

July 28, 2015

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification
144 Old Boston Post Road, Danbury, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains ten (10) wireless telecommunications antennas at the top of the existing 65-foot tower at 144 Old Boston Post Road in Danbury, Connecticut (the “Property”). The tower and underlying property are owned by AT&T. The Council approved Cellco’s shared use of this tower in 2004. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with two (2) model 800 10734V01, 700 MHz antennas; two (2) model HBXX-6517DS-VTM, 1900 MHz antennas; and two (2) model HBXX-6517DS-VTM, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install four (4) coaxial cable diplexers; two (2) remote radio heads (“RRHs”); and one (1) HYBRIFLEX™ antenna cable. Included in [Attachment 1](#) are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Danbury Mayor, Mark D. Boughton.

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

Melanie A. Bachman
July 28, 2015
Page 2

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the top of the 65-foot tower.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies for the modified Danbury facility are included in Attachment 2. As indicated on these tables, Cellco's modified facility will operate well within the FCC standards for RF emissions.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis included in Attachment 3*).

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Mark D. Boughton, Mayor
Tim Parks

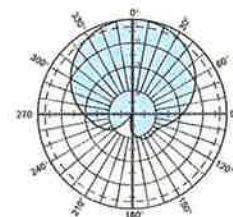
ATTACHMENT 1

Kathrein's X-polarized antennas are designed for use in digital polarization diversity systems.

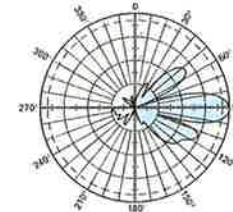
- X-polarized (+45° and -45°).
- UV resistant fiberglass radomes.
- Wideband vector dipole technology.
- DC Grounded metallic parts for impulse suppression.
- RET motor housed inside the radome and field replaceable.

General specifications:

Frequency range	698–894 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° and -45°
Maximum input power	500 watts per input (at 50°C)
Connector	2 x 7-16 DIN female (long neck) (bottom mounted)
Isolation	>30 dB
Electrical downtilt	0–16 degrees (continuously adjustable)
<i>See reverse for order information.</i>	



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization
0°–16° electrical downtilt



Specifications:	698–806 MHz	824–894 MHz
Gain	14.2 dBi	14.8 dBi
Front-to-back ratio	>30 dB (co-polar) 32 dB (average)	>30 dB (co-polar) 33 dB (average)
+45° and -45° polarization horizontal beamwidth	68° (half-power)	65° (half-power)
+45° and -45° polarization vertical beamwidth	16° (half-power)	14.8° (half-power)
Min. sidelobe suppression for first sidelobe above main beam average	0° 8° 16° T 16 17 17 dB 16 19 20 dB	0° 8° 16° T 18 17 16 dB 20 20 20 dB
Cross polar ratio		
Main direction	0°	24 dB (typical)
Sector	±60°	>10 dB, Average: 15 dB
		23 dB (typical)
		>10 dB, Average: 16 dB

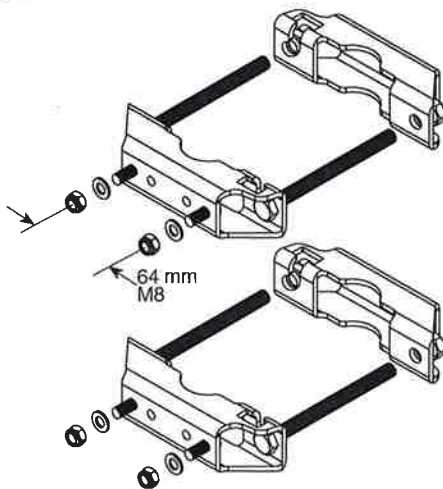
IRT specifications:

Logical interface ex factory ¹	3GPP/AISG 2.0
Protocols	AISG 1.1 and 3GPP/AISG 2.0 compliant
Hardware interface ²	2 x 8 pin connector acc. IEC 60130-9; according to AISG: – IRT in (male): Control / Daisy chain in – IRT in (female): Daisy chain out
Power supply	10–30 V
Power consumption	<1 watt (standby) <8.5 watts (motor activated)
Adjustment time (full range)	40 sec.
Adjustment cycles	>50,000
Certification	FCC 15.107 Class B Computing Devices

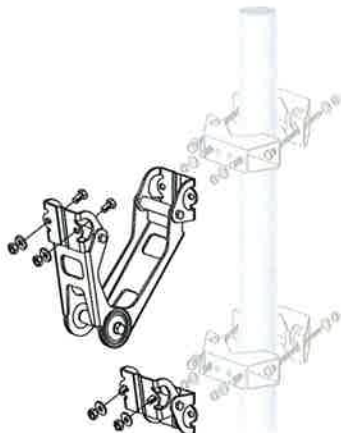
¹ The protocol of the logical interface can be switched from 3GPP/AISG 2.0 to AISG 1.1 and vice versa with a vendor specific command. Start-up operation of the RCU 86010149 is possible in an RET system supporting AISG 1.1 or supporting 3GPP/AISG 2.0 after performing a layer 2 reset before address assignment. The protocol can also be changed as follows: AISG 1.1 to 3GPP: Enter "3GPP" into the additional data field "Installer's ID" and perform a layer 7 reset or a power reset. 3GPP to AISG 1.1: Enter "AISG 1" into the additional datafield "Installer's ID" and perform a layer 2 reset or a power reset. After switching the protocol any other information can be entered into the "Installer's ID" field.

² The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ("hand-tightened"). The connector should be tightened by hand only!





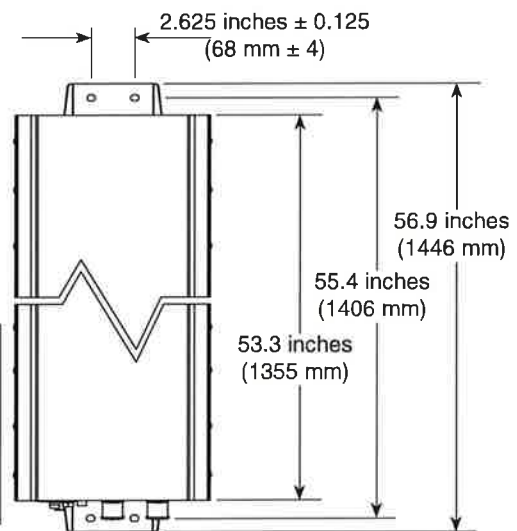
Mounting Brackets
for use with 2-point mount antennas
Mast dia. 2–4.5 inches (50–115 mm)
Weight: 4.4 lb (2 kg)



Mechanical Tilt Brackets
for use with 2-point mount antennas
Weight: 7.4 lb (3.7 kg)
(Model 850 10013)

Mechanical specifications:

Weight	24.3 lb (11 kg)	28.7 lb (13 kg) clamps included
Dimensions H x W x D	53.3 x 11.9 x 3.9 inches (1355 x 303 x 99 mm)	
Wind load	at 93 mph (150kph)	
Front/Side/Rear	140 lbf / 45 lbf / 160 lbf (620 N) / (200 N) / (710 N)	
Mounting category	M (Medium)	
Wind survival rating*	150 mph (240 kph)	
Shipping dimensions	56.3 x 12.4 x 4.5 inches (1430 x 315 x 115 mm)	
Shipping weight	33.1 lb (15 kg)	
Mounting bracket	2-point hot-dip galvanized with stainless steel hardware for 2 to 4.5 inch (50 to 115 mm) OD masts.	

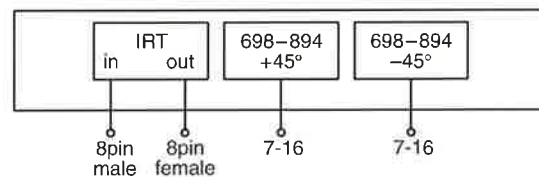
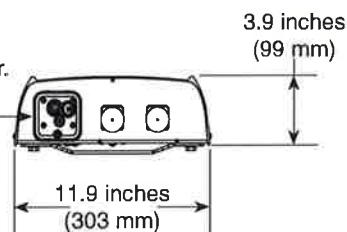


KATHREIN 860 10149

FC Tested To Comply With FCC Standards

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: Refer to part number 860 10149 for the specifications of the remote control actuator.



Order Information:

Model	Description
800 10734V01	Antenna with mounting bracket 0°–16° electrical downtilt
800 10734V01K	Antenna with mounting bracket and mechanical tilt bracket 0°–16° electrical downtilt

* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

Product Specifications

COMMScope®

POWERED BY



HBXX-6517DS-VTM

Andrew® Quad Port Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Superior azimuth tracking and pattern symmetry with excellent passive intermodulation suppression

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain, dBi	19.0	19.1	19.2
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
CPR at Boresight, dB	21	22	21
CPR at Sector, dB	10	11	9
Isolation, dB	30	30	30
VSWR Return Loss, dB	1.4 15.6	1.4 15.6	1.4 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0 ° 18.4	0 ° 18.4	0 ° 18.7
	3 ° 18.7	3 ° 18.7	3 ° 18.9
	6 ° 18.4	6 ° 18.5	6 ° 18.6
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® quad
Band	Single band
Brand	DualPol® Teletilt®
Operating Frequency Band	1710 – 2180 MHz

Product Specifications

COMMSCOPE®

HBXX-6517DS-VTM



Performance Note

Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4
Wind Loading, maximum	668.0 N @ 150 km/h 150.2 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph

Dimensions

Depth	166.0 mm 6.5 in
Length	1903.0 mm 74.9 in
Width	305.0 mm 12.0 in
Net Weight	19.5 kg 43.0 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	HBXX-6517DS-A2M
RET System	Teletilt®

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system



Included Products

600899A-2 — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance
------------------	---

POWERED BY



CBC78-DF
Crossband Coupler, 698-787 MHz/Cellular

Electrical Specifications

dc Pass-through	Band 1 Band 2
3rd Order IMD Test Method	Two +43 dBm carriers
3rd Order IMD, maximum	-110 dBm
Isolation Between Paths, minimum	50.0 dB
Lightning Surge Current	10 kA
Lightning Surge Current Waveform	8/20 waveform
Return Loss, minimum	22.00 dB
Return Loss, typical	24.00 dB
Spurious Signals/2nd Order Harmonics, minimum	40 dB
Spurious Signals/3rd Order Harmonics, minimum	30 dB

Electrical Specifications (Branch 1)

Operating Frequency Band	698 – 787 MHz
Insertion Loss, maximum	0.25 dB
Output Power, maximum composite	500 W
Peak Power	5 kW
Total Group Delay, maximum	25 ns

Electrical Specifications (Branch 2)

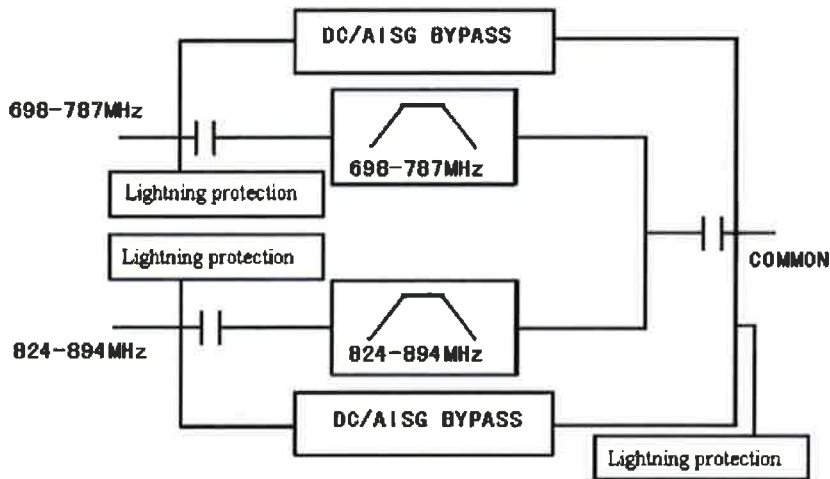
Operating Frequency Band	824 – 894 MHz
Insertion Loss, maximum	0.25 dB
Output Power, maximum composite	500 W
Peak Power	5 kW
Total Group Delay, maximum	25 ns

CBC78-DF

POWERED BY



Block Diagram



General Specifications

Product Type	Diplexer
Application	Indoor Outdoor
Includes	Mounting hardware

Mechanical Specifications

Color	Gray
Connector Interface	7-16 DIN Female
Connector Interface Style	Long neck
Ground Screw Diameter	0.25 in

Environmental Specifications

Ingress Protection Test Method	IEC 60529:2001, IP67
Operating Temperature	-40 °C to +65 °C (-40 °F to +149 °F)
Relative Humidity	5%–100%

Dimensions

Depth	66.5 mm 2.6 in
Height	200.0 mm 7.9 in
Volume	2.0 L
Width	150.0 mm 5.9 in
Weight, without mounting hardware	3.0 kg 6.6 lb

Product Specifications

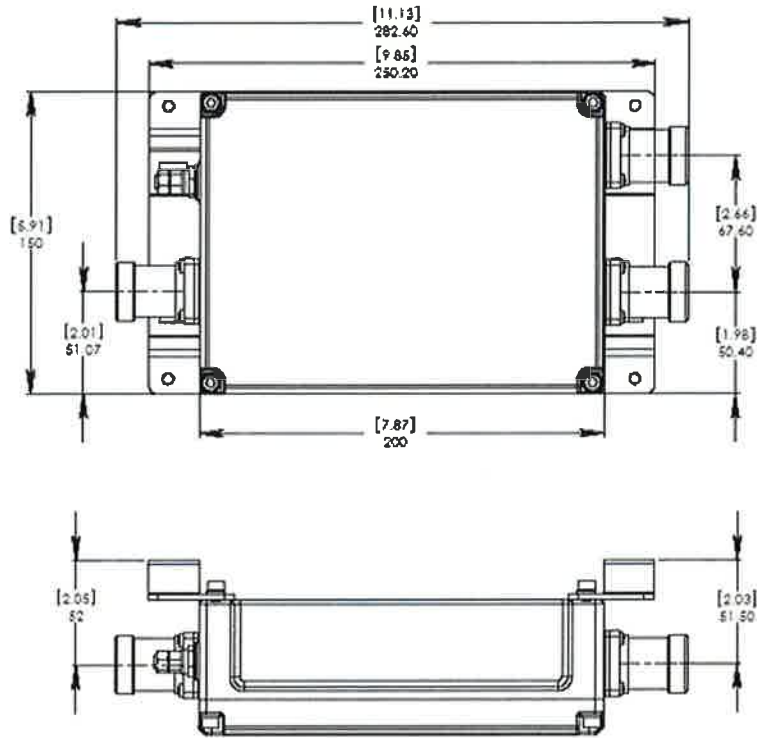
COMMSCOPE®

CBC78-DF

POWERED BY



Outline Drawing



Regulatory Compliance/Certifications

Agency

ISO 9001:2008

Classification

Designed, manufactured and/or distributed under this quality management system

Product Specifications

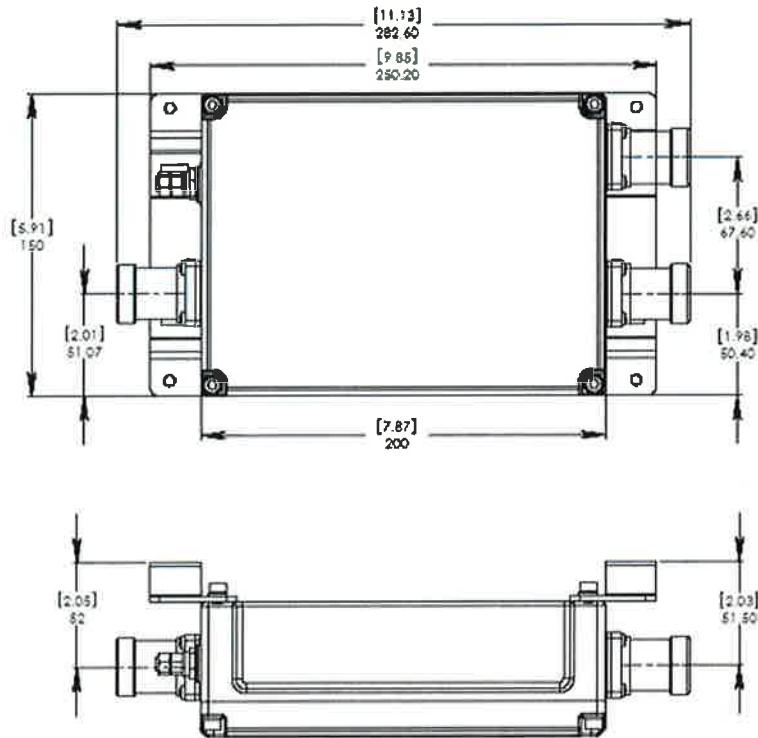
COMMSCOPE®

CBC78-DF

POWERED BY



Outline Drawing



Regulatory Compliance/Certifications

Agency

ISO 9001:2008

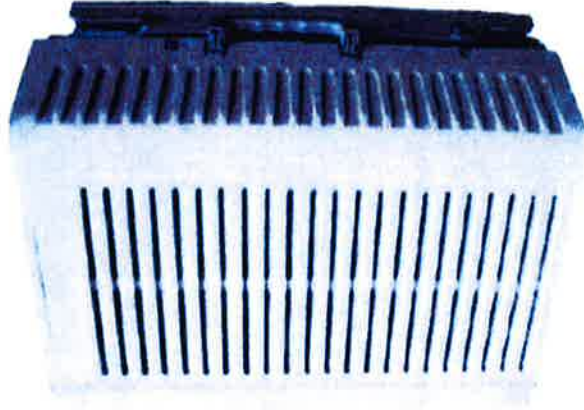
Classification

Designed, manufactured and/or distributed under this quality management system

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3



RRH2x60	
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver	1900 HW version 1900A HW version
Features	2 Branch RX – LA6.0.1 4 Branch RX – LR13.3 AISG 2.0 for RET/TMA
Power	Internal Smart Bias-T -48VDC
CPRI Ports	2 CPRI Rate 3 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (top mounted)

