EMPIRE telecom
A QualTek Company

October 3, 2017

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

RE: NOTICE OF EXEMPT MODIFICATION
55 Walls Drive, Fairfield, CT 06824

Dear Ms. Bachman:

Enclosed please find and original and two (2) copies of a Notice of Exempt Modification including drawings, structural analyses, RF emissions reports, parcel maps, and a check in the amount of six hundred twenty five dollars ($625.00) for the filing fee. In addition, I have included a single copy of each notification letter to the municipality, the Department of Planning and Zoning, and to the property and tower owner. The proof of delivery is likewise enclosed and consists of a copy of the Certified Mail receipt, the USPS receipt and a copy of the USPS Tracking Results from the USPS website, acknowledging the date and time of delivery.

I have submitted electronic copies of these documents via email to the CSC today.

Please feel free to contact me with any questions or comments. Thank you for your kind cooperation in this matter.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-286-4006
jandrews@empiretelecomm.com

Enclosures

EMPIRE telecom
A QualTek Company

September 27, 2017

Jim Wendt, Planning Director
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

RE: AT&T Wireless Modifications to Telecommunication Facility –
55 Walls Drive, Fairfield, CT 06824

Dear Mr. Wendt:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility AT&T Wireless currently maintains nine (9) antennas at the 70 foot level of an existing 70 foot self-supported roof tower located at 55 Walls Drive, in Fairfield, CT. The tower is owned by 55 Walls Dr., LLC. The property is owned by 55 Walls Dr., LLC.

AT&T Wireless now seeks to replace three (3) existing antennas at the 70 foot level of the tower, to be mounted on the existing tower, as well as install three (3) new RRUS-32 Remote Radio Units ("RRU"), install 3 new RRUS-32 B66 RRUs on the tower, below the antennas. In addition, six (6) TMAs with twelve (12) low band combiners will be replaced and three (3) new RRUS-11 with surge arrestors are to be installed within the equipment room.

This letter is intended to serve as the required notice to the municipality's Planning and Zoning Department. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

EMPIRE telecom
A QualTek Company

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-286-4006 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

Enclosures

cc: Melanie Bachman, Connecticut Siting Council

EMPIRE telecom
A QualTek Company

September 27, 2017

55 Walls Dr., LLC
1 Corporate Drive
Shelton, CT 06484
Attn: Robert D. Scinto

RE: AT&T Wireless Modifications to Telecommunication Facility –
55 Walls Drive, Fairfield, CT 06824

Dear Mr. Scinto:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility AT&T Wireless currently maintains nine (9) antennas at the 70 foot level of an existing 70 foot self-supported roof tower located at 55 Walls Drive, in Fairfield, CT. The tower is owned by 55 Walls Dr., LLC. The property is owned by 55 Walls Dr., LLC.

AT&T Wireless now seeks to replace three (3) existing antennas at the 70 foot level of the tower, to be mounted on the existing tower, as well as install three (3) new RRUS-32 Remote Radio Units ("RRU"), install 3 new RRUS-32 B66 RRUs on the tower, below the antennas. In addition, six (6) TMAs with twelve (12) low band combiners will be replaced and three (3) new RRUS-11 with surge arrestors are to be installed within the equipment room.

This letter is intended to serve as the required notice to the tower owner and the property owner. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

EMPIRE telecom
A QualTek Company

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-286-4006 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

Enclosures

cc: Melanie Bachman, Connecticut Siting Council

EMPIRE telecom
A QualTek Company

September 27, 2017

The Honorable Michael C. Tetreau
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

RE: AT&T Wireless Modifications to Telecommunication Facility –
55 Walls Drive, Fairfield, CT 06824

Dear Selectman Tetreau:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility AT&T Wireless currently maintains nine (9) antennas at the 70 foot level of an existing 70 foot self-supported roof tower located at 55 Walls Drive, in Fairfield, CT. The tower is owned by 55 Walls Dr., LLC. The property is owned by 55 Walls Dr., LLC.

AT&T Wireless now seeks to replace three (3) existing antennas at the 70 foot level of the tower, to be mounted on the existing tower, as well as install three (3) new RRUS-32 Remote Radio Units ("RRU"), install 3 new RRUS-32 B66 RRUs on the tower, below the antennas. In addition, six (6) TMAs with twelve (12) low band combiners will be replaced and three (3) new RRUS-11 with surge arrestors are to be installed within the equipment room.

This letter is intended to serve as the required notice to the municipality. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

EMPIRE telecom
A QualTek Company

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-286-4006 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

Enclosures

cc: Melanie Bachman, Connecticut Siting Council

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DATE & TIME	STATUS OF ITEM	LOCATION
October 2, 2017, 7:29 am	**Delivered**	**FAIRFIELD, CT 06824**
Your item was delivered at 7:29 am on October 2, 2017 in FAIRFIELD, CT 06824.		
October 2, 2017, 7:05 am	Arrived at Unit	FAIRFIELD, CT 06825
September 29, 2017, 8:52 am	Out for Delivery	FAIRFIELD, CT 06824
September 29, 2017, 8:42 am	Sorting Complete	FAIRFIELD, CT 06824

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09/27/2017

Sent To: Jim Wendt, Planning Director
Street and Apt. No., or PO Box No.: 725 Old Post Rd
City, State, ZIP+4®: Fairfield CT 06824

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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October 2, 2017, 7:29 am	**Delivered**	**FAIRFIELD, CT 06824**
Your item was delivered at 7:29 am on October 2, 2017 in FAIRFIELD, CT 06824.		
October 2, 2017, 7:05 am	Arrived at Unit	FAIRFIELD, CT 06825
September 29, 2017, 8:52 am	Out for Delivery	FAIRFIELD, CT 06824
September 29, 2017, 8:42 am	Sorting Complete	FAIRFIELD, CT 06824

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Expected Delivery on: Monday, October 2, 2017 by 8:00pm ⓘ

Product & Tracking Information

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Postal Product:
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Features:
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DATE & TIME	STATUS OF ITEM	LOCATION
October 2, 2017, 2:45 pm	**Delivered, Front Desk/Reception**	**SHELTON, CT 06484**
Your item was delivered to the front desk or reception area at 2:45 pm on October 2, 2017 in SHELTON, CT 06484.		
October 2, 2017, 9:44 am	Out for Delivery	SHELTON, CT 06484
October 2, 2017, 9:34 am	Sorting Complete	SHELTON, CT 06484
October 2, 2017, 8:18 am	Arrived at Unit	SHELTON, CT 06484

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Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2120

Fairfield Central
55 Walls Drive
Fairfield, CT 06824

September 19, 2017

Centerline Communications Project Number: 950006-074

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**18.93 %**

September 19, 2017

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

Emissions Analysis for Site: **CT2120 – Fairfield Central**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **55 Walls Drive, Fairfield, CT**, 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 (μW/cm2). 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 **55 Walls Drive, Fairfield, CT**, 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	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60
LTE	850 MHz	2	60
LTE	2300 MHz (WCS)	2	60
LTE	2100 MHz (AWS)	2	60
UMTS	850 MHz	2	30

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 HPA-65R-BUU-H6	70
A	2	Kathrein 800-10798	70
A	3	Powerwave 7770	70
B	1	CCI HPA-65R-BUU-H6	70
B	2	Kathrein 800-10798	70
B	3	Powerwave 7770	70
C	1	CCI HPA-65R-BUU-H6	70
C	2	Kathrein 800-10798	70
C	3	Powerwave 7770	70

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 HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	6.68
Antenna A2	Kathrein 800-10798	850 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	13.65 / 15.15 / 14.75	6	360	10,291.42	10.90
Antenna A3	Powerwave 7770	850 MHz	11.4	2	60	828.23	1.28
						Sector A Composite MPE%	**18.86**
Antenna B1	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	6.68
Antenna B2	Kathrein 800-10798	850 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	13.65 / 15.15 / 14.75	6	360	10,291.42	10.90
Antenna B3	Powerwave 7770	850 MHz	11.4	2	60	828.23	1.28
						Sector B Composite MPE%	**18.86**
Antenna C1	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	6.68
Antenna C2	Kathrein 800-10798	850 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	13.65 / 15.15 / 14.75	6	360	10,291.42	10.90
Antenna C3	Powerwave 7770	850 MHz	11.4	2	60	828.23	1.28
						Sector C Composite MPE%	**18.86**

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 Sector Value	**18.86 %**
WMNR	0.01 %
ABA Alarm	0.06 %
Site Total MPE %:	**18.93 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	18.86 %
AT&T Sector B Total:	18.86 %
AT&T Sector C Total:	18.86 %
Site Total:	18.93 %

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 (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 700 MHz LTE	2	940.05	70	16.50	700 MHz	467	3.53%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	70	31.44	1900 MHz (PCS)	1000	3.14%
AT&T 850 MHz LTE	2	1,390.44	70	24.41	850 MHz	567	4.30%
AT&T 2300 MHz (WCS) LTE	2	1,964.04	70	34.48	2300 MHz (WCS)	1000	3.45%
AT&T 2100 MHz (AWS) LTE	2	1,791.23	70	31.44	2100 MHz (AWS)	1000	3.14%
AT&T 850 MHz UMTS	2	414.12	70	7.27	850 MHz	567	1.28%
						Total:	**18.86%**

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:	18.86 %
Sector B:	18.86 %
Sector C:	18.86 %
AT&T Maximum Total (per sector):	18.86 %
Site Total:	18.93 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.93 %** 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.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

MASER CONSULTING
— CONNECTICUT —

331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
T: 732.383.1950
www.maserconsulting.com

LTE Multi Carrier

Tower Feasibility Analysis

Site Number:	*CT2120*
FA Location ID:	*10035074*
Site Name:	*Fairfield Central*
Site Address:	*55 Walls Drive*
	Fairfield, CT 06824
Maser Project Number:	*16963051A*

August 21, 2017

Analysis Type	*Tower Feasibility*
Pass/Fail	*Pass*
Structure Utilization	*41.2%*

Frank E. Pazden, P.E.
Connecticut Professional Engineer
PE License #28188

Objective:

The objective of this report is to determine the structural capacity of the existing 20'-0" tall self-support tower on the rooftop of the building located at 55 Walls drive in Fairfield CT for the addition of the proposed wireless telecommunications equipment by **AT&T**, together with the existing loading.

Introduction:

Maser Consulting Connecticut has reviewed the following documents in completing this report:

- RFDS 1789997, provided by Empire Telecom, dated July 21, 2017
- Structural Analysis Report prepared by Maser Consulting Connecticut, Project No. 16963012A, dated October 26, 2016
- Construction Drawings prepared by Maser Consulting Connecticut, Project No. 16963012A, dated October 27, 2016
- Structural Analysis Report prepared by Hudson Design Group, LLC, Project No. 2120.01, dated June 24, 2011
- Construction Drawings prepared by Hudson Design Group, LLC, Project No. 2120.01, dated May 26, 2011

The existing structure is a 20'-0" tall self-support tower constructed of structural steel, located on the rooftop of an existing building, and is attached to the building via an existing structural steel dunnage. This analysis is based upon the referenced documentation.

Discrete and Linear Appurtenances:

Maser Consulting Connecticut understands the existing and proposed **AT&T** loading to be as follows:

- (3) Powerwave 7770 Antennas (Existing)
- (3) CCI HPA-65R-BUU-H6 Antennas (Existing)
- ***(3) Kathrein 80010798 Antennas (Proposed)***
- (3) RRUS-11 700 MHz (Existing)
- (3) RRUS-32 B2 (Existing)
- **(3) RRUS-11 850 MHz (Proposed, to be installed inside the shelter)**
- **(3) RRUS-32 B66 AWS Band (Proposed)**
- **(3) RRUS-32 WCS Band (Proposed)**
- **(6) DBC0061F1V51-2 (Proposed)**
- (6) LGP 21401 TMA's (Existing)
- (1) DC-6 (Existing)
- ***(1) DC-6 (Proposed)***
- (3) Side Mount Standoffs (Existing)
- (1) ½" Coaxial Cable (Existing)
- (12) 1-5/8" Coaxial Cables (Existing)
- (1) 2" Innerduct (Existing)
- (2) DC Cables (Existing)
- ***(2) DC Cables (Proposed)***

Member Information:

See the Material Take-Off sheet in Appendix A for tower information.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- 2016 CT State Building Code and All Subsequent Amendments, Incorporating IBC 2012
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-EIA-222-G
    - Basic Wind Speed – 111 mph (Per CT Building Code)
    - Service Wind Speed – 60 mph
    - Ice Wind Speed – 50 mph (0.75" Ice)
    - Topography Category – 1
    - Exposure Category – B
    - Structure Class II
- Specification for Structural Steel Buildings ANSI/AISC 360-10, American Institute of Steel Construction (AISC)

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the existing structure is structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, then the proposed equipment can be installed as intended. Tower Numerics, tnx Tower, a tower and monopole analysis and design program, designed specifically for the telecommunications industry and for all applicable codes and standards was used for this structural analysis.

The following assumptions were considered during this analysis:

- No physical deterioration has occurred in any of the structural components of the tower.
- The tower has the same capacity as the day they it was erected.
- Previous structural analysis is accurate.
- All tower information was obtained from the previous structural analysis by Destek Engineering LLC.

Calculations:

The calculations are found in Appendix A of this report.

Conclusion:

Maser Consulting Connecticut has determined that the existing 20' tall self-support tower is **ADEQUATE** to support the existing and proposed loading per the aforementioned codes and standards. It has been calculated that the maximum stress ratio is in the second to lowest section of the tower diagonals. The tower has been determined to be stressed to a maximum of **41.2%** of its structural capacity. Therefore, the proposed **AT&T** equipment **CAN** be installed on the tower as intended, without structural modifications.

The tower is supported by the steel dunnage which has been analyzed and deemed adequate in the Structural Analysis by Hudson Design Group, LLC. The tower reactions from this analysis have been compared to that of the structural analysis by Hudson Design Group, LLC. It is assumed that the capacities noted in the previous structural analysis by Hudson Design Group, LLC are accurate. The current analysis reactions are less than the previous analysis, therefore, the tower is deemed adequate based solely on comparison.

