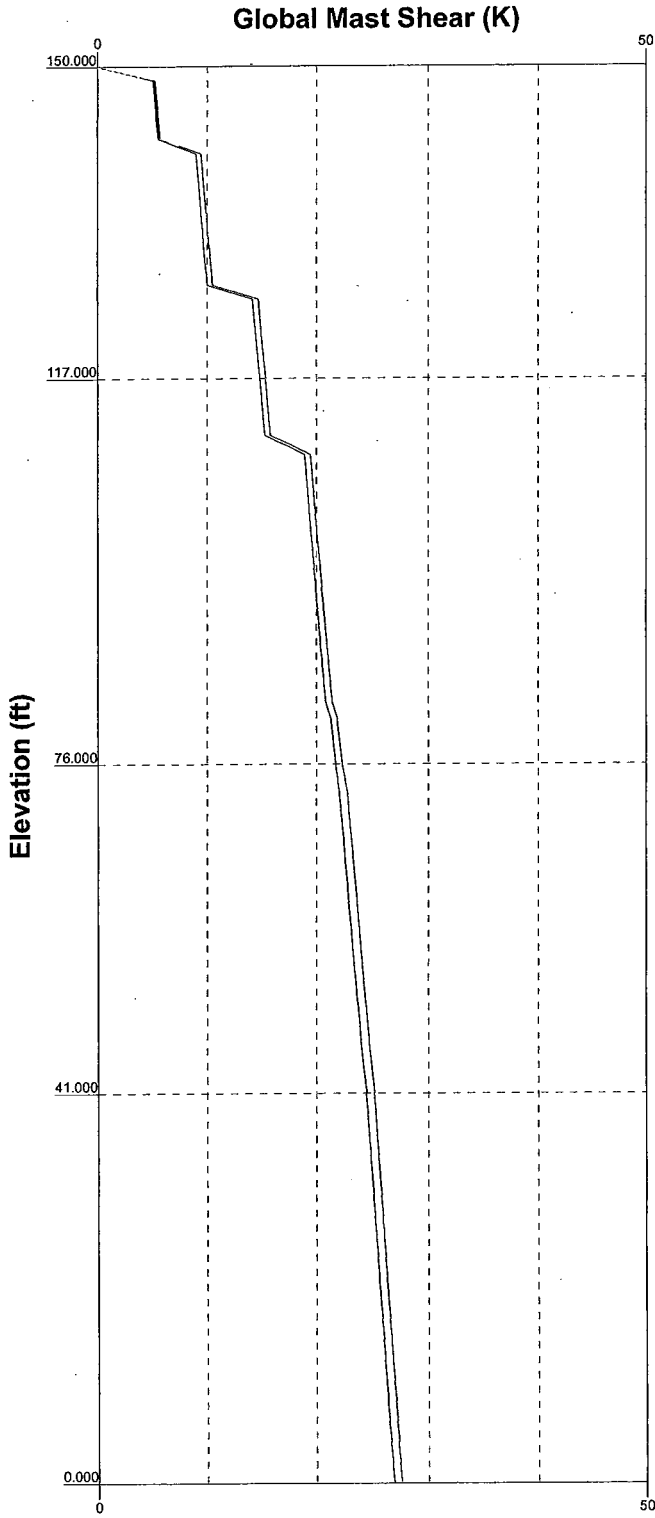
Round \_\_\_\_\_ Flat \_\_\_\_\_ App In Face \_\_\_\_\_ App Out Face \_\_\_\_\_ Truss Leg \_\_\_\_\_




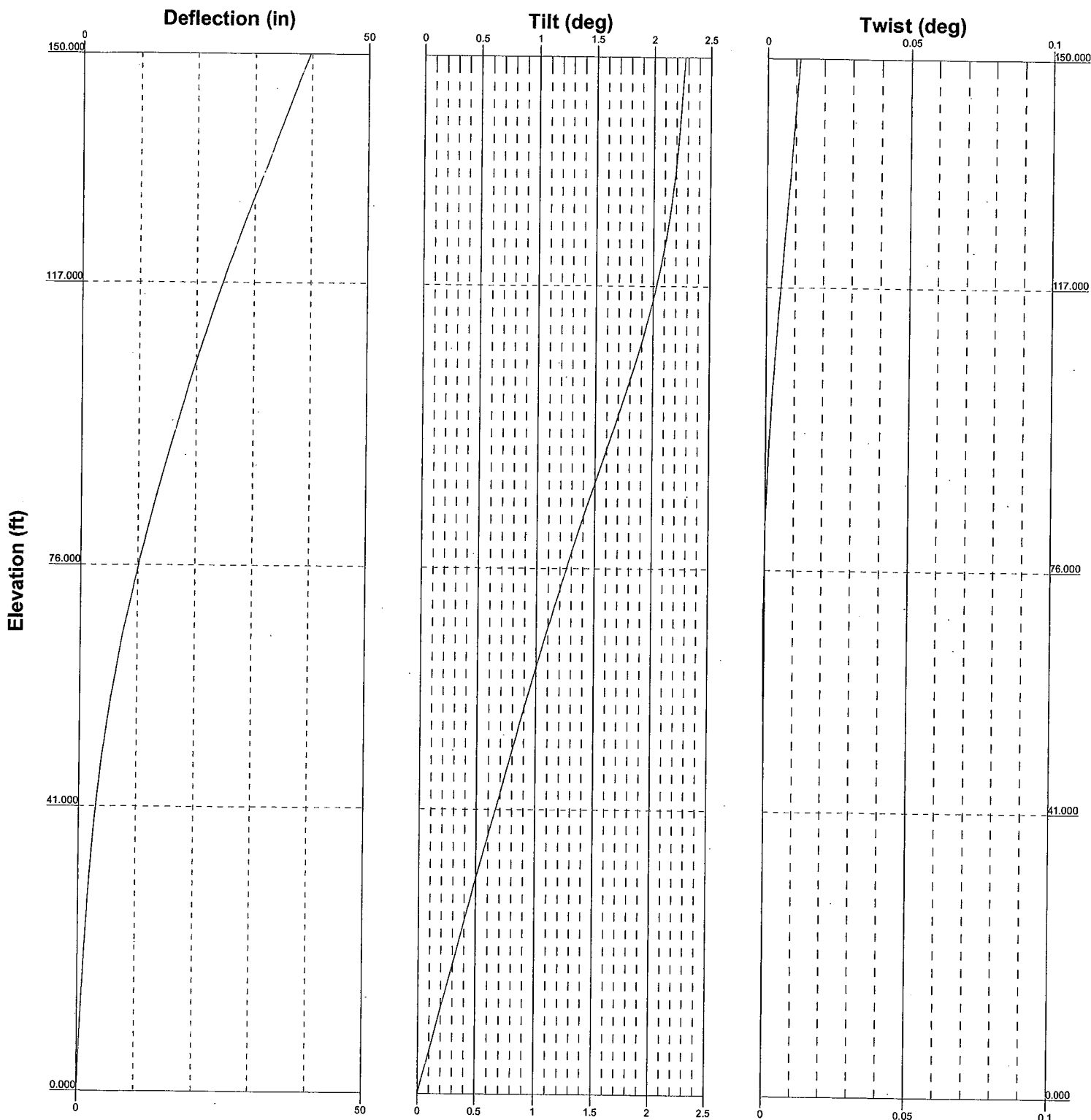
 B+T	<b>B+T Group</b>	Job: <b>84435.000.0001 - Windsor Central, CT (Site# CT513)</b>			
	1717 S. Boulder, Suite 300		Project: <b>150' Monopole / AT&amp;T Mobility Co-Location</b>		
	Tulsa, OK 74119		Client: Nexlink	Drawn by: Rortiz	App'd:
	Phone: (918) 587-4630		Code: TIA/EIA-222-F	Date: 08/24/12	Scale: NTS
	FAX: (918) 295-0265		Path:	Dwg No. E-7	


— Vx — Vz

— Mx — Mz



 <p><b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	<b>Job: 84435.000.0001 - Windsor Central, CT (Site# CT513)</b>		
	<b>Project: 150' Monopole / AT&amp;T Mobility Co-Location</b>		
	Client: Nexlink	Drawn by: Rortiz	App'd:
	Code: TIA/EIA-222-F	Date: 08/24/12	Scale: NTS
	Path:	Dwg No. E-4	



 <p><b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	Job: <b>84435.000.0001 - Windsor Central, CT (Site# CT513)</b>		
	Project: <b>150' Monopole / AT&amp;T Mobility Co-Location</b>		
	Client: <b>Nexlink</b>	Drawn by: <b>Rortiz</b>	App'd:
	Code: <b>TIA/EIA-222-F</b>	Date: <b>08/24/12</b>	Scale: <b>NTS</b>
	Path:	Dwg No. <b>E-5</b>	

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84435.000.0001 - Windsor Central, CT (Site# CT5138)	<b>Page</b> 1 of 17
	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

## 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 Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 38 mph is used in combination with ice.

Temperature drop of 50.000 °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

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>√ Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>Add IBC .6D+W Combination</li> </ul> | <ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>Use Clear Spans For KL/r</li> <li>Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>Autocalc Torque Arm Areas</li> <li>SR Members Have Cut Ends</li> <li>Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> </ul> | <ul style="list-style-type: none"> <li>Treat Feedline Bundles As Cylinder</li> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>SR Leg Bolts Resist Compression</li> <li>All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feedline Torque</li> <li>Include Angle Block Shear Check Poles</li> <li>√ Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> </ul> |
|--|--|--|

## Tapered Pole Section Geometry

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	
L1	150.000-117.000	33.000	3.800	18	24.190	30.371	0.219	0.875	A607-65 (65 ksi)
L2	117.000-76.000	44.800	4.750	18	29.222	38.038	0.250	1.000	A607-65 (65 ksi)
L3	76.000-41.000	39.750	5.570	18	36.603	44.583	0.344	1.375	A607-65 (65 ksi)
L4	41.000-0.000	46.570		18	42.777	52.250	0.375	1.500	A607-65 (65 ksi)

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	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>7</sup>	w in	w/t
L1	24.563	16.644	1208.271	8.510	12.289	98.325	2418.133	8.323	3.872	17.703
	30.840	20.935	2404.649	10.704	15.428	155.858	4812.461	10.470	4.960	22.676
L2	30.432	22.989	2437.859	10.285	14.845	164.225	4878.925	11.497	4.703	18.812
	38.625	29.985	5409.363	13.415	19.323	279.940	10825.843	14.995	6.255	25.019
L3	38.136	39.561	6571.314	12.872	18.594	353.402	13151.274	19.784	5.837	16.981
	45.271	48.268	11934.668	15.705	22.648	526.960	23885.040	24.138	7.242	21.066
L4	44.588	50.469	11464.228	15.053	21.731	527.555	22943.540	25.239	6.869	18.317
	53.056	61.744	20991.814	18.416	26.543	790.861	42011.250	30.878	8.536	22.763

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontal
ft	ft <sup>2</sup>	in					in	in
L1 150.000-117.000				1	1	1		
L2 117.000-76.000				1	1	1		
L3 76.000-41.000				1	1	1		
L4 41.000-0.000				1	1	1		

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft			in	in	in	klf
*@*										

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		C <sub>A</sub> A <sub>A</sub>	Weight
				ft			ft <sup>2</sup> /ft	klf
LDF7-50A(1-5/8") (AT&T-E)	C	No	Inside Pole	148.000 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF5-50A(7/8") (AT&T-E)	C	No	Inside Pole	148.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
DC/Fiber (AT&T-P (Outside Sheilded))	C	No	Inside Pole	148.000 - 5.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A	Weight
						ft <sup>2</sup> /ft	klf
DC/Fiber (AT&T-P (Outside))	C	No	CaAa (Out Of Face)	148.000 - 5.000	1	2" Ice	0.000
						4" Ice	0.000
						No Ice	0.156
						1/2" Ice	0.256
						1" Ice	0.356
						2" Ice	0.556
*@* LDF7-50A(1-5/8") (T-Mobile-E)	C	No	Inside Pole	142.000 - 5.000	12	4" Ice	0.956
						No Ice	0.000
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
*@* LDF7-50A(1-5/8") (VZW-E)	C	No	Inside Pole	126.000 - 5.000	12	No Ice	0.000
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
						*@* LDF7-50A(1-5/8") (Sprint/City-E)	C
1/2" Ice	0.000						
1" Ice	0.000						
2" Ice	0.000						
4" Ice	0.000						
LDF5-50A(7/8") (Sprint/City-E)	C	No	Inside Pole	109.000 - 5.000	3		
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
						LDF1-50A(1/4") (Sprint/City-E)	C
1/2" Ice	0.000						
1" Ice	0.000						
2" Ice	0.000						
4" Ice	0.000						
*@* LDF5-50A(7/8") (E)	C	No	Inside Pole	81.000 - 5.000	2		
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
						*@* LDF1-50A(1/4") (E)	C
1/2" Ice	0.000						
1" Ice	0.000						
2" Ice	0.000						
4" Ice	0.000						
*@* LDF4-50A(1/2") (E)	C	No	CaAa (Out Of Face)	51.000 - 5.000	1		
						1/2" Ice	0.163
						1" Ice	0.263
						2" Ice	0.463
						4" Ice	0.863
						*@* Ground Cable (E)	C
1/2" Ice	0.000						
1" Ice	0.000						
2" Ice	0.000						
4" Ice	0.000						
*@* Safety Line 3/8	A	No	CaAa (Out Of	150.000 - 5.000	1		
							0.000

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	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>AA</sub>	Weight
						ft <sup>2</sup> /ft	klf
(E)			Face)		1/2" Ice	0.137	0.001
					1" Ice	0.238	0.001
					2" Ice	0.437	0.002
					4" Ice	0.838	0.004

