Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center St., Floor 3
West Bridgewater, MA 02379
Mobile: (774) 420-4202
ameyers@clinellc.com

DATE July 11, 2019

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

RE: Notice of Exempt Modification // Site Number: CT2091
401 Wakelee Ave., CT 06401 (Site Name: Ansonia)
N 41.356100 // W -73.092000

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains six (9) antennas at the 167-foot level of the existing 196-foot Self-Support tower at 401 Wakelee Ave., CT 06401. The tower is owned by American Tower Corp. The property is owned by the City of Ansonia. AT&T now intends to replace three (3) antennas, add three (3) Remote Radio Units, and add one (1) Surge Arrestor for its LTE upgrade. This equipment would be installed at the 167-foot level of the tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 Daniel C. Rosenthal, First Selectman, as well as the tower and ground owner, SBA Infrastructure, LLC.

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

Attached to accommodate this filing are construction drawings dated July 3, 2019 by Hudson Design Group, LLC, a structural analysis dated June 21, 2019 by American Tower Corporation, a mount analysis dated June 26, 2018 by Hudson Design Group, LLC, and an Emissions Analysis Report dated July 11, 2019 by Centerline Communications, LLC.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications 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 emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis by American Tower Corporation, dated June 21, 2019.

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

Sincerely,

Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center St., Floor 3
West Bridgewater, MA 02379
Mobile: (774) 420-4202
ameyers@centerlincommunications.com

Attachments

cc: David S. Cassetti, Mayor - as elected official
American Tower Corporation – as tower owner
Janet Vitarius Waugh, City Clerk – as property owner
David Blackwell, Sr. – as Zoning Enforcement Officer

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2091

Ansonia NW- Spectrasite Tower
401 Wakelee Avenue

Ansonia, CT 06401

July 11, 2019

Centerline Communications Project Number: 950012-234

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.30 %**

Centerline Communications, LLC 95 Ryan Drive, Suite 1 Raynham MA 02767

July 11, 2019

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2091 – Ansonia NW- Spectrasite Tower**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **401 Wakelee Avenue** in **Ansonia, Connecticut** for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **401 Wakelee Avenue in Ansonia, Connecticut**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	2500 MHz (WCS)	3	40
5G	850 MHz	2	25
LTE	850 MHz	2	40
LTE	700 MHz	2	40
LTE	2100 MHz (AWS)	4	30
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	CCI OPA-65R-BU6BA	167
A	2	CCI TPA65R-BU6DA	167
A	3	CCI OPA-65R-LCUU-H6	167
B	1	CCI OPA-65R-BU6BA	167
B	2	CCI TPA65R-BU6DA	167
B	3	CCI OPA-65R-LCUU-H6	167
C	1	CCI OPA-65R-BU6BA	167
C	2	CCI TPA65R-BU6DA	167
C	3	CCI OPA-65R-LCUU-H6	167

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	CCI OPA-65R-BU6BA	850 MHz / 700 MHz	12.25 dBd / 12.15 dBd	4	140	2,319.75	0.59
Antenna A2	CCI TPA65R-BU6DA	700 MHz / 1900 MHz / 1900 MHz / 850 MHz / 850 MHz	12.85 dBd / 16.15 dBd / 16.15 dBd / 13.15 dBd / 13.15 dBd / 16.15 dBd	18	650	22,359.30	3.37
Antenna A3	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz	11.65 dBd / 15.45 dBd	6	200	5,378.76	0.87
						Sector A Composite MPE%	**4.83**
Antenna B1	CCI OPA-65R-BU6BA	850 MHz / 700 MHz	12.25 dBd / 12.15 dBd	4	140	2,319.75	0.59
Antenna B2	CCI TPA65R-BU6DA	700 MHz / 1900 MHz / 1900 MHz / 850 MHz / 850 MHz	12.85 dBd / 16.15 dBd / 16.15 dBd / 13.15 dBd / 13.15	18	650	22,359.30	3.37
Antenna B3	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz	11.65 dBd / 15.45 dBd	6	200	5,378.76	0.87
						Sector B Composite MPE%	**4.83**
Antenna C1	CCI OPA-65R-BU6BA	850 MHz / 700 MHz	12.25 dBd / 12.15 dBd	4	140	2,319.75	0.59
Antenna C2	CCI TPA65R-BU6DA	700 MHz / 1900 MHz / 1900 MHz / 850 MHz / 850 MHz	12.85 dBd / 16.15 dBd / 16.15 dBd / 13.15 dBd / 13.15 dBd / 16.15 dBd	18	650	22,359.30	3.37
Antenna C3	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz	11.65 dBd / 15.45 dBd	6	200	5,378.76	0.87
						Sector C Composite MPE%	**4.83**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Per Sector Value	4.83%
Metro PCS	0.3%
Clearwire	0.05%
Sprint	0.93%
Verizon	1.19%
T-Mobile	2%
Site Total MPE %:	**9.30 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	4.83 %
AT&T Sector B Total:	4.83 %
AT&T Sector C Total:	4.83 %
Site Total:	9.30 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($i.tW/cm^2$)	Frequency (MHz)	Allowable MPE ($i.tW/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	503.64	167.0	1.30	850 MHz UMTS	567	0.23%
AT&T 700 MHz LTE	2	656.24	167.0	1.69	700 MHz LTE	467	0.36%
AT&T 700 MHz LTE	2	771.01	167.0	1.99	700 MHz LTE	467	0.43%
AT&T 1900 MHz LTE	4	1648.39	167.0	8.50	1900 MHz LTE	1000	0.85%
AT&T 1900 MHz LTE	4	1648.39	167.0	8.50	1900 MHz LTE	1000	0.85%
AT&T 850 MHz LTE	2	826.15	167.0	2.13	850 MHz LTE	567	0.38%
AT&T 850 MHz 5G	2	516.35	167.0	1.33	850 MHz 5G	567	0.23%
AT&T 700 MHz LTE	2	584.87	167.0	1.51	700 MHz LTE	467	0.32%
AT&T 2300 MHz LTE	4	1052.26	167.0	5.43	2300 MHz LTE	1000	0.54%
						Total:	**4.83%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	4.83 %
Sector B:	4.83 %
Sector C:	4.83 %
AT&T Maximum Total (per sector):	4.83 %
Site Total:	9.30 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.30 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Ryan McManus
Senior RF EME Compliance Manager
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**196 ft Self Supported Tower**
ATC Site Name	:	**Ansonia Wakelee, CT**
ATC Site Number	:	**302470**
Engineering Number	:	**OAA749428_C3_01**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**Ansonia, CT**
Carrier Site Number	:	**CT2091**
Site Location	:	**401 Wakelee Ave** **Ansonia, CT 06401-1226** **41.356100,-73.092000**
County	:	**New Haven**
Date	:	**June 21, 2019**
Max Usage	:	**93%**
Result	:	**Pass**

Prepared By:
Jennifer Yu
Structural Engineer I

Jennifer Yu

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

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Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 196 ft self supported tower to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	Rohn Drawing #A991899, dated July 7, 1999
Foundation Drawing	Rohn Drawing #A992523-1, dated September 22, 1999
Geotechnical Report	Tectonic Engineering Consultants W.O. #1170.C754, dated May 20, 1999

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	97 mph (3-Second Gust, Vasd) / 125 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.19, S_1 = 0.06
Site Class:	D - Stiff Soil

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

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
194.0	3	KMW TTA (HB-X-WM-17-65-00T)	Leg	(6) 1 5/8" Coax	SPRINT NEXTEL
	3	KMW AM-X-WM-17-65-00T (48")			
192.0	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
185.0	3	Alcatel-Lucent 800 MHz RRH	Sector Frame	(3) 1 1/4" Hybriflex Cable	
	2	Powerwave Allgon P40-16-XLPP-RRR			
	1	RFS APXVSPP18-C-A20			
178.0	3	Rymsa MGD3-800TX	Sector Frame	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
177.0	6	Andrew SBNHH-1D65B			
	1	Powerwave Allgon P65-16-XL-2			
	2	RFS DB-T1-6Z-8AB-0Z			
	1	Swedcom SLCP 2x6014			
	1	Amphenol Antel BXA-70063-6BF-EDIN-X			
	3	Antel BXA-80080/4CF			
	3	Alcatel-Lucent B66 RRH4x45			
	3	Alcatel-Lucent PCS B25 RRH2x60/4x30			
	3	Alcatel-Lucent B13 RRH4x30-4R 700U			
	3	RFS FD9R6004/2C-3L			
167.0	3	Ericsson Radio 8843 - B2 + B66A (w/ protruding items)	Sector Frame	(2) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 1/4" Coax (1) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS-32 (77 lbs)			
	2	CCI OPA-65R-LCUU-H6			
	2	CCI TPA65R-BU6D			
	1	CCI OPA-65R-LCUU-H8			
	1	CCI TPA65R-BU8D			
	6	Powerwave Allgon TT19-08BP111-001			
	6	Kaelus DBCT108F1V92-1			
	1	Raycap DC6-48-60-0-8F (24" Height)			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 11 (Band 12) (55 lb)			
	3	Ericsson RRUS 4478 B5			
	2	Raycap DC6-48-60-18-8F ("Squid")			
157.0	3	Kathrein Scala 742 213	Leg	(6) 1 5/8" Coax	METRO PCS INC
148.0	3	Ericsson AIR-32 B2A/B66Aa	Sector Frame	(1) 1 1/4" (1.25"-31.8mm) Fiber (3) 1 5/8" (1.63"-41.3mm) Fiber (6) 1 5/8" Coax	T-MOBILE
	3	Ericsson KRY 112 144/1			
	3	Ericsson Radio 4449 B12,B71			
	3	RFS APXVAARR24_43-U-NA20			
	3	Ericsson AIR 21, 1.3 M, B2A B4P			
125.0	2	Motorola PTP54600	Leg	(2) 1/4" Coax	CITY OF ANSONIA, CT
85.0	1	Generic 10' Dipole	Stand-Off	(1) 1/2" Coax	
76.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(1) 1/2" Coax	SPRINT NEXTEL

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
167.0	3	Powerwave Allgon 7770.00	-	-	AT&T MOBILITY

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
167.0	1	Raycap DC6-48-60-18-8F ("Squid")	Sector Frame	(2) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	3	Ericsson RRUS E2 B29			
	2	CCI OPA65R-BU6A			
	1	CCI OPA65R-BU8B			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines stacked on top of existing AT&T MOBILITY coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	88%	Pass
Diagonals	93%	Pass
Horizontals	14%	Pass
Anchor Bolts	78%	Pass
Leg Bolts	71%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Uplift (Kips)	301.1	406.5	339.8	84%
Axial (Kips)	343.0	463.1	389.1	84%
Shear (Kips)	54.4	73.4	66.6	91%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
167.0	Raycap DC6-48-60-18-8F ("Squid")	AT&T MOBILITY	0.358	0.012	0.252
	Ericsson RRUS E2 B29				
	CCI OPA65R-BU6A				
	CCI OPA65R-BU8B				

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

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

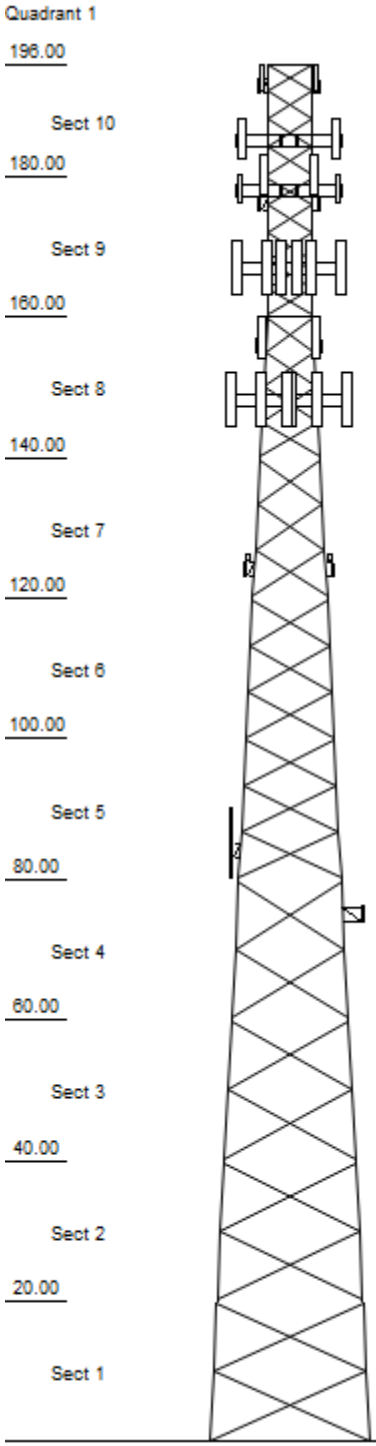
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Loads: 97 mph no ice
50 mph w/ 3/4" radial ice
Site Class: D Ss: 0.19 S1: 0.06
60 mph Serviceability

Job Information

Client : AT&T MOBILITY			
Tower : 302470	Location : Ansonia	Base Width :	23.00 ft
Code : ANSI/TIA-222-G		Top Width :	6.65 ft
		Tower Ht :	196.00 ft
		Shape :	Triangle

Sections Properties

Section	Leg Members	Diagonal Members	Horizontal Members
1	PX 50 ksi 8" DIA PIPE	SAE 50 ksi 4X4X0.25	
2	PSP 50 ksi ROHN 8 EHS	SAE 50 ksi 4X4X0.25	
3	PSP 50 ksi ROHN 8 EHS	SAE 50 ksi 3.5X3.5X0.25	
4	PX 50 ksi 6" DIA PIPE	SAE 50 ksi 3.5X3.5X0.25	
5	PSP 50 ksi ROHN 6 EHS	SAE 50 ksi 3X3X0.25	
6 - 7	PX 50 ksi 5" DIA PIPE	SAE 36 ksi 2.5X2.5X0.25	
8	PX 50 ksi 4" DIA PIPE	SAE 36 ksi 2X2X0.25	SAE 36 ksi 2X2X0.125
9	PX 50 ksi 3" DIA PIPE	SAE 36 ksi 2X2X0.1875	
10	PST 50 ksi 2-1/2" DIA PIPE	SAE 36 ksi 1.75X1.75X0.1875	SAE 36 ksi 2X2X0.125

Discrete Appurtenance

Elev (ft)	Type	Qty	Description
194.00	Panel	3	KMW AM-X-WM-17-65-00T (48")
194.00		3	KMW TTA (HB-X-WM-17-65-00T)
192.00		3	Alcatel-Lucent 1900 MHz 4X45 R
185.00	Panel	2	Powerwave Allgon P40-16-XLPP-R
185.00	Panel	1	RFS APXVSPP18-C-A20
185.00		3	Alcatel-Lucent 800 MHz RRH
185.00	Mounting Frame	3	Round Sector Frames
178.00	Panel	3	Rymsa MGD3-800TX
178.00	Mounting Frame	3	Flat Light Sector Frames
177.00		2	RFS DB-T1-6Z-8AB-0Z
177.00	Panel	3	Antel BXA-80080/4CF
177.00		3	Alcatel-Lucent B66 RRH4x45
177.00		3	Alcatel-Lucent PCS B25 RRH2x60
177.00		3	Alcatel-Lucent B13 RRH4x30-4R
177.00		3	RFS FD9R6004/2C-3L
177.00	Panel	6	Andrew SBNHH-1D65B
177.00	Panel	1	Powerwave Allgon P65-16-XL-2
177.00	Panel	1	Amphenol Antel BXA-70063-6BF-E
177.00	Panel	1	Swedcom SLCP 2x6014
167.00	Mounting Frame	3	Round Sector Frames
167.00	Panel	1	CCI TPA65R-BU8D
167.00	Panel	1	CCI OPA-65R-LCUU-H8
167.00	Panel	2	CCI TPA65R-BU6D
167.00	Panel	1	CCI OPA65R-BU8B
167.00	Panel	2	CCI OPA-65R-LCUU-H6
167.00	Panel	2	CCI OPA65R-BU6A
167.00		3	Ericsson RRUS-32 (77 lbs)
167.00		3	Ericsson RRUS E2 B29
167.00		3	Ericsson RRUS 11 (Band 12) (55
167.00		3	Ericsson RRUS 4478 B14
167.00		3	Ericsson Radio 8843 - B2 + B66
167.00		3	Ericsson RRUS 4478 B5
167.00		1	Raycap DC6-48-60-18-8F ("Squid
167.00		2	Raycap DC6-48-60-18-8F ("Squid
167.00		1	Raycap DC6-48-60-0-8F (24" Hei
167.00		6	Kaelus DBCT108F1V92-1
167.00		6	Powerwave Allgon TT19-08BP111-
157.00	Panel	3	Kathrein Scala 742 213
148.00	Mounting Frame	3	Round Sector Frame
148.00	Panel	3	RFS APXVAARR24_43-U-NA20
148.00	Panel	3	Ericsson AIR-32 B2A/B66Aa
148.00	Panel	3	Ericsson AIR 21, 1.3 M, B2A B4
148.00		3	Ericsson Radio 4449 B12,B71
148.00		3	Ericsson KRY 112 144/1

Job Information

Client : AT&T MOBILITY
Tower : 302470 **Location :** Ansonia **Base Width :** 23.00 ft
Code : ANSI/TIA-222-G **Top Width :** 6.65 ft
Tower Ht : 196.00 ft
Shape : Triangle

125.00	Panel	2	Motorola PTP54600
102.00	Straight Arm	2	Standoffs
85.00	Whip	1	Generic 10' Dipole
80.00	Straight Arm	1	Standoffs
76.00	Straight Arm	1	Standoffs
76.00	Whip	1	PCTEL GPS-TMG-HR-26N

Linear Appurtenance

Elev (ft) From	To	Qty	Description
8.00	194.00	1	Wave Guide
8.00	194.00	6	1 5/8" Coax
8.00	185.00	1	Wave Guide
8.00	185.00	3	1 1/4" Hybriflex Cab
8.00	177.00	2	1 5/8" Hybriflex
8.00	177.00	12	1 5/8" Coax
8.00	167.00	1	Wave Guide
8.00	167.00	1	2" conduit
8.00	167.00	12	1 1/4" Coax
8.00	167.00	2	0.78" (19.7mm) 8 AWG
8.00	167.00	6	0.78" (19.7mm) 8 AWG
8.00	167.00	2	0.39" (10mm) Fiber T
8.00	157.00	1	Waveguide
8.00	157.00	6	1 5/8" Coax
8.00	148.00	1	Wave Guide
0.00	148.00	6	1 5/8" Coax
0.00	148.00	3	1 5/8" (1.63"-41.3mm
0.00	148.00	1	1 1/4" (1.25"- 31.8m
8.00	125.00	2	1/4" Coax
8.00	85.00	1	1/2" Coax
8.00	76.00	1	1/2" Coax

Global Base Foundation Design Loads

Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	7,373.23	56.88	66.57
DL + WL + IL	2,588.81	175.41	24.06

Individual Base Foundation Design Loads

Vertical (kip)	Uplift (kip)	Horizontal (kip)
389.13	339.82	40.35

Site Number:	302470	Code:	ANSI/TIA-222-G	
Site Name:	Ansonia Wakelee, CT	Engineering Number:	OAA749428_C3_01	6/21/2019 10:20:20 AM
Customer:	AT&T MOBILITY			

Analysis Parameters

Location:	New Haven County, CT	Height (ft):	196
Code:	ANSI/TIA-222-G	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	23.00
Tower Manufacturer:	Rohn	Top Face Width (ft):	6.65
Tower Type:	Self Support	Anchor Bolt Detail Type	d
Kd:			
Ke:			

Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	97 mph
Exposure Category:	C	Design Windspeed With Ice:	50 mph
Topographic Category:	1	Operational Windspeed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	0.94				
T_L (sec):	6	p:	1.3	C_S:	0.034
S_S:	0.190	S_1:	0.060	C_S, Max:	0.034
F_a:	1.600	F_V:	2.400	C_S, Min:	0.030
S_{ds}:	0.203	S_{d1}:	0.096		

Load Cases

1.2D + 1.6W Normal	97 mph Normal with No Ice
1.2D + 1.6W 60 deg	97 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	97 mph 90 degree with No Ice
0.9D + 1.6W Normal	97 mph Normal with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	97 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	97 mph 90 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 deg
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 deg
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 deg
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
194.0	KMW AM-X-WM-17-	3	14	3.4	4.0	7.3	2.6	1.00	0.64	0.0	0.0	29.79	261	51
194.0	KMW TTA (HB-X-WM-	3	16	0.6	1.3	7.3	3.7	1.00	0.50	0.0	0.0	29.79	40	57
192.0	Alcatel-Lucent 1900	3	60	2.3	2.1	11.1	10.7	1.00	0.50	0.0	0.0	29.73	141	216
185.0	Alcatel-Lucent 800	3	53	2.1	1.6	13.0	10.8	0.80	0.50	0.0	0.0	29.50	103	191
185.0	Powerwave Allgon	2	64	9.1	4.5	20.0	6.5	0.80	1.00	0.0	0.0	29.50	582	154
185.0	RFS APXVSPP18-C-	1	57	8.0	6.0	11.8	7.0	0.80	1.00	0.0	0.0	29.50	257	68
185.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	29.50	975	1080
178.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.0	29.26	1074	1440
178.0	Rymsa MGD3-800TX	3	15	3.3	4.4	6.3	3.5	1.00	0.69	0.0	0.0	29.26	275	55
177.0	Alcatel-Lucent B13	3	57	2.2	1.8	12.0	9.0	0.80	0.50	1.0	103.6	29.26	104	206
177.0	Alcatel-Lucent B66	3	67	2.6	2.2	12.0	7.3	0.80	0.50	1.0	123.2	29.26	123	241
177.0	Alcatel-Lucent PCS	3	55	2.2	1.8	12.0	9.5	0.80	0.50	1.0	105.0	29.26	105	198
177.0	Amphenol Antel BXA-	1	19	7.3	5.7	11.2	5.3	0.80	1.00	1.0	231.1	29.26	231	23
177.0	Andrew SBNHH-	6	51	8.2	6.1	11.9	7.1	0.80	0.69	1.0	1076.7	29.26	1077	365
177.0	Antel BXA-80080/4CF	3	14	4.8	4.0	11.2	5.9	0.80	0.67	1.0	307.1	29.26	307	51
177.0	Powerwave Allgon	1	33	8.1	6.0	12.0	5.0	0.80	1.00	1.0	258.8	29.26	259	40
177.0	RFS DB-T1-6Z-8AB-	2	44	4.8	2.0	24.0	10.0	0.80	0.72	1.0	220.0	29.26	220	106
177.0	RFS FD9R6004/2C-3L	3	3	0.3	0.5	6.5	1.5	0.80	0.50	0.0	0.0	29.22	15	9
177.0	Swedcom SLCP	1	20	6.5	4.4	14.0	11.0	0.80	1.00	1.0	206.3	29.26	206	24
167.0	CCI OPA-65R-LCUU-	2	73	9.7	6.0	14.8	7.4	0.80	0.75	0.0	0.0	28.87	455	175
167.0	CCI OPA-65R-LCUU-	1	88	13.0	7.7	14.8	7.4	0.80	1.00	0.0	0.0	28.87	408	106
167.0	CCI OPA65R-BU6A	2	58	7.8	5.9	11.7	8.4	0.80	0.79	0.0	0.0	28.87	390	138
167.0	CCI OPA65R-BU8B	1	69	11.2	8.0	11.7	8.4	0.80	1.00	0.0	0.0	28.87	352	83
167.0	CCI TPA65R-BU6D	2	68	12.9	5.9	21.0	7.8	0.80	0.72	0.0	0.0	28.87	582	162
167.0	CCI TPA65R-BU8D	1	83	18.1	8.0	21.0	7.8	0.80	1.00	0.0	0.0	28.87	568	99
167.0	Ericsson Radio 8843	3	75	2.0	1.5	13.2	11.3	0.80	0.50	0.0	0.0	28.87	93	270
167.0	Ericsson RRUS 11	3	55	2.5	1.5	17.0	7.2	0.80	0.50	0.0	0.0	28.87	119	198
167.0	Ericsson RRUS 4478	3	59	2.0	1.5	13.4	8.3	0.80	0.50	0.0	0.0	28.87	95	214
167.0	Ericsson RRUS 4478	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.0	28.87	87	216
167.0	Ericsson RRUS E2	3	60	3.2	1.7	18.5	7.5	0.80	0.50	0.0	0.0	28.87	148	216
167.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.50	0.0	0.0	28.87	156	277
167.0	Kaelus	6	14	0.6	0.9	7.1	6.8	0.80	0.50	0.0	0.0	28.87	59	100
167.0	Powerwave Allgon	6	16	0.6	0.8	6.7	5.4	0.80	0.50	0.0	0.0	28.87	52	115
167.0	Raycap DC6-48-60-0-	1	33	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	28.87	46	39
167.0	Raycap DC6-48-60-	2	32	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	28.87	92	76
167.0	Raycap DC6-48-60-	1	32	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	28.87	46	38
167.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	28.87	852	1080
157.0	Kathrein Scala 742	3	22	5.1	6.4	6.1	2.7	1.00	0.67	0.0	0.0	28.49	400	79
148.0	Ericsson AIR 21, 1.3	3	83	6.1	4.7	12.0	8.0	0.80	0.71	0.0	0.0	28.14	395	299
148.0	Ericsson AIR-32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	28.14	425	476
148.0	Ericsson KRY 112	3	11	0.3	0.6	6.1	2.7	0.80	0.50	0.0	0.0	28.14	16	40
148.0	Ericsson Radio 4449	3	74	1.6	1.2	13.2	9.3	0.80	0.50	0.0	0.0	28.14	75	266
148.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	28.14	1171	460
148.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	28.14	831	1080
125.0	Motorola PTP54600	2	12	1.8	1.2	14.5	3.8	1.00	0.50	4.0	260.3	27.34	65	29
102.0	Standoffs	2	75	2.5	0.0	0.0	0.0	1.00	0.90	0.0	0.0	26.02	159	180
85.00	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	0.0	0.0	25.04	128	36
80.00	Standoffs	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	24.72	84	90
76.00	PCTEL GPS-TMG-HR-	1	1	0.1	0.4	3.2	3.2	1.00	1.00	0.0	0.0	24.46	3	1
76.00	Standoffs	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	24.46	83	90
	Totals	125	9420	659.1									14790	11304

Site Number: 302470 Code: ANSI/TIA-222-G

Site Name: Ansonia Wakelee, CT Engineering Number: OAA749428_C3_01 6/21/2019 10:20:21 AM

