Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

HAND DELIVERED

May 7, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at Garden Circle (Farmdale Drive),Waterbury (owner, American Tower Corp.)

Dear Ms. Bachman:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.

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

4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS transmissions. Moreover, LTE will utilize additional radio frequencies newly-licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, AT&T respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 830-0380 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Steven L. Levine
Real Estate Consultant

cc: Mayor Neil M. O'Leary, City of Waterbury

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

Garden Circle (Farmdale Drive), Waterbury, CT
Site Number 1005
Prior Decisions: Docket 44.5; EM's 4/89, 3/94, 8/02, 7/07, 5/12, 6/13

Tower Owner/Manager: American Tower

Lease Area: The Garden Circle (Farmdale Drive), Waterbury site was approved by the Council in Docket 44.5 with a 70 ft x 70 ft lease area. (See attached site plan from Docket 44.5 Application.) Subsequently, on 3/30/94 the Council approved an exempt modification expanding the lease and fenced areas to 70 ft x 100 ft to accommodate colocation by Bell Atlantic Mobile. No further changes have been made to the site's footprint. Since all proposed equipment modifications will occur either on the existing tower structure or within AT&T's existing equipment shelter, the proposed modifications will not extend either AT&T's lease area or the overall site boundaries.

Equipment configuration: Guyed Monopole

Current and/or approved:
Equipment platform @ 150 ft
Three PowerWave 7770 antennas @ 152 ft c.l.
Two PowerWave P-65-17-XLH-RR antennas @ 152 ft c.l.
Two Andrew SBNH-1D6565C antennas @ 152 ft c.l.
Two KMW AM-X-CD-16-65-00T-RET antennas @ 152 ft c.l.
Three CCI TMA's @ 152 ft
Six remote radio heads @ 152 ft
One Raycap DC6-48-60-18-8F surge arrestor @ 152 ft
Twelve lines 1¼ inch coax
One fiber and two DC control cables
Equipment shelter
Diesel generator on concrete pad

Proposed modifications:
Remove existing platform and existing equipment from 150 ft level.
Remove six lines 1¼ inch coax.
Install Commscope equipment platform MT3607R.
Re-install three PowerWave 7770 antennas @ 154 ft c.l.
Install six CCI HPA-65R-BUU-H8 antennas @ 154 ft c.l.
Install three CCI HPA-65R-BUU-H6 antennas @ 154 ft c.l.
Install three CCI DTMABP7819VG12A TMA's @ 154 ft.
Install 18 remote radio heads and six associated A2 modules @ 154 ft.
Install three Raycap DC6-48-60-18-8F surge arrestors @ 154 ft.
Install four additional DC control cables.

Power Density:

Calculations for AT&T's current operations at the site indicate a radio frequency electromagnetic radiation power density, measured at the tower base, of approximately 44.4 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density for AT&T's planned operations would be approximately 32.5 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							26.04
AT&T GSM *	152	880 - 894	2	565	0.0176	0.5867	3.00
AT&T GSM *	152	1900 Band	2	875	0.0272	1.0000	2.72
AT&T UMTS *	152	880 - 894	1	647	0.0101	0.5867	1.72
AT&T UMTS *	152	1900 Band	4	934	0.0581	1.0000	5.81
AT&T LTE *	152	734	1	1615	0.0251	0.4893	5.14
Total *							44.4%

* Per CSC records

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							26.04
AT&T LTE	154	700 Band	1	500	0.0076	0.4667	1.62
AT&T LTE	154	1900 Band	1	500	0.0076	1.0000	0.76
AT&T LTE	154	2300 Band	1	500	0.0076	1.0000	0.76
AT&T UMTS	154	880 - 894	2	500	0.0152	0.5867	2.58
AT&T UMTS	154	1900 Band	1	500	0.0076	1.0000	0.76
Total							32.5%

* Per CSC records

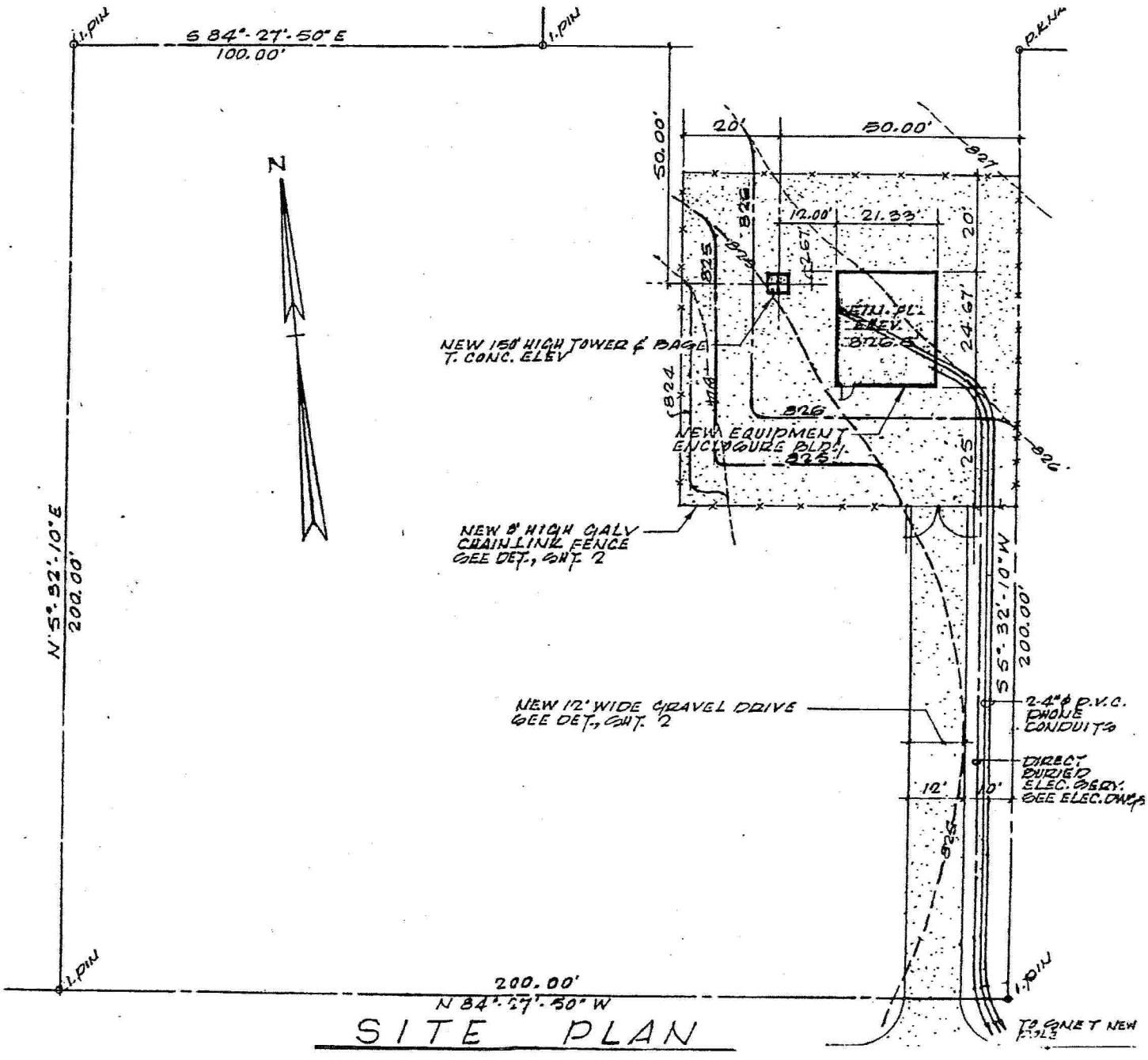
Structural information:

The attached structural analysis (American Tower Corp., 5/5/14) demonstrates that the tower and foundation are adequate to accommodate the proposed equipment modifications.

DOCKET 44.5

Connecticut Siting Council Application

Southern New England Telephone Company



SITE PLAN

SITE NAME: WOLCOTT WEST
SITE NUMBER: CT1005

PROJECT INFORMATION

SCOPE OF WORK:	REPLACE EXISTING ANTENNA PLATFORM WITH NEW PLATFORM. RELOCATE (1) EXISTING ANTENNA PER SECTOR TO NEW PLATFORM. REMOVE (2) EXISTING ANTENNAS PER SECTOR AND REPLACE WITH (3) NEW ANTENNAS PER SECTOR. RELOCATE EXISTING SURGE ARRESTOR TO NEW PLATFORM AND ADD (2) ADDITIONAL SURGE ARRESTORS. INSTALL (18) TOTAL RRUS ON A NEW COLLAR MOUNT. INSTALL FIBER AND DC POWER CONDUITS AND INSTALL ADDITIONAL EQUIPMENT INSIDE AN EXISTING SHELTER. REMOVE 6 LINES OF EXISTING COAX.
SITE ADDRESS:	FARMDALE DRIVE WATERBURY, CT 06704
LATITUDE:	41° 34' 14.4" (NAD 83)*
LONGITUDE:	73° 01' 3.3" (NAD 83)* *PER AT&T EXISTING PLANS
JURISDICTION:	CONNECTICUT SITING COUNCIL
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
NAME OF APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
TOWER OWNER: TOWER NUMBER:	AMERICAN TOWER 302476

DRAWING INDEX

		REV
T01	TITLE SHEET	0
G01	GENERAL NOTES	0
A01	SITE PLAN & SHELTER LAYOUT	0
A02	ANTENNA LAYOUTS & ELEVATIONS	0
A03	CONSTRUCTION DETAILS I	0
A04	CONSTRUCTION DETAILS II	0
E01	GROUNDING DETAILS	0

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

STRUCTURAL NOTE:

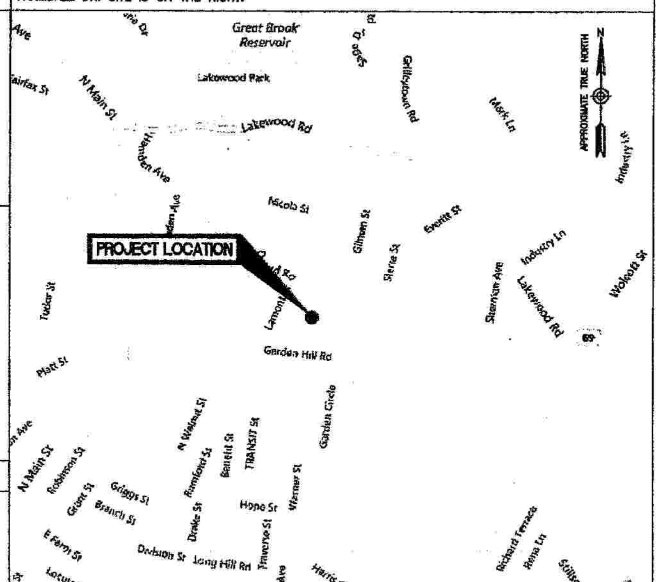
1. AS REQUIRED THE TIA/EIA 222F – STANDARD, SAI COMMUNICATIONS, INC. SHALL PROVIDE A STRUCTURAL ANALYSIS OF THE TOWER PREPARED BY A LICENSED CONNECTICUT STRUCTURAL ENGINEER CERTIFYING THAT, THE EXISTING TOWER AND ANY REQUIRED IMPROVEMENTS AND REINFORCEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES AND COMPLIES WITH THE CURRENT CONNECTICUT STATE BUILDING CODE AND EIA/TIA CRITERIA. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

CONTACT INFORMATION

CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	GREG H. NAWROTZKI	DEWBERRY	(973) 576-9653
SAC:	CARL AQUILINA	SAI	(603) 560-6185
CONST.:	SCOTT KELLEY	SAI	(978) 979-7638

VICINITY MAP

DIRECTIONS: (FROM ROCKY HILL, CT) HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.3 MILES TURN LEFT ONTO CAPITOL BLVD. 0.2 MILES TURN LEFT ONTO WEST ST. 0.3 MILES MERGE ONTO I-91 S VIA RAMP ON THE LEFT TOWARD NEW HAVEN. 9.0 MILES MERGE ONTO I-691 W VIA EXIT 18 TOWARD MERIDEN/WATERBURY. 7.9 MILES MERGE ONTO I-84 W VIA EXIT 1 ON THE LEFT TOWARD WATERBURY/DANBURY. 7.4 MILES TAKE THE UNION ST EXIT TOWARD DOWNTOWN WATERBURY. STAY STRAIGHT TO GO ONTO BRASS MILL DR. BRASS MILL DR BECOMES WELTON ST. 0.1 MILES TURN RIGHT ONTO WALNUT ST. 0.8 MILES TURN RIGHT ONTO DELFORD RD. DELFORD RD BECOMES LAMONT ST. 0.1 MILES TURN LEFT ONTO GARDEN HILL RD. TURN LEFT ONTO GARDEN HILL CIRCLE. TURN LEFT ONTO FARMDALE DR. SITE IS ON THE RIGHT.