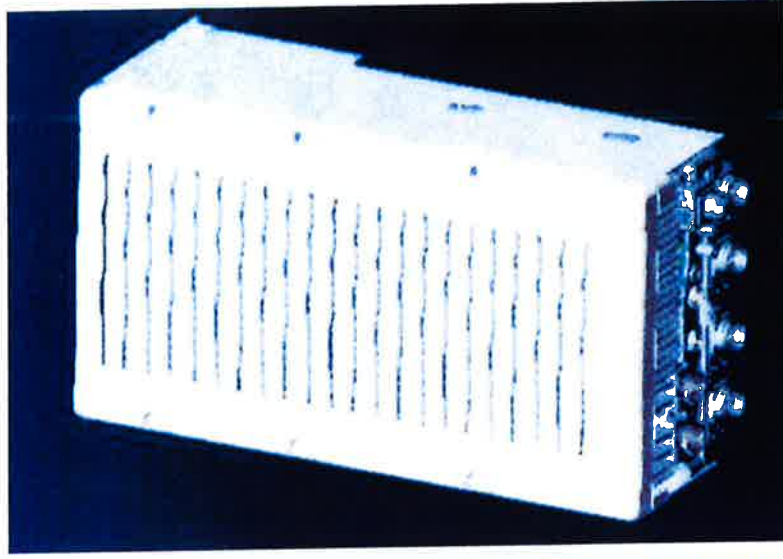
** Not a Verizon Wireless deployed product

ALCATEL-LUCENT – CONFIDENTIAL – SOLELY FOR AUTHORIZED PERSONS HAVING A NEED TO KNOW – PROPRIETARY – USE PURSUANT TO COMPANY INSTRUCTION

NEW PCS RF MODULES FOR VZW RRH2X60 - HW CHARACTERISTICS

LR14.3

RRH2x60	
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC Internal Smart Bias-T
CPRJ Ports	2 CPRJ Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w) x 9.4" (d)**
Weight	55lb**



** - Includes solar shield but not mounting brackets (8 lbs.)



ATTACHMENT 2

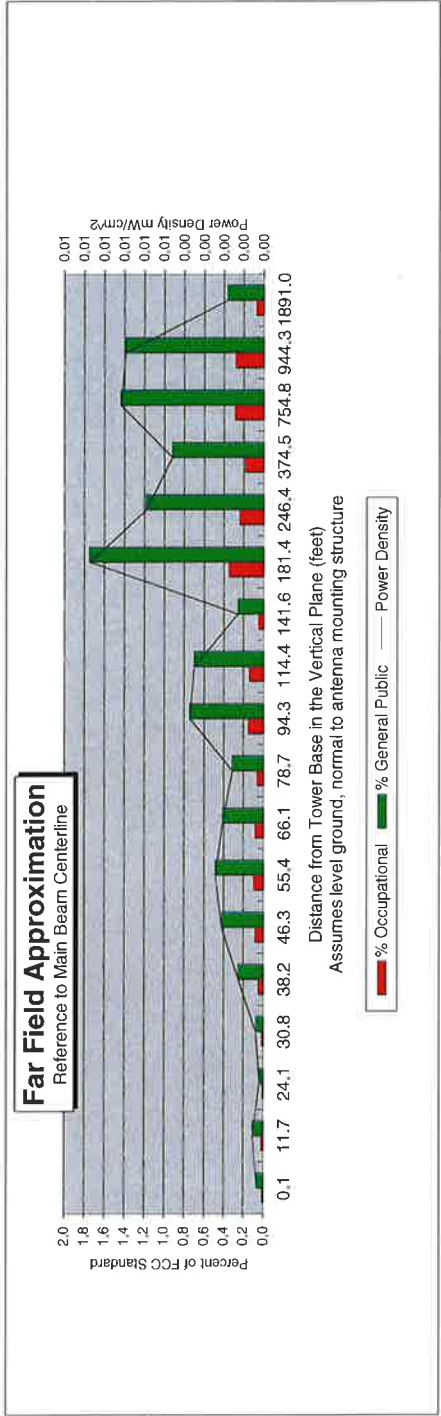
Far Field Approximation
with downtilt variation

**Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types**



Location:	Danbury South, CT
Site #:	5-0169
Date:	06/30/15
Name:	Ryan Ulanday
File Name:	Danbury South, CT - FF Power

Operating Freq. (MHz)	746.0
Antenna Height (ft):	69.0
Antenna Gain (dBi):	15.2
Antenna Size (in.):	76.1
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	892.0
Number of Channels:	1



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	66.0	67.0	70.3	72.8	76.2	80.6	86.2	93.4	102.7	115.1	132.1	156.2	193.1	255.1	380.3	757.6	946.6	1892.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.7	24.1	30.8	38.2	46.3	55.4	66.1	78.7	94.3	114.4	141.6	181.4	246.4	374.5	754.8	944.3	1891.0
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	0
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.3	0.1
Percent of General Population Standard	0.1	0.1	0.0	0.1	0.3	0.4	0.5	0.4	0.3	0.7	0.7	0.3	1.7	1.2	0.9	1.4	1.4	0.4

Antenna Type Kathrein 80010735V01
Max% 1.75%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pt.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

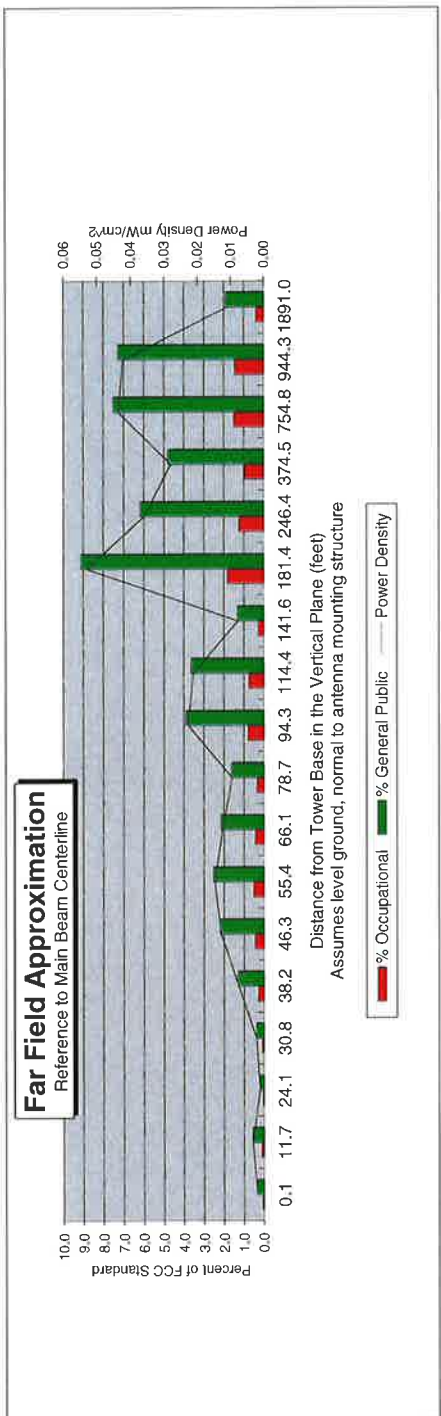
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	Danbury South, CT
Site #:	5-0169
Date:	06/30/15
Name:	Ryan Ulandy
File Name:	Danbury South, CT - FF Power

Operating Freq. (MHz)	869.0
Antenna Height (ft):	69.0
Antenna Gain (dBi):	16.7
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	3906.0
Number of Channels:	9



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	66.0	67.0	70.3	72.8	76.2	80.6	86.2	93.4	102.7	115.1	132.1	156.2	193.1	255.1	380.3	757.6	946.6	1892.1	
Distance from Antenna Structure Base in Horizontal plane	0.1	11.7	24.1	30.8	38.2	46.3	55.4	66.1	78.7	94.3	114.4	141.6	181.4	246.4	374.5	754.8	944.3	1891.0	#NUM!
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	0
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.05	0.04	0.03	0.04	0.04	0.01	#NUM!
Percent of Occupational Standard	0.1	0.1	0.0	0.1	0.3	0.4	0.5	0.4	0.3	0.8	0.7	0.3	1.8	1.2	1.0	1.5	1.5	0.4	#NUM!
Percent of General Population Standard	0.3	0.6	0.2	0.4	1.3	2.2	2.5	2.1	1.6	3.9	3.7	1.3	9.1	6.2	4.8	7.5	7.3	1.9	#NUM!

Antenna Type DB848F65ZAXY
Max% 9.13%
Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dB), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density (mW/cm²).
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

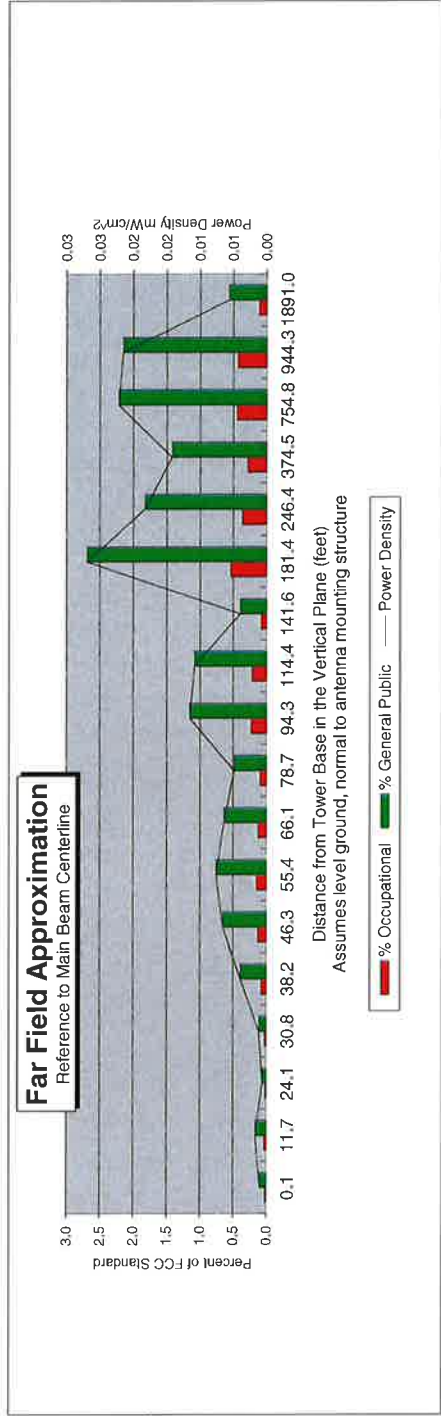
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	Danbury South, CT
Site #:	5-0169
Date:	06/30/15
Name:	Flyan Ulanday
File Name:	Danbury South, CT - FF Power

Operating Freq. (MHz)	1971.0
Antenna Height (ft):	69.0
Antenna Gain (dBi):	17.2
Antenna Size (in.):	50.9
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	1771.0
Number of Channels:	1



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	66.0	67.0	70.3	72.8	76.2	80.6	86.2	93.4	102.7	115.1	132.1	156.2	193.1	255.1	380.3	757.6	946.6	1892.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.7	24.1	30.8	38.2	46.3	55.4	66.1	78.7	94.3	114.4	141.6	181.4	246.4	374.5	754.8	944.3	1891.0
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.03	0.02	0.01	0.02	0.02	0.01
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.5	0.4	0.3	0.4	0.4	0.1
Percent of General Population Standard	0.1	0.2	0.1	0.1	0.4	0.6	0.7	0.6	0.5	1.2	1.1	0.4	2.7	1.8	1.4	2.2	2.1	0.6

Antenna Type HBXX-6516DS-A2M
Max% 2.69%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pt
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

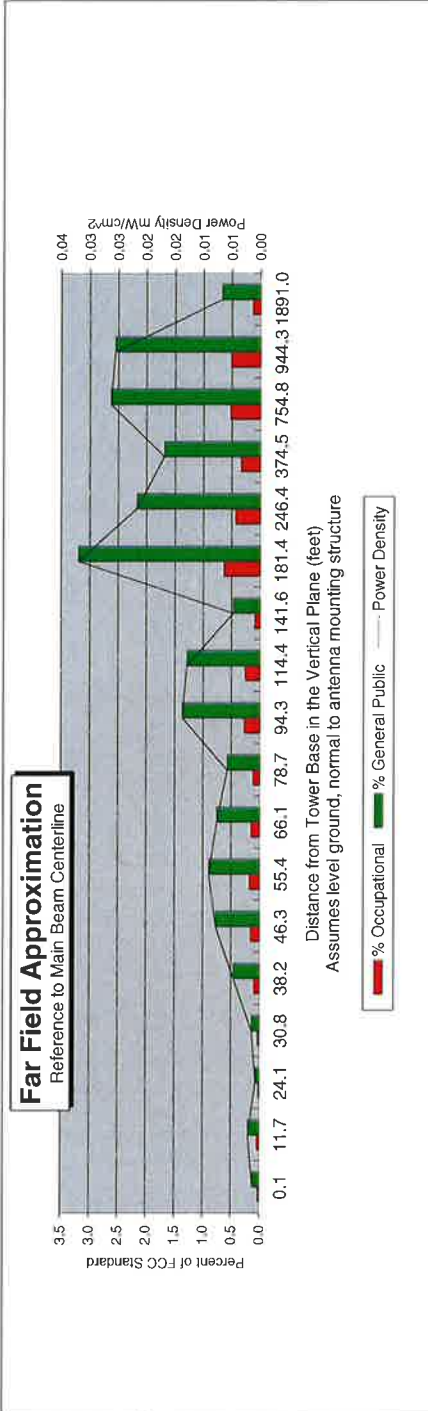
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	Danbury South, CT
Site #:	5-0169
Date:	06/30/15
Name:	Ryan Ulanday
File Name:	Danbury South, CT - FF Power

Operating Freq. (MHz)	2110.0
Antenna Height (ft):	69.0
Antenna Gain (dBi):	18.0
Antenna Size (ft.):	50.9
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (W):	1750.0
Number of Channels:	1



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	66.0	67.0	70.3	72.8	76.2	80.6	86.2	93.4	102.7	115.1	132.1	156.2	193.1	255.1	380.3	757.6	946.6	1892.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.7	24.1	30.8	38.2	46.3	55.4	66.1	78.7	94.3	114.4	141.6	181.4	246.4	374.5	754.8	944.3	1891.0
Angle from Main Beam. (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.03	0.02	0.02	0.03	0.01
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.1	0.6	0.4	0.3	0.5	0.5	0.1
Percent of General Population Standard	0.1	0.2	0.1	0.1	0.5	0.8	0.9	0.8	0.6	1.4	1.3	0.5	3.2	2.2	1.7	2.6	2.6	0.7

Antenna Type HBXX-6516DS-A2M
Max% 3.20%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Pt
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

ATTACHMENT 3



AT&T Towers
 5405 Windward Parkway
 Alpharetta, GA 30004
 770-708-6100
 Tuesday, May 05, 2015



ENGINEERING INNOVATION

Velocitel, Inc., d.b.a. FDH Velocitel
 6521 Meridien Dr.
 Raleigh, NC 27616
 919-755-1012