Customer: AT&T MOBILITY

Tower Loading

Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
194.0	KMW AM-X-WM-17-	3	14	3.4	4.0	7.3	2.6	1.00	0.64	0.0	0.0	29.79	261	38
194.0	KMW TTA (HB-X-WM-	3	16	0.6	1.3	7.3	3.7	1.00	0.50	0.0	0.0	29.79	40	43
192.0	Alcatel-Lucent 1900	3	60	2.3	2.1	11.1	10.7	1.00	0.50	0.0	0.0	29.73	141	162
185.0	Alcatel-Lucent 800	3	53	2.1	1.6	13.0	10.8	0.80	0.50	0.0	0.0	29.50	103	143
185.0	Powerwave Allgon	2	64	9.1	4.5	20.0	6.5	0.80	1.00	0.0	0.0	29.50	582	115
185.0	RFS APXVSPP18-C-	1	57	8.0	6.0	11.8	7.0	0.80	1.00	0.0	0.0	29.50	257	51
185.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	29.50	975	810
178.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.0	29.26	1074	1080
178.0	Rymsa MGD3-800TX	3	15	3.3	4.4	6.3	3.5	1.00	0.69	0.0	0.0	29.26	275	42
177.0	Alcatel-Lucent B13	3	57	2.2	1.8	12.0	9.0	0.80	0.50	1.0	103.6	29.26	104	154
177.0	Alcatel-Lucent B66	3	67	2.6	2.2	12.0	7.3	0.80	0.50	1.0	123.2	29.26	123	181
177.0	Alcatel-Lucent PCS	3	55	2.2	1.8	12.0	9.5	0.80	0.50	1.0	105.0	29.26	105	149
177.0	Amphenol Antel BXA-	1	19	7.3	5.7	11.2	5.3	0.80	1.00	1.0	231.1	29.26	231	17
177.0	Andrew SBNHH-	6	51	8.2	6.1	11.9	7.1	0.80	0.69	1.0	1076.7	29.26	1077	274
177.0	Antel BXA-80080/4CF	3	14	4.8	4.0	11.2	5.9	0.80	0.67	1.0	307.1	29.26	307	39
177.0	Powerwave Allgon	1	33	8.1	6.0	12.0	5.0	0.80	1.00	1.0	258.8	29.26	259	30
177.0	RFS DB-T1-6Z-8AB-	2	44	4.8	2.0	24.0	10.0	0.80	0.72	1.0	220.0	29.26	220	79
177.0	RFS FD9R6004/2C-3L	3	3	0.3	0.5	6.5	1.5	0.80	0.50	0.0	0.0	29.22	15	7
177.0	Swedcom SLCP	1	20	6.5	4.4	14.0	11.0	0.80	1.00	1.0	206.3	29.26	206	18
167.0	CCI OPA-65R-LCUU-	2	73	9.7	6.0	14.8	7.4	0.80	0.75	0.0	0.0	28.87	455	131
167.0	CCI OPA-65R-LCUU-	1	88	13.0	7.7	14.8	7.4	0.80	1.00	0.0	0.0	28.87	408	79
167.0	CCI OPA65R-BU6A	2	58	7.8	5.9	11.7	8.4	0.80	0.79	0.0	0.0	28.87	390	104
167.0	CCI OPA65R-BU8B	1	69	11.2	8.0	11.7	8.4	0.80	1.00	0.0	0.0	28.87	352	62
167.0	CCI TPA65R-BU6D	2	68	12.9	5.9	21.0	7.8	0.80	0.72	0.0	0.0	28.87	582	122
167.0	CCI TPA65R-BU8D	1	83	18.1	8.0	21.0	7.8	0.80	1.00	0.0	0.0	28.87	568	74
167.0	Ericsson Radio 8843	3	75	2.0	1.5	13.2	11.3	0.80	0.50	0.0	0.0	28.87	93	203
167.0	Ericsson RRUS 11	3	55	2.5	1.5	17.0	7.2	0.80	0.50	0.0	0.0	28.87	119	149
167.0	Ericsson RRUS 4478	3	59	2.0	1.5	13.4	8.3	0.80	0.50	0.0	0.0	28.87	95	160
167.0	Ericsson RRUS 4478	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.0	28.87	87	162
167.0	Ericsson RRUS E2	3	60	3.2	1.7	18.5	7.5	0.80	0.50	0.0	0.0	28.87	148	162
167.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.50	0.0	0.0	28.87	156	208
167.0	Kaelus	6	14	0.6	0.9	7.1	6.8	0.80	0.50	0.0	0.0	28.87	59	75
167.0	Powerwave Allgon	6	16	0.6	0.8	6.7	5.4	0.80	0.50	0.0	0.0	28.87	52	86
167.0	Raycap DC6-48-60-0-	1	33	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	28.87	46	30
167.0	Raycap DC6-48-60-	2	32	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	28.87	92	57
167.0	Raycap DC6-48-60-	1	32	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	28.87	46	29
167.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	28.87	852	810
157.0	Kathrein Scala 742	3	22	5.1	6.4	6.1	2.7	1.00	0.67	0.0	0.0	28.49	400	59
148.0	Ericsson AIR 21, 1.3	3	83	6.1	4.7	12.0	8.0	0.80	0.71	0.0	0.0	28.14	395	224
148.0	Ericsson AIR-32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	28.14	425	357
148.0	Ericsson KRY 112	3	11	0.3	0.6	6.1	2.7	0.80	0.50	0.0	0.0	28.14	16	30
148.0	Ericsson Radio 4449	3	74	1.6	1.2	13.2	9.3	0.80	0.50	0.0	0.0	28.14	75	200
148.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	28.14	1171	345
148.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	28.14	831	810
125.0	Motorola PTP54600	2	12	1.8	1.2	14.5	3.8	1.00	0.50	4.0	260.3	27.34	65	22
102.0	Standoffs	2	75	2.5	0.0	0.0	0.0	1.00	0.90	0.0	0.0	26.02	159	135
85.00	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	0.0	0.0	25.04	128	27
80.00	Standoffs	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	24.72	84	68
76.00	PCTEL GPS-TMG-HR-	1	1	0.1	0.4	3.2	3.2	1.00	1.00	0.0	0.0	24.46	3	1
76.00	Standoffs	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	24.46	83	68
	Totals	125	9420	659.1									14790	8478

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
194.0	KMW AM-X-WM-17-	3	78	5.3	4.0	7.3	2.6	1.00	0.64	0.0	0.0	7.92	68	243
194.0	KMW TTA (HB-X-WM-	3	37	1.1	1.3	7.3	3.7	1.00	0.50	0.0	0.0	7.92	11	120
192.0	Alcatel-Lucent 1900	3	143	3.4	2.1	11.1	10.7	1.00	0.50	0.0	0.0	7.90	35	464
185.0	Alcatel-Lucent 800	3	129	3.1	1.6	13.0	10.8	0.80	0.50	0.0	0.0	7.84	25	418
185.0	Powerwave Allgon	2	254	11.3	4.5	20.0	6.5	0.80	1.00	0.0	0.0	7.84	121	534
185.0	RFS APXVSPP18-C-	1	234	10.9	6.0	11.8	7.0	0.80	1.00	0.0	0.0	7.84	58	245
185.0	Round Sector	3	621	24.7	0.0	0.0	0.0	0.75	0.75	0.0	0.0	7.84	277	2044
178.0	Flat Light Sector	3	705	33.2	0.0	0.0	0.0	0.75	0.67	0.0	0.0	7.77	331	2356
178.0	Rymsa MGD3-800TX	3	85	5.1	4.4	6.3	3.5	1.00	0.69	0.0	0.0	7.77	70	263
177.0	Alcatel-Lucent B13	3	127	3.2	1.8	12.0	9.0	0.80	0.50	1.0	25.3	7.77	25	415
177.0	Alcatel-Lucent B66	3	139	3.7	2.2	12.0	7.3	0.80	0.50	1.0	29.5	7.77	30	457
177.0	Alcatel-Lucent PCS	3	127	3.2	1.8	12.0	9.5	0.80	0.50	1.0	25.6	7.77	26	415
177.0	Amphenol Antel BXA-	1	166	10.0	5.7	11.2	5.3	0.80	1.00	1.0	52.6	7.77	53	169
177.0	Andrew SBNHH-	6	229	11.0	6.1	11.9	7.1	0.80	0.69	1.0	241.6	7.77	242	1433
177.0	Antel BXA-80080/4CF	3	124	6.7	4.0	11.2	5.9	0.80	0.67	1.0	71.2	7.77	71	380
177.0	Powerwave Allgon	1	190	11.0	6.0	12.0	5.0	0.80	1.00	1.0	57.9	7.77	58	197
177.0	RFS DB-T1-6Z-8AB-	2	172	6.2	2.0	24.0	10.0	0.80	0.72	1.0	47.5	7.77	48	361
177.0	RFS FD9R6004/2C-3L	3	11	0.7	0.5	6.5	1.5	0.80	0.50	0.0	0.0	7.76	6	34
177.0	Swedcom SLCP	1	198	8.6	4.4	14.0	11.0	0.80	1.00	1.0	45.3	7.77	45	202
167.0	CCI OPA-65R-LCUU-	2	280	12.5	6.0	14.8	7.4	0.80	0.75	0.0	0.0	7.67	98	588
167.0	CCI OPA-65R-LCUU-	1	349	16.6	7.7	14.8	7.4	0.80	1.00	0.0	0.0	7.67	87	366
167.0	CCI OPA65R-BU6A	2	243	10.6	5.9	11.7	8.4	0.80	0.79	0.0	0.0	7.67	88	509
167.0	CCI OPA65R-BU8B	1	314	14.5	8.0	11.7	8.4	0.80	1.00	0.0	0.0	7.67	76	328
167.0	CCI TPA65R-BU6D	2	333	15.7	5.9	21.0	7.8	0.80	0.72	0.0	0.0	7.67	118	692
167.0	CCI TPA65R-BU8D	1	432	21.8	8.0	21.0	7.8	0.80	1.00	0.0	0.0	7.67	114	449
167.0	Ericsson Radio 8843	3	148	2.9	1.5	13.2	11.3	0.80	0.50	0.0	0.0	7.67	23	488
167.0	Ericsson RRUS 11	3	123	3.6	1.5	17.0	7.2	0.80	0.50	0.0	0.0	7.67	28	403
167.0	Ericsson RRUS 4478	3	122	3.0	1.5	13.4	8.3	0.80	0.50	0.0	0.0	7.67	23	401
167.0	Ericsson RRUS 4478	3	116	2.7	1.4	13.4	7.7	0.80	0.50	0.0	0.0	7.67	22	384
167.0	Ericsson RRUS E2	3	142	4.3	1.7	18.5	7.5	0.80	0.50	0.0	0.0	7.67	34	462
167.0	Ericsson RRUS-32	3	176	4.6	2.5	13.3	9.5	0.80	0.50	0.0	0.0	7.67	36	573
167.0	Kaelus	6	39	1.2	0.9	7.1	6.8	0.80	0.50	0.0	0.0	7.67	18	253
167.0	Powerwave Allgon	6	36	1.1	0.8	6.7	5.4	0.80	0.50	0.0	0.0	7.67	17	238
167.0	Raycap DC6-48-60-0-	1	141	2.2	2.0	11.0	11.0	0.80	1.00	0.0	0.0	7.67	11	148
167.0	Raycap DC6-48-60-	2	94	2.2	2.0	11.0	11.0	0.80	1.00	0.0	0.0	7.67	23	202
167.0	Raycap DC6-48-60-	1	94	2.2	2.0	11.0	11.0	0.80	1.00	0.0	0.0	7.67	11	101
167.0	Round Sector	3	618	24.6	0.0	0.0	0.0	0.75	0.67	0.0	0.0	7.67	242	2034
157.0	Kathrein Scala 742	3	135	6.4	6.4	6.1	2.7	1.00	0.67	0.0	0.0	7.57	83	418
148.0	Ericsson AIR 21, 1.3	3	229	8.2	4.7	12.0	8.0	0.80	0.71	0.0	0.0	7.48	89	738
148.0	Ericsson AIR-32	3	292	8.7	4.7	12.9	8.7	0.80	0.71	0.0	0.0	7.48	94	956
148.0	Ericsson KRY 112	3	22	0.8	0.6	6.1	2.7	0.80	0.50	0.0	0.0	7.48	6	72
148.0	Ericsson Radio 4449	3	130	2.5	1.2	13.2	9.3	0.80	0.50	0.0	0.0	7.48	19	435
148.0	RFS	3	521	24.0	8.0	24.0	8.7	0.80	0.63	0.0	0.0	7.48	230	1641
148.0	Round Sector Frame	3	669	31.0	0.0	0.0	0.0	0.75	0.67	0.0	0.0	7.48	297	2186
125.0	Motorola PTP54600	2	51	2.6	1.2	14.5	3.8	1.00	0.50	4.0	64.4	7.26	16	108
102.0	Standoffs	2	100	2.8	0.0	0.0	0.0	1.00	0.90	0.0	0.0	6.91	30	231
85.00	Generic 10' Dipole	1	136	9.5	10.0	3.0	3.0	1.00	1.00	0.0	0.0	6.65	54	142
80.00	Standoffs	1	99	2.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.57	16	114
76.00	PCTEL GPS-TMG-HR-	1	5	0.3	0.4	3.2	3.2	1.00	1.00	0.0	0.0	6.50	1	5
76.00	Standoffs	1	99	2.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.50	16	114
	Totals	125	24645	983.2									3616	26529

Tower Loading

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
194.0	KMW AM-X-WM-17-	3	14	3.4	4.0	7.3	2.6	1.00	0.64	0.0	0.0	11.40	63	43
194.0	KMW TTA (HB-X-WM-	3	16	0.6	1.3	7.3	3.7	1.00	0.50	0.0	0.0	11.40	9	48
192.0	Alcatel-Lucent 1900	3	60	2.3	2.1	11.1	10.7	1.00	0.50	0.0	0.0	11.37	34	180
185.0	Alcatel-Lucent 800	3	53	2.1	1.6	13.0	10.8	0.80	0.50	0.0	0.0	11.29	25	159
185.0	Powerwave Allgon	2	64	9.1	4.5	20.0	6.5	0.80	1.00	0.0	0.0	11.29	139	128
185.0	RFS APXVSPP18-C-	1	57	8.0	6.0	11.8	7.0	0.80	1.00	0.0	0.0	11.29	62	57
185.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	11.29	233	900
178.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.0	11.19	257	1200
178.0	Rymsa MGD3-800TX	3	15	3.3	4.4	6.3	3.5	1.00	0.69	0.0	0.0	11.19	66	46
177.0	Alcatel-Lucent B13	3	57	2.2	1.8	12.0	9.0	0.80	0.50	1.0	24.8	11.19	25	172
177.0	Alcatel-Lucent B66	3	67	2.6	2.2	12.0	7.3	0.80	0.50	1.0	29.5	11.19	29	201
177.0	Alcatel-Lucent PCS	3	55	2.2	1.8	12.0	9.5	0.80	0.50	1.0	25.1	11.19	25	165
177.0	Amphenol Antel BXA-	1	19	7.3	5.7	11.2	5.3	0.80	1.00	1.0	55.3	11.19	55	19
177.0	Andrew SBNHH-	6	51	8.2	6.1	11.9	7.1	0.80	0.69	1.0	257.5	11.19	257	304
177.0	Antel BXA-80080/4CF	3	14	4.8	4.0	11.2	5.9	0.80	0.67	1.0	73.4	11.19	73	43
177.0	Powerwave Allgon	1	33	8.1	6.0	12.0	5.0	0.80	1.00	1.0	61.9	11.19	62	33
177.0	RFS DB-T1-6Z-8AB-	2	44	4.8	2.0	24.0	10.0	0.80	0.72	1.0	52.6	11.19	53	88
177.0	RFS FD9R6004/2C-3L	3	3	0.3	0.5	6.5	1.5	0.80	0.50	0.0	0.0	11.18	4	8
177.0	Swedcom SLCP	1	20	6.5	4.4	14.0	11.0	0.80	1.00	1.0	49.3	11.19	49	20
167.0	CCI OPA-65R-LCUU-	2	73	9.7	6.0	14.8	7.4	0.80	0.75	0.0	0.0	11.04	109	146
167.0	CCI OPA-65R-LCUU-	1	88	13.0	7.7	14.8	7.4	0.80	1.00	0.0	0.0	11.04	97	88
167.0	CCI OPA65R-BU6A	2	58	7.8	5.9	11.7	8.4	0.80	0.79	0.0	0.0	11.04	93	115
167.0	CCI OPA65R-BU8B	1	69	11.2	8.0	11.7	8.4	0.80	1.00	0.0	0.0	11.04	84	69
167.0	CCI TPA65R-BU6D	2	68	12.9	5.9	21.0	7.8	0.80	0.72	0.0	0.0	11.04	139	135
167.0	CCI TPA65R-BU8D	1	83	18.1	8.0	21.0	7.8	0.80	1.00	0.0	0.0	11.04	136	83
167.0	Ericsson Radio 8843	3	75	2.0	1.5	13.2	11.3	0.80	0.50	0.0	0.0	11.04	22	225
167.0	Ericsson RRUS 11	3	55	2.5	1.5	17.0	7.2	0.80	0.50	0.0	0.0	11.04	28	165
167.0	Ericsson RRUS 4478	3	59	2.0	1.5	13.4	8.3	0.80	0.50	0.0	0.0	11.04	23	178
167.0	Ericsson RRUS 4478	3	60	1.8	1.4	13.4	7.7	0.80	0.50	0.0	0.0	11.04	21	180
167.0	Ericsson RRUS E2	3	60	3.2	1.7	18.5	7.5	0.80	0.50	0.0	0.0	11.04	35	180
167.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.50	0.0	0.0	11.04	37	231
167.0	Kaelus	6	14	0.6	0.9	7.1	6.8	0.80	0.50	0.0	0.0	11.04	14	83
167.0	Powerwave Allgon	6	16	0.6	0.8	6.7	5.4	0.80	0.50	0.0	0.0	11.04	12	96
167.0	Raycap DC6-48-60-0-	1	33	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	11.04	11	33
167.0	Raycap DC6-48-60-	2	32	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	11.04	22	64
167.0	Raycap DC6-48-60-	1	32	1.5	2.0	11.0	11.0	0.80	1.00	0.0	0.0	11.04	11	32
167.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	11.04	204	900
157.0	Kathrein Scala 742	3	22	5.1	6.4	6.1	2.7	1.00	0.67	0.0	0.0	10.90	96	66
148.0	Ericsson AIR 21, 1.3	3	83	6.1	4.7	12.0	8.0	0.80	0.71	0.0	0.0	10.77	94	249
148.0	Ericsson AIR-32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	10.77	102	397
148.0	Ericsson KRY 112	3	11	0.3	0.6	6.1	2.7	0.80	0.50	0.0	0.0	10.77	4	33
148.0	Ericsson Radio 4449	3	74	1.6	1.2	13.2	9.3	0.80	0.50	0.0	0.0	10.77	18	222
148.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	10.77	280	384
148.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	10.77	199	900
125.0	Motorola PTP54600	2	12	1.8	1.2	14.5	3.8	1.00	0.50	4.0	62.2	10.46	16	24
102.0	Standoffs	2	75	2.5	0.0	0.0	0.0	1.00	0.90	0.0	0.0	9.96	38	150
85.00	Generic 10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	0.0	0.0	9.58	31	30
80.00	Standoffs	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.46	20	75
76.00	PCTEL GPS-TMG-HR-	1	1	0.1	0.4	3.2	3.2	1.00	1.00	0.0	0.0	9.36	1	1
76.00	Standoffs	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.36	20	75
	Totals	125	9420	659.1									3537	9420

Site Number: 302470 Code: ANSI/TIA-222-G

Site Name: Ansonia Wakelee, CT Engineering Number: OAA749428_C3_01 6/21/2019 10:20:21 AM

Customer: AT&T MOBILITY

Tower Loading

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
8.00	194.0	1 5/8" Coax	6	1.98	0.82	100	Lin App	Individual	0.00	N	1.00	1.00	0.36
8.00	194.0	Wave Guide	1	1.25	5.00	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	185.0	1 1/4" Hybriflex	3	1.54	1.00	100	Lin App	Individual	0.00	N	1.00	1.00	0.46
8.00	185.0	Wave Guide	1	1.25	5.00	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	177.0	1 5/8" Coax	12	1.98	0.82	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	177.0	1 5/8" Hybriflex	2	1.98	1.30	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	167.0	0.39" (10mm) Fiber	2	0.39	0.06	100	Lin App	Individual	0.00	N	1.00	1.00	0.01
8.00	167.0	0.78" (19.7mm) 8	6	0.78	0.59	100	Lin App	Individual	0.00	N	1.00	1.00	0.01
8.00	167.0	0.78" (19.7mm) 8	2	0.78	0.59	100	Lin App	Individual	0.00	N	1.00	1.00	0.01
8.00	167.0	1 1/4" Coax	12	1.55	0.63	100	Lin App	Individual	0.00	N	1.00	1.00	0.35
8.00	167.0	2" conduit	1	2.38	3.65	100	Lin App	Individual	0.00	N	1.00	1.00	0.01
8.00	167.0	Wave Guide	1	1.25	5.00	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	157.0	1 5/8" Coax	6	1.98	0.82	100	Lin App	Individual	0.00	N	1.00	1.00	0.36
8.00	157.0	Waveguide	1	1.50	6.00	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	148.0	1 1/4" (1.25"-	1	1.25	1.05	100	Lin App	Individual	0.00	N	1.00	1.00	0.01
0.00	148.0	1 5/8" (1.63"-	3	1.63	1.61	100	Lin App	Individual	0.00	N	1.00	1.00	0.01
0.00	148.0	1 5/8" Coax	6	1.98	0.82	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	148.0	Wave Guide	1	1.25	5.00	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	125.0	1/4" Coax	2	0.34	0.06	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	85.00	1/2" Coax	1	0.63	0.15	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
8.00	76.00	1/2" Coax	1	0.63	0.15	100	Lin App	Individual	0.00	N	1.00	1.00	0.00

Equivalent Lateral Force Method

(Based on ASCE7-10 Chapters 11, 12 & 15)

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Long-Period Transition Period (T_L - Seconds):	6
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s:	0.03
Lower Limit C_s:	0.03
Period based on Rayleigh Method (sec):	0.94
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.22
Total Unfactored Dead Load:	47.40 k
Seismic Base Shear (E):	2.09 k

LoadCase (1.2 + 0.2Sds) * DL + E Seismic

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
10	188.00	884	529,293	0.040	84	1,096
9	170.00	1,901	1,007,06	0.076	160	2,359
8	150.00	2,979	1,354,02	0.103	214	3,695
7	130.00	3,682	1,405,55	0.106	223	4,568
6	110.00	3,813	1,186,94	0.090	188	4,731
5	90.00	4,291	1,045,20	0.079	166	5,323
4	70.00	4,584	821,490	0.062	130	5,686
3	50.00	4,980	591,783	0.045	94	6,178
2	30.00	5,321	338,818	0.026	54	6,601
1	10.00	5,543	92,259	0.007	15	6,876
KMW AM-X-WM-17-65-00T (48")	194.00	43	26,513	0.002	4	53
KMW TTA (HB-X-WM-17-65-00T)	194.00	48	29,687	0.002	5	59
Alcatel-Lucent 1900 MHz 4X45 RRH	192.00	180	110,617	0.008	18	223
Alcatel-Lucent 800 MHz RRH	185.00	159	93,379	0.007	15	197
Powerwave Allgon P40-16-XLPP-RRR	185.00	128	75,173	0.006	12	159
RFS APXVSPP18-C-A20	185.00	57	33,476	0.003	5	71
Round Sector Frames	185.00	900	528,561	0.040	84	1,116
Flat Light Sector Frames	178.00	1,200	672,319	0.051	106	1,489
Rymsa MGD3-800TX	178.00	46	25,884	0.002	4	57
Alcatel-Lucent B13 RRH4x30-4R 700U	177.00	172	95,482	0.007	15	213
Alcatel-Lucent B66 RRH4x45	177.00	201	111,841	0.008	18	249
Alcatel-Lucent PCS B25 RRH2x60/4x30	177.00	165	91,810	0.007	15	205
Amphenol Antel BXA-70063-6BF-EDIN-X	177.00	19	10,683	0.001	2	24
Andrew SBNHH-1D65B	177.00	304	169,264	0.013	27	377
Antel BXA-80080/4CF	177.00	43	23,871	0.002	4	53

Equivalent Lateral Force Method

Powerwave Allgon P65-16-XL-2	177.00	33	18,362	0.001	3	41
RFS DB-T1-6Z-8AB-0Z	177.00	88	48,965	0.004	8	109
RFS FD9R6004/2C-3L	177.00	8	4,340	0.000	1	10
Swedcom SLCP 2x6014	177.00	20	11,128	0.001	2	25
CCI OPA-65R-LCUU-H6	167.00	146	75,668	0.006	12	181
CCI OPA-65R-LCUU-H8	167.00	88	45,608	0.003	7	109
CCI OPA65R-BU6A	167.00	115	59,602	0.005	9	143
CCI OPA65R-BU8B	167.00	69	35,761	0.003	6	86
CCI TPA65R-BU6D	167.00	135	69,967	0.005	11	167
CCI TPA65R-BU8D	167.00	83	42,758	0.003	7	102
Ericsson Radio 8843 - B2 + B66A (w/ prot	167.00	225	116,612	0.009	18	279
Ericsson RRUS 11 (Band 12) (55 lb)	167.00	165	85,515	0.006	14	205
Ericsson RRUS 4478 B14	167.00	178	92,357	0.007	15	221
Ericsson RRUS 4478 B5	167.00	180	93,134	0.007	15	223
Ericsson RRUS E2 B29	167.00	180	93,289	0.007	15	223
Ericsson RRUS-32 (77 lbs)	167.00	231	119,722	0.009	19	287
Kaelus DBCT108F1V92-1	167.00	83	43,224	0.003	7	103
Powerwave Allgon TT19-08BP111-001	167.00	96	49,754	0.004	8	119
Raycap DC6-48-60-0-8F (24" Height)	167.00	33	16,999	0.001	3	41
Raycap DC6-48-60-18-8F ("Squid")	167.00	64	32,962	0.002	5	79
Raycap DC6-48-60-18-8F ("Squid")	167.00	32	16,481	0.001	3	39
Round Sector Frames	167.00	900	466,447	0.035	74	1,116
Kathrein Scala 742 213	157.00	66	31,721	0.002	5	82
Ericsson AIR 21, 1.3 M, B2A B4P	148.00	249	111,352	0.008	18	309
Ericsson AIR-32 B2A/B66Aa	148.00	397	177,358	0.013	28	492
Ericsson KRY 112 144/1	148.00	33	14,757	0.001	2	41
Ericsson Radio 4449 B12,B71	148.00	222	99,278	0.008	16	275
RFS APXVAARR24_43-U-NA20	148.00	384	171,589	0.013	27	476
Round Sector Frame	148.00	900	402,477	0.030	64	1,116
Motorola PTP54600	125.00	24	8,805	0.001	1	30
Standoffs	102.00	150	42,575	0.003	7	186
Generic 10' Dipole	85.00	30	6,815	0.001	1	37
Standoffs	80.00	75	15,822	0.001	3	93
PCTEL GPS-TMG-HR-26N	76.00	1	119	0.000	0	1
Standoffs	76.00	75	14,861	0.001	2	93
		47,398	13,207,185	1.000	2,092	58,799

LoadCase (0.9 - 0.2Sds) * DL + E — Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
10	188.00	884	529,293	0.040	84	760
9	170.00	1,901	1,007,06	0.076	160	1,634
8	150.00	2,979	1,354,02	0.103	214	2,560
7	130.00	3,682	1,405,55	0.106	223	3,165
6	110.00	3,813	1,186,94	0.090	188	3,278
5	90.00	4,291	1,045,20	0.079	166	3,688
4	70.00	4,584	821,490	0.062	130	3,940
3	50.00	4,980	591,783	0.045	94	4,280
2	30.00	5,321	338,818	0.026	54	4,573
1	10.00	5,543	92,259	0.007	15	4,764
KMW AM-X-WM-17-65-00T (48")	194.00	43	26,513	0.002	4	37
KMW TTA (HB-X-WM-17-65-00T)	194.00	48	29,687	0.002	5	41
Alcatel-Lucent 1900 MHz 4X45 RRH	192.00	180	110,617	0.008	18	155