\*@\*

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	150.000-117.000	A	0.000	0.000	0.000	1.238	0.007
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	4.836	0.667
L2	117.000-76.000	A	0.000	0.000	0.000	1.538	0.009
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	6.396	1.448
L3	76.000-41.000	A	0.000	0.000	0.000	1.313	0.008
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	6.090	1.303
L4	41.000-0.000	A	0.000	0.000	0.000	1.350	0.008
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	7.884	1.350

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	150.000-117.000	A	1.182	0.000	0.000	0.000	9.039	0.049
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	12.165	0.796
L2	117.000-76.000	A	1.137	0.000	0.000	0.000	11.231	0.060
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	16.089	1.617
L3	76.000-41.000	A	1.071	0.000	0.000	0.000	9.270	0.050
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	16.320	1.465
L4	41.000-0.000	A	1.000	0.000	0.000	0.000	9.060	0.049
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	23.304	1.560

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
L1	150.000-117.000	-0.177	0.050	-0.352	-0.097
L2	117.000-76.000	-0.190	0.057	-0.391	-0.089
L3	76.000-41.000	-0.214	0.071	-0.483	-0.034
L4	41.000-0.000	-0.234	0.089	-0.588	0.076

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	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
Mount (AT&T-E)	A	None			0.000	150.000	No Ice 0.250 1/2" Ice 0.300 1" Ice 0.350 2" Ice 0.400 4" Ice 0.450	0.250 0.300 0.350 0.400 0.450	0.003 0.003 0.004 0.004 0.004
(2) 800 10121 w/ Mount Pipe (AT&T-E)	A	From Leg	4.000 0.000 -1.500		60.000	150.000	No Ice 5.685 1/2" Ice 6.182 1" Ice 6.676 2" Ice 7.695 4" Ice 9.858	4.600 5.351 6.046 7.526 10.832	0.066 0.112 0.167 0.298 0.675
(2) 800 10121 w/ Mount Pipe (AT&T-E)	B	From Leg	4.000 0.000 -1.500		60.000	150.000	No Ice 5.685 1/2" Ice 6.182 1" Ice 6.676 2" Ice 7.695 4" Ice 9.858	4.600 5.351 6.046 7.526 10.832	0.066 0.112 0.167 0.298 0.675
(2) 800 10121 w/ Mount Pipe (AT&T-E)	C	From Leg	4.000 0.000 -1.500		-50.000	150.000	No Ice 5.685 1/2" Ice 6.182 1" Ice 6.676 2" Ice 7.695 4" Ice 9.858	4.600 5.351 6.046 7.526 10.832	0.066 0.112 0.167 0.298 0.675
(4) LGP 13519 (AT&T-E)	A	From Leg	4.000 0.000 -1.500		0.000	150.000	No Ice 0.338 1/2" Ice 0.422 1" Ice 0.515 2" Ice 0.726 4" Ice 1.252	0.207 0.280 0.362 0.551 1.034	0.005 0.008 0.012 0.024 0.071
(4) LGP 13519 (AT&T-E)	B	From Leg	4.000 0.000 -1.500		0.000	150.000	No Ice 0.338 1/2" Ice 0.422 1" Ice 0.515 2" Ice 0.726 4" Ice 1.252	0.207 0.280 0.362 0.551 1.034	0.005 0.008 0.012 0.024 0.071
(4) LGP 13519 (AT&T-E)	C	From Leg	4.000 0.000 -1.500		0.000	150.000	No Ice 0.338 1/2" Ice 0.422 1" Ice 0.515 2" Ice 0.726 4" Ice 1.252	0.207 0.280 0.362 0.551 1.034	0.005 0.008 0.012 0.024 0.071
(4) RET (AT&T-E)	A	From Leg	4.000 0.000 -1.500		0.000	150.000	No Ice 0.028 1/2" Ice 0.035 1" Ice 0.040 2" Ice 0.045 4" Ice 0.050	0.028 0.035 0.040 0.045 0.050	0.001 0.001 0.001 0.001 0.001
(4) RET (AT&T-E)	B	From Leg	4.000 0.000 -1.500		0.000	150.000	No Ice 0.028 1/2" Ice 0.035 1" Ice 0.040 2" Ice 0.045 4" Ice 0.050	0.028 0.035 0.040 0.045 0.050	0.001 0.001 0.001 0.001 0.001
(4) RET (AT&T-E)	C	From Leg	4.000 0.000 -1.500		0.000	150.000	No Ice 0.028 1/2" Ice 0.035 1" Ice 0.040 2" Ice 0.045 4" Ice 0.050	0.028 0.035 0.040 0.045 0.050	0.001 0.001 0.001 0.001 0.001
P65-17-XLH-RR w/ Mount Pipe (AT&T-P)	A	From Leg	4.000 0.000 -2.000		50.000	150.000	No Ice 11.704 1/2" Ice 12.424 1" Ice 13.153 2" Ice 14.639	8.938 10.450 11.986 14.313	0.092 0.174 0.271 0.498



<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84435.000.0001 - Windsor Central, CT (Site# CT5138)	<b>Page</b> 6 of 17
	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T-P)	B	From Leg	4.000	0.000	40.000	150.000	4" Ice	17.906	19.144	1.125
			0.000				No Ice	8.498	6.304	0.074
			-2.000				1/2" Ice	9.149	7.479	0.136
							1" Ice	9.767	8.368	0.210
							2" Ice	11.031	10.179	0.385
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T-P)	C	From Leg	4.000	0.000	40.000	150.000	4" Ice	13.679	14.024	0.874
			0.000				No Ice	8.498	6.304	0.074
			-2.000				1/2" Ice	9.149	7.479	0.136
							1" Ice	9.767	8.368	0.210
							2" Ice	11.031	10.179	0.385
RRUS-11 (AT&T-P)	A	From Leg	4.000	0.000	0.000	150.000	4" Ice	13.679	14.024	0.874
			0.000				No Ice	4.424	1.186	0.055
			-2.000				1/2" Ice	4.708	1.351	0.081
							1" Ice	5.001	1.526	0.110
							2" Ice	5.613	1.900	0.179
RRUS-11 (AT&T-P)	B	From Leg	4.000	0.000	0.000	150.000	4" Ice	6.940	2.753	0.368
			0.000				No Ice	4.424	1.186	0.055
			-2.000				1/2" Ice	4.708	1.351	0.081
							1" Ice	5.001	1.526	0.110
							2" Ice	5.613	1.900	0.179
RRUS-11 (AT&T-P)	C	From Leg	4.000	0.000	0.000	150.000	4" Ice	6.940	2.753	0.368
			0.000				No Ice	4.424	1.186	0.055
			-2.000				1/2" Ice	4.708	1.351	0.081
							1" Ice	5.001	1.526	0.110
							2" Ice	5.613	1.900	0.179
Surge Arrestor (AT&T-P)	C	From Leg	4.000	0.000	0.000	150.000	4" Ice	6.940	2.753	0.368
			0.000				No Ice	2.567	4.317	0.019
			-2.000				1/2" Ice	2.798	4.596	0.050
							1" Ice	3.038	4.885	0.085
							2" Ice	3.543	5.488	0.167
10' Dipole (City-E)	A	From Leg	4.000	0.000	0.000	150.000	4" Ice	4.658	6.797	0.383
			0.000				No Ice	3.330	3.330	0.034
			5.000				1/2" Ice	5.994	5.994	0.044
							1" Ice	8.658	8.658	0.054
							2" Ice	13.986	13.986	0.075
Platform Mount [LP 714-1] (E)	C	None			0.000	150.000	4" Ice	24.642	24.642	0.116
							No Ice	37.470	37.470	1.600
							1/2" Ice	44.230	44.230	2.040
							1" Ice	50.990	50.990	2.480
							2" Ice	64.510	64.510	3.360
*@*	A	From Leg	4.000	0.000	60.000	142.000	4" Ice	91.550	91.550	5.119
			0.000				No Ice	7.466	3.494	0.061
			0.000				1/2" Ice	7.994	4.263	0.108
							1" Ice	8.518	4.960	0.164
							2" Ice	9.595	6.403	0.298
APX16DWV-16DWVS-C w/ Mount Pipe (T-Mobile-E)	B	From Leg	4.000	0.000	60.000	142.000	4" Ice	11.873	9.490	0.683
			0.000				No Ice	7.466	3.494	0.061
			0.000				1/2" Ice	7.994	4.263	0.108
							1" Ice	8.518	4.960	0.164
							2" Ice	9.595	6.403	0.298
APX16DWV-16DWVS-C w/ Mount Pipe (T-Mobile-E)	C	From Leg	4.000	0.000	-50.000	142.000	4" Ice	11.873	9.490	0.683
			0.000				No Ice	7.466	3.494	0.061
			0.000				1/2" Ice	7.994	4.263	0.108
							1" Ice	8.518	4.960	0.164
							2" Ice	9.595	6.403	0.298

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84435.000.0001 - Windsor Central, CT (Site# CT5138)	<b>Page</b> 7 of 17
	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
RR90-17-02DP w/ Mount Pipe (T-Mobile-E)	A	From Leg	4.000	0.000	60.000	142.000	No Ice	4.593	3.319	0.034
			0.000				1/2" Ice	5.088	4.089	0.069
			0.000				1" Ice	5.578	4.784	0.114
							2" Ice	6.588	6.225	0.224
							4" Ice	8.731	9.308	0.557
RR90-17-02DP w/ Mount Pipe (T-Mobile-E)	B	From Leg	4.000	0.000	60.000	142.000	No Ice	4.593	3.319	0.034
			0.000				1/2" Ice	5.088	4.089	0.069
			0.000				1" Ice	5.578	4.784	0.114
							2" Ice	6.588	6.225	0.224
							4" Ice	8.731	9.308	0.557
RR90-17-02DP w/ Mount Pipe (T-Mobile-E)	C	From Leg	4.000	0.000	-50.000	142.000	No Ice	4.593	3.319	0.034
			0.000				1/2" Ice	5.088	4.089	0.069
			0.000				1" Ice	5.578	4.784	0.114
							2" Ice	6.588	6.225	0.224
							4" Ice	8.731	9.308	0.557
Ericsson 7"x6"x3" TMA (T-Mobile-E)	A	From Leg	4.000	0.000	0.000	142.000	No Ice	0.408	0.204	0.010
			0.000				1/2" Ice	0.497	0.273	0.013
			0.000				1" Ice	0.594	0.351	0.018
							2" Ice	0.815	0.533	0.031
							4" Ice	1.359	0.999	0.081
Ericsson 7"x6"x3" TMA (T-Mobile-E)	B	From Leg	4.000	0.000	0.000	142.000	No Ice	0.408	0.204	0.010
			0.000				1/2" Ice	0.497	0.273	0.013
			0.000				1" Ice	0.594	0.351	0.018
							2" Ice	0.815	0.533	0.031
							4" Ice	1.359	0.999	0.081
Ericsson 7"x6"x3" TMA (T-Mobile-E)	C	From Leg	4.000	0.000	0.000	142.000	No Ice	0.408	0.204	0.010
			0.000				1/2" Ice	0.497	0.273	0.013
			0.000				1" Ice	0.594	0.351	0.018
							2" Ice	0.815	0.533	0.031
							4" Ice	1.359	0.999	0.081
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	B	From Leg	4.000	0.000	0.000	142.000	No Ice	0.829	0.394	0.011
			0.000				1/2" Ice	0.961	0.505	0.016
			0.000				1" Ice	1.102	0.624	0.024
							2" Ice	1.410	0.889	0.044
							4" Ice	2.129	1.522	0.112
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	C	From Leg	4.000	0.000	0.000	142.000	No Ice	0.829	0.394	0.011
			0.000				1/2" Ice	0.961	0.505	0.016
			0.000				1" Ice	1.102	0.624	0.024
							2" Ice	1.410	0.889	0.044
							4" Ice	2.129	1.522	0.112
(2) GSM PCS 1900 Masthead Amplifier (T-Mobile-E)	A	From Leg	4.000	0.000	0.000	142.000	No Ice	0.829	0.394	0.011
			0.000				1/2" Ice	0.961	0.505	0.016
			0.000				1" Ice	1.102	0.624	0.024
							2" Ice	1.410	0.889	0.044
							4" Ice	2.129	1.522	0.112
(2) 6' x 2" Mount Pipe (T-Mobile-E)	A	From Leg	4.000	0.000	0.000	142.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
							4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe (T-Mobile-E)	B	From Leg	4.000	0.000	0.000	142.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
							4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe (T-Mobile-E)	C	From Leg	4.000	0.000	0.000	142.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033