Maser Consulting Connecticut reserves the right to amend this report if additional information about the tower is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the discrete and linear appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis. The **AT&T** mounts have ***not*** been analyzed in this report.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Very truly yours,
Maser Consulting Connecticut

Frank E. Pazden, P.E.
Geographic Discipline Leader

Tapan Pandey
Structural Engineer

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APPENDIX A

DESIGNED APPURTENANCE LOADING

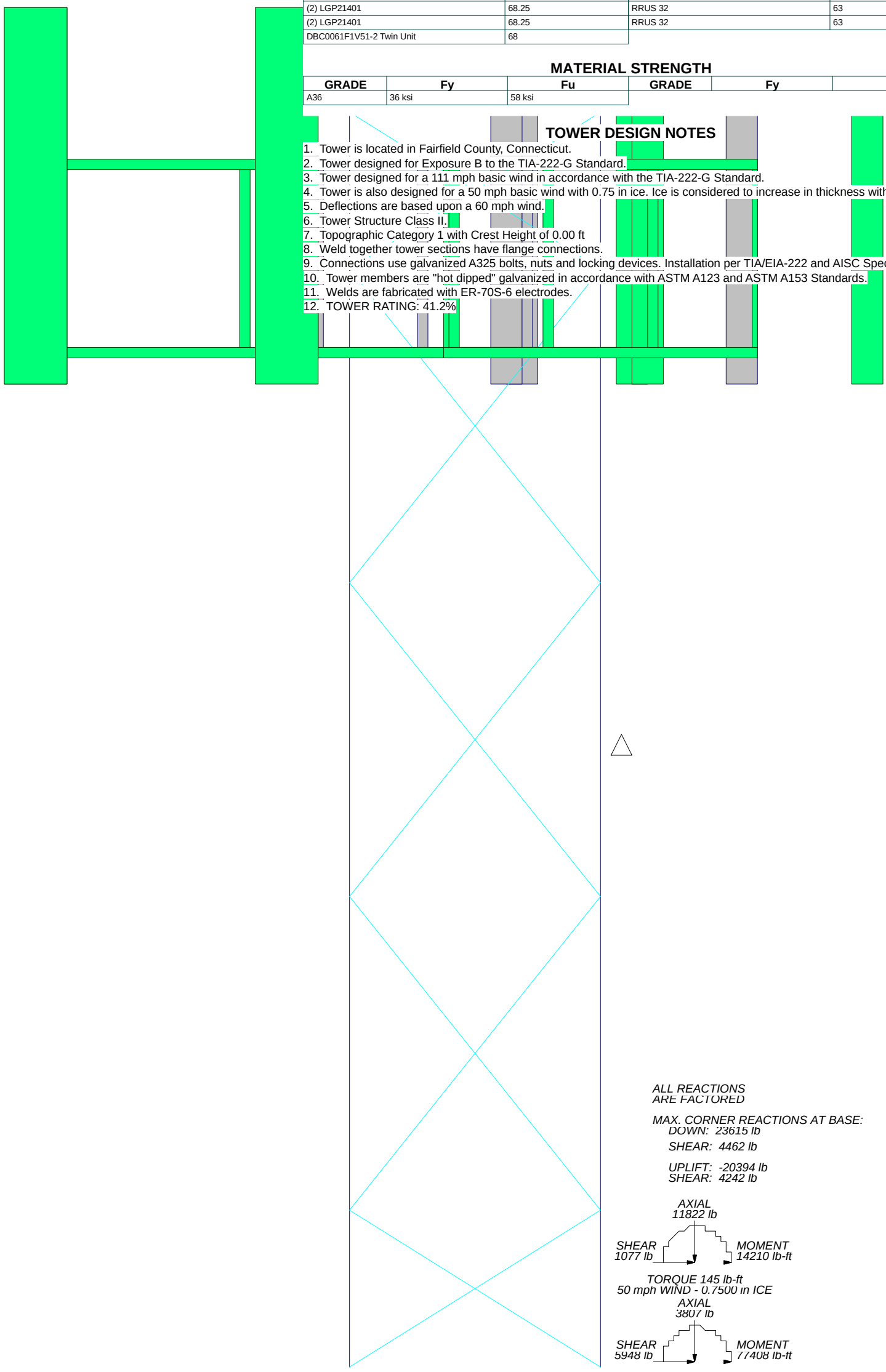
TYPE	ELEVATION	TYPE	ELEVATION
27' Whip antenna	71.25	DBC0061F1V51-2 Twin Unit	68
Powerwave 7770 with mount pipe	70	DBC0061F1V51-2 Twin Unit	68
Powerwave 7770 with mount pipe	70	RRUS B2	65
Powerwave 7770 with mount pipe	70	RRUS B2	65
80010798	70	RRUS B2	65
80010798	70	DC6-48-60-18-8F	65
80010798	70	DC6-48-60-18-8F	65
HPA-65R-BUU-H6 with mount pipe	70	RUSS 11	65
HPA-65R-BUU-H6 with mount pipe	70	RUSS 11	65
HPA-65R-BUU-H6 with mount pipe	70	RUSS 11	65
Pirod 4' Side Mount Standoff (1)	69	RRUS 32	63
Pirod 4' Side Mount Standoff (1)	69	RRUS 32	63
Pirod 4' Side Mount Standoff (1)	69	RRUS 32	63
(2) LGP21401	68.25	RRUS 32	63
(2) LGP21401	68.25	RRUS 32	63
(2) LGP21401	68.25	RRUS 32	63
DBC0061F1V51-2 Twin Unit	68		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 111 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 41.2%



Section	T1	T2	T3	T4	T5
Legs	L2 1/2x2 1/2x1/4		3.5" x 3.5" x 1/4" Bent Plate		
Leg Grade			A36		
Diagonals			L2x2x1/4		
Diagonal Grade			A36		
Top Girts			N.A.		
Face Width (ft)			4		
# Panels @ (ft)	1 @ 2.5		3 @ 5		1 @ 2.5
Weight (lb)	948.5	209.9	209.9	209.9	134.6

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 23615 lb
SHEAR: 4462 lb

UPLIFT: -20394 lb
SHEAR: 4242 lb

AXIAL 11822 lb
SHEAR 1077 lb *MOMENT 14210 lb-ft*
TORQUE 145 lb-ft
50 mph WIND - 0.7500 in ICE

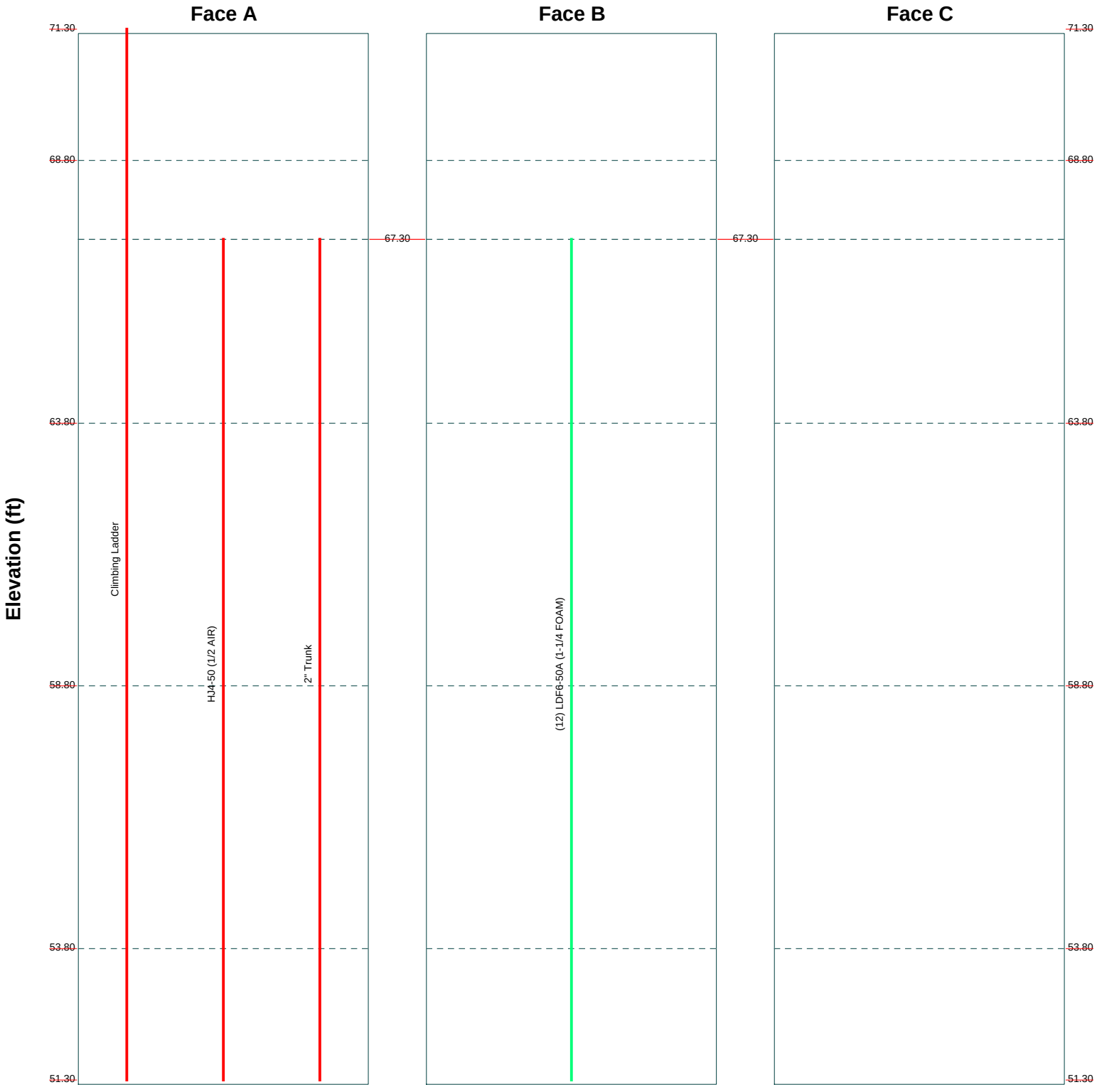
AXIAL 3807 lb
SHEAR 5948 lb *MOMENT 77408 lb-ft*
TORQUE 359 lb-ft
REACTIONS - 111 mph WIND

Maser Consulting Connecticut
331 Newman Springs Road, Suite 203
Red Bank, NJ
Phone: 732.383.1950
FAX:

Job: ***16963051A***			
Project: ***Tower Analysis***			
Client: AT&T	Drawn by: tpandey	App'd:	
Code: TIA-222-G	Date: 08/21/17	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
51'3-19/32" - 71'3-19/32"

Round | Flat | App In Face | App Out Face | Truss Leg



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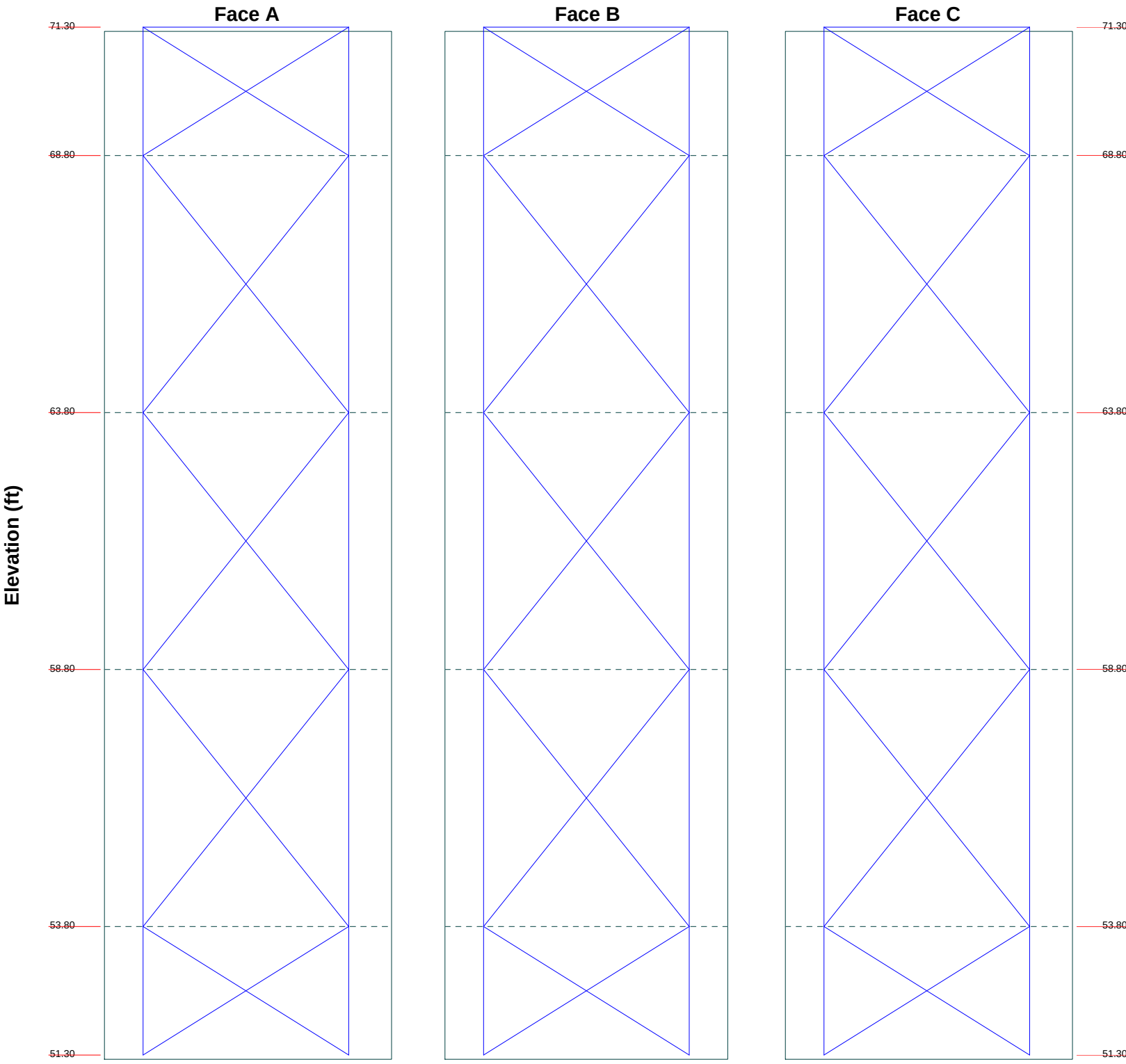
Code: TIA-222-G	Date: 08/21/17	Scale: NTS
Path:		Dwg No. E-7

Stress Distribution Chart
51'3-19/32" - 71'3-19/32"

