4 Davis Road West, Suite 5 – Old Lyme, CT 06371

Ms. Melanie Bachman
Executive Director
CT Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification Application
1712 Main Street, Coventry, CT 06238

August 13, 2018

Dear Ms. Bachman:

Sprint Spectrum Realty Company, L.P. ("Sprint"), is submitting to the Connecticut Siting Council for a Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site. Sprint currently maintains 6 panel antennae at the 179'11" level of the Tower. Sprint proposes to replace those panel antennas (2 per sector). Sprint also proposes relocating 3 existing remote radio units from their existing locations on the ground and adding 9 additional remote radio units, installing them at the 179'11" level on the tower. Sprint further proposes to add 4 hybrid cables while removing any existing cabling and strengthening the existing tower.

There are no existing zoning or permitting documents, as the owner of this property is the Connecticut Airport Authority and does not require municipally generated zoning or building permits, nor does there appear to have been any previous Siting Council applications on the facility list that corresponds with this Sprint installation. Any documents enclosed reflect the reality of the current installation on the Tower.

If you have any questions, please feel free to contact me.

Thank you,

By: *Paul F. Sagristano*

Paul F. Sagristano
Cherundolo Consulting
917.841.0247
psagristano@lrivassoc.com

4 Davis Road West, Suite 5 – Old Lyme, CT 06371

Ms. Melanie Bachman
Executive Director
CT Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification Application
1712 Main Street, Coventry, CT 06238

Latitude : N41.7798
Longitude: W72.3101

August 13, 2018

Dear Ms. Bachman:

Sprint Spectrum Realty Company, L.P. ("Sprint"), is submitting to the Connecticut Siting Council for a Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site. . Sprint currently maintains 6 panel antennae at the 179'11" level of the Tower. Sprint proposes to replace those panel antennas (2 per sector) with 6 new antennas (2 per sector). Sprint also proposes to relocate 3 existing remote radio units and add 9 additional Remote Radio units (3 per sector) also at the 179'11" level on the tower. Sprint further proposes to add 4 hybrid cable (while removing all other Sprint related cabling) and adding 48 Antenna-RRH jumper cables. Lastly Sprint proposes strengthening the existing Tower to the capacity prior to modification. No ground based modifications are being performed. Sprint is performing a new high-performance upgrade for cellular mobile communications. It is designed to increase the capacity and speed of its mobile telephone and broadband networks.

The Sprint database does not have original zoning or building permits, nor are there submissions for Siting Council approval for this site on the Siting Council Database.

Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, for construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).
In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to and to John Elsesser, Town Manager of Coventry which is also tower owner, and Eric Trotter P&Z Director of the Town of Coventry.
.
Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower with proposed modifications to accommodate the revised antenna configuration.

Existing Facility

The Facility is located at 1712 Main Street in the Town of Coventry and is owned by the Town of Coventry, the Site coordinates are: N41.7798, W72.3101

The existing facility consists of a 190' Self-Support Lattice tower. Sprint currently operates wireless communications equipment on a platform on a concrete slab at the facility and has 6 antennas mounted at a centerline of 179'11"

Statutory Considerations

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

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

2. The proposed changes will not require an extension of the property boundaries.

3. The proposed additions will not increase the noise level at the existing facility by

six decibels or more, or to levels that exceed state and/or local criteria

4. The changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

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

Respectfully submitted,

Paul F. Sagristano

Paul F. Sagristano
Charles Cherundolo Consulting
917-841-0247
psagristano@lrivassoc.com

PFS/mtf

Additional Recipients:
John Elsesser, Town Manager, Town of Coventry Via Fed Ex
Eric Trott, P&Z Director, Town of Coventry Via Fed Ex

August 31,2018

Dear Customer:

The following is the proof-of-delivery for tracking number **773080128394**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	L.BROWN	**Delivery location:**	1712 MAIN STREET COVENTRY, CT 06238
Service type:	FedEx Express Saver	**Delivery date:**	Aug 31, 2018 10:11
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	773080128394	**Ship date:**	Aug 28, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Eric Trott, P&Z Director
Town of Coventry
1712 Main Street
COVENTRY, CT 06238 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Purchase order number:
CT03XC206 CSC sub

Thank you for choosing FedEx.

August 31,2018

Dear Customer:

The following is the proof-of-delivery for tracking number **773080107363**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	L.BROWN	**Delivery location:**	1712 MAIN STREET COVENTRY, CT 06238
Service type:	FedEx Express Saver	**Delivery date:**	Aug 31, 2018 10:11
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	773080107363	**Ship date:**	Aug 28, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
John Elsesser, Town Manager
Town of Coventry
1712 Main Street
COVENTRY, CT 06238 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Purchase order number:
CT03XC206 CSC sub

Thank you for choosing FedEx.

Google Maps 1712 Main St

Imagery ©2018 Google, Map data ©2018 Google 50 ft

Town of Coventry, CT

Property Listing Report

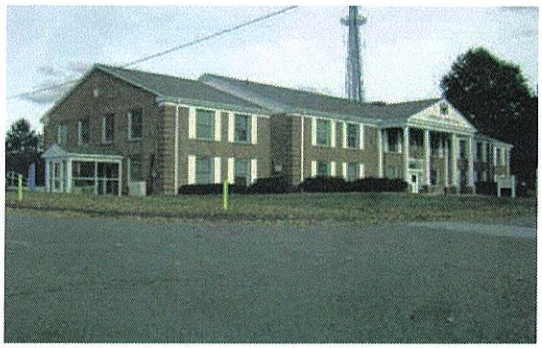
Map Block Lot: 018 0049 0001 | Account: R30305