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	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub> Front	C <sub>A</sub> A <sub>A</sub> Side	Weight
			Horz	Lateral					
			0.000						
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
						No Ice	37.470	37.470	1.600
Platform Mount [LP 714-1] (T-Mobile-E)	C	None		0.000	142.000	1/2" Ice	44.230	44.230	2.040
						1" Ice	50.990	50.990	2.480
						2" Ice	64.510	64.510	3.360
						4" Ice	91.550	91.550	5.119
*@*									
(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	A	From Leg	4.000 0.000 1.500	10.000	126.000	No Ice	5.379	5.396	0.042
						1/2" Ice	6.071	6.491	0.090
						1" Ice	6.647	7.302	0.149
						2" Ice	7.828	8.960	0.288
						4" Ice	10.341	12.491	0.689
(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	B	From Leg	4.000 0.000 1.500	0.000	126.000	No Ice	5.379	5.396	0.042
						1/2" Ice	6.071	6.491	0.090
						1" Ice	6.647	7.302	0.149
						2" Ice	7.828	8.960	0.288
						4" Ice	10.341	12.491	0.689
(2) DB844G65ZAXY w/Mount Pipe (VZW-E)	C	From Leg	4.000 0.000 1.500	-10.000	126.000	No Ice	5.379	5.396	0.042
						1/2" Ice	6.071	6.491	0.090
						1" Ice	6.647	7.302	0.149
						2" Ice	7.828	8.960	0.288
						4" Ice	10.341	12.491	0.689
P65-16-XL-4A w/Mount Pipe (VZW-E)	A	From Leg	4.000 0.000 1.500	10.000	126.000	No Ice	12.993	10.060	0.054
						1/2" Ice	13.736	11.398	0.149
						1" Ice	14.465	12.561	0.258
						2" Ice	15.912	14.705	0.507
						4" Ice	18.923	19.361	1.164
P65-16-XL-4A w/Mount Pipe (VZW-E)	B	From Leg	4.000 0.000 1.500	0.000	126.000	No Ice	12.993	10.060	0.054
						1/2" Ice	13.736	11.398	0.149
						1" Ice	14.465	12.561	0.258
						2" Ice	15.912	14.705	0.507
						4" Ice	18.923	19.361	1.164
P65-16-XL-4A w/Mount Pipe (VZW-E)	C	From Leg	4.000 0.000 1.500	-10.000	126.000	No Ice	12.993	10.060	0.054
						1/2" Ice	13.736	11.398	0.149
						1" Ice	14.465	12.561	0.258
						2" Ice	15.912	14.705	0.507
						4" Ice	18.923	19.361	1.164
MG D3 800TO w/Mount Pipe (VZW-E)	A	From Leg	4.000 0.000 1.500	10.000	126.000	No Ice	3.337	2.158	0.018
						1/2" Ice	3.676	2.482	0.037
						1" Ice	4.023	2.813	0.061
						2" Ice	4.832	3.498	0.122
						4" Ice	6.570	5.012	0.304
MG D3 800TO w/Mount Pipe (VZW-E)	B	From Leg	4.000 0.000 1.500	0.000	126.000	No Ice	3.337	2.158	0.018
						1/2" Ice	3.676	2.482	0.037
						1" Ice	4.023	2.813	0.061
						2" Ice	4.832	3.498	0.122
						4" Ice	6.570	5.012	0.304
MG D3 800TO w/Mount Pipe (VZW-E)	C	From Leg	4.000 0.000 1.500	-10.000	126.000	No Ice	3.337	2.158	0.018
						1/2" Ice	3.676	2.482	0.037
						1" Ice	4.023	2.813	0.061
						2" Ice	4.832	3.498	0.122
						4" Ice	6.570	5.012	0.304
(2) 6.5"x5"X.5" TMA (VZW-E)	A	From Leg	4.000 0.000 1.500	0.000	126.000	No Ice	0.316	0.036	0.010
						1/2" Ice	0.395	0.081	0.012
						1" Ice	0.482	0.140	0.014

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	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
						2" Ice 0.683	0.282	0.023
(2) 6.5"x5"x.5" TMA (VZW-E)	B	From Leg	4.000	0.000	126.000	4" Ice 1.189	0.671	0.061
						No Ice 0.316	0.036	0.010
						1/2" Ice 0.395	0.081	0.012
						1" Ice 0.482	0.140	0.014
						2" Ice 0.683	0.282	0.023
(2) 6.5"x5"x.5" TMA (VZW-E)	C	From Leg	4.000	0.000	126.000	4" Ice 1.189	0.671	0.061
						No Ice 0.316	0.036	0.010
						1/2" Ice 0.395	0.081	0.012
						1" Ice 0.482	0.140	0.014
						2" Ice 0.683	0.282	0.023
Platform Mount [LP 403-1] (VZW-E)	C	None		0.000	126.000	4" Ice 1.189	0.671	0.061
						No Ice 18.850	18.850	1.500
						1/2" Ice 24.300	24.300	1.797
						1" Ice 29.750	29.750	2.093
						2" Ice 40.650	40.650	2.686
*@*(2) DB950F65E-M w/ Mount Pipe (Sprint-E)	A	From Leg	4.000	10.000	109.000	4" Ice 10.841	12.536	0.723
						No Ice 6.362	5.661	0.038
						1/2" Ice 6.907	6.545	0.090
						1" Ice 7.438	7.306	0.153
						2" Ice 8.532	8.949	0.302
UMWD-06516-XD w/ Mount Pipe (Sprint-E)	B	From Leg	4.000	-25.000	109.000	4" Ice 10.841	12.536	0.723
						No Ice 3.928	3.549	0.033
						1/2" Ice 4.353	4.289	0.067
						1" Ice 4.788	4.973	0.110
						2" Ice 5.763	6.391	0.215
UMWD-06516-XD w/ Mount Pipe (Sprint-E)	B	From Leg	4.000	55.000	109.000	4" Ice 10.841	12.536	0.723
						No Ice 3.928	3.549	0.033
						1/2" Ice 4.353	4.289	0.067
						1" Ice 4.788	4.973	0.110
						2" Ice 5.763	6.391	0.215
(2) DB950F65E-M w/ Mount Pipe (Sprint-E)	C	From Leg	4.000	40.000	109.000	4" Ice 10.841	12.536	0.723
						No Ice 6.362	5.661	0.038
						1/2" Ice 6.907	6.545	0.090
						1" Ice 7.438	7.306	0.153
						2" Ice 8.532	8.949	0.302
4' Yagi (City-E)	A	From Leg	4.000	0.000	109.000	4" Ice 10.841	12.536	0.723
						No Ice 0.820	0.033	0.020
						1/2" Ice 1.199	0.093	0.030
						1" Ice 1.578	0.153	0.040
						2" Ice 2.336	0.273	0.060
18' Omni (City-E)	B	From Leg	4.000	0.000	109.000	4" Ice 3.852	0.513	0.100
						No Ice 5.400	5.400	0.020
						1/2" Ice 7.233	7.233	0.059
						1" Ice 9.083	9.083	0.109
						2" Ice 12.833	12.833	0.245
8' Dipole (City-E)	C	From Leg	4.000	0.000	109.000	4" Ice 18.770	18.770	0.660
						No Ice 3.330	3.330	0.034
						1/2" Ice 5.994	5.994	0.044
						1" Ice 8.658	8.658	0.054
						2" Ice 13.986	13.986	0.075
Platform Mount [LP 714-1] (E)	C	None		0.000	109.000	4" Ice 24.642	24.642	0.116
						No Ice 37.470	37.470	1.600
						1/2" Ice 44.230	44.230	2.040
						1" Ice 50.990	50.990	2.480
						2" Ice 64.510	64.510	3.360

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	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
6' x 2" Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	109.000	4" Ice	91.550	91.550	5.119
			0.000				No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
							1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
(3) 6' x 2" Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	109.000	4" Ice	4.702	4.702	0.231
			0.000				No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
							1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	109.000	4" Ice	4.702	4.702	0.231
			0.000				No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
							1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
*@* 4' Yagi (E)	A	From Leg	6.000	0.000	0.000	81.000	4" Ice	4.702	4.702	0.231
			0.000				No Ice	0.820	0.033	0.020
			2.000				1/2" Ice	1.199	0.093	0.030
							1" Ice	1.578	0.153	0.040
							2" Ice	2.336	0.273	0.060
10' Dipole (E)	C	From Leg	6.000	0.000	0.000	81.000	4" Ice	3.852	0.513	0.100
			0.000				No Ice	3.330	3.330	0.034
			-5.000				1/2" Ice	5.994	5.994	0.044
							1" Ice	8.658	8.658	0.054
							2" Ice	13.986	13.986	0.075
4' x 2" Pipe Mount (E)	A	From Leg	6.000	0.000	0.000	81.000	4" Ice	24.642	24.642	0.116
			0.000				No Ice	0.866	0.866	0.015
			0.000				1/2" Ice	1.111	1.111	0.022
							1" Ice	1.365	1.365	0.032
							2" Ice	1.901	1.901	0.062
4' x 2" Pipe Mount (E)	B	From Leg	6.000	0.000	0.000	81.000	4" Ice	3.228	3.228	0.161
			0.000				No Ice	0.866	0.866	0.015
			0.000				1/2" Ice	1.111	1.111	0.022
							1" Ice	1.365	1.365	0.032
							2" Ice	1.901	1.901	0.062
4' x 2" Pipe Mount (E)	C	From Leg	6.000	0.000	0.000	81.000	4" Ice	3.228	3.228	0.161
			0.000				No Ice	0.866	0.866	0.015
			0.000				1/2" Ice	1.111	1.111	0.022
							1" Ice	1.365	1.365	0.032
							2" Ice	1.901	1.901	0.062
Side Arm Mount [SO 701-3] (E)	A	None			0.000	81.000	4" Ice	3.228	3.228	0.161
							No Ice	2.830	2.830	0.195
							1/2" Ice	3.920	3.920	0.237
							1" Ice	5.010	5.010	0.279
							2" Ice	7.190	7.190	0.363
*@* Pipe Mount [PM 601-1] (E)	A	From Leg	0.000	0.000	0.000	74.000	4" Ice	11.550	11.550	0.531
			0.000				No Ice	3.000	0.900	0.065
			0.000				1/2" Ice	3.740	1.120	0.079
							1" Ice	4.480	1.340	0.093
							2" Ice	5.960	1.780	0.122
*@* Side Arm Mount [SO 702-1] (E)	A	From Leg	3.000	0.000	0.000	50.000	4" Ice	8.920	2.660	0.178
			0.000				No Ice	1.000	1.430	0.027
			0.000				1/2" Ice	1.000	2.050	0.038
							1" Ice	1.000	2.670	0.049

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	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
GPS_A	A	From Leg	3.000		0.000	No Ice	0.297	0.297	0.001
(E)			0.000			1/2" Ice	0.374	0.374	0.005
			1.000			1" Ice	0.459	0.459	0.010
						2" Ice	0.655	0.655	0.025
						4" Ice	1.151	1.151	0.079

\*@\*

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz	Vert							
				ft	ft	°	°	ft	ft	ft <sup>2</sup>	K	
HP2-23	A	Paraboloid	From	1.000		-10.000		74.000	2.042	No Ice	3.274	0.027
(E)		w/Shroud (HP)	Leg	0.000						1/2" Ice	3.547	0.045
				1.000						1" Ice	3.819	0.063
										2" Ice	4.365	0.100
										4" Ice	5.456	0.173

\*@\*

### Load Combinations

Comb. No.	Description
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

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Comb. No.	Description
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

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 117	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-17.768	0.569	0.375
			Max. Mx	11	-7.833	267.516	-4.208
			Max. My	2	-7.744	-4.249	278.740
			Max. Vy	11	-14.472	267.516	-4.208
			Max. Vx	2	-14.988	-4.249	278.740
			Max. Torque	10			-2.991
L2	117 - 76	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-29.875	0.788	0.143
			Max. Mx	11	-15.361	1009.967	-12.775
			Max. My	2	-15.289	-12.686	1042.870
			Max. Vy	11	-21.304	1009.967	-12.775
			Max. Vx	8	21.885	13.087	-1042.653
			Max. Torque	10			-2.992
L3	76 - 41	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-39.220	1.040	0.693
			Max. Mx	11	-22.715	1785.739	-19.009
			Max. My	8	-22.667	20.062	-1841.878
			Max. Vy	11	-23.991	1785.739	-19.009
			Max. Vx	8	24.697	20.062	-1841.878
			Max. Torque	3			2.766
L4	41 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-53.996	1.480	0.549
			Max. Mx	11	-34.838	2972.476	-27.493
			Max. My	8	-34.837	29.186	-3061.069
			Max. Vy	11	-26.912	2972.476	-27.493
			Max. Vx	8	27.597	29.186	-3061.069
			Max. Torque	3			2.810

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### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	53.996	-0.022	8.269
	Max. H <sub>x</sub>	11	34.859	26.886	-0.178
	Max. H <sub>z</sub>	2	34.859	-0.196	27.539
	Max. M <sub>x</sub>	2	3059.620	-0.196	27.539
	Max. M <sub>z</sub>	5	2971.551	-26.882	0.185
	Max. Torsion	3	2.810	-13.590	23.963
	Min. Vert	1	34.859	0.000	0.000
	Min. H <sub>x</sub>	5	34.859	-26.882	0.185
	Min. H <sub>z</sub>	8	34.859	0.190	-27.569
	Min. M <sub>x</sub>	8	-3061.069	0.190	-27.569
	Min. M <sub>z</sub>	11	-2972.476	26.886	-0.178
	Min. Torsion	9	-2.783	13.591	-23.989