STRUCTURAL ANALYSIS
65' SST

AT&T DESIGNATION:	Site USID:	SNET005-A
	Site FA:	10137472
	Site Name:	Danbury
	Project Number:	15BKPG1400
	Carrier Project:	4_Wireline Verizon Tower Only Modification 01.14.2015
ANALYSIS CRITERIA:		TIA/EIA-222-F
	Codes:	2005 Connecticut State Building Code

SITE DATA: 144 Old Boston Post Road, Danbury, CT 06810, Fairfield County
 Latitude 41.3595, Longitude -73.4655
 Market: NYC/NNJ
 65' SST

Julie Overman,

FDH Velocitel 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:	86.70%	Pass
Foundation Ratio with Proposed Equipment:	98.70%	Pass

We at FDH Velocitel appreciate the opportunity of providing our continuing professional services to you and AT&T Towers. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by: Richard Torbert
 Analysis Prepared by: Richard Torbert
 Analysis Reviewed by: Dennis D. Abel, PE



AT&T Proprietary (Internal Use Only)
 Not for use or disclosure outside the AT&T companies
 except under written agreement

05-05-2015



ENGINEERING INNOVATION

Velocitel, Inc., d.b.a. FDH Velocitel, 6521 Meridien Drive, Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

**Structural Analysis for
AT&T Towers**

65' Self-Support Tower

Site Name: Danbury

Site USID: SNET005-A

Site FA: 10137472

Carrier Project: 4_Wireline Verizon Tower Only Modification 01.14.2015

FDH Project Number 15BKPG1400

Analysis Results

Tower Components	86.7%	Sufficient
Foundation	98.7%	Sufficient

Prepared By:

Richard Torbert
Project Engineer

Reviewed By:

Dennis D. Abel, PE
Director of Structural Engineering
CT PE License No. 29630

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



May 5, 2015

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY3
 Conclusions3
 Recommendation.....3
RESULTS4
GENERAL COMMENTS5
LIMITATIONS5
APPENDIX6

EXECUTIVE SUMMARY

At the request of AT&T Towers, FDH Velocitel performed a structural analysis of the existing self-supported tower located in Danbury, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and the *2005 Connecticut State Building Code (CSBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, soil parameters and foundation dimensions was obtained from:

- ❑ FDH, Inc. (Job No. 11-07130T T1) Self-Support Tower Mapping Report dated August 23, 2011
- ❑ FDH Engineering, Inc. (Project No. 11-07110E N1) Dispersive Wave Propagation Testing of an Existing Tower Foundation dated August 23, 2011
- ❑ FDH Engineering, Inc. (Project No. 11-07110E G1) Geotechnical Evaluation of Subsurface Conditions dated August 24, 2011
- ❑ FDH Engineering, Inc. (Project No. 12-03174E S1) Modification Drawings for a 65' Self-Support Tower dated March 16, 2012
- ❑ Hudson Design Group, LLC (Project No. CT2133) Final Report of Special Inspection dated January 11, 2013
- ❑ All documents and photos acquired from AT&T Siterra
- ❑ AT&T Towers

The *basic design wind speed* per the *TIA/EIA-222-F* standards is 85 mph without ice and 38 mph with 1/2" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Verizon in place at 69 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 CSBC* provided the **Recommendations** listed below are satisfied. Furthermore, given the existing foundation dimensions (see FDH Engineering, Inc. Project No. 11-07110E N1), and utilizing the existing soil parameters (see FDH Engineering, Inc. Project No. 11-07110E G1), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Velocitel is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

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

1. The proposed feed line must be installed adjacent to Verizon's existing feed lines.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as determined by the client.

Tower Analysis Summary Form

General Info

Site Name	Danbury
Site Number	SNE1005-A
FA Number	10137472
Date of Analysis	5/5/2015
Company Performing Analysis	FDH Velocitel



Tower Info	Description	Date
Tower Type (S, SST, MP)	SST	
Tower Height (top of steel AGL)	65'	
Tower Manufacturer	N/A	
Tower Model	N/A	
Tower Design	N/A	
Foundation Design	N/A	
Geotech Report	FDH Engineering, Inc.	8/24/2011
Tower Mapping	FDH Engineering, Inc.	8/17/2011
Previous Structural Analysis	FDH Engineering, Inc.	6/4/2014
Foundation Mapping	FDH Engineering, Inc.	8/23/2011

Design Parameters	
Design Code Used	TIA/EIA 222-F 2005 CBBC
Location of Tower (County, State)	Fairfield, CT
Basic Wind Speed (mph)	85
Ice Thickness (in)	0.5
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Location Wind Category (1, 1.5, 2)	



Steel Yield Strength (ksi)	
Tower Legs	36 (assumed)
Bracing	36 (assumed)

Existing / Reserved Loading

Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Antenna				Azimuth	Mount			Transmission Line			
			Quantity	Type	Manufacturer	Model		Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T	62.5	64	6	Panel	Powerwave	7770	20, 140, 260	1		6.3' Face Mount T-Frames	12	Coax	1-5/8"	Face C
AT&T	62.5	64	6	Diplexer	Powerwave	LGPI17210		1		Fiber	1	Coax	3/8"	Face C
AT&T	62.5	64	3	Panel	Powerwave	P85-16-XLH-RR	20, 140, 270							
AT&T	62.5	64	6	RRH	Ericsson	RBS 6000								
AT&T	62.5	64	6	TMA	Powerwave	IT08-19DB111-001								
AT&T	62.5	64	1	Surge	Raycap	DC6-48-60-18-8F								
AT&T	62.5	64	1	GPS		GPS								
Verizon	72	73.5	1	GPS	N/A	GPS		1		Pipe Mount	1	Coax	1/2"	Face C
Verizon*	66.5	69	2	Panel	Antel	BXA-7006J16CF*	195, 280, 320	2		14.5' I-Beam Mounts	12	Coax	1 5/8"	Face C
Verizon	66.5	69	4	Panel	Decibel	DB846F6ZAXY	195, 280, 320				1	Hybrid	1 5/8"	
Verizon*	66.5	69	4	Panel	Antel	LPA-18506312CF*	195, 280							
Verizon*	66.5	69	2	Panel	Antel	BXA-171063-12BF*	180, 300							
Verizon	66.5	69	2	RRH	ALU	RH 2x40-4W5								
Verizon	66.5	69	1	Box	RFS	DB-T1-62-6AG-02								
N/A	58	72.6	1	Yagi	Antenex	5-Element Yagi		1		Pipe Mount	1	Coax	3/8"	Face C
State Police	61.5	60.5	1	Dish	RFS	6"		1		Pipe Mount	1	Coax	WE65	Face C
State Police	58	57	1	Dish	RFS	8"		1		Pipe Mount	1	Coax	WE65	Face C
N/A	58							1		Pipe Mount				
N/A	57.5	65	1	Omni	TX/RX	15.5' x 3.5"		1		2' Standoff	1	Coax	1-1/4"	Face C
N/A	56.5	55	1	Dipole	N/A	8.5' x 1.75"		1		Pipe Mount	1	Coax	1/2"	Face C
N/A	58.5	59	1	TMA	Adtran	13" x 10.5" x 3.5"		1		Pipe Mount	1	Coax	1/2"	Face C
N/A	56.5	57.5	1	Dish	Radiowaves	SPD2-5.8		1						
N/A	56							1		Pipe Mount				
N/A	54.5	65	1	Omni	Telewave	21" x 2.5"		1		8' Standoff	1	Coax	1/2"	Face C
N/A	52.5	57.5	1	Omni	N/A	7.25' x 0.95"		1		Pipe Mount				
N/A	52.5							1		Pipe Mount				
N/A	52.5	58.5	1	Dipole	Telewave	10' x 1.6"		1		Pipe Mount	1	Coax	1/2"	Face C
N/A	52.5	55	1	Yagi	N/A	5-Element Yagi		1		Pipe Mount	1	Coax	1/2"	Face C
State Police	51.5	59.5	1	Omni	TX/RX	9.25' x 3.5"		1		6.5' I-Beam Standoff	2	Coax	1-5/8"	Face C
State Police	51.5	46.5	1	Dipole	Telewave	10' x 1.6"		2		Coax	2	Coax	7/8"	Face C
State Police	51.5	59.5	1	Omni	Decibel	10' x 3"		1		9.5' I-Beam Standoff	1	Coax	1-5/8"	Face C
State Police	51.5	57.5	1	Omni	Antel	11.5' x 2.5"		1		Coax	1	Coax	1-1/4"	Face C
State Police	51.5	51.5	1	TMA	N/A	20" x 16" x 7.25"		1		Coax	2	Coax	3/8"	Face C
State Police	51.5	45.5	1	Omni	Decibel	10' x 3"		1		Coax	1	Coax	1-5/8"	Face C
N/A	51.5							1		10.5' I-Beam Standoff				
N/A	50.5	45.5	1	Omni	Decibel	10' x 3"		1		5.5' Standoff	1	Coax	1-1/4"	Face C
N/A	50.5							2		15' Standoffs				
N/A	50.5	46	1	Omni	Decibel	DB636NS-C Omni		1		5.5' Standoff	1	Coax	1-1/4"	Face C
Skytel	50.5	52.5	1	TMA	N/A	20.5" x 6.75" x 4.5"		1		15" Standoff	1	Coax	1/2"	Face C
Skytel	50.5	43.5	1	Omni	Scala	11" x 2"		1						
N/A	46.5	46.5	1	Dish	Scala	PRFTV-48/75 Grid		1		8' Standoff	1	C	1/2"	Face C

*Verizon will remove (4) Antel LPA-18506312CF panels prior to the installation of the proposed equipment

Proposed Loading

Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Antenna				Azimuth	Mount			Transmission Line			
			Quantity	Type	Manufacturer	Model		Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
Verizon	66.5	69	2	Panel	Katrin	800 10734V01	180, 300							
Verizon	66.5	69	4	Diplexer	Andrew	CBCT8-DF								
Verizon	66.5	69	4	Panel	Andrew	HBXX-6516DS-A2M								
Verizon	66.5	69	2	RRH	ALU	RH 2x60-PCS								

Note: The proposed loading will be installed in addition to the remaining existing loading.

Future Loading

Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Antenna				Azimuth	Mount			Transmission Line			
			Quantity	Type	Manufacturer	Model		Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face

NOTE: THIS FORM MUST BE SAVED AS EXCEL 97-2003 TO UPLOAD IN SITERRA

RESULTS

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

Table 1 - Material Strength

Member Type	Yield Strength
Legs	36 ksi (Assumed)
Bracing	36 ksi (Assumed)

Table 2 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 3** displays the maximum foundation reactions. **Table 4** displays the maximum antenna rotations at service wind speed (dishes only).

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

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

Table 2 - Summary of Working Percentage of Structural Components

Section No.	Elevation (ft)	Component Type	Size	% Capacity*	Pass Fail
T1	65 - 50.1042	Leg	15.5"Ø x 0.260 8-Sided Polygon	35.6	Pass
		Top Girt	12.45"Ø x 0.265 8-Sided Polygon	38.6	Pass
T2	50.1042 - 48.1042	Leg	15.5"Ø x 0.260 8-Sided Polygon	52.0	Pass
		Horizontal	12.45"Ø x 0.265 8-Sided Polygon	73.5	Pass
T3	48.1042 - 25.1667	Leg	15.5"Ø x 0.260 8-Sided Polygon	74.6	Pass
		Horizontal	W10x26	86.7	Pass
T4	25.1667 - 0	Leg	15.5"Ø x 0.260 8-Sided Polygon	19.2	Pass
		Diagonal	W6x25	23.5 37.9 (b)	Pass
		Horizontal	12.45"Ø x 0.265 8-Sided Polygon	0.7 1.1 (b)	Pass

*Capacities include 1/3 allowable increase for wind per TIA/EIA-222-F standards.

Table 3 - Maximum Base Reactions

Load Type	Direction	Current Analysis* (TIA/EIA-222-F)
Individual Foundation	Horizontal	22 k
	Uplift	82 k
	Compression	104 k
Overturing Moment	---	1,228 k-ft

*Foundation adequate per independent analysis.

Table 4 - Maximum Antenna Rotations at Service Wind Speeds (Dishes Only)

Centerline Elevation (ft)	Antenna	Tilt* (deg)	Twist* (deg)
60.5	(1) 6' Dish	0.0139	0.0816
57.5	(1) Radiowaves SPD2-5.8	0.0138	0.0782
57	(1) 6' Dish	0.0138	0.0776
46.5	(1) Gabriel PRFTV-48/75	0.0129	0.0613

*Allowable tilt and twist values to be determined by the carrier

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of AT&T Towers to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Velocitel should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Velocitel.

APPENDIX

15'5"Ø x 0.260 8-Sided Polygon	A36	12.45'Ø x 0.265 8-Sided Polygon	N.A.	65.0 ft
				49.9 ft
				41.9 ft
				25.2 ft
				0.0 ft

Legs		W10x30	A	1 @ 14.2812	3.7
Leg Grade					
Diagonals	W6x25				
Diagonal Grade	A36				
Top Chits					
Horizontal					
Face Width (ft)					
# Panels @ (ft)					
Weight (K)					19.4

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon	65	5.7x4.5" Pipe Mount	61.5
6.5' x 4.5" Pipe Mount	65	6' Dish	61.5
GPS	65	14.7x3.5" Pipe Mount	58
28" x 1.6" Pipe Mount	65	6.6x4.5" Pipe Mount	58
5 Element (38" x 13.5") Yagi	65	6' Dish	58
5.25' x 2.4" Pipe Mount	65	2' Standoff	57.5
RRH-2x60-PCS	65	15.5x3.5" Omni	57.5
RRH-2x60-PCS	65	14.5x1.9" Pipe Mount	56.5
(2) HBXX-6516DS-A2M w/ Mount Pipe	65	16x3.5" Pipe Mount	56.5
(2) HBXX-6516DS-A2M w/ Mount Pipe	65	13"x10.5"x3.5" TMA	56.5
(2) CBC78-DF	65	9.5x1.75" 4-Element Dipole	56.5
(2) CBC78-DF	65	SPD2-5.8	56.5
800 10734v01 w/ Mount Pipe	65	7.7x1.6" Pipe Mount	56
800 10734v01 w/ Mount Pipe	65	21"x2.5" Omni	54.5
(2) DB846F65ZAXY w/ Mount Pipe	65	8' Standoff	54.5
(2) DB846F65ZAXY w/ Mount Pipe	65	5x2.4" Pipe Mount	52.5
I-Beam	65	10x1.6" Omni	52.5
I-Beam	65	5-Element (80.5"x3.7") Yagi	52.5
RRH2X40-AWS	65	4-Element (10"x1.6") Dipole	52.5
RRH2X40-AWS	65	7.25x0.95" Omni	52.5
DB-T1-6Z-8AB-OZ	65	(2) 5x2.4" Pipe Mount	52.5
28" x 1.6" Pipe Mount	62.5	5x2.4" Pipe Mount	52.5
GPS	62.5	10.5' I-Beam Standoff	51.5
(2) 7770.00 w/ Mount Pipe	62.5	4x2.4" Pipe Mount	51.5
(2) 7770.00 w/ Mount Pipe	62.5	11.5x2.5" Omni	51.5
(2) 7770.00 w/ Mount Pipe	62.5	10x3" Omni	51.5
P65-16-XLH-RR w/ Mount Pipe	62.5	20"x16"x7.25" TMA	51.5
P65-16-XLH-RR w/ Mount Pipe	62.5	10x3" Omni	51.5
P65-16-XLH-RR w/ Mount Pipe	62.5	9.5' I-Beam Standoff	51.5
(2) LGP17210 Diplexer	62.5	9.25x3.5" Omni	51.5
(2) LGP17210 Diplexer	62.5	4-Element (10"x1.6") Dipole	51.5
(2) LGP17210 Diplexer	62.5	6.5' I-Beam Standoff	51.5
(2) TT08-19DB111-001 TMA	62.5	15" Standoff	50.5
(2) TT08-19DB111-001 TMA	62.5	DB636NS-C	50.5
(2) TT08-19DB111-001 TMA	62.5	6.5' Standoff	50.5
(2) RBS 6000 RRH	62.5	11x2" Omni	50.5
(2) RBS 6000 RRH	62.5	15" Standoff	50.5
(2) RBS 6000 RRH	62.5	20.5"x6.75"x4.5" TMA	50.5
GPS	62.5	10x3" Omni	50.5
DC6-48-60-18-8F	62.5	6.5' Standoff	50.5
8.3' Face Mounted T-Frame	62.5	15" Standoff	50.5
8.3' Face Mounted T-Frame	62.5	5' Standoff Mnt	46.5
8.3' Face Mounted T-Frame	62.5	PRFTV-48/75 Grid Dish	46.5