APPLICABLE BUILDING CODES AND STANDARDS

CONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARD NOTES, SYMBOLS AND DETAILS (SEE DRAWING INDEX FOR STANDARD NOTES AND DETAILS INCLUDED WITH TYPICAL DRAWING PACKAGE). CONTRACTOR WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE:
CONNECTICUT STATE BUILDING CODE (2005) & ALL SUBSEQUENT AMENDMENTS

ELECTRICAL CODE:
NATIONAL ELECTRICAL CODE (NEC 2005)

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS.
AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

SAI
500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

WOLCOTT WEST
SITE NO. CT1005
FARMDALE DRIVE
WATERBURY, CT 06704

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

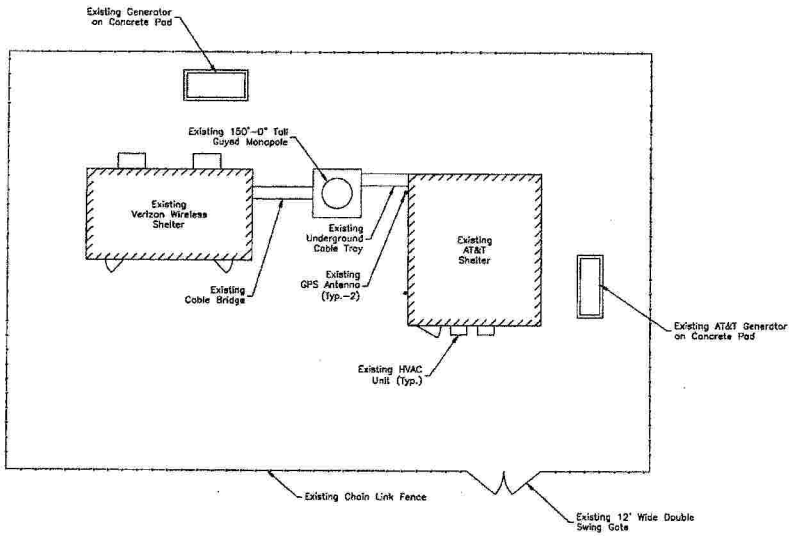
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	04/28/14	ISSUED FOR CONSTRUCTION	RSA	BSH	GHN
A	03/25/14	PRELIMINARY SUBMISSION	RSA	BSH	GHN

SCALE: AS SHOWN | DESIGNED BY: BSH | DRAWN BY: RSA

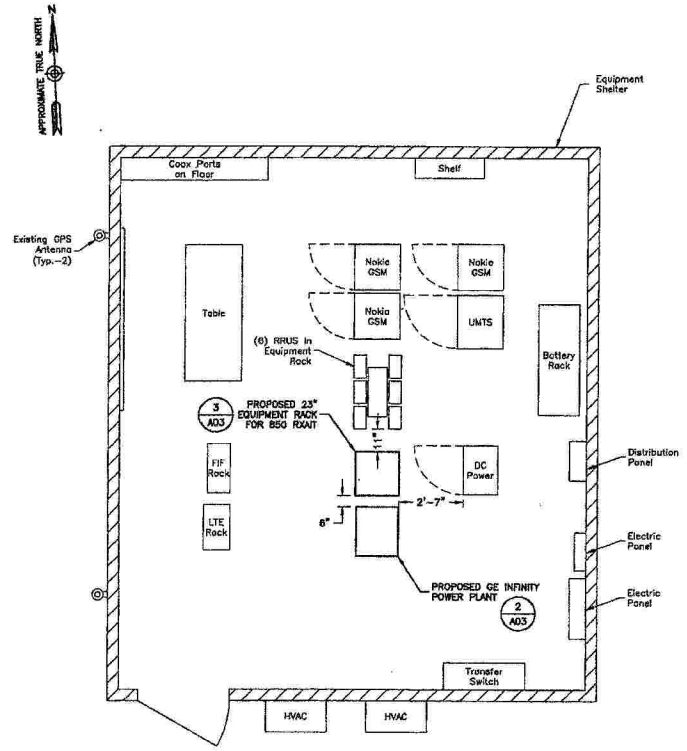
ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029256

TITLE SHEET

DEWBERRY NO.	DRAWING NUMBER	REV
50055106/50062590	T01	0



SITE PLAN 1
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"
0' 10' 20'



SHELTER LAYOUT DETAIL 2
SCALE: 3/16"=1" FOR 11"x17"
3/8"=1" FOR 22"x34"
0' 2' 4' 8'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. MOUNT ALL ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS BY OTHERS.
3. NOT ALL INFORMATION SHOWN FOR CLARITY.

Dewberry
Dewberry Engineers Inc.
800 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

SAI
500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

WOLCOTT WEST
SITE NO. CT1005

FARMDALE DRIVE
WATERBURY, CT 06704

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

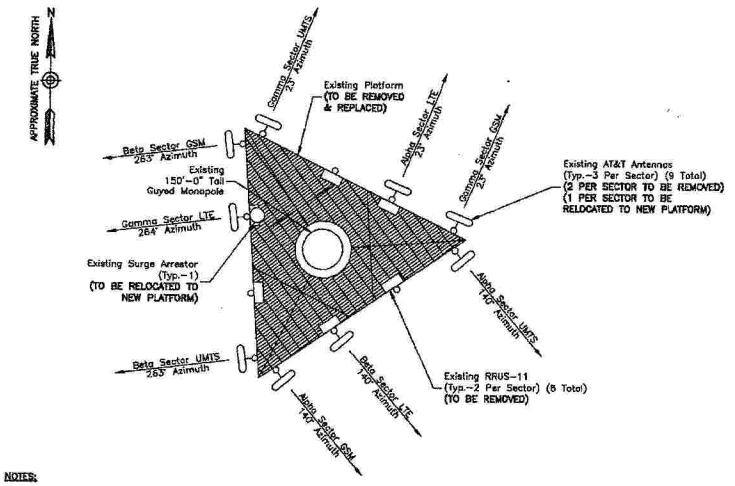
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	04/29/14	ISSUED FOR CONSTRUCTION	RSA	BSH	GHN
A	03/25/14	PRELIMINARY SUBMISSION	RSA	BSH	GHN

SCALE: AS SHOWN | DESIGNED BY: BSH | DRAWN BY: RSA

STATE OF CONNECTICUT
ROBERT J. FOLEY
ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0022256

SITE PLAN & SHELTER LAYOUT

DEWBERRY NO.	DRAWING NUMBER	REV
50055106/50062690	A01	0

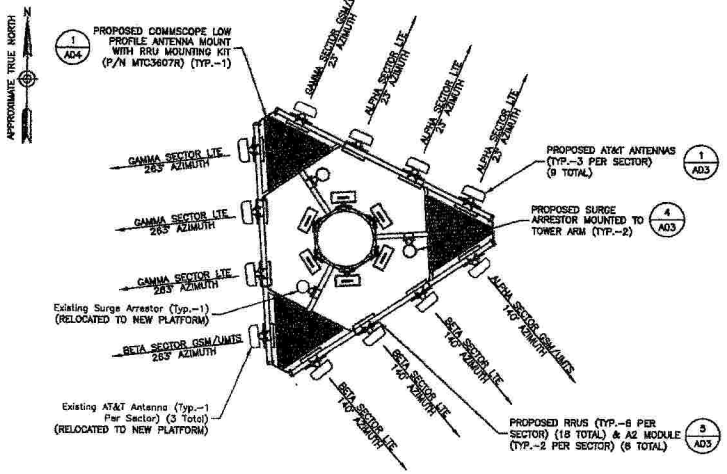


NOTES:

1. EXISTING TMA'S NOT SHOWN FOR CLARITY.
2. ALL EXISTING TMA'S ARE TO REMAIN.

EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.

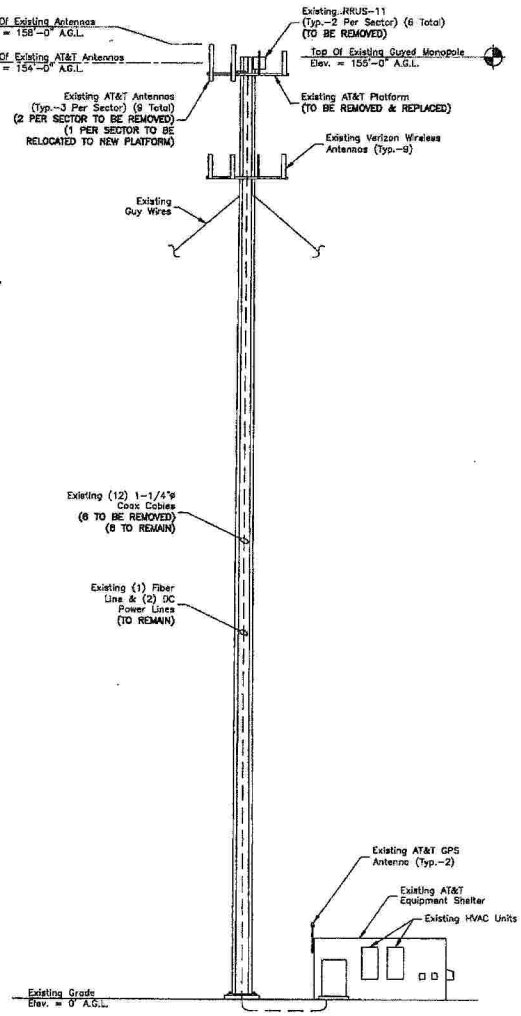


NOTES:

1. EXISTING TMA'S NOT SHOWN FOR CLARITY.
2. ALL EXISTING TMA'S ARE TO REMAIN.

PROPOSED ANTENNA LAYOUT (2)

SCALE: N.T.S.

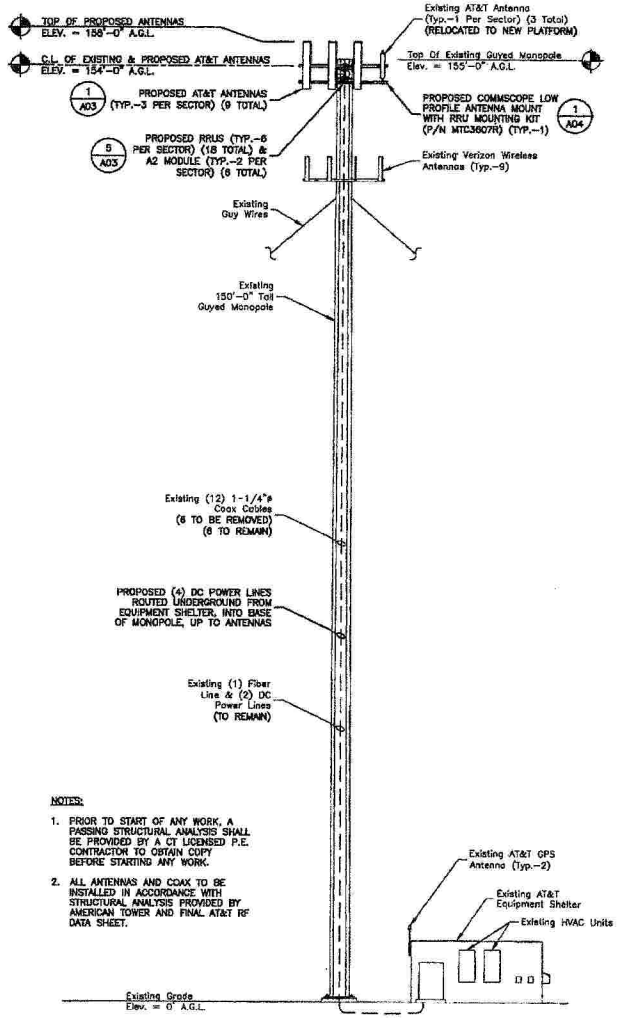


EXISTING SOUTH ELEVATION (3)

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

A.G.L. = ABOVE GRADE LEVEL
C.L. = CENTER LINE



NOTES:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY A CT LICENSED P.E. CONTRACTOR TO OBTAIN COPY BEFORE STARTING ANY WORK.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER AND FINAL AT&T RF DATA SHEET.