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	34.859	0.000	0.000	-0.406	0.312	0.000
Dead+Wind 0 deg - No Ice	34.859	0.196	-27.539	-3059.620	-28.977	-2.415
Dead+Wind 30 deg - No Ice	34.859	13.590	-23.963	-2665.556	-1509.262	-2.810
Dead+Wind 60 deg - No Ice	34.859	23.370	-13.961	-1557.111	-2587.293	-2.524
Dead+Wind 90 deg - No Ice	34.859	26.882	-0.185	-28.895	-2971.551	-1.535
Dead+Wind 120 deg - No Ice	34.859	23.173	13.652	1507.939	-2557.996	-0.080
Dead+Wind 150 deg - No Ice	34.859	13.273	23.786	2637.034	-1460.309	1.329
Dead+Wind 180 deg - No Ice	34.859	-0.190	27.569	3061.069	29.186	2.384
Dead+Wind 210 deg - No Ice	34.859	-13.591	23.989	2666.732	1509.973	2.783
Dead+Wind 240 deg - No Ice	34.859	-23.361	13.975	1557.363	2587.246	2.486
Dead+Wind 270 deg - No Ice	34.859	-26.886	0.178	27.493	2972.476	1.560
Dead+Wind 300 deg - No Ice	34.859	-23.169	-13.626	-1506.810	2558.372	0.100
Dead+Wind 330 deg - No Ice	34.859	-13.264	-23.755	-2635.534	1460.285	-1.335
Dead+Ice+Temp	53.996	0.000	0.000	-0.549	1.480	0.000
Dead+Wind 0 deg+Ice+Temp	53.996	0.022	-8.269	-961.810	-1.867	-0.889
Dead+Wind 30 deg+Ice+Temp	53.996	4.083	-7.176	-835.077	-473.035	-0.880
Dead+Wind 60 deg+Ice+Temp	53.996	7.058	-4.159	-484.654	-817.591	-0.655
Dead+Wind 90 deg+Ice+Temp	53.996	8.140	-0.019	-3.852	-942.510	-0.246
Dead+Wind 120 deg+Ice+Temp	53.996	7.035	4.129	478.060	-814.086	0.244
Dead+Wind 150 deg+Ice+Temp	53.996	4.051	7.159	830.793	-467.487	0.650
Dead+Wind 180 deg+Ice+Temp	53.996	-0.021	8.276	961.215	4.952	0.883
Dead+Wind 210 deg+Ice+Temp	53.996	-4.084	7.183	834.407	476.254	0.873
Dead+Wind 240 deg+Ice+Temp	53.996	-7.056	4.163	483.734	820.606	0.642
Dead+Wind 270 deg+Ice+Temp	53.996	-8.141	0.017	2.492	945.782	0.250
Dead+Wind 300 deg+Ice+Temp	53.996	-7.035	-4.122	-478.743	817.210	-0.239
Dead+Wind 330 deg+Ice+Temp	53.996	-4.049	-7.151	-831.374	470.506	-0.650
Dead+Wind 0 deg - Service	34.859	0.076	-10.758	-1197.056	-11.135	-0.952
Dead+Wind 30 deg - Service	34.859	5.309	-9.361	-1042.927	-590.163	-1.109
Dead+Wind 60 deg - Service	34.859	9.129	-5.454	-609.323	-1011.803	-0.997
Dead+Wind 90 deg - Service	34.859	10.501	-0.072	-11.569	-1162.044	-0.607
Dead+Wind 120 deg - Service	34.859	9.052	5.333	589.527	-1000.291	-0.033
Dead+Wind 150 deg - Service	34.859	5.185	9.291	1031.191	-570.980	0.523
Dead+Wind 180 deg - Service	34.859	-0.074	10.769	1197.102	11.624	0.941
Dead+Wind 210 deg - Service	34.859	-5.309	9.371	1042.861	590.848	1.099
Dead+Wind 240 deg - Service	34.859	-9.126	5.459	608.893	1012.188	0.981
Dead+Wind 270 deg - Service	34.859	-10.502	0.069	10.494	1162.805	0.616



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Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead+Wind 300 deg - Service	34.859	-9.050	-5.323	-589.608	1000.835	0.041
Dead+Wind 330 deg - Service	34.859	-5.181	-9.279	-1031.123	571.373	-0.525

### Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-34.859	0.000	0.000	34.859	0.000	0.000%
2	0.196	-34.859	-27.539	-0.196	34.859	27.539	0.000%
3	13.590	-34.859	-23.963	-13.590	34.859	23.963	0.000%
4	23.370	-34.859	-13.961	-23.370	34.859	13.961	0.000%
5	26.882	-34.859	-0.185	-26.882	34.859	0.185	0.000%
6	23.173	-34.859	13.652	-23.173	34.859	-13.652	0.000%
7	13.273	-34.859	23.786	-13.273	34.859	-23.786	0.000%
8	-0.190	-34.859	27.569	0.190	34.859	-27.569	0.000%
9	-13.591	-34.859	23.989	13.591	34.859	-23.989	0.000%
10	-23.361	-34.859	13.975	23.361	34.859	-13.975	0.000%
11	-26.886	-34.859	0.178	26.886	34.859	-0.178	0.000%
12	-23.169	-34.859	-13.626	23.169	34.859	13.626	0.000%
13	-13.264	-34.859	-23.755	13.264	34.859	23.755	0.000%
14	0.000	-53.996	0.000	0.000	53.996	0.000	0.000%
15	0.022	-53.996	-8.269	-0.022	53.996	8.269	0.000%
16	4.083	-53.996	-7.176	-4.083	53.996	7.176	0.000%
17	7.058	-53.996	-4.159	-7.058	53.996	4.159	0.000%
18	8.140	-53.996	-0.019	-8.140	53.996	0.019	0.000%
19	7.035	-53.996	4.129	-7.035	53.996	-4.129	0.000%
20	4.051	-53.996	7.159	-4.051	53.996	-7.159	0.000%
21	-0.021	-53.996	8.276	0.021	53.996	-8.276	0.000%
22	-4.084	-53.996	7.183	4.084	53.996	-7.183	0.000%
23	-7.056	-53.996	4.163	7.056	53.996	-4.163	0.000%
24	-8.141	-53.996	0.017	8.141	53.996	-0.017	0.000%
25	-7.034	-53.996	-4.122	7.035	53.996	4.122	0.000%
26	-4.049	-53.996	-7.151	4.049	53.996	7.151	0.000%
27	0.076	-34.859	-10.758	-0.076	34.859	10.758	0.000%
28	5.309	-34.859	-9.361	-5.309	34.859	9.361	0.000%
29	9.129	-34.859	-5.454	-9.129	34.859	5.454	0.000%
30	10.501	-34.859	-0.072	-10.501	34.859	0.072	0.000%
31	9.052	-34.859	5.333	-9.052	34.859	-5.333	0.000%
32	5.185	-34.859	9.291	-5.185	34.859	-9.291	0.000%
33	-0.074	-34.859	10.769	0.074	34.859	-10.769	0.000%
34	-5.309	-34.859	9.371	5.309	34.859	-9.371	0.000%
35	-9.126	-34.859	5.459	9.126	34.859	-5.459	0.000%
36	-10.502	-34.859	0.069	10.502	34.859	-0.069	0.000%
37	-9.050	-34.859	-5.323	9.050	34.859	5.323	0.000%
38	-5.181	-34.859	-9.279	5.181	34.859	9.279	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00005045
3	Yes	6	0.00000001	0.00004242
4	Yes	6	0.00000001	0.00004753

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5	Yes	5	0.0000001	0.00010845
6	Yes	6	0.0000001	0.00004263
7	Yes	6	0.0000001	0.00004256
8	Yes	5	0.0000001	0.00011142
9	Yes	6	0.0000001	0.00004796
10	Yes	6	0.0000001	0.00004252
11	Yes	5	0.0000001	0.00005208
12	Yes	6	0.0000001	0.00004389
13	Yes	6	0.0000001	0.00004432
14	Yes	4	0.0000001	0.00000001
15	Yes	5	0.0000001	0.00039147
16	Yes	5	0.0000001	0.00057952
17	Yes	5	0.0000001	0.00060029
18	Yes	5	0.0000001	0.00038319
19	Yes	5	0.0000001	0.00057521
20	Yes	5	0.0000001	0.00057509
21	Yes	5	0.0000001	0.00039143
22	Yes	5	0.0000001	0.00060677
23	Yes	5	0.0000001	0.00057976
24	Yes	5	0.0000001	0.00038436
25	Yes	5	0.0000001	0.00058290
26	Yes	5	0.0000001	0.00058921
27	Yes	4	0.0000001	0.00038802
28	Yes	5	0.0000001	0.00011307
29	Yes	5	0.0000001	0.00013717
30	Yes	4	0.0000001	0.00048837
31	Yes	5	0.0000001	0.00011176
32	Yes	5	0.0000001	0.00011210
33	Yes	4	0.0000001	0.00051133
34	Yes	5	0.0000001	0.00014018
35	Yes	5	0.0000001	0.00011314
36	Yes	4	0.0000001	0.00037680
37	Yes	5	0.0000001	0.00011811
38	Yes	5	0.0000001	0.00012083

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 117	39.730	28	2.276	0.012
L2	120.8 - 76	26.195	28	2.082	0.006
L3	80.75 - 41	11.440	34	1.344	0.003
L4	46.57 - 0	3.810	34	0.751	0.001

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.000	Mount	28	39.730	2.276	0.012	23861
142.000	APX16DWV-16DWVS-C w/ Mount Pipe	28	35.915	2.243	0.010	14913
126.000	(2) DB844G65ZAXY w/Mount Pipe	28	28.494	2.138	0.007	4970
109.000	(2) DB950F65E-M w/ Mount Pipe	28	21.276	1.904	0.005	3672
81.000	4' Yagi	34	11.513	1.349	0.003	2971
75.000	HP2-23	34	9.813	1.234	0.002	2916

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84435.000.0001 - Windsor Central, CT (Site# CT5138)	<b>Page</b> 16 of 17
	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	°	°	ft
74.000	Pipe Mount [PM 601-1]	34	9.544	1.216	0.002	2909
50.000	Side Arm Mount [SO 702-1]	34	4.350	0.807	0.001	2754

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	°	°
L1	150 - 117	101.309	9	5.808	0.032
L2	120.8 - 76	66.847	9	5.315	0.016
L3	80.75 - 41	29.223	9	3.434	0.006
L4	46.57 - 0	9.738	9	1.921	0.003

### Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	°	°	ft
150.000	Mount	9	101.309	5.808	0.032	9546
142.000	APX16DWV-16DWVS-C w/ Mount Pipe	9	91.599	5.725	0.027	5966
126.000	(2) DB844G65ZAXY w/Mount Pipe	9	72.702	5.458	0.018	1985
109.000	(2) DB950F65E-M w/ Mount Pipe	9	54.314	4.862	0.012	1461
81.000	4' Yagi	9	29.411	3.446	0.007	1174
75.000	HP2-23	9	25.072	3.154	0.006	1150
74.000	Pipe Mount [PM 601-1]	9	24.385	3.107	0.006	1147
50.000	Side Arm Mount [SO 702-1]	9	11.119	2.063	0.003	1080

### Compression Checks

### Pole Design Data

Section No.	Elevation	Size	L	L <sub>u</sub>	K/r	F <sub>a</sub>	A	Actual P	Allow. P <sub>a</sub>	Ratio P/P <sub>a</sub>
	ft		ft	ft		ksi	in <sup>2</sup>	K	K	
L1	150 - 117 (1)	TP30.371x24.19x0.219	33.000	0.000	0.0	39.000	20.441	-7.736	797.195	0.010
L2	117 - 76 (2)	TP38.038x29.222x0.25	44.800	0.000	0.0	39.000	29.243	-15.284	1140.480	0.013
L3	76 - 41 (3)	TP44.583x36.603x0.344	39.750	0.000	0.0	39.000	47.048	-22.666	1834.860	0.012
L4	41 - 0 (4)	TP52.25x42.777x0.375	46.570	0.000	0.0	39.000	61.744	-34.837	2408.020	0.014

<b>tnxTower</b>  <b>B+T Group</b> 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	<b>Job</b> 84435.000.0001 - Windsor Central, CT (Site# CT5138)	<b>Page</b> 17 of 17
	<b>Project</b> 150' Monopole / AT&T Mobility Co-Location	<b>Date</b> 14:34:39 08/24/12
	<b>Client</b> Nexlink	<b>Designed by</b> Rortiz

### Pole Bending Design Data

Section No.	Elevation ft	Size	Actual $M_x$ kip-ft	Actual $f_{bx}$ ksi	Allow. $F_{bx}$ ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual $M_y$ kip-ft	Actual $f_{by}$ ksi	Allow. $F_{by}$ ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	150 - 117 (1)	TP30.371x24.19x0.219	279.553	22.581	39.000	0.579	0.000	0.000	39.000	0.000
L2	117 - 76 (2)	TP38.038x29.222x0.25	1045.65	47.134	39.000	1.209	0.000	0.000	39.000	0.000
L3	76 - 41 (3)	TP44.583x36.603x0.344	1845.20	44.236	39.000	1.134	0.000	0.000	39.000	0.000
L4	41 - 0 (4)	TP52.25x42.777x0.375	3064.55	46.499	39.000	1.192	0.000	0.000	39.000	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V$ K	Actual $f_v$ ksi	Allow. $F_v$ ksi	Ratio $\frac{f_v}{F_v}$	Actual $T$ kip-ft	Actual $f_{vt}$ ksi	Allow. $F_{vt}$ ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 117 (1)	TP30.371x24.19x0.219	15.046	0.736	26.000	0.057	2.668	0.105	26.000	0.004
L2	117 - 76 (2)	TP38.038x29.222x0.25	21.926	0.750	26.000	0.058	2.548	0.056	26.000	0.002
L3	76 - 41 (3)	TP44.583x36.603x0.344	24.701	0.525	26.000	0.040	2.739	0.032	26.000	0.001
L4	41 - 0 (4)	TP52.25x42.777x0.375	27.599	0.447	26.000	0.034	2.783	0.021	26.000	0.001

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 117 (1)	0.010	0.579	0.000	0.057	0.004	0.590	1.333	HI-3+VT ✓
L2	117 - 76 (2)	0.013	1.209	0.000	0.058	0.002	1.223	1.333	HI-3+VT ✓
L3	76 - 41 (3)	0.012	1.134	0.000	0.040	0.001	1.147	1.333	HI-3+VT ✓
L4	41 - 0 (4)	0.014	1.192	0.000	0.034	0.001	1.207	1.333	HI-3+VT ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail
L1	150 - 117	Pole	TP30.371x24.19x0.219	1	-7.736	1062.661	44.2	Pass
L2	117 - 76	Pole	TP38.038x29.222x0.25	2	-15.284	1520.260	91.7	Pass
L3	76 - 41	Pole	TP44.583x36.603x0.344	3	-22.666	2445.868	86.1	Pass
L4	41 - 0	Pole	TP52.25x42.777x0.375	4	-34.837	3209.891	90.6	Pass
Summary								
Pole (L2)							91.7	Pass
RATING =							91.7	Pass

## Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
  - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
  - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding  $(1) \times (\text{Rod Diameter})$

### Site Data

BU#: 14488		
Site Name: WindsorCentral, CT		
App #: Hartford		
Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	59.25	in
Anchor Spacing:	6	in