SYMBOL LIST

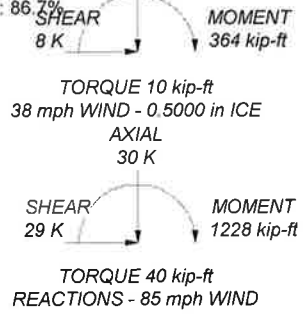
MARK	SIZE	MARK	SIZE
A	12.45'Ø x 0.265 8-Sided Polygon		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 86.7% **SEAR** 8 K



	<p>Velocitel, Inc., d.b.a. FDH Velocitel</p>		<p>Job: Danbury, SNET005-A/FA# 10137472</p>	
	<p>6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>		<p>Project: 15BKPG1400</p>	
<p>ENGINEERING IDENTIFICATION: Tower Analysis</p>	<p>Client: AT&T Towers</p>	<p>Code: TIA/EIA-222-F</p>	<p>Drawn by: RTorbert</p>	<p>App'd: Scale: N</p>
	<p>Date: 05/05/15</p>	<p>Path:</p>	<p>Dwg No.:</p>	

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	12.45"Ø x 0.265 8-Sided Polygon		

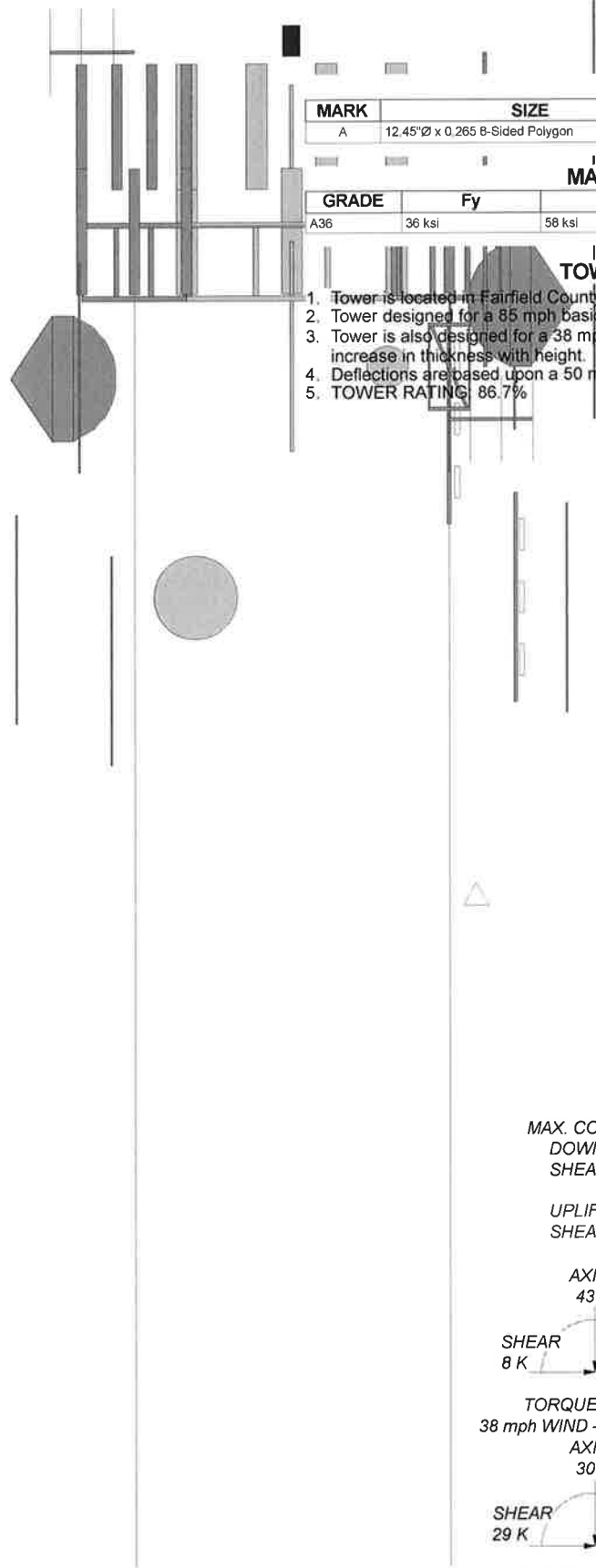
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 86.7%

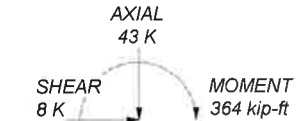
						65.0 ft
						49.9 ft
						41.9 ft
						25.2 ft
						0.0 ft
						19.4



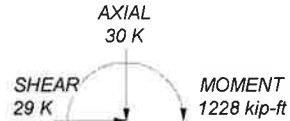
MAX. CORNER REACTIONS AT BASE:

DOWN: 104 K
SHEAR: 22 K

UPLIFT: -82 K
SHEAR: 17 K



TORQUE 10 kip-ft
38 mph WIND - 0.5000 in ICE



TORQUE 40 kip-ft
REACTIONS - 85 mph WIND

<p>ENGINEERING INVESTIGATION</p> <p>Tower Analysis</p>	<p>Velocitel, Inc., d.b.a. FDH Velocitel</p> <p>6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>		<p>Job: Danbury, SNET005-A/FA# 10137472</p> <p>Project: 15BKPG1400</p>	
	<p>Client: AT&T Towers</p> <p>Code: TIA/EIA-222-F</p> <p>Path:</p>	<p>Drawn by: RTorbert</p> <p>Date: 05/05/15</p>	<p>App'd:</p> <p>Scale: N</p> <p>Dwg No.:</p>	

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 1 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Tower Input Data

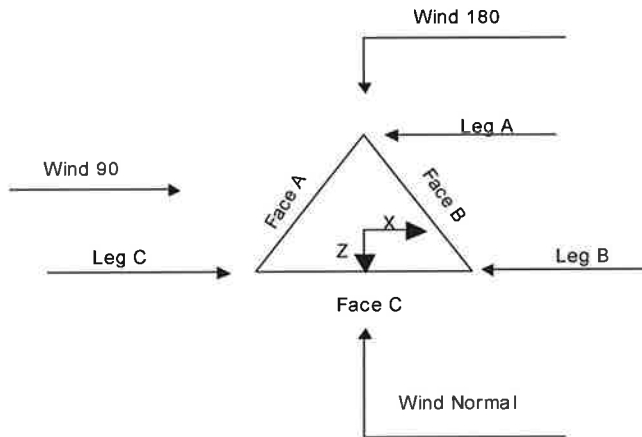
The main tower is a 3x free standing tower with an overall height of 65.00 ft above the ground line.
 The base of the tower is set at an elevation of 0.00 ft above the ground line.
 The face width of the tower is 15.03 ft at the top and 15.03 ft at the base.
 This tower is designed using the TIA/EIA-222-F standard.
 The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 38 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 50 mph.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque √ Include Angle Block Shear Check <p style="text-align: center;">Poles</p> <ul style="list-style-type: none"> Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|---|--|

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 2 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	65.00-49.93			15.03	1	15.07
T2	49.93-41.93			15.03	1	8.00
T3	41.93-25.17			15.03	1	16.76
T4	25.17-0.00			15.03	1	25.17

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	65.00-49.93	14.28	X Brace	No	Yes	9.5000	0.0000
T2	49.93-41.93	8.00	X Brace	No	Yes	0.0000	0.0000
T3	41.93-25.17	16.76	X Brace	No	Yes	0.0000	0.0000
T4	25.17-0.00	25.17	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 3 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 65.00-49.93	Arbitrary Shape	15.5"Ø x 0.260 8-Sided Polygon	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 49.93-41.93	Arbitrary Shape	15.5"Ø x 0.260 8-Sided Polygon	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T3 41.93-25.17	Arbitrary Shape	15.5"Ø x 0.260 8-Sided Polygon	A36 (36 ksi)	Wide Flange		A36 (36 ksi)
T4 25.17-0.00	Arbitrary Shape	15.5"Ø x 0.260 8-Sided Polygon	A36 (36 ksi)	Wide Flange	W6x25	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 65.00-49.93	None	Flat Bar		A36 (36 ksi)	Arbitrary Shape	12.45"Ø x 0.265 8-Sided Polygon	A36 (36 ksi)
T2 49.93-41.93	None	Flat Bar		A36 (36 ksi)	Arbitrary Shape	12.45"Ø x 0.265 8-Sided Polygon	A36 (36 ksi)
T3 41.93-25.17	None	Flat Bar		A36 (36 ksi)	Wide Flange	W10x30	A572-50 (50 ksi)
T4 25.17-0.00	None	Flat Bar		A36 (36 ksi)	Arbitrary Shape	12.45"Ø x 0.265 8-Sided Polygon	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 65.00-49.93	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 49.93-41.93	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 41.93-25.17	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 25.17-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	X K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X	X	X	X	X	X	X
				Y	Y	Y	Y	Y	Y	Y

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 4 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹									
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace		
			X Y	X Y	X Y	X Y	X Y	X Y	X Y	X Y		
T1 65.00-49.93	Yes	Yes	1	1	1	1	1	1	1	1	1	1
T2 49.93-41.93	Yes	Yes	1	1	1	1	1	1	1	1	1	1
T3 41.93-25.17	Yes	Yes	1	1	1	1	1	1	1	1	1	1
T4 25.17-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 65.00-49.93	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 49.93-41.93	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 41.93-25.17	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 25.17-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	No.	Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
				Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 65.00-49.93	Flange	1.0000	0	0.6250	0	1.2500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 49.93-41.93	Flange	1.0000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	1.2500	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 41.93-25.17	Flange	2.2500	4	0.7500	0	0.6250	0	0.6250	0	0.6250	0	1.0000	4	0.6250	0
		A572-50		A325N		A325N		A325N		A325N		A325N		A325N	
T4 25.17-0.00	Flange	2.2500	4	0.7500	6	0.6250	0	0.6250	0	0.6250	0	1.2500	4	0.6250	0
		A572-50		A325N		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	# Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
-------------	-------------------	-----------------	-------------------	-----------------	----------------------	--------------------------------	-----------------	-----------------------------	----------------------------	-----------------	---------------

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 5 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf

WE65	C	Yes	Ar (CfAe)	58.00 - 0.00	-2.0000	-0.5	2	2	0.5000	1.5836		0.53
WE65	C	Yes	Ar (CfAe)	61.50 - 58.00	-2.0000	-0.5	1	1	0.5000	1.5836		0.53

7/8	C	Yes	Ar (CfAe)	51.50 - 0.00	-1.0000	-0.3	2	2	0.5000	1.1100		0.54
1 5/8	C	Yes	Ar (CfAe)	51.50 - 0.00	-1.0000	-0.25	4	4	0.5000	1.9800		1.04
LDF2-50A(3/8")	C	Yes	Ar (CfAe)	51.50 - 0.00	-1.0000	-0.18	2	2	0.4400	0.4400		0.08

1 1/4	C	Yes	Ar (CfAe)	51.50 - 0.00	-3.0000	0.1	1	1	0.5000	1.5500		0.66
1/2	C	Yes	Ar (CfAe)	52.50 - 0.00	-2.0000	0.1	2	2	0.5000	0.5800		0.25
1/2	C	Yes	Ar (CfAe)	54.50 - 52.50	-2.0000	0.1	1	1	0.5000	0.5800		0.25
1/2	C	Yes	Ar (CfAe)	50.50 - 0.00	-0.5000	0.1	2	2	0.5000	0.5800		0.25
1/2	C	Yes	Ar (CfAe)	52.50 - 50.50	-0.5000	0.1	1	1	0.5000	0.5800		0.25
LDF2-50A(3/8")	C	Yes	Ar (CfAe)	65.00 - 0.00	-1.0000	0.1	1	1	0.4400	0.4400		0.08

1/2	C	Yes	Ar (CfAe)	54.50 - 0.00	-4.0000	0.12	1	1	0.5800	0.5800		0.25
1 5/8	C	Yes	Ar (CfAe)	62.50 - 0.00	-4.0000	0.2	12	10	0.5000	1.9800		1.04
1 5/8	C	Yes	Ar (CfAe)	51.50 - 0.00	-3.0000	0.2	1	1	0.5000	1.9800		1.04
1 5/8	C	Yes	Ar (CfAe)	65.00 - 0.00	-1.0000	0.2	12	8	0.5000	1.9800		1.04
HB158-1-08U 8-S8J18(1-5/8")	C	Yes	Ar (CfAe)	65.00 - 0.00	-2.6250	0.2	2	2	0.5000	1.9800		1.30

1/2	C	Yes	Ar (CfAe)	65.00 - 0.00	-1.0000	0.35	1	1	0.5000	0.5800		0.25
1/2	C	Yes	Ar (CfAe)	46.50 - 0.00	-3.0000	0.38	1	1	0.5000	0.5800		0.25
1/2	C	Yes	Ar (CfAe)	56.50 - 0.00	-4.0000	0.35	1	1	0.5000	0.5800		0.25
1 1/4	C	Yes	Ar (CfAe)	50.50 - 0.00	0.0000	0.5	3	3	0.5000	1.5500		0.66
1 1/4	C	Yes	Ar (CfAe)	57.50 - 50.50	0.0000	0.5	1	1	0.5000	1.5500		0.66

1" conduit & 1.3" conduit	A	Yes	Ar (CfAe)	65.00 - 0.00	0.0000	-0.49	2	2	1.0000	1.0900		0.33

Feedline Ladder (Af)	C	Yes	Af (CfAe)	65.00 - 0.00	-2.0000	0.25	1	1	3.0000	3.0000	9.0000	8.40
Feedline Ladder (Af)	C	Yes	Af (CfAe)	51.50 - 0.00	-2.0000	-0.25	1	1	3.0000	3.0000	9.0000	8.40

3/4" DC Cable	C	Yes	Ar (CfAe)	62.50 - 0.00	-1.0000	0.3	2	2	0.2500	0.7500		0.33
3/8" Fiber Cable	C	Yes	Ar (CfAe)	62.50 - 0.00	-1.0000	0.35	1	1	0.4400	0.4400		0.08

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA} ft ² /ft	Weight plf

Feed Line/Linear Appurtenances Section Areas

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 6 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T1	65.00-49.93	A	2.738	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	55.591	4.161	0.000	0.000	0.57
T2	49.93-41.93	A	1.453	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	45.826	4.000	0.000	0.000	0.46
T3	41.93-25.17	A	3.045	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	96.354	8.380	0.000	0.000	0.96
T4	25.17-0.00	A	4.572	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	144.682	12.583	0.000	0.000	1.44

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T1	65.00-49.93	A	0.534	2.712	2.625	0.000	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		26.656	57.686	0.000	0.000	1.32
T2	49.93-41.93	A	0.520	1.420	1.393	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		26.879	45.881	0.000	0.000	1.04
T3	41.93-25.17	A	0.501	2.922	2.919	0.000	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		56.261	96.050	0.000	0.000	2.16
T4	25.17-0.00	A	0.500	4.383	4.383	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.00
		C		84.400	144.220	0.000	0.000	3.24

Feed Line Shielding

Section	Elevation ft	Face	A_R ft ²	A_R Ice ft ²	A_F ft ²	A_F Ice ft ²
T1	65.00-49.93	A	0.188	0.399	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	4.113	6.341	0.000	0.000
T2	49.93-41.93	A	0.188	0.395	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	6.462	10.290	0.000	0.000
T3	41.93-25.17	A	0.000	0.029	0.159	0.304
		B	0.000	0.000	0.000	0.000
		C	0.000	0.763	5.452	7.977
T4	25.17-0.00	A	0.188	0.504	0.377	0.722
		B	0.000	0.000	0.000	0.000
		C	6.483	13.215	12.958	18.953

Feed Line Center of Pressure

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 7 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section	Elevation	CP _X	CP _Z	CP _X Ice	CP _Z Ice
	ft	in	in	in	in
T1	65.00-49.93	-8.8168	13.2911	-8.9088	12.5857
T2	49.93-41.93	-6.2869	14.8802	-6.6244	12.9327
T3	41.93-25.17	-8.0805	18.9862	-8.5579	16.8080
T4	25.17-0.00	-6.4641	15.1882	-6.7581	13.0415

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _{AA} Front ft ²	C _{SA} Side ft ²	Weight K
			Horz ft	Lateral ft					
Beacon	A	From Leg	0.00	0.0000	65.00	No Ice	2.00	2.00	0.02
			0.00			1/2" Ice	2.50	2.50	0.03
			7.30			1" Ice	3.00	3.00	0.04
						2" Ice	4.00	4.00	0.06
						4" Ice	6.00	6.00	0.10
6.5' x 4.5" Pipe Mount	A	From Leg	0.00	0.0000	65.00	No Ice	2.60	2.60	0.07
			0.00			1/2" Ice	3.01	3.01	0.09
			3.00			1" Ice	3.42	3.42	0.12
						2" Ice	4.28	4.28	0.19
						4" Ice	6.12	6.12	0.38