> 100% | 90%-100% | 75%-90% | 50%-75% | < 50% Overstress



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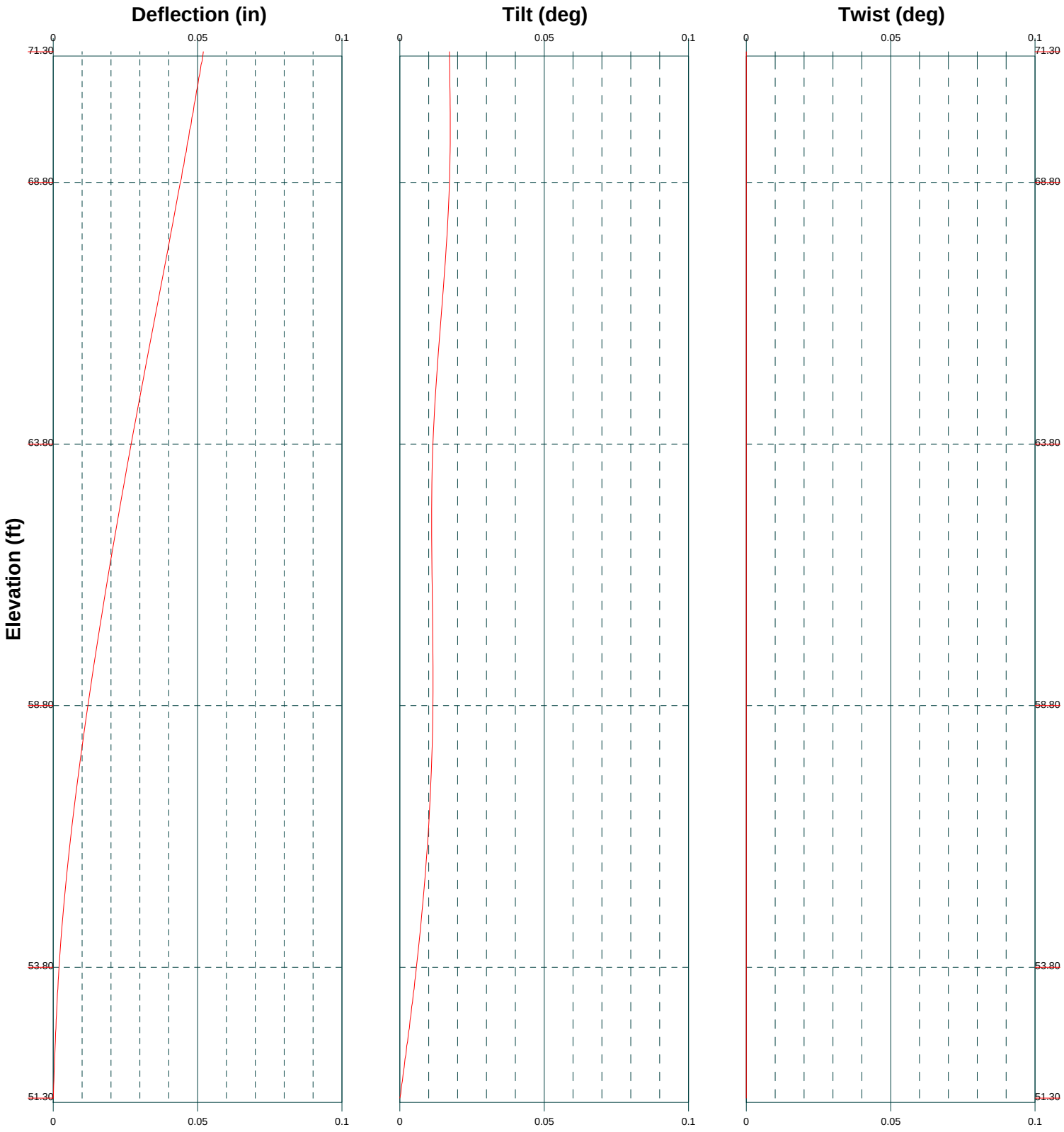
Job: ***16963051A***			
Project: ***Tower Analysis***			
Client: AT&T	Drawn by: tpandey	App'd:	
Code: TIA-222-G	Date: 08/21/17	Scale: NTS	
Path:		Dwg No. E-8	

TIA-222-G - Service - 60 mph

Maximum Values



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Phone: 732.383.1950
FAX:

Job: ***16963051A***			
Project: ***Tower Analysis***			
Client: AT&T	Drawn by: tpandey	App'd:	
Code: TIA-222-G	Date: 08/21/17	Scale: NTS	
Path:		Dwg No. E-5	

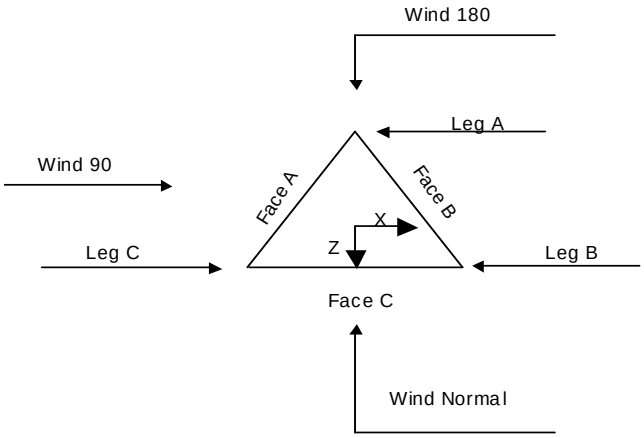
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 71.30 ft above the ground line.
The base of the tower is set at an elevation of 51.30 ft above the ground line.
The face width of the tower is 4.00 ft at the top and 4.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 111 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	71.30-68.80			4.00	1	2.50
T2	68.80-63.80			4.00	1	5.00
T3	63.80-58.80			4.00	1	5.00
T4	58.80-53.80			4.00	1	5.00
T5	53.80-51.30			4.00	1	2.50

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	71.30-68.80	2.50	X Brace	No	No	0.0000	0.0000
T2	68.80-63.80	5.00	X Brace	No	No	0.0000	0.0000
T3	63.80-58.80	5.00	X Brace	No	No	0.0000	0.0000
T4	58.80-53.80	5.00	X Brace	No	No	0.0000	0.0000
T5	53.80-51.30	2.50	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 71.30-68.80	Arbitrary Shape	3.5" x 3.5" x 1/4" Bent Plate	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T2 68.80-63.80	Arbitrary Shape	3.5" x 3.5" x 1/4" Bent Plate	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T3 63.80-58.80	Arbitrary Shape	3.5" x 3.5" x 1/4" Bent Plate	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T4 58.80-53.80	Arbitrary Shape	3.5" x 3.5" x 1/4" Bent Plate	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T5 53.80-51.30	Arbitrary Shape	3.5" x 3.5" x 1/4" Bent Plate	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 71.30-68.80	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 71.30-68.80	0.00	0.0000	A36 (36 ksi)	1.03	1	1.02	36.0000	36.0000	36.0000
T2 68.80-63.80	0.00	0.0000	A36 (36 ksi)	1.03	1	1.02	36.0000	36.0000	36.0000
T3 63.80-58.80	0.00	0.0000	A36 (36 ksi)	1.03	1	1.02	36.0000	36.0000	36.0000
T4 58.80-53.80	0.00	0.0000	A36 (36 ksi)	1.03	1	1.02	36.0000	36.0000	36.0000
T5 53.80-51.30	0.00	0.0000	A36 (36 ksi)	1.03	1	1.02	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 71.30-68.80	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T2	Yes	No	1	1		1		1		1		1		1		1	
68.80-63.80				1		1		1		1		1		1		1	
T3	Yes	No	1	1		1		1		1		1		1		1	
63.80-58.80				1		1		1		1		1		1		1	
T4	Yes	No	1	1		1		1		1		1		1		1	
58.80-53.80				1		1		1		1		1		1		1	
T5	Yes	No	1	1		1		1		1		1		1		1	
53.80-51.30				1		1		1		1		1		1		1	

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 71.30-68.80	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 68.80-63.80	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 63.80-58.80	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 58.80-53.80	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 53.80-51.30	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Climbing Ladder	A	No	Af (CaAa)	71.30 - 51.30	1	1	0.2500	18.0000		7.90
HJ4-50 (1/2 AIR)	A	No	Ar (CaAa)	67.30 - 51.30	1	1	0.5800	0.5800		0.25
2" Trunk	A	No	Ar (CaAa)	67.30 - 51.30	1	1	2.0000	2.0000		1.00
HJ4-50 (1/2 AIR)	C	No	Ar (CaAa)	51.30 - 51.30	2	2	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF6-50A (1-1/4 FOAM)	B	No	CaAa (Out Of Face)	67.30 - 51.30	12	No Ice	0.16	0.66
						1/2" Ice	0.25	1.91
						1" Ice	0.35	3.78

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	71.30-68.80	A	0.000	0.000	6.042	0.000	19.75
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	68.80-63.80	A	0.000	0.000	12.986	0.000	43.88
		B	0.000	0.000	0.000	6.510	27.72
		C	0.000	0.000	0.000	0.000	0.00
T3	63.80-58.80	A	0.000	0.000	13.373	0.000	45.75
		B	0.000	0.000	0.000	9.300	39.60
		C	0.000	0.000	0.000	0.000	0.00
T4	58.80-53.80	A	0.000	0.000	13.373	0.000	45.75
		B	0.000	0.000	0.000	9.300	39.60
		C	0.000	0.000	0.000	0.000	0.00
T5	53.80-51.30	A	0.000	0.000	6.687	0.000	22.88
		B	0.000	0.000	0.000	4.650	19.80
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	71.30-68.80	A	1.617	0.000	0.000	6.483	0.000	92.27
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	68.80-63.80	A	1.608	0.000	0.000	16.115	0.000	227.88
		B		0.000	0.000	0.000	20.020	300.61
		C		0.000	0.000	0.000	0.000	0.00
T3	63.80-58.80	A	1.596	0.000	0.000	17.435	0.000	244.88
		B		0.000	0.000	0.000	28.450	425.25
		C		0.000	0.000	0.000	0.000	0.00
T4	58.80-53.80	A	1.582	0.000	0.000	17.401	0.000	242.77
		B		0.000	0.000	0.000	28.288	420.74
		C		0.000	0.000	0.000	0.000	0.00
T5	53.80-51.30	A	1.571	0.000	0.000	8.687	0.000	120.54
		B		0.000	0.000	0.000	14.079	208.56
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	71.30-68.80	-1.8009	-1.0398	-2.6230	-1.5144
T2	68.80-63.80	0.7751	0.4475	1.9930	1.1506
T3	63.80-58.80	1.4223	0.8212	2.6485	1.5291
T4	58.80-53.80	1.4223	0.8212	2.6389	1.5236
T5	53.80-51.30	1.3752	0.7939	2.6659	1.5392

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Climbing Ladder	68.80 - 71.30	0.6000	0.2913
T2	1	Climbing Ladder	63.80 - 68.80	0.6000	0.5585
T2	3	HJ4-50 (1/2 AIR)	63.80 - 67.30	0.6000	0.5585
T2	4	2" Trunk	63.80 - 67.30	0.6000	0.5585
T3	1	Climbing Ladder	58.80 - 63.80	0.6000	0.5600
T3	3	HJ4-50 (1/2 AIR)	58.80 - 63.80	0.6000	0.5600
T3	4	2" Trunk	58.80 - 63.80	0.6000	0.5600
T4	1	Climbing Ladder	53.80 - 58.80	0.6000	0.5617
T4	3	HJ4-50 (1/2 AIR)	53.80 - 58.80	0.6000	0.5617
T4	4	2" Trunk	53.80 - 58.80	0.6000	0.5617
T5	1	Climbing Ladder	51.30 - 53.80	0.6000	0.4560
T5	3	HJ4-50 (1/2 AIR)	51.30 - 53.80	0.6000	0.4560
T5	4	2" Trunk	51.30 - 53.80	0.6000	0.4560

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 4' Side Mount Standoff (1)	A	Stand-Off Right	0.00 0.00 0.00	0.0000	69.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
Pirod 4' Side Mount Standoff (1)	B	Stand-Off Right	0.00 0.00 0.00	0.0000	69.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
Pirod 4' Side Mount Standoff (1)	C	Stand-Off Right	0.00 0.00 0.00	0.0000	69.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
27' Whip antenna	C	From Leg	0.00 0.00 11.00	0.0000	71.25	No Ice 1/2" Ice 1" Ice	8.10 10.83 13.56	8.10 10.83 13.56	30.00 88.13 146.26
Powerwave 7770 with mount pipe	A	Stand-Off Right	5.00 2.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 6.83	4.25 5.01 5.76	55.38 102.81 150.00
Powerwave 7770 with mount pipe	B	Stand-Off Right	5.00 2.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 6.83	4.25 5.01 5.76	55.38 102.81 150.00
Powerwave 7770 with mount pipe	C	Stand-Off Right	5.00 2.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 6.83	4.25 5.01 5.76	55.38 102.81 150.00
80010798	A	Stand-Off Right	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	10.69 11.19 11.71	5.69 6.18 6.67	81.50 142.68 210.54
80010798	B	Stand-Off Right	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	10.69 11.19 11.71	5.69 6.18 6.67	81.50 142.68 210.54
80010798	C	Stand-Off	1.00	0.0000	70.00	No Ice	10.69	5.69	81.50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
		Right	0.00			1/2" Ice	11.19	6.18	142.68
			0.00			1" Ice	11.71	6.67	210.54
HPA-65R-BUU-H6 with mount pipe	A	Stand-Off Right	5.00 -2.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	10.60 11.27 11.94	8.11 9.30 10.49	76.55 158.03 239.51
HPA-65R-BUU-H6 with mount pipe	B	Stand-Off Right	5.00 -2.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	10.60 11.27 11.94	8.11 9.30 10.49	76.55 158.03 239.51
HPA-65R-BUU-H6 with mount pipe	C	Stand-Off Right	5.00 -2.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	10.60 11.27 11.94	8.11 9.30 10.49	76.55 158.03 239.51
(2) LGP21401	A	Stand-Off Right	1.00 0.00 0.00	0.0000	68.25	No Ice 1/2" Ice 1" Ice	1.66 1.82 1.98	0.44 0.54 0.65	35.00 45.89 59.04
(2) LGP21401	B	Stand-Off Right	1.00 0.00 0.00	0.0000	68.25	No Ice 1/2" Ice 1" Ice	1.66 1.82 1.98	0.44 0.54 0.65	35.00 45.89 59.04
(2) LGP21401	C	Stand-Off Right	1.00 0.00 0.00	0.0000	68.25	No Ice 1/2" Ice 1" Ice	1.66 1.82 1.98	0.44 0.54 0.65	35.00 45.89 59.04
RUSS 11	A	From Face	1.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.73	1.37 1.55 1.73	50.70 71.50 92.30
RUSS 11	B	From Face	1.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.73	1.37 1.55 1.73	50.70 71.50 92.30
RUSS 11	C	From Face	1.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.73	1.37 1.55 1.73	50.70 71.50 92.30
RRUS B2	A	From Face	1.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	0.50 0.61 0.73	22.00 34.66 49.78
RRUS B2	B	From Face	1.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	0.50 0.61 0.73	22.00 34.66 49.78
RRUS B2	C	From Face	1.00 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	0.50 0.61 0.73	22.00 34.66 49.78
DC6-48-60-18-8F	B	From Face	0.50 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	1.29 1.49 1.69	1.29 1.49 1.69	32.00 47.38 62.76
DC6-48-60-18-8F	C	From Face	0.50 0.00 0.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	1.29 1.49 1.69	1.29 1.49 1.69	32.00 47.38 62.76
RRUS 32	A	From Face	1.00 0.00 0.00	0.0000	63.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	92.00 119.93 151.47
RRUS 32	B	From Face	1.00 0.00 0.00	0.0000	63.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	92.00 119.93 151.47
RRUS 32	C	From Face	1.00 0.00 0.00	0.0000	63.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	92.00 119.93 151.47
RRUS 32	A	From Face	1.00 0.00 0.00	0.0000	63.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	92.00 119.93 151.47
RRUS 32	B	From Face	1.00	0.0000	63.00	No Ice	3.31	2.42	92.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	3.56	2.64	119.93
			0.00			1" Ice	3.81	2.86	151.47
RRUS 32	C	From Face	1.00	0.0000	63.00	No Ice	3.31	2.42	92.00
			0.00			1/2" Ice	3.56	2.64	119.93
			0.00			1" Ice	3.81	2.86	151.47
DBC0061F1V51-2 Twin Unit	A	Stand-Off Right	1.00	0.0000	68.00	No Ice	0.43	0.41	18.30
			0.00			1/2" Ice	0.51	0.50	23.58
			0.00			1" Ice	0.61	0.59	30.39
DBC0061F1V51-2 Twin Unit	B	Stand-Off Right	1.00	0.0000	68.00	No Ice	0.43	0.41	18.30
			0.00			1/2" Ice	0.51	0.50	23.58
			0.00			1" Ice	0.61	0.59	30.39
DBC0061F1V51-2 Twin Unit	C	Stand-Off Right	1.00	0.0000	68.00	No Ice	0.43	0.41	18.30
			0.00			1/2" Ice	0.51	0.50	23.58
			0.00			1" Ice	0.61	0.59	30.39