Equivalent Lateral Force Method

Alcatel-Lucent 800 MHz RRH	185.00	159	93,379	0.007	15	137
Powerwave Allgon P40-16-XLPP-RRR	185.00	128	75,173	0.006	12	110
RFS APXVSPP18-C-A20	185.00	57	33,476	0.003	5	49
Round Sector Frames	185.00	900	528,561	0.040	84	774
Flat Light Sector Frames	178.00	1,200	672,319	0.051	106	1,031
Rymsa MGD3-800TX	178.00	46	25,884	0.002	4	40
Alcatel-Lucent B13 RRH4x30-4R 700U	177.00	172	95,482	0.007	15	147
Alcatel-Lucent B66 RRH4x45	177.00	201	111,841	0.008	18	173
Alcatel-Lucent PCS B25 RRH2x60/4x30	177.00	165	91,810	0.007	15	142
Amphenol Antel BXA-70063-6BF-EDIN-X	177.00	19	10,683	0.001	2	17
Andrew SBNHH-1D65B	177.00	304	169,264	0.013	27	261
Antel BXA-80080/4CF	177.00	43	23,871	0.002	4	37
Powerwave Allgon P65-16-XL-2	177.00	33	18,362	0.001	3	28
RFS DB-T1-6Z-8AB-0Z	177.00	88	48,965	0.004	8	76
RFS FD9R6004/2C-3L	177.00	8	4,340	0.000	1	7
Swedcom SLCP 2x6014	177.00	20	11,128	0.001	2	17
CCI OPA-65R-LCUU-H6	167.00	146	75,668	0.006	12	125
CCI OPA-65R-LCUU-H8	167.00	88	45,608	0.003	7	76
CCI OPA65R-BU6A	167.00	115	59,602	0.005	9	99
CCI OPA65R-BU8B	167.00	69	35,761	0.003	6	59
CCI TPA65R-BU6D	167.00	135	69,967	0.005	11	116
CCI TPA65R-BU8D	167.00	83	42,758	0.003	7	71
Ericsson Radio 8843 - B2 + B66A (w/ prot	167.00	225	116,612	0.009	18	193
Ericsson RRUS 11 (Band 12) (55 lb)	167.00	165	85,515	0.006	14	142
Ericsson RRUS 4478 B14	167.00	178	92,357	0.007	15	153
Ericsson RRUS 4478 B5	167.00	180	93,134	0.007	15	154
Ericsson RRUS E2 B29	167.00	180	93,289	0.007	15	155
Ericsson RRUS-32 (77 lbs)	167.00	231	119,722	0.009	19	199
Kaelus DBCT108F1V92-1	167.00	83	43,224	0.003	7	72
Powerwave Allgon TT19-08BP111-001	167.00	96	49,754	0.004	8	83
Raycap DC6-48-60-0-8F (24" Height)	167.00	33	16,999	0.001	3	28
Raycap DC6-48-60-18-8F ("Squid")	167.00	64	32,962	0.002	5	55
Raycap DC6-48-60-18-8F ("Squid")	167.00	32	16,481	0.001	3	27
Round Sector Frames	167.00	900	466,447	0.035	74	774
Kathrein Scala 742 213	157.00	66	31,721	0.002	5	57
Ericsson AIR 21, 1.3 M, B2A B4P	148.00	249	111,352	0.008	18	214
Ericsson AIR-32 B2A/B66Aa	148.00	397	177,358	0.013	28	341
Ericsson KRY 112 144/1	148.00	33	14,757	0.001	2	28
Ericsson Radio 4449 B12,B71	148.00	222	99,278	0.008	16	191
RFS APXVAARR24_43-U-NA20	148.00	384	171,589	0.013	27	330
Round Sector Frame	148.00	900	402,477	0.030	64	774
Motorola PTP54600	125.00	24	8,805	0.001	1	21
Standoffs	102.00	150	42,575	0.003	7	129
Generic 10' Dipole	85.00	30	6,815	0.001	1	26
Standoffs	80.00	75	15,822	0.001	3	64
PCTEL GPS-TMG-HR-26N	76.00	1	119	0.000	0	1
Standoffs	76.00	75	14,861	0.001	2	64
		47,398	13,207,185	1.000	2,092	40,737

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	0.94
Redundancy Factor (p):	1.30

LoadCase (1.2 + 0.2Sds) * DL + E Seismic

Section	Height Above Base (ft)	Weight (lb)	a	b	c	S_{az}	Horizontal Force (lb)	Vertical Force (lb)
10	188.00	884	1.739	1.275	0.876	0.327	125	1,096
9	170.00	1,901	1.422	0.326	0.455	0.165	136	2,359
8	150.00	2,979	1.107	-0.066	0.191	0.065	84	3,695
7	130.00	3,682	0.831	-0.117	0.063	0.034	54	4,568
6	110.00	3,813	0.595	-0.051	0.014	0.039	64	4,731
5	90.00	4,291	0.399	0.019	0.007	0.047	88	5,323
4	70.00	4,584	0.241	0.057	0.018	0.046	91	5,686
3	50.00	4,980	0.123	0.070	0.034	0.038	82	6,178
2	30.00	5,321	0.044	0.071	0.042	0.031	70	6,601
1	10.00	5,543	0.005	0.044	0.025	0.018	42	6,876
KMW AM-X-WM-17-65-00T (48")	194.00	43	1.852	1.784	1.069	0.397	7	53
KMW TTA (HB-X-WM-17-65-00T)	194.00	48	1.852	1.784	1.069	0.397	8	59
Alcatel-Lucent 1900 MHz 4X45	192.00	180	1.814	1.601	1.001	0.373	29	223
Alcatel-Lucent 800 MHz RRH	185.00	159	1.684	1.062	0.790	0.295	20	197
Powerwave Allgon P40-16-XLPP-	185.00	128	1.684	1.062	0.790	0.295	16	159
RFS APXVSPP18-C-A20	185.00	57	1.684	1.062	0.790	0.295	7	71
Round Sector Frames	185.00	900	1.684	1.062	0.790	0.295	115	1,116
Flat Light Sector Frames	178.00	1,200	1.559	0.657	0.616	0.228	119	1,489
Rymsa MGD3-800TX	178.00	46	1.559	0.657	0.616	0.228	5	57
Alcatel-Lucent B13 RRH4x30-4R	177.00	172	1.541	0.608	0.593	0.220	16	213
Alcatel-Lucent B66 RRH4x45	177.00	201	1.541	0.608	0.593	0.220	19	249
Alcatel-Lucent PCS B25	177.00	165	1.541	0.608	0.593	0.220	16	205
Amphenol Antel BXA-70063-6BF-	177.00	19	1.541	0.608	0.593	0.220	2	24
Andrew SBNHH-1D65B	177.00	304	1.541	0.608	0.593	0.220	29	377
Antel BXA-80080/4CF	177.00	43	1.541	0.608	0.593	0.220	4	53
Powerwave Allgon P65-16-XL-2	177.00	33	1.541	0.608	0.593	0.220	3	41
RFS DB-T1-6Z-8AB-0Z	177.00	88	1.541	0.608	0.593	0.220	8	109
RFS FD9R6004/2C-3L	177.00	8	1.541	0.608	0.593	0.220	1	10
Swedcom SLCP 2x6014	177.00	20	1.541	0.608	0.593	0.220	2	25
CCI OPA-65R-LCUU-H6	167.00	146	1.372	0.233	0.404	0.145	9	181
CCI OPA-65R-LCUU-H8	167.00	88	1.372	0.233	0.404	0.145	6	109
CCI OPA65R-BU6A	167.00	115	1.372	0.233	0.404	0.145	7	143
CCI OPA65R-BU8B	167.00	69	1.372	0.233	0.404	0.145	4	86
CCI TPA65R-BU6D	167.00	135	1.372	0.233	0.404	0.145	8	167
CCI TPA65R-BU8D	167.00	83	1.372	0.233	0.404	0.145	5	102
Ericsson Radio 8843 - B2 + B66A	167.00	225	1.372	0.233	0.404	0.145	14	279
Ericsson RRUS 11 (Band 12) (55	167.00	165	1.372	0.233	0.404	0.145	10	205
Ericsson RRUS 4478 B14	167.00	178	1.372	0.233	0.404	0.145	11	221
Ericsson RRUS 4478 B5	167.00	180	1.372	0.233	0.404	0.145	11	223
Ericsson RRUS E2 B29	167.00	180	1.372	0.233	0.404	0.145	11	223

Site Number: 302470 Code: ANSI/TIA-222-G

Site Name: Ansonia Wakelee, CT Engineering Number: OAA749428_C3_01 6/21/2019 10:20:21 AM

Customer: AT&T MOBILITY

Equivalent Modal Analysis Method

Ericsson RRUS-32 (77 lbs)	167.00	231	1.372	0.233	0.404	0.145	15	287
Kaelus DBCT108F1V92-1	167.00	83	1.372	0.233	0.404	0.145	5	103
Powerwave Allgon TT19-	167.00	96	1.372	0.233	0.404	0.145	6	119
Raycap DC6-48-60-0-8F (24"	167.00	33	1.372	0.233	0.404	0.145	2	41
Raycap DC6-48-60-18-8F ("Squid")	167.00	64	1.372	0.233	0.404	0.145	4	79
Raycap DC6-48-60-18-8F ("Squid")	167.00	32	1.372	0.233	0.404	0.145	2	39
Round Sector Frames	167.00	900	1.372	0.233	0.404	0.145	57	1,116
Kathrein Scala 742 213	157.00	66	1.213	0.017	0.264	0.091	3	82
Ericsson AIR 21, 1.3 M, B2A B4P	148.00	249	1.078	-0.082	0.173	0.059	6	309
Ericsson AIR-32 B2A/B66Aa	148.00	397	1.078	-0.082	0.173	0.059	10	492
Ericsson KRY 112 144/1	148.00	33	1.078	-0.082	0.173	0.059	1	41
Ericsson Radio 4449 B12,B71	148.00	222	1.078	-0.082	0.173	0.059	6	275
RFS APXVAARR24_43-U-NA20	148.00	384	1.078	-0.082	0.173	0.059	10	476
Round Sector Frame	148.00	900	1.078	-0.082	0.173	0.059	23	1,116
Motorola PTP54600	125.00	24	0.769	-0.105	0.045	0.033	0	30
Standoffs	102.00	150	0.512	-0.020	0.008	0.043	3	186
Generic 10' Dipole	85.00	30	0.355	0.031	0.008	0.048	1	37
Standoffs	80.00	75	0.315	0.042	0.011	0.048	2	93
PCTEL GPS-TMG-HR-26N	76.00	1	0.284	0.049	0.014	0.047	0	1
Standoffs	76.00	75	0.284	0.049	0.014	0.047	2	93
		47,398	72.185	22.205	23.855	9.135	1,519	58,799

LoadCase (0.9 - 0.2Sds) * DL + E Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	a	b	c	S_{az}	Horizontal Force (lb)	Vertical Force (lb)
10	188.00	884	1.739	1.275	0.876	0.327	125	760
9	170.00	1,901	1.422	0.326	0.455	0.165	136	1,634
8	150.00	2,979	1.107	-0.066	0.191	0.065	84	2,560
7	130.00	3,682	0.831	-0.117	0.063	0.034	54	3,165
6	110.00	3,813	0.595	-0.051	0.014	0.039	64	3,278
5	90.00	4,291	0.399	0.019	0.007	0.047	88	3,688
4	70.00	4,584	0.241	0.057	0.018	0.046	91	3,940
3	50.00	4,980	0.123	0.070	0.034	0.038	82	4,280
2	30.00	5,321	0.044	0.071	0.042	0.031	70	4,573
1	10.00	5,543	0.005	0.044	0.025	0.018	42	4,764
KMW AM-X-WM-17-65-00T (48")	194.00	43	1.852	1.784	1.069	0.397	7	37
KMW TTA (HB-X-WM-17-65-00T)	194.00	48	1.852	1.784	1.069	0.397	8	41
Alcatel-Lucent 1900 MHz 4X45	192.00	180	1.814	1.601	1.001	0.373	29	155
Alcatel-Lucent 800 MHz RRH	185.00	159	1.684	1.062	0.790	0.295	20	137
Powerwave Allgon P40-16-XLPP-	185.00	128	1.684	1.062	0.790	0.295	16	110
RFS APXVSPP18-C-A20	185.00	57	1.684	1.062	0.790	0.295	7	49
Round Sector Frames	185.00	900	1.684	1.062	0.790	0.295	115	774
Flat Light Sector Frames	178.00	1,200	1.559	0.657	0.616	0.228	119	1,031
Rymsa MGD3-800TX	178.00	46	1.559	0.657	0.616	0.228	5	40
Alcatel-Lucent B13 RRH4x30-4R	177.00	172	1.541	0.608	0.593	0.220	16	147
Alcatel-Lucent B66 RRH4x45	177.00	201	1.541	0.608	0.593	0.220	19	173
Alcatel-Lucent PCS B25	177.00	165	1.541	0.608	0.593	0.220	16	142
Amphenol Antel BXA-70063-6BF-	177.00	19	1.541	0.608	0.593	0.220	2	17
Andrew SBNHH-1D65B	177.00	304	1.541	0.608	0.593	0.220	29	261
Antel BXA-80080/4CF	177.00	43	1.541	0.608	0.593	0.220	4	37
Powerwave Allgon P65-16-XL-2	177.00	33	1.541	0.608	0.593	0.220	3	28
RFS DB-T1-6Z-8AB-0Z	177.00	88	1.541	0.608	0.593	0.220	8	76
RFS FD9R6004/2C-3L	177.00	8	1.541	0.608	0.593	0.220	1	7
Swedcom SLCP 2x6014	177.00	20	1.541	0.608	0.593	0.220	2	17
CCI OPA-65R-LCUU-H6	167.00	146	1.372	0.233	0.404	0.145	9	125
CCI OPA-65R-LCUU-H8	167.00	88	1.372	0.233	0.404	0.145	6	76
CCI OPA65R-BU6A	167.00	115	1.372	0.233	0.404	0.145	7	99
CCI OPA65R-BU8B	167.00	69	1.372	0.233	0.404	0.145	4	59
CCI TPA65R-BU6D	167.00	135	1.372	0.233	0.404	0.145	8	116
CCI TPA65R-BU8D	167.00	83	1.372	0.233	0.404	0.145	5	71
Ericsson Radio 8843 - B2 + B66A	167.00	225	1.372	0.233	0.404	0.145	14	193
Ericsson RRUS 11 (Band 12) (55	167.00	165	1.372	0.233	0.404	0.145	10	142

Equivalent Modal Analysis Method

Ericsson RRUS 4478 B14	167.00	178	1.372	0.233	0.404	0.145	11	153
Ericsson RRUS 4478 B5	167.00	180	1.372	0.233	0.404	0.145	11	154
Ericsson RRUS E2 B29	167.00	180	1.372	0.233	0.404	0.145	11	155
Ericsson RRUS-32 (77 lbs)	167.00	231	1.372	0.233	0.404	0.145	15	199
Kaelus DBCT108F1V92-1	167.00	83	1.372	0.233	0.404	0.145	5	72
Powerwave Allgon TT19-	167.00	96	1.372	0.233	0.404	0.145	6	83
Raycap DC6-48-60-0-8F (24"	167.00	33	1.372	0.233	0.404	0.145	2	28
Raycap DC6-48-60-18-8F ("Squid")	167.00	64	1.372	0.233	0.404	0.145	4	55
Raycap DC6-48-60-18-8F ("Squid")	167.00	32	1.372	0.233	0.404	0.145	2	27
Round Sector Frames	167.00	900	1.372	0.233	0.404	0.145	57	774
Kathrein Scala 742 213	157.00	66	1.213	0.017	0.264	0.091	3	57
Ericsson AIR 21, 1.3 M, B2A B4P	148.00	249	1.078	-0.082	0.173	0.059	6	214
Ericsson AIR-32 B2A/B66Aa	148.00	397	1.078	-0.082	0.173	0.059	10	341
Ericsson KRY 112 144/1	148.00	33	1.078	-0.082	0.173	0.059	1	28
Ericsson Radio 4449 B12,B71	148.00	222	1.078	-0.082	0.173	0.059	6	191
RFS APXVAARR24_43-U-NA20	148.00	384	1.078	-0.082	0.173	0.059	10	330
Round Sector Frame	148.00	900	1.078	-0.082	0.173	0.059	23	774
Motorola PTP54600	125.00	24	0.769	-0.105	0.045	0.033	0	21
Standoffs	102.00	150	0.512	-0.020	0.008	0.043	3	129
Generic 10' Dipole	85.00	30	0.355	0.031	0.008	0.048	1	26
Standoffs	80.00	75	0.315	0.042	0.011	0.048	2	64
PCTEL GPS-TMG-HR-26N	76.00	1	0.284	0.049	0.014	0.047	0	1
Standoffs	76.00	75	0.284	0.049	0.014	0.047	2	64
		47,398	72.185	22.205	23.855	9.135	1,519	40,737

Force/Stress Summary

Section: 1 15N25 Bot Elev (ft): 0.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 8" DIA PIPE	-380.24	1.2D + 1.6W Normal	9.77	100	100	100	40.7	50.0	510.32	0	0	0.00	0.00	74	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 4X4X0.25	-12.49	1.2D + 1.6W 90 deg	23.62	50	50	50	178.3	43.5	13.79	1	1	17.89	23.40	90	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 8" DIA PIPE	341.69	0.9D + 1.6W 60 deg	50	65	576.00	0	0	0.00	0.00		59	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG SAE - 4X4X0.25	12.28	1.2D + 1.6W 90 deg	50	65	62.93	1	1	17.89	14.14	17.98	86	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	310.00	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	354.19	1.2D + 1.6W Normal	0.00	0		
Bot Tension	341.69	0.9D + 1.6W 60 deg	605.74	68	10	1" A354-BC
Bot Compression	390.35	1.2D + 1.6W Normal	605.74	78	10	1" A354-BC

Section: 2 14N46 Bot Elev (ft): 20.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PSP - ROHN 8 EHS	-342.66	1.2D + 1.6W Normal	9.77	100	100	100	40.1	50.0	388.80	0	0	0.00	0.00	88	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 4X4X0.25	-12.02	1.2D + 1.6W 90 deg	22.69	50	50	50	171.3	43.5	14.94	1	1	17.89	23.40	80	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PSP - ROHN 8 EHS	306.61	1.2D + 1.6W 60 deg	50	65	437.40	0	0	0.00	0.00		70	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG SAE - 4X4X0.25	11.81	1.2D + 1.6W 90 deg	50	65	62.93	1	1	17.89	14.14	17.98	83	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	275.76	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	314.28	1.2D + 1.6W Normal	0.00	0		
Bot Tension	310.00	0.9D + 1.6W 60 deg	436.14	71	8	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 3 13N88 Bot Elev (ft): 40.00 Height (ft): 20.000

Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PSP - ROHN 8 EHS	-303.33	1.2D + 1.6W Normal	9.77	100	100	100	40.1	50.0	388.78	0	0	0.00	0.00	78	Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.25	-10.79	1.2D + 1.6W 90 deg	20.87	50	50	50	182.0	50.0	11.52	1	1	17.89	23.40	93	Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	PSP - ROHN 8 EHS	276.18	0.9D + 1.6W 60 deg	50	65	437.40	0	0	0.00	0.00		63	Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.25	10.64	1.2D + 1.6W 90 deg	50	65	53.79	1	1	17.89	14.14	17.98	75	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	242.14	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	275.19	1.2D + 1.6W Normal	0.00	0		
Bot Tension	275.76	0.9D + 1.6W 60 deg	436.14	63	8	1 A325
Bot Compression	0.00		0.00	0		

Section: 4 12N50 Bot Elev (ft): 60.00 Height (ft): 20.000

Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 6" DIA PIPE	-263.75	1.2D + 1.6W Normal	9.77	100	100	100	53.4	50.0	306.88	0	0	0.00	0.00	85	Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.25	-10.47	1.2D + 1.6W 90 deg	19.04	50	50	50	166.1	50.0	13.84	1	1	17.89	23.40	75	Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	PX - 6" DIA PIPE	242.44	0.9D + 1.6W 60 deg	50	65	378.00	0	0	0.00	0.00		64	Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.25	10.45	1.2D + 1.6W 90 deg	50	65	53.79	1	1	17.89	14.14	17.98	73	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	205.81	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	233.66	1.2D + 1.6W Normal	0.00	0		
Bot Tension	242.14	0.9D + 1.6W 60 deg	436.14	56	8	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 5 11N223 Bot Elev (ft): 80.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PSP - ROHN 6 EHS	-224.94	1.2D + 1.6W Normal	6.51	100	100	100	35.1	50.0	275.92	0	0	0.00	0.00	81	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.25	-9.53	1.2D + 1.6W 90 deg	15.90	50	50	50	161.2	50.0	12.52	1	1	17.89	23.40	76	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PSP - ROHN 6 EHS	206.12	0.9D + 1.6W 60 deg	50	65	301.95	0	0	0.00	0.00		68	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG SAE - 3X3X0.25	9.36	1.2D + 1.6W 90 deg	50	65	44.65	1	1	17.89	14.14	14.93	66	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	167.05	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	189.80	1.2D + 1.6W Normal	0.00	0		
Bot Tension	205.81	0.9D + 1.6W 60 deg	327.10	63	6	1 A325
Bot Compression	0.00		0.00	0		

Section: 6 10N152 Bot Elev (ft): 100.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 5" DIA PIPE	-181.75	1.2D + 1.6W Normal	6.51	100	100	100	42.5	50.0	240.98	0	0	0.00	0.00	75	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.25	-8.05	1.2D + 1.6W 90 deg	14.13	50	50	50	172.8	36.0	9.01	1	1	12.43	17.40	89	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 5" DIA PIPE	165.50	1.2D + 1.6W 60 deg	50	65	274.95	0	0	0.00	0.00		60	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.25	8.19	1.2D + 1.6W 90 deg	36	58	32.71	1	1	12.43	10.44	11.83	78	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	128.84	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	147.23	1.2D + 1.6W Normal	0.00	0		
Bot Tension	167.05	0.9D + 1.6W 60 deg	327.10	51	6	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 7 9N216 Bot Elev (ft): 120.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 5" DIA PIPE	-138.44	1.2D + 1.6W Normal	6.51	100	100	100	42.5	50.0	240.99	0	0	0.00	0.00	57	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.25	-7.85	1.2D + 1.6W 90 deg	12.33	50	50	50	150.8	36.0	11.83	1	1	12.43	17.40	66	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 5" DIA PIPE	127.52	1.2D + 1.6W 60 deg	50	65	274.95	0	0	0.00	0.00		46	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.25	8.12	1.2D + 1.6W 90 deg	36	58	32.71	1	1	12.43	10.44	11.83	77	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	85.60	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	99.88	1.2D + 1.6W Normal	0.00	0		
Bot Tension	128.84	0.9D + 1.6W 60 deg	218.07	59	4	1 A325
Bot Compression	0.00		0.00	0		

Section: 8 A780252 Bot Elev (ft): 140.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 4" DIA PIPE	-92.99	1.2D + 1.6W Normal	4.88	100	100	100	39.6	50.0	176.95	0	0	0.00	0.00	52	Member X
HORIZ SAE - 2X2X0.125	-0.39	1.2D + 1.6W 60 deg	6.760	100	100	100	203.8	36.0	2.61	1	1	12.43	8.70	14	Member Z
DIAG SAE - 2X2X0.25	-6.79	1.2D + 1.6W 90 deg	9.848	50	50	50	151.1	36.0	9.30	1	1	12.43	17.40	73	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 4" DIA PIPE	85.81	0.9D + 1.6W 60 deg	50	65	198.45	0	0	0.00	0.00		43	Member
HORIZ SAE - 2X2X0.125	0.30	1.2D + 1.6W Normal	36	58	12.60	1	1	12.43	5.22	4.55	6	Blk Shear
DIAG SAE - 2X2X0.25	6.80	1.2D + 1.6W 90 deg	36	58	24.55	1	1	12.43	10.44	9.11	74	Blk Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	41.48	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	50.71	1.2D + 1.6W Normal	0.00	0		
Bot Tension	85.60	0.9D + 1.6W 60 deg	218.07	39	4	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 9 A780178 Bot Elev (ft): 160.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 3" DIA PIPE	-50.04	1.2D + 1.6W Normal	0.25	100	100	100	2.6	50.0	135.83	0	0	0.00	0.00	36	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2X2X0.1875	-6.58	1.2D + 1.6W 90 deg	7.798	50	50	50	119.1	36.0	10.98	2	1	24.85	26.10	59	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 3" DIA PIPE	41.18	0.9D + 1.6W 60 deg	50	65	135.90	0	0	0.00	0.00		30	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0.00	0	
DIAG SAE - 2X2X0.1875	6.50	1.2D + 1.6W 90 deg	36	58	18.74	2	1	24.85	20.88	12.34	52	Blk Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	3.94	0.9D + 1.6W 60 deg	0.00	0	0	
Top Compression	6.02	1.2D + 1.6W Normal	0.00	0		
Bot Tension	41.48	0.9D + 1.6W 60 deg	166.22	25	4	0.875" A325
Bot Compression	0.00		0.00	0		

Section: 10 A780178 Bot Elev (ft): 180.0 Height (ft): 16.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 2-1/2" DIA PIP	-5.92	1.2D + 1.6W Normal	0.25	100	100	100	3.2	50.0	76.62	0	0	0.00	0.00	7	Member X
HORIZ SAE - 2X2X0.125	-0.09	1.2D + 1.6W 90 deg	6.647	100	100	100	200.4	36.0	2.70	1	1	12.43	8.70	3	Member Z
DIAG SAE - 1.75X1.75X0.18	-1.56	1.2D + 1.6W 90 deg	7.758	50	50	50	135.7	36.0	7.62	1	1	12.43	13.05	20	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PST - 2-1/2" DIA PIP	4.01	0.9D + 1.6W 60 deg	50	65	76.68	0	0	0.00	0.00		5	Member
HORIZ SAE - 2X2X0.125	0.09	1.2D + 1.6W 60 deg	36	58	12.60	1	1	12.43	5.22	4.55	2	Blk Shear
DIAG SAE - 1.75X1.75X0.18	1.56	1.2D + 1.6W 90 deg	36	58	15.67	1	1	12.43	7.83	5.81	26	Blk Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	0.27	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	3.94	0.9D + 1.6W 60 deg	120.41	3	4	0.75" A325
Bot Compression	0.00		0.00	0		