GPS	C	From Leg	0.00	0.0000	62.50	No Ice	0.62	0.62	0.01
			0.00			1/2" Ice	0.75	0.75	0.02
			1.50			1" Ice	0.89	0.89	0.03
						2" Ice	1.20	1.20	0.05
						4" Ice	1.96	1.96	0.13
28" x 1.6" Pipe Mount	C	From Leg	0.00	0.0000	62.50	No Ice	0.36	0.36	0.03
			0.00			1/2" Ice	0.49	0.49	0.03
			0.00			1" Ice	0.65	0.65	0.04
						2" Ice	1.01	1.01	0.05
						4" Ice	1.87	1.87	0.11

GPS	C	From Leg	0.00	0.0000	65.00	No Ice	0.62	0.62	0.01
			11.00			1/2" Ice	0.75	0.75	0.02
			8.50			1" Ice	0.89	0.89	0.03
						2" Ice	1.20	1.20	0.05
						4" Ice	1.96	1.96	0.13
28" x 1.6" Pipe Mount	C	From Leg	0.00	0.0000	65.00	No Ice	0.36	0.36	0.03
			7.00			1/2" Ice	0.49	0.49	0.03
			0.00			1" Ice	0.65	0.65	0.04
						2" Ice	1.01	1.01	0.05
						4" Ice	1.87	1.87	0.11

5 Element (38" x 13.5") Yagi	C	From Leg	0.00	0.0000	65.00	No Ice	1.50	1.50	0.02
			0.00			1/2" Ice	1.90	1.90	0.02
			7.60			1" Ice	2.30	2.30	0.03
						2" Ice	3.10	3.10	0.04
						4" Ice	4.70	4.70	0.05
5.25' x 2.4" Pipe Mount	C	From Leg	0.00	0.0000	65.00	No Ice	1.33	1.33	0.03
			0.00			1/2" Ice	1.63	1.63	0.04

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 8 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
					3.00					
							1" Ice	1.95	1.95	0.05
							2" Ice	2.60	2.60	0.09
							4" Ice	4.11	4.11	0.22

RRH-2x60-PCS	A	From Leg	0.00	0.0000	65.00	No Ice	2.45	1.43	0.06	
			0.00			1/2" Ice	2.67	1.61	0.07	
			4.00			1" Ice	2.90	1.81	0.09	
						2" Ice	3.37	2.22	0.14	
						4" Ice	4.44	3.16	0.28	
RRH-2x60-PCS	C	From Leg	0.00	0.0000	65.00	No Ice	2.45	1.43	0.06	
			0.00			1/2" Ice	2.67	1.61	0.07	
			4.00			1" Ice	2.90	1.81	0.09	
						2" Ice	3.37	2.22	0.14	
						4" Ice	4.44	3.16	0.28	
(2) HBXX-6516DS-A2M w/ Mount Pipe	A	From Leg	0.00	0.0000	65.00	No Ice	6.18	4.53	0.05	
			0.00			1/2" Ice	6.65	5.20	0.10	
			4.00			1" Ice	7.14	5.90	0.15	
						2" Ice	8.13	7.37	0.29	
						4" Ice	10.26	10.56	0.67	
(2) HBXX-6516DS-A2M w/ Mount Pipe	C	From Leg	0.00	0.0000	65.00	No Ice	6.18	4.53	0.05	
			0.00			1/2" Ice	6.65	5.20	0.10	
			4.00			1" Ice	7.14	5.90	0.15	
						2" Ice	8.13	7.37	0.29	
						4" Ice	10.26	10.56	0.67	
(2) CBC78-DF	A	From Leg	0.00	0.0000	65.00	No Ice	0.45	0.20	0.01	
			0.00			1/2" Ice	0.55	0.27	0.01	
			4.00			1" Ice	0.65	0.35	0.01	
						2" Ice	0.88	0.54	0.03	
						4" Ice	1.45	1.02	0.08	
(2) CBC78-DF	C	From Leg	0.00	0.0000	65.00	No Ice	0.45	0.20	0.01	
			0.00			1/2" Ice	0.55	0.27	0.01	
			4.00			1" Ice	0.65	0.35	0.01	
						2" Ice	0.88	0.54	0.03	
						4" Ice	1.45	1.02	0.08	
800 10734v01 w/ Mount Pipe	A	From Leg	0.00	0.0000	65.00	No Ice	9.20	5.65	0.06	
			0.00			1/2" Ice	9.94	6.93	0.13	
			4.00			1" Ice	10.67	8.07	0.20	
						2" Ice	12.07	10.02	0.37	
						4" Ice	14.99	14.12	0.87	
800 10734v01 w/ Mount Pipe	C	From Leg	0.00	0.0000	65.00	No Ice	9.20	5.65	0.06	
			0.00			1/2" Ice	9.94	6.93	0.13	
			4.00			1" Ice	10.67	8.07	0.20	
						2" Ice	12.07	10.02	0.37	
						4" Ice	14.99	14.12	0.87	
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	0.00	75.0000	65.00	No Ice	7.27	7.82	0.05	
			0.00			1/2" Ice	7.88	9.01	0.11	
			4.00			1" Ice	8.48	9.91	0.19	
						2" Ice	9.72	11.81	0.37	
						4" Ice	12.33	15.98	0.87	
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	0.00	75.0000	65.00	No Ice	7.27	7.82	0.05	
			0.00			1/2" Ice	7.88	9.01	0.11	
			4.00			1" Ice	8.48	9.91	0.19	
						2" Ice	9.72	11.81	0.37	
						4" Ice	12.33	15.98	0.87	
1-Beam	A	From Leg	0.00	0.0000	65.00	No Ice	8.76	0.78	0.34	
			0.00			1/2" Ice	12.74	0.95	0.50	
			1.50			1" Ice	16.72	1.13	0.66	

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 9 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Lateral			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
						2" Ice	24.68	1.49	0.97
						4" Ice	40.60	2.21	1.59
						No Ice	8.76	0.78	0.34
						1/2" Ice	12.74	0.95	0.50
						1" Ice	16.72	1.13	0.66
						2" Ice	24.68	1.49	0.97
						4" Ice	40.60	2.21	1.59
I-Beam	C	From Leg	0.00	0.0000	65.00	No Ice	2.52	1.59	0.04
			0.00			1/2" Ice	2.75	1.80	0.06
			1.50			1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2X40-AWS	A	From Leg	0.00	-40.0000	65.00	No Ice	2.52	1.59	0.04
			0.00			1/2" Ice	2.75	1.80	0.06
			4.00			1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2X40-AWS	C	From Leg	0.00	-40.0000	65.00	No Ice	2.52	1.59	0.04
			0.00			1/2" Ice	2.75	1.80	0.06
			4.00			1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
DB-T1-6Z-8AB-0Z	C	From Leg	0.00	40.0000	65.00	No Ice	5.60	2.33	0.04
			0.00			1/2" Ice	5.92	2.56	0.08
			4.00			1" Ice	6.24	2.79	0.12
						2" Ice	6.91	3.28	0.21
						4" Ice	8.37	4.37	0.45

(2) 7770.00 w/Mount Pipe	A	From Leg	0.00	50.0000	62.50	No Ice	6.46	4.59	0.05
			0.00			1/2" Ice	7.14	5.66	0.10
			1.50			1" Ice	7.73	6.45	0.16
						2" Ice	8.94	8.06	0.30
						4" Ice	11.51	11.64	0.71
(2) 7770.00 w/Mount Pipe	B	From Leg	0.00	50.0000	62.50	No Ice	6.46	4.59	0.05
			0.00			1/2" Ice	7.14	5.66	0.10
			1.50			1" Ice	7.73	6.45	0.16
						2" Ice	8.94	8.06	0.30
						4" Ice	11.51	11.64	0.71
(2) 7770.00 w/Mount Pipe	C	From Leg	0.00	30.0000	62.50	No Ice	6.46	4.59	0.05
			0.00			1/2" Ice	7.14	5.66	0.10
			1.50			1" Ice	7.73	6.45	0.16
						2" Ice	8.94	8.06	0.30
						4" Ice	11.51	11.64	0.71
P65-16-XLH-RR w/ Mount Pipe	A	From Leg	0.00	50.0000	62.50	No Ice	8.64	6.36	0.08
			0.00			1/2" Ice	9.29	7.54	0.14
			1.50			1" Ice	9.91	8.43	0.22
						2" Ice	11.18	10.24	0.39
						4" Ice	13.83	14.10	0.89
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	0.00	50.0000	62.50	No Ice	8.64	6.36	0.08
			0.00			1/2" Ice	9.29	7.54	0.14
			1.50			1" Ice	9.91	8.43	0.22
						2" Ice	11.18	10.24	0.39
						4" Ice	13.83	14.10	0.89
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	0.00	30.0000	62.50	No Ice	8.64	6.36	0.08
			0.00			1/2" Ice	9.29	7.54	0.14
			1.50			1" Ice	9.91	8.43	0.22
						2" Ice	11.18	10.24	0.39
						4" Ice	13.83	14.10	0.89
(2) LGP17210 Diplexer	A	From Leg	0.00	50.0000	62.50	No Ice	1.95	0.50	0.01
			0.00			1/2" Ice	2.13	0.62	0.02
			1.50			1" Ice	2.33	0.75	0.03
						2" Ice	2.75	1.03	0.07

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 10 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert	Lateral					
(2) LGP17210 Diplexer	B	From Leg	0.00	50.0000	62.50	4" Ice	3.69	1.69	0.17	
			0.00			No Ice	1.95	0.50	0.01	
			1.50			1/2" Ice	2.13	0.62	0.02	
						1" Ice	2.33	0.75	0.03	
						2" Ice	2.75	1.03	0.07	
(2) LGP17210 Diplexer	C	From Leg	0.00	30.0000	62.50	4" Ice	3.69	1.69	0.17	
			0.00			No Ice	1.95	0.50	0.01	
			1.50			1/2" Ice	2.13	0.62	0.02	
						1" Ice	2.33	0.75	0.03	
						2" Ice	2.75	1.03	0.07	
(2) TT08-19DB111-001 TMA	A	From Leg	0.00	50.0000	62.50	4" Ice	3.69	1.69	0.17	
			0.00			No Ice	0.92	0.75	0.02	
			1.50			1/2" Ice	1.06	0.88	0.03	
						1" Ice	1.21	1.02	0.04	
						2" Ice	1.54	1.32	0.06	
(2) TT08-19DB111-001 TMA	B	From Leg	0.00	50.0000	62.50	4" Ice	2.29	2.04	0.15	
			0.00			No Ice	0.92	0.75	0.02	
			1.50			1/2" Ice	1.06	0.88	0.03	
						1" Ice	1.21	1.02	0.04	
						2" Ice	1.54	1.32	0.06	
(2) TT08-19DB111-001 TMA	C	From Leg	0.00	30.0000	62.50	4" Ice	2.29	2.04	0.15	
			0.00			No Ice	0.92	0.75	0.02	
			1.50			1/2" Ice	1.06	0.88	0.03	
						1" Ice	1.21	1.02	0.04	
						2" Ice	1.54	1.32	0.06	
(2) RBS 6000 RRH	A	From Leg	0.00	50.0000	62.50	4" Ice	2.29	2.04	0.15	
			0.00			No Ice	2.94	1.19	0.06	
			1.50			1/2" Ice	3.17	1.35	0.07	
						1" Ice	3.41	1.52	0.10	
						2" Ice	3.91	1.89	0.15	
(2) RBS 6000 RRH	B	From Leg	0.00	50.0000	62.50	4" Ice	5.02	2.72	0.30	
			0.00			No Ice	2.94	1.19	0.06	
			1.50			1/2" Ice	3.17	1.35	0.07	
						1" Ice	3.41	1.52	0.10	
						2" Ice	3.91	1.89	0.15	
(2) RBS 6000 RRH	C	From Leg	0.00	30.0000	62.50	4" Ice	5.02	2.72	0.30	
			0.00			No Ice	2.94	1.19	0.06	
			1.50			1/2" Ice	3.17	1.35	0.07	
						1" Ice	3.41	1.52	0.10	
						2" Ice	3.91	1.89	0.15	
GPS	C	From Leg	0.00	30.0000	62.50	4" Ice	5.02	2.72	0.30	
			0.00			No Ice	0.62	0.62	0.01	
			1.50			1/2" Ice	0.75	0.75	0.02	
						1" Ice	0.89	0.89	0.03	
						2" Ice	1.20	1.20	0.05	
DC6-48-60-18-8F	C	From Leg	0.00	30.0000	62.50	4" Ice	1.96	1.96	0.13	
			0.00			No Ice	2.57	4.32	0.03	
			1.50			1/2" Ice	2.80	4.60	0.06	
						1" Ice	3.04	4.88	0.10	
						2" Ice	3.54	5.49	0.18	
8.3' Face Mounted T-Frame	A	From Leg	0.00	0.0000	62.50	4" Ice	4.66	6.80	0.40	
			0.00			No Ice	13.80	3.75	0.28	
			0.00			1/2" Ice	18.42	5.95	0.39	
						1" Ice	23.04	8.15	0.50	
						2" Ice	32.28	12.55	0.73	
8.3' Face Mounted T-Frame	B	From Leg	0.00	0.0000	62.50	4" Ice	50.76	21.35	1.18	
						No Ice	13.80	3.75	0.28	

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 11 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral	Vert					
			0.00				1/2" Ice	18.42	5.95	0.39
			0.00				1" Ice	23.04	8.15	0.50
							2" Ice	32.28	12.55	0.73
							4" Ice	50.76	21.35	1.18
8.3' Face Mounted T-Frame	C	From Leg	0.00	0.0000	62.50		No Ice	13.80	3.75	0.28
			0.00				1/2" Ice	18.42	5.95	0.39
			0.00				1" Ice	23.04	8.15	0.50
							2" Ice	32.28	12.55	0.73
							4" Ice	50.76	21.35	1.18

5.7'x4.5" Pipe Mount	B	From Leg	0.00	0.0000	61.50		No Ice	2.60	2.60	0.07
			0.00				1/2" Ice	3.01	3.01	0.09
			0.00				1" Ice	3.42	3.42	0.12
							2" Ice	4.28	4.28	0.19
							4" Ice	6.12	6.12	0.38

6.6'x4.5" Pipe Mount	C	From Leg	0.00	0.0000	58.00		No Ice	2.60	2.60	0.07
			0.00				1/2" Ice	3.01	3.01	0.09
			0.00				1" Ice	3.42	3.42	0.12
							2" Ice	4.28	4.28	0.19
							4" Ice	6.12	6.12	0.38

15.5'x3.5" Omni	B	From Leg	2.00	0.0000	57.50		No Ice	5.25	5.25	0.02
			0.00				1/2" Ice	6.79	6.79	0.06
			7.50				1" Ice	8.34	8.34	0.10
							2" Ice	11.40	11.40	0.23
							4" Ice	15.13	15.13	0.60
2' Standoff	B	From Leg	0.00	0.0000	57.50		No Ice	1.00	0.90	0.02
			0.00				1/2" Ice	1.39	1.42	0.03
			0.00				1" Ice	1.78	1.94	0.04
							2" Ice	2.56	2.98	0.06
							4" Ice	4.12	5.06	0.10

14.7'x3.5" Pipe Mount	A	From Leg	0.00	0.0000	58.00		No Ice	5.87	5.87	0.26
			0.00				1/2" Ice	7.40	7.40	0.33
			0.00				1" Ice	8.95	8.95	0.39
							2" Ice	11.58	11.58	0.54
							4" Ice	15.56	15.56	0.94
7.7'x1.6" Pipe Mount	A	From Leg	0.00	0.0000	56.00		No Ice	2.30	2.30	0.04
			0.00				1/2" Ice	3.13	3.13	0.06
			0.00				1" Ice	3.62	3.62	0.08
							2" Ice	4.62	4.62	0.14
							4" Ice	6.73	6.73	0.33

9.5'x1.75" 4-Element Dipole	B	From Leg	0.00	0.0000	56.50		No Ice	1.75	1.75	0.03
			0.00				1/2" Ice	2.77	2.77	0.04
			-1.50				1" Ice	3.81	3.81	0.06
							2" Ice	5.56	5.56	0.12
							4" Ice	8.11	8.11	0.33
14.5x1.9" Pipe Mount	B	From Leg	0.00	0.0000	56.50		No Ice	3.45	3.45	0.10
			0.00				1/2" Ice	4.94	4.94	0.14
			0.00				1" Ice	6.47	6.47	0.18
							2" Ice	9.60	9.60	0.28
							4" Ice	14.01	14.01	0.61