### Plate Data

W=Side:	57.25	in
Thick:	2.75	in
Grade:	55	ksi
Clip Distance:	6	in

### Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

### Pole Data

Diam:	52.25	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

### Stress Increase Factor

ASD ASIF:	1.333
-----------	-------

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

### Base Reactions

TIA Revision:	F	
Unfactored Moment, M:	3065	ft-kips
Unfactored Axial, P:	35	kips
Unfactored Shear, V:	28	kips

### Anchor Rod Results

TIA F --> Maximum Rod Tension	153.0 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	78.5% Pass

### Base Plate Results

Base Plate Stress:	46.7 ksi	Flexural Check
Allowable PL Bending Stress:	55.0 ksi	
Base Plate Stress Ratio:	85.0% Pass	

### PL Ref. Data

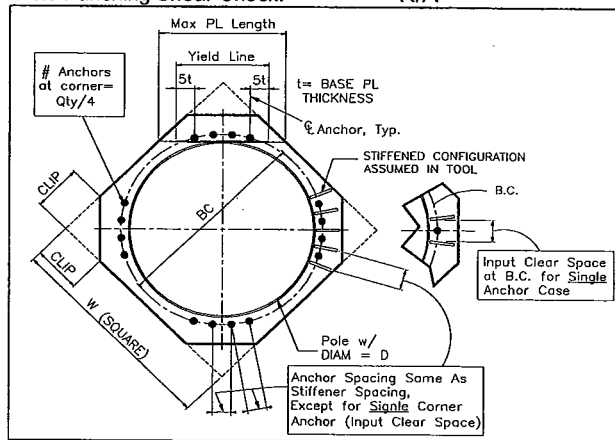
Yield Line (in):	28.71
Max PL Length:	28.71

### N/A - Unstiffened Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$ :	N/A
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$ :	N/A
Plate Comp. (AISC Bracket):	N/A

### Pole Results

Pole Punching Shear Check:	N/A
----------------------------	-----



CAISSON Version 10.35 2:43:36 PM Friday, August 24, 2012  
 B&T Engineering

\*\*\*\*\*  
 \* CAISSON - Pier Foundations Analysis and Design - Copyright Power Line Systems, Inc. 1993-2010 \*  
 \*\*\*\*\*

Project Title: 84435.000.0002 - Windsor Central, CT (Site# 14488)  
 Project Notes: 150' Monopole- 7' Dia, 33' Depth (32.5' Bearing)

Calculation Method: Full 8CD

\*\*\*\*\* I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
7.00	0.50		

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	2.00	0.00	100.0			
2	Clay	3.00	2.00	37.6			
3	Sand	7.00	5.00	55.0		3.690	35.00
4	Sand	4.00	12.00	50.0		3.124	31.00
5	Clay	19.00	16.00	50.0	800.0		

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
3065.0	35.0	28.00	

2.20 ≥ 2.00 (F.S.), Soil Interaction = (2.00/2.20) × 100% = 90.9%

\*\*\*\*\* R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
33.000	190.498	909.5

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft <sup>3</sup> )	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	0.50	2.00	100.0			0.00	1.50
Clay	2.50	3.00	37.6			0.00	4.00
Sand	5.50	7.00	55.0		3.690	274.09	9.44
Sand	12.50	4.00	50.0		3.124	209.36	14.58
Clay	16.50	3.54	50.0	800.0		158.81	18.27
Clay	20.04	12.96	50.0	800.0		-580.39	26.52

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear Factor (with Safety Factor) (kips)	Moment Factor (with Safety Factor) (ft-k)	Shear Factor (without Safety Factor) (kips)	Moment Factor (without Safety Factor) (ft-k)
0.00	61.9	6849.6	28.1	3113.5
3.30	61.9	7053.8	28.1	3206.3
6.60	32.6	7242.4	14.8	3292.0
9.90	-86.0	7167.0	-39.1	3257.7
13.20	-245.1	6625.5	-111.4	3011.6
16.50	-421.6	5535.4	-191.6	2516.1
19.80	-569.4	3900.3	-258.8	1772.9
23.10	-443.5	2195.4	-201.6	997.9
26.40	-295.7	975.7	-134.4	443.5
29.70	-147.8	243.9	-67.2	110.9
33.00	0.0	-0.0	0.0	-0.0

Mmax = 3315.53 Kip-ft (Moment for DSMC sheet)

## Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

**Note:** Shaft assumed to have ties, not spiral, transverse reinforcing

### Site Data

BU#: 14488  
 Site Name: WindsorCentral, CT  
 App #: Hartford

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	3315.53	ft-kips (* Note)
Max. Service Shaft P:	35	kips
Max Axial Force Type:	Comp.	

(\* Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

### Enter Load Factors Below:

For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Load Factor	Shaft Factored Loads	
1.30	Mu:	4310.189 ft-kips
1.30	Pu:	45.5 kips

### Pier Properties

#### Concrete:

Pier Diameter = 7.0 ft  
 Concrete Area = 5541.8 in<sup>2</sup>

#### Reinforcement:

Clear Cover to Tie = 4.00 in  
 Horiz. Tie Bar Size = 5  
 Vert. Cage Diameter = 6.11 ft  
 Vert. Cage Diameter = 73.34 in  
**Vertical Bar Size = 11**  
 Bar Diameter = 1.41 in  
 Bar Area = 1.56 in<sup>2</sup>  
 Number of Bars = 20  
 As Total = 31.2 in<sup>2</sup>  
 A s/ Aconc, Rho: 0.0056 0.56%

### Material Properties

Concrete Comp. strength,  $f_c$  = 3000 psi  
 Reinforcement yield strength,  $F_y$  = 60 ksi  
 Reinforcing Modulus of Elasticity,  $E$  = 29000 ksi  
 Reinforcement yield strain = 0.00207  
 Limiting compressive strain = 0.003

### ACI 318 Code

Select Analysis ACI Code = 2008

### Seismic Properties

Seismic Design Category = D  
 Seismic Risk = High

Solve  
(Run)

<-- Press Upon Completing All Input

ACI 10.5, ACI 21.10.4, and IBC 1810.

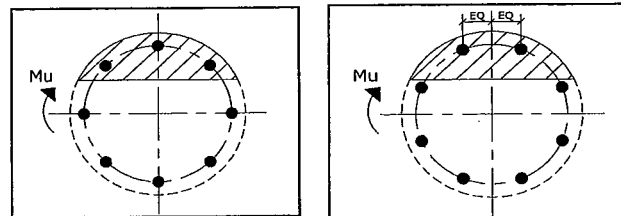
Min As for Flexural, Tension Controlled, Shafts:

$$(3) * (\text{Sqrt}(f_c) / F_y) = 0.0027$$

$$200 / F_y = 0.0033$$

### Results:

Governing Orientation Case: 1



Case 1

Case 2

Dist. From Edge to Neutral Axis: 13.63 in

Extreme Steel Strain,  $\epsilon_t$ : 0.0143

$\epsilon_t > 0.0050$ , Tension Controlled

Reduction Factor,  $\phi$ : 0.900

### Minimum Rho Check:

Actual Req'd Min. Rho: 0.33% Flexural  
 Provided Rho: 0.56% OK

Ref. Shaft Max Axial Capacities, $\phi$ Max(Pn or Tn):		
Max Pu = ( $\phi=0.65$ ) Pn:		
Pn per ACI 318 (10-2)	8280.46	kips
at Mu=( $\phi=0.65$ )Mn=	5016.69	ft-kips
Max Tu, ( $\phi=0.9$ ) Tn =	1684.8	kips
at Mu= $\phi=(0.90)$ Mn=	0.00	ft-kips

**Output Note:** Negative Pu=Tension

For Axial Compression,  $\phi$  Pn = Pu: 45.50 kips  
 Drilled Shaft Moment Capacity,  $\phi$ Mn: 4937.69 ft-kips  
 Drilled Shaft Superimposed Mu: 4310.19 ft-kips

**(Mu/ $\phi$ Mn, Drilled Shaft Flexure CSR): 87.3%**



**PROJECT INFORMATION**

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS  
 SITE ADDRESS: 340 BLOOMFIELD AVENUE WINDSOR, CT 06095  
 LATITUDE: 41.8525 N 41° 51' 9.0" N  
 LONGITUDE: 72.6606 W 72° 39' 38.16" W  
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES  
 CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY



**SITE NUMBER: CT5138**  
**SITE NAME: WINDSOR - CENTRAL**

**DRAWING INDEX**

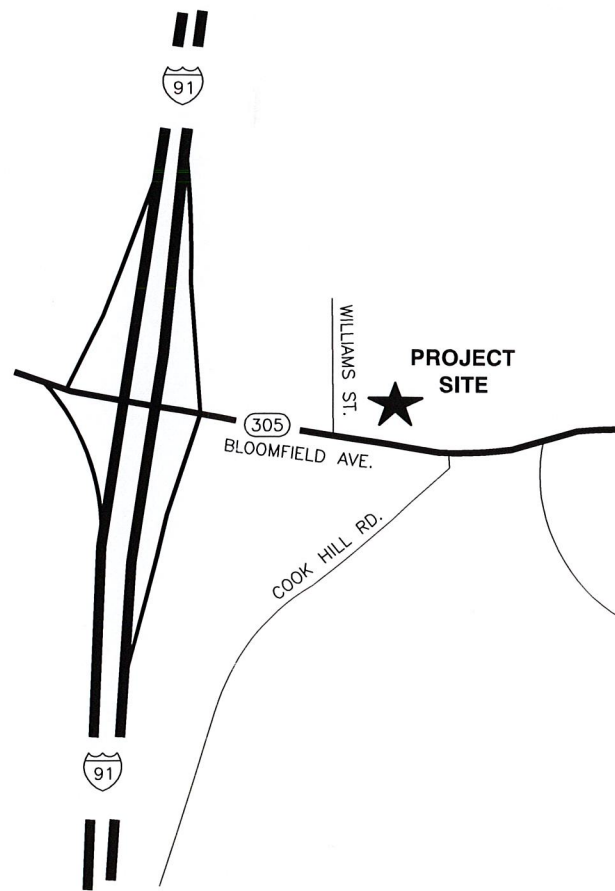
**REV**

- T-1 TITLE SHEET
- GN-1 GENERAL NOTES
- A-1 EQUIPMENT & COMPOUND PLAN
- A-2 ELEVATION & ANTENNA LAYOUT
- A-3 DETAILS
- G-1 PLUMBING DIAGRAM & GROUNDING DETAILS

- 2
- 2
- 2
- 2
- 2
- 2

**VICINITY MAP**

DIRECTIONS TO SITE:  
 FROM ROCKY HILL, CT: HEAD EAST ON ENTERPRISE DR TOWARD CAPITOL BLVD - GO 0.4 MI. TURN LEFT AT CAPITOL BLVD - GO 0.3 MI. TURN LEFT AT WEST ST - GO 0.3 MI. TURN LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD - GO 15.3 MI. TAKE EXIT 37 FOR BLOOMFIELD AVE/CT-305 TOWARD WINDSOR CENTER - GO 0.2 MI. TURN RIGHT AT BLOOMFIELD AVE/CT-305 W - GO 0.2 MI. SHARP LEFT TO STAY ON BLOOMFIELD AVE/CT-305 W - GO 0.1 MI. ARRIVE AT 340 BLOOMFIELD AVE, WINDSOR.



**GENERAL NOTES**

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. 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.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL



BEFORE YOU DIG



CALL TOLL FREE 800-922-4455

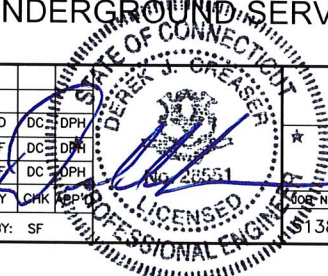
UNDERGROUND SERVICE ALERT



**SITE NUMBER: CT5138**  
**SITE NAME: WINDSOR-CENTRAL**  
 340 BLOOMFIELD AVENUE  
 WINDSOR, CT 06095  
 HARTFORD COUNTY



				AT&T	
				TITLE SHEET (LTE)	
NO.	DATE	REVISIONS	BY	SITE NUMBER	DRAWING NUMBER
2	09/19/12	CONSTRUCTION REVISED	DD DC DPH	138.01	T-1
1	04/17/12	ISSUED FOR CONSTRUCTION	SF DC DPH		
0	04/13/12	ISSUED FOR REVIEW	SF DC DPH		
SCALE: AS SHOWN		DESIGNED BY: RP	DRAWN BY: SF		
				REV	2



**GROUNDING NOTES**

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - NEXLINK  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY
  2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
  3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
  4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
  5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
  6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
  7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
  8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
  9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
  10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
  11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
  12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
  13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
  14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
  15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
  16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
  17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
  18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
  19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
  20. APPLICABLE BUILDING CODES:  
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.  
 BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS  
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS  
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
- AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL
  - ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.
- FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