Detailed Reactions

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal	**13.28**	**00.00**	**0**	**1**	**0.00**	**389.13**	**-40.35**	
	13.28	**00.00**	**120**	**1a**	**13.88**	**-166.12**	**-13.11**	
	13.28	**00.00**	**240**	**1b**	**-13.88**	**-166.12**	**-13.11**	
1.2D + 1.6W 60 deg	**13.28**	**00.00**	**0**	**1**	**-4.00**	**196.32**	**-19.82**	
	13.28	**00.00**	**120**	**1a**	**-19.16**	**196.10**	**6.45**	
	13.28	**00.00**	**240**	**1b**	**-31.53**	**-335.54**	**-18.20**	
1.2D + 1.6W 90 deg	**13.28**	**00.00**	**0**	**1**	**-4.77**	**18.97**	**-1.15**	
	13.28	**00.00**	**120**	**1a**	**-30.48**	**329.24**	**14.92**	
	13.28	**00.00**	**240**	**1b**	**-28.75**	**-291.33**	**-13.77**	
0.9D + 1.6W Normal	**13.28**	**00.00**	**0**	**1**	**0.00**	**383.91**	**-40.04**	
	13.28	**00.00**	**120**	**1a**	**14.14**	**-170.62**	**-13.27**	
	13.28	**00.00**	**240**	**1b**	**-14.14**	**-170.62**	**-13.27**	
0.9D + 1.6W 60 deg	**13.28**	**00.00**	**0**	**1**	**-4.00**	**191.35**	**-19.51**	
	13.28	**00.00**	**120**	**1a**	**-18.90**	**191.13**	**6.29**	
	13.28	**00.00**	**240**	**1b**	**-31.78**	**-339.82**	**-18.35**	
0.9D + 1.6W 90 deg	**13.28**	**00.00**	**0**	**1**	**-4.78**	**14.23**	**-0.85**	
	13.28	**00.00**	**120**	**1a**	**-30.22**	**324.09**	**14.76**	
	13.28	**00.00**	**240**	**1b**	**-29.00**	**-295.66**	**-13.91**	
1.2D + 1.0Di + 1.0Wi Normal	**13.28**	**00.00**	**0**	**1**	**0.00**	**188.44**	**-14.43**	
	13.28	**00.00**	**120**	**1a**	**5.10**	**-6.51**	**-4.81**	
	13.28	**00.00**	**240**	**1b**	**-5.10**	**-6.51**	**-4.81**	
1.2D + 1.0Di + 1.0Wi 60 deg	**13.28**	**00.00**	**0**	**1**	**-1.56**	**122.44**	**-7.22**	
	13.28	**00.00**	**120**	**1a**	**-7.03**	**122.39**	**2.26**	
	13.28	**00.00**	**240**	**1b**	**-11.83**	**-69.42**	**-6.83**	
1.2D + 1.0Di + 1.0Wi 90 deg	**13.28**	**00.00**	**0**	**1**	**-1.82**	**58.47**	**-0.27**	
	13.28	**00.00**	**120**	**1a**	**-11.16**	**169.66**	**5.40**	
	13.28	**00.00**	**240**	**1b**	**-10.72**	**-52.72**	**-5.13**	
(1.2 + 0.2Sds) * DL + E Normal M1	**13.28**	**00.00**	**0**	**1**	**0.00**	**33.24**	**-2.52**	
	13.28	**00.00**	**120**	**1a**	**-0.57**	**12.09**	**0.24**	
	13.28	**00.00**	**240**	**1b**	**0.57**	**12.09**	**0.24**	
(1.2 + 0.2Sds) * DL + E Normal M2	**13.28**	**00.00**	**0**	**1**	**0.00**	**29.64**	**-2.17**	
	13.28	**00.00**	**120**	**1a**	**-0.71**	**13.89**	**0.35**	
	13.28	**00.00**	**240**	**1b**	**0.71**	**13.89**	**0.35**	
(1.2 + 0.2Sds) * DL + E 60 deg M1	**13.28**	**00.00**	**0**	**1**	**-0.08**	**26.19**	**-1.88**	
	13.28	**00.00**	**120**	**1a**	**-1.67**	**26.19**	**0.87**	
	13.28	**00.00**	**240**	**1b**	**-0.02**	**5.04**	**-0.01**	
(1.2 + 0.2Sds) * DL + E 60 deg M2	**13.28**	**00.00**	**0**	**1**	**-0.05**	**24.39**	**-1.71**	
	13.28	**00.00**	**120**	**1a**	**-1.51**	**24.39**	**0.81**	
	13.28	**00.00**	**240**	**1b**	**0.29**	**8.64**	**0.17**	
(1.2 + 0.2Sds) * DL + E 90 deg M1	**13.28**	**00.00**	**0**	**1**	**-0.09**	**19.14**	**-1.25**	
	13.28	**00.00**	**120**	**1a**	**-2.06**	**31.35**	**1.13**	
	13.28	**00.00**	**240**	**1b**	**0.11**	**6.93**	**0.12**	
(1.2 + 0.2Sds) * DL + E 90 deg M2	**13.28**	**00.00**	**0**	**1**	**-0.06**	**19.14**	**-1.25**	
	13.28	**00.00**	**120**	**1a**	**-1.79**	**28.24**	**1.00**	

	13.28	00.00	240	1b	0.38	10.04	0.25
(0.9 - 0.2Sds) * DL + E Normal M1	13.28	00.00	0	1	0.00	27.34	-2.13
	13.28	00.00	120	1a	-0.24	6.22	0.05
	13.28	00.00	240	1b	0.24	6.22	0.05
(0.9 - 0.2Sds) * DL + E Normal M2	13.28	00.00	0	1	0.00	23.75	-1.79
	13.28	00.00	120	1a	-0.38	8.02	0.16
	13.28	00.00	240	1b	0.38	8.02	0.16
(0.9 - 0.2Sds) * DL + E 60 deg M1	13.28	00.00	0	1	-0.08	20.30	-1.50
	13.28	00.00	120	1a	-1.34	20.30	0.68
	13.28	00.00	240	1b	-0.35	-0.82	-0.20
(0.9 - 0.2Sds) * DL + E 60 deg M2	13.28	00.00	0	1	-0.05	18.50	-1.33
	13.28	00.00	120	1a	-1.18	18.50	0.62
	13.28	00.00	240	1b	-0.05	2.78	-0.03
(0.9 - 0.2Sds) * DL + E 90 deg M1	13.28	00.00	0	1	-0.09	13.26	-0.87
	13.28	00.00	120	1a	-1.73	25.45	0.94
	13.28	00.00	240	1b	-0.22	1.07	-0.08
(0.9 - 0.2Sds) * DL + E 90 deg M2	13.28	00.00	0	1	-0.06	13.26	-0.87
	13.28	00.00	120	1a	-1.46	22.34	0.80
	13.28	00.00	240	1b	0.05	4.18	0.06
1.0D + 1.0W Service Normal	13.28	00.00	0	1	0.00	105.45	-10.60
	13.28	00.00	120	1a	2.75	-29.03	-2.84
	13.28	00.00	240	1b	-2.75	-29.03	-2.84
1.0D + 1.0W Service 60 deg	13.28	00.00	0	1	-1.00	58.82	-5.57
	13.28	00.00	120	1a	-5.33	58.76	1.92
	13.28	00.00	240	1b	-7.06	-70.18	-4.07
1.0D + 1.0W Service 90 deg	13.28	00.00	0	1	-1.18	15.80	-1.00
	13.28	00.00	120	1a	-8.11	91.08	4.00
	13.28	00.00	240	1b	-6.38	-59.48	-3.00

Max Uplift:	339.82 (kip)	Moment Ice:	2,588.81 (kip-ft)	Moment:	7,373.23 (kip-ft)	1.2D + 1.6W Normal	
Max Down:	389.13 (kip)	Total Down Ice:	175.41 (kip)	Total Down:	56.88 (kip)		
Max Shear:	40.35 (kip)	Total Shear Ice:	24.06 (kip)	Total Shear:	66.57 (kip)		

Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
97 mph Normal with No Ice	79.75	0.316	0.0195	0.5040	0.5040
97 mph Normal with No Ice	80.00	0.318	0.0195	0.5084	0.5084
97 mph Normal with No Ice	86.75	0.375	0.0194	0.4924	0.4928
97 mph Normal with No Ice	100.25	0.505	0.0235	0.6482	0.6482
97 mph Normal with No Ice	126.75	0.825	0.0256	0.7712	0.7716
97 mph Normal with No Ice	150.00	1.174	0.0286	0.9463	0.9463
97 mph Normal with No Ice	154.88	1.254	0.0283	0.9477	0.9481
97 mph Normal with No Ice	168.05	1.488	0.0302	1.0503	1.0507
97 mph Normal with No Ice	175.85	1.631	0.0295	1.0923	1.0927
97 mph Normal with No Ice	179.75	1.702	0.0288	1.1097	1.1097
97 mph Normal with No Ice	184.19	1.785	0.0294	1.0453	1.0457
97 mph Normal with No Ice	192.06	1.929	0.0293	1.0518	1.0522
97 mph 60 degree with No Ice	79.75	0.303	0.0276	0.4843	0.4844
97 mph 60 degree with No Ice	80.00	0.305	0.0277	0.4882	0.4883
97 mph 60 degree with No Ice	86.75	0.360	0.0288	0.4738	0.4742
97 mph 60 degree with No Ice	100.25	0.485	0.0361	0.6229	0.6230
97 mph 60 degree with No Ice	126.75	0.794	0.0470	0.7417	0.7421
97 mph 60 degree with No Ice	150.00	1.130	0.0586	0.9119	0.9125
97 mph 60 degree with No Ice	154.88	1.208	0.0603	0.9133	0.9134
97 mph 60 degree with No Ice	168.05	1.432	0.0765	1.0088	1.0100
97 mph 60 degree with No Ice	175.85	1.570	0.0856	0.9940	0.9977
97 mph 60 degree with No Ice	179.75	1.639	0.0869	1.0858	1.0874
97 mph 60 degree with No Ice	184.19	1.718	0.0860	1.0007	1.0042
97 mph 60 degree with No Ice	192.06	1.856	0.0861	1.0114	1.0144
97 mph 90 degree with No Ice	79.75	0.306	-0.0278	0.4839	0.4841
97 mph 90 degree with No Ice	80.00	0.308	-0.0279	0.4875	0.4877
97 mph 90 degree with No Ice	86.75	0.363	-0.0285	0.4790	0.4799
97 mph 90 degree with No Ice	100.25	0.489	-0.0353	0.6218	0.6221
97 mph 90 degree with No Ice	126.75	0.801	-0.0435	0.7471	0.7484
97 mph 90 degree with No Ice	150.00	1.140	-0.0486	0.9161	0.9164
97 mph 90 degree with No Ice	154.88	1.218	-0.0484	0.9238	0.9251
97 mph 90 degree with No Ice	168.05	1.445	-0.0538	1.0148	1.0154
97 mph 90 degree with No Ice	175.85	1.583	-0.0550	0.9845	0.9860
97 mph 90 degree with No Ice	179.75	1.652	-0.0552	1.0897	1.0901
97 mph 90 degree with No Ice	184.19	1.732	-0.0551	1.0103	1.0118
97 mph 90 degree with No Ice	192.06	1.872	-0.0551	1.0207	1.0222
97 mph Normal with No Ice (Reduced DL)	79.75	0.315	0.0194	0.5034	0.5034
97 mph Normal with No Ice (Reduced DL)	80.00	0.318	0.0195	0.5078	0.5078
97 mph Normal with No Ice (Reduced DL)	86.75	0.374	0.0193	0.4915	0.4919
97 mph Normal with No Ice (Reduced DL)	100.25	0.504	0.0234	0.6470	0.6470
97 mph Normal with No Ice (Reduced DL)	126.75	0.823	0.0256	0.7696	0.7700
97 mph Normal with No Ice (Reduced DL)	150.00	1.171	0.0285	0.9441	0.9441
97 mph Normal with No Ice (Reduced DL)	154.88	1.252	0.0282	0.9455	0.9459
97 mph Normal with No Ice (Reduced DL)	168.05	1.485	0.0301	1.0479	1.0481
97 mph Normal with No Ice (Reduced DL)	175.85	1.627	0.0294	1.0898	1.0902
97 mph Normal with No Ice (Reduced DL)	179.75	1.699	0.0287	1.1069	1.1069
97 mph Normal with No Ice (Reduced DL)	184.19	1.781	0.0293	1.0428	1.0432
97 mph Normal with No Ice (Reduced DL)	192.06	1.925	0.0292	1.0493	1.0497
97 mph 60 deg with No Ice (Reduced DL)	79.75	0.303	0.0275	0.4833	0.4834
97 mph 60 deg with No Ice (Reduced DL)	80.00	0.305	0.0276	0.4872	0.4872
97 mph 60 deg with No Ice (Reduced DL)	86.75	0.360	0.0287	0.4729	0.4733
97 mph 60 deg with No Ice (Reduced DL)	100.25	0.484	0.0360	0.6216	0.6218
97 mph 60 deg with No Ice (Reduced DL)	126.75	0.793	0.0469	0.7401	0.7405
97 mph 60 deg with No Ice (Reduced DL)	150.00	1.128	0.0584	0.9099	0.9104
97 mph 60 deg with No Ice (Reduced DL)	154.88	1.206	0.0601	0.9112	0.9114

97 mph 60 deg with No Ice (Reduced DL)	168.05	1.429	0.0763	1.0063	1.0077
97 mph 60 deg with No Ice (Reduced DL)	175.85	1.567	0.0854	0.9917	0.9953
97 mph 60 deg with No Ice (Reduced DL)	179.75	1.636	0.0866	1.0832	1.0848
97 mph 60 deg with No Ice (Reduced DL)	184.19	1.714	0.0858	0.9984	1.0018
97 mph 60 deg with No Ice (Reduced DL)	192.06	1.853	0.0859	1.0090	1.0121
97 mph 90 deg with No Ice (Reduced DL)	79.75	0.306	-0.0278	0.4833	0.4835
97 mph 90 deg with No Ice (Reduced DL)	80.00	0.308	-0.0279	0.4869	0.4871
97 mph 90 deg with No Ice (Reduced DL)	86.75	0.363	-0.0285	0.4782	0.4790
97 mph 90 deg with No Ice (Reduced DL)	100.25	0.489	-0.0353	0.6207	0.6209
97 mph 90 deg with No Ice (Reduced DL)	126.75	0.800	-0.0434	0.7455	0.7468
97 mph 90 deg with No Ice (Reduced DL)	150.00	1.138	-0.0485	0.9140	0.9143
97 mph 90 deg with No Ice (Reduced DL)	154.88	1.216	-0.0483	0.9217	0.9230
97 mph 90 deg with No Ice (Reduced DL)	168.05	1.442	-0.0537	1.0122	1.0130
97 mph 90 deg with No Ice (Reduced DL)	175.85	1.580	-0.0549	0.9821	0.9836
97 mph 90 deg with No Ice (Reduced DL)	179.75	1.649	-0.0550	1.0871	1.0874
97 mph 90 deg with No Ice (Reduced DL)	184.19	1.729	-0.0550	1.0079	1.0094
97 mph 90 deg with No Ice (Reduced DL)	192.06	1.868	-0.0550	1.0183	1.0198
50 mph Normal with 0.75 in Radial Ice	79.75	0.111	0.0072	0.1726	0.1726
50 mph Normal with 0.75 in Radial Ice	80.00	0.112	0.0072	0.1743	0.1743
50 mph Normal with 0.75 in Radial Ice	86.75	0.131	0.0071	0.1683	0.1685
50 mph Normal with 0.75 in Radial Ice	100.25	0.175	0.0087	0.2211	0.2211
50 mph Normal with 0.75 in Radial Ice	126.75	0.283	0.0095	0.2555	0.2557
50 mph Normal with 0.75 in Radial Ice	150.00	0.398	0.0105	0.3084	0.3084
50 mph Normal with 0.75 in Radial Ice	154.88	0.424	0.0104	0.3086	0.3088
50 mph Normal with 0.75 in Radial Ice	168.05	0.499	0.0110	0.3388	0.3389
50 mph Normal with 0.75 in Radial Ice	175.85	0.545	0.0107	0.3480	0.3482
50 mph Normal with 0.75 in Radial Ice	179.75	0.568	0.0107	0.3564	0.3564
50 mph Normal with 0.75 in Radial Ice	184.19	0.595	0.0106	0.3361	0.3363
50 mph Normal with 0.75 in Radial Ice	192.06	0.641	0.0106	0.3379	0.3381
50 mph 60 deg with 0.75 in Radial Ice	79.75	0.110	0.0083	0.1760	0.1760
50 mph 60 deg with 0.75 in Radial Ice	80.00	0.111	0.0084	0.1773	0.1773
50 mph 60 deg with 0.75 in Radial Ice	86.75	0.130	0.0084	0.1659	0.1661
50 mph 60 deg with 0.75 in Radial Ice	100.25	0.174	0.0104	0.2189	0.2189
50 mph 60 deg with 0.75 in Radial Ice	126.75	0.280	0.0123	0.2518	0.2521
50 mph 60 deg with 0.75 in Radial Ice	150.00	0.392	0.0141	0.3034	0.3034
50 mph 60 deg with 0.75 in Radial Ice	154.88	0.418	0.0141	0.3033	0.3035
50 mph 60 deg with 0.75 in Radial Ice	168.05	0.492	0.0160	0.3339	0.3339
50 mph 60 deg with 0.75 in Radial Ice	175.85	0.538	0.0166	0.3285	0.3289
50 mph 60 deg with 0.75 in Radial Ice	179.75	0.560	0.0167	0.3538	0.3539
50 mph 60 deg with 0.75 in Radial Ice	184.19	0.586	0.0166	0.3291	0.3295
50 mph 60 deg with 0.75 in Radial Ice	192.06	0.632	0.0166	0.3326	0.3329
50 mph 90 deg with 0.75 in Radial Ice	79.75	0.110	-0.0098	0.1741	0.1742
50 mph 90 deg with 0.75 in Radial Ice	80.00	0.111	-0.0098	0.1752	0.1752
50 mph 90 deg with 0.75 in Radial Ice	86.75	0.130	-0.0099	0.1668	0.1671
50 mph 90 deg with 0.75 in Radial Ice	100.25	0.174	-0.0122	0.2167	0.2167
50 mph 90 deg with 0.75 in Radial Ice	126.75	0.280	-0.0146	0.2523	0.2528
50 mph 90 deg with 0.75 in Radial Ice	150.00	0.394	-0.0162	0.3039	0.3040
50 mph 90 deg with 0.75 in Radial Ice	154.88	0.419	-0.0161	0.3058	0.3062
50 mph 90 deg with 0.75 in Radial Ice	168.05	0.494	-0.0176	0.3342	0.3343
50 mph 90 deg with 0.75 in Radial Ice	175.85	0.539	-0.0178	0.3263	0.3268
50 mph 90 deg with 0.75 in Radial Ice	179.75	0.562	-0.0178	0.3545	0.3547
50 mph 90 deg with 0.75 in Radial Ice	184.19	0.588	-0.0178	0.3308	0.3313
50 mph 90 deg with 0.75 in Radial Ice	192.06	0.634	-0.0177	0.3338	0.3343
Seismic Normal M1	79.75	0.012	0.0008	0.0203	0.0204
Seismic Normal M1	80.00	0.012	0.0008	0.0204	0.0204
Seismic Normal M1	86.75	0.015	0.0008	0.0204	0.0205
Seismic Normal M1	100.25	0.020	0.0010	0.0270	0.0270
Seismic Normal M1	126.75	0.034	0.0011	0.0332	0.0332
Seismic Normal M1	150.00	0.049	0.0012	0.0419	0.0419
Seismic Normal M1	154.88	0.053	0.0011	0.0421	0.0421
Seismic Normal M1	168.05	0.063	0.0012	0.0469	0.0469
Seismic Normal M1	175.85	0.069	0.0011	0.0469	0.0469

Seismic Normal M1	179.75	0.072	0.0011	0.0507	0.0507
Seismic Normal M1	184.19	0.076	0.0011	0.0463	0.0464
Seismic Normal M1	192.06	0.083	0.0010	0.0469	0.0469
Seismic Normal M2	79.75	0.009	0.0005	0.0153	0.0153
Seismic Normal M2	80.00	0.009	0.0005	0.0154	0.0154
Seismic Normal M2	86.75	0.011	0.0005	0.0156	0.0157
Seismic Normal M2	100.25	0.015	0.0006	0.0204	0.0204
Seismic Normal M2	126.75	0.026	0.0007	0.0270	0.0270
Seismic Normal M2	150.00	0.039	0.0007	0.0358	0.0358
Seismic Normal M2	154.88	0.042	0.0007	0.0363	0.0363
Seismic Normal M2	168.05	0.051	0.0008	0.0421	0.0422
Seismic Normal M2	175.85	0.056	0.0007	0.0423	0.0423
Seismic Normal M2	179.75	0.059	0.0007	0.0478	0.0478
Seismic Normal M2	184.19	0.063	0.0007	0.0420	0.0420
Seismic Normal M2	192.06	0.069	0.0007	0.0428	0.0428
Seismic 60 deg M1	79.75	0.012	0.0008	0.0213	0.0213
Seismic 60 deg M1	80.00	0.012	0.0008	0.0214	0.0214
Seismic 60 deg M1	86.75	0.015	0.0008	0.0205	0.0205
Seismic 60 deg M1	100.25	0.020	0.0010	0.0272	0.0272
Seismic 60 deg M1	126.75	0.034	0.0011	0.0333	0.0333
Seismic 60 deg M1	150.00	0.049	0.0012	0.0413	0.0413
Seismic 60 deg M1	154.88	0.053	0.0011	0.0417	0.0417
Seismic 60 deg M1	168.05	0.063	0.0012	0.0470	0.0470
Seismic 60 deg M1	175.85	0.069	0.0011	0.0466	0.0466
Seismic 60 deg M1	179.75	0.072	-0.0011	0.0506	0.0506
Seismic 60 deg M1	184.19	0.076	-0.0011	0.0462	0.0462
Seismic 60 deg M1	192.06	0.083	-0.0010	0.0471	0.0471
Seismic 60 deg M2	79.75	0.009	0.0005	0.0160	0.0160
Seismic 60 deg M2	80.00	0.009	0.0005	0.0160	0.0160
Seismic 60 deg M2	86.75	0.011	0.0005	0.0157	0.0157
Seismic 60 deg M2	100.25	0.015	0.0006	0.0207	0.0207
Seismic 60 deg M2	126.75	0.026	0.0007	0.0271	0.0271
Seismic 60 deg M2	150.00	0.039	0.0007	0.0352	0.0352
Seismic 60 deg M2	154.88	0.042	0.0007	0.0359	0.0359
Seismic 60 deg M2	168.05	0.051	-0.0007	0.0422	0.0422
Seismic 60 deg M2	175.85	0.056	-0.0007	0.0420	0.0420
Seismic 60 deg M2	179.75	0.059	-0.0007	0.0477	0.0477
Seismic 60 deg M2	184.19	0.063	-0.0007	0.0419	0.0419
Seismic 60 deg M2	192.06	0.069	-0.0007	0.0429	0.0429
Seismic 90 deg M1	79.75	0.012	-0.0009	0.0210	0.0210
Seismic 90 deg M1	80.00	0.012	-0.0009	0.0211	0.0211
Seismic 90 deg M1	86.75	0.015	-0.0009	0.0205	0.0206
Seismic 90 deg M1	100.25	0.020	-0.0012	0.0269	0.0269
Seismic 90 deg M1	126.75	0.034	-0.0013	0.0333	0.0333
Seismic 90 deg M1	150.00	0.049	-0.0014	0.0417	0.0417
Seismic 90 deg M1	154.88	0.053	-0.0013	0.0422	0.0422
Seismic 90 deg M1	168.05	0.063	-0.0014	0.0470	0.0470
Seismic 90 deg M1	175.85	0.069	-0.0013	0.0470	0.0470
Seismic 90 deg M1	179.75	0.072	-0.0013	0.0503	0.0503
Seismic 90 deg M1	184.19	0.076	-0.0012	0.0464	0.0464
Seismic 90 deg M1	192.06	0.083	-0.0012	0.0470	0.0470
Seismic 90 deg M2	79.75	0.009	-0.0006	0.0158	0.0158
Seismic 90 deg M2	80.00	0.009	-0.0006	0.0158	0.0158
Seismic 90 deg M2	86.75	0.011	-0.0006	0.0157	0.0157
Seismic 90 deg M2	100.25	0.015	-0.0007	0.0205	0.0205
Seismic 90 deg M2	126.75	0.026	-0.0008	0.0271	0.0271
Seismic 90 deg M2	150.00	0.039	-0.0008	0.0356	0.0356
Seismic 90 deg M2	154.88	0.042	-0.0008	0.0364	0.0364
Seismic 90 deg M2	168.05	0.051	-0.0009	0.0422	0.0422
Seismic 90 deg M2	175.85	0.056	-0.0008	0.0424	0.0425
Seismic 90 deg M2	179.75	0.059	-0.0008	0.0472	0.0472
Seismic 90 deg M2	184.19	0.063	-0.0008	0.0421	0.0421