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	339.45					
Bracing Weight	609.08					
Total Member Self-Weight	948.53			97.37	-48.66	
Total Weight	3172.54			97.37	-48.66	
Wind 0 deg - No Ice		0.00	-3717.34	-48180.55	-48.66	-15.73
Wind 30 deg - No Ice		1781.07	-3084.90	-40321.49	-23384.50	90.32
Wind 60 deg - No Ice		3040.10	-1755.20	-22970.76	-40003.83	178.54
Wind 90 deg - No Ice		3562.14	0.00	97.37	-46720.34	224.44
Wind 120 deg - No Ice		3219.31	1858.67	24236.34	-41858.57	207.01
Wind 150 deg - No Ice		1781.07	3084.90	40516.23	-23384.50	134.12
Wind 180 deg - No Ice		0.00	3510.41	46233.64	-48.66	28.48
Wind 210 deg - No Ice		-1781.07	3084.90	40516.23	23287.18	-90.32
Wind 240 deg - No Ice		-3219.31	1858.67	24236.34	41761.26	-191.28
Wind 270 deg - No Ice		-3562.14	0.00	97.37	46623.02	-224.44
Wind 300 deg - No Ice		-3040.10	-1755.20	-22970.76	39906.52	-207.01
Wind 330 deg - No Ice		-1781.07	-3084.90	-40321.49	23287.18	-134.12
Member Ice	2124.88					
Total Weight Ice	11187.64			1311.71	-1398.58	
Wind 0 deg - Ice		0.00	-1076.92	-10983.80	-1398.58	102.09
Wind 30 deg - Ice		521.59	-903.42	-9034.38	-7371.89	137.08
Wind 60 deg - Ice		893.68	-515.96	-4603.46	-11643.95	138.47
Wind 90 deg - Ice		1043.18	0.00	1311.71	-13345.21	105.48
Wind 120 deg - Ice		932.64	538.46	7459.47	-12046.81	42.66
Wind 150 deg - Ice		521.59	903.42	11657.80	-7371.89	-31.59
Wind 180 deg - Ice		0.00	1031.93	13142.05	-1398.58	-95.81
Wind 210 deg - Ice		-521.59	903.42	11657.80	4574.74	-137.08
Wind 240 deg - Ice		-932.64	538.46	7459.47	9249.65	-144.75
Wind 270 deg - Ice		-1043.18	0.00	1311.71	10548.06	-105.48
Wind 300 deg - Ice		-893.68	-515.96	-4603.46	8846.80	-42.66
Wind 330 deg - Ice		-521.59	-903.42	-9034.38	4574.74	31.59

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Total Weight	3172.54			97.37	-48.66	
Wind 0 deg - Service		0.00	-1086.15	-14044.93	14.14	-4.60
Wind 30 deg - Service		520.40	-901.36	-11748.63	-6804.22	26.39
Wind 60 deg - Service		888.27	-512.84	-6679.02	-11660.12	52.17
Wind 90 deg - Service		1040.80	0.00	61.12	-13622.58	65.58
Wind 120 deg - Service		940.63	543.07	7114.14	-12202.05	60.49
Wind 150 deg - Service		520.40	901.36	11870.86	-6804.22	39.19
Wind 180 deg - Service		0.00	1025.68	13541.40	14.14	8.32
Wind 210 deg - Service		-520.40	901.36	11870.86	6832.50	-26.39
Wind 240 deg - Service		-940.63	543.07	7114.14	12230.33	-55.89
Wind 270 deg - Service		-1040.80	0.00	61.12	13650.87	-65.58
Wind 300 deg - Service		-888.27	-512.84	-6679.02	11688.41	-60.49
Wind 330 deg - Service		-520.40	-901.36	-11748.63	6832.50	-39.19

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	71.3 - 68.8	Leg	Max Tension	23	557.62	-123.59	-7.68
			Max. Compression	35	-1842.93	-7.39	4.64
			Max. Mx	6	413.73	228.32	-0.28
			Max. My	12	-434.26	0.23	382.18
			Max. Vy	18	-349.40	128.64	2.82
			Max. Vx	12	-408.89	0.00	0.00
		Diagonal	Max Tension	14	469.69	0.00	0.00
			Max. Compression	3	-445.70	0.00	0.00
			Max. Mx	35	170.62	-6.64	0.02
			Max. My	14	-341.02	1.50	-0.82
			Max. Vy	34	-15.01	5.47	-0.08
			Max. Vx	14	0.35	0.00	0.00
		Top Girt	Max Tension	11	183.72	0.00	0.00
			Max. Compression	29	-250.37	0.00	0.00
			Max. Mx	26	-229.62	-30.28	0.00
			Max. My	10	-126.05	0.00	-0.00
			Max. Vy	26	30.28	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
T2	68.8 - 63.8	Leg	Max Tension	23	2585.00	-123.59	-7.68
			Max. Compression	18	-3638.19	95.23	-9.32
			Max. Mx	18	-3396.63	128.64	2.82
			Max. My	20	-646.54	0.40	-503.30
			Max. Vy	18	109.10	128.64	2.82
			Max. Vx	16	-238.83	0.45	489.55
		Diagonal	Max Tension	5	1319.00	0.00	0.00
			Max. Compression	4	-1369.48	0.00	0.00
			Max. Mx	34	-149.06	13.82	-0.22
			Max. My	3	-1297.88	-4.51	1.75
			Max. Vy	34	-16.95	13.82	-0.22
			Max. Vx	3	0.55	-4.51	1.75
T3	63.8 - 58.8	Leg	Max Tension	15	6518.17	-87.31	-10.69
			Max. Compression	10	-8449.90	55.82	4.18
			Max. Mx	18	-8199.02	95.23	-9.32
			Max. My	12	-1081.99	-1.75	-2519.66
			Max. Vy	10	137.28	95.20	4.59
			Max. Vx	16	-461.25	-1.76	2504.40
		Diagonal	Max Tension	20	1860.25	0.00	0.00
			Max. Compression	21	-1829.28	0.00	0.00
			Max. Mx	18	1627.53	15.81	-1.80
			Max. My	8	-1816.23	-10.04	-2.93
			Max. Vy	31	-15.71	10.16	-0.44

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	8	-0.92	0.00	0.00
T4	58.8 - 53.8	Leg	Max Tension	15	11347.84	-52.08	-7.16
			Max. Compression	10	-13776.09	68.54	-5.99
			Max. Mx	31	-5101.78	123.64	18.87
			Max. My	12	-1120.28	-0.46	-2945.20
			Max. Vy	31	-43.18	123.64	18.87
			Max. Vx	4	124.85	-0.42	-2920.74
		Diagonal	Max Tension	23	2606.44	0.00	0.00
			Max. Compression	10	-2805.89	0.00	0.00
			Max. Mx	31	-111.69	31.12	0.23
			Max. My	12	-2466.89	-12.92	-3.08
			Max. Vy	31	-22.16	31.12	0.23
			Max. Vx	12	0.96	-12.92	-3.08
T5	53.8 - 51.3	Leg	Max Tension	15	17376.15	-62.68	-7.54
			Max. Compression	10	-20389.81	-0.00	-0.00
			Max. Mx	31	-7637.31	123.64	18.87
			Max. My	12	-1242.89	-0.46	-2945.20
			Max. Vy	31	51.87	123.64	18.87
			Max. Vx	12	-1190.55	-0.46	-2945.20
		Diagonal	Max Tension	8	2940.10	0.00	0.00
			Max. Compression	10	-3076.93	0.00	0.00
			Max. Mx	31	-128.78	-40.56	-0.46
			Max. My	12	-2823.90	-16.61	-3.10
			Max. Vy	31	-29.56	0.00	0.00
			Max. Vx	12	1.32	-13.65	-3.10

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	23585.43	3885.44	-2189.50
	Max. H_x	18	23585.43	3885.44	-2189.50
	Max. H_z	6	-20052.93	-3692.35	2086.77
	Min. Vert	7	-20366.95	-3692.09	2086.26
	Min. H_x	6	-20052.93	-3692.35	2086.77
	Min. H_z	19	23263.76	3885.24	-2190.10
Leg B	Max. Vert	10	23614.64	-3888.32	-2188.28
	Max. H_x	23	-20345.06	3694.56	2079.12
	Max. H_z	22	-20023.73	3694.54	2079.16
	Min. Vert	23	-20345.06	3694.56	2079.12
	Min. H_x	10	23614.64	-3888.32	-2188.28
	Min. H_z	11	23285.66	-3887.85	-2188.40
Leg A	Max. Vert	2	23549.40	-2.51	4457.31
	Max. H_x	8	1235.09	546.51	-2.97
	Max. H_z	3	23236.74	-2.78	4458.01
	Min. Vert	15	-20393.97	7.21	-4242.33
	Min. H_x	21	926.29	-544.33	-1.99
	Min. H_z	14	-20088.88	7.99	-4243.59

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	3172.54	0.00	-0.00	97.37	-48.66	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	3807.04	0.00	-5947.74	-77181.51	-58.38	-25.19
0.9 Dead+1.6 Wind 0 deg - No Ice	2855.28	0.00	-5947.74	-77197.43	-43.78	-25.20
1.2 Dead+1.6 Wind 30 deg - No Ice	3807.04	2849.71	-4935.85	-64598.14	-37421.18	144.70
0.9 Dead+1.6 Wind 30 deg - No Ice	2855.28	2849.71	-4935.85	-64616.21	-37400.11	144.66
1.2 Dead+1.6 Wind 60 deg - No Ice	3806.96	4864.11	-2808.05	-36817.41	-64031.11	285.73
0.9 Dead+1.6 Wind 60 deg - No Ice	2855.21	4863.91	-2808.42	-36840.25	-64005.02	285.24
1.2 Dead+1.6 Wind 90 deg - No Ice	3807.04	5699.42	-0.00	117.50	-74784.73	359.13
0.9 Dead+1.6 Wind 90 deg - No Ice	2855.28	5699.42	-0.00	88.25	-74757.20	359.11
1.2 Dead+1.6 Wind 120 deg - No Ice	3807.04	5150.90	2973.87	38766.25	-67000.81	331.39
0.9 Dead+1.6 Wind 120 deg - No Ice	2855.28	5150.90	2973.87	38730.32	-66974.65	331.37
1.2 Dead+1.6 Wind 150 deg - No Ice	3807.04	2849.71	4935.85	64831.61	-37421.95	214.74
0.9 Dead+1.6 Wind 150 deg - No Ice	2855.28	2849.71	4935.85	64791.17	-37400.88	214.71
1.2 Dead+1.6 Wind 180 deg - No Ice	3807.04	-0.41	5616.65	73985.93	-58.24	45.93
0.9 Dead+1.6 Wind 180 deg - No Ice	2855.21	0.21	5616.47	73943.70	-43.81	44.99
1.2 Dead+1.6 Wind 210 deg - No Ice	3807.04	-2849.71	4935.85	64831.59	37305.11	-144.70
0.9 Dead+1.6 Wind 210 deg - No Ice	2855.28	-2849.71	4935.85	64791.15	37313.26	-144.66
1.2 Dead+1.6 Wind 240 deg - No Ice	3807.04	-5150.90	2973.87	38766.22	66883.98	-306.20
0.9 Dead+1.6 Wind 240 deg - No Ice	2855.28	-5150.90	2973.87	38730.30	66887.04	-306.17
1.2 Dead+1.6 Wind 270 deg - No Ice	3807.04	-5699.42	0.00	117.47	74667.92	-359.13
0.9 Dead+1.6 Wind 270 deg - No Ice	2855.28	-5699.42	0.00	88.23	74669.60	-359.11
1.2 Dead+1.6 Wind 300 deg - No Ice	3806.96	-4864.11	-2808.05	-36817.44	63914.32	-331.21
0.9 Dead+1.6 Wind 300 deg - No Ice	2855.21	-4863.91	-2808.42	-36840.27	63917.43	-330.73
1.2 Dead+1.6 Wind 330 deg - No Ice	3807.04	-2849.71	-4935.85	-64598.16	37304.41	-214.74
0.9 Dead+1.6 Wind 330 deg - No Ice	2855.28	-2849.71	-4935.85	-64616.22	37312.54	-214.71
1.2 Dead+1.0 Ice+1.0 Temp	11822.15	-0.00	-0.00	1332.74	-1409.65	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	11822.15	-0.00	-1076.92	-10982.46	-1409.70	102.23
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	11822.15	521.59	-903.42	-9030.28	-7393.80	137.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	11822.15	893.68	-515.96	-4591.98	-11673.42	138.64
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	11822.15	1043.18	-0.00	1333.72	-13377.24	105.63
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	11822.15	932.64	538.46	7490.89	-12075.31	42.74
1.2 Dead+1.0 Wind 150	11822.15	521.59	903.42	11697.43	-7393.73	-31.62

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	11822.15	-0.00	1031.93	13184.90	-1410.08	-95.91
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	11822.15	-521.59	903.42	11697.66	4573.30	-137.36
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	11822.15	-932.64	538.46	7490.82	9255.85	-144.96
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	11822.15	-1043.18	-0.00	1335.02	10555.97	-105.61
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	11822.15	-893.68	-515.96	-4591.77	8853.00	-42.71
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	11822.15	-521.59	-903.42	-9030.55	4571.67	31.74
Dead+Wind 0 deg - Service	3172.54	0.00	-1086.15	-14016.64	-48.66	-4.59
Dead+Wind 30 deg - Service	3172.54	520.40	-901.36	-11718.21	-6870.56	26.39
Dead+Wind 60 deg - Service	3172.54	888.27	-512.84	-6646.19	-11728.98	52.18
Dead+Wind 90 deg - Service	3172.54	1040.80	-0.00	97.34	-13692.25	65.60
Dead+Wind 120 deg - Service	3172.54	940.63	543.07	7154.48	-12271.82	60.49
Dead+Wind 150 deg - Service	3172.54	520.40	901.36	11913.20	-6870.35	39.18
Dead+Wind 180 deg - Service	3172.54	0.00	1025.68	13584.69	-48.66	8.31
Dead+Wind 210 deg - Service	3172.54	-520.40	901.36	11913.19	6773.02	-26.39
Dead+Wind 240 deg - Service	3172.54	-940.63	543.07	7154.47	12174.48	-55.90
Dead+Wind 270 deg - Service	3172.54	-1040.80	-0.00	97.34	13594.92	-65.60
Dead+Wind 300 deg - Service	3172.54	-888.27	-512.84	-6646.19	11631.65	-60.50
Dead+Wind 330 deg - Service	3172.54	-520.40	-901.36	-11718.21	6773.25	-39.19