PROPOSED SOUTH ELEVATION (4)

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

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500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	04/28/14	ISSUED FOR CONSTRUCTION	RSA	BSH	GHN
A	03/25/14	PRELIMINARY SUBMISSION	RSA	BSH	GHN

SCALE: AS SHOWN | DESIGNED BY: BSH | DRAWN BY: RSA

ROBERT A. FOLEY, P.E.
CT LICENSE No. PEN.0029058

ANTENNA LAYOUTS & ELEVATIONS

DEWBERRY NO.	DRAWING NUMBER	REV
50055106/50062690	A02	0

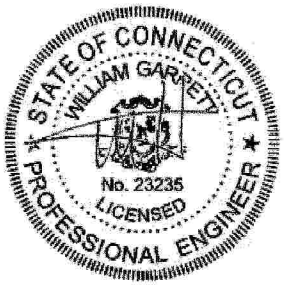
AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**150 ft Monopole**
ATC Site Name	:	**Wtbr - Waterbury, CT**
ATC Site Number	:	**302476**
Engineering Number	:	**57963521**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Farmdale Drive**
Carrier Site Number	:	**CT1005 / FA #10034976**
Site Location	:	**Farmdale Drive** **Waterbury, CT 06704-2833** **41.570667, -73.017600**
County	:	**New Haven**
Date	:	**May 5, 2014**
Max Usage	:	**100%**
Result	:	**Pass**

Michael B. Davenport
Structural Engineer III

Michael Davenport



May 6 2014 7:38 AM

AMERICAN TOWER®
CORPORATION

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	ITT Meyer Type "B" Specifications (AT&T Spec. AT-8935, dated April 13, 1984) Smith Cullum Mapping: Acquisition #CT-0012, dated June 7, 2001
Foundation Drawing	Girard & Co. Engineers Job #38926, dated July 10, 1984
Modifications	SpectraSite Communications Drawing #CT-0012-M1, dated January 12, 2005

Analysis

The tower was analyzed using tnxTower version 6.1 tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	99 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	B
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	154.0	3	CCI DTMABP7819VG12A	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6	AT&T Mobility
		1	Raycap DC6-48-60-18-8F			
		9	ADC DD1900			
		6	Ericsson RRUS 11 (Band 7)			
		3	Powerwave Allgon 7770.00			
129.0	129.0	6	RFS FD9R6004/2C-3L (3.1 lbs)	Low Profile Platform	(15) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon Wireless
		3	Alcatel-Lucent RRH2x40-AWS			
		3	Antel BXA-171063/8CF			
		3	Amphenol Antel BXA-171063-8BF-EDIN-X			
		3	Andrew DB948F85E-M			
		3	Amphenol Antel BXA-80063-4CF-EDIN-X			
		1	RFS DB-T1-6Z-8AB-0Z			
		1	Antel BXA-70080-6CF-EDIN-X			
		2	Amphenol Antel BXA-70063-6CF-EDIN-X			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	158.0	2	Powerwave Allgon P65-17-XLH-RR	Platform w/ Handrails	(6) 1 1/4" Coax	AT&T Mobility
	156.0	2	KMW AM-X-CD-16-65-00T-RET (54")			
	158.0	2	Andrew SBNH-1D6565C (60.8 lbs)			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	154.0	2	Raycap DC6-48-60-18-8F	Platform w/ Handrails	(4) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		6	Ericsson RRUS A2 Module (15.1"Height)			
		3	Ericsson RRUS E2 B29			
		6	Ericsson RRUS-12 B2			
		3	Ericsson RRUS-32			
		3	CCI HPA-65R-BUU-H6			
		6	CCI HPA-65R-BUU-H8			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	11%	Pass
Shaft	100%	Pass
Base Plate	7%	Pass
Flanges	74%	Pass

Foundations

Reaction Component	Analysis Reactions
Moment (Kips-Ft)	144.1
Axial (Kips)	73.0
Shear (Kips)	3.8
Guy Tension (Kips)	35.6

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Deflection (in)	Sway (Rotation) (°)
150.0	6.715	1.189

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

AMERICAN TOWER®
CORPORATION

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

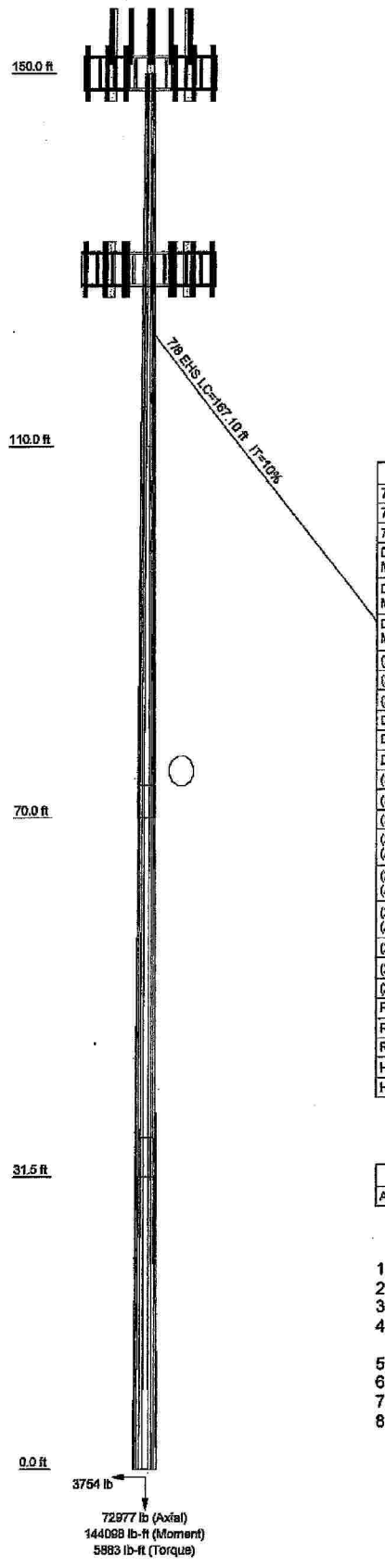
-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

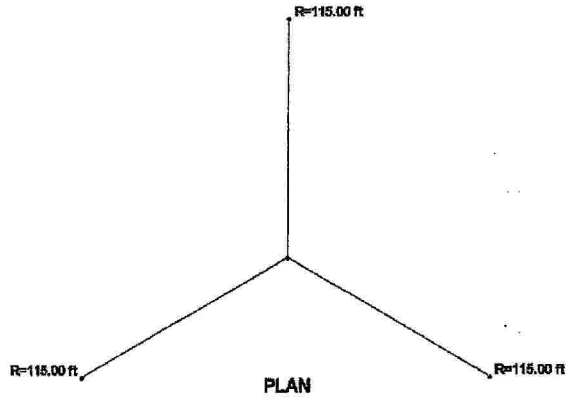
It is the responsibility of the client to ensure that the information provided to ATC Tower Services, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Section	1	2	3	4
Length (ft)	40.00	40.00	42.00	35.67
Number of Sides	12	12	12	12
Thickness (in)	0.1875	0.2500	0.3130	0.3750
Socket Length (ft)		3.50	4.17	
Top Dia (in)	15.0000	21.2500	26.5535	31.8245
Bot Dia (in)	21.2500	27.6100	33.1000	37.3800
Grade	A572-65			
Weight (lb) 13390.7	1474.1	2648.4	4251.2	5016.0





PLAN

DESIGNED APPURTENANCE LOADING

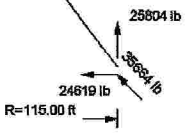
TYPE	ELEVATION	TYPE	ELEVATION
7770.00 (ATI Mobility)	150	HPA-65R-BUU-H6 (ATI Mobility)	150
7770.00 (ATI Mobility)	150	(2) HPA-65R-BUU-H8 (ATI Mobility)	150
7770.00 (ATI Mobility)	150	(2) HPA-65R-BUU-H8 (ATI Mobility)	150
DC6-48-60-18-8F (23.5" Height) (ATI Mobility)	150	(2) HPA-65R-BUU-H8 (ATI Mobility)	150
		RRUS E2 B29 (ATI Mobility)	150
DC6-48-60-18-8F (23.5" Height) (ATI Mobility)	150	RRUS E2 B29 (ATI Mobility)	150
		RRUS E2 B29 (ATI Mobility)	150
DC6-48-60-18-8F (23.5" Height) (ATI Mobility)	150	Flat Platform w/ Handrails (ATI Mobility)	150
(2) RRUS 11 (Band 7) (ATI Mobility)	150	BXA-70063-6CF-EDIN-X (Verizon)	129
(2) RRUS 11 (Band 7) (ATI Mobility)	150	BXA-70063-6CF-EDIN-X (Verizon)	129
(2) RRUS 11 (Band 7) (ATI Mobility)	150	BXA-70080-6CF-EDIN-X (Verizon)	129
DTMABP7819VG12A (ATI Mobility)	150	Flat Platform w/ Handrails (Verizon)	129
DTMABP7819VG12A (ATI Mobility)	150	DB948F85E-M (Verizon)	129
DTMABP7819VG12A (ATI Mobility)	150	DB948F85E-M (Verizon)	129
(3) DD1900 (ATI Mobility)	150	DB948F85E-M (Verizon)	129
(3) DD1900 (ATI Mobility)	150	BXA-171063-8BF-EDIN-X (Verizon)	129
(3) DD1900 (ATI Mobility)	150	BXA-171063-8BF-EDIN-X (Verizon)	129
(2) RRUS A2 Module (15.1"Height) (ATI Mobility)	150	BXA-171063-8BF-EDIN-X (Verizon)	129
		BXA-80063/4CF (Verizon)	129
(2) RRUS A2 Module (15.1"Height) (ATI Mobility)	150	BXA-80063/4CF (Verizon)	129
		BXA-80063/4CF (Verizon)	129
(2) RRUS A2 Module (15.1"Height) (ATI Mobility)	150	(2) FD9R6004/2C-3L (Verizon)	129
(2) RRUS-12 B2 (ATI Mobility)	150	(2) FD9R6004/2C-3L (Verizon)	129
(2) RRUS-12 B2 (ATI Mobility)	150	(2) FD9R6004/2C-3L (Verizon)	129
(2) RRUS-12 B2 (ATI Mobility)	150	DB-T1-6Z-8AB-0Z (Verizon)	129
RRUS-32 (ATI Mobility)	150	BXA-171063/8CF (Verizon)	129
RRUS-32 (ATI Mobility)	150	BXA-171063/8CF (Verizon)	129
RRUS-32 (ATI Mobility)	150	BXA-171063/8CF (Verizon)	129
HPA-65R-BUU-H6 (ATI Mobility)	150	RRH2x40-AWS (Verizon)	129
HPA-65R-BUU-H8 (ATI Mobility)	150	RRH2x40-AWS (Verizon)	129
		RRH2x40-AWS (Verizon)	129

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 99 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.5%



ALL REACTIONS ARE FACTORED

ATC Engineering
3500 Regency Parkway, Suite 100
Cary, NC 27518
Phone: (919) 466-5147
FAX:

Job: 57963521			
Project: 302476 - Wtbr-Waterbury, CT			
Client: AT&T Mobility	Drawn by: michael.davenport		App'd:
Code: TIA-222-G	Date: 05/05/14		Scale: NTS
Path: C:\Users\michael.davenport\Desktop\302476-53066625(Rev-F).eri			Dwg No. E-1

Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

May 7, 2014

Honorable Neil M. O'Leary, Mayor
City of Waterbury
City Hall, 235 Grand Street
Waterbury, CT 06702

Notice of Exempt Modification: Existing Telecommunications Facility at Garden Circle (Farmdale Drive), Waterbury

Dear Mayor O'Leary:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") will be changing its equipment configuration at certain cell sites.