Seismic 90 deg M2	192.06	0.069	-0.0008	0.0429	0.0429
Seismic (Reduced DL) Normal M1	79.75	0.012	0.0008	0.0201	0.0202
Seismic (Reduced DL) Normal M1	80.00	0.012	0.0008	0.0202	0.0202
Seismic (Reduced DL) Normal M1	86.75	0.015	0.0008	0.0204	0.0204
Seismic (Reduced DL) Normal M1	100.25	0.020	0.0010	0.0269	0.0269
Seismic (Reduced DL) Normal M1	126.75	0.034	0.0011	0.0331	0.0331
Seismic (Reduced DL) Normal M1	150.00	0.049	0.0012	0.0417	0.0417
Seismic (Reduced DL) Normal M1	154.88	0.052	0.0011	0.0419	0.0419
Seismic (Reduced DL) Normal M1	168.05	0.063	0.0012	0.0467	0.0467
Seismic (Reduced DL) Normal M1	175.85	0.069	0.0011	0.0467	0.0467
Seismic (Reduced DL) Normal M1	179.75	0.072	0.0011	0.0505	0.0505
Seismic (Reduced DL) Normal M1	184.19	0.076	0.0011	0.0462	0.0462
Seismic (Reduced DL) Normal M1	192.06	0.082	0.0010	0.0468	0.0468
Seismic (Reduced DL) Normal M2	79.75	0.009	0.0005	0.0151	0.0152
Seismic (Reduced DL) Normal M2	80.00	0.009	0.0005	0.0152	0.0152
Seismic (Reduced DL) Normal M2	86.75	0.011	0.0005	0.0156	0.0156
Seismic (Reduced DL) Normal M2	100.25	0.015	0.0006	0.0204	0.0204
Seismic (Reduced DL) Normal M2	126.75	0.026	0.0007	0.0270	0.0270
Seismic (Reduced DL) Normal M2	150.00	0.039	0.0007	0.0356	0.0356
Seismic (Reduced DL) Normal M2	154.88	0.042	0.0007	0.0362	0.0362
Seismic (Reduced DL) Normal M2	168.05	0.051	0.0008	0.0419	0.0419
Seismic (Reduced DL) Normal M2	175.85	0.056	0.0007	0.0422	0.0422
Seismic (Reduced DL) Normal M2	179.75	0.059	0.0007	0.0477	0.0477
Seismic (Reduced DL) Normal M2	184.19	0.063	0.0007	0.0419	0.0419
Seismic (Reduced DL) Normal M2	192.06	0.068	0.0007	0.0426	0.0427
Seismic (Reduced DL) 60 deg M1	79.75	0.012	0.0008	0.0210	0.0210
Seismic (Reduced DL) 60 deg M1	80.00	0.012	0.0008	0.0211	0.0211
Seismic (Reduced DL) 60 deg M1	86.75	0.015	0.0008	0.0204	0.0205
Seismic (Reduced DL) 60 deg M1	100.25	0.020	0.0010	0.0271	0.0271
Seismic (Reduced DL) 60 deg M1	126.75	0.034	0.0011	0.0332	0.0332
Seismic (Reduced DL) 60 deg M1	150.00	0.049	0.0012	0.0412	0.0412
Seismic (Reduced DL) 60 deg M1	154.88	0.052	0.0011	0.0416	0.0416
Seismic (Reduced DL) 60 deg M1	168.05	0.063	0.0012	0.0467	0.0467
Seismic (Reduced DL) 60 deg M1	175.85	0.069	-0.0011	0.0465	0.0465
Seismic (Reduced DL) 60 deg M1	179.75	0.072	-0.0011	0.0505	0.0505
Seismic (Reduced DL) 60 deg M1	184.19	0.076	-0.0011	0.0461	0.0461
Seismic (Reduced DL) 60 deg M1	192.06	0.082	-0.0010	0.0469	0.0469
Seismic (Reduced DL) 60 deg M2	79.75	0.009	0.0005	0.0156	0.0156
Seismic (Reduced DL) 60 deg M2	80.00	0.009	0.0005	0.0157	0.0157
Seismic (Reduced DL) 60 deg M2	86.75	0.011	0.0005	0.0157	0.0157
Seismic (Reduced DL) 60 deg M2	100.25	0.015	0.0006	0.0206	0.0206
Seismic (Reduced DL) 60 deg M2	126.75	0.026	0.0007	0.0270	0.0270
Seismic (Reduced DL) 60 deg M2	150.00	0.038	0.0007	0.0352	0.0352
Seismic (Reduced DL) 60 deg M2	154.88	0.042	0.0007	0.0359	0.0359
Seismic (Reduced DL) 60 deg M2	168.05	0.051	-0.0007	0.0419	0.0419
Seismic (Reduced DL) 60 deg M2	175.85	0.056	-0.0007	0.0419	0.0419
Seismic (Reduced DL) 60 deg M2	179.75	0.059	-0.0007	0.0476	0.0476
Seismic (Reduced DL) 60 deg M2	184.19	0.063	-0.0007	0.0418	0.0418
Seismic (Reduced DL) 60 deg M2	192.06	0.068	-0.0007	0.0427	0.0427
Seismic (Reduced DL) 90 deg M1	79.75	0.012	-0.0009	0.0207	0.0207
Seismic (Reduced DL) 90 deg M1	80.00	0.012	-0.0009	0.0208	0.0208
Seismic (Reduced DL) 90 deg M1	86.75	0.015	-0.0009	0.0205	0.0205
Seismic (Reduced DL) 90 deg M1	100.25	0.020	-0.0012	0.0268	0.0268
Seismic (Reduced DL) 90 deg M1	126.75	0.034	-0.0013	0.0332	0.0332
Seismic (Reduced DL) 90 deg M1	150.00	0.049	-0.0013	0.0415	0.0415
Seismic (Reduced DL) 90 deg M1	154.88	0.052	-0.0013	0.0421	0.0421
Seismic (Reduced DL) 90 deg M1	168.05	0.063	-0.0014	0.0467	0.0467
Seismic (Reduced DL) 90 deg M1	175.85	0.069	-0.0013	0.0468	0.0469
Seismic (Reduced DL) 90 deg M1	179.75	0.072	-0.0013	0.0501	0.0501
Seismic (Reduced DL) 90 deg M1	184.19	0.076	-0.0012	0.0462	0.0463
Seismic (Reduced DL) 90 deg M1	192.06	0.082	-0.0012	0.0469	0.0469
Seismic (Reduced DL) 90 deg M2	79.75	0.009	-0.0006	0.0155	0.0155

Seismic (Reduced DL) 90 deg M2	80.00	0.009	-0.0006	0.0155	0.0155
Seismic (Reduced DL) 90 deg M2	86.75	0.011	-0.0006	0.0157	0.0157
Seismic (Reduced DL) 90 deg M2	100.25	0.015	-0.0007	0.0204	0.0204
Seismic (Reduced DL) 90 deg M2	126.75	0.026	-0.0008	0.0270	0.0270
Seismic (Reduced DL) 90 deg M2	150.00	0.039	-0.0008	0.0354	0.0354
Seismic (Reduced DL) 90 deg M2	154.88	0.042	-0.0008	0.0363	0.0363
Seismic (Reduced DL) 90 deg M2	168.05	0.051	-0.0009	0.0419	0.0419
Seismic (Reduced DL) 90 deg M2	175.85	0.056	-0.0008	0.0423	0.0423
Seismic (Reduced DL) 90 deg M2	179.75	0.059	-0.0008	0.0471	0.0471
Seismic (Reduced DL) 90 deg M2	184.19	0.063	-0.0008	0.0420	0.0420
Seismic (Reduced DL) 90 deg M2	192.06	0.068	-0.0008	0.0427	0.0427
Serviceability - 60 mph Wind Normal	79.75	0.077	0.0047	0.1210	0.1210
Serviceability - 60 mph Wind Normal	80.00	0.077	0.0047	0.1221	0.1221
Serviceability - 60 mph Wind Normal	86.75	0.091	0.0046	0.1187	0.1188
Serviceability - 60 mph Wind Normal	100.25	0.122	0.0056	0.1560	0.1560
Serviceability - 60 mph Wind Normal	126.75	0.199	0.0060	0.1854	0.1855
Serviceability - 60 mph Wind Normal	150.00	0.283	0.0067	0.2273	0.2273
Serviceability - 60 mph Wind Normal	154.88	0.302	0.0065	0.2276	0.2277
Serviceability - 60 mph Wind Normal	168.05	0.358	0.0069	0.2522	0.2523
Serviceability - 60 mph Wind Normal	175.85	0.392	0.0066	0.2621	0.2622
Serviceability - 60 mph Wind Normal	179.75	0.410	0.0065	0.2662	0.2662
Serviceability - 60 mph Wind Normal	184.19	0.429	0.0065	0.2509	0.2510
Serviceability - 60 mph Wind Normal	192.06	0.464	0.0064	0.2523	0.2524
Serviceability - 60 mph Wind 60 deg	79.75	0.073	0.0054	0.1179	0.1179
Serviceability - 60 mph Wind 60 deg	80.00	0.074	0.0054	0.1188	0.1188
Serviceability - 60 mph Wind 60 deg	86.75	0.087	0.0055	0.1143	0.1145
Serviceability - 60 mph Wind 60 deg	100.25	0.117	0.0068	0.1505	0.1505
Serviceability - 60 mph Wind 60 deg	126.75	0.192	0.0081	0.1784	0.1786
Serviceability - 60 mph Wind 60 deg	150.00	0.272	0.0093	0.2191	0.2191
Serviceability - 60 mph Wind 60 deg	154.88	0.291	0.0093	0.2192	0.2193
Serviceability - 60 mph Wind 60 deg	168.05	0.345	0.0107	0.2427	0.2428
Serviceability - 60 mph Wind 60 deg	175.85	0.378	0.0111	0.2386	0.2388
Serviceability - 60 mph Wind 60 deg	179.75	0.395	0.0111	0.2604	0.2604
Serviceability - 60 mph Wind 60 deg	184.19	0.414	0.0109	0.2402	0.2404
Serviceability - 60 mph Wind 60 deg	192.06	0.447	0.0108	0.2428	0.2430
Serviceability - 60 mph Wind 90 deg	79.75	0.074	-0.0066	0.1177	0.1177
Serviceability - 60 mph Wind 90 deg	80.00	0.075	-0.0067	0.1185	0.1185
Serviceability - 60 mph Wind 90 deg	86.75	0.088	-0.0068	0.1157	0.1159
Serviceability - 60 mph Wind 90 deg	100.25	0.118	-0.0084	0.1501	0.1501
Serviceability - 60 mph Wind 90 deg	126.75	0.194	-0.0103	0.1800	0.1802
Serviceability - 60 mph Wind 90 deg	150.00	0.275	-0.0114	0.2204	0.2204
Serviceability - 60 mph Wind 90 deg	154.88	0.294	-0.0113	0.2222	0.2225
Serviceability - 60 mph Wind 90 deg	168.05	0.348	-0.0125	0.2443	0.2444
Serviceability - 60 mph Wind 90 deg	175.85	0.382	-0.0127	0.2366	0.2369
Serviceability - 60 mph Wind 90 deg	179.75	0.398	-0.0127	0.2619	0.2620
Serviceability - 60 mph Wind 90 deg	184.19	0.417	-0.0126	0.2428	0.2431
Serviceability - 60 mph Wind 90 deg	192.06	0.451	-0.0126	0.2453	0.2456

Maximum Reactions Summary

	Vertical (kip)				Horizontal (kip)		Moment (kip-ft)	
Anchor Group	DL+WL	DL+WL+IL	UpLift	Shear	DL+WL	DL+WL+IL	DL+WL	DL+WL+IL
Base	56.88	175.41	389.13	40.35	66.57	24.06	7373.23	2588.81

June 26, 2019

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:		
	Site Number:	CT2091 (LTE 7C)
	FA Number:	10035308
	PACE Number:	MRCTB038055
	PT Number:	2051A0MCKF
	Site Name:	ANSONIA NW_SPECTRASITE TOWER
	Site Address:	401 Wakelee Avenue Ansonia, CT 06401

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- (2) TPA65R-BU6DA Antennas (71.2"x21.0"x7.8" – Wt. = 68 lbs. /each)
- (1) TPA65R-BU8DA Antennas (96.0"x21.0"x7.8" – Wt. = 83 lbs. /each)
- (2) OPA-65R-LCUU-H6 Antennas (72.0"x14.8"x7.4" – Wt. = 73 lbs. /each)
- (1) OPA-65R-LCUU-H8 Antennas (92.7"x14.4"x7.0" – Wt. = 88 lbs. /each)
- (3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4478 B5 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) RRUS-32 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (6) DBCT108F1V92-1 Diplexers (10.7"x6.8"x7.2" – Wt. = 29 lbs. /each)
- (3) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(2) OPA65R-BU6A Antennas (71.1"x11.7"x8.4" – Wt. = 58 lbs. /each)**
- **(1) OPA65R-BU8B Antennas (95.9"x11.7"x8.4" – Wt. = 69 lbs. /each)**
- **(3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. Com Ex Consultants conducted a survey climb and mapping of the existing AT&T antenna mounts on November 21, 2016. HDG conducted a ground audit of the existing AT&T antenna mounts on June 24, 2019.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 123 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.18 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing tower with clamps and threaded rods. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 7C) Mount Rating	11	LC4	96%	**PASS**

Reference Documents:

- Mount mapping report prepared by Com Ex Consultants dated November 21, 2016.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	167 (ft)
	z_g=	1200 (ft)
K_z= 1.144	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt} =1.0)

Category= **1**

K_h=	#DIV/0!	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	167	
z_s=	140	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = **1.00** in
Importance Factor = I= **1.0** (from Table 2-3)
K_{iz} = **1.18** (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = **1.18** in

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	200	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	Gh=	1.00

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.144	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**37.48**	K_e=	0.99	(from 2.6.8)
$q_{z\,(ice)}$=	**6.19**	K_d=	0.85	(from Table 2-2)
$q_{z\,(30)}$=	**2.23**	V_{max}=	123	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
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HUDSON Design Group LLC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.18 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	4.57	1.29	678	128	40
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	6.44	1.38	478	94	28
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	8.20	1.44	420	85	25
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.10	1.20	118	24	7
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	76	17	5
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	47	11	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.35	1.20	76	17	5
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	47	11	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	61	14	4
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	105	22	6
RRUS-11 RRH (Side)	19.7	7.2	17.0	0.99	2.74	1.21	45	11	3
RRUS-32 RRH	27.2	12.1	7.0	2.29	2.25	1.20	103	22	6
RRUS-32 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	63	15	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	1.57	1.20	23	6	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	42	10	3
1-1/2" Pipe	1.9	12.0		0.16	0.16	1.20	7	3	0
2" Pipe	2.4	12.0		0.20	0.20	1.20	9	4	1
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	11	4	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	13	4	1

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: L&W Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 30 (deg) | Ice Thickness = 1.18 in. | Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	678	307	585
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	478	272	426
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	420	324	396
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	118	48	100
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	69
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	38	76	48
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	69
4478 B5 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	38	76	48
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	61	51	59
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	105	45	90
RRUS-11 RRH (Side)	19.7	8.5	17.0	1.16	2.33	2.32	1.16	1.20	1.20	52	105	65
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	103	63	93
RRUS-32 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	55	103	67
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	23	24	23

WIND LOADS WITH ICE:

TPA65R-BU8DA Antenna	98.4	23.4	10.2	15.95	6.93	4.21	9.69	1.28	1.49	126	64	111
OPA-65R-LCUU-H8 Antenna	95.1	16.8	9.4	11.06	6.17	5.67	10.16	1.34	1.51	92	58	83
OPA65R-BU8BA Antenna	98.3	14.1	10.8	9.59	7.34	6.99	9.14	1.40	1.47	83	67	79
RRUS-E2 B29 RRH	22.8	20.9	9.9	3.29	1.56	1.09	2.31	1.20	1.20	24	12	21
B14 4478 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	15
B14 4478 RRH (Side)	20.5	7.9	15.8	1.12	2.24	2.60	1.30	1.20	1.20	8	17	10
4478 B5 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	15
4478 B5 RRH (Side)	20.5	7.9	15.8	1.12	2.24	2.60	1.30	1.20	1.20	8	17	10
B2/B66A 8843 RRH	17.3	15.6	13.3	1.86	1.59	1.11	1.30	1.20	1.20	14	12	13
RRUS-11 RRH	22.1	19.4	9.6	2.96	1.46	1.14	2.31	1.20	1.20	22	11	19
RRUS-11 RRH (Side)	22.1	9.7	19.4	1.48	2.96	2.28	1.14	1.20	1.20	11	22	14
RRUS-32 RRH	29.6	14.5	9.4	2.97	1.92	2.04	3.16	1.20	1.23	22	15	20
RRUS-32 RRH (Side)	29.6	7.2	14.5	1.48	2.97	4.09	2.04	1.27	1.20	12	22	14
DBCT108F1V92-1 Diplexer	13.1	9.2	9.6	0.83	0.87	1.43	1.37	1.20	1.20	6	6	6

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	40	18	35
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	25
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	25	19	24
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	2	5	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4478 B5 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	2	5	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	5
RRUS-11 RRH (Side)	19.7	8.5	17.0	1.16	2.33	2.32	1.16	1.20	1.20	3	6	4
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	3	6	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 6/24/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	678	307	400
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	478	272	323
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	420	324	348
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	118	48	66
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	54
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	57	76	71
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	54
4478 B5 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	57	76	71
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	61	51	53
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	105	45	60
RRUS-11 RRH (Side)	19.7	12.8	17.0	1.74	2.33	1.55	1.16	1.20	1.20	78	105	98
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	103	63	73
RRUS-32 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	79	103	97
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	23	24	24

WIND LOADS WITH ICE:

TPA65R-BU8DA Antenna	98.4	23.4	10.2	15.95	6.93	4.21	9.69	1.28	1.49	126	64	79
OPA-65R-LCUU-H8 Antenna	95.1	16.8	9.4	11.06	6.17	5.67	10.16	1.34	1.51	92	58	66
OPA65R-BU8BA Antenna	98.3	14.1	10.8	9.59	7.34	6.99	9.14	1.40	1.47	83	67	71
RRUS-E2 B29 RRH	22.8	20.9	9.9	3.29	1.56	1.09	2.31	1.20	1.20	24	12	15
B14 4478 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	13
B14 4478 RRH (Side)	20.5	11.8	15.8	1.68	2.24	1.73	1.30	1.20	1.20	12	17	16
4478 B5 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	13
4478 B5 RRH (Side)	20.5	11.8	15.8	1.68	2.24	1.73	1.30	1.20	1.20	12	17	16
B2/B66A 8843 RRH	17.3	15.6	13.3	1.86	1.59	1.11	1.30	1.20	1.20	14	12	12
RRUS-11 RRH	22.1	19.4	9.6	2.96	1.46	1.14	2.31	1.20	1.20	22	11	14
RRUS-11 RRH (Side)	22.1	14.5	19.4	2.22	2.96	1.52	1.14	1.20	1.20	17	22	21
RRUS-32 RRH	29.6	14.5	9.4	2.97	1.92	2.04	3.16	1.20	1.23	22	15	16
RRUS-32 RRH (Side)	29.6	10.8	14.5	2.22	2.97	2.73	2.04	1.21	1.20	17	22	21
DBCT108F1V92-1 Diplexer	13.1	9.2	9.6	0.83	0.87	1.43	1.37	1.20	1.20	6	6	6

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	40	18	24
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	19
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	25	19	21
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	4
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	3	5	4
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B5 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	4
RRUS-11 RRH (Side)	19.7	12.8	17.0	1.74	2.33	1.55	1.16	1.20	1.20	5	6	6
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	5	6	6
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	678	307	307
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	478	272	272
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	420	324	324
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	118	48	48
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	47
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	47	76	76
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	47
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	47	76	76
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	61	51	51
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	105	45	45
RRUS-11 RRH (Side)	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	45	105	105
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	103	63	63
RRUS-32 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	63	103	103
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	23	24	24

WIND LOADS WITH ICE:

TPA65R-BU8DA Antenna	98.4	23.4	10.2	15.95	6.93	4.21	9.69	1.28	1.49	126	64	64
OPA-65R-LCUU-H8 Antenna	95.1	16.8	9.4	11.06	6.17	5.67	10.16	1.34	1.51	92	58	58
OPA65R-BU8BA Antenna	98.3	14.1	10.8	9.59	7.34	6.99	9.14	1.40	1.47	83	67	67
RRUS-E2 B29 RRH	22.8	20.9	9.9	3.29	1.56	1.09	2.31	1.20	1.20	24	12	12
B14 4478 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	11
B14 4478 RRH (Side)	20.5	10.7	15.8	1.51	2.24	1.92	1.30	1.20	1.20	11	17	17
4478 B5 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	11
4478 B5 RRH (Side)	20.5	10.7	15.8	1.51	2.24	1.92	1.30	1.20	1.20	11	17	17
B2/B66A 8843 RRH	17.3	15.6	13.3	1.86	1.59	1.11	1.30	1.20	1.20	14	12	12
RRUS-11 RRH	22.1	19.4	9.6	2.96	1.46	1.14	2.31	1.20	1.20	22	11	11
RRUS-11 RRH (Side)	22.1	9.6	19.4	1.46	2.96	2.31	1.14	1.20	1.20	11	22	22
RRUS-32 RRH	29.6	14.5	9.4	2.97	1.92	2.04	3.16	1.20	1.23	22	15	15
RRUS-32 RRH (Side)	29.6	9.4	14.5	1.92	2.97	3.16	2.04	1.23	1.20	15	22	22
DBCT108F1V92-1 Diplexer	13.1	9.2	9.6	0.83	0.87	1.43	1.37	1.20	1.20	6	6	6

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	40	18	18
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	16
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	25	19	19
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	3
RRUS-11 RRH (Side)	19.7	7.2	17.0	0.99	2.33	2.74	1.16	1.21	1.20	3	6	6
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.18 in. | Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	678	307	400
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	478	272	323
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	420	324	348
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	118	48	66
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	54
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	57	76	71
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	54
4478 B5 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	57	76	71
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	61	51	53
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	105	45	60
RRUS-11 RRH (Side)	19.7	12.8	17.0	1.74	2.33	1.55	1.16	1.20	1.20	78	105	98
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	103	63	73
RRUS-32 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	79	103	97
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	23	24	24

WIND LOADS WITH ICE:

TPA65R-BU8DA Antenna	98.4	23.4	10.2	15.95	6.93	4.21	9.69	1.28	1.49	126	64	79
OPA-65R-LCUU-H8 Antenna	95.1	16.8	9.4	11.06	6.17	5.67	10.16	1.34	1.51	92	58	66
OPA65R-BU8BA Antenna	98.3	14.1	10.8	9.59	7.34	6.99	9.14	1.40	1.47	83	67	71
RRUS-E2 B29 RRH	22.8	20.9	9.9	3.29	1.56	1.09	2.31	1.20	1.20	24	12	15
B14 4478 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	13
B14 4478 RRH (Side)	20.5	11.8	15.8	1.68	2.24	1.73	1.30	1.20	1.20	12	17	16
4478 B5 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	13
4478 B5 RRH (Side)	20.5	11.8	15.8	1.68	2.24	1.73	1.30	1.20	1.20	12	17	16
B2/B66A 8843 RRH	17.3	15.6	13.3	1.86	1.59	1.11	1.30	1.20	1.20	14	12	12
RRUS-11 RRH	22.1	19.4	9.6	2.96	1.46	1.14	2.31	1.20	1.20	22	11	14
RRUS-11 RRH (Side)	22.1	14.5	19.4	2.22	2.96	1.52	1.14	1.20	1.20	17	22	21
RRUS-32 RRH	29.6	14.5	9.4	2.97	1.92	2.04	3.16	1.20	1.23	22	15	16
RRUS-32 RRH (Side)	29.6	10.8	14.5	2.22	2.97	2.73	2.04	1.21	1.20	17	22	21
DBCT108F1V92-1 Diplexer	13.1	9.2	9.6	0.83	0.87	1.43	1.37	1.20	1.20	6	6	6

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	40	18	24
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	19
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	25	19	21
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	4
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	3	5	4
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B5 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	4
RRUS-11 RRH (Side)	19.7	12.8	17.0	1.74	2.33	1.55	1.16	1.20	1.20	5	6	6
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	5	6	6
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	678	307	585
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	478	272	426
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	420	324	396
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	118	48	100
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	69
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	38	76	48
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	76	47	69
4478 B5 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	38	76	48
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	61	51	59
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	105	45	90
RRUS-11 RRH (Side)	19.7	8.5	17.0	1.16	2.33	2.32	1.16	1.20	1.20	52	105	65
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	103	63	93
RRUS-32 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	55	103	67
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	23	24	23

WIND LOADS WITH ICE:

TPA65R-BU8DA Antenna	98.4	23.4	10.2	15.95	6.93	4.21	9.69	1.28	1.49	126	64	111
OPA-65R-LCUU-H8 Antenna	95.1	16.8	9.4	11.06	6.17	5.67	10.16	1.34	1.51	92	58	83
OPA65R-BU8BA Antenna	98.3	14.1	10.8	9.59	7.34	6.99	9.14	1.40	1.47	83	67	79
RRUS-E2 B29 RRH	22.8	20.9	9.9	3.29	1.56	1.09	2.31	1.20	1.20	24	12	21
B14 4478 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	15
B14 4478 RRH (Side)	20.5	7.9	15.8	1.12	2.24	2.60	1.30	1.20	1.20	8	17	10
4478 B5 RRH	20.5	15.8	10.7	2.24	1.51	1.30	1.92	1.20	1.20	17	11	15
4478 B5 RRH (Side)	20.5	7.9	15.8	1.12	2.24	2.60	1.30	1.20	1.20	8	17	10
B2/B66A 8843 RRH	17.3	15.6	13.3	1.86	1.59	1.11	1.30	1.20	1.20	14	12	13
RRUS-11 RRH	22.1	19.4	9.6	2.96	1.46	1.14	2.31	1.20	1.20	22	11	19
RRUS-11 RRH (Side)	22.1	9.7	19.4	1.48	2.96	2.28	1.14	1.20	1.20	11	22	14
RRUS-32 RRH	29.6	14.5	9.4	2.97	1.92	2.04	3.16	1.20	1.23	22	15	20
RRUS-32 RRH (Side)	29.6	7.2	14.5	1.48	2.97	4.09	2.04	1.27	1.20	12	22	14
DBCT108F1V92-1 Diplexer	13.1	9.2	9.6	0.83	0.87	1.43	1.37	1.20	1.20	6	6	6

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	40	18	35
OPA-65R-LCUU-H8 Antenna	92.7	14.4	7.0	9.27	4.51	6.44	13.24	1.38	1.61	28	16	25
OPA65R-BU8BA Antenna	95.9	11.7	8.4	7.79	5.59	8.20	11.42	1.44	1.55	25	19	24
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	2	5	3
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4478 B5 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	2	5	3
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	5
RRUS-11 RRH (Side)	19.7	8.5	17.0	1.16	2.33	2.32	1.16	1.20	1.20	3	6	4
RRUS-32 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	3	6	4
DBCT108F1V92-1 Diplexer	10.7	6.8	7.2	0.51	0.54	1.57	1.49	1.20	1.20	1	1	1

Date: 6/26/2019
Project Name: ANSONIA NW_SPECTRASITE TOWER
Project No.: CT2091
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.18 in.
Density of ice: 56 pcf

TPA65R-BU8DA Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 21.0
Depth (in): 7.8
Total weight of ice on object: 272 lbs
Weight of object: 83.0 lbs
Combined weight of ice and object: 355 lbs

OPA-65R-LCUU-H8 Antenna
Weight of ice based on total radial SF area:
Height (in): 92.7
Width (in): 14.4
Depth (in): 7.0
Total weight of ice on object: 191 lbs
Weight of object: 88.0 lbs
Combined weight of ice and object: 279 lbs

OPA65R-BU8BA Antenna
Weight of ice based on total radial SF area:
Height (in): 95.9
Width (in): 11.7
Depth (in): 8.4
Total weight of ice on object: 180 lbs
Weight of object: 69.0 lbs
Combined weight of ice and object: 249 lbs

RRUS-E2 B29 RRH
Weight of ice based on total radial SF area:
Height (in): 20.4
Width (in): 18.5
Depth (in): 7.5
Total weight of ice on object: 52 lbs
Weight of object: 53.0 lbs
Combined weight of ice and object: 105 lbs

B14 4478 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 37 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 97 lbs

4478 B5 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 37 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 97 lbs

B2/B66A 8843 RRH
Weight of ice based on total radial SF area:
Height (in): 14.9
Width (in): 13.2
Depth (in): 10.9
Total weight of ice on object: 33 lbs
Weight of object: 72.0 lbs
Combined weight of ice and object: 105 lbs

RRUS-11 RRH
Weight of ice based on total radial SF area:
Height (in): 19.7
Width (in): 17.0
Depth (in): 7.2
Total weight of ice on object: 46 lbs
Weight of object: 51.0 lbs
Combined weight of ice and object: 97 lbs

RRUS-32 RRH
Weight of ice based on total radial SF area:
Height (in): 27.2
Width (in): 12.1
Depth (in): 7.0
Total weight of ice on object: 50 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 110 lbs

DBCT108F1V92-1 Diplexer
Weight of ice based on total radial SF area:
Height (in): 10.7
Width (in): 6.8
Depth (in): 7.2
Total weight of ice on object: 14 lbs
Weight of object: 29.0 lbs
Combined weight of ice and object: 43 lbs

Squid Surge Arrestor
Weight of ice based on total radial SF area:
Depth (in): 24.0
Diameter(in): 9.7
Total weight of ice on object: 31 lbs
Weight of object: 33 lbs
Combined weight of ice and object: 64 lbs