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-3172.54	-0.00	-0.00	3172.54	0.00	0.000%
2	0.00	-3807.04	-5947.74	-0.00	3807.04	5947.74	0.000%
3	0.00	-2855.28	-5947.74	-0.00	2855.28	5947.74	0.000%
4	2849.71	-3807.04	-4935.85	-2849.71	3807.04	4935.85	0.000%
5	2849.71	-2855.28	-4935.85	-2849.71	2855.28	4935.85	0.000%
6	4864.16	-3807.04	-2808.33	-4864.11	3806.96	2808.05	0.004%
7	4864.16	-2855.28	-2808.33	-4863.91	2855.21	2808.42	0.004%
8	5699.42	-3807.04	-0.00	-5699.42	3807.04	0.00	0.000%
9	5699.42	-2855.28	-0.00	-5699.42	2855.28	0.00	0.000%
10	5150.90	-3807.04	2973.87	-5150.90	3807.04	-2973.87	0.000%
11	5150.90	-2855.28	2973.87	-5150.90	2855.28	-2973.87	0.000%
12	2849.71	-3807.04	4935.85	-2849.71	3807.04	-4935.85	0.000%
13	2849.71	-2855.28	4935.85	-2849.71	2855.28	-4935.85	0.000%
14	0.00	-3807.04	5616.65	0.41	3807.04	-5616.65	0.006%
15	0.00	-2855.28	5616.65	-0.21	2855.21	-5616.47	0.005%
16	-2849.71	-3807.04	4935.85	2849.71	3807.04	-4935.85	0.000%
17	-2849.71	-2855.28	4935.85	2849.71	2855.28	-4935.85	0.000%
18	-5150.90	-3807.04	2973.87	5150.90	3807.04	-2973.87	0.000%
19	-5150.90	-2855.28	2973.87	5150.90	2855.28	-2973.87	0.000%
20	-5699.42	-3807.04	-0.00	5699.42	3807.04	-0.00	0.000%
21	-5699.42	-2855.28	0.00	5699.42	2855.28	-0.00	0.000%
22	-4864.16	-3807.04	-2808.33	4864.11	3806.96	2808.05	0.004%
23	-4864.16	-2855.28	-2808.33	4863.91	2855.21	2808.42	0.004%
24	-2849.71	-3807.04	-4935.85	2849.71	3807.04	4935.85	0.000%
25	-2849.71	-2855.28	-4935.85	2849.71	2855.28	4935.85	0.000%
26	-0.00	-11822.15	-0.00	0.00	11822.15	0.00	0.000%
27	-0.00	-11822.15	-1076.92	0.00	11822.15	1076.92	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
28	521.59	-11822.15	-903.42	-521.59	11822.15	903.42	0.000%
29	893.68	-11822.15	-515.96	-893.68	11822.15	515.96	0.000%
30	1043.18	-11822.15	-0.00	-1043.18	11822.15	0.00	0.000%
31	932.64	-11822.15	538.46	-932.64	11822.15	-538.46	0.000%
32	521.59	-11822.15	903.42	-521.59	11822.15	-903.42	0.000%
33	-0.00	-11822.15	1031.93	0.00	11822.15	-1031.93	0.000%
34	-521.59	-11822.15	903.42	521.59	11822.15	-903.42	0.000%
35	-932.64	-11822.15	538.46	932.64	11822.15	-538.46	0.000%
36	-1043.18	-11822.15	-0.00	1043.18	11822.15	0.00	0.000%
37	-893.68	-11822.15	-515.96	893.68	11822.15	515.96	0.000%
38	-521.59	-11822.15	-903.42	521.59	11822.15	903.42	0.000%
39	0.00	-3172.54	-1086.15	-0.00	3172.54	1086.15	0.000%
40	520.40	-3172.54	-901.36	-520.40	3172.54	901.36	0.000%
41	888.27	-3172.54	-512.84	-888.27	3172.54	512.84	0.000%
42	1040.80	-3172.54	-0.00	-1040.80	3172.54	0.00	0.000%
43	940.63	-3172.54	543.07	-940.63	3172.54	-543.07	0.000%
44	520.40	-3172.54	901.36	-520.40	3172.54	-901.36	0.000%
45	0.00	-3172.54	1025.68	-0.00	3172.54	-1025.68	0.000%
46	-520.40	-3172.54	901.36	520.40	3172.54	-901.36	0.000%
47	-940.63	-3172.54	543.07	940.63	3172.54	-543.07	0.000%
48	-1040.80	-3172.54	-0.00	1040.80	3172.54	0.00	0.000%
49	-888.27	-3172.54	-512.84	888.27	3172.54	512.84	0.000%
50	-520.40	-3172.54	-901.36	520.40	3172.54	901.36	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001

29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	71.3 - 68.8	0.052	43	0.0159	0.0010
T2	68.8 - 63.8	0.044	43	0.0157	0.0009
T3	63.8 - 58.8	0.027	43	0.0142	0.0006
T4	58.8 - 53.8	0.012	43	0.0107	0.0004
T5	53.8 - 51.3	0.002	43	0.0046	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
71.25	27' Whip antenna	43	0.052	0.0159	0.0010	366551
70.00	Powerwave 7770 with mount pipe	43	0.048	0.0158	0.0009	366551
69.00	Pirod 4' Side Mount Standoff (1)	43	0.045	0.0157	0.0009	366551
68.25	(2) LGP21401	43	0.042	0.0156	0.0008	366551
68.00	DBC0061F1V51-2 Twin Unit	43	0.041	0.0156	0.0008	366551
65.00	RUSS 11	43	0.031	0.0148	0.0007	207738
63.00	RRUS 32	43	0.025	0.0138	0.0006	119169

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	71.3 - 68.8	0.286	10	0.0866	0.0054
T2	68.8 - 63.8	0.240	10	0.0855	0.0048
T3	63.8 - 58.8	0.148	10	0.0777	0.0034
T4	58.8 - 53.8	0.067	10	0.0583	0.0020
T5	53.8 - 51.3	0.013	10	0.0251	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
71.25	27' Whip antenna	10	0.285	0.0866	0.0054	70063
70.00	Powerwave 7770 with mount pipe	10	0.262	0.0861	0.0051	70063
69.00	Pirod 4' Side Mount Standoff (1)	10	0.244	0.0856	0.0048	70063
68.25	(2) LGP21401	10	0.230	0.0850	0.0046	70063
68.00	DBC0061F1V51-2 Twin Unit	10	0.225	0.0848	0.0046	70063
65.00	RUSS 11	10	0.170	0.0805	0.0037	38895
63.00	RRUS 32	10	0.134	0.0754	0.0032	22038

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	71.3 - 68.8	3.5" x 3.5" x 1/4" Bent Plate	2.50	2.50	35.0 K=1.00	1.6300	-1842.93	49509.60	0.037 [1] ✔
T2	68.8 - 63.8	3.5" x 3.5" x 1/4" Bent Plate	5.00	5.00	70.0 K=1.00	1.6300	-3638.19	40790.70	0.089 [1] ✔
T3	63.8 - 58.8	3.5" x 3.5" x 1/4" Bent Plate	5.00	5.00	70.0 K=1.00	1.6300	-8449.90	40790.70	0.207 [1] ✔
T4	58.8 - 53.8	3.5" x 3.5" x 1/4" Bent Plate	5.00	5.00	70.0 K=1.00	1.6300	-13776.10	40790.70	0.338 [1] ✔
T5	53.8 - 51.3	3.5" x 3.5" x 1/4" Bent Plate	2.50	2.50	35.0 K=1.00	1.6300	-20389.80	49509.60	0.412 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	71.3 - 68.8	L2x2x1/4	4.72	2.19	80.3 K=1.20	0.9380	-445.70	21638.00	0.021 [1] ✔
T2	68.8 - 63.8	L2x2x1/4	6.40	2.97	98.3 K=1.08	0.9380	-1369.48	18269.80	0.075 [1] ✔
T3	63.8 - 58.8	L2x2x1/4	6.40	2.97	98.3 K=1.08	0.9380	-1829.28	18269.80	0.100 [1] ✔
T4	58.8 - 53.8	L2x2x1/4	6.40	2.97	98.3 K=1.08	0.9380	-2805.89	18269.80	0.154 [1] ✔
T5	53.8 - 51.3	L2x2x1/4	4.72	2.19	80.3 K=1.20	0.9380	-3076.93	21638.00	0.142 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	71.3 - 68.8	L2 1/2x2 1/2x1/4	4.00	3.71	105.3 K=1.16	1.1900	-250.37	21503.40	0.012 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	71.3 - 68.8	3.5" x 3.5" x 1/4" Bent Plate	2.50	2.50	35.0	1.6300	557.62	52812.00	0.011 [1] ✔
T2	68.8 - 63.8	3.5" x 3.5" x 1/4" Bent Plate	5.00	5.00	70.0	1.6300	2585.00	52812.00	0.049 [1] ✔
T3	63.8 - 58.8	3.5" x 3.5" x 1/4" Bent Plate	5.00	5.00	70.0	1.6300	6518.17	52812.00	0.123 [1] ✔
T4	58.8 - 53.8	3.5" x 3.5" x 1/4" Bent Plate	5.00	5.00	70.0	1.6300	11347.80	52812.00	0.215 [1] ✔
T5	53.8 - 51.3	3.5" x 3.5" x 1/4" Bent Plate	2.50	2.50	35.0	1.6300	17376.20	52812.00	0.329 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	71.3 - 68.8	L2x2x1/4	4.72	2.19	43.1	0.9380	469.68	30391.20	0.015 [1] ✔
T2	68.8 - 63.8	L2x2x1/4	6.40	2.97	58.5	0.9380	1319.00	30391.20	0.043 [1] ✔
T3	63.8 - 58.8	L2x2x1/4	6.40	2.97	58.5	0.9380	1860.25	30391.20	0.061 [1] ✔
T4	58.8 - 53.8	L2x2x1/4	6.40	2.97	58.5	0.9380	2606.44	30391.20	0.086 [1] ✔
T5	53.8 - 51.3	L2x2x1/4	4.72	2.19	43.1	0.9380	2940.10	30391.20	0.097 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	71.3 - 68.8	L2 1/2x2 1/2x1/4	4.00	3.71	57.9	1.1900	183.73	38556.00	0.005 [1] ✔

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	71.3 - 68.8	Leg	3.5" x 3.5" x 1/4" Bent Plate	1	-1842.93	49509.60	3.7	Pass
		Diagonal	L2x2x1/4	11	-445.70	21638.00	2.1	Pass
		Top Girt	L2 1/2x2 1/2x1/4	5	-250.37	21503.40	1.2	Pass
T2	68.8 - 63.8	Leg	3.5" x 3.5" x 1/4" Bent Plate	13	-3638.19	40790.70	8.9	Pass
		Diagonal	L2x2x1/4	20	-1369.48	18269.80	7.5	Pass
T3	63.8 - 58.8	Leg	3.5" x 3.5" x 1/4" Bent Plate	23	-8449.90	40790.70	20.7	Pass
		Diagonal	L2x2x1/4	25	-1829.28	18269.80	10.0	Pass
T4	58.8 - 53.8	Leg	3.5" x 3.5" x 1/4" Bent Plate	32	-13776.10	40790.70	33.8	Pass
		Diagonal	L2x2x1/4	35	-2805.89	18269.80	15.4	Pass
T5	53.8 - 51.3	Leg	3.5" x 3.5" x 1/4" Bent Plate	41	-20389.80	49509.60	41.2	Pass
		Diagonal	L2x2x1/4	44	-3076.93	21638.00	14.2	Pass
							Summary	
							Leg (T5) 41.2	Pass
							Diagonal (T4) 15.4	Pass
							Top Girt (T1) 1.2	Pass
							RATING = **41.2**	**Pass**

SITE NAME: FAIRFIELD CENTRAL
PROJECT: MULTI CARRIER ADD
FA NUMBER: 10035074
SITE NUMBER: CT2120
55 WALLS DRIVE
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD
CITY, STATE, ZIP:	BILLERICA, MA 01862
CONTACT:	DAVID COOPER
E-MAIL:	DCOOPER@EMPIRETELCOMM.COM

ENGINEER

COMPANY:	MASER CONSULTING P.A.
ADDRESS:	2000 MIDLANTIC DRIVE, SUITE 100
CITY, STATE, ZIP:	MT. LAUREL, NJ 08054
CONTACT:	MICHAEL CLEARY
PHONE:	(856) 717-0412 x4105
E-MAIL:	MCLEARY@MASERCONSULTING.COM

RF ENGINEER

COMPANY:	NEW CINGULAR WIRELESS PCS, LLC
ADDRESS:	550 COCHITUATE RD.
CITY, STATE, ZIP:	FRAMINGHAM, MA 01701
CONTACT:	RAHIMUDDIN MOHAMMED
E-MAIL:	RX855W@ATT.COM

SITE INFORMATION

APPLICANT/LESSEE

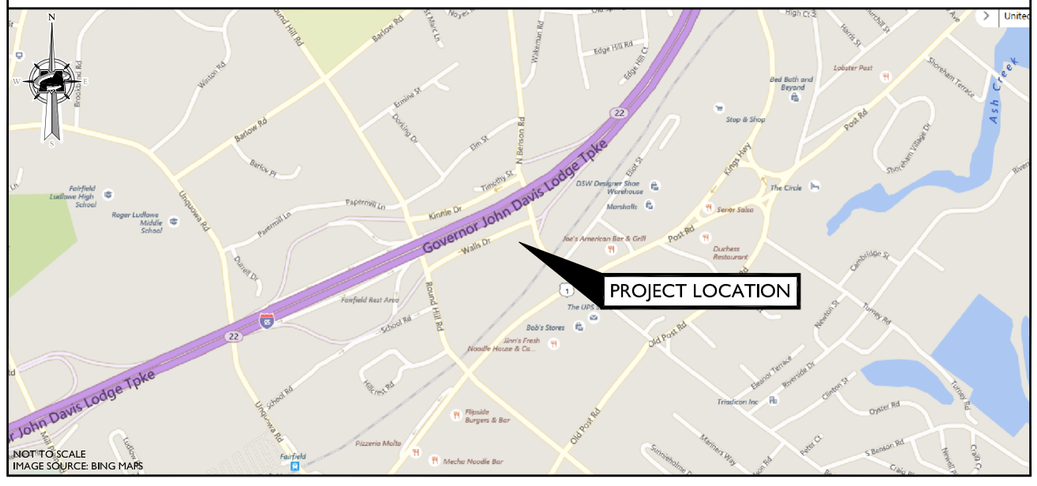
at&t

NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE RD.
FRAMINGHAM, MA 01701

BUILDING OWNER:

NAME:	55 WALLS DR LLC
ADDRESS:	1 CORPORATE DRIVE
CITY, STATE, ZIP:	SHELTON, CT 06484
LATITUDE:	41.1478250° N
LONGITUDE:	73.2514711° W
LAT./LONG. TYPE:	NAD 83
AREA OF CONSTRUCTION:	EXISTING EQUIPMENT ROOM, ROOFTOP AND TOWER
ZONING/JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDIANCES
CURRENT/PROPOSED USE:	UNMANNED TELECOMMUNICATIONS FACILITY
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
CONSTRUCTION TYPE:	IIB
USE GROUP:	U

VICINITY MAP



DRIVING DIRECTIONS

DIRECTIONS FROM AT&T OFFICE AT 550 COCHITUATE ROAD, FARMINGHAM, MA:

HEAD NORTHEAST TOWARD LEGGAT MCCALL CONN. TURN LEFT ONTO LEGGAT MCCALL CONN. CONTINUE ONTO BURR ST. TURN LEFT ONTO COCHITUATE RD. USE THE RIGHT LANE TO TAKE THE RAMP TO I-90 E/MASSPIKE W/SPRINGFIELD/BOSTON. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE. MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE. USE THE RIGHT 2 LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE ONTO I-84. USE THE LEFT 2 LANES TO TAKE EXIT 57 FOR CT-15 S TOWARD I-91 S/CHARTER OAK BRIDGE/N.Y.CITY. CONTINUE ONTO CT-15 S. CONTINUE ONTO CT-15 S/US-5 S. TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NEW YORK CITY. TAKE EXIT 17 TO MERGE ONTO CT-15 S/WILBUR CROSS PKWY. TAKE EXIT 52 FOR STATE ROUTE 108 S/STATE ROUTE 8 S TOWARD BRIDGEPORT. KEEP LEFT, FOLLOW SIGNS FOR CT-8 S/BRIDGEPORT AND MERGE ONTO CT-8 S. TAKE THE INTERSTATE 95 S EXIT TOWARD N.Y. CITY. MERGE ONTO I-95 S. TAKE EXIT 22 FOR CT-135/N BENSON RD. TURN LEFT ONTO CT-135 S/N BENSON RD. TURN RIGHT ONTO KINNIE DR. TURN LEFT ONTO ROUND HILL RD. TURN LEFT ONTO WALLS DR. SITE IS AHEAD ON THE RIGHT.