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

The enclosed Notice fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council's procedures, please contact the undersigned at 860-830-0380 or Ms. Melanie Bachman, Acting Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine
Real Estate Consultant

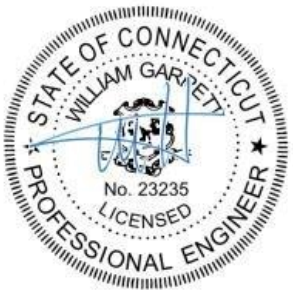
Enclosure

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**150 ft Monopole**
ATC Site Name	:	**Wtbr - Waterbury, CT**
ATC Site Number	:	**302476**
Engineering Number	:	**57963521**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Farmdale Drive**
Carrier Site Number	:	**CT1005 / FA #10034976**
Site Location	:	**Farmdale Drive** **Waterbury, CT 06704-2833** **41.570667, -73.017600**
County	:	**New Haven**
Date	:	**May 5, 2014**
Max Usage	:	**100%**
Result	:	**Pass**

Michael B. Davenport
Structural Engineer III



May 6 2014 7:38 AM

AMERICAN TOWER®
CORPORATION

Eng. Number 57963521
May 5, 2014

Table of Contents

AMERICAN TOWER®
CORPORATION

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	ITT Meyer Type "B" Specifications (AT&T Spec. AT-8935, dated April 13, 1984) Smith Cullum Mapping: Acquisition #CT-0012, dated June 7, 2001
Foundation Drawing	Girard & Co. Engineers Job #38926, dated July 10, 1984
Modifications	SpectraSite Communications Drawing #CT-0012-M1, dated January 12, 2005

Analysis

The tower was analyzed using tnxTower version 6.1 tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	99 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	B
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	154.0	3	CCI DTMABP7819VG12A	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6	AT&T Mobility
		1	Raycap DC6-48-60-18-8F			
		9	ADC DD1900			
		6	Ericsson RRUS 11 (Band 7)			
		3	Powerwave Allgon 7770.00			
129.0	129.0	6	RFS FD9R6004/2C-3L (3.1 lbs)	Low Profile Platform	(15) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon Wireless
		3	Alcatel-Lucent RRH2x40-AWS			
		3	Antel BXA-171063/8CF			
		3	Amphenol Antel BXA-171063-8BF-EDIN-X			
		3	Andrew DB948F85E-M			
		3	Amphenol Antel BXA-80063-4CF-EDIN-X			
		1	RFS DB-T1-6Z-8AB-0Z			
		1	Antel BXA-70080-6CF-EDIN-X			
		2	Amphenol Antel BXA-70063-6CF-EDIN-X			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	158.0	2	Powerwave Allgon P65-17-XLH-RR	Platform w/ Handrails	(6) 1 1/4" Coax	AT&T Mobility
	156.0	2	KMW AM-X-CD-16-65-00T-RET (54")			
	158.0	2	Andrew SBNH-1D6565C (60.8 lbs)			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	154.0	2	Raycap DC6-48-60-18-8F	Platform w/ Handrails	(4) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		6	Ericsson RRUS A2 Module (15.1"Height)			
		3	Ericsson RRUS E2 B29			
		6	Ericsson RRUS-12 B2			
		3	Ericsson RRUS-32			
		3	CCI HPA-65R-BUU-H6			
		6	CCI HPA-65R-BUU-H8			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	11%	Pass
Shaft	100%	Pass
Base Plate	7%	Pass
Flanges	74%	Pass

Foundations

Reaction Component	Analysis Reactions
Moment (Kips-Ft)	144.1
Axial (Kips)	73.0
Shear (Kips)	3.8
Guy Tension (Kips)	35.6

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Deflection (in)	Sway (Rotation) (°)
150.0	6.715	1.189

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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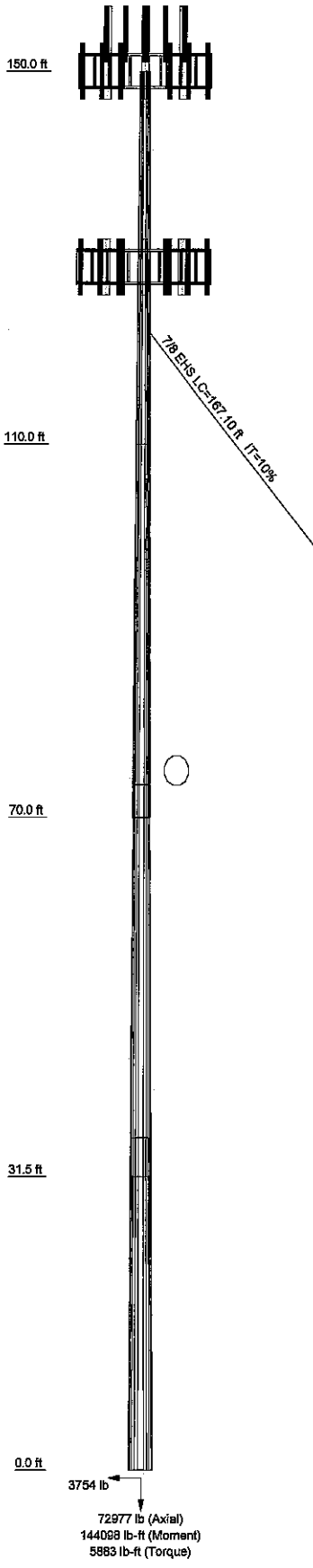
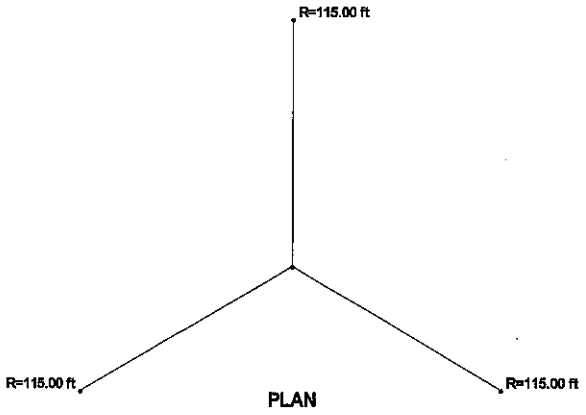
Section	1	2	3	4
Length (ft)	40.00	40.00	42.00	35.67
Number of Sides	12	12	12	12
Thickness (in)	0.1875	0.2500	0.3130	0.3750
Socket Length (ft)		3.50	4.17	
Top Dia (in)	15.0000	21.2500	26.5535	31.8245
Bot Dia (in)	21.2500	27.6100	33.1000	37.3800
Grade	A572-65			
Weight (lb) 13390.7	1474.1	2649.4	4251.2	5016.0





PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
7770.00 (ATI Mobility)	150	HPA-65R-BUU-H6 (ATI Mobility)	150
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(2) RRUS 11 (Band 7) (ATI Mobility)	150	Flat Platform w/ Handrails (ATI Mobility)	150
(2) RRUS 11 (Band 7) (ATI Mobility)	150	BXA-70063-6CF-EDIN-X (Verizon)	129
DTMABP7819VG12A (ATI Mobility)	150	BXA-70063-6CF-EDIN-X (Verizon)	129
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(2) RRUS-12 B2 (ATI Mobility)	150	BXA-80063/4CF (Verizon)	129
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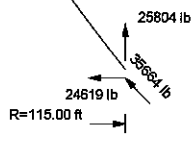
RRUS-32 (ATI Mobility)	150	(2) FD9R6004/2C-3L (Verizon)	129
HPA-65R-BUU-H6 (ATI Mobility)	150	DB-T1-6Z-8AB-0Z (Verizon)	129
HPA-65R-BUU-H6 (ATI Mobility)	150	BXA-171063/8CF (Verizon)	129
		BXA-171063/8CF (Verizon)	129
		BXA-171063/8CF (Verizon)	129
		RRH2x40-AWS (Verizon)	129
		RRH2x40-AWS (Verizon)	129
		RRH2x40-AWS (Verizon)	129

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 99 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.5%



ALL REACTIONS ARE FACTORED

ATC Engineering
3500 Regency Parkway, Suite 100
Cary, NC 27518
Phone: (919) 466-5147
FAX:

Job: *57963521*			
Project: *302476 - Wtbr-Waterbury, CT*			
Client: AT&T Mobility	Drawn by: michael.davenport	App'd:	
Code: TIA-222-G	Date: 05/05/14	Scale: NTS	
Path: C:\Users\michael.davenport\Desktop\302476-53056625(Rev-F).eri		Dwg No. E-1	

tnxTower	Job	Page
	57963521	1 of 23
ATC Engineering 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 466-5147 FAX:	Project 302476 - Wtbr-Waterbury, CT	Date 16:59:47 05/05/14
	Client AT&T Mobility	Designed by michael.davenport

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 99 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Safety factor used in guy design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	√ Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice Capacity Exemption	

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-110.00	40.00	0.00	12	15.0000	21.2500	0.1875	4.0000	A572-65 (65 ksi)
L2	110.00-70.00	40.00	3.50	12	21.2500	27.6100	0.2500	4.0000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	70.00-31.50	42.00	4.17	12	26.5535	33.1000	0.3130	4.0000	A572-65 (65 ksi)
L4	31.50-0.00	35.67		12	31.8245	37.3800	0.3750	4.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.5291	8.9430	250.4541	5.3029	7.7700	32.2335	507.4880	4.4015	3.5175	18.76
	21.9996	12.7165	720.0669	7.5404	11.0075	65.4160	1459.0508	6.2587	5.1925	27.693
L2	21.9996	16.9050	951.5678	7.5180	11.0075	86.4472	1928.1342	8.3201	5.0250	20.1
	28.5840	22.0248	2104.4088	9.7949	14.3020	147.1411	4264.1028	10.8399	6.7295	26.918
L3	28.0550	26.4468	2324.3551	9.3941	13.7547	168.9861	4709.7736	13.0163	6.2775	20.056
	34.2676	33.0447	4534.1011	11.7377	17.1458	264.4438	9187.3181	16.2636	8.0320	25.661
L4	33.6191	37.9753	4794.1771	11.2589	16.4851	290.8190	9714.3026	18.6903	7.5240	20.064
	38.6986	44.6835	7810.0590	13.2478	19.3628	403.3530	15825.2970	21.9919	9.0128	24.034

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
L1 150.00-110.00				1	1	1		
L2 110.00-70.00				1	1	1		
L3 70.00-31.50				1	1	1		
L4 31.50-0.00				1	1	1		

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
122	EHS	A	7/8	7970.00	10%	19000	1.581	166.95	115.00	0.0000	0.00	100%
		B	7/8	7970.00	10%	19000	1.581	166.95	115.00	0.0000	0.00	100%
		C	7/8	7970.00	10%	19000	1.581	166.95	115.00	0.0000	0.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
122	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
122.00	A572-50 (50 ksi)	Solid Round			No	A572-50 (50 ksi)	Solid Round	1 1/4

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
122	263.95	263.95	263.95		2.73 2.9 sec/pulse	2.73 2.9 sec/pulse	2.73 2.9 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
122	No	No			1	1	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
122	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
122	A	61.00	20	5	1.5950
	B	61.00	20	5	1.5950
	C	61.00	20	5	1.5950

Guy-Tensioning Information

Guy Elevation		H	V	Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
				Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft
122	A	114.19	122.00	9507	2.30	8992	2.43	8479	2.57	7970	2.73	7465	2.92	6966	3.12	6473	3.36
	B	114.19	122.00	9507	2.30	8992	2.43	8479	2.57	7970	2.73	7465	2.92	6966	3.12	6473	3.36
	C	114.19	122.00	9507	2.30	8992	2.43	8479	2.57	7970	2.73	7465	2.92	6966	3.12	6473	3.36

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	plf
1 5/8 (Verizon)	A	Surface Ar (CaAa)	129.00 - 5.00	2	2	0.000 0.500	1.9800		1.04
1 5/8" Hybriflex (Verizon)	C	Surface Ar (CaAa)	129.00 - 0.00	1	1	0.000 0.250	1.9800		1.30

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		C_AA_A	Weight
				ft			ft^2/ft	plf
1 1/4 (AT&T Mobility)	A	No	Inside Pole	150.00 - 5.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.66 0.66 0.66
10 mm Cable (AT&T Mobility)	A	No	Inside Pole	150.00 - 5.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.07 0.07 0.07
19.7 mm Cable (AT&T Mobility)	A	No	Inside Pole	150.00 - 5.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.59 0.59 0.59
**								
**								
1 5/8 (Verizon)	A	No	Inside Pole	129.00 - 5.00	14	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A_R	A_F	C_AA_A In Face	C_AA_A Out Face	Weight
	ft		ft^2	ft^2	ft^2	ft^2	lb
L1	150.00-110.00	A	0.000	0.000	7.524	0.000	777.36
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.762	0.000	24.70
L2	110.00-70.00	A	0.000	0.000	15.840	0.000	1126.80
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	7.920	0.000	52.00
L3	70.00-31.50	A	0.000	0.000	15.246	0.000	1084.55
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	7.623	0.000	50.05
L4	31.50-0.00	A	0.000	0.000	10.494	0.000	746.51
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	6.237	0.000	40.95

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_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	150.00-110.00	A	1.719	0.000	0.000	17.571	0.000	981.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	10.295	0.000	172.32
L2	110.00-70.00	A	1.657	0.000	0.000	36.373	0.000	1536.56
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	21.178	0.000	346.59
L3	70.00-31.50	A	1.566	0.000	0.000	35.009	0.000	1478.94
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	20.384	0.000	333.59
L4	31.50-0.00	A	1.390	0.000	0.000	23.490	0.000	998.79
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	16.100	0.000	254.58

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-110.00	-0.1743	-0.1061	-0.2712	-0.1249
L2	110.00-70.00	-0.3046	-0.1854	-0.4356	-0.2032
L3	70.00-31.50	-0.3132	-0.1906	-0.4771	-0.2226
L4	31.50-0.00	-0.2812	-0.1226	-0.4562	-0.1322