16'x3.5" Pipe Mount	C	From Leg	0.00	0.0000	56.50		No Ice	6.40	6.40	0.30
			0.00				1/2" Ice	8.05	8.05	0.37

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 13 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
9.25'x3.5" Omni	B	From Leg	6.50		0.0000	51.50	No Ice	2.85	2.85	0.03
			5.00				1/2" Ice	3.83	3.83	0.05
			8.00				1" Ice	4.67	4.67	0.07
							2" Ice	5.85	5.85	0.15
							4" Ice	8.30	8.30	0.37
4-Element (10'x1.6") Dipole	B	From Leg	6.50		0.0000	51.50	No Ice	2.00	2.00	0.02
			5.00				1/2" Ice	3.02	3.02	0.04
			-5.00				1" Ice	4.07	4.07	0.06
							2" Ice	5.70	5.70	0.12
							4" Ice	8.26	8.26	0.33
6.5' I-Beam Standoff	B	From Leg	0.00		0.0000	51.50	No Ice	0.37	4.82	0.16
			5.00				1/2" Ice	0.46	5.37	0.20
			0.00				1" Ice	0.55	5.93	0.24
							2" Ice	0.76	7.08	0.34
							4" Ice	1.29	9.47	0.63

10.5' I-Beam Standoff	B	From Leg	0.00		0.0000	51.50	No Ice	0.37	7.79	0.26
			-5.00				1/2" Ice	0.46	8.65	0.32
			0.00				1" Ice	0.55	9.52	0.38
							2" Ice	0.76	11.29	0.54
							4" Ice	1.29	14.93	0.98
4'x2.4" Pipe Mount	B	From Leg	10.50		0.0000	51.50	No Ice	1.00	1.00	0.03
			-5.00				1/2" Ice	1.39	1.39	0.04
			0.00				1" Ice	1.70	1.70	0.05
							2" Ice	2.35	2.35	0.08
							4" Ice	3.78	3.78	0.20

11.5'x2.5" Omni	C	From Leg	3.00		0.0000	51.50	No Ice	2.75	2.75	0.03
			0.00				1/2" Ice	3.88	3.88	0.05
			6.00				1" Ice	5.03	5.03	0.07
							2" Ice	6.81	6.81	0.15
							4" Ice	9.60	9.60	0.40
10'x3" Omni	C	From Leg	9.50		0.0000	51.50	No Ice	3.00	3.00	0.03
			0.00				1/2" Ice	4.03	4.03	0.05
			8.00				1" Ice	5.03	5.03	0.08
							2" Ice	6.26	6.26	0.15
							4" Ice	8.83	8.83	0.39
20'x16"x7.25" TMA	C	From Leg	0.00		0.0000	51.50	No Ice	3.11	1.41	0.04
			0.00				1/2" Ice	3.35	1.59	0.06
			0.00				1" Ice	3.60	1.78	0.08
							2" Ice	4.11	2.19	0.14
							4" Ice	5.25	3.10	0.30
10'x3" Omni	C	From Leg	9.50		0.0000	51.50	No Ice	3.00	3.00	0.03
			0.00				1/2" Ice	4.03	4.03	0.05
			6.00				1" Ice	5.03	5.03	0.08
							2" Ice	6.26	6.26	0.15
							4" Ice	8.83	8.83	0.39
9.5' I-Beam Standoff	C	From Leg	0.00		0.0000	51.50	No Ice	0.37	7.05	0.24
			0.00				1/2" Ice	0.46	7.83	0.29
			0.00				1" Ice	0.55	8.63	0.35
							2" Ice	0.76	10.24	0.49
							4" Ice	1.29	13.57	0.89

10'x3" Omni	C	From Leg	6.50		0.0000	50.50	No Ice	3.00	3.00	0.03
			0.00				1/2" Ice	4.03	4.03	0.05
			-5.00				1" Ice	5.03	5.03	0.08
							2" Ice	6.26	6.26	0.15

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 15 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz	Lateral Vert						
				ft	ft	°	°	ft	ft	ft ²	K
6' Dish	B	Paraboloid w/Radome	From Leg	1.00	0.0000	61.50	6.00	No Ice	28.27	0.38	
				0.00	1/2" Ice			29.07	0.45		
				-1.00	1" Ice			29.86	0.52		
					2" Ice			31.44	0.66		
					4" Ice			34.60	0.94		
6' Dish	C	Paraboloid w/Radome	From Leg	1.00	0.0000	58.00	6.00	No Ice	28.27	0.38	
				0.00	1/2" Ice			29.07	0.45		
				-1.00	1" Ice			29.86	0.52		
					2" Ice			31.44	0.66		
					4" Ice			34.60	0.94		
SPD2-5.8	B	Paraboloid w/o Radome	From Face	1.00	0.0000	56.50	2.00	No Ice	3.14	0.02	
				0.00	1/2" Ice			3.41	0.04		
				1.00	1" Ice			3.67	0.06		
					2" Ice			4.21	0.09		
					4" Ice			5.28	0.16		
PRFTV-48/75 Grid Dish	A	Grid	From Face	1.00	0.0000	46.50	4.00	No Ice	12.57	0.07	
				0.00	1/2" Ice			13.10	0.14		
				0.00	1" Ice			13.62	0.21		
					2" Ice			14.68	0.35		
					4" Ice			16.80	0.63		

Tower Pressures - No Ice

$G_H = 1.195$

Section Elevation	z	K _z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
T1 65.00-49.93	57.46	1.172	22	246.034	A	0.000	55.743	38.938	69.85	0.000	0.000
					B	0.000	53.193		73.20	0.000	0.000
					C	4.161	104.672		35.78	0.000	0.000
T2 49.93-41.93	45.93	1.099	20	130.583	A	0.000	36.186	20.667	57.11	0.000	0.000
					B	0.000	34.921		59.18	0.000	0.000
					C	4.000	74.285		26.40	0.000	0.000
T3 41.93-25.17	33.55	1.005	19	273.579	A	11.829	46.343	43.298	74.43	0.000	0.000
					B	11.988	43.298		78.32	0.000	0.000
					C	14.916	139.652		28.01	0.000	0.000
T4 25.17-0.00	12.58	1	18	410.794	A	28.115	83.652	65.014	58.17	0.000	0.000
					B	28.492	79.269		60.33	0.000	0.000
					C	28.117	217.467		26.47	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.195$

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 16 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 65.00-49.93	57.46	1.172	4	0.5344	247.376	A	2.625	59.415	41.623	67.09	0.000	0.000
						B	0.000	57.102		72.89	0.000	0.000
						C	57.686	77.417		30.81	0.000	0.000
T2 49.93-41.93	45.93	1.099	4	0.5202	131.277	A	1.393	38.525	22.054	55.25	0.000	0.000
						B	0.000	37.500		58.81	0.000	0.000
						C	45.881	54.089		22.06	0.000	0.000
T3 41.93-25.17	33.55	1.005	4	0.5010	274.978	A	14.603	50.137	46.097	71.20	0.000	0.000
						B	11.988	47.244		77.82	0.000	0.000
						C	100.061	102.741		22.73	0.000	0.000
T4 25.17-0.00	12.58	1	4	0.5000	412.891	A	32.153	92.954	69.208	55.32	0.000	0.000
						B	28.492	89.074		58.87	0.000	0.000
						C	153.758	160.259		22.04	0.000	0.000

Tower Pressure - Service

$G_H = 1.195$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 65.00-49.93	57.46	1.172	7	246.034	A	0.000	55.743	38.938	69.85	0.000	0.000
					B	0.000	53.193		73.20	0.000	0.000
					C	4.161	104.672		35.78	0.000	0.000
T2 49.93-41.93	45.93	1.099	7	130.583	A	0.000	36.186	20.667	57.11	0.000	0.000
					B	0.000	34.921		59.18	0.000	0.000
					C	4.000	74.285		26.40	0.000	0.000
T3 41.93-25.17	33.55	1.005	6	273.579	A	11.829	46.343	43.298	74.43	0.000	0.000
					B	11.988	43.298		78.32	0.000	0.000
					C	14.916	139.652		28.01	0.000	0.000
T4 25.17-0.00	12.58	1	6	410.794	A	28.115	83.652	65.014	58.17	0.000	0.000
					B	28.492	79.269		60.33	0.000	0.000
					C	28.117	217.467		26.47	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e e	C _F	R _R	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face	
T1 65.00-49.93	0.58	3.66	A	0.227	2.51	0.596	1	1	33.233	3.82	253.38	C
			B	0.216	2.543	0.594	1	1	31.588			
			C	0.442	1.986	0.67	1	1	74.270			
T2 49.93-41.93	0.46	2.71	A	0.277	2.359	0.609	1	1	22.043	2.63	328.40	C
			B	0.267	2.386	0.606	1	1	21.179			
			C	0.6	1.804	0.753	1	1	59.959			
T3 41.93-25.17	0.97	3.60	A	0.213	2.554	0.593	1	1	39.313	4.76	284.19	C
			B	0.202	2.589	0.591	1	1	37.569			
			C	0.565	1.83	0.733	1	1	117.252			
T4 25.17-0.00	1.46	9.41	A	0.272	2.373	0.608	1	1	78.955	7.65	303.87	C
			B	0.262	2.401	0.605	1	1	76.457			
			C	0.598	1.805	0.752	1	1	191.711			

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 17 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
Sum Weight:	3.47	19.39						OTM	596.14 kip-ft	18.86		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	0.58	3.66	A	0.227	2.51	0.596	0.8	1	33.233	3.78	250.54	C
			B	0.216	2.543	0.594	0.8	1	31.588			
			C	0.442	1.986	0.67	0.8	1	73.438			
T2 49.93-41.93	0.46	2.71	A	0.277	2.359	0.609	0.8	1	22.043	2.59	324.02	C
			B	0.267	2.386	0.606	0.8	1	21.179			
			C	0.6	1.804	0.753	0.8	1	59.159			
T3 41.93-25.17	0.97	3.60	A	0.213	2.554	0.593	0.8	1	36.947	4.64	276.96	C
			B	0.202	2.589	0.591	0.8	1	35.172			
			C	0.565	1.83	0.733	0.8	1	114.269			
T4 25.17-0.00	1.46	9.41	A	0.272	2.373	0.608	0.8	1	73.332	7.42	294.96	C
			B	0.262	2.401	0.605	0.8	1	70.759			
			C	0.598	1.805	0.752	0.8	1	186.088			
Sum Weight:	3.47	19.39						OTM	585.19 kip-ft	18.43		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	0.58	3.66	A	0.227	2.51	0.596	0.85	1	33.233	3.79	251.25	C
			B	0.216	2.543	0.594	0.85	1	31.588			
			C	0.442	1.986	0.67	0.85	1	73.646			
T2 49.93-41.93	0.46	2.71	A	0.277	2.359	0.609	0.85	1	22.043	2.60	325.11	C
			B	0.267	2.386	0.606	0.85	1	21.179			
			C	0.6	1.804	0.753	0.85	1	59.359			
T3 41.93-25.17	0.97	3.60	A	0.213	2.554	0.593	0.85	1	37.539	4.67	278.77	C
			B	0.202	2.589	0.591	0.85	1	35.771			
			C	0.565	1.83	0.733	0.85	1	115.015			
T4 25.17-0.00	1.46	9.41	A	0.272	2.373	0.608	0.85	1	74.738	7.48	297.19	C
			B	0.262	2.401	0.605	0.85	1	72.183			
			C	0.598	1.805	0.752	0.85	1	187.494			
Sum Weight:	3.47	19.39						OTM	587.93 kip-ft	18.54		

Tower Forces - With Ice - Wind Normal To Face

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 18 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	1.37	4.49	A	0.251	2.435	0.602	1	1	38.397	1.06	70.52	C
			B	0.231	2.496	0.597	1	1	34.100			
			C	0.546	1.847	0.722	1	1	113.590			
T2 49.93-41.93	1.07	3.31	A	0.304	2.285	0.617	1	1	25.169	0.79	98.71	C
			B	0.286	2.335	0.612	1	1	22.936			
			C	0.762	1.793	0.866	1	1	92.709			
T3 41.93-25.17	2.21	4.50	A	0.235	2.482	0.598	1	1	44.598	1.45	86.48	C
			B	0.215	2.545	0.594	1	1	40.035			
			C	0.738	1.783	0.847	1	1	187.124			
T4 25.17-0.00	3.31	11.84	A	0.303	2.288	0.617	1	1	89.489	2.27	90.02	C
			B	0.285	2.337	0.611	1	1	82.947			
			C	0.761	1.792	0.865	1	1	292.381			
Sum Weight:	7.95	24.13						OTM	174.48	5.57		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	1.37	4.49	A	0.251	2.435	0.602	0.8	1	37.872	0.96	63.36	C
			B	0.231	2.496	0.597	0.8	1	34.100			
			C	0.546	1.847	0.722	0.8	1	102.053			
T2 49.93-41.93	1.07	3.31	A	0.304	2.285	0.617	0.8	1	24.891	0.71	88.94	C
			B	0.286	2.335	0.612	0.8	1	22.936			
			C	0.762	1.793	0.866	0.8	1	83.533			
T3 41.93-25.17	2.21	4.50	A	0.235	2.482	0.598	0.8	1	41.677	1.29	77.23	C
			B	0.215	2.545	0.594	0.8	1	37.637			
			C	0.738	1.783	0.847	0.8	1	167.112			
T4 25.17-0.00	3.31	11.84	A	0.303	2.288	0.617	0.8	1	83.058	2.03	80.55	C
			B	0.285	2.337	0.611	0.8	1	77.249			
			C	0.761	1.792	0.865	0.8	1	261.629			
Sum Weight:	7.95	24.13						OTM	156.49	4.99		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	1.37	4.49	A	0.251	2.435	0.602	0.85	1	38.004	0.98	65.15	C
			B	0.231	2.496	0.597	0.85	1	34.100			
			C	0.546	1.847	0.722	0.85	1	104.937			
T2 49.93-41.93	1.07	3.31	A	0.304	2.285	0.617	0.85	1	24.960	0.73	91.38	C
			B	0.286	2.335	0.612	0.85	1	22.936			
			C	0.762	1.793	0.866	0.85	1	85.827			
T3 41.93-25.17	2.21	4.50	A	0.235	2.482	0.598	0.85	1	42.408	1.33	79.54	C
			B	0.215	2.545	0.594	0.85	1	38.237			
			C	0.738	1.783	0.847	0.85	1	172.115			

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 19 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T4 25.17-0.00	3.31	11.84	A	0.303	2.288	0.617	0.85	1	84.666	2.09	82.92	C
			B	0.285	2.337	0.611	0.85	1	78.673			
			C	0.761	1.792	0.865	0.85	1	269.317			
Sum Weight:	7.95	24.13						OTM	160.99 kip-ft	5.13		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	0.58	3.66	A	0.227	2.51	0.596	1	1	33.233	1.32	87.68	C
			B	0.216	2.543	0.594	1	1	31.588			
			C	0.442	1.986	0.67	1	1	74.270			
T2 49.93-41.93	0.46	2.71	A	0.277	2.359	0.609	1	1	22.043	0.91	113.63	C
			B	0.267	2.386	0.606	1	1	21.179			
			C	0.6	1.804	0.753	1	1	59.959			
T3 41.93-25.17	0.97	3.60	A	0.213	2.554	0.593	1	1	39.313	1.65	98.34	C
			B	0.202	2.589	0.591	1	1	37.569			
			C	0.565	1.83	0.733	1	1	117.252			
T4 25.17-0.00	1.46	9.41	A	0.272	2.373	0.608	1	1	78.955	2.65	105.15	C
			B	0.262	2.401	0.605	1	1	76.457			
			C	0.598	1.805	0.752	1	1	191.711			
Sum Weight:	3.47	19.39						OTM	206.28 kip-ft	6.52		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	0.58	3.66	A	0.227	2.51	0.596	0.8	1	33.233	1.31	86.69	C
			B	0.216	2.543	0.594	0.8	1	31.588			
			C	0.442	1.986	0.67	0.8	1	73.438			
T2 49.93-41.93	0.46	2.71	A	0.277	2.359	0.609	0.8	1	22.043	0.90	112.12	C
			B	0.267	2.386	0.606	0.8	1	21.179			
			C	0.6	1.804	0.753	0.8	1	59.159			
T3 41.93-25.17	0.97	3.60	A	0.213	2.554	0.593	0.8	1	36.947	1.61	95.83	C
			B	0.202	2.589	0.591	0.8	1	35.172			
			C	0.565	1.83	0.733	0.8	1	114.269			
T4 25.17-0.00	1.46	9.41	A	0.272	2.373	0.608	0.8	1	73.332	2.57	102.06	C
			B	0.262	2.401	0.605	0.8	1	70.759			
			C	0.598	1.805	0.752	0.8	1	186.088			
Sum Weight:	3.47	19.39						OTM	202.49 kip-ft	6.38		