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

1. CONNECTICUT STATE BUILDING CODE (2016) & ALL SUBSEQUENT AMENDMENTS
2. NATIONAL ELECTRIC CODE 2014
3. NATIONAL FIRE PROTECTION ASSOCIATION 70 - 2014
4. LIGHTNING PROTECTION CODE 201
5. AMERICAN CONCRETE INSTITUTE 318
6. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10
7. EIA/TIA-222 REVISION G
8. TIA 607 FOR GROUNDING
9. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
10. IEEE C2 LATEST EDITION
11. TELCORDIA GR-1275
12. ANSI T1.311

GENERAL CONTRACTOR NOTES

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

SHEET	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-1	ROOF PLAN
A-2	EQUIPMENT PLAN
A-3	ELEVATION VIEW AND ANTENNA SCHEDULE
A-4	ANTENNA LAYOUTS
A-5	DETAILS
A-6	RF PLUMBING DIAGRAMS
G-1	GROUNDING DETAILS

PROJECT DESCRIPTION/SCOPE OF WORK

THIS PROJECT WILL BE COMPRISED OF:

- ADD (3) RRUS-32
- ADD (3) RRUS-32 B66
- ADD (3) RRUS-11 AT BOTTOM WITH SURGE ARRESTOR
- REPLACE (3) ANTENNAS WITH (3) NEW ANTENNAS
- REPLACE (6) TMA AND (6) DIPLEXERS WITH (12) LOW BAND COMBINERS
- UPGRADE DUS TO 5216
- ADD SECOND XMU

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	16963051A

REV.	DATE	DESCRIPTION	BY	CHK'D
0	08/15/17	ISSUED FOR CONSTRUCTION	MPC	MPC
1	08/15/17	ISSUED FOR REVIEW	AN	FEP

STATE OF CONNECTICUT
FRANK E. PAZDEN
28188
REGISTERED PROFESSIONAL ENGINEER

FRANK E. PAZDEN
LICENSED PROFESSIONAL ENGINEER
LICENSE NO. 28188 MY LICENSE EXPIRES ON: 12/31/2018

SITE NAME:

FAIRFIELD CENTRAL
FA10035074
CT2120

55 WALLS DRIVE
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING 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 GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5O HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. 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.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" 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.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

    CONTRACTOR - EMPIRE TELECOM
    SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
    OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)

23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. 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.
26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. 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.
30. 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.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. 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 UTILITIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. 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.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. 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.
49. 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.
50. 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 ALERT OF DANGEROUS EXPOSURE LEVELS.

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1	08/10/17	ISSUED FOR REVIEW	AN	FEP
REV.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY

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SITE NAME:

FAIRFIELD CENTRAL
FA10035074
CT2120

55 WALLS DRIVE
FAIRFIELD, CT 06824
FAIRFIELD COUNTY

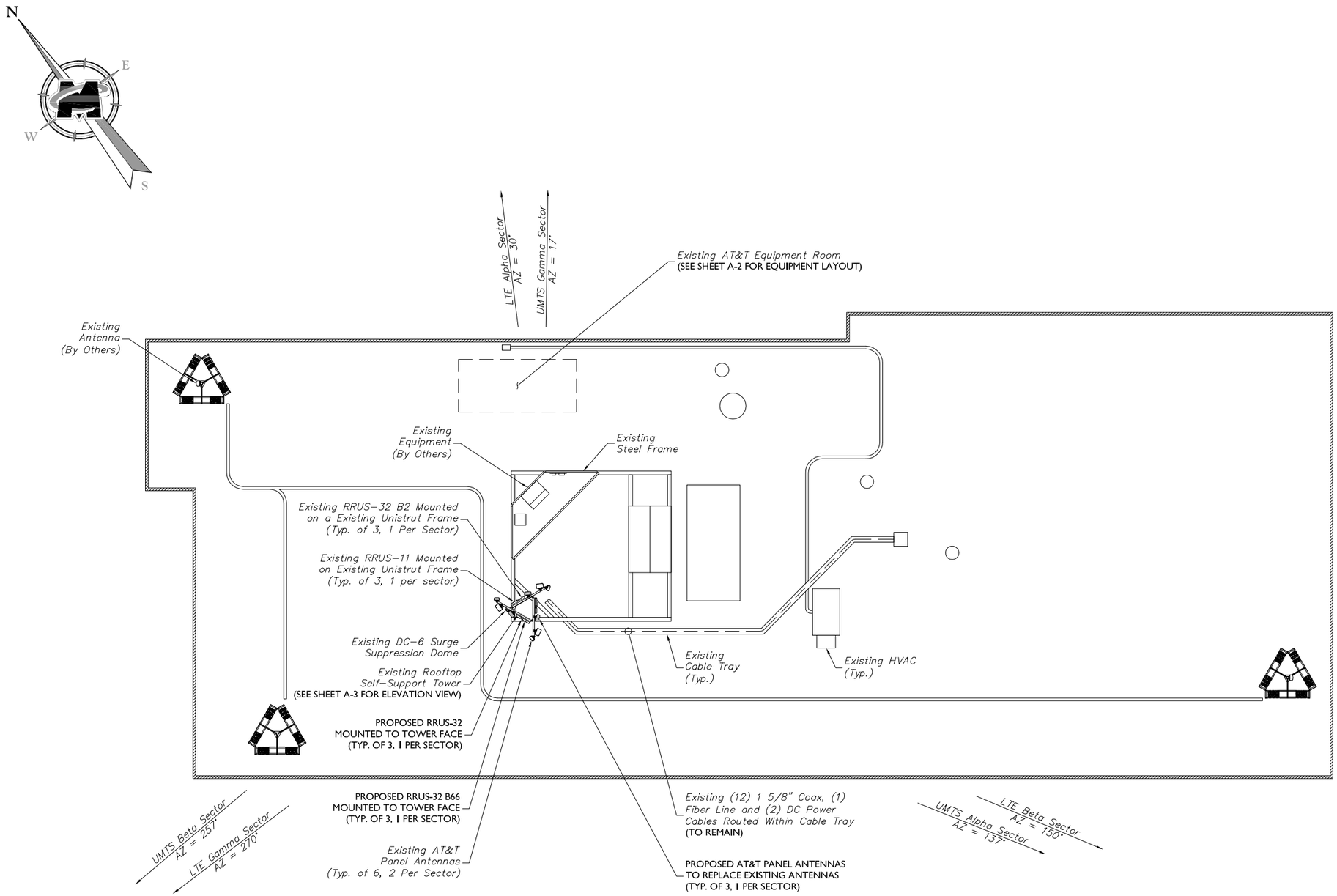
RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

SHEET TITLE :

GENERAL NOTES

SHEET NUMBER :

GN-1



ROOF PLAN

10 8 6 4 2 0 5 10 20

SCALE : 1" = 10'

(DO NOT SCALE 11"X17" DRAWINGS)

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REV.	DATE	ISSUED FOR	BY	CHK'D

STATE OF CONNECTICUT
FRANK E. BAZEN
No. 28188
REGISTERED PROFESSIONAL ENGINEER

FRANK E. BAZEN
CT LICENSED PROFESSIONAL ENGINEER LICENSE NUMBER: 28188

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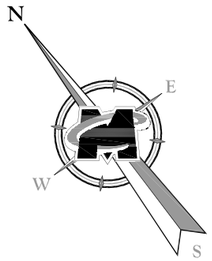
SHEET TITLE :

ROOF PLAN

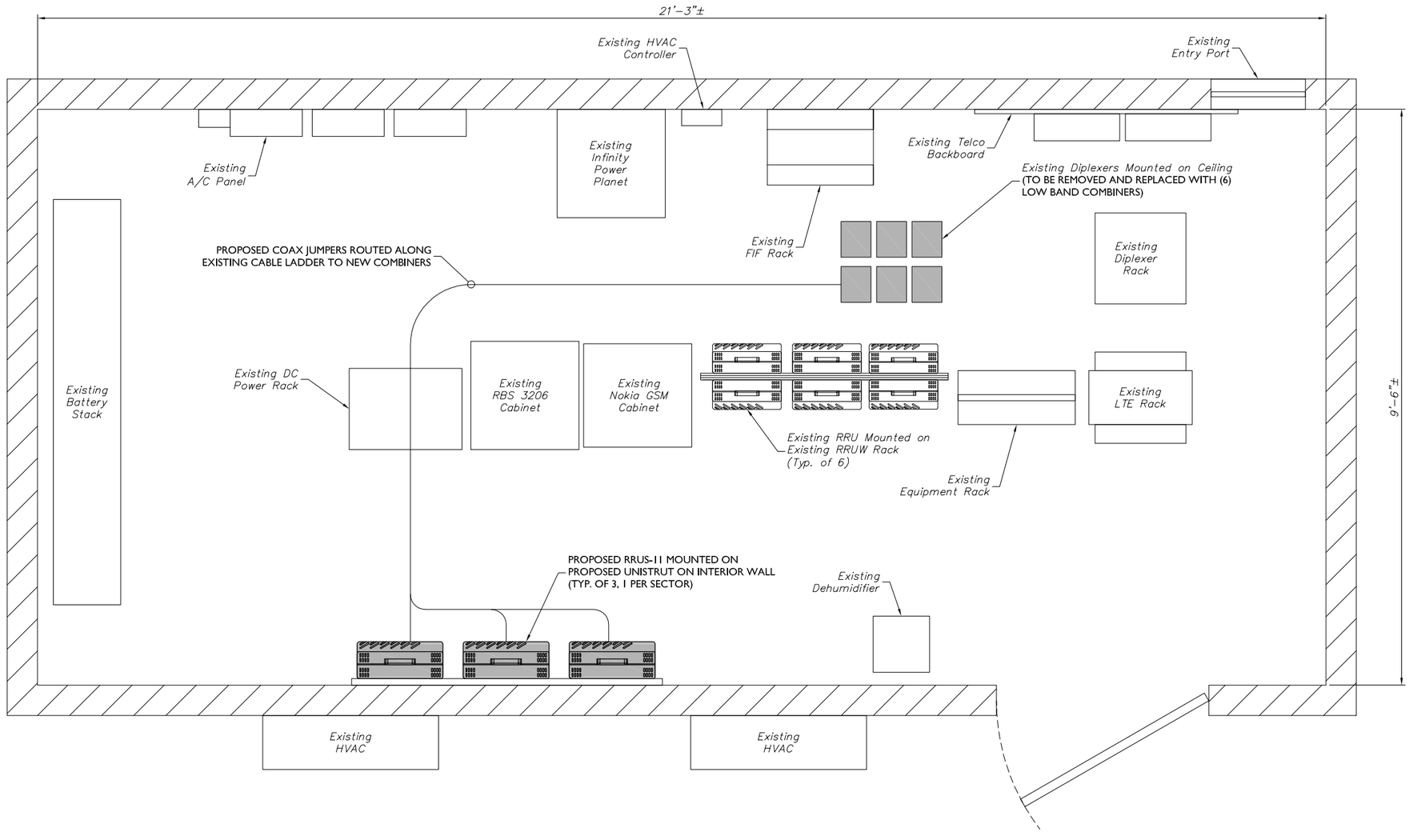
SHEET NUMBER :

A-1



EQUIPMENT UPGRADE:

UPGRADE DUS TO 5216
ADD 2ND XMU



EQUIPMENT PLAN

SCALE : 1" = 1'
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REVISION #	DATE	DESCRIPTION	DRAWN BY	CHECKED BY

STATE OF CONNECTICUT
FRANK E. PADEN
No. 28188
PROFESSIONAL ENGINEER

FRANK E. PADEN
CT PROFESSIONAL ENGINEER LICENSE NO. 28188

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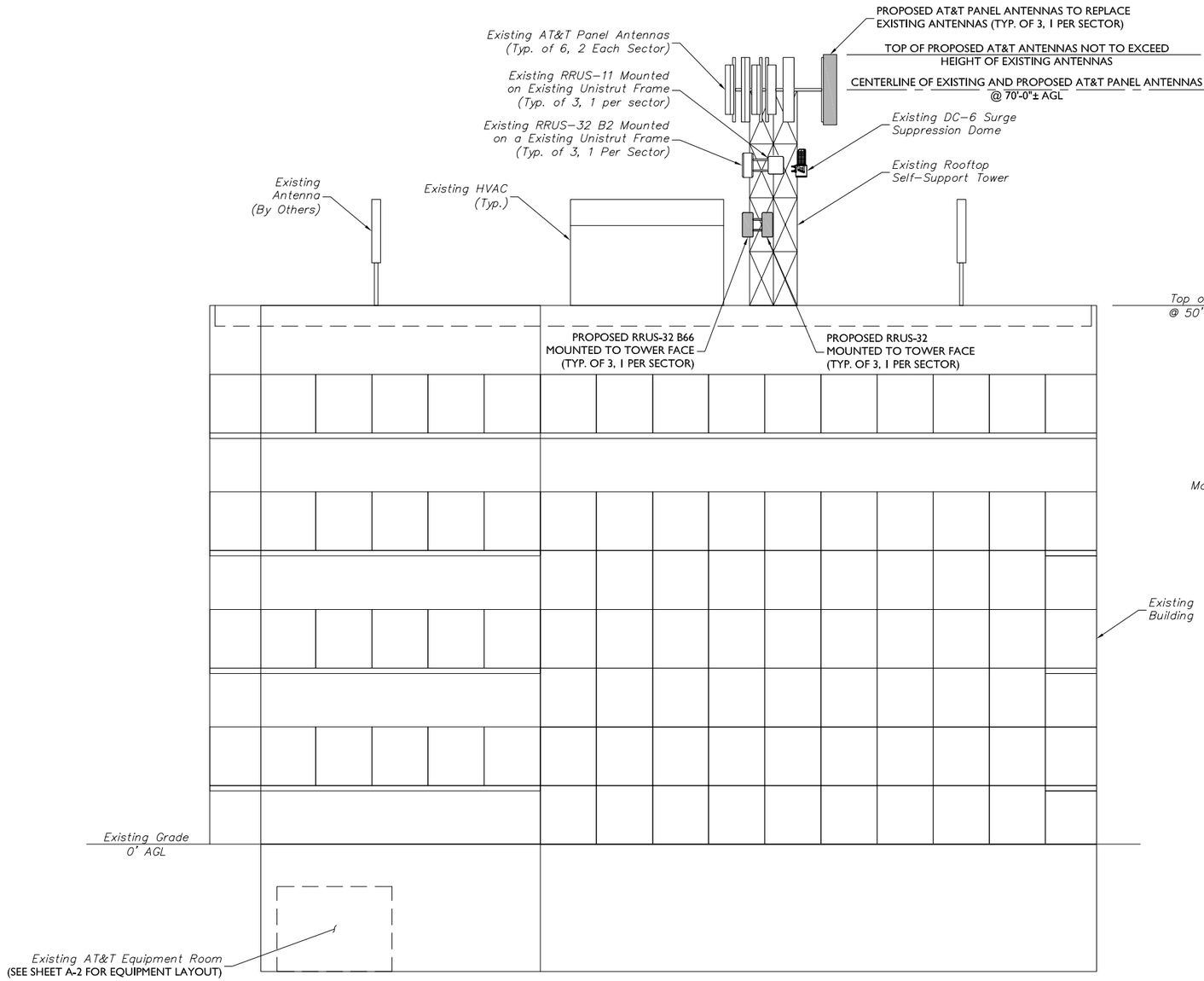
SHEET TITLE :