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	8	1 5/8	110.00 - 129.00	1.0000	1.0000
L1	9	1 5/8" Hybriflex	110.00 - 129.00	1.0000	1.0000
L2	8	1 5/8	70.00 - 110.00	1.0000	1.0000
L2	9	1 5/8" Hybriflex	70.00 - 110.00	1.0000	1.0000
L3	8	1 5/8	31.50 - 70.00	1.0000	1.0000
L3	9	1 5/8" Hybriflex	31.50 - 70.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
7770.00	A	From Leg	2.50		0.0000	150.00	No Ice	5.51	1.70	35.00
(AT&T Mobility)			0.00				1/2" Ice	4.73	1.99	67.63
			4.00				1" Ice	6.75	3.63	105.06
7770.00	B	From Leg	2.50		0.0000	150.00	No Ice	5.51	1.70	35.00
(AT&T Mobility)			0.00				1/2" Ice	4.73	1.99	67.63
			4.00				1" Ice	6.75	3.63	105.06
7770.00	C	From Leg	2.50		0.0000	150.00	No Ice	5.51	1.70	35.00
(AT&T Mobility)			0.00				1/2" Ice	4.73	1.99	67.63
			4.00				1" Ice	6.75	3.63	105.06
DC6-48-60-18-8F (23.5"	A	From Leg	2.50		0.0000	150.00	No Ice	1.27	1.27	20.00
Height)			0.00				1/2" Ice	1.46	1.46	35.12
(AT&T Mobility)			4.00				1" Ice	1.66	1.66	52.57
DC6-48-60-18-8F (23.5"	B	From Leg	2.50		0.0000	150.00	No Ice	1.27	1.27	20.00
Height)			0.00				1/2" Ice	1.46	1.46	35.12
(AT&T Mobility)			4.00				1" Ice	1.66	1.66	52.57
DC6-48-60-18-8F (23.5"	C	From Leg	2.50		0.0000	150.00	No Ice	1.27	1.27	20.00
Height)			0.00				1/2" Ice	1.46	1.46	35.12
(AT&T Mobility)			4.00				1" Ice	1.66	1.66	52.57
(2) RRUS 11 (Band 7)	A	From Leg	2.50		0.0000	150.00	No Ice	2.79	1.38	50.70
(AT&T Mobility)			0.00				1/2" Ice	3.50	1.56	71.57
			4.00				1" Ice	3.75	1.74	95.48
(2) RRUS 11 (Band 7)	B	From Leg	2.50		0.0000	150.00	No Ice	2.79	1.38	50.70
(AT&T Mobility)			0.00				1/2" Ice	3.50	1.56	71.57
			4.00				1" Ice	3.75	1.74	95.48
(2) RRUS 11 (Band 7)	C	From Leg	2.50		0.0000	150.00	No Ice	2.79	1.38	50.70
(AT&T Mobility)			0.00				1/2" Ice	3.50	1.56	71.57
			4.00				1" Ice	3.75	1.74	95.48
DTMABP7819VG12A	A	From Leg	2.50		0.0000	150.00	No Ice	0.97	0.39	19.20
(AT&T Mobility)			0.00				1/2" Ice	0.00	0.49	26.49
			4.00				1" Ice	1.43	0.60	35.63
DTMABP7819VG12A	B	From Leg	2.50		0.0000	150.00	No Ice	0.97	0.39	19.20
(AT&T Mobility)			0.00				1/2" Ice	0.00	0.49	26.49
			4.00				1" Ice	1.43	0.60	35.63
DTMABP7819VG12A	C	From Leg	2.50		0.0000	150.00	No Ice	0.97	0.39	19.20
(AT&T Mobility)			0.00				1/2" Ice	0.00	0.49	26.49
			4.00				1" Ice	1.43	0.60	35.63
(3) DD1900	A	From Leg	2.50		0.0000	150.00	No Ice	1.09	0.30	12.10
(AT&T Mobility)			0.00				1/2" Ice	1.43	0.40	19.21
			4.00				1" Ice	1.59	0.51	28.18
(3) DD1900	B	From Leg	2.50		0.0000	150.00	No Ice	1.09	0.30	12.10
(AT&T Mobility)			0.00				1/2" Ice	1.43	0.40	19.21
			4.00				1" Ice	1.59	0.51	28.18
(3) DD1900	C	From Leg	2.50		0.0000	150.00	No Ice	1.09	0.30	12.10
(AT&T Mobility)			0.00				1/2" Ice	1.43	0.40	19.21
			4.00				1" Ice	1.59	0.51	28.18
(2) RRUS A2 Module	A	From Leg	2.50		0.0000	150.00	No Ice	2.06	0.48	22.00
(15.1"Height)			0.00				1/2" Ice	2.62	0.61	34.55

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T Mobility)			4.00			1" Ice	2.83	0.74	49.56
(2) RRUS A2 Module	B	From Leg	2.50	0.0000	150.00	No Ice	2.06	0.48	22.00
(15.1"Height)			0.00			1/2" Ice	2.62	0.61	34.55
(AT&T Mobility)			4.00			1" Ice	2.83	0.74	49.56
(2) RRUS A2 Module	C	From Leg	2.50	0.0000	150.00	No Ice	2.06	0.48	22.00
(15.1"Height)			0.00			1/2" Ice	2.62	0.61	34.55
(AT&T Mobility)			4.00			1" Ice	2.83	0.74	49.56
(2) RRUS-12 B2	A	From Leg	2.50	0.0000	150.00	No Ice	3.15	1.49	58.00
(AT&T Mobility)			0.00			1/2" Ice	3.93	1.67	81.22
			4.00			1" Ice	4.19	1.87	107.64
(2) RRUS-12 B2	B	From Leg	2.50	0.0000	150.00	No Ice	3.15	1.49	58.00
(AT&T Mobility)			0.00			1/2" Ice	3.93	1.67	81.22
			4.00			1" Ice	4.19	1.87	107.64
(2) RRUS-12 B2	C	From Leg	2.50	0.0000	150.00	No Ice	3.15	1.49	58.00
(AT&T Mobility)			0.00			1/2" Ice	3.93	1.67	81.22
			4.00			1" Ice	4.19	1.87	107.64
RRUS-32	A	From Leg	2.50	0.0000	150.00	No Ice	3.31	2.76	77.00
(AT&T Mobility)			0.00			1/2" Ice	4.15	3.02	104.93
			4.00			1" Ice	4.44	3.29	136.47
RRUS-32	B	From Leg	2.50	0.0000	150.00	No Ice	3.31	2.76	77.00
(AT&T Mobility)			0.00			1/2" Ice	4.15	3.02	104.93
			4.00			1" Ice	4.44	3.29	136.47
RRUS-32	C	From Leg	2.50	0.0000	150.00	No Ice	3.31	2.76	77.00
(AT&T Mobility)			0.00			1/2" Ice	4.15	3.02	104.93
			4.00			1" Ice	4.44	3.29	136.47
HPA-65R-BUU-H6	A	From Leg	2.50	0.0000	150.00	No Ice	9.66	6.45	51.00
(AT&T Mobility)			0.00			1/2" Ice	10.93	6.91	113.99
			4.00			1" Ice	11.50	7.38	183.38
HPA-65R-BUU-H6	B	From Leg	2.50	0.0000	150.00	No Ice	9.66	6.45	51.00
(AT&T Mobility)			0.00			1/2" Ice	10.93	6.91	113.99
			4.00			1" Ice	11.50	7.38	183.38
HPA-65R-BUU-H6	C	From Leg	2.50	0.0000	150.00	No Ice	9.66	6.45	51.00
(AT&T Mobility)			0.00			1/2" Ice	10.93	6.91	113.99
			4.00			1" Ice	11.50	7.38	183.38
(2) HPA-65R-BUU-H8	A	From Leg	2.50	0.0000	150.00	No Ice	12.98	7.52	68.00
(AT&T Mobility)			0.00			1/2" Ice	13.99	8.09	141.77
			4.00			1" Ice	14.70	8.67	223.17
(2) HPA-65R-BUU-H8	B	From Leg	2.50	0.0000	150.00	No Ice	12.98	7.52	68.00
(AT&T Mobility)			0.00			1/2" Ice	13.99	8.09	141.77
			4.00			1" Ice	14.70	8.67	223.17
(2) HPA-65R-BUU-H8	C	From Leg	2.50	0.0000	150.00	No Ice	12.98	7.52	68.00
(AT&T Mobility)			0.00			1/2" Ice	13.99	8.09	141.77
			4.00			1" Ice	14.70	8.67	223.17
RRUS E2 B29	A	From Leg	2.50	0.0000	150.00	No Ice	3.15	1.49	60.00
(AT&T Mobility)			0.00			1/2" Ice	3.93	1.67	83.22
			4.00			1" Ice	4.19	1.87	109.64
RRUS E2 B29	B	From Leg	2.50	0.0000	150.00	No Ice	3.15	1.49	60.00
(AT&T Mobility)			0.00			1/2" Ice	3.93	1.67	83.22
			4.00			1" Ice	4.19	1.87	109.64
RRUS E2 B29	C	From Leg	2.50	0.0000	150.00	No Ice	3.15	1.49	60.00
(AT&T Mobility)			0.00			1/2" Ice	3.93	1.67	83.22
			4.00			1" Ice	4.19	1.87	109.64
Flat Platform w/ Handrails	A	From Leg	2.50	0.0000	150.00	No Ice	36.00	42.40	2000.00
(AT&T Mobility)			0.00			1/2" Ice	48.40	57.40	2450.00
			0.00			1" Ice	76.20	76.20	2240.00
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BXA-70063-6CF-EDIN-X	A	From Leg	2.50	0.0000	129.00	No Ice	7.57	4.16	17.00
(Verizon)			0.00			1/2" Ice	8.27	4.60	59.49
			0.00			1" Ice	8.81	5.04	107.83
BXA-70063-6CF-EDIN-X	B	From Leg	2.50	0.0000	129.00	No Ice	7.57	4.16	17.00
(Verizon)			0.00			1/2" Ice	8.27	4.60	59.49
			0.00			1" Ice	8.81	5.04	107.83
BXA-70080-6CF-EDIN-X	C	From Leg	2.50	0.0000	129.00	No Ice	5.77	4.56	18.00
(Verizon)			0.00			1/2" Ice	6.22	5.00	54.30
			0.00			1" Ice	6.68	5.45	96.29
Flat Platform w/ Handrails	B	From Leg	2.50	0.0000	129.00	No Ice	42.40	42.40	2000.00
(Verizon)			0.00			1/2" Ice	48.40	57.40	2450.00
			0.00			1" Ice	76.20	76.20	2240.00
DB948F85E-M	A	From Leg	2.50	0.0000	129.00	No Ice	1.89	3.27	8.50
(Verizon)			0.00			1/2" Ice	2.19	3.63	27.56
			0.00			1" Ice	2.50	4.00	50.60
DB948F85E-M	B	From Leg	2.50	0.0000	129.00	No Ice	1.89	3.27	8.50
(Verizon)			0.00			1/2" Ice	2.19	3.63	27.56
			0.00			1" Ice	2.50	4.00	50.60
DB948F85E-M	C	From Leg	2.50	0.0000	129.00	No Ice	1.89	3.27	8.50
(Verizon)			0.00			1/2" Ice	2.19	3.63	27.56
			0.00			1" Ice	2.50	4.00	50.60
BXA-171063-8BF-EDIN-X	A	From Leg	2.50	0.0000	129.00	No Ice	2.94	2.16	10.50
(Verizon)			0.00			1/2" Ice	3.26	2.46	29.28
			0.00			1" Ice	3.60	2.77	52.05
BXA-171063-8BF-EDIN-X	B	From Leg	2.50	0.0000	129.00	No Ice	2.94	2.16	10.50
(Verizon)			0.00			1/2" Ice	3.26	2.46	29.28
			0.00			1" Ice	3.60	2.77	52.05
BXA-171063-8BF-EDIN-X	C	From Leg	2.50	0.0000	129.00	No Ice	2.94	2.16	10.50
(Verizon)			0.00			1/2" Ice	3.26	2.46	29.28
			0.00			1" Ice	3.60	2.77	52.05
BXA-80063/4CF	A	From Leg	2.50	0.0000	129.00	No Ice	4.71	2.25	9.90
(Verizon)			0.00			1/2" Ice	5.55	2.55	37.73
			0.00			1" Ice	5.94	2.85	69.84
BXA-80063/4CF	B	From Leg	2.50	0.0000	129.00	No Ice	4.71	2.25	9.90
(Verizon)			0.00			1/2" Ice	5.55	2.55	37.73
			0.00			1" Ice	5.94	2.85	69.84
BXA-80063/4CF	C	From Leg	2.50	0.0000	129.00	No Ice	4.71	2.25	9.90
(Verizon)			0.00			1/2" Ice	5.55	2.55	37.73
			0.00			1" Ice	5.94	2.85	69.84
(2) FD9R6004/2C-3L	A	From Leg	2.50	0.0000	129.00	No Ice	0.37	0.08	3.10
(Verizon)			0.00			1/2" Ice	0.45	0.14	5.40
			0.00			1" Ice	0.54	0.20	8.79
(2) FD9R6004/2C-3L	B	From Leg	2.50	0.0000	129.00	No Ice	0.37	0.08	3.10
(Verizon)			0.00			1/2" Ice	0.45	0.14	5.40
			0.00			1" Ice	0.54	0.20	8.79
(2) FD9R6004/2C-3L	C	From Leg	2.50	0.0000	129.00	No Ice	0.37	0.08	3.10
(Verizon)			0.00			1/2" Ice	0.45	0.14	5.40
			0.00			1" Ice	0.54	0.20	8.79
DB-T1-6Z-8AB-0Z	C	From Leg	2.50	0.0000	129.00	No Ice	4.80	2.33	44.00
(Verizon)			0.00			1/2" Ice	5.92	2.56	80.13
			0.00			1" Ice	6.24	2.79	120.22
BXA-171063/8CF	A	From Leg	2.50	0.0000	129.00	No Ice	2.90	2.31	10.50
(Verizon)			0.00			1/2" Ice	3.22	2.62	29.82
			0.00			1" Ice	3.55	2.93	53.16
BXA-171063/8CF	B	From Leg	2.50	0.0000	129.00	No Ice	2.90	2.31	10.50
(Verizon)			0.00			1/2" Ice	3.22	2.62	29.82
			0.00			1" Ice	3.55	2.93	53.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BXA-171063/8CF	C	From Leg	2.50	0.0000	129.00	No Ice	2.90	2.31	10.50
(Verizon)			0.00			1/2" Ice	3.22	2.62	29.82
			0.00			1" Ice	3.55	2.93	53.16
RRH2x40-AWS	A	From Leg	2.50	0.0000	129.00	No Ice	2.16	1.59	44.00
(Verizon)			0.00			1/2" Ice	2.75	1.80	61.37
			0.00			1" Ice	2.99	2.01	81.63
RRH2x40-AWS	B	From Leg	2.50	0.0000	129.00	No Ice	2.16	1.59	44.00
(Verizon)			0.00			1/2" Ice	2.75	1.80	61.37
			0.00			1" Ice	2.99	2.01	81.63
RRH2x40-AWS	C	From Leg	2.50	0.0000	129.00	No Ice	2.16	1.59	44.00
(Verizon)			0.00			1/2" Ice	2.75	1.80	61.37
			0.00			1" Ice	2.99	2.01	81.63