**ABBREVIATIONS**

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE		
EGR	EQUIPMENT GROUND RING	REQUIRED		TYP	TYPICAL

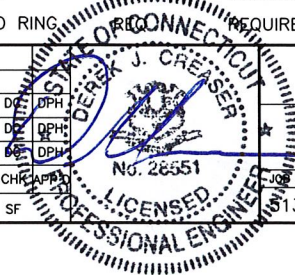
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 BUILDING 20 NORTH, SUITE 2-101  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
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500 ENTERPRISE DRIVE, SUITE 3A  
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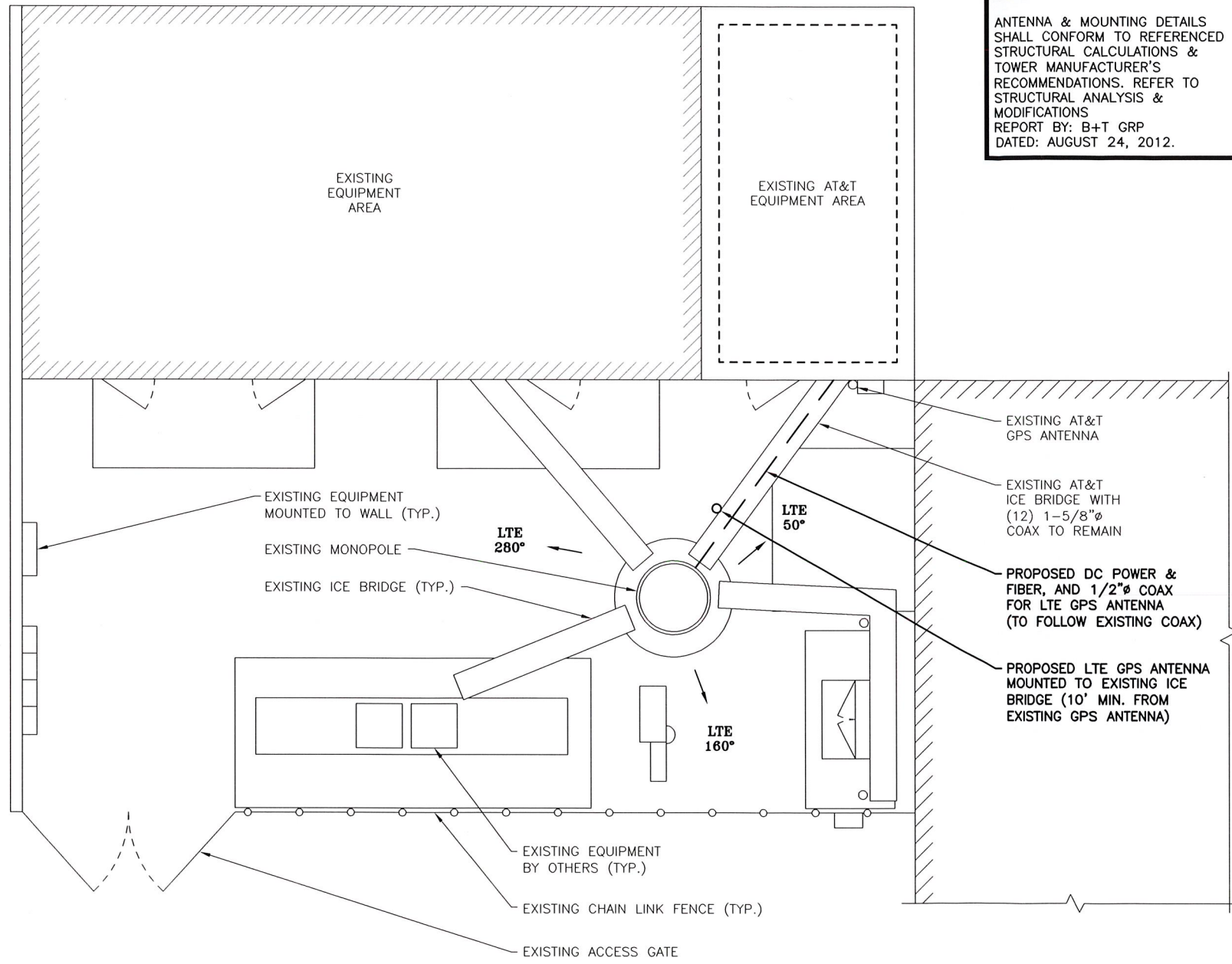
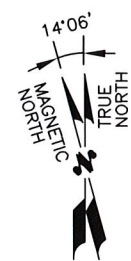
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JOB NUMBER: 138.01			DRAWING NUMBER: GN-1		
REVISIONS			REV		



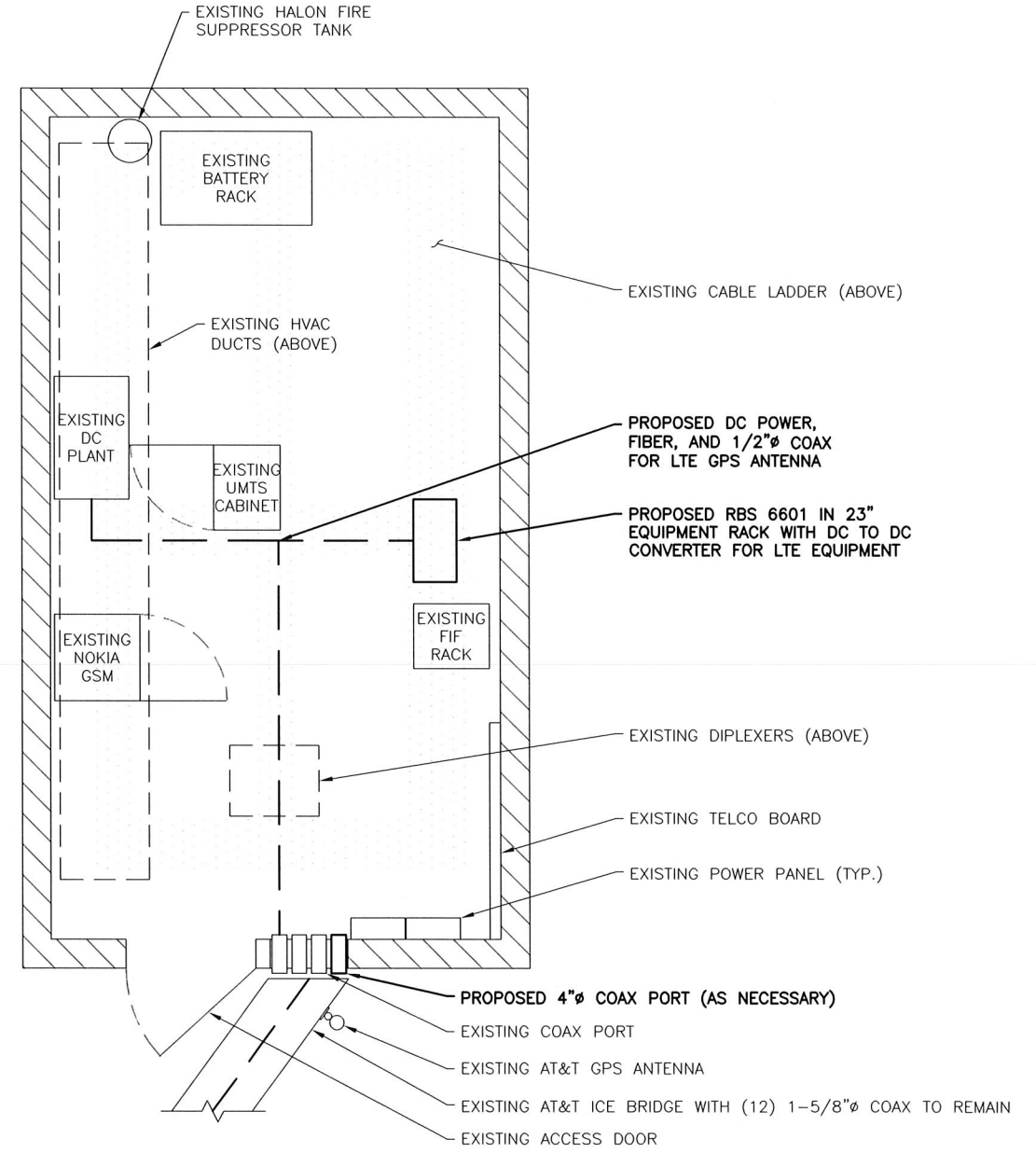
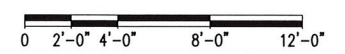


**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

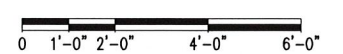
**NOTE:**  
ANTENNA & MOUNTING DETAILS SHALL CONFORM TO REFERENCED STRUCTURAL CALCULATIONS & TOWER MANUFACTURER'S RECOMMENDATIONS. REFER TO STRUCTURAL ANALYSIS & MODIFICATIONS REPORT BY: B+T GRP DATED: AUGUST 24, 2012.



**COMPOUND PLAN**  
SCALE: 1/4"=1'-0"



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



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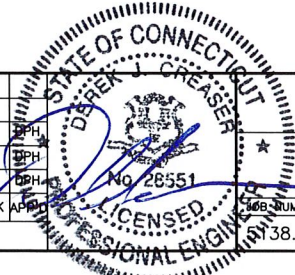
**NEXLINK GLOBAL SERVICES**  
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WINDSOR, CT 06095

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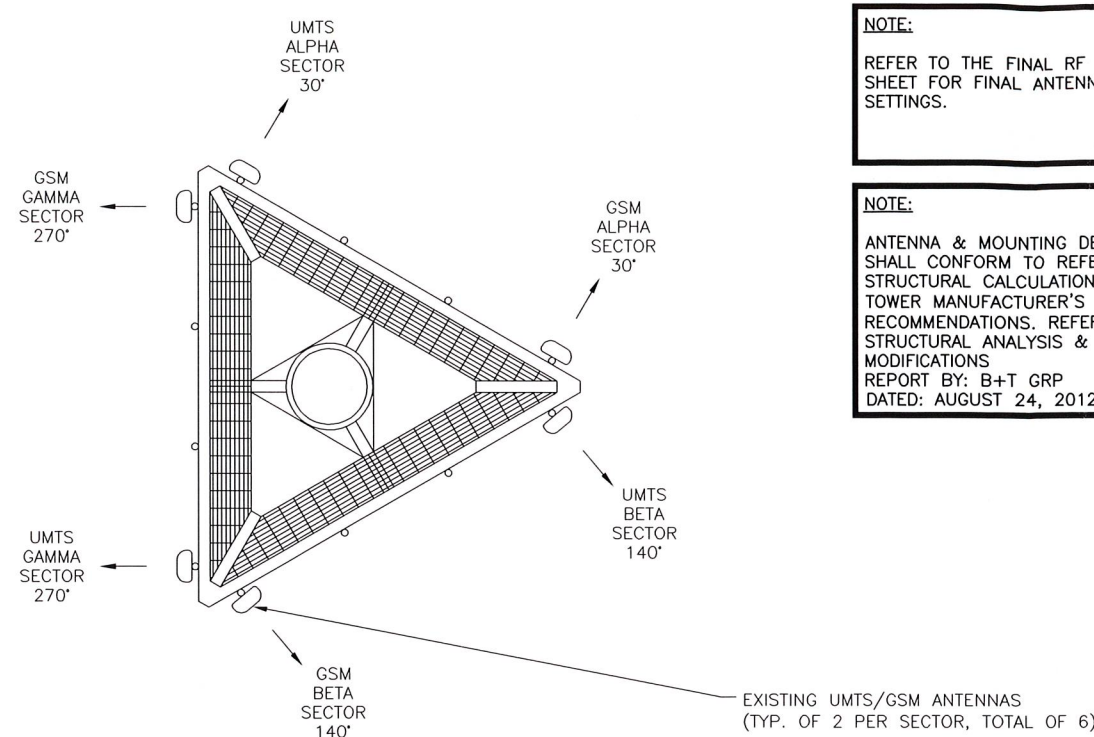
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ROCKY HILL, CT 06067

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NO. DATE		REVISIONS	BY	CHK	APP

SCALE: AS SHOWN    DESIGNED BY: RP    DRAWN BY: SF



AT&T	
EQUIPMENT & COMPOUND PLAN (LTE)	
DWG NUMBER	DRAWING NUMBER
38.01	A-1
REV	2

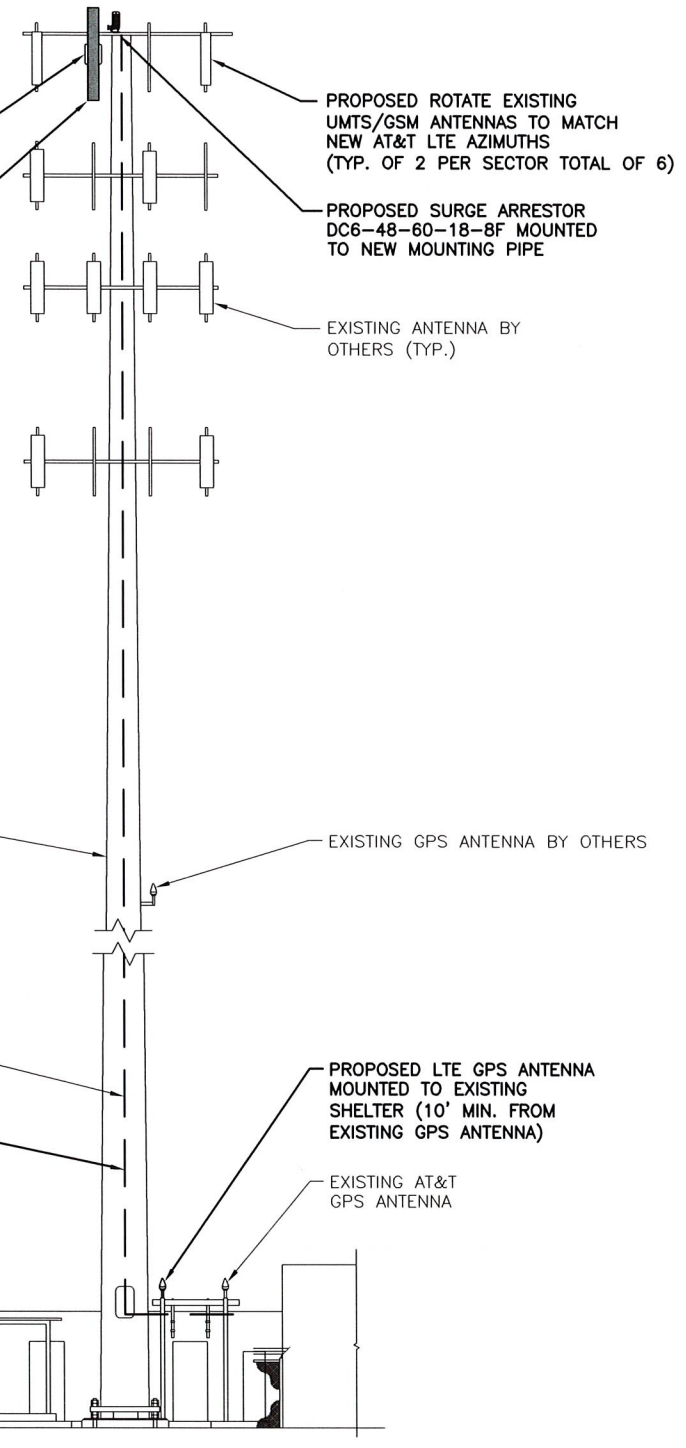


**EXISTING UMTS/GSM ANTENNA PLAN**  
SCALE: N.T.S.

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

**NOTE:**  
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- TOP OF PROPOSED AT&T LTE ANTENNA  
152'-0"± (AGL)
- TOP OF EXISTING MONOPOLE  
150'-0"± (AGL)
- CENTER OF PROPOSED AT&T LTE ANTENNA & EXISTING AT&T UMTS ANTENNAS  
148'-0"± (AGL)
- PROPOSED AT&T RRH'S & SURGE ARRESTOR  
148'-0"± (AGL)
- PROPOSED RRH MOUNTED TO NEW MOUNTING PIPE (TYP. OF 2 PER SECTOR, TOTAL OF 6)
- PROPOSED LTE ANTENNA ON NEW MOUNTING PIPE AT POSITION 3  
(TYP. OF 1 PER SECTOR, TOTAL OF 3)  
ALPHA SECTOR: P65-17-XLH-RR  
BETA SECTOR: AM-X-CD-16-65-00T  
GAMMA SECTOR: AM-X-CD-16-65-00T