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 20 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 65.00-49.93	0.58	3.66	A	0.227	2.51	0.596	0.85	1	33.233	1.31	86.94	C
			B	0.216	2.543	0.594	0.85	1	31.588			
			C	0.442	1.986	0.67	0.85	1	73.646			
T2 49.93-41.93	0.46	2.71	A	0.277	2.359	0.609	0.85	1	22.043	0.90	112.50	C
			B	0.267	2.386	0.606	0.85	1	21.179			
			C	0.6	1.804	0.753	0.85	1	59.359			
T3 41.93-25.17	0.97	3.60	A	0.213	2.554	0.593	0.85	1	37.539	1.62	96.46	C
			B	0.202	2.589	0.591	0.85	1	35.771			
			C	0.565	1.83	0.733	0.85	1	115.015			
T4 25.17-0.00	1.46	9.41	A	0.272	2.373	0.608	0.85	1	74.738	2.59	102.83	C
			B	0.262	2.401	0.605	0.85	1	72.183			
			C	0.598	1.805	0.752	0.85	1	187.494			
Sum Weight:	3.47	19.39						OTM	203.43 kip-ft	6.42		

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	8.71					
Bracing Weight	10.67					
Total Member Self-Weight	19.39					
Total Weight	30.19			22.14	11.10	
Wind 0 deg - No Ice		0.36	-28.73	-1182.06	-11.88	-17.17
Wind 30 deg - No Ice		14.15	-24.81	-1026.46	-585.93	2.34
Wind 60 deg - No Ice		24.21	-14.48	-595.32	-1005.85	21.80
Wind 90 deg - No Ice		28.02	-0.37	-1.55	-1162.96	35.86
Wind 120 deg - No Ice		24.32	14.00	601.12	-998.90	39.73
Wind 150 deg - No Ice		13.60	24.19	1032.39	-550.61	32.02
Wind 180 deg - No Ice		-0.47	27.95	1194.71	40.28	17.06
Wind 210 deg - No Ice		-14.32	24.52	1054.19	617.98	-2.40
Wind 240 deg - No Ice		-24.73	14.65	642.61	1047.01	-22.56
Wind 270 deg - No Ice		-28.07	0.42	48.68	1188.25	-36.12
Wind 300 deg - No Ice		-23.94	-13.79	-551.78	1011.01	-38.86
Wind 330 deg - No Ice		-13.55	-24.46	-1004.23	569.88	-31.71
Member Ice	4.74					
Total Weight Ice	43.11			42.28	24.65	
Wind 0 deg - Ice		0.07	-7.96	-278.85	19.82	-4.59
Wind 30 deg - Ice		3.74	-6.56	-226.51	-128.32	0.58
Wind 60 deg - Ice		6.37	-3.71	-111.33	-236.12	5.45
Wind 90 deg - Ice		7.46	-0.03	39.34	-278.45	9.05
Wind 120 deg - Ice		6.80	3.93	198.94	-247.02	10.38
Wind 150 deg - Ice		3.68	6.44	303.64	-123.38	7.90
Wind 180 deg - Ice		-0.02	7.34	342.50	27.40	4.12
Wind 210 deg - Ice		-3.77	6.50	307.85	179.47	-0.59
Wind 240 deg - Ice		-6.85	4.04	206.74	300.18	-5.79
Wind 270 deg - Ice		-7.44	0.09	48.12	327.05	-8.92
Wind 300 deg - Ice		-6.26	-3.62	-104.61	279.28	-9.56
Wind 330 deg - Ice		-3.61	-6.49	-222.30	169.43	-8.03
Total Weight	30.19			22.14	11.10	
Wind 0 deg - Service		0.13	-9.94	-408.93	-2.89	-5.94

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 21 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 30 deg - Service		4.90	-8.59	-355.09	-201.52	0.81
Wind 60 deg - Service		8.38	-5.01	-205.91	-346.82	7.54
Wind 90 deg - Service		9.70	-0.13	-0.45	-401.18	12.41
Wind 120 deg - Service		8.41	4.84	208.09	-344.42	13.75
Wind 150 deg - Service		4.71	8.37	357.31	-189.30	11.08
Wind 180 deg - Service		-0.16	9.67	413.48	15.16	5.90
Wind 210 deg - Service		-4.95	8.49	364.86	215.06	-0.83
Wind 240 deg - Service		-8.56	5.07	222.44	363.51	-7.81
Wind 270 deg - Service		-9.71	0.15	16.93	412.38	-12.50
Wind 300 deg - Service		-8.28	-4.77	-190.84	351.06	-13.45
Wind 330 deg - Service		-4.69	-8.46	-347.40	198.41	-10.97

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
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

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 22 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

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			
T1	65 - 49.9271	Leg	Max Tension	12	5.84	33.93	-2.97			
			Max. Compression	10	-12.08	26.17	-1.45			
			Max. Mx	10	-8.45	-37.80	-0.05			
			Max. My	13	-1.32	0.22	-16.28			
			Max. Vy	10	-5.65	26.17	-1.45			
			Max. Vx	13	-3.09	-0.19	7.36			
		Top Girt	Max Tension	10	1.61	-1.84	0.03			
			Max. Compression	4	-1.70	2.16	-0.02			
			Max. Mx	3	-0.06	-28.77	-0.05			
			Max. My	6	-0.83	-24.25	-0.07			
			Max. Vy	3	4.03	-28.77	-0.05			
			Max. Vx	11	0.01	27.11	0.06			
			T2	49.9271 - 41.9271	Leg	Max Tension	8	14.89	47.52	2.66
						Max. Compression	10	-24.96	26.97	-0.37
Max. Mx	2	-22.60				-50.01	-2.59			
Max. My	13	-4.70				0.99	-22.99			
Max. Vy	10	-9.75				26.97	-0.37			
Max. Vx	6	1.34				-11.85	12.60			
T3	41.9271 - 25.1667	Horizontal	Max Tension	2	3.45	0.67	0.05			
			Max. Compression	4	-3.47	3.91	-0.04			
			Max. Mx	11	-0.11	-54.81	-0.11			
			Max. My	10	-1.83	-45.80	-0.12			
			Max. Vy	11	7.48	-54.81	-0.11			
		Leg	Max. Vx	11	0.01	53.57	0.11			
			Max Tension	8	27.13	59.05	4.14			
			Max. Compression	10	-40.27	52.75	3.97			
			Max. Mx	2	-37.19	-61.10	-3.91			
			Max. My	13	-6.51	-1.36	55.44			
T4	25.1667 - 0	Horizontal	Max. Vy	10	-7.01	52.75	3.97			
			Max. Vx	13	-6.64	-1.36	55.44			
			Max Tension	4	4.56	-3.52	0.01			
			Max. Compression	10	-4.46	-6.82	0.00			
			Max. Mx	11	0.20	-64.22	0.03			
		Leg	Max. My	6	2.24	-55.76	0.03			
			Max. Vy	11	8.71	-64.22	0.03			
			Max. Vx	6	0.00	-55.76	0.03			
			Max Tension	8	48.20	-51.25	-5.58			
			Max. Compression	10	-60.29	0.00	0.00			
			Max. Mx	10	-58.79	52.75	3.97			
			Max. My	13	-4.15	-1.36	55.44			
			Max. Vy	10	2.43	52.75	3.97			
			Max. Vx	13	2.69	-1.36	55.44			
Diagonal	Max Tension	12	23.23	0.00	0.00					
	Max. Compression	6	-28.15	0.00	0.00					
	Max. Mx	9	17.75	-0.81	-0.00					
	Max. My	6	-20.84	0.08	0.04					
	Max. Vy	22	0.16	-0.57	-0.00					
	Max. Vx	6	0.00	0.00	0.00					
	Horizontal	Max Tension	8	1.34	0.00	0.00				
Max. Compression		22	-1.58	0.00	0.00					
Max. Mx		14	-1.54	1.24	0.00					
Max. Vy		14	-0.33	0.00	0.00					

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 23 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	104.40	19.25	-9.99
	Max. H _x	10	104.40	19.25	-9.99
	Max. H _z	4	-79.72	-15.21	7.83
	Min. Vert	4	-79.72	-15.21	7.83
	Min. H _x	4	-79.72	-15.21	7.83
	Min. H _z	10	104.40	19.25	-9.99
Leg B	Max. Vert	6	99.61	-19.01	-9.09
	Max. H _x	12	-78.39	15.15	7.19
	Max. H _z	12	-78.39	15.15	7.19
	Min. Vert	12	-78.39	15.15	7.19
	Min. H _x	6	99.61	-19.01	-9.09
	Min. H _z	6	99.61	-19.01	-9.09
Leg A	Max. Vert	2	100.87	-0.66	21.43
	Max. H _x	6	-36.11	1.71	-7.55
	Max. H _z	2	100.87	-0.66	21.43
	Min. Vert	8	-81.71	0.52	-17.09
	Min. H _x	12	52.45	-1.83	11.25
	Min. H _z	8	-81.71	0.52	-17.09

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	30.19	0.00	0.00	22.14	11.10	0.00
Dead+Wind 0 deg - No Ice	30.19	0.36	-28.73	-1182.06	-11.88	-17.17
Dead+Wind 30 deg - No Ice	30.19	14.15	-24.81	-1026.46	-585.93	2.34
Dead+Wind 60 deg - No Ice	30.19	24.21	-14.48	-595.32	-1005.85	21.80
Dead+Wind 90 deg - No Ice	30.19	28.02	-0.37	-1.55	-1162.96	35.86
Dead+Wind 120 deg - No Ice	30.19	24.32	14.00	601.12	-998.90	39.73
Dead+Wind 150 deg - No Ice	30.19	13.60	24.19	1032.39	-550.61	32.02
Dead+Wind 180 deg - No Ice	30.19	-0.47	27.95	1194.71	40.28	17.06
Dead+Wind 210 deg - No Ice	30.19	-14.32	24.52	1054.19	617.98	-2.40
Dead+Wind 240 deg - No Ice	30.19	-24.73	14.65	642.61	1047.01	-22.56
Dead+Wind 270 deg - No Ice	30.19	-28.07	0.42	48.68	1188.25	-36.12
Dead+Wind 300 deg - No Ice	30.19	-23.94	-13.79	-551.78	1011.01	-38.86
Dead+Wind 330 deg - No Ice	30.19	-13.55	-24.46	-1004.23	569.88	-31.71
Dead+Ice+Temp	43.11	0.00	0.00	42.28	24.65	0.00
Dead+Wind 0 deg+Ice+Temp	43.11	0.07	-7.96	-278.85	19.82	-4.59
Dead+Wind 30 deg+Ice+Temp	43.11	3.74	-6.56	-226.51	-128.32	0.58
Dead+Wind 60 deg+Ice+Temp	43.11	6.37	-3.71	-111.33	-236.12	5.45
Dead+Wind 90 deg+Ice+Temp	43.11	7.46	-0.03	39.34	-278.45	9.05
Dead+Wind 120 deg+Ice+Temp	43.11	6.80	3.93	198.94	-247.02	10.38
Dead+Wind 150 deg+Ice+Temp	43.11	3.68	6.44	303.64	-123.38	7.90
Dead+Wind 180 deg+Ice+Temp	43.11	-0.02	7.34	342.50	27.40	4.12
Dead+Wind 210 deg+Ice+Temp	43.11	-3.77	6.50	307.85	179.47	-0.59
Dead+Wind 240 deg+Ice+Temp	43.11	-6.85	4.04	206.74	300.18	-5.79
Dead+Wind 270 deg+Ice+Temp	43.11	-7.44	0.09	48.12	327.05	-8.92
Dead+Wind 300 deg+Ice+Temp	43.11	-6.26	-3.62	-104.61	279.28	-9.56
Dead+Wind 330 deg+Ice+Temp	43.11	-3.61	-6.49	-222.30	169.43	-8.03
Dead+Wind 0 deg - Service	30.19	0.13	-9.94	-394.54	3.15	-5.94
Dead+Wind 30 deg - Service	30.19	4.90	-8.59	-340.70	-195.49	0.81
Dead+Wind 60 deg - Service	30.19	8.38	-5.01	-191.51	-340.79	7.54

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 24 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 90 deg - Service	30.19	9.70	-0.13	13.94	-395.15	12.41
Dead+Wind 120 deg - Service	30.19	8.41	4.84	222.48	-338.38	13.75
Dead+Wind 150 deg - Service	30.19	4.71	8.37	371.71	-183.27	11.08
Dead+Wind 180 deg - Service	30.19	-0.16	9.67	427.87	21.20	5.90
Dead+Wind 210 deg - Service	30.19	-4.95	8.49	379.25	221.09	-0.83
Dead+Wind 240 deg - Service	30.19	-8.56	5.07	236.84	369.54	-7.81
Dead+Wind 270 deg - Service	30.19	-9.71	0.15	31.32	418.41	-12.50
Dead+Wind 300 deg - Service	30.19	-8.28	-4.77	-176.45	357.09	-13.45
Dead+Wind 330 deg - Service	30.19	-4.69	-8.46	-333.00	204.45	-10.97

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	0.00	-30.19	0.00	0.00	30.19	0.00	0.000%
2	0.36	-30.19	-28.73	-0.36	30.19	28.73	0.000%
3	14.15	-30.19	-24.81	-14.15	30.19	24.81	0.000%
4	24.21	-30.19	-14.48	-24.21	30.19	14.48	0.000%
5	28.02	-30.19	-0.37	-28.02	30.19	0.37	0.000%
6	24.32	-30.19	14.00	-24.32	30.19	-14.00	0.000%
7	13.60	-30.19	24.19	-13.60	30.19	-24.19	0.000%
8	-0.47	-30.19	27.95	0.47	30.19	-27.95	0.000%
9	-14.32	-30.19	24.52	14.32	30.19	-24.52	0.000%
10	-24.73	-30.19	14.65	24.73	30.19	-14.65	0.000%
11	-28.07	-30.19	0.42	28.07	30.19	-0.42	0.000%
12	-23.94	-30.19	-13.79	23.94	30.19	13.79	0.000%
13	-13.55	-30.19	-24.46	13.55	30.19	24.46	0.000%
14	0.00	-43.11	0.00	0.00	43.11	0.00	0.000%
15	0.07	-43.11	-7.96	-0.07	43.11	7.96	0.000%
16	3.74	-43.11	-6.56	-3.74	43.11	6.56	0.000%
17	6.37	-43.11	-3.71	-6.37	43.11	3.71	0.000%
18	7.46	-43.11	-0.03	-7.46	43.11	0.03	0.000%
19	6.80	-43.11	3.93	-6.80	43.11	-3.93	0.000%
20	3.68	-43.11	6.44	-3.68	43.11	-6.44	0.000%
21	-0.02	-43.11	7.34	0.02	43.11	-7.34	0.000%
22	-3.77	-43.11	6.50	3.77	43.11	-6.50	0.000%
23	-6.85	-43.11	4.04	6.85	43.11	-4.04	0.000%
24	-7.44	-43.11	0.09	7.44	43.11	-0.09	0.000%
25	-6.26	-43.11	-3.62	6.26	43.11	3.62	0.000%
26	-3.61	-43.11	-6.49	3.61	43.11	6.49	0.000%
27	0.13	-30.19	-9.94	-0.13	30.19	9.94	0.000%
28	4.90	-30.19	-8.59	-4.90	30.19	8.59	0.000%
29	8.38	-30.19	-5.01	-8.38	30.19	5.01	0.000%
30	9.70	-30.19	-0.13	-9.70	30.19	0.13	0.000%
31	8.41	-30.19	4.84	-8.41	30.19	-4.84	0.000%
32	4.71	-30.19	8.37	-4.71	30.19	-8.37	0.000%
33	-0.16	-30.19	9.67	0.16	30.19	-9.67	0.000%
34	-4.95	-30.19	8.49	4.95	30.19	-8.49	0.000%
35	-8.56	-30.19	5.07	8.56	30.19	-5.07	0.000%
36	-9.71	-30.19	0.15	9.71	30.19	-0.15	0.000%
37	-8.28	-30.19	-4.77	8.28	30.19	4.77	0.000%
38	-4.69	-30.19	-8.46	4.69	30.19	8.46	0.000%