EQUIPMENT PLAN

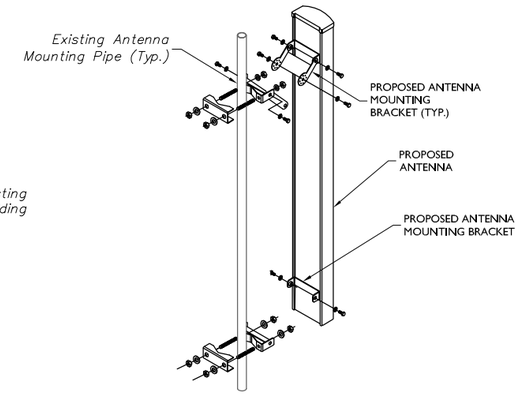
SHEET NUMBER :

A-2



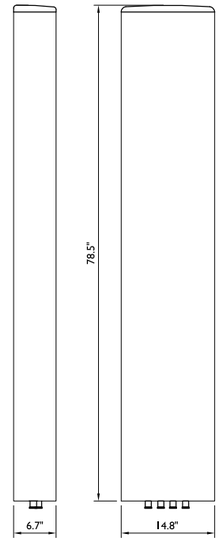
ELEVATION VIEW

SCALE : 1" = 6'
(DO NOT SCALE 11"X17" DRAWINGS)



ANTENNA MOUNTING DETAIL

NOT TO SCALE



WEIGHT = 81.5 LBS

KATHREIN 80010798

ANTENNA DETAIL

NOT TO SCALE

PROPOSED ANTENNA AND RRUS CONFIGURATION

SECTOR		EXISTING ANTENNA CONFIGURATION	PROPOSED ANTENNA CONFIGURATION	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH	ANT. CL ELEV (ft.)	RRUS CONFIGURATION	STATUS
ALPHA	A1	CCI HPA-65R-BUU-H6	CCI HPA-65R-BUU-H6	LTE	REMAIN	72.00	14.80	9.00	50.70	30°	70.0'	RRUS 11 RRUS 32+B2	REMAIN
	A3	Powerwave 7770	Kathrein 80010798	LTE	NEW	78.50	14.80	6.70	81.50	30°	70.0'	RRUS 11 RRUS 32 RRUS 32 B66	NEW
	A4	Powerwave 7770	Powerwave 7770	UMTS	REMAIN	55.00	11.00	5.00	35.00	137°	70.0'	-	-
BETA	B1	CCI HPA-65R-BUU-H6	CCI HPA-65R-BUU-H6	LTE	REMAIN	72.00	14.80	9.00	50.70	150°	70.0'	RRUS 11 RRUS 32+B2	REMAIN
	B3	Powerwave 7770	Kathrein 80010798	LTE	NEW	78.50	14.80	6.70	81.50	150°	70.0'	RRUS 11 RRUS 32 RRUS 32 B66	NEW
	B4	Powerwave 7770	Powerwave 7770	UMTS	REMAIN	55.00	11.00	5.00	35.00	257°	70.0'	-	-
GAMMA	C1	CCI HPA-65R-BUU-H6	CCI HPA-65R-BUU-H6	LTE	REMAIN	72.00	14.80	9.00	50.70	270°	70.0'	RRUS 11 RRUS 32+B2	REMAIN
	C3	Powerwave 7770	Kathrein 80010798	LTE	NEW	78.50	14.80	6.70	81.50	270°	70.0'	RRUS 11 RRUS 32 RRUS 32 B66	NEW
	C4	Powerwave 7770	Powerwave 7770	UMTS	REMAIN	55.00	11.00	5.00	35.00	17°	70.0'	-	-

ANTENNA SCHEDULE

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SCALE : AS SHOWN
JOB NUMBER : 16963051A

GRAPHIC SCALE	ORIGINAL SCALE	ORIGINAL DRAWING	MPC	MPC
0 6 12 24	1" = 6"	24x36	AN	FER
DATE	DESCRIPTION		DRAWN BY	CHECKED BY

COMMONWEALTH OF CONNECTICUT
No. 28188
FRANK E. PAZDEN
REGISTERED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER

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CT2120

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FAIRFIELD COUNTY

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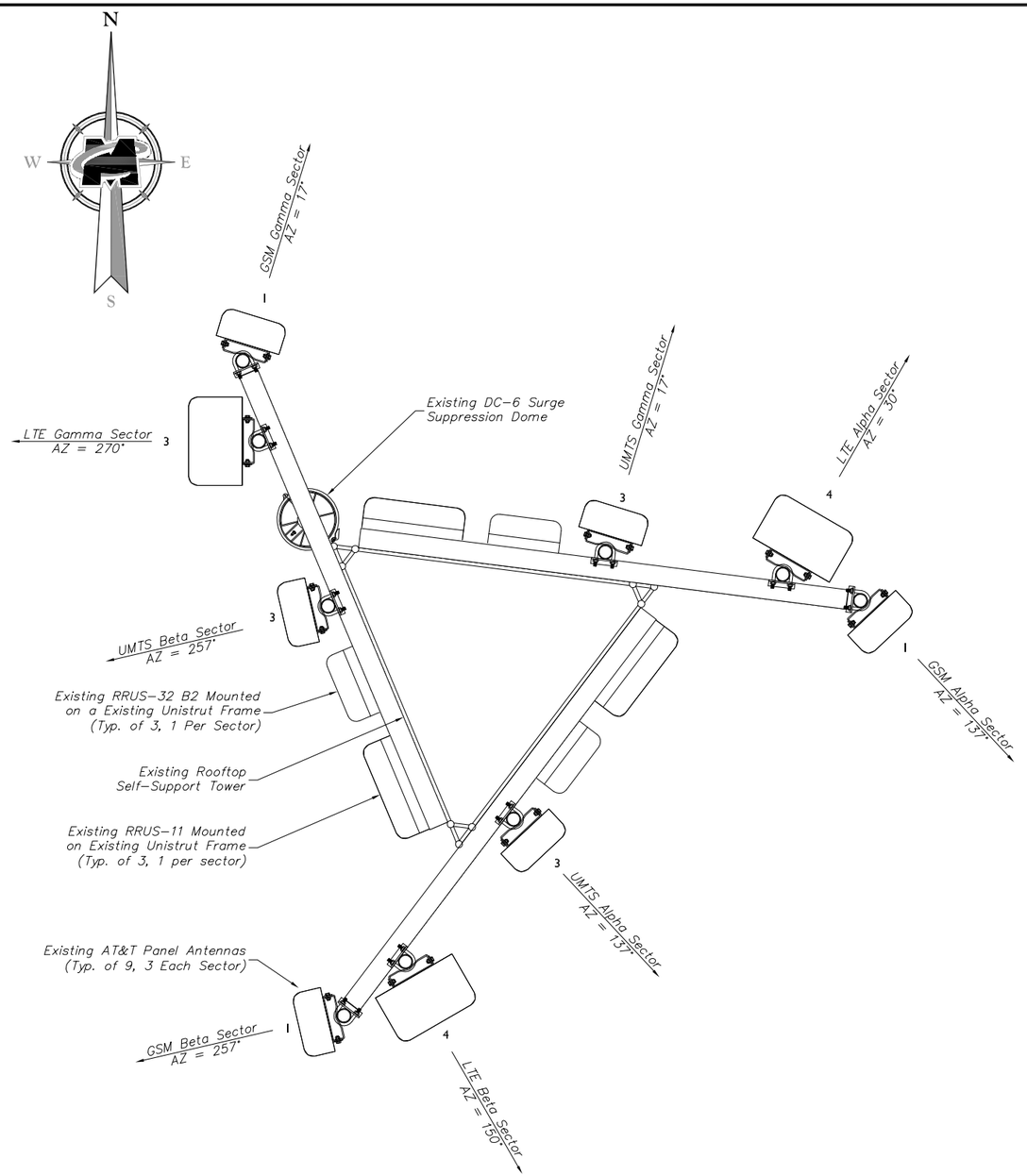
Fax: 732.383.1984

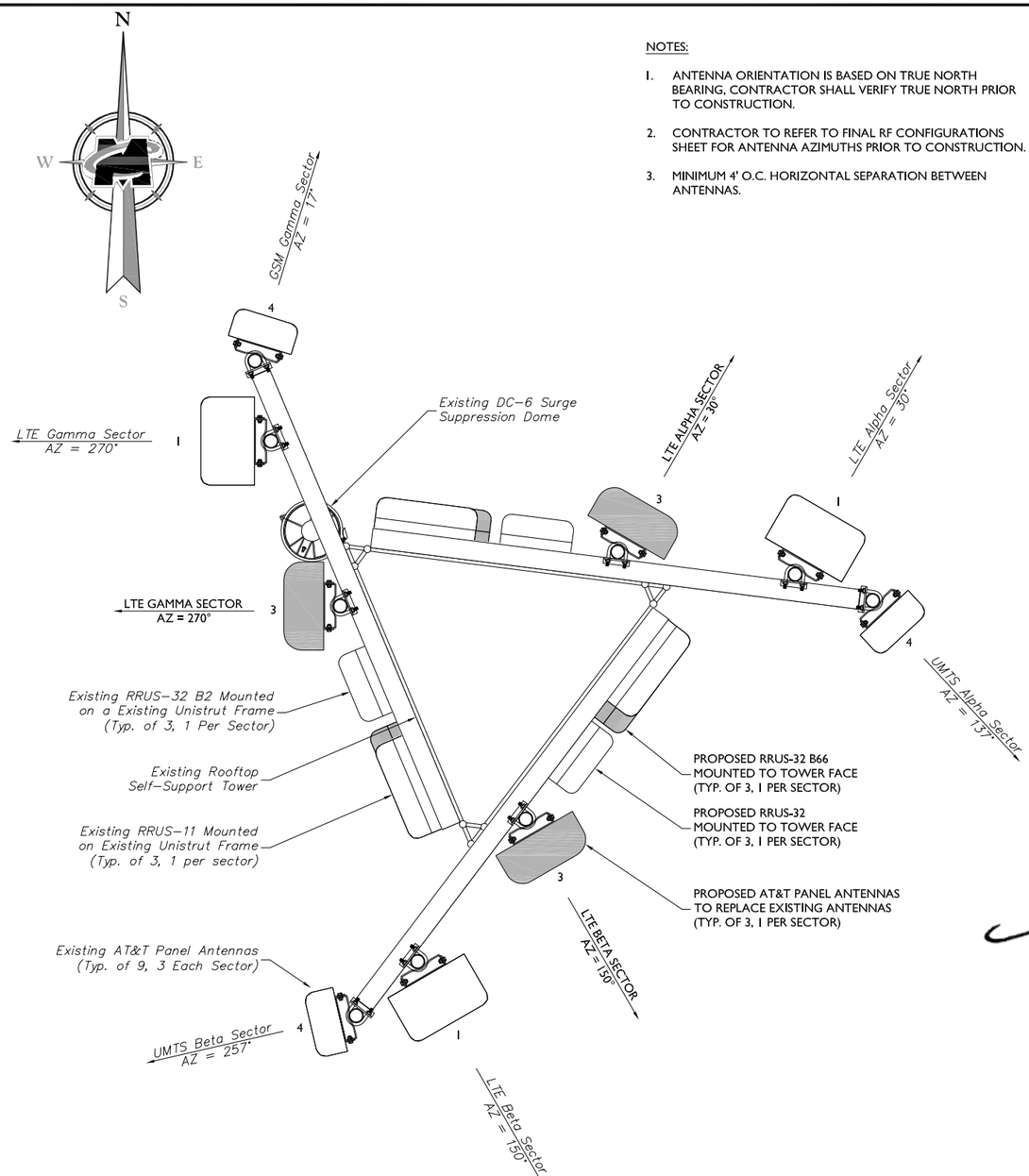
SHEET TITLE :
ELEVATION VIEW AND ANTENNA SCHEDULE

SHEET NUMBER :
A-3



EXISTING - ANTENNA LAYOUT

NOT TO SCALE



PROPOSED - ANTENNA LAYOUT

NOT TO SCALE

NOTES:

1. ANTENNA ORIENTATION IS BASED ON TRUE NORTH BEARING, CONTRACTOR SHALL VERIFY TRUE NORTH PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO REFER TO FINAL RF CONFIGURATIONS SHEET FOR ANTENNA AZIMUTHS PRIOR TO CONSTRUCTION.
3. MINIMUM 4' O.C. HORIZONTAL SEPARATION BETWEEN ANTENNAS.