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	129.07	1.063	25	62.548	A	0.000	62.548	62.548	100.00	7.524	0.000
150.00-110.00					B	0.000	62.548		100.00	0.000	0.000
					C	0.000	62.548		100.00	3.762	0.000
L2	89.45	0.957	23	84.306	A	0.000	84.306	84.306	100.00	15.840	0.000
110.00-70.00					B	0.000	84.306		100.00	0.000	0.000
					C	0.000	84.306		100.00	7.920	0.000
L3 70.00-31.50	50.64	0.814	19	99.976	A	0.000	99.976	99.976	100.00	15.246	0.000
					B	0.000	99.976		100.00	0.000	0.000
					C	0.000	99.976		100.00	7.623	0.000
L4 31.50-0.00	15.38	0.7	17	94.917	A	0.000	94.917	94.917	100.00	10.494	0.000
					B	0.000	94.917		100.00	0.000	0.000
					C	0.000	94.917		100.00	6.237	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	129.07	1.063	6	1.7192	74.009	A	0.000	74.009	74.009	100.00	17.571	0.000
150.00-110.00						B	0.000	74.009		100.00	0.000	0.000
						C	0.000	74.009		100.00	10.295	0.000
L2 110.00-70.00	89.45	0.957	6	1.6573	95.355	A	0.000	95.355	95.355	100.00	36.373	0.000
						B	0.000	95.355		100.00	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
						C	0.000	95.355		100.00	21.178	0.000
L3 70.00-31.50	50.64	0.814	5	1.5656	110.610	A	0.000	110.610	110.610	100.00	35.009	0.000
						B	0.000	110.610		100.00	0.000	0.000
						C	0.000	110.610		100.00	20.384	0.000
L4 31.50-0.00	15.38	0.7	4	1.3898	103.137	A	0.000	103.137	103.137	100.00	23.490	0.000
						B	0.000	103.137		100.00	0.000	0.000
						C	0.000	103.137		100.00	16.100	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
L1	129.07	1.063	8	62.548	A	0.000	62.548	62.548	100.00	7.524	0.000
150.00-110.00					B	0.000	62.548		100.00	0.000	0.000
					C	0.000	62.548		100.00	3.762	0.000
L2	89.45	0.957	7	84.306	A	0.000	84.306	84.306	100.00	15.840	0.000
110.00-70.00					B	0.000	84.306		100.00	0.000	0.000
					C	0.000	84.306		100.00	7.920	0.000
L3 70.00-31.50	50.64	0.814	6	99.976	A	0.000	99.976	99.976	100.00	15.246	0.000
					B	0.000	99.976		100.00	0.000	0.000
					C	0.000	99.976		100.00	7.623	0.000
L4 31.50-0.00	15.38	0.7	5	94.917	A	0.000	94.917	94.917	100.00	10.494	0.000
					B	0.000	94.917		100.00	0.000	0.000
					C	0.000	94.917		100.00	6.237	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	Face	e	C_F	q_z	D_F	D_R	A_E	F	w	Ctrl. Face
ft	lb	lb				psf			ft^2	lb	plf	
L1	802.06	1474.06	A	1	1	25	1	1	62.548	1741.36	43.53	C
150.00-110.00			B	1	1		1	1	62.548			
			C	1	1		1	1	62.548			
L2	1178.80	2649.40	A	1	1	23	1	1	84.306	2111.13	52.78	C
110.00-70.00			B	1	1		1	1	84.306			
			C	1	1		1	1	84.306			
L3	1134.60	4251.18	A	1	1	19	1	1	99.976	2118.40	55.02	C
70.00-31.50			B	1	1		1	1	99.976			
			C	1	1		1	1	99.976			
L4 31.50-0.00	787.46	5016.04	A	1	1	17	1	1	94.917	1742.08	55.30	C
			B	1	1		1	1	94.917			
			C	1	1		1	1	94.917			
Sum Weight:	3902.91	13390.68								7712.98		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	802.06	1474.06	A	1	1	25	1	1	62.548	1741.36	43.53	C
150.00-110.00			B	1	1		1	1	62.548			
			C	1	1		1	1	62.548			
L2	1178.80	2649.40	A	1	1	23	1	1	84.306	2111.13	52.78	C
110.00-70.00			B	1	1		1	1	84.306			
			C	1	1		1	1	84.306			
L3	1134.60	4251.18	A	1	1	19	1	1	99.976	2118.40	55.02	C
70.00-31.50			B	1	1		1	1	99.976			
			C	1	1		1	1	99.976			
L4 31.50-0.00	787.46	5016.04	A	1	1	17	1	1	94.917	1742.08	55.30	C
			B	1	1		1	1	94.917			
			C	1	1		1	1	94.917			
Sum Weight:	3902.91	13390.68								7712.98		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	802.06	1474.06	A	1	1	25	1	1	62.548	1741.36	43.53	C
150.00-110.00			B	1	1		1	1	62.548			
			C	1	1		1	1	62.548			
L2	1178.80	2649.40	A	1	1	23	1	1	84.306	2111.13	52.78	C
110.00-70.00			B	1	1		1	1	84.306			
			C	1	1		1	1	84.306			
L3	1134.60	4251.18	A	1	1	19	1	1	99.976	2118.40	55.02	C
70.00-31.50			B	1	1		1	1	99.976			
			C	1	1		1	1	99.976			
L4 31.50-0.00	787.46	5016.04	A	1	1	17	1	1	94.917	1742.08	55.30	C
			B	1	1		1	1	94.917			
			C	1	1		1	1	94.917			
Sum Weight:	3902.91	13390.68								7712.98		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	1153.83	3182.88	A	1	1.2	6	1	1	74.009	630.68	15.77	C
150.00-110.00			B	1	1.2		1	1	74.009			
			C	1	1.2		1	1	74.009			
L2	1883.15	4814.95	A	1	1.2	6	1	1	95.355	730.89	18.27	C
110.00-70.00			B	1	1.2		1	1	95.355			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	1	1.2		1	1	95.355			
L3	1812.53	6641.25	A	1	1.2	5	1	1	110.610	717.40	18.63	C
70.00-31.50			B	1	1.2		1	1	110.610			
			C	1	1.2		1	1	110.610			
L4 31.50-0.00	1253.37	7006.88	A	1	1.2	4	1	1	103.137	579.41	18.39	C
			B	1	1.2		1	1	103.137			
			C	1	1.2		1	1	103.137			
Sum Weight:	6102.88	21645.96								2658.38		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	1153.83	3182.88	A	1	1.2	6	1	1	74.009	630.68	15.77	C
150.00-110.00			B	1	1.2		1	1	74.009			
			C	1	1.2		1	1	74.009			
L2	1883.15	4814.95	A	1	1.2	6	1	1	95.355	730.89	18.27	C
110.00-70.00			B	1	1.2		1	1	95.355			
			C	1	1.2		1	1	95.355			
L3	1812.53	6641.25	A	1	1.2	5	1	1	110.610	717.40	18.63	C
70.00-31.50			B	1	1.2		1	1	110.610			
			C	1	1.2		1	1	110.610			
L4 31.50-0.00	1253.37	7006.88	A	1	1.2	4	1	1	103.137	579.41	18.39	C
			B	1	1.2		1	1	103.137			
			C	1	1.2		1	1	103.137			
Sum Weight:	6102.88	21645.96								2658.38		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	1153.83	3182.88	A	1	1.2	6	1	1	74.009	630.68	15.77	C
150.00-110.00			B	1	1.2		1	1	74.009			
			C	1	1.2		1	1	74.009			
L2	1883.15	4814.95	A	1	1.2	6	1	1	95.355	730.89	18.27	C
110.00-70.00			B	1	1.2		1	1	95.355			
			C	1	1.2		1	1	95.355			
L3	1812.53	6641.25	A	1	1.2	5	1	1	110.610	717.40	18.63	C
70.00-31.50			B	1	1.2		1	1	110.610			
			C	1	1.2		1	1	110.610			
L4 31.50-0.00	1253.37	7006.88	A	1	1.2	4	1	1	103.137	579.41	18.39	C
			B	1	1.2		1	1	103.137			
			C	1	1.2		1	1	103.137			
Sum Weight:	6102.88	21645.96								2658.38		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	802.06	1474.06	A	1	1	8	1	1	62.548	572.29	14.31	C
150.00-110.00			B	1	1		1	1	62.548			
			C	1	1		1	1	62.548			
L2	1178.80	2649.40	A	1	1	7	1	1	84.306	693.81	17.35	C
110.00-70.00			B	1	1		1	1	84.306			
			C	1	1		1	1	84.306			
L3	1134.60	4251.18	A	1	1	6	1	1	99.976	696.20	18.08	C
70.00-31.50			B	1	1		1	1	99.976			
			C	1	1		1	1	99.976			
L4 31.50-0.00	787.46	5016.04	A	1	1	5	1	1	94.917	572.53	18.18	C
			B	1	1		1	1	94.917			
			C	1	1		1	1	94.917			
Sum Weight:	3902.91	13390.68								2534.84		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	802.06	1474.06	A	1	1	8	1	1	62.548	572.29	14.31	C
150.00-110.00			B	1	1		1	1	62.548			
			C	1	1		1	1	62.548			
L2	1178.80	2649.40	A	1	1	7	1	1	84.306	693.81	17.35	C
110.00-70.00			B	1	1		1	1	84.306			
			C	1	1		1	1	84.306			
L3	1134.60	4251.18	A	1	1	6	1	1	99.976	696.20	18.08	C
70.00-31.50			B	1	1		1	1	99.976			
			C	1	1		1	1	99.976			
L4 31.50-0.00	787.46	5016.04	A	1	1	5	1	1	94.917	572.53	18.18	C
			B	1	1		1	1	94.917			
			C	1	1		1	1	94.917			
Sum Weight:	3902.91	13390.68								2534.84		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	802.06	1474.06	A	1	1	8	1	1	62.548	572.29	14.31	C
150.00-110.00			B	1	1		1	1	62.548			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	1	1		1	1	62.548			
L2	1178.80	2649.40	A	1	1	7	1	1	84.306	693.81	17.35	C
110.00-70.00			B	1	1		1	1	84.306			
			C	1	1		1	1	84.306			
L3	1134.60	4251.18	A	1	1	6	1	1	99.976	696.20	18.08	C
70.00-31.50			B	1	1		1	1	99.976			
			C	1	1		1	1	99.976			
L4 31.50-0.00	787.46	5016.04	A	1	1	5	1	1	94.917	572.53	18.18	C
			B	1	1		1	1	94.917			
			C	1	1		1	1	94.917			
Sum Weight:	3902.91	13390.68								2534.84		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	13390.68			
Bracing Weight	0.00			
Total Member Self-Weight	13390.68			
Guy Weight	791.86			
Total Weight	24537.95			
Wind 0 deg - No Ice		2.38	-14706.19	3176.01
Wind 30 deg - No Ice		7449.63	-12737.12	1833.14
Wind 60 deg - No Ice		12900.75	-7355.15	-0.91
Wind 90 deg - No Ice		14895.13	-2.38	-1834.72
Wind 120 deg - No Ice		12898.38	7351.04	-3176.92
Wind 150 deg - No Ice		7445.51	12734.74	-3667.86
Wind 180 deg - No Ice		-2.38	14706.19	-3176.01
Wind 210 deg - No Ice		-7449.63	12737.12	-1833.14
Wind 240 deg - No Ice		-12900.75	7355.15	0.91
Wind 270 deg - No Ice		-14895.13	2.38	1834.72
Wind 300 deg - No Ice		-12898.38	-7351.04	3176.92
Wind 330 deg - No Ice		-7445.51	-12734.74	3667.86
Member Ice	8255.28			
Guy Ice	2410.85			
Total Weight Ice	47274.51			
Wind 0 deg - Ice		2.11	-5858.74	2019.22
Wind 30 deg - Ice		2932.42	-5074.87	1154.08
Wind 60 deg - Ice		5076.99	-2931.20	-20.29
Wind 90 deg - Ice		5861.18	-2.11	-1189.23
Wind 120 deg - Ice		5074.87	2927.54	-2039.51
Wind 150 deg - Ice		2928.76	5072.76	-2343.31
Wind 180 deg - Ice		-2.11	5858.74	-2019.22
Wind 210 deg - Ice		-2932.42	5074.87	-1154.08
Wind 240 deg - Ice		-5076.99	2931.20	20.29
Wind 270 deg - Ice		-5861.18	2.11	1189.23
Wind 300 deg - Ice		-5074.87	-2927.54	2039.51
Wind 330 deg - Ice		-2928.76	-5072.76	2343.31
Total Weight	24537.95			
Wind 0 deg - Service		0.78	-4833.12	1043.78
Wind 30 deg - Service		2448.28	-4186.00	602.45
Wind 60 deg - Service		4239.77	-2417.24	-0.30