EXISTING 150' MONOPOLE

EXISTING GPS ANTENNA BY OTHERS

EXISTING (12) 1-7/8" COAX TO REMAIN

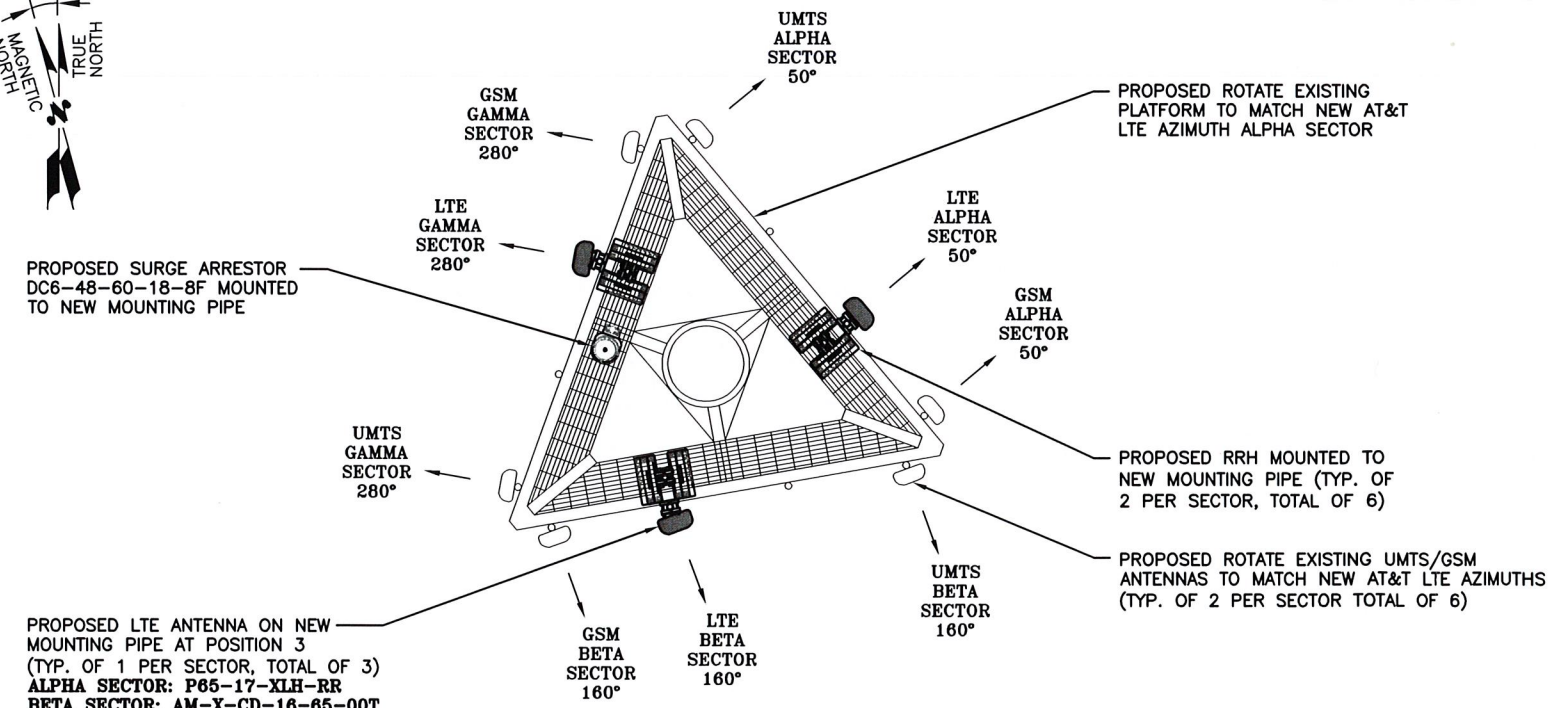
PROPOSED 3" FLEX CONDUIT FOR DC POWER & FIBER (TO FOLLOW EXISTING COAX)

EXISTING EQUIPMENT BY OTHERS (TYP.)

EXISTING BUILDING

EXISTING CHAIN LINK FENCE (TYP.)

GROUND LEVEL  
ELEV. 0'-0"± (AGL)



PROPOSED SURGE ARRESTOR DC6-48-60-18-8F MOUNTED TO NEW MOUNTING PIPE

PROPOSED LTE ANTENNA ON NEW MOUNTING PIPE AT POSITION 3  
(TYP. OF 1 PER SECTOR, TOTAL OF 3)  
ALPHA SECTOR: P65-17-XLH-RR  
BETA SECTOR: AM-X-CD-16-65-00T  
GAMMA SECTOR: AM-X-CD-16-65-00T

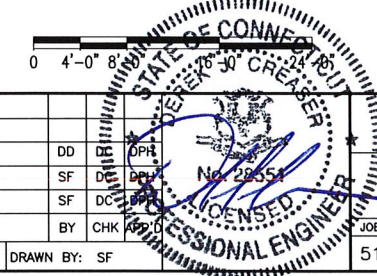
**PROPOSED LTE ANTENNA PLAN**  
SCALE: N.T.S.

PROPOSED ROTATE EXISTING PLATFORM TO MATCH NEW AT&T LTE AZIMUTH ALPHA SECTOR

PROPOSED RRH MOUNTED TO NEW MOUNTING PIPE (TYP. OF 2 PER SECTOR, TOTAL OF 6)

PROPOSED ROTATE EXISTING UMTS/GSM ANTENNAS TO MATCH NEW AT&T LTE AZIMUTHS (TYP. OF 2 PER SECTOR TOTAL OF 6)

**SOUTH ELEVATION**  
SCALE: 1/8"=1'-0"



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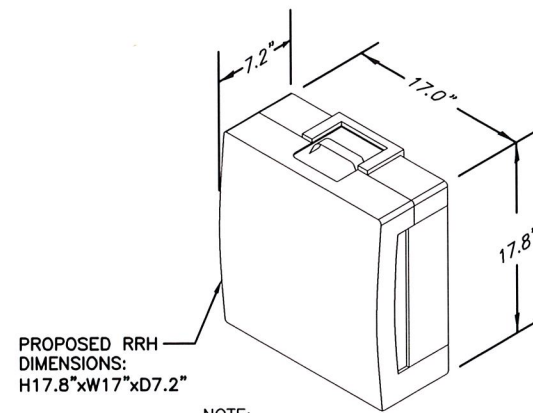
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**at&t**  
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NO.	DATE	REVISIONS	BY	CHK	APP	JOB NUMBER	DRAWING NUMBER	REV	
2	09/19/12	CONSTRUCTION REVISED	DD	DPH		5138.01	A-2	2	
1	04/17/12	ISSUED FOR CONSTRUCTION	SF	DC					
0	04/13/12	ISSUED FOR REVIEW	SF	DC					
SCALE: AS SHOWN						DESIGNED BY: RP	DRAWN BY: SF		

AT&T  
ELEVATION & ANTENNA LAYOUT (LTE)

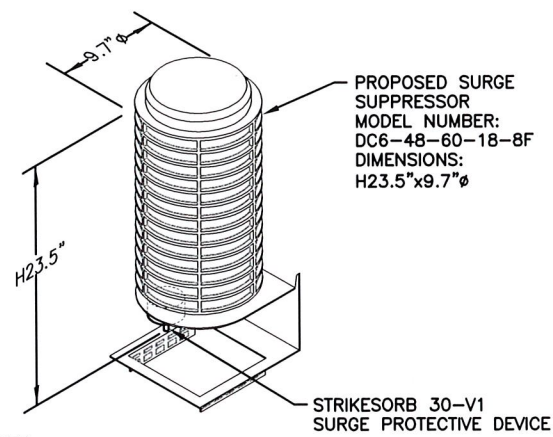


PROPOSED RRH DIMENSIONS: H17.8"xW17"xD7.2"

NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**RRH DETAIL**

SCALE: N.T.S.

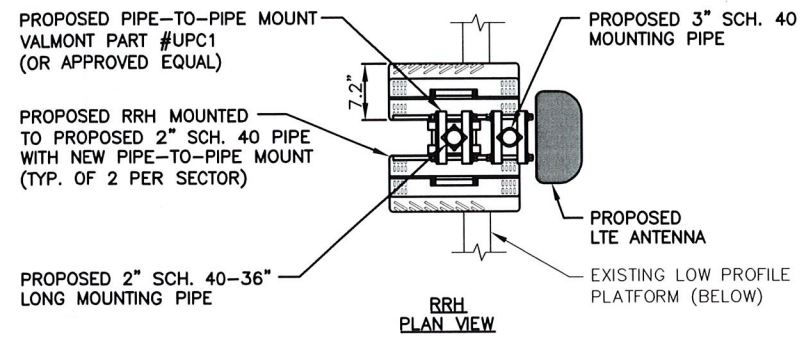


PROPOSED SURGE SUPPRESSOR MODEL NUMBER: DC6-48-60-18-8F DIMENSIONS: H23.5"x9.7"φ

NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE SUPPRESSOR DETAIL**

SCALE: N.T.S.



PROPOSED PIPE-TO-PIPE MOUNT VALMONT PART #UPC1 (OR APPROVED EQUAL)

PROPOSED RRH MOUNTED TO PROPOSED 2" SCH. 40 PIPE WITH NEW PIPE-TO-PIPE MOUNT (TYP. OF 2 PER SECTOR)

PROPOSED 2" SCH. 40-36" LONG MOUNTING PIPE

PROPOSED 3" SCH. 40 MOUNTING PIPE

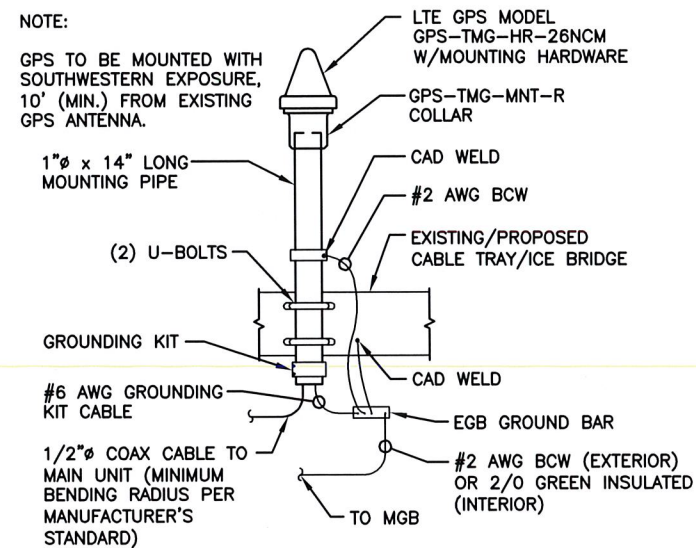
PROPOSED LTE ANTENNA

EXISTING LOW PROFILE PLATFORM (BELOW)

RRH PLAN VIEW

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

NOTE:  
ANTENNA & MOUNTING DETAILS SHALL CONFORM TO REFERENCED STRUCTURAL CALCULATIONS & TOWER MANUFACTURER'S RECOMMENDATIONS. REFER TO STRUCTURAL ANALYSIS & MODIFICATIONS REPORT BY: B+T GRP DATED: AUGUST 24, 2012.



NOTE:

GPS TO BE MOUNTED WITH SOUTHWESTERN EXPOSURE, 10' (MIN.) FROM EXISTING GPS ANTENNA.