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A	08/31/17	ISSUED FOR REVIEW	AN	FEP

STATE OF CONNECTICUT
FRANK E. PAZDON
No. 28188
REGISTERED PROFESSIONAL ENGINEER

FRANK E. PAZDON
REGISTERED PROFESSIONAL ENGINEER
STATE OF CONNECTICUT LICENSE NO. 28188

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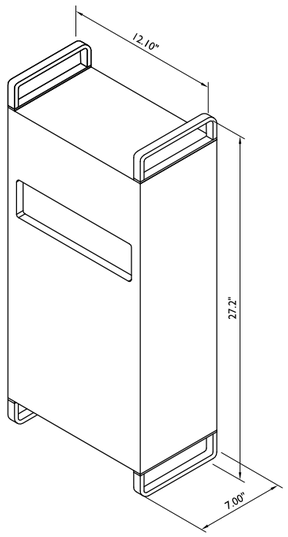
SHEET TITLE:
ANTENNA LAYOUTS

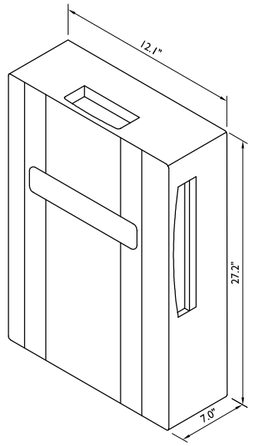
SHEET NUMBER:
A-4



RRUS-32 B66 DIMENSIONS (H X W X D): 27.2" X 12.1" X 7.0"
(INCLUDES HANDLES, FEET AND SUNSHIELD)

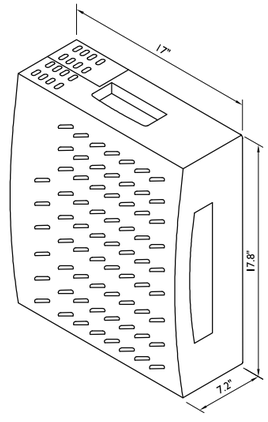
WEIGHT: 53 LBS

RRUS-32 B66 DETAIL
NOT TO SCALE



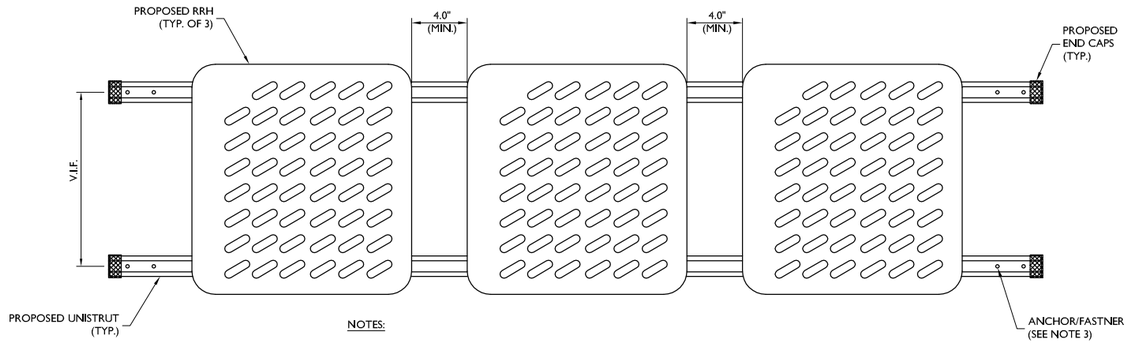
RRUS-32 B2 DIMENSIONS (H X W X D): 27.2" X 12.1" X 7.0" (INCLUDES SUNSHIELD)
WEIGHT: 53 LBS

RRUS-32 DETAIL
NOT TO SCALE



RRUS-11 DIMENSIONS (H X W X D): 17.8" X 17" X 7.2" (INCLUDES SUNSHIELD)
WEIGHT: 55 LBS

RRUS-11 DETAIL
NOT TO SCALE

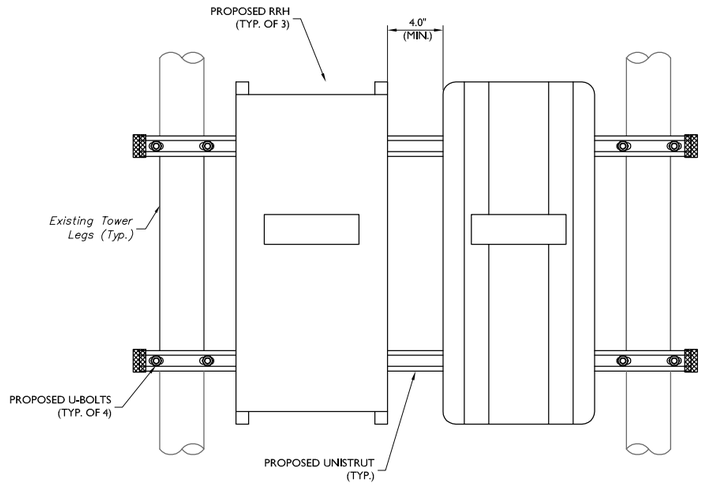


NOTES:

1. ALCATEL-LUCENT (ALU) VIA AT&T SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. ALU INSTALLS RRH AND MAKES CABLE TERMINATIONS.
2. A SUPPORT FOR A SINGLE RRH SHALL HAVE A MINIMUM OF TWO ANCHORS/FASTENERS FOR EACH UNISTRUT CHANNEL.
3. INSTALL ANCHORS/FASTENERS A MAXIMUM OF 2'-0" ON CENTERS.
   - WOOD STUDS - 1/4"Ø LAG BOLT W/ 2" EMBEDMENT IN WOOD.
   - CONCRETE - 1/2"Ø HILTI KWIK BOLT III W/ 2-1/4" EMBEDMENT OR EQUIVALENT.
   - THROUGH BOLT - 1/4"Ø A36/A307 THREADED ROD W/ NUTS AND WASHERS.
   - MASONRY - 1/2"Ø THREADED ROD WITH HILTI HY70 W/5" MINIMUM EMBEDMENT.

   ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
4. MOUNT RRU'S TO UNISTRUT WITH 3/8"Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.
5. MOUNT FIBER BOX WITH FOUR (4) 1/4"Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.
6. NO PAINTING OF THE RRU'S OR SOLAR SHIELD ALLOWED.

RRH WALL MOUNTING DETAIL
NOT TO SCALE



NOTES:

1. ALL UNISTRUT CHANNELS SHALL BE P1000 UNLESS OTHERWISE NOTED.
2. ALL FIELD CUT ENDS SHALL BE FIELD GALVANIZED ACCORDING TO ATSM-A780.
3. ALL FASTENERS ARE 1/2"Ø. ALL DRILLED HOLES SHALL BE 9/16"Ø.
4. MOUNT RRU'S TO UNISTRUT WITH 3/8"Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR (4) PER DEVICE SUBCONTRACTOR SHALL SUPPLY.
5. NO PAINTING OF THE RRU'S OR SOLAR SHIELD IS ALLOWED.

RRH DETAIL MOUNTING DETAIL
NOT TO SCALE

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NEW	DATE	DESCRIPTION	DRAWN	CHECKED

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FRANK E. PATRICIAN
No. 28188
FRANK E. PATRICIAN
CONNECTICUT LICENSED PROFESSIONAL ENGINEER
LICENSE/REGISTRATION NUMBER: PEN.28188
PROFESSIONAL ENGINEER

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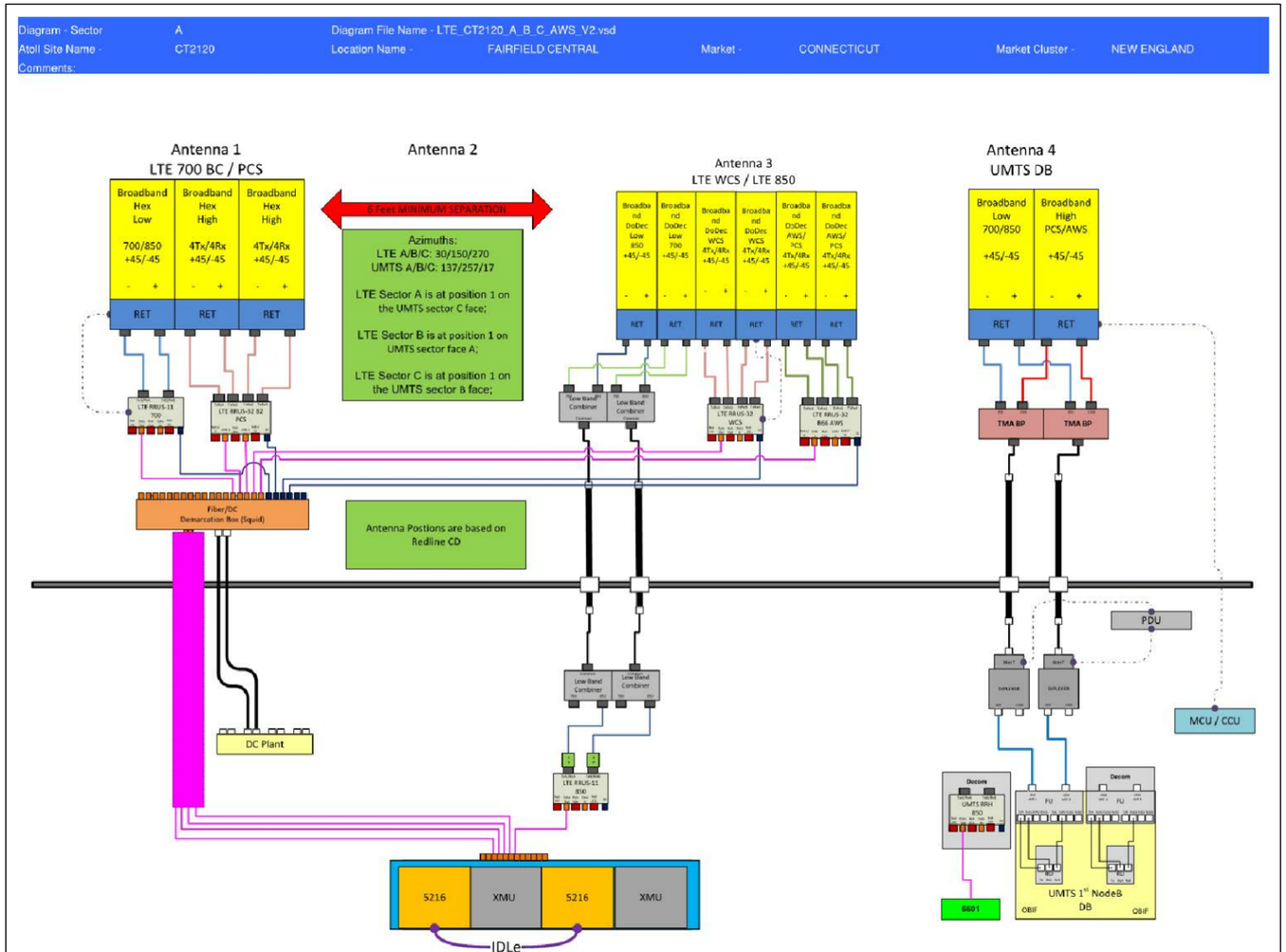
SHEET TITLE:
DETAILS

SHEET NUMBER:
A-5



ALL SECTORS

NEW-ENGLAND_CONNECTICUT_CT2120_2018-LTE-Multi-Carrier_LTE_dr701e_2051A0ACN5_10035074_60405_05-30-2017_Final-RF-Approval_v1.00

RF PLUMBING DIAGRAMS

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0	MPC	ISSUED FOR COMMENT	06/30/17	MPC
1	SB	UPDATED PER COMMENTS	08/28/17	FEP

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CONNECTICUT LICENSED PROFESSIONAL ENGINEER
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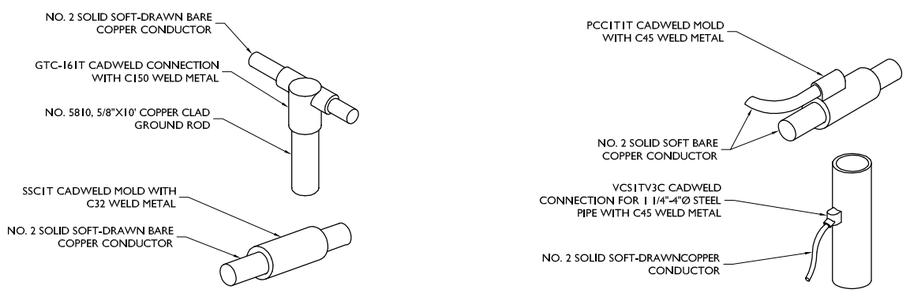
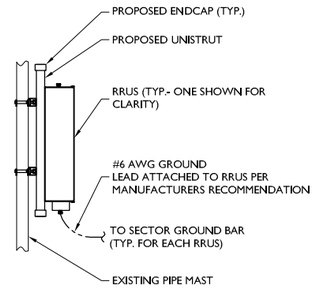
SHEET TITLE: RF PLUMBING DIAGRAMS

SHEET NUMBER: A-6



CADWELD DETAILS
NOT TO SCALE



RRU GROUNDING DETAIL
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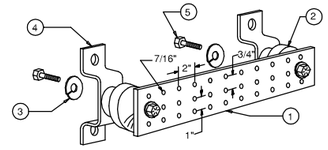


LEGEND

1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.

2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4

3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8

4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056

5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

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

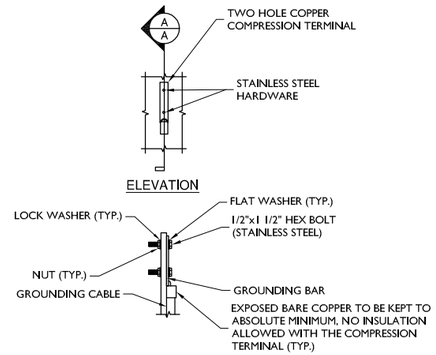
SECTION "P" - SURGE PRODUCERS

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

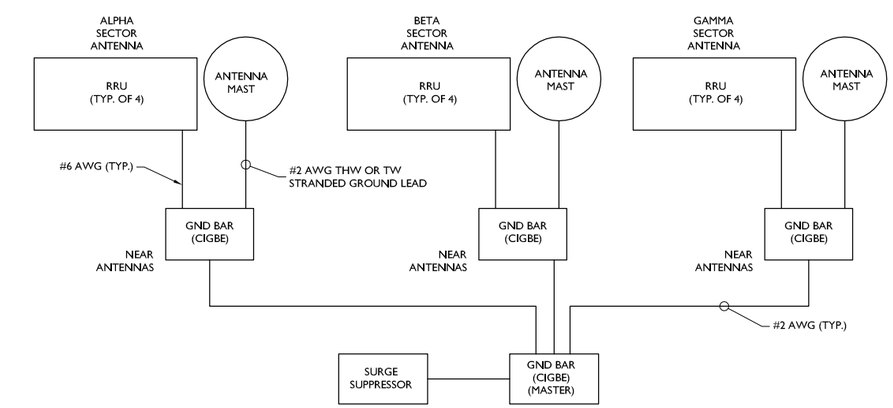
SECTION "A" - SURGE ABSORBERS

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

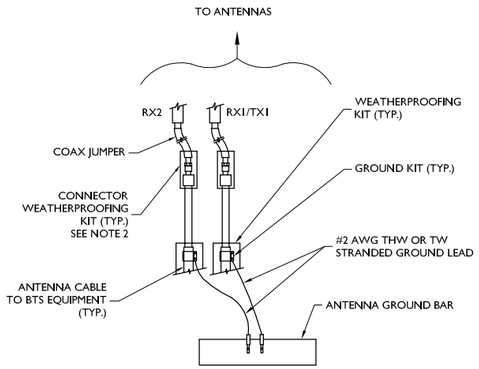
MASTER GROUND BAR
NOT TO SCALE



TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



SCHEMATIC DIAGRAM GROUNDING SYSTEM
NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR
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NEW/MOD.	DATE	DESCRIPTION	DRAWN	CHECKED

STATE OF CONNECTICUT — FRANK B. PAPPALARDO — No. 28188 — PROFESSIONAL ENGINEER

FRANK B. PAPPALARDO
LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: PEN.28188

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SHEET TITLE: GROUNDING DETAILS

SHEET NUMBER: G-1