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 25 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	65 - 49.9271	0.931	35	0.0140	0.0865
T2	49.9271 - 41.9271	0.701	35	0.0133	0.0675
T3	41.9271 - 25.1667	0.542	35	0.0122	0.0509
T4	25.1667 - 0	0.045	35	0.0086	0.0040

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
65.00	Beacon	35	0.931	0.0140	0.0865	129275
62.50	GPS	35	0.894	0.0139	0.0838	129275
61.50	5.7'x4.5" Pipe Mount	35	0.880	0.0139	0.0827	129275
60.50	6' Dish	35	0.865	0.0139	0.0816	129275
58.00	6.6'x4.5" Pipe Mount	35	0.828	0.0138	0.0788	92339
57.50	SPD2-5.8	35	0.820	0.0138	0.0782	86183
57.00	6' Dish	35	0.813	0.0138	0.0776	80797
56.50	9.5'x1.75" 4-Element Dipole	35	0.805	0.0137	0.0770	76044
56.00	7.7'x1.6" Pipe Mount	35	0.797	0.0137	0.0763	71819
54.50	21'x2.5" Omni	35	0.774	0.0136	0.0744	61528
52.50	7.25'x0.95" Omni	35	0.743	0.0135	0.0715	47955
51.50	9.25'x3.5" Omni	35	0.727	0.0134	0.0700	39764
50.50	10'x3" Omni	35	0.710	0.0133	0.0685	31625
46.50	PRFTV-48/75 Grid Dish	35	0.641	0.0129	0.0613	11983

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	65 - 49.9271	2.674	10	0.0383	0.2499
T2	49.9271 - 41.9271	2.016	10	0.0364	0.1951
T3	41.9271 - 25.1667	1.559	10	0.0336	0.1472
T4	25.1667 - 0	0.128	10	0.0238	0.0116

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
65.00	Beacon	10	2.674	0.0383	0.2499	44906
62.50	GPS	10	2.570	0.0382	0.2422	44906
61.50	5.7'x4.5" Pipe Mount	10	2.528	0.0381	0.2391	44906
60.50	6' Dish	10	2.486	0.0380	0.2359	44906
58.00	6.6'x4.5" Pipe Mount	10	2.379	0.0378	0.2277	32076
57.50	SPD2-5.8	10	2.358	0.0377	0.2259	29937

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 26 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
57.00	6' Dish	10	2.336	0.0377	0.2242	28066
56.50	9.5'x1.75" 4-Element Dipole	10	2.314	0.0376	0.2224	26415
56.00	7.7'x1.6" Pipe Mount	10	2.292	0.0376	0.2206	24948
54.50	21'x2.5" Omni	10	2.226	0.0373	0.2149	21373
52.50	7.25'x0.95" Omni	10	2.136	0.0370	0.2068	16654
51.50	9.25'x3.5" Omni	10	2.090	0.0368	0.2024	13806
50.50	10'x3" Omni	10	2.043	0.0366	0.1979	10975
46.50	PRFTV-48/75 Grid Dish	10	1.844	0.0354	0.1772	4154

Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load	Ratio	Allowable Ratio	Criteria
	ft			in		K	K	Allowable		
T1	65	Top Girt	A325N	1.2500	4	0.43	25.77	0.017 ✓	1.333	Bolt Shear
T3	41.9271	Leg	A572-50	2.2500	4	6.78	85.29	0.080 ✓	1.333	Bolt Tension
		Horizontal	A325N	1.0000	4	1.14	16.49	0.069 ✓	1.333	Bolt Shear
T4	25.1667	Leg	A572-50	2.2500	4	12.05	85.29	0.141 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	6	4.69	9.28	0.506 ✓	1.333	Bolt Shear
		Horizontal	A325N	1.2500	4	0.38	25.77	0.015 ✓	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation	Size	L	L _u	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P
	ft		ft	ft		ksi	in ²	K	K	P _a
T1	65 - 49.9271	15.5"Ø x 0.260 8-Sided Polygon	15.07	14.28	30.9 K=1.00	19.875	13.1302	-9.33	260.97	0.036
T2	49.9271 - 41.9271	15.5"Ø x 0.260 8-Sided Polygon	8.00	8.00	17.3 K=1.00	20.758	13.1302	-21.97	272.56	0.081
T3	41.9271 - 25.1667	15.5"Ø x 0.260 8-Sided Polygon	16.76	16.76	36.3 K=1.00	19.478	13.1302	-35.09	255.76	0.137
T4	25.1667 - 0	15.5"Ø x 0.260 8-Sided Polygon	25.17	25.17	54.5 K=1.00	17.946	13.1302	-60.29	235.63	0.256

Leg Bending Design Data (Compression)

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 27 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

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 $\frac{f_{by}}{F_{by}}$
T1	65 - 49.9271	15.5"Ø x 0.260 8-Sided Polygon	-32.91	-7.592	21.600	0.351	8.18	-1.887	21.600	0.087
T2	49.9271 - 41.9271	15.5"Ø x 0.260 8-Sided Polygon	-42.76	-9.866	21.600	0.457	-14.61	-3.371	21.600	0.156
T3	41.9271 - 25.1667	15.5"Ø x 0.260 8-Sided Polygon	-52.28	-12.061	21.600	0.558	-28.00	-6.459	21.600	0.299
T4	25.1667 - 0	15.5"Ø x 0.260 8-Sided Polygon	0.00	0.000	21.600	0.000	0.00	0.000	21.600	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	65 - 49.9271	15.5"Ø x 0.260 8-Sided Polygon	0.036	0.351	0.087	0.475	1.333	HI-3 ✓
T2	49.9271 - 41.9271	15.5"Ø x 0.260 8-Sided Polygon	0.081	0.457	0.156	0.693	1.333	HI-3 ✓
T3	41.9271 - 25.1667	15.5"Ø x 0.260 8-Sided Polygon	0.137	0.558	0.299	0.995	1.333	HI-3 ✓
T4	25.1667 - 0	15.5"Ø x 0.260 8-Sided Polygon	0.256	0.000	0.000	0.256	1.333	HI-3 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in ²	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T4	25.1667 - 0	W6x25	29.31	13.40	105.8 K=1.00	12.234	7.3400	-28.15	89.80	0.313 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in ²	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T2	49.9271 - 41.9271	12.45"Ø x 0.265 8-Sided Polygon	15.03	13.74	37.2 K=1.00	19.408	10.7000	-0.11	207.67	0.001
T3	41.9271 - 25.1667	W10x30	15.03	13.74	120.3 K=1.00	32.500	6.3769	0.00	91.15	0.000
T4	25.1667 - 0	12.45"Ø x 0.265 8-Sided Polygon	15.03	13.74	37.2 K=1.00	19.408	10.7000	-1.54	207.67	0.007*

* DL controls

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 28 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Horizontal Bending Design Data

Section No.	Elevation ft	Size	Actual	Actual	Allow.	Ratio	Actual	Actual	Allow.	Ratio
			M_x kip-ft	f_{bx} ksi	F_{bx} ksi	$\frac{f_{bx}}{F_{bx}}$	M_y kip-ft	f_{by} ksi	F_{by} ksi	$\frac{f_{by}}{F_{by}}$
T2	49.9271 - 41.9271	12.45"Ø x 0.265 8-Sided Polygon	-54.81	-21.099	21.600	0.977	-0.11	-0.043	21.600	0.002
T3	41.9271 - 25.1667	W10x30	-64.22	-23.785	20.618	1.154	0.03	-0.055	37.500	0.001
T4	25.1667 - 0	12.45"Ø x 0.265 8-Sided Polygon	0.00	0.000	21.600	0.000	0.00	0.000	21.600	0.000

Horizontal Interaction Design Data

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P}{P_a}$	$\frac{f_{bx}}{F_{bx}}$	$\frac{f_{by}}{F_{by}}$			
T2	49.9271 - 41.9271	12.45"Ø x 0.265 8-Sided Polygon	0.001	0.977	0.002	0.979	1.333	HI-3 ✓
T3	41.9271 - 25.1667	W10x30	0.000	1.154	0.001	1.155	1.333	HI-3 ✓
T4	25.1667 - 0	12.45"Ø x 0.265 8-Sided Polygon	0.007	0.000	0.000	0.007* ✓	1.000	HI-3 ✓

* DL controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L	L_u	Kl/r	F_o ksi	A in ²	Actual	Allow.	Ratio
			ft	ft				P	P_a	$\frac{P}{P_a}$
T1	65 - 49.9271	12.45"Ø x 0.265 8-Sided Polygon	15.03	13.74	37.2	19.408	10.7000	-0.06	207.67	0.000
					K=1.00					

Top Girt Bending Design Data

Section No.	Elevation ft	Size	Actual	Actual	Allow.	Ratio	Actual	Actual	Allow.	Ratio
			M_x kip-ft	f_{bx} ksi	F_{bx} ksi	$\frac{f_{bx}}{F_{bx}}$	M_y kip-ft	f_{by} ksi	F_{by} ksi	$\frac{f_{by}}{F_{by}}$
T1	65 - 49.9271	12.45"Ø x 0.265 8-Sided Polygon	-28.77	-11.076	21.600	0.513	-0.05	-0.021	21.600	0.001

Top Girt Interaction Design Data

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 29 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_n}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{bv}}{F_{bv}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	65 - 49.9271	12.45"Ø x 0.265 8-Sided Polygon	0.000	0.513	0.001	0.514 ✓	1.333	H1-3 ✓

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_n}$
T1	65 - 49.9271	15.5"Ø x 0.260 8-Sided Polygon	15.07	14.28	30.9	21.600	13.1302	4.47	283.61	0.016
T2	49.9271 - 41.9271	15.5"Ø x 0.260 8-Sided Polygon	8.00	8.00	17.3	21.600	13.1302	11.04	283.61	0.039
T3	41.9271 - 25.1667	15.5"Ø x 0.260 8-Sided Polygon	16.76	16.76	36.3	21.600	13.1302	21.65	283.61	0.076
T4	25.1667 - 0	15.5"Ø x 0.260 8-Sided Polygon	25.17	25.17	54.5	21.600	13.1302	48.20	283.61	0.170

Leg Bending Design Data (Tension)

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 _{bv} ksi	Allow. F _{bv} ksi	Ratio $\frac{f_{bv}}{F_{bv}}$
T1	65 - 49.9271	15.5"Ø x 0.260 8-Sided Polygon	31.09	7.173	21.600	0.332	-8.46	1.952	21.600	0.090
T2	49.9271 - 41.9271	15.5"Ø x 0.260 8-Sided Polygon	41.54	9.582	21.600	0.444	14.58	3.364	21.600	0.156
T3	41.9271 - 25.1667	15.5"Ø x 0.260 8-Sided Polygon	50.56	11.663	21.600	0.540	-29.67	6.845	21.600	0.317
T4	25.1667 - 0	15.5"Ø x 0.260 8-Sided Polygon	0.00	0.000	21.600	0.000	0.00	0.000	21.600	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_n}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{bv}}{F_{bv}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	65 - 49.9271	15.5"Ø x 0.260 8-Sided Polygon	0.016	0.332	0.090	0.438 ✓	1.333	H2-1 ✓
T2	49.9271 - 41.9271	15.5"Ø x 0.260 8-Sided Polygon	0.039	0.444	0.156	0.638 ✓	1.333	H2-1 ✓
T3	41.9271 - 25.1667	15.5"Ø x 0.260 8-Sided Polygon	0.076	0.540	0.317	0.933 ✓	1.333	H2-1 ✓

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 30 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T4	25.1667 - 0	15.5"Ø x 0.260 8-Sided Polygon	0.170	0.000	0.000	0.170 ✓	1.333	H2-1 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T4	25.1667 - 0	W6x25	29.31	13.40	105.8	29.000	5.2950	23.23	153.56	0.151 ✓

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T2	49.9271 - 41.9271	12.45"Ø x 0.265 8-Sided Polygon	15.03	13.74	37.2	21.600	10.7000	0.04	231.12	0.000
T3	41.9271 - 25.1667	W10x30	15.03	13.74	120.3	32.500	6.3769	0.20	207.25	0.001
T4	25.1667 - 0	12.45"Ø x 0.265 8-Sided Polygon	15.03	13.74	37.2	21.600	10.7000	1.03	231.12	0.004*

* DL controls

Horizontal 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 $\frac{f_{by}}{F_{by}}$
T2	49.9271 - 41.9271	12.45"Ø x 0.265 8-Sided Polygon	-54.57	21.006	21.600	0.972	-0.11	0.042	21.600	0.002
T3	41.9271 - 25.1667	W10x30	-64.22	23.785	20.618	1.154	0.03	0.055	37.500	0.001
T4	25.1667 - 0	12.45"Ø x 0.265 8-Sided Polygon	0.00	0.000	21.600	0.000	0.00	0.000	21.600	0.000

Horizontal Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	49.9271 -	12.45"Ø x 0.265 8-Sided	0.000	0.972	0.002	0.975	1.333	H2-1 ✓

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 31 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T3	41.9271 - 25.1667	Polygon W10x30	0.001	1.154	0.001	1.156 ✓	1.333	H2-1 ✓
T4	25.1667 - 0	12.45"Ø x 0.265 8-Sided Polygon	0.004	0.000	0.000	0.004* ✓	1.000	H2-1 ✓

* DL controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _w ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	65 - 49.9271	12.45"Ø x 0.265 8-Sided Polygon	15.03	13.74	37.2	21.600	10.7000	0.69	231.12	0.003

Top Girt 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 $\frac{f_{by}}{F_{by}}$
T1	65 - 49.9271	12.45"Ø x 0.265 8-Sided Polygon	-26.81	10.320	21.600	0.478	-0.05	0.018	21.600	0.001

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	65 - 49.9271	12.45"Ø x 0.265 8-Sided Polygon	0.003	0.478	0.001	0.482 ✓	1.333	H2-1 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
T1	65 - 49.9271	Leg	15.5"Ø x 0.260 8-Sided Polygon	1	-9.33	347.87	35.6	Pass
		Top Girt	12.45"Ø x 0.265 8-Sided Polygon	6	0.69	308.08	38.6	Pass
T2	49.9271 - 41.9271	Leg	15.5"Ø x 0.260 8-Sided Polygon	7	-21.97	363.33	52.0	Pass
		Horizontal	12.45"Ø x 0.265 8-Sided Polygon	10	-0.11	276.82	73.5	Pass

tnxTower Velocitel, Inc., d.b.a. FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job Danbury, SNET005-A/FA# 10137472	Page 32 of 32
	Project 15BKPG1400	Date 15:05:14 05/05/15
	Client AT&T Towers	Designed by RTorbert

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
T3	41.9271 - 25.1667	Leg	15.5"Ø x 0.260 8-Sided Polygon	13	-35.09	340.92	74.6	Pass	
T4	25.1667 - 0	Horizontal	W10x30	16	0.20	276.26	86.7	Pass	
		Leg	15.5"Ø x 0.260 8-Sided Polygon	19	-60.29	314.10	19.2	Pass	
		Diagonal	W6x25	26	-28.15	119.70	23.5	Pass	
		Horizontal	12.45"Ø x 0.265 8-Sided Polygon	23	-1.54	207.67	0.7	Pass	
							37.9 (b)		
							1.1 (b)		
							Summary		
							Leg (T3)	74.6	Pass
							Diagonal (T4)	37.9	Pass
							Horizontal (T3)	86.7	Pass
							Top Girt (T1)	38.6	Pass
							Bolt Checks	37.9	Pass
							RATING =	86.7	Pass



Project: Danbury / 15 BK PG1400

Sheet 1 of 1

Date: 05/05/2015

By: RTT

FDH Project #: _____

Checked By: _____

Drawing #: _____

Foundation Analysis

Overturning:

$$FS = \frac{(P + W_c + W_s)(l/2)}{M + V(d)} = \frac{(43K + 140K)(21.6ft/2)}{1228K-ft + 29K(2.5ft)}$$

$$FS = 1.52$$

$$1.5/1.52 = \boxed{98.7\%}$$

Toe Pressure:

$$q_{ult} = 25 \text{ ksf}$$

$$\frac{M}{S} + \frac{P}{A} \Rightarrow S = \frac{I}{y} = \frac{11,197.4 \text{ ft}^4}{13} = 861.3 \text{ ft}^3$$

$$\sigma = \frac{1228 \text{ K-ft}}{861.3 \text{ ft}^3} + \frac{43K}{357.2 \text{ ft}^2} = 1.546 \text{ ksf}$$

$$\frac{1.546 \text{ ksf}}{0.5(25 \text{ ksf})} = \boxed{12.4\%}$$