1-1/2" Pipe
Per foot weight of ice:
diameter (in): 1.9
Per foot weight of ice on object: 4 plf

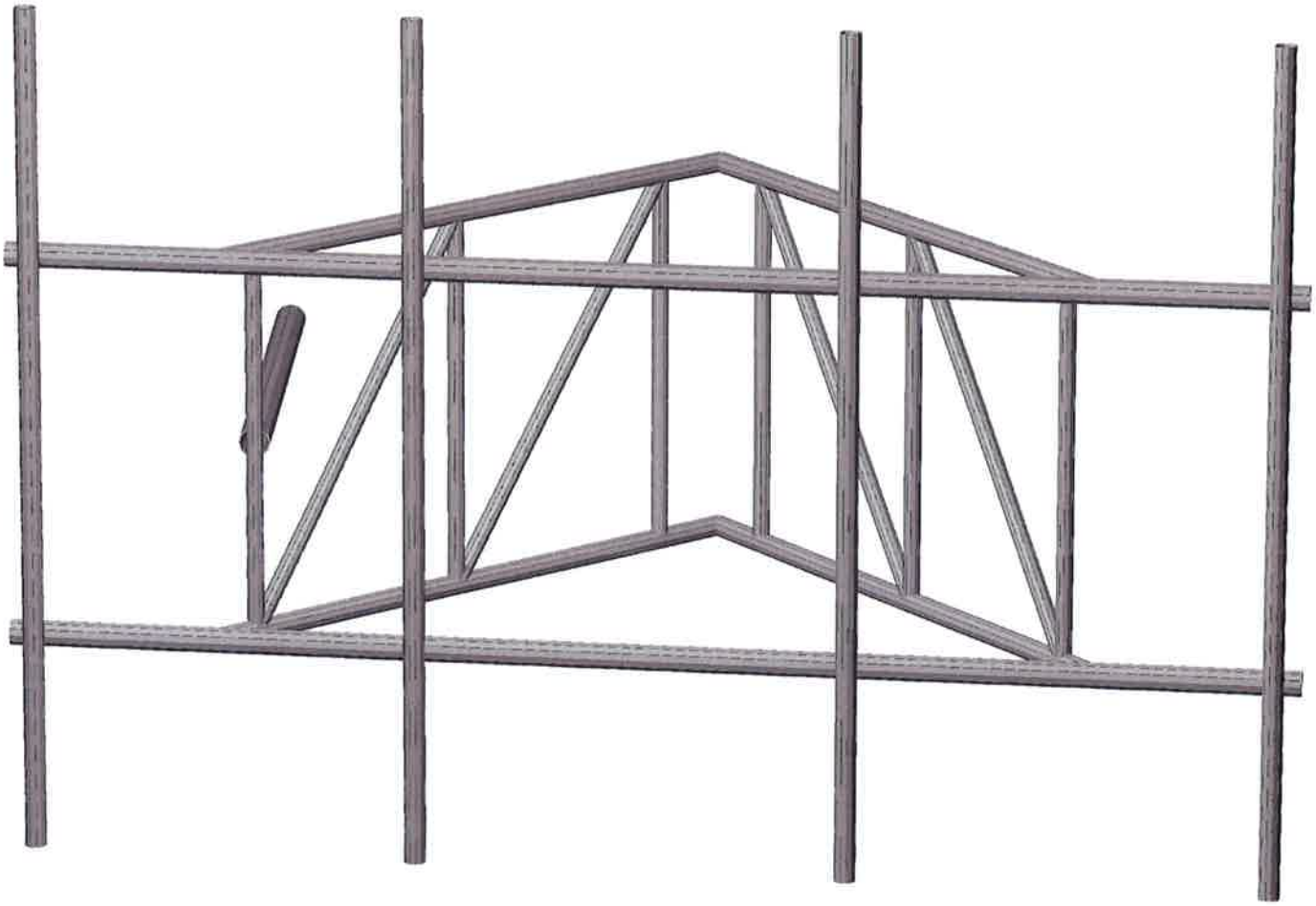
2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 5 plf

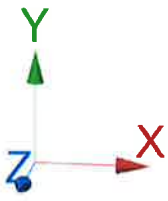
2-1/2" pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 6 plf

3" Pipe
Per foot weight of ice:
diameter (in): 3.5
Per foot weight of ice on object: 7 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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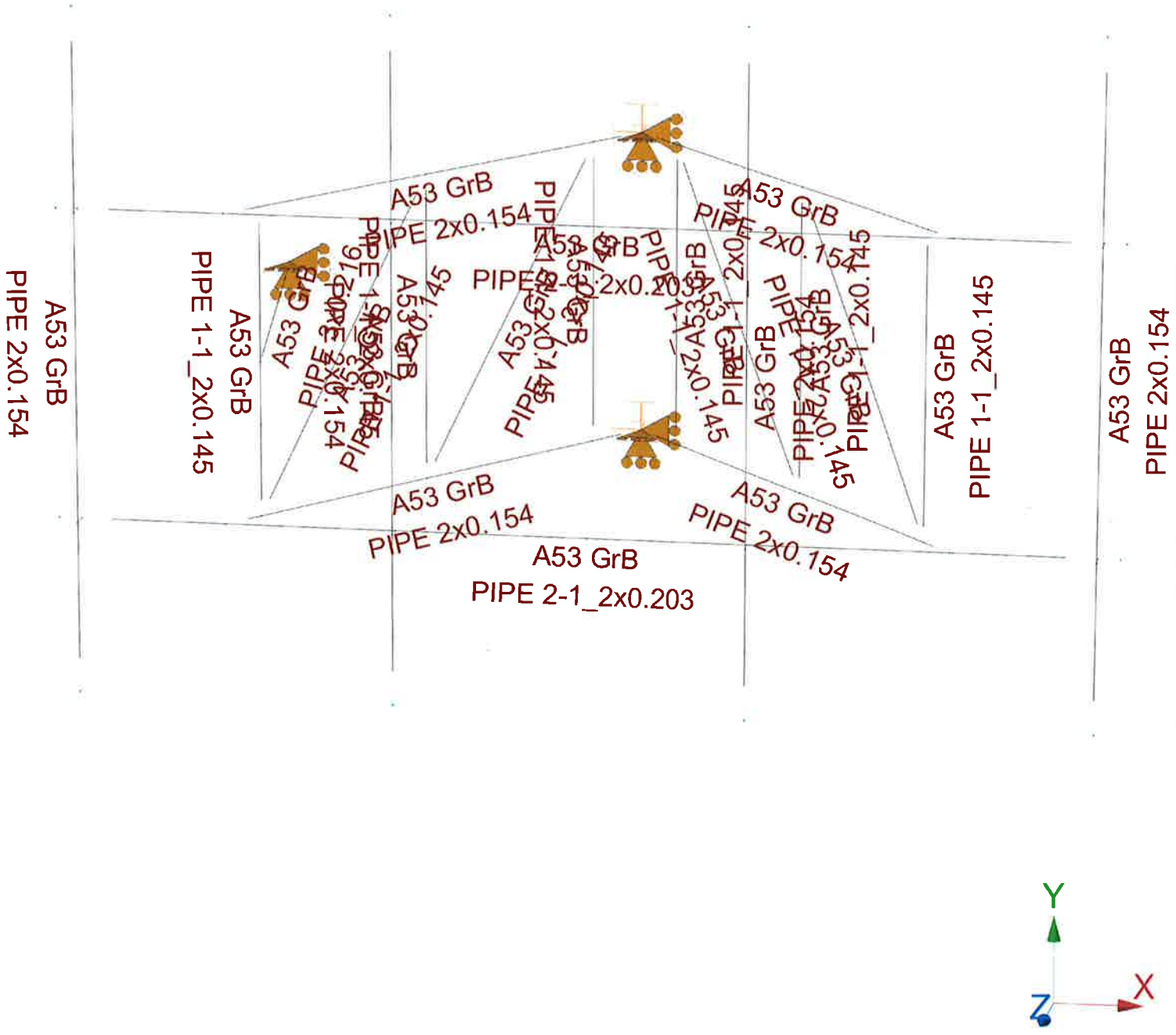
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PIPE 2x0.154
A53 GrB
PIPE 1-1_2x0.145
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Y
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Z

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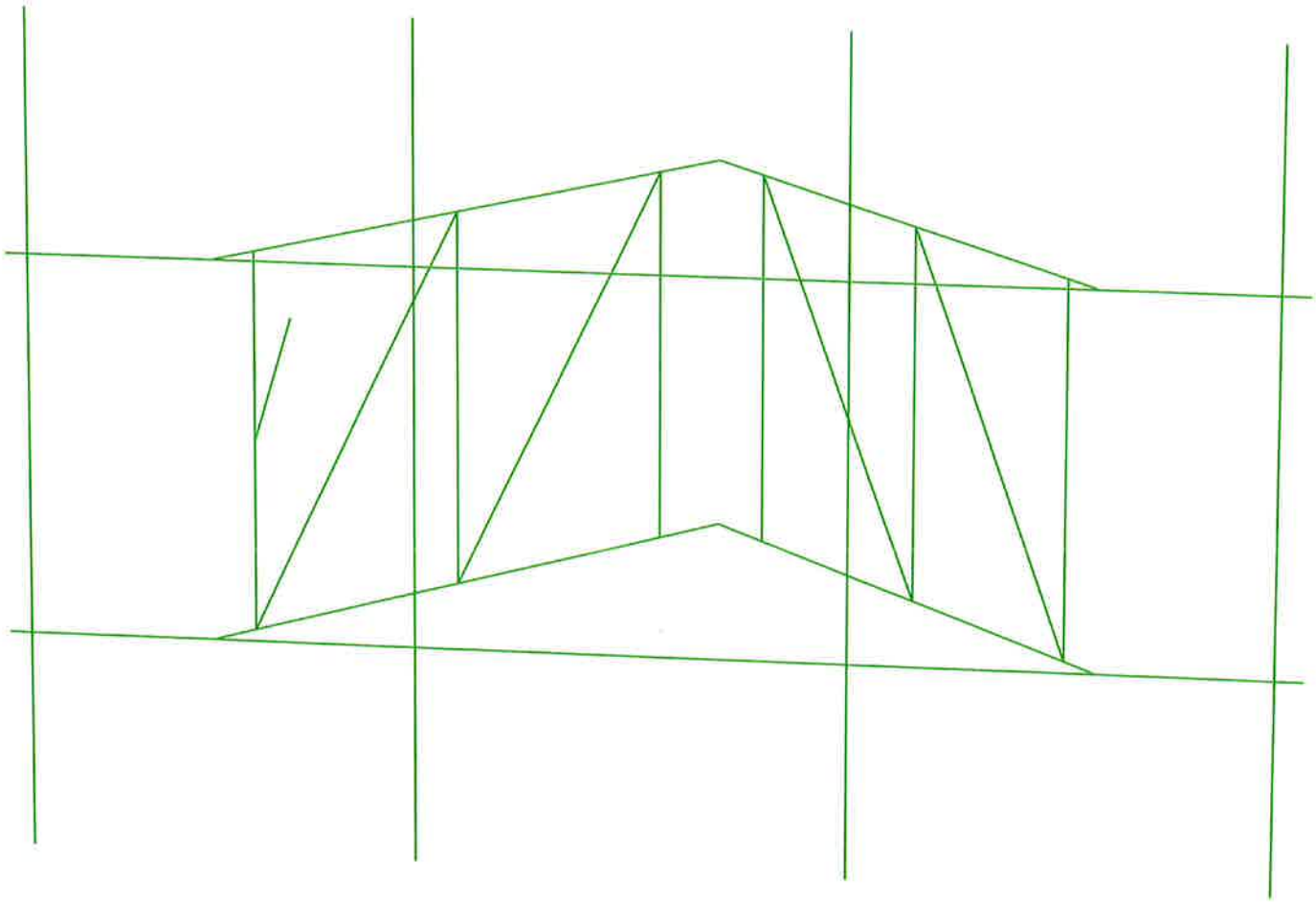
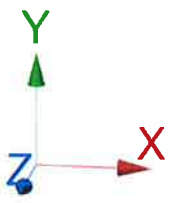
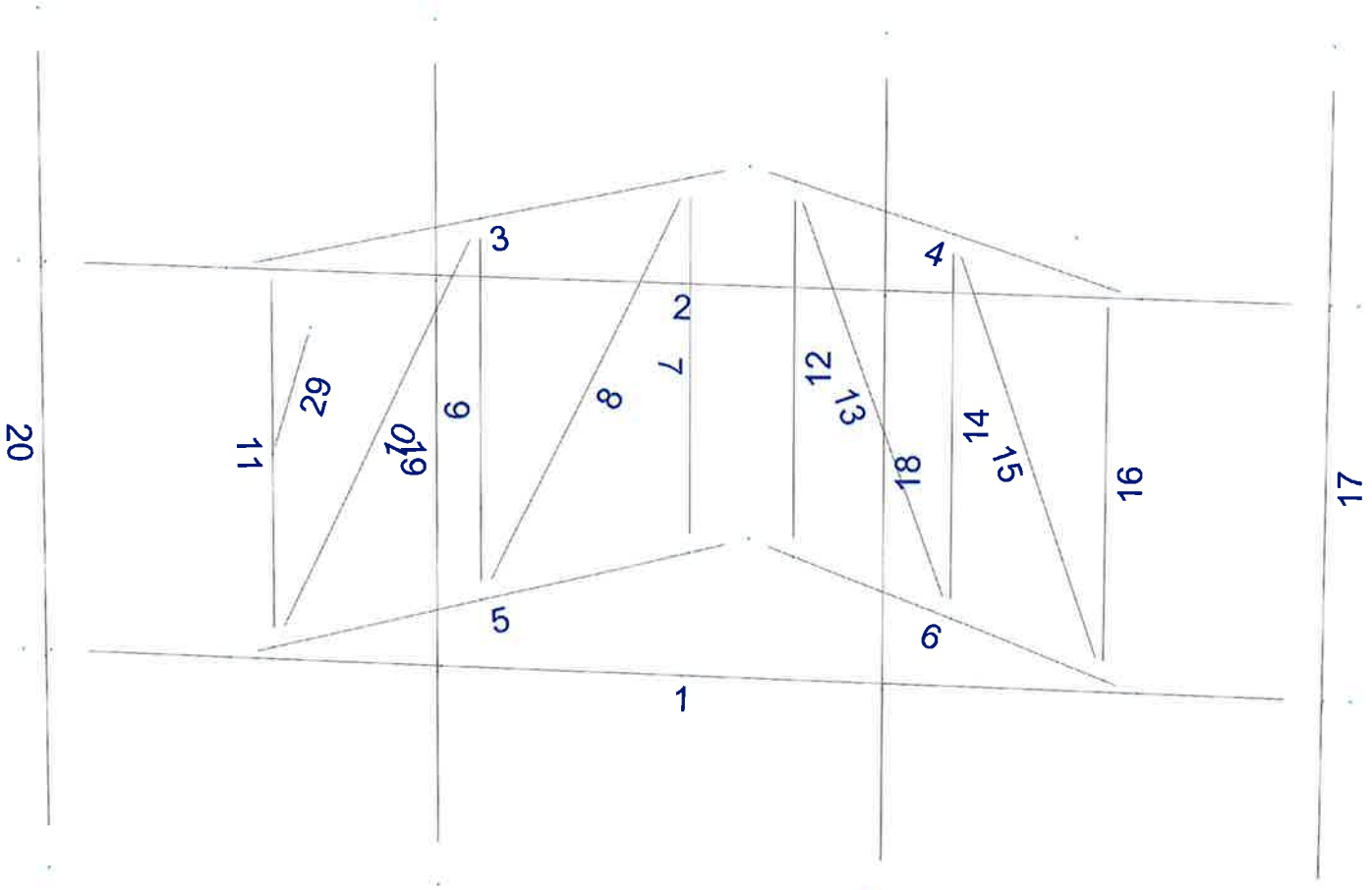
Error on design
Design O.K.
With warnings



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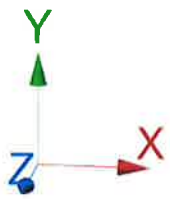
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Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2091\LTE 7C\CT2091 (LTE 7C).retx\

Load data

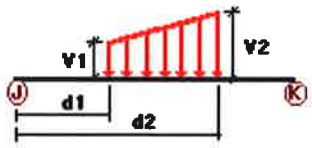
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 lb Live Load Antenna 4	No	LL

Distributed force on members

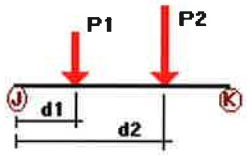


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.011	0.00	0.00	No	0.00	No
	2	z	-0.011	0.00	0.00	No	0.00	No
	3	z	-0.009	0.00	0.00	No	0.00	No
	4	z	-0.009	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	6	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.007	0.00	0.00	No	0.00	No
	8	z	-0.007	0.00	0.00	No	0.00	No
	9	z	-0.007	0.00	0.00	No	0.00	No
	10	z	-0.007	0.00	0.00	No	0.00	No
	11	z	-0.007	0.00	0.00	No	0.00	No
	12	z	-0.007	0.00	0.00	No	0.00	No
	13	z	-0.007	0.00	0.00	No	0.00	No
	14	z	-0.007	0.00	0.00	No	0.00	No
	15	z	-0.007	0.00	0.00	No	0.00	No
	16	z	-0.007	0.00	0.00	No	0.00	No
	29	z	-0.013	0.00	0.00	No	0.00	No
W30	1	z	-0.011	0.00	0.00	No	0.00	No
	2	z	-0.011	0.00	0.00	No	0.00	No
	3	z	-0.009	0.00	0.00	No	0.00	No
	4	z	-0.009	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	6	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.007	0.00	0.00	No	0.00	No
	8	z	-0.007	0.00	0.00	No	0.00	No
	9	z	-0.007	0.00	0.00	No	0.00	No
	10	z	-0.007	0.00	0.00	No	0.00	No
	11	z	-0.007	0.00	0.00	No	0.00	No
	12	z	-0.007	0.00	0.00	No	0.00	No
	13	z	-0.007	0.00	0.00	No	0.00	No
	14	z	-0.007	0.00	0.00	No	0.00	No
	15	z	-0.007	0.00	0.00	No	0.00	No
	16	z	-0.007	0.00	0.00	No	0.00	No
	29	z	-0.013	0.00	0.00	No	0.00	No
W60	1	x	-0.011	0.00	0.00	No	0.00	No
	2	x	-0.011	0.00	0.00	No	0.00	No
	3	x	-0.009	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.007	0.00	0.00	No	0.00	No
	8	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
	10	x	-0.007	0.00	0.00	No	0.00	No
	11	x	-0.007	0.00	0.00	No	0.00	No
	12	x	-0.007	0.00	0.00	No	0.00	No
	13	x	-0.007	0.00	0.00	No	0.00	No
	14	x	-0.007	0.00	0.00	No	0.00	No
	15	x	-0.007	0.00	0.00	No	0.00	No
	16	x	-0.007	0.00	0.00	No	0.00	No
	17	x	-0.009	0.00	0.00	No	0.00	No
	18	x	-0.009	0.00	0.00	No	0.00	No
	19	x	-0.009	0.00	0.00	No	0.00	No
	20	x	-0.009	0.00	0.00	No	0.00	No
	29	x	-0.013	0.00	0.00	No	0.00	No
W90	3	x	-0.009	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.007	0.00	0.00	No	0.00	No

	8	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
	10	x	-0.007	0.00	0.00	No	0.00	No
	11	x	-0.007	0.00	0.00	No	0.00	No
	12	x	-0.007	0.00	0.00	No	0.00	No
	13	x	-0.007	0.00	0.00	No	0.00	No
	14	x	-0.007	0.00	0.00	No	0.00	No
	15	x	-0.007	0.00	0.00	No	0.00	No
	16	x	-0.007	0.00	0.00	No	0.00	No
	17	x	-0.009	0.00	0.00	No	0.00	No
	18	x	-0.009	0.00	0.00	No	0.00	No
	19	x	-0.009	0.00	0.00	No	0.00	No
	20	x	-0.009	0.00	0.00	No	0.00	No
	29	x	-0.013	0.00	0.00	No	0.00	No
W120	1	x	-0.011	0.00	0.00	No	0.00	No
	2	x	-0.011	0.00	0.00	No	0.00	No
	3	x	-0.009	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.007	0.00	0.00	No	0.00	No
	8	x	-0.007	0.00	0.00	No	0.00	No
	9	x	-0.007	0.00	0.00	No	0.00	No
	10	x	-0.007	0.00	0.00	No	0.00	No
	11	x	-0.007	0.00	0.00	No	0.00	No
	12	x	-0.007	0.00	0.00	No	0.00	No
	13	x	-0.007	0.00	0.00	No	0.00	No
	14	x	-0.007	0.00	0.00	No	0.00	No
	15	x	-0.007	0.00	0.00	No	0.00	No
	16	x	-0.007	0.00	0.00	No	0.00	No
	17	x	-0.009	0.00	0.00	No	0.00	No
	18	x	-0.009	0.00	0.00	No	0.00	No
	19	x	-0.009	0.00	0.00	No	0.00	No
	20	x	-0.009	0.00	0.00	No	0.00	No
	29	x	-0.013	0.00	0.00	No	0.00	No
W150	1	z	0.011	0.00	0.00	No	0.00	No
	2	z	0.011	0.00	0.00	No	0.00	No
	3	z	0.009	0.00	0.00	No	0.00	No
	4	z	0.009	0.00	0.00	No	0.00	No
	5	z	0.009	0.00	0.00	No	0.00	No
	6	z	0.009	0.00	0.00	No	0.00	No
	7	z	0.007	0.00	0.00	No	0.00	No
	8	z	0.007	0.00	0.00	No	0.00	No
	9	z	0.007	0.00	0.00	No	0.00	No
	10	z	0.007	0.00	0.00	No	0.00	No
	11	z	0.007	0.00	0.00	No	0.00	No
	12	z	0.007	0.00	0.00	No	0.00	No
	13	z	0.007	0.00	0.00	No	0.00	No
	14	z	0.007	0.00	0.00	No	0.00	No
	15	z	0.007	0.00	0.00	No	0.00	No
	16	z	0.007	0.00	0.00	No	0.00	No
	29	z	0.013	0.00	0.00	No	0.00	No
Di	1	y	-0.006	0.00	0.00	No	0.00	No
	2	y	-0.006	0.00	0.00	No	0.00	No
	3	y	-0.005	0.00	0.00	No	0.00	No
	4	y	-0.005	0.00	0.00	No	0.00	No
	5	y	-0.005	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.004	0.00	0.00	No	0.00	No
	8	y	-0.004	0.00	0.00	No	0.00	No

9	y	-0.004	0.00	0.00	No	0.00	No
10	y	-0.004	0.00	0.00	No	0.00	No
11	y	-0.004	0.00	0.00	No	0.00	No
12	y	-0.004	0.00	0.00	No	0.00	No
13	y	-0.004	0.00	0.00	No	0.00	No
14	y	-0.004	0.00	0.00	No	0.00	No
15	y	-0.004	0.00	0.00	No	0.00	No
16	y	-0.004	0.00	0.00	No	0.00	No
17	y	-0.005	0.00	0.00	No	0.00	No
18	y	-0.005	0.00	0.00	No	0.00	No
19	y	-0.005	0.00	0.00	No	0.00	No
20	y	-0.005	0.00	0.00	No	0.00	No
29	y	-0.007	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	17	y	-0.035	0.50	No
		y	-0.035	7.50	No
		y	-0.058	6.50	No
	18	y	-0.042	0.50	No
		y	-0.042	7.50	No
		y	-0.111	1.50	No
	19	y	-0.072	1.50	No
		y	-0.053	3.50	No
	20	y	-0.044	0.50	No
		y	-0.044	7.50	No
		y	-0.12	1.50	No
Wo	17	z	-0.211	0.50	No
		z	-0.211	7.50	No
		z	-0.046	6.50	No
	18	z	-0.339	0.50	No
		z	-0.339	7.50	No
		z	-0.108	1.50	No
	19	z	-0.061	1.50	No
		z	-0.118	3.50	No
	20	z	-0.239	0.50	No
		z	-0.239	7.50	No
		z	-0.094	1.50	No
W30	17	3	-0.199	0.50	No
		3	-0.199	7.50	No
		3	-0.046	6.50	No
	18	3	-0.293	0.50	No
		3	-0.293	7.50	No
		3	-0.067	1.50	No
	19	3	-0.059	1.50	No
		3	-0.10	3.50	No
	20	3	-0.214	0.50	No
		3	-0.214	7.50	No

		3	-0.048	1.50	No
W60	17	3	-0.175	0.50	No
		3	-0.175	7.50	No
		3	-0.048	6.50	No
	18	3	-0.20	0.50	No
		3	-0.20	7.50	No
		3	-0.098	1.50	No
	19	3	-0.053	1.50	No
		3	-0.066	3.50	No
	20	3	-0.162	0.50	No
		3	-0.162	7.50	No
		3	-0.071	1.50	No
W90	17	x	-0.163	0.50	No
		x	-0.163	7.50	No
		x	-0.048	6.50	No
	18	x	-0.154	0.50	No
		x	-0.154	7.50	No
		x	-0.105	1.50	No
	19	x	-0.051	1.50	No
		x	-0.048	3.50	No
	20	x	-0.136	0.50	No
		x	-0.136	7.50	No
		x	-0.076	1.50	No
W120	17	2	-0.175	0.50	No
		2	-0.175	7.50	No
		2	-0.048	6.50	No
	18	2	-0.20	0.50	No
		2	-0.20	7.50	No
		2	-0.098	1.50	No
	19	2	-0.053	1.50	No
		2	-0.066	3.50	No
	20	2	-0.162	0.50	No
		2	-0.162	7.50	No
		2	-0.071	1.50	No
W150	17	2	-0.199	0.50	No
		2	-0.199	7.50	No
		2	-0.046	6.50	No
	18	2	-0.293	0.50	No
		2	-0.293	7.50	No
		2	-0.067	1.50	No
	19	2	-0.059	1.50	No
		2	-0.10	3.50	No
	20	2	-0.214	0.50	No
		2	-0.214	7.50	No
		2	-0.048	1.50	No
Di	17	y	-0.09	0.50	No
		y	-0.09	7.50	No
		y	-0.028	6.50	No
	18	y	-0.136	0.50	No
		y	-0.136	7.50	No
		y	-0.096	1.50	No
	19	y	-0.033	1.50	No
		y	-0.052	3.50	No
	20	y	-0.096	0.50	No
		y	-0.096	7.50	No
		y	-0.074	1.50	No
WI0	17	z	-0.043	0.50	No
		z	-0.043	7.50	No
		z	-0.012	6.50	No
	18	z	-0.064	0.50	No

		z	-0.064	7.50	No
		z	-0.026	1.50	No
	19	z	-0.014	1.50	No
		z	-0.024	3.50	No
	20	z	-0.048	0.50	No
		z	-0.048	7.50	No
		z	-0.022	1.50	No
WI30	17	3	-0.04	0.50	No
		3	-0.04	7.50	No
		3	-0.012	6.50	No
	18	3	-0.056	0.50	No
		3	-0.056	7.50	No
		3	-0.014	1.50	No
	19	3	-0.013	1.50	No
		3	-0.021	3.50	No
	20	3	-0.042	0.50	No
		3	-0.042	7.50	No
		3	-0.01	1.50	No
WI60	17	3	-0.036	0.50	No
		3	-0.036	7.50	No
		3	-0.012	6.50	No
	18	3	-0.04	0.50	No
		3	-0.04	7.50	No
		3	-0.021	1.50	No
	19	3	-0.012	1.50	No
		3	-0.015	3.50	No
	20	3	-0.034	0.50	No
		3	-0.034	7.50	No
		3	-0.016	1.50	No
WI90	17	x	-0.034	0.50	No
		x	-0.034	7.50	No
		x	-0.012	6.50	No
	18	x	-0.032	0.50	No
		x	-0.032	7.50	No
		x	-0.022	1.50	No
	19	x	-0.012	1.50	No
		x	-0.012	3.50	No
	20	x	-0.029	0.50	No
		x	-0.029	7.50	No
		x	-0.017	1.50	No
WI120	17	2	-0.036	0.50	No
		2	-0.036	7.50	No
		2	-0.012	6.50	No
	18	2	-0.04	0.50	No
		2	-0.04	7.50	No
		2	-0.021	1.50	No
	19	2	-0.012	1.50	No
		2	-0.015	3.50	No
	20	2	-0.034	0.50	No
		2	-0.034	7.50	No
		2	-0.016	1.50	No
WI150	17	2	-0.04	0.50	No
		2	-0.04	7.50	No
		2	-0.012	6.50	No
	18	2	-0.056	0.50	No
		2	-0.056	7.50	No
		2	-0.014	1.50	No
	19	2	-0.013	1.50	No
		2	-0.021	3.50	No
	20	2	-0.042	0.50	No