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Wind 90 deg - Service	[redacted]	4895.22	-0.78	-602.97
Wind 120 deg - Service		4238.99	2415.88	-1044.08
Wind 150 deg - Service		2446.93	4185.21	-1205.43
Wind 180 deg - Service		-0.78	4833.12	-1043.78
Wind 210 deg - Service		-2448.28	4186.00	-602.45
Wind 240 deg - Service		-4239.77	2417.24	0.30
Wind 270 deg - Service		-4895.22	0.78	602.97
Wind 300 deg - Service		-4238.99	-2415.88	1044.08
Wind 330 deg - Service		-2446.93	-4185.21	1205.43

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	150 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-55108.68	-206309.73	-108610.16
			Max. Mx	5	-8862.48	-306520.27	3124.00
			Max. My	2	-8860.50	-7145.89	295311.13
			Max. Vy	5	13854.00	-306520.27	3124.00
			Max. Vx	2	-13563.86	-7145.89	295311.13
			Max. Torque	5			6937.99
		Guy A	Bottom Tension	7	34951.75		
			Top Tension	7	35142.08		
			Top Cable Vert	7	25733.72		
			Top Cable Norm	7	23931.97		
			Top Cable Tan	7	50.46		
			Bot Cable Vert	7	-25286.62		
			Bot Cable Norm	7	24127.63		
			Bot Cable Tan	7	262.40		
		Guy B	Bottom Tension	11	35318.11		
			Top Tension	11	35508.43		
			Top Cable Vert	11	25999.52		
			Top Cable Norm	11	24184.10		
			Top Cable Tan	11	50.40		
			Bot Cable Vert	11	-25552.43		
			Bot Cable Norm	11	24379.77		
			Bot Cable Tan	11	262.34		
		Guy C	Bottom Tension	5	35661.65		
			Top Tension	5	35851.94		
			Top Cable Vert	5	26248.54		
			Top Cable Norm	5	24420.75		
			Top Cable Tan	5	54.43		
			Bot Cable Vert	5	-25801.45		
			Bot Cable Norm	5	24616.42		
			Bot Cable Tan	5	266.37		
L2	110 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-59128.23	-87530.78	-46733.33
			Max. Mx	5	-50497.53	-230916.66	-3586.05
			Max. My	2	-54446.71	-6010.91	226570.98
			Max. Vy	5	-4896.29	-230916.66	-3586.05
			Max. Vx	8	-5327.27	-6205.13	-203323.34
			Max. Torque	7			5890.52
L3	70 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-65303.16	-51031.54	-33294.22
			Max. Mx	6	-59941.59	-79941.27	-43053.21
			Max. My	2	-59297.22	-1638.45	87214.58
			Max. Vy	5	-2541.56	-74816.91	-22075.92
			Max. Vx	8	-2580.31	-2526.86	-39383.10
			Max. Torque	7			5883.14
L4	31.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-72972.63	-111203.67	-74978.81
			Max. Mx	10	-72613.69	123354.22	-74531.87
			Max. My	2	-72328.93	6462.10	137252.61
			Max. Vy	11	-3624.08	114913.40	-45666.31
			Max. Vx	2	-3663.10	6462.10	137252.61
			Max. Torque	7			5882.96

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	6	72972.63	-3007.39	-1922.76
	Max. H_x	11	68032.74	3624.08	-274.94
	Max. H_z	2	72328.93	106.62	3663.10
	Max. M_x	2	137252.61	106.62	3663.10
	Max. M_z	6	111203.67	-3007.39	-1922.76
	Max. Torsion	7	5882.86	-1838.52	-3108.29
	Min. Vert	1	41808.57	87.77	-49.14
	Min. H_x	5	68383.65	-3410.39	-278.42
	Min. H_z	8	57027.43	94.02	-3536.81
	Min. M_x	7	-82156.47	-1838.52	-3108.29
	Min. M_z	10	-123354.22	3221.78	-1923.43
	Min. Torsion	13	-5779.63	1678.52	3201.59
Guy C @ 115 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-197.23	-104.71	60.46
	Max. H_x	10	-197.23	-104.71	60.46
	Max. H_z	3	-25436.75	-20888.77	12359.18
	Min. Vert	5	-25801.45	-21451.63	12077.53
	Min. H_x	5	-25801.45	-21451.63	12077.53
	Min. H_z	10	-197.23	-104.71	60.46
Guy B @ 115 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-195.52	103.35	59.69
	Max. H_x	11	-25552.43	21244.67	11962.69
	Max. H_z	13	-25297.86	20774.58	12293.46
	Min. Vert	11	-25552.43	21244.67	11962.69
	Min. H_x	6	-195.52	103.35	59.69
	Min. H_z	6	-195.52	103.35	59.69
Guy A @ 115 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-198.36	-0.00	-121.94
	Max. H_x	10	-21424.65	399.39	-20407.33
	Max. H_z	2	-198.36	-0.00	-121.94
	Min. Vert	7	-25286.62	-262.40	-24127.63
	Min. H_x	6	-21537.55	-403.23	-20514.63
	Min. H_z	7	-25286.62	-262.40	-24127.63

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	41808.57	-87.77	49.14	2832.06	5226.93	-11.56
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	72328.93	-106.62	-3663.10	-137252.61	6462.10	4697.77
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	67663.81	1465.21	-3200.89	-116057.95	-11132.22	2373.82
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	57443.45	2806.41	-1660.30	-27473.52	-48800.02	-760.77
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	68383.65	3410.39	278.42	46455.25	-102783.36	-3725.99
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	72972.63	3007.39	1922.76	74978.81	-111203.67	-5535.17
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	68017.45	1838.52	3108.29	82156.47	-84240.30	-5882.86
1.2 Dead+1.6 Wind 180 deg -	57027.43	-94.02	3536.81	71330.93	4401.10	-4792.65

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
No Ice+1.0 Guy						
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	67675.17	-2048.45	3109.98	81841.21	96075.28	-2365.60
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	72613.69	-3221.78	1923.43	74531.87	123354.22	794.64
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	68032.74	-3624.08	274.94	45666.31	114913.40	3728.14
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	57281.14	-3012.80	-1671.73	-29260.29	60435.37	5501.81
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	67655.29	-1678.52	-3201.59	-116083.41	24067.30	5779.63
1.2 Dead+1.0 Ice+1.0 Temp+Guy	70106.36	-151.31	96.64	5516.02	9540.13	-37.45
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	72075.95	-152.31	-353.97	-505.19	9718.93	1877.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	71686.35	58.42	-287.38	1694.89	9727.56	906.21
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	71361.48	218.53	-117.04	5005.80	8693.23	-374.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	71678.45	285.76	106.75	7565.11	6412.56	-1567.93
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	72063.67	238.36	322.81	8684.52	4449.65	-2299.65
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	71646.21	76.44	472.24	7586.76	6157.26	-2422.29
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	71265.86	-149.32	525.49	6784.80	9190.06	-1957.41
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	71502.44	-375.70	471.04	7314.66	12294.28	-977.76
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	71852.70	-538.91	320.48	8198.72	14162.21	306.74
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	71504.43	-587.57	103.79	7013.14	12448.46	1493.85
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	71271.49	-521.47	-119.50	4582.38	10438.41	2217.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	71656.59	-362.54	-288.39	1536.80	9614.94	2338.44
Dead+Wind 0 deg - Service+Guy	41931.22	-87.72	-663.48	-8089.59	5221.42	991.86
Dead+Wind 30 deg - Service+Guy	41909.77	256.05	-567.77	-6575.98	386.89	503.72
Dead+Wind 60 deg - Service+Guy	41899.99	507.53	-307.25	-2631.66	-3100.79	-135.85
Dead+Wind 90 deg - Service+Guy	41913.73	599.45	48.79	2782.21	-4356.95	-741.74
Dead+Wind 120 deg - Service+Guy	41936.31	507.54	405.49	8303.61	-3097.90	-1137.78
Dead+Wind 150 deg - Service+Guy	41910.80	255.67	666.38	12327.90	485.26	-1232.33
Dead+Wind 180 deg - Service+Guy	41896.54	-87.43	761.92	13805.02	5232.73	-1014.94
Dead+Wind 210 deg - Service+Guy	41906.63	-430.60	666.38	12343.41	9987.84	-528.95
Dead+Wind 240 deg - Service+Guy	41928.80	-682.59	405.26	8320.13	13572.27	110.95
Dead+Wind 270 deg - Service+Guy	41909.30	-774.56	48.44	2782.32	14827.64	718.65
Dead+Wind 300 deg - Service+Guy	41898.69	-682.92	-307.49	-2644.43	13570.24	1116.04
Dead+Wind 330 deg - Service+Guy	41909.69	-431.58	-567.81	-6587.81	10068.16	1210.76