LTE GPS MODEL GPS-TMG-HR-26NCM W/MOUNTING HARDWARE

GPS-TMG-MNT-R COLLAR

1"φ x 14" LONG MOUNTING PIPE

CAD WELD

#2 AWG BCW

(2) U-BOLTS

EXISTING/PROPOSED CABLE TRAY/ICE BRIDGE

GROUNDING KIT

CAD WELD

#6 AWG GROUNDING KIT CABLE

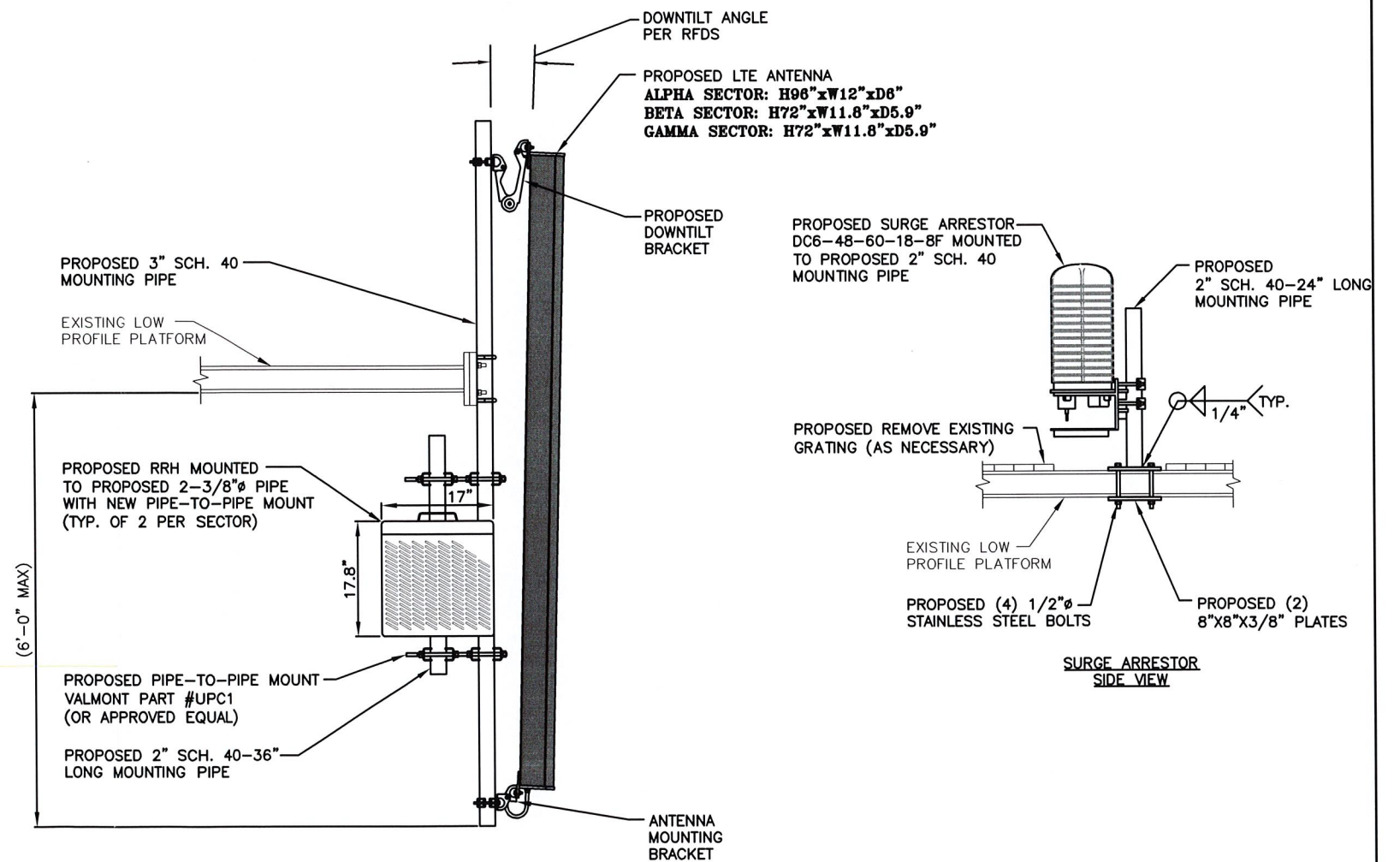
EGB GROUND BAR

1/2"φ COAX CABLE TO MAIN UNIT (MINIMUM BENDING RADIUS PER MANUFACTURER'S STANDARD)

#2 AWG BCW (EXTERIOR) OR 2/0 GREEN INSULATED (INTERIOR) TO MGB

**GPS MOUNTING DETAIL**

SCALE: N.T.S.



PROPOSED 3" SCH. 40 MOUNTING PIPE

EXISTING LOW PROFILE PLATFORM

PROPOSED RRH MOUNTED TO PROPOSED 2-3/8"φ PIPE WITH NEW PIPE-TO-PIPE MOUNT (TYP. OF 2 PER SECTOR)

(6'-0" MAX)

PROPOSED PIPE-TO-PIPE MOUNT VALMONT PART #UPC1 (OR APPROVED EQUAL)

PROPOSED 2" SCH. 40-36" LONG MOUNTING PIPE

DOWNTILT ANGLE PER RFDS

PROPOSED LTE ANTENNA ALPHA SECTOR: H96"xW12"xD6" BETA SECTOR: H72"xW11.8"xD5.9" GAMMA SECTOR: H72"xW11.8"xD5.9"

PROPOSED DOWNTILT BRACKET

PROPOSED SURGE ARRESTOR DC6-48-60-18-8F MOUNTED TO PROPOSED 2" SCH. 40 MOUNTING PIPE

PROPOSED 2" SCH. 40-24" LONG MOUNTING PIPE

PROPOSED REMOVE EXISTING GRATING (AS NECESSARY)

EXISTING LOW PROFILE PLATFORM

PROPOSED (4) 1/2"φ STAINLESS STEEL BOLTS

PROPOSED (2) 8"x8"x3/8" PLATES

SURGE ARRESTOR SIDE VIEW

**PROPOSED LTE ANTENNA, RRH & SURGE ARRESTOR MOUNTING DETAIL**

SCALE: N.T.S.

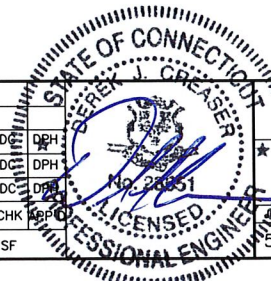
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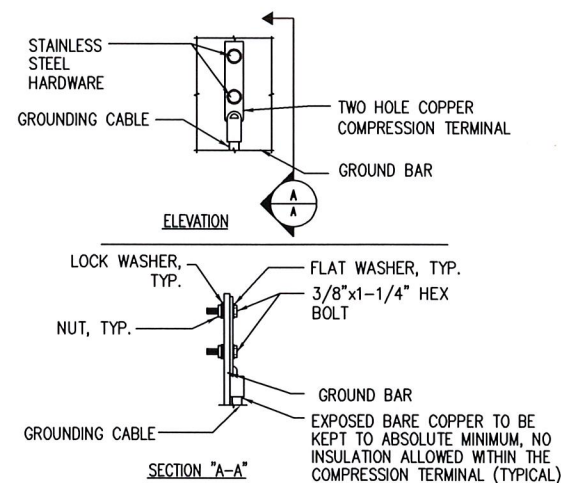
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				DETAILS (LTE)			
				DRAWING NUMBER			
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				REV			
				2			
NO.	DATE	REVISIONS	BY	CHK	APP	DESIGN NUMBER	5138.01
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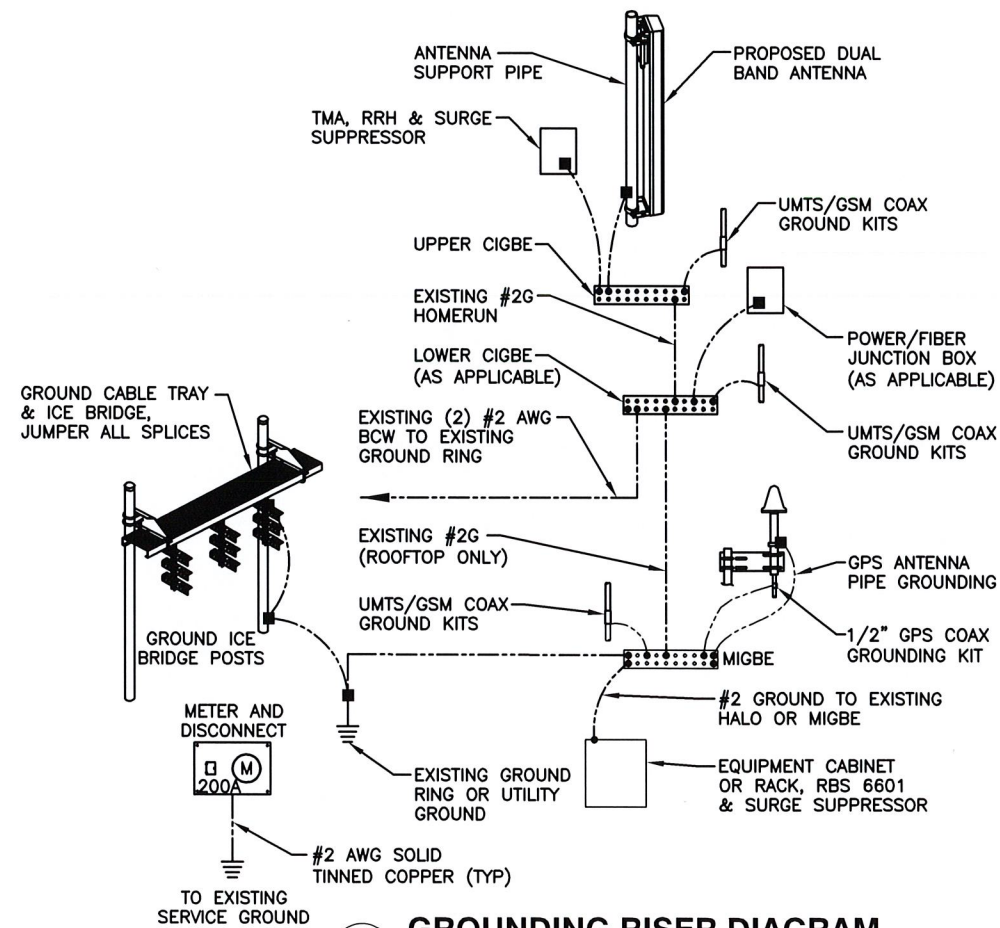




- NOTE:
- "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
  - OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
  - CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

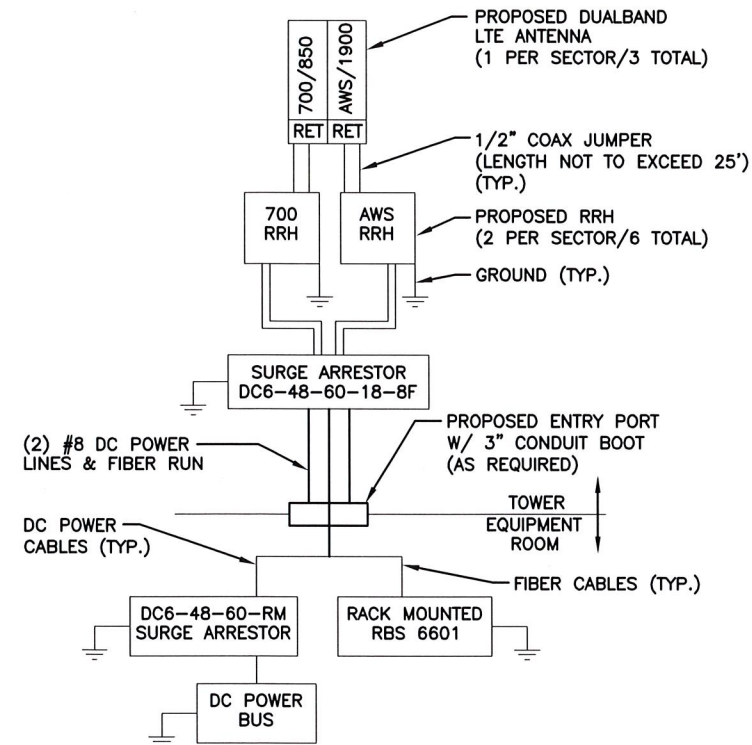
**TYPICAL GROUND BAR CONNECTION DETAIL**

2  
N.T.S.



**GROUNDING RISER DIAGRAM**

1  
N.T.S.



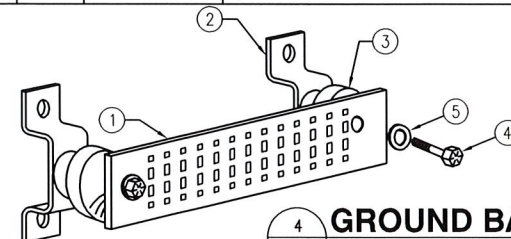
NOTES:

- CONTRACTOR TO CONFIRM ALL PARTS.
- INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

**PLUMBING DIAGRAM**

3  
N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2		WALL MTG. BRKT.
3	2		INSULATORS
4	4		5/8"-11x1" H.H.C.S.
5	4		5/8 LOCKWASHER



**GROUND BAR - DETAIL**

4  
N.T.S.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

**Hudson Design Group, Inc.**  
1600 OSGOOD STREET  
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**NEXLINK GLOBAL SERVICES**  
a UniTek GLOBAL SERVICES company  
800 MARSHALL PHELPS ROAD UNIT#: 2A  
WINDSOR, CT 06095

**SITE NUMBER: CT5138**  
**SITE NAME: WINDSOR-CENTRAL**  
340 BLOOMFIELD AVENUE  
WINDSOR, CT 06095  
HARTFORD COUNTY

**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

2 09/19/12 CONSTRUCTION REVISED		DD	DPH	DPH	AT&T PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)	
1 04/17/12 ISSUED FOR CONSTRUCTION		SF	DPH	DPH		
0 04/13/12 ISSUED FOR REVIEW		SF	DPH	DPH		
NO.	DATE	REVISIONS	BY	CHKD	JOB NUMBER	
					5138.01	
SCALE: AS SHOWN					DESIGNED BY: RP	DRAWN BY: SF
					DRAWING NUMBER	REV
					G-1	2