		2	-0.042	7.50	No
		2	-0.01	1.50	No
WL0	17	z	-0.013	0.50	No
		z	-0.013	7.50	No
		z	-0.002	6.50	No
	18	z	-0.021	0.50	No
		z	-0.021	7.50	No
		z	-0.007	1.50	No
	19	z	-0.004	1.50	No
		z	-0.007	3.50	No
	20	z	-0.015	0.50	No
		z	-0.015	7.50	No
		z	-0.006	1.50	No
WL30	17	3	-0.012	0.50	No
		3	-0.012	7.50	No
		3	-0.002	6.50	No
	18	3	-0.018	0.50	No
		3	-0.018	7.50	No
		3	-0.004	1.50	No
	19	3	-0.003	1.50	No
		3	-0.006	3.50	No
	20	3	-0.013	0.50	No
		3	-0.013	7.50	No
		3	-0.003	1.50	No
WL60	17	3	-0.011	0.50	No
		3	-0.011	7.50	No
		3	-0.002	6.50	No
	18	3	-0.012	0.50	No
		3	-0.012	7.50	No
		3	-0.006	1.50	No
	19	3	-0.003	1.50	No
		3	-0.004	3.50	No
	20	3	-0.01	0.50	No
		3	-0.01	7.50	No
		3	-0.004	1.50	No
WL90	17	x	-0.01	0.50	No
		x	-0.01	7.50	No
		x	-0.002	6.50	No
	18	x	-0.01	0.50	No
		x	-0.01	7.50	No
		x	-0.006	1.50	No
	19	x	-0.003	1.50	No
		x	-0.003	3.50	No
	20	x	-0.009	0.50	No
		x	-0.009	7.50	No
		x	-0.005	1.50	No
WL120	17	2	-0.011	0.50	No
		2	-0.011	7.50	No
		2	-0.002	6.50	No
	18	2	-0.012	0.50	No
		2	-0.012	7.50	No
		2	-0.006	1.50	No
	19	2	-0.003	1.50	No
		2	-0.004	3.50	No
	20	2	-0.01	0.50	No
		2	-0.01	7.50	No
		2	-0.004	1.50	No
WL150	17	2	-0.012	0.50	No
		2	-0.012	7.50	No
		2	-0.002	6.50	No

	18	2	-0.018	0.50	No
		2	-0.018	7.50	No
		2	-0.004	1.50	No
	19	2	-0.003	1.50	No
		2	-0.006	3.50	No
	20	2	-0.013	0.50	No
		2	-0.013	7.50	No
		2	-0.003	1.50	No
LL1	1	y	-0.25	6.00	No
LL2	1	y	-0.25	0.00	No
LL3	1	y	-0.25	12.00	No
LLa1	17	y	-0.25	4.00	No
LLa2	18	y	-0.25	4.00	No
LLa3	19	y	-0.25	4.00	No
LLa4	20	y	-0.25	4.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Bentley

Current Date: 6/26/2019 4:16 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2091\LTE 7C\CT2091 (LTE 7C).retx\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2

LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 1-1_2x0.145	**7**	LC27 at 100.00%	0.10	OK	
		8	LC10 at 100.00%	0.08	OK	
		9	LC4 at 100.00%	0.09	OK	
		10	LC4 at 100.00%	0.22	OK	
		11	LC4 at 50.00%	**0.96**	**OK**	
		12	LC34 at 100.00%	0.09	OK	
		13	LC34 at 0.00%	0.06	OK	
		14	LC34 at 0.00%	0.07	OK	
		15	LC1 at 100.00%	0.09	OK	
		16	LC39 at 100.00%	0.12	OK	
	PIPE 2-1_2x0.203	**1**	LC7 at 16.41%	0.25	OK	
		2	LC2 at 83.59%	**0.31**	**OK**	
	PIPE 2x0.154	**3**	LC4 at 100.00%	0.27	OK	
		4	LC10 at 0.00%	0.29	OK	
		5	LC11 at 100.00%	0.25	OK	
		6	LC10 at 0.00%	0.25	OK	
		17	LC7 at 29.17%	0.29	OK	
		18	LC1 at 29.17%	**0.54**	**OK**	
		19	LC7 at 31.25%	0.12	OK	
		20	LC1 at 29.17%	0.40	OK	
	PIPE 3x0.216	**29**	LC4 at 0.00%	**0.05**	**OK**	

Bentley

Current Date: 6/26/2019 4:16 PM
Units system: English
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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	0.00	0.00	4.50	0
3	6.00	0.00	4.50	0
4	-6.00	0.00	4.50	0
5	0.00	3.625	0.00	0
6	0.00	3.625	4.50	0
7	6.00	3.625	4.50	0
8	-6.00	3.625	4.50	0
9	-4.10	0.00	4.50	0
10	-4.10	3.625	4.50	0
11	4.10	0.00	4.50	0
12	4.10	3.625	4.50	0
21	-0.4986	3.625	0.5473	0
80	-3.7676	3.625	4.1351	0
81	-0.4986	0.00	0.5473	0
82	-3.7676	0.00	4.1351	0
111	-2.1608	3.625	2.3716	0
112	-2.1608	0.00	2.3716	0
121	0.4986	3.625	0.5473	0
180	3.7676	3.625	4.1351	0
210	2.1608	3.625	2.3716	0
211	3.7676	0.00	4.1351	0

212	2.1608	0.00	2.3716	0
213	0.4986	0.00	0.5473	0
230	5.75	-2.00	4.70	0
231	1.833	-2.00	4.70	0
232	-2.167	-2.00	4.70	0
233	-5.75	-2.00	4.70	0
234	5.75	6.00	4.70	0
235	1.833	6.00	4.70	0
236	-2.167	6.00	4.70	0
237	-5.75	6.00	4.70	0
238	-3.7676	1.8125	4.1351	0
239	-4.2676	1.8125	-0.3649	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
5	1	1	1	1	1	1
239	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	3	4		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	7	8		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	10	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	5	12		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	9	1		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	1	11		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	81	21		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
8	21	112		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
9	112	111		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
10	111	82		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
11	82	80		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
12	213	121		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
13	121	212		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
14	212	210		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
15	210	211		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
16	211	180		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
17	234	230		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
18	235	231		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
19	236	232		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
20	237	233		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	238	239		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
17	315.00	0	0.00	0.00	0.00
18	315.00	0	0.00	0.00	0.00
19	315.00	0	0.00	0.00	0.00
20	315.00	0	0.00	0.00	0.00

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING TOWER: • NEW AT&T ANTENNAS: (OPA65R–BU6BA) (TYP. OF 1 PER ALPHA & GAMMA SECTORS, TOTAL OF 2). • NEW AT&T ANTENNAS: (OPA65R–BU8BA) (TYP. OF 1 PER BETA SECTOR). • NEW AT&T RRUS: RRUS– E2 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T SURGE ARRESTOR: DC6–48–60–18–8C–EV (TOTAL OF 1) & (2) DC CABLES. ITEMS TO BE MOUNTED AT GROUND LEVEL: • INSTALL (1) RACK MOUNTED DC12 • INSTALL (6) TELCO FLEX ITEMS TO REMAIN: • (6) ANTENNAS, (18) RRU'S, (12) COAX CABLES, (6) DC POWER & (2) 18PAIR FIBER.
SITE ADDRESS:	401 WAKELEE AVENUE ANSONIA, CT 06401
LATITUDE:	41.3560750 N, 42° 21' 21.87" N
LONGITUDE:	73.0920269 W, 73° 5' 31.30" W
TYPE OF SITE:	SELF SUPPORT TOWER/ INDOOR EQUIPMENT
STRUCTURE HEIGHT:	195'±
RAD CENTER:	167'–0"
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2091

SITE NAME: ANSONIA NW_SPECTRASITE TOWER

FA CODE:10035308

PACE ID: MRCTB038055

PROJECT: LTE 7C_2019 UPGRADE

DRAWING INDEX

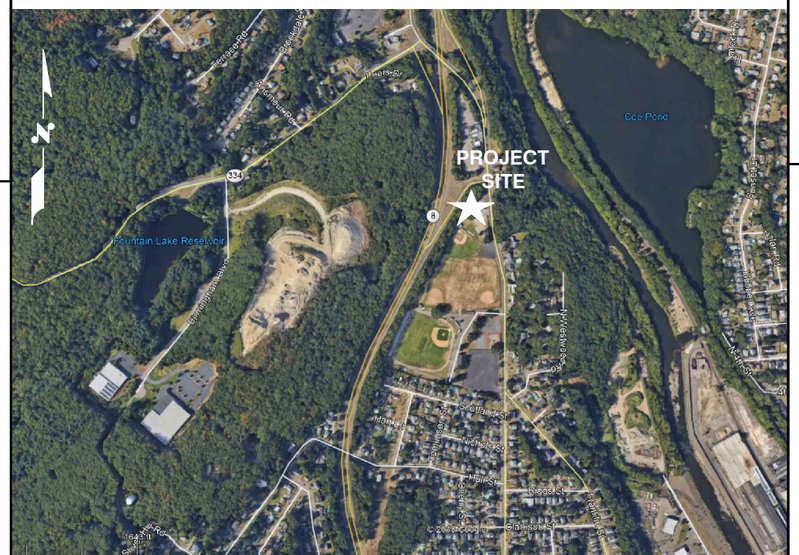
SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	1
GN–1	GENERAL NOTES	1
A–1	COMPOUND & EQUIPMENT PLANS	1
A–2	ANTENNA LAYOUTS	1
A–3	ELEVATION	1
A–4	DETAILS	1
RF–1	RF PLUMBING DIAGRAM	1
G–1	GROUNDING DETAILS	1

ATC SITE NAME: ANSONIA WAKELEE
ATC SITE #: 302470

VICINITY MAP

DIRECTIONS TO SITE:

HEAD NORTHEAST TOWARD LEGGATT McCALL CONN. TURN LEFT ONTO LEGGATT McCALL CONN. CONTINUE ONTO BURR ST. TURN LEFT ONTO COCHITUATE RD. TAKE THE RAMP TO I–90 E/MASSPIKE W/SPRINGFIELD/BOSTON. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I–90 W/MASSPIKE W/SPRINGFIELD/BOSTON AND MERGE ONTO I–90 W MASSPIKE. MERGE ONTO I–90W MASSPIKE .TAKE EXIT 9 FOR I–84 TOWARD US–20/HARTFORD/NYC. CONTINUE ONTO I–84. KEEP RIGHT TO STAY ON I–84 TAKE EXIT 19 ON THE LEFT TO MERGE ONTO CT–8 S TOWARD NAUGATUCK/BRIDGEPORT. TAKE EXIT 19 TOWARD CT–334/WAKELEE AVE/ANSONIA. TURN LEFT ONTO DERBY AVE. CONTINUE ONTO CT–334 E. TURN RIGHT END AT 401 WAKELEE AVE.



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

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OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2091
SITE NAME: ANSONIA NW_SPECTRASITE TOWER
ATC SITE#: 302470

401 WAKELEE AVENUE
ANSONIA, CT 06401
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	07/03/19	ISSUED FOR CONSTRUCTION	MR	AT	DJC
A	06/28/19	ISSUED FOR REVIEW	MR	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: HC

STATE OF CONNECTICUT — REGISTERED — No. 24... — LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	T–1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH LTE SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 WITH 2018 CT BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2091
SITE NAME: ANSONIA NW_SPECTRASITE TOWER
ATC SITE#: 302470

401 WAKELEE AVENUE
ANSONIA, CT 06401
NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	07/03/19	ISSUED FOR CONSTRUCTION	MR	AT	DJC
A	06/28/19	ISSUED FOR REVIEW	MR	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: HC

STATE OF CONNECTICUT · DEREK J. CREASEY · NO. 28554 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	GN-1	1

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: JUNE 26, 2019

SPECIAL CONSTRUCTION/PLANNING NOTE:

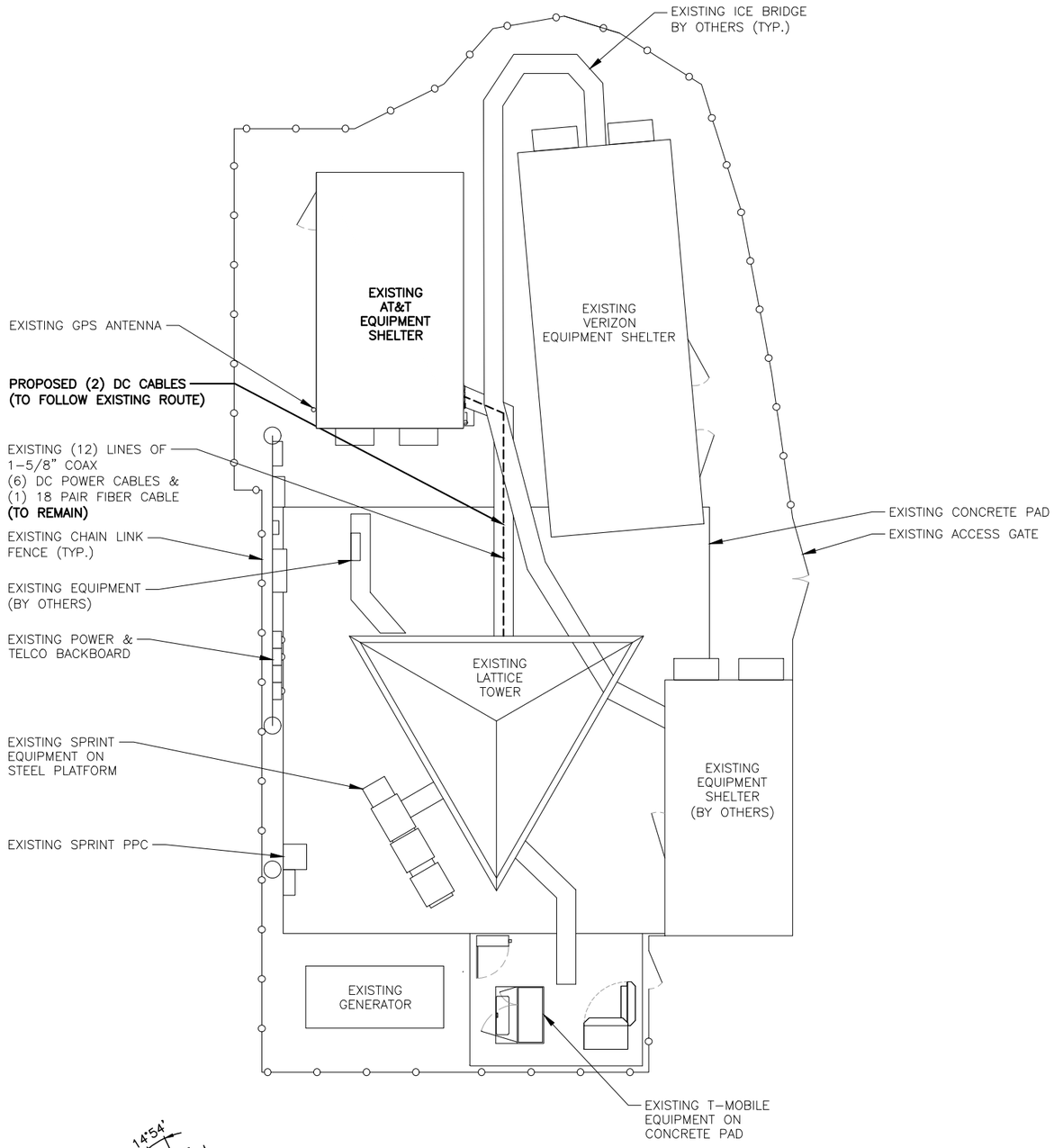
EQUIPMENT SHOWN AS "TO BE INSTALLED AS PART OF LTE 5C/6C 5G NR PROJECT" REFERS TO RECORD DRAWINGS AND NOT ACTUAL FIELD CONDITIONS. DEPLOYMENT OF EQUIPMENT "TO BE INSTALLED AS PART OF LTE 5C/6C/5G NR PROJECT" UNDER A SEPARATE BUILDING PERMIT PRIOR TO CONSTRUCTION START OF THIS PROJECT.

NOTE:

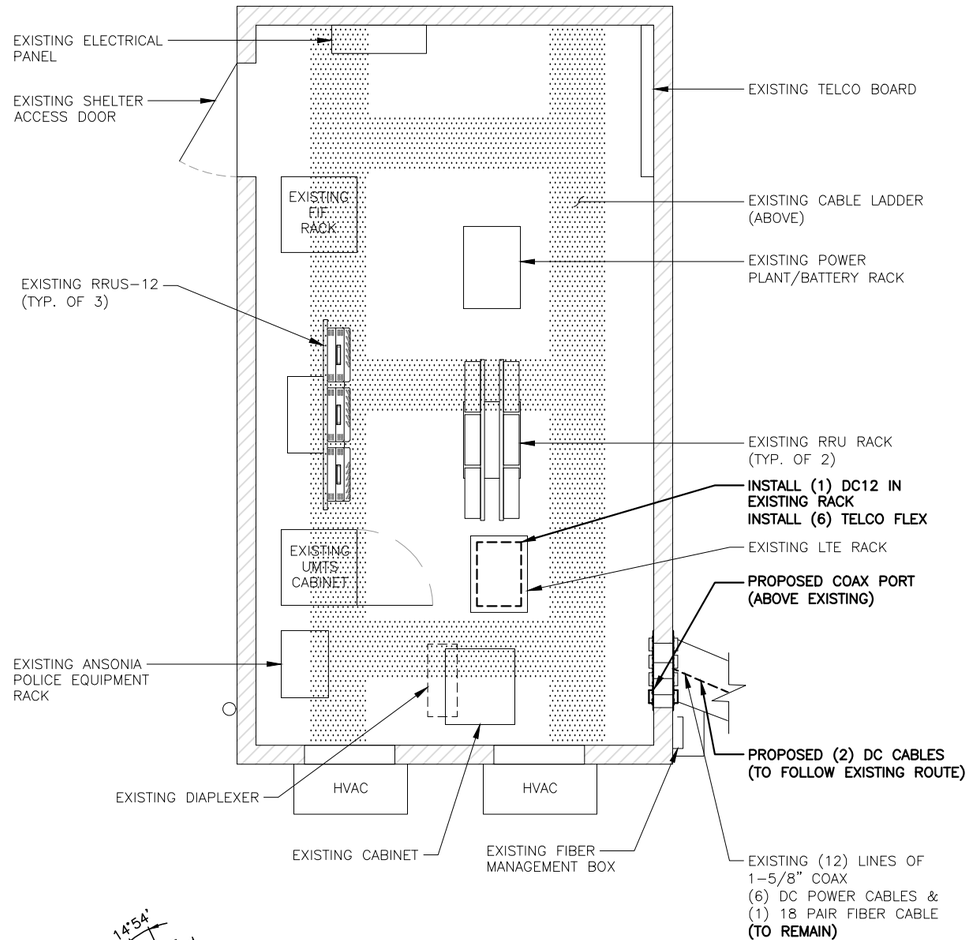
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER AND FINAL RF DATA SHEET



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
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SITE NUMBER: CT2091
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ATC SITE#: 302470

401 WAKELEE AVENUE
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NEW HAVEN COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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A	06/28/19	ISSUED FOR REVIEW	MR	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: HC

STATE OF CONNECTICUT
DEREK J. CREASEY
LICENSED PROFESSIONAL ENGINEER
No. 23536

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	A-1	1

NOTE:

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NOTE:

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NOTE:

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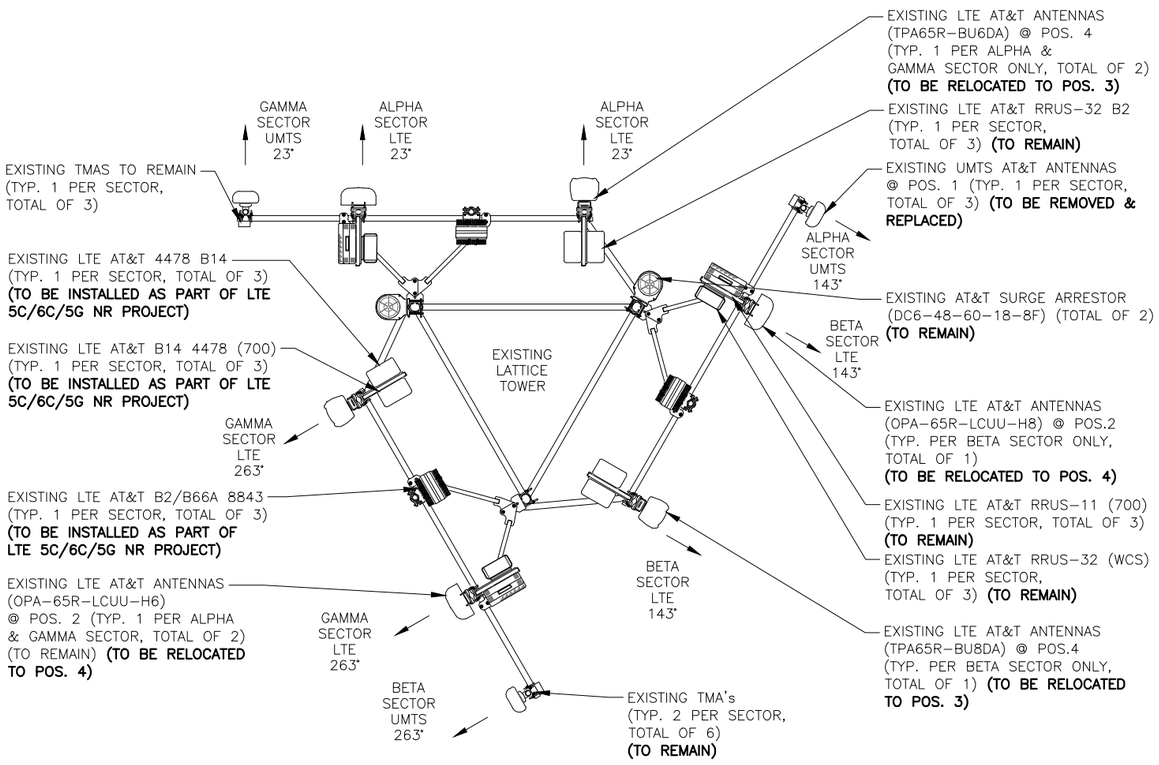
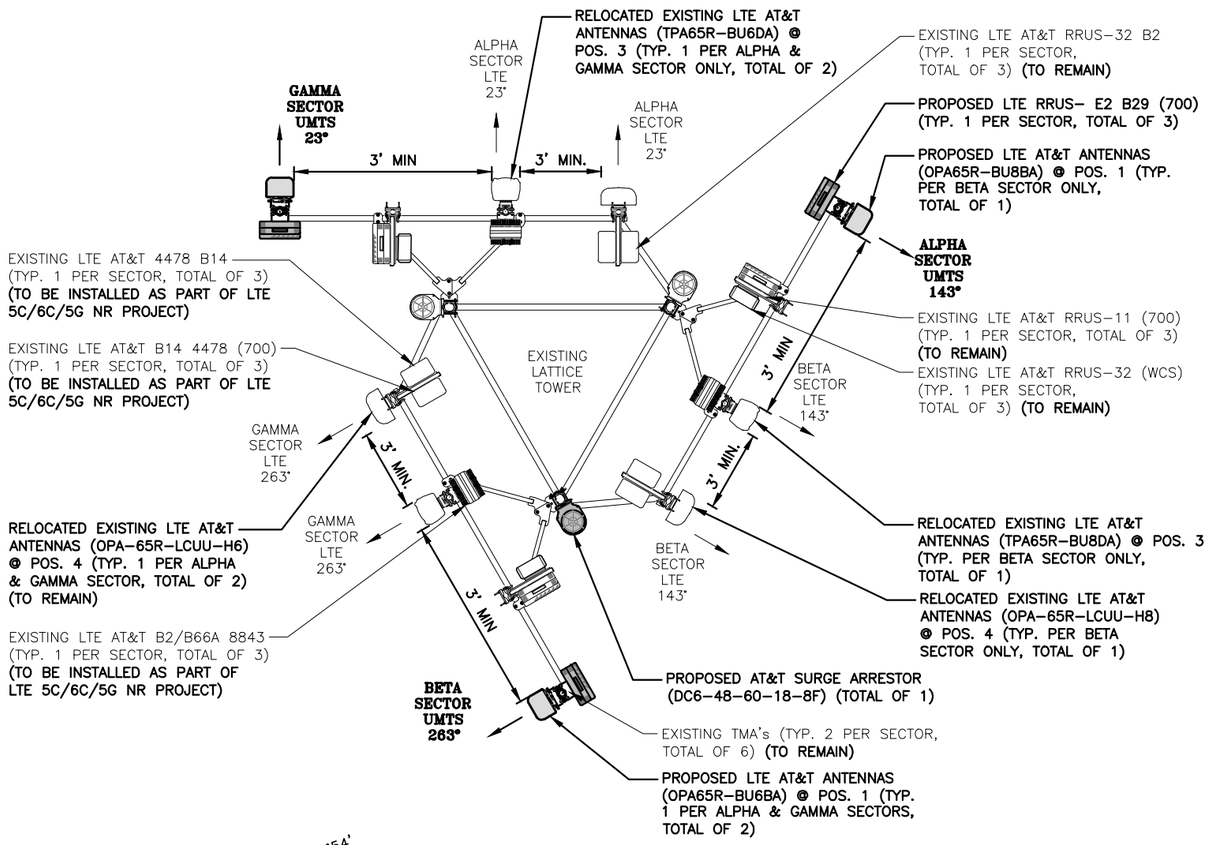


EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

HUDSON Design Group LLC
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SITE NUMBER: CT2091
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ATC SITE#: 302470

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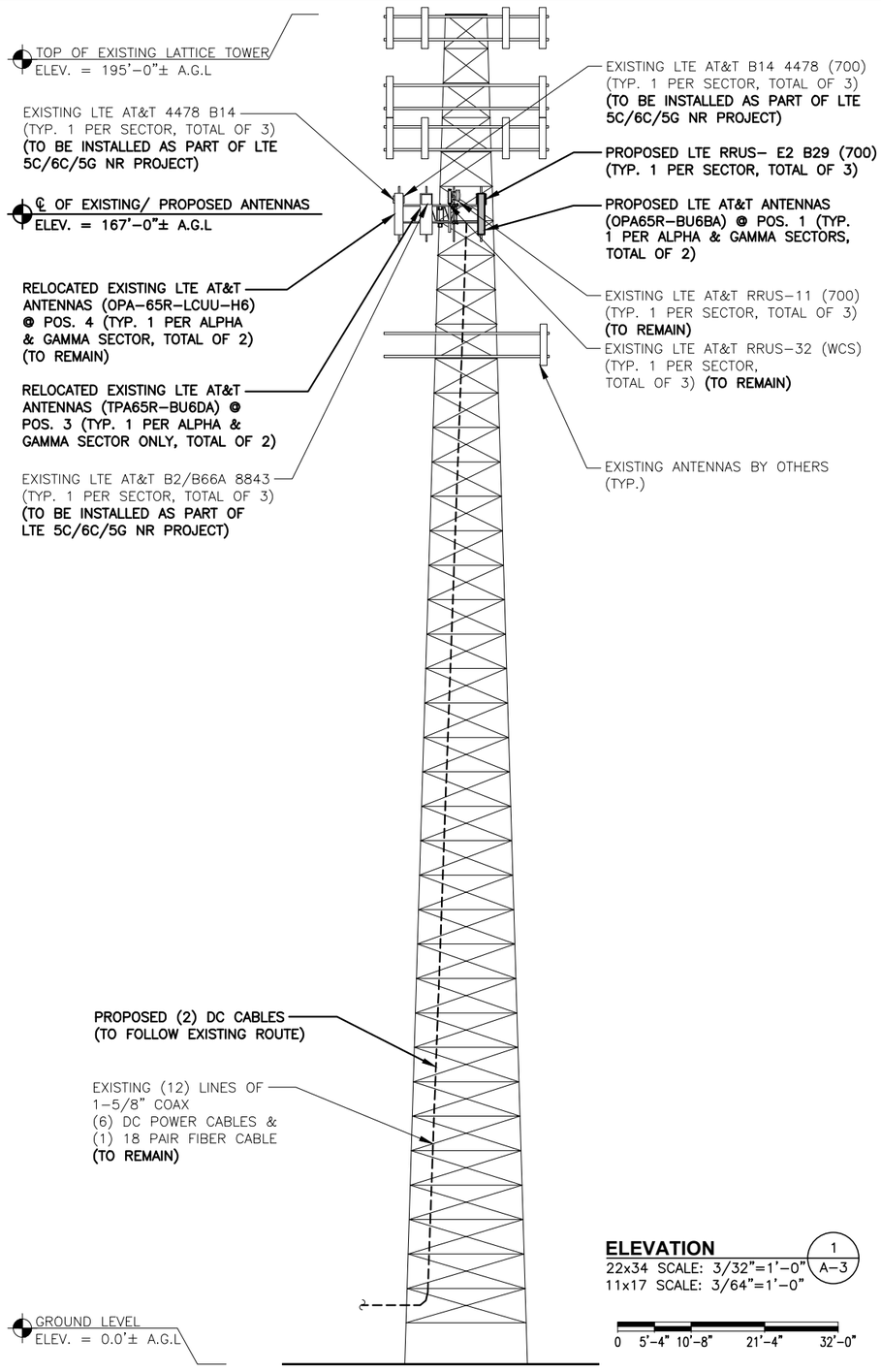
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: HC

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 23551
LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	A-2	1



ELEVATION 1 / A-3
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:

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HUDSON DESIGN GROUP, LLC.
DATED: JUNE 26, 2019

NOTE:

ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER AND FINAL RF DATA SHEET

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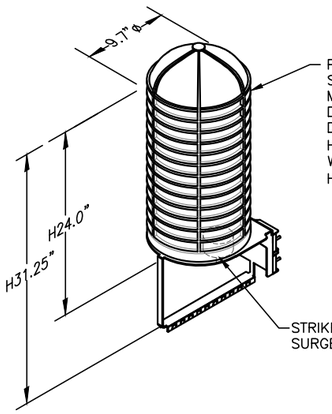
STATE OF CONNECTICUT
DEREK J. CREASEY
No. 27554
LICENSED PROFESSIONAL ENGINEER

AT&T

ELEVATION
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	A-3	1



PROPOSED SURGE SUPPRESSOR
MODEL NUMBERS:
DC6-48-60-18-8C-EV
DIMENSIONS:
H24.0"x9.7"ø
WITH BRACKET:
H31.25"X9.7"ø

STRIKESORB 30-V1
SURGE PROTECTIVE DEVICE

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (1 / A-4)
SCALE: N.T.S

NOTE:

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NOTE:

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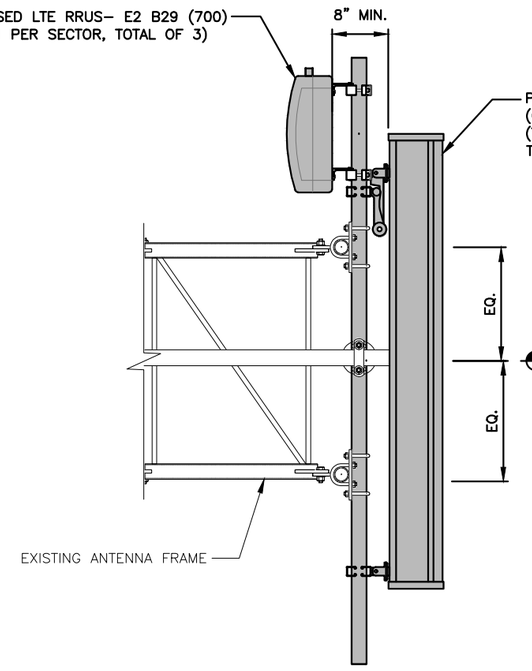
DATED: JUNE 26, 2019

PROPOSED LTE RRUS- E2 B29 (700)
(TYP. 1 PER SECTOR, TOTAL OF 3)



PROPOSED LTE AT&T ANTENNAS
(OPA65R-BU8BA) @ POS. 1
(TYP. PER BETA SECTOR ONLY,
TOTAL OF 1)

℄ OF PROPOSED/EXISTING
AT&T ANTENNAS
ELEV. = 167'± A.G.L

PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (2 / A-4)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	**PROPOSED**	**UMTS 850**	**OPA65R-BU6BA**	**71.1X11.7X8.4**	**±167'**	**23°**	(2) POWERWAVE LGP21901 (2) TT19-08BP111-001	**(P)(1) RRUS-E2 B29**	**20.4x18.5x7.5**	(2) 1-5/8 COAX	--
A2							-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8C
A3	EXISTING	LTE 700 B14/850/AWS/PCS	TPA65R-BU6DA	71.2X21X7.8	±167'	23°	(E)(2) DBCT108F1V92-1	(E)(1) B14 4478 (E)(1) 4478 B5 (E)(1) B2/B66A 8843	18.1x13.2x8.3 18.1X13.2X8.3 14.9X13.2X10.9	--	
A4	EXISTING	LTE 700 BC/1WCS	OPA-65R-LCUU-H6	72X14.8X7.4	±167'	23°	--	(E)(1) RRUS-11 (E)(1) RRUS-32	- -	(2) 1-5/8 COAX	
B1	**PROPOSED**	**UMTS 850**	**OPA65R-BU8BA**	**95.9X11.7X8.4**	**±167'**	**143°**	(2) POWERWAVE LGP21901 (2) TT19-08BP111-001	**(P)(1) RRUS-E2 B29**	**20.4x18.5x7.5**	(2) 1-5/8 COAX	
B2							-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8C
B3	EXISTING	LTE 700 B14/850/AWS/PCS	TPA65R-BU8DA	96X21X7.8	±167'	143°	(E)(2) DBCT108F1V92-1	(E)(1) B14 4478 (E)(1) 4478 B5 (E)(1) B2/B66A 8843	18.1x13.2x8.3 18.1X13.2X8.3 14.9X13.2X10.9	--	
B4	EXISTING	LTE 700 BC/1WCS	OPA-65R-LCUU-H8	92.7X14.8X7.4	±167'	143°	--	(E)(1) RRUS-11 (E)(1) RRUS-32	- -	(2) 1-5/8 COAX	
C1	**PROPOSED**	**UMTS 850**	**OPA65R-BU6BA**	**71.1X11.7X8.4**	**±167'**	**263°**	(2) POWERWAVE LGP21901 (2) TT19-08BP111-001	**(P)(1) RRUS-E2 B29**	**20.4x18.5x7.5**	(2) 1-5/8 COAX	--
C2							-	-	-	-	**(P) (1) RAYCAP DC6-48-60-18-8C (DC ONLY)**
C3	EXISTING	LTE 700 B14/850/AWS/PCS	TPA65R-BU6DA	71.2X21X7.8	±167'	263°	(E)(2) DBCT108F1V92-1	(E)(1) B14 4478 (E)(1) 4478 B5 (E)(1) B2/B66A 8843	18.1x13.2x8.3 18.1X13.2X8.3 14.9X13.2X10.9	--	
C4	EXISTING	LTE 700 BC/1WCS	OPA-65R-LCUU-H6	72X14.8X7.4	±167'	263°	--	(E)(1) RRUS-11 (E)(1) RRUS-32	- -	(2) 1-5/8 COAX	

FINAL ANTENNA SCHEDULE (4 / A-4)
SCALE: N.T.S

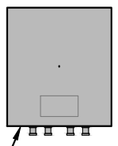
RRU CHART

QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
6(E)	RRUS-32	27.2"	12.1"	7.0"
3(E)	4426 B66	15.0"	13.2"	7.4"
3(E)	B14 4478	15.0"	13.2"	7.4"
3(E)	8843 B2/B66A	14.9"	13.2"	10.9"
3(P)	RRUS-E2 B29	20.4"	18.5"	7.5"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

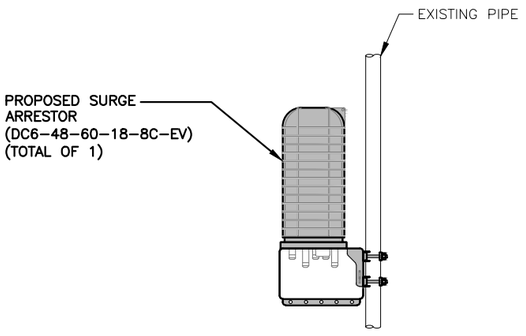
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-4)
SCALE: N.T.S



SURGE ARRESTOR MOUNTING DETAIL (5 / A-4)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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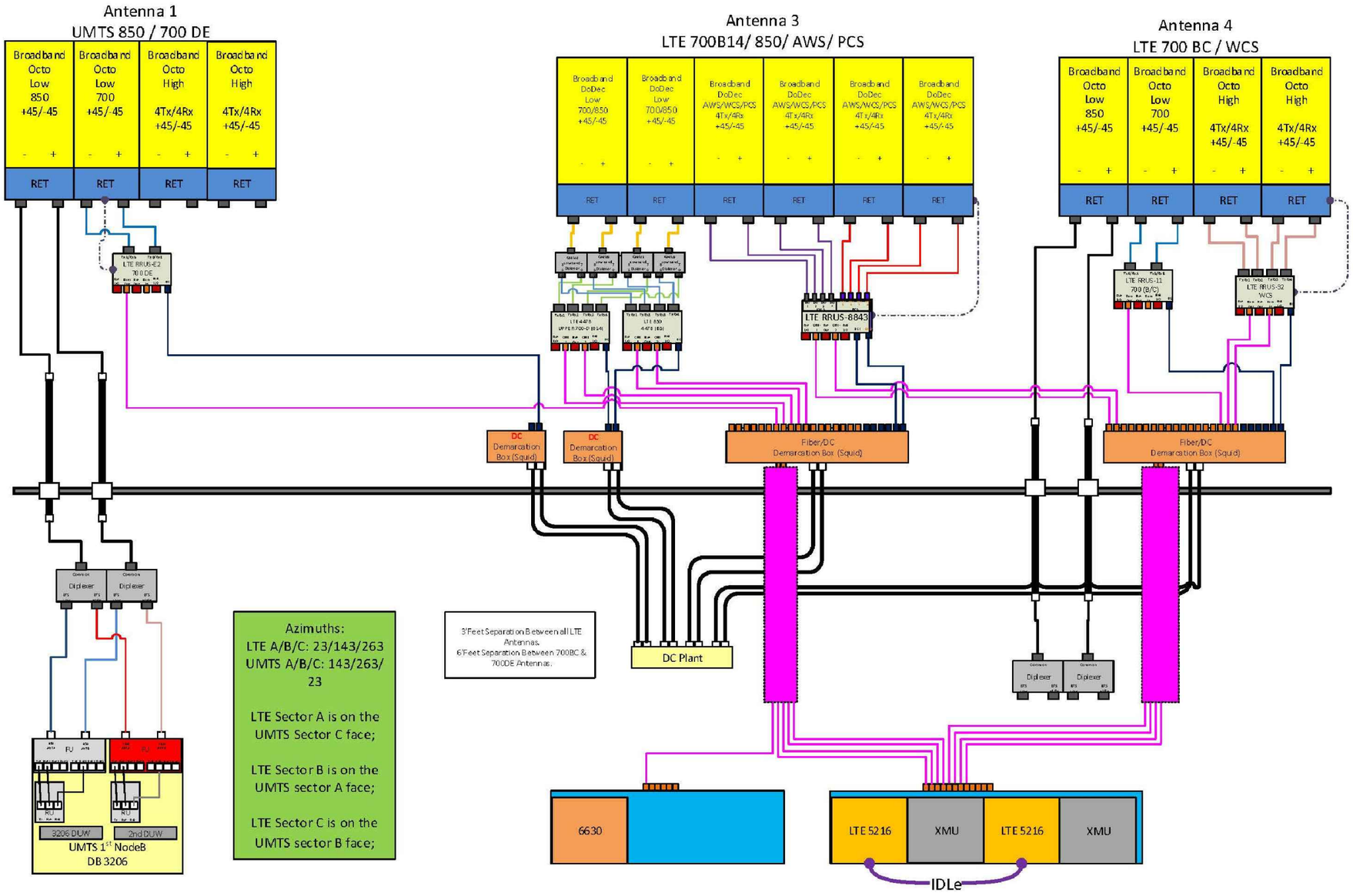
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: HC

AT&T

DETAILS
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	A-4	1



RF PLUMBING DIAGRAM 1 / RF–1
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

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

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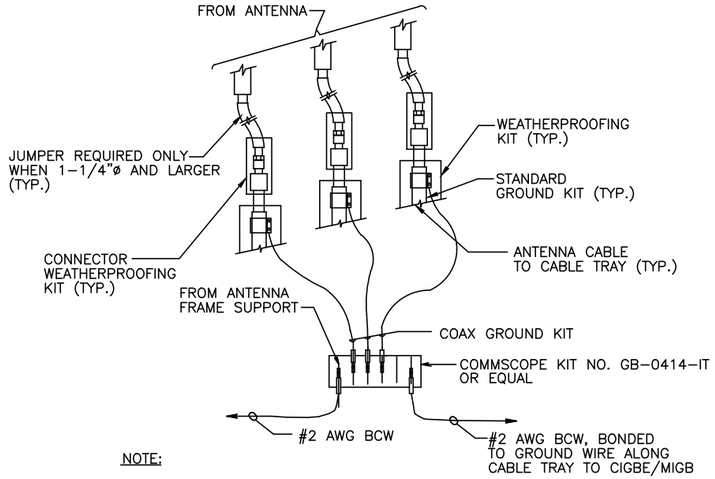
STATE OF CONNECTICUT · DEREK J. CREASEY · NO. 27551 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	RF–1	1

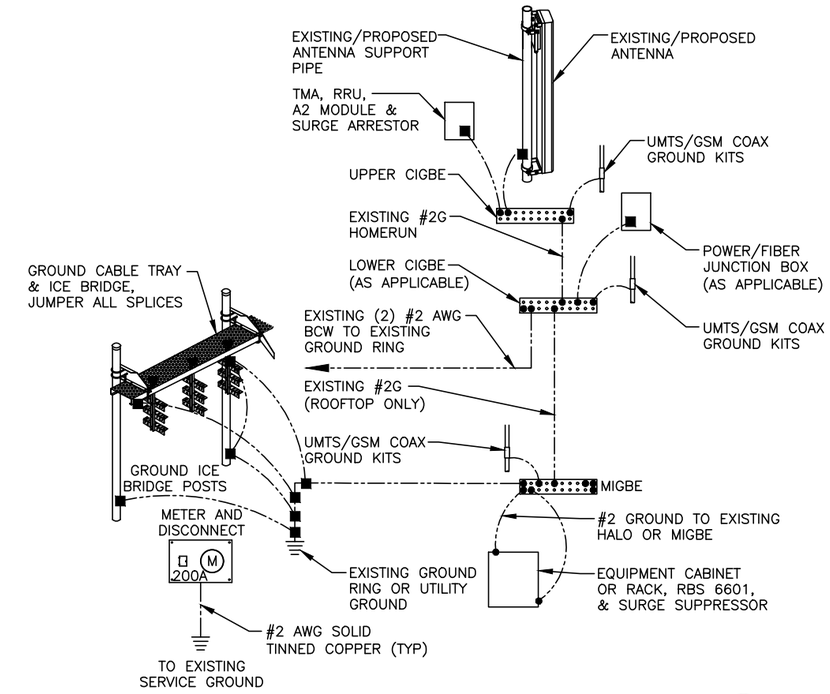


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

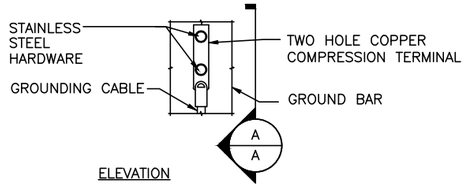
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

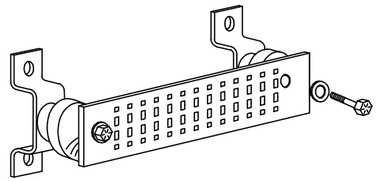
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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STATE OF CONNECTICUT · DEREK J. CREASEY · No. 25571 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 7C_2019 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2091	G-1	1

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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THE UPS STORE
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CHARLOTTE ,NC 28204

UPS Access Point™
CHERRY MARKET-AP443
603 BALDWIN AVE
CHARLOTTE ,NC 28204

UPS Access Point™
PREMIER PHARMACY AND WELLNESS
3010 MONROE RD
CHARLOTTE ,NC 28205

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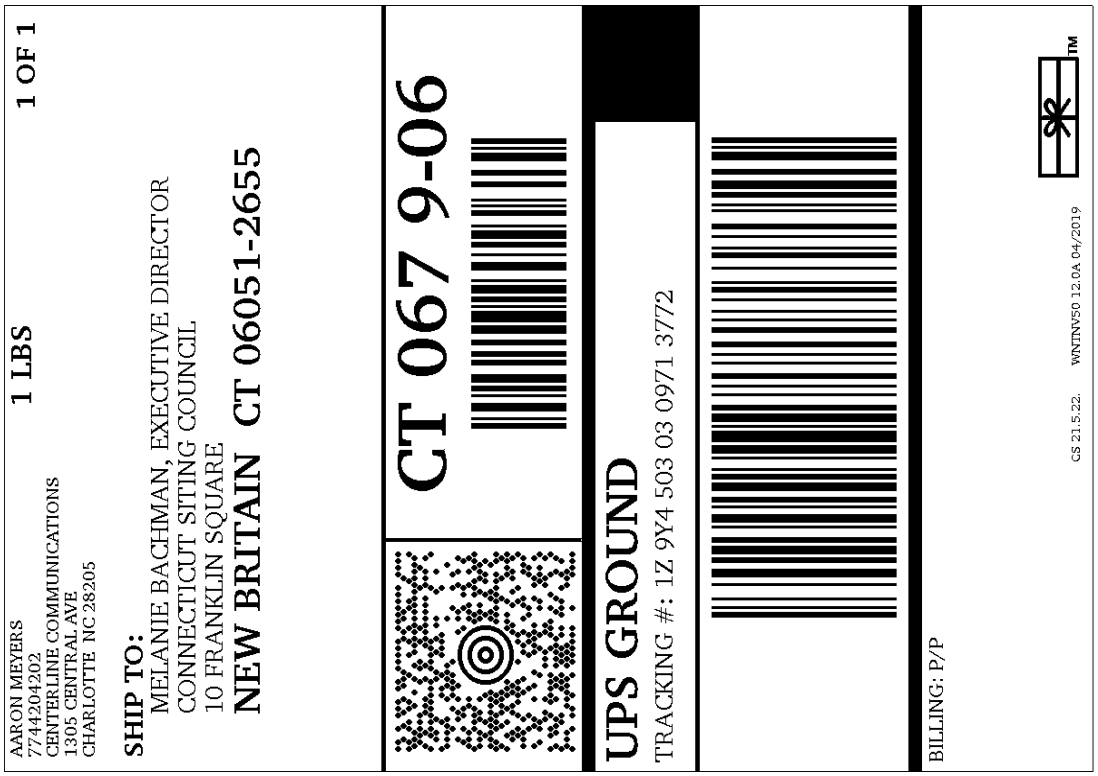

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
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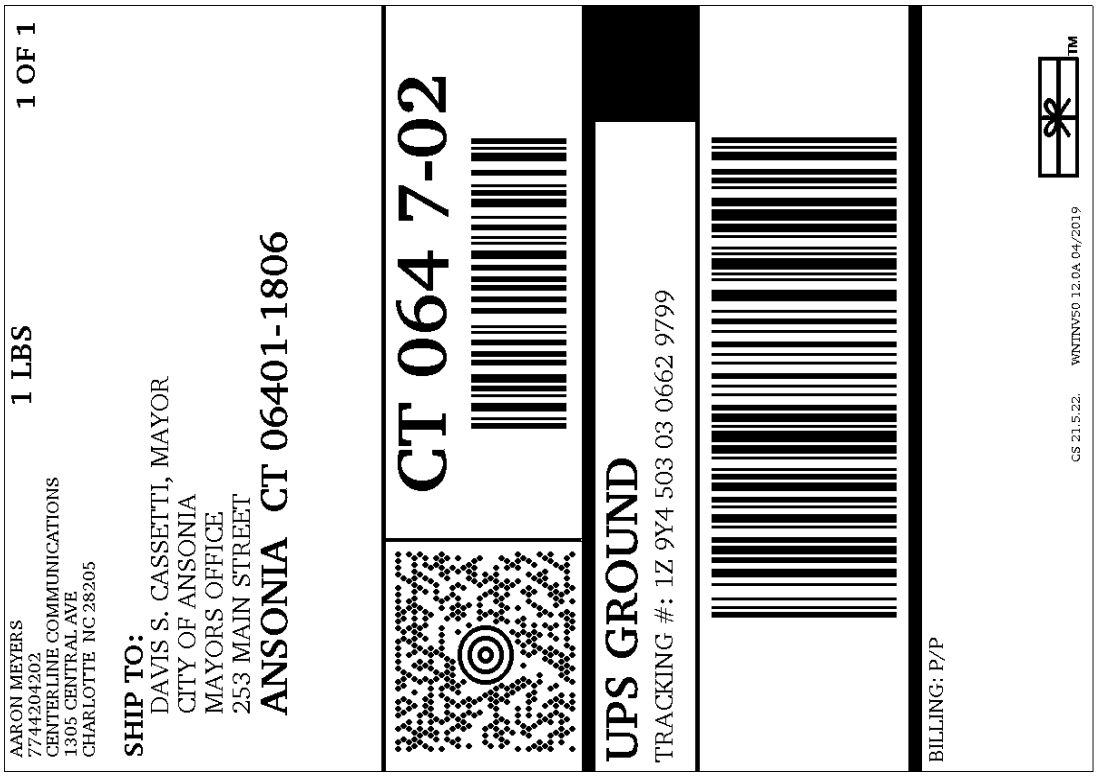

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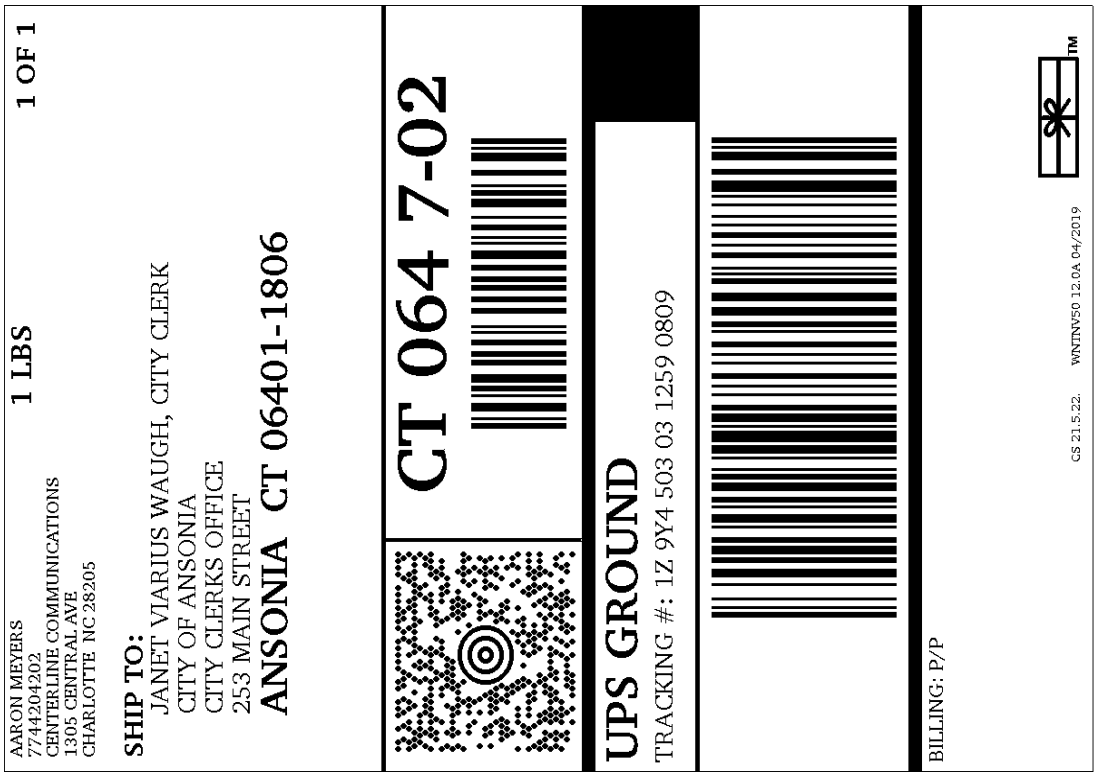

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