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-24537.93	0.00	0.12	24537.85	-0.09	0.001%
2	3.80	-29342.17	-24607.56	-3.80	29342.17	24607.53	0.000%
3	12457.75	-29287.15	-21311.84	-12457.73	29287.15	21311.83	0.000%
4	21574.48	-29232.12	-12307.07	-21574.48	29232.12	12307.07	0.000%
5	24908.91	-29287.15	-3.80	-24908.89	29287.15	3.79	0.000%
6	21570.68	-29342.17	12300.48	-21570.67	29342.17	-12300.48	0.000%
7	12451.16	-29287.15	21308.04	-12451.16	29287.15	-21308.04	0.000%
8	-3.80	-29232.12	24607.56	3.80	29232.12	-24607.55	0.000%
9	-12457.75	-29287.15	21311.84	12457.75	29287.15	-21311.83	0.000%
10	-21574.48	-29342.17	12307.07	21574.45	29342.17	-12307.06	0.000%
11	-24908.91	-29287.15	3.80	24908.90	29287.15	-3.81	0.000%
12	-21570.68	-29232.12	-12300.48	21570.67	29232.12	12300.48	0.000%
13	-12451.16	-29287.15	-21308.04	12451.15	29287.15	21308.03	0.000%
14	0.00	-52504.30	0.00	0.29	52504.29	-0.25	0.001%
15	2.11	-52545.05	-6656.90	-2.11	52545.05	6656.81	0.000%
16	3331.15	-52504.30	-5765.49	-3330.94	52504.29	5765.01	0.001%
17	5768.21	-52463.54	-3330.28	-5767.87	52463.54	3330.07	0.001%
18	6658.63	-52504.30	-2.11	-6658.56	52504.30	2.12	0.000%
19	5766.10	-52545.05	3326.62	-5766.02	52545.05	-3326.59	0.000%
20	3327.49	-52504.30	5763.37	-3327.44	52504.30	-5763.33	0.000%
21	-2.11	-52463.54	6656.90	2.15	52463.54	-6656.59	0.001%
22	-3331.15	-52504.30	5765.49	3330.89	52504.29	-5765.17	0.001%
23	-5768.21	-52545.05	3330.28	5767.77	52545.04	-3330.03	0.001%
24	-6658.63	-52504.30	2.11	6658.22	52504.29	-2.06	0.001%
25	-5766.10	-52463.54	-3326.62	5765.85	52463.54	3326.41	0.001%
26	-3327.49	-52504.30	-5763.37	3327.48	52504.30	5763.30	0.000%
27	0.78	-24549.23	-5054.47	-0.78	24549.23	5054.47	0.000%
28	2558.86	-24537.93	-4377.52	-2558.86	24537.93	4377.52	0.000%
29	4431.47	-24526.63	-2527.91	-4431.47	24526.63	2527.91	0.000%
30	5116.37	-24537.93	-0.78	-5116.37	24537.93	0.78	0.000%
31	4430.69	-24549.23	2526.56	-4430.69	24549.23	-2526.56	0.000%
32	2557.51	-24537.93	4376.74	-2557.51	24537.93	-4376.74	0.000%
33	-0.78	-24526.63	5054.47	0.78	24526.63	-5054.47	0.000%
34	-2558.86	-24537.93	4377.52	2558.85	24537.93	-4377.50	0.000%
35	-4431.47	-24549.23	2527.91	4431.45	24549.23	-2527.90	0.000%
36	-5116.37	-24537.93	0.78	5116.37	24537.93	-0.78	0.000%
37	-4430.69	-24526.63	-2526.56	4430.69	24526.63	2526.56	0.000%
38	-2557.51	-24537.93	-4376.74	2557.51	24537.93	4376.74	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00018031
2	Yes	6	0.00000001	0.00091459
3	Yes	6	0.00000001	0.00049869
4	Yes	6	0.00000001	0.00022188
5	Yes	6	0.00000001	0.00041525
6	Yes	7	0.00000001	0.00013478
7	Yes	7	0.00000001	0.00011002
8	Yes	6	0.00000001	0.00017135

9	Yes	6	0.00000001	0.00044953
10	Yes	6	0.00000001	0.00071520
11	Yes	6	0.00000001	0.00041311
12	Yes	6	0.00000001	0.00033885
13	Yes	6	0.00000001	0.00066617
14	Yes	4	0.00000001	0.00042132
15	Yes	6	0.00000001	0.00018022
16	Yes	5	0.00000001	0.00079124
17	Yes	5	0.00000001	0.00067903
18	Yes	6	0.00000001	0.00015408
19	Yes	6	0.00000001	0.00021507
20	Yes	6	0.00000001	0.00017187
21	Yes	5	0.00000001	0.00064839
22	Yes	5	0.00000001	0.00053896
23	Yes	5	0.00000001	0.00068351
24	Yes	5	0.00000001	0.00082615
25	Yes	5	0.00000001	0.00087311
26	Yes	6	0.00000001	0.00016338
27	Yes	5	0.00000001	0.00007562
28	Yes	5	0.00000001	0.00004480
29	Yes	5	0.00000001	0.00004120
30	Yes	5	0.00000001	0.00007651
31	Yes	5	0.00000001	0.00009353
32	Yes	5	0.00000001	0.00009022
33	Yes	5	0.00000001	0.00006627
34	Yes	4	0.00000001	0.00081426
35	Yes	4	0.00000001	0.00090322
36	Yes	5	0.00000001	0.00006128
37	Yes	5	0.00000001	0.00009131
38	Yes	5	0.00000001	0.00009641

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 110	6.715	29	1.1885	0.0571
L2	110 - 70	0.602	35	0.2216	0.0192
L3	73.5 - 31.5	0.108	34	0.0110	0.0074
L4	35.667 - 0	0.045	34	0.0085	0.0024

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	7770.00	29	6.715	1.1885	0.0577	16194
129.00	BXA-70063-6CF-EDIN-X	29	2.843	0.6072	0.0341	3855
122.00	Guy	29	1.789	0.4439	0.0274	2891

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 110	42.429	6	5.8727	0.2798
L2	110 - 70	8.895	10	1.6507	0.0946
L3	73.5 - 31.5	2.550	10	0.3734	0.0354
L4	35.667 - 0	0.603	10	0.1458	0.0114

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	7770.00	6	42.429	5.8727	0.2798	3676
129.00	BXA-70063-6CF-EDIN-X	6	22.136	3.3707	0.1653	873
122.00	Guy	6	16.428	2.6568	0.1356	653

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
L1	122.00 (A) (7)	7/8 EHS	7970.00	79699.84	35142.10	47820.00	1.000	1.361 ✔
	122.00 (B) (6)	7/8 EHS	7970.00	79699.84	35508.40	47820.00	1.000	1.347 ✔
	122.00 (C) (5)	7/8 EHS	7970.00	79699.84	35851.90	47820.00	1.000	1.334 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 110 (1)	TP21.25x15x0.1875	40.00	28.00	48.9	11.5845	-49827.50	615724.00	0.081
L2	110 - 70 (2)	TP27.61x21.25x0.25	40.00	122.00	194.7	16.9050	-55195.10	100711.00	0.548
L3	70 - 31.5 (3)	TP33.1x26.5535x0.313	42.00	122.00	152.7	26.9966	-60080.50	261667.00	0.230
L4	31.5 - 0 (4)	TP37.38x31.8245x0.375	35.67	122.00	127.4	38.7590	-66299.90	539470.00	0.123

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 110 (1)	TP21.25x15x0.1875	287893.33	315006.67	0.914	0.00	315006.67	0.000
L2	110 - 70 (2)	TP27.61x21.25x0.25	233150.83	531001.67	0.439	0.00	531001.67	0.000
L3	70 - 31.5 (3)	TP33.1x26.5535x0.313	90797.50	1081866.67	0.084	0.00	1081866.67	0.000
L4	31.5 - 0 (4)	TP37.38x31.8245x0.375	68067.25	1861291.67	0.037	0.00	1861291.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 110 (1)	TP21.25x15x0.1875	4696.94	403664.00	0.012	3741.38	638735.00	0.006
L2	110 - 70 (2)	TP27.61x21.25x0.25	4467.34	623034.00	0.007	5543.15	1076708.33	0.005
L3	70 - 31.5 (3)	TP33.1x26.5535x0.313	2267.75	994959.00	0.002	5535.38	2193683.33	0.003
L4	31.5 - 0 (4)	TP37.38x31.8245x0.375	1258.30	1439950.00	0.001	794.64	3774125.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 110 (1)	0.081	0.914	0.000	0.012	0.006	0.995 ✔	1.000	4.8.2 ✔
L2	110 - 70 (2)	0.548	0.439	0.000	0.007	0.005	0.987 ✔	1.000	4.8.2 ✔
L3	70 - 31.5 (3)	0.230	0.084	0.000	0.002	0.003	0.314 ✔	1.000	4.8.2 ✔
L4	31.5 - 0 (4)	0.123	0.037	0.000	0.001	0.000	0.159 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	150 - 110	Pole	TP21.25x15x0.1875	1	-49827.50	615724.00	99.5	Pass
		Guy A@122	7/8	7	35142.10	47820.00	73.5	Pass
		Guy B@122	7/8	6	35508.40	47820.00	74.3	Pass
		Guy C@122	7/8	5	35851.90	47820.00	75.0	Pass
L2	110 - 70	Pole	TP27.61x21.25x0.25	2	-55195.10	100711.00	98.7	Pass
L3	70 - 31.5	Pole	TP33.1x26.5535x0.313	3	-60080.50	261667.00	31.4	Pass
L4	31.5 - 0	Pole	TP37.38x31.8245x0.375	4	-66299.90	539470.00	15.9	Pass
							Summary	
							Pole (L1) 99.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Guy A (L1)	73.5	Pass
						Guy B (L1)	74.3	Pass
						Guy C (L1)	75.0	Pass
						RATING =	**99.5**	**Pass**

Base/Flange Plate	Plate Type	***Baseplate***	
	Pole Diameter	37.38	in
	Pole Thickness	0.375	in
	Plate Length	44	in
	Plate Thickness	2.5	in
	Plate Fy	60	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	1382.37	k-in
	Applied	92.72	k-in
Stiffeners	#	***0***	

Bolts	#	***8***	
	Bolt Circle	44	in
	(R)adial / (S)quare	S	
	Bolt Gap	6	in
	Diameter	2.25	in
	Hole Diameter	2.75	in
	Type	A615-75	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	28.57	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev. ***G***

Moment 144.1 k-ft

Axial 73.0 k

Date	5/5/2014
Engineer	BD
Site #	302476
Carrier	AT&T Mobility

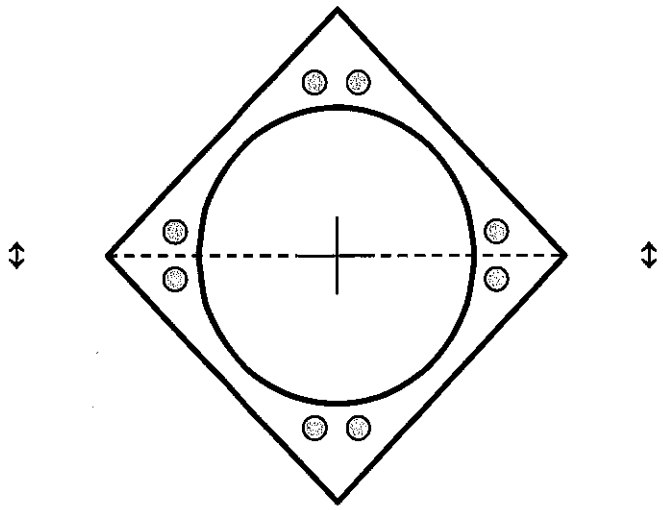


Plate Stress Ratio:

0.07 (Pass)

Bolt Stress Ratio:

0.11 (Pass)

Base/Flange Plate	Plate Type	*Flange @ 110.0 ft*
	Pole Diameter	21.267 in
	Pole Thickness	0.1875 in
	Plate Diameter	28.5 in
	Plate Thickness	1 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	Allowable	75.16 k-in
	Applied	55.41 k-in
Stiffeners	#	*0*

Bolts	#	*12*
	Bolt Circle	25.75 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.125 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	Allowable	54.52 k
	Applied	40.55 k
Reinforcement ●	#	*0*
Extra Bolts O	#	*0*

Code Rev. *G*

Moment 287.9 k-ft
Axial 49.8 k

Date	5/5/2014
Engineer	BD
Site #	302476
Carrier	AT&T Mobility

Required Flange Thickness:
0.86 in OK

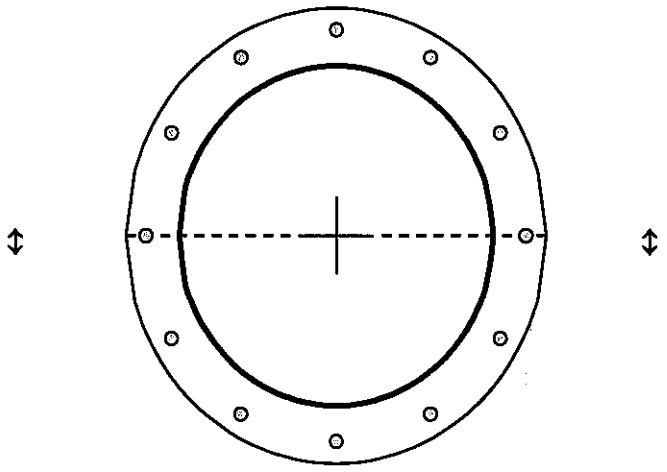


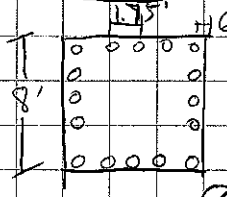
Plate Stress Ratio:
0.74 (Pass)

Bolt Stress Ratio:
0.74 (Pass)

AMERICAN TOWER®
CORPORATION

302476 Nitka - Waterbury, CT

Fdn. Check



Capacity both ≈ 60K

$\phi OTM_{cap} = 60K(5)(7')(0.9) = 1890\ K\text{-}ft.$

$usage = \frac{1441\ K\text{-}ft}{1890\ K\text{-}ft} = 0.08$, OK

Anchor Rods

$T_{applied} = 25.8K$

$V = 24.6K$

$\left(\frac{V_{ub}}{\phi R_{nv}}\right)^2 + \left(\frac{T_{ub}}{\phi R_{nt}}\right)^2 = \left(\frac{24.6}{34.6}\right)^2 + \left(\frac{25.8}{65.2}\right)^2$

$0.51 + 0.16 = 0.67$, OK