Property Information

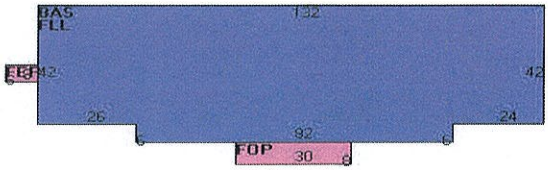
Property Location	1712 MAIN ST
Owner	COVENTRY TOWN OF
Co-Owner	
Mailing Address	1712 MAIN ST COVENTRY CT 06238
Land Use	901 Town MDL-94
Land Class	E
Zoning Code	GR40
Census Tract	

Neighborhood	G
Acreage	98
Utilities	Sewer,Well
Lot Setting/Desc	Level
Additional Info	

Photo



Sketch



Primary Construction Details

Year Built	1962
Stories	1
Building Style	City/Town Hall
Building Use	Comm/Ind
Building Condition	C
Floors	Asphalt Tile
Total Rooms	0

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable
Roof Cover	Asphalt Shingl

Exterior Walls	Brick
Interior Walls	Drywall
Heating Type	Forced Air
Heating Fuel	Oil
AC Type	Central
Gross Bldg Area	12360
Total Living Area	6036

Report Created On 8/27/2018

Town of Coventry, CT

Property Listing Report | Map Block Lot 018 0049 0001 | Account R30305

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	19730200	13811100
Extras	201600	141200
Improvements	20573300	14401400
Outbuildings	641500	449100
Land	2360800	1652600
Total	22934100	16054000

Outbuilding and Extra Items

Type	Description
Cell Shed	288 S.F.
Paving	26000 S.F.
Paving	5000 S.F.
Tennis Court	3 UNITS
Cell Shed	200 S.F.
Shed	600 S.F.
Paving	20000 S.F.
Lean-to	192 S.F.
Lean-to	192 S.F.
Light 3	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Porch, Enclosed	48	0
Porch, Open	240	0
Fin. Lower Level	6036	0
First Floor	6036	6036
Total Area	12360	6036

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
COVENTRY TOWN OF	100/ 64	1/6/1960	

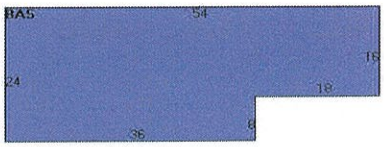
Report Created On 8/27/2018

Town of Coventry, CT

Property Listing Report | Map Block Lot 018 0049 0001 | Account R30305

Photo

Sketch



Primary Construction Details

Year Built	1970
Stories	1
Building Style	City/Town Hall
Building Use	Comm/Ind
Building Condition	C-
Floors	Carpet
Total Rooms	0
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

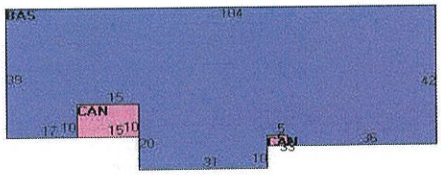
Kitchen Style	
Roof Style	Gable
Roof Cover	Asphalt Shingl
Exterior Walls	Vinyl
Interior Walls	Drywall
Heating Type	Forced Air
Heating Fuel	Gas
AC Type	Central
Gross Bldg Area	
Total Living Area	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	1152	1152
Total Area		

Photo

Sketch



Primary Construction Details

Year Built	1999
Stories	1
Building Style	Office
Building Use	Comm/Ind
Building Condition	C
Floors	Carpet
Total Rooms	0
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

Kitchen Style	
Roof Style	Gable
Roof Cover	Asphalt Shingl
Exterior Walls	Brick
Interior Walls	Drywall
Heating Type	Forced Air
Heating Fuel	Gas
AC Type	Central
Gross Bldg Area	
Total Living Area	

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Canopy	165	0
First Floor	4324	4324
Total Area		

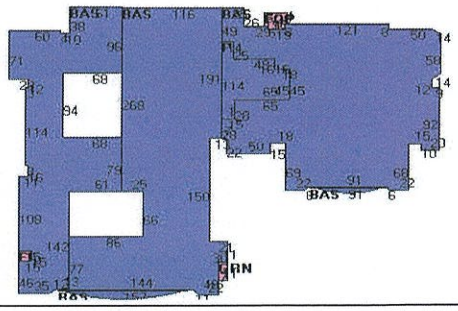
Report Created On 8/27/2018

Town of Coventry, CT

Property Listing Report | Map Block Lot 018 0049 0001 | Account R30305

Photo

Sketch



Primary Construction Details

Year Built	1961
Stories	
Building Style	Schools-Public
Building Use	Comm/Ind
Building Condition	C
Floors	Asphalt Tile
Total Rooms	0
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

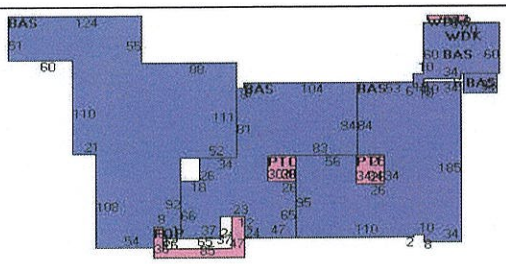
Kitchen Style	
Roof Style	Flat
Roof Cover	Tar + Gravel
Exterior Walls	Brick
Interior Walls	Drywall
Heating Type	Hot Water
Heating Fuel	Oil
AC Type	None/partial
Gross Bldg Area	
Total Living Area	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Porch, Open	840	0
Greenhouse	297	0
First Floor	131670	131670
Patio	5362	0
Total Area		

Photo

Sketch



Primary Construction Details

Year Built	1962
Stories	1
Building Style	Schools-Public
Building Use	Comm/Ind
Building Condition	C
Floors	Asphalt Tile
Total Rooms	0
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

Kitchen Style	
Roof Style	Flat
Roof Cover	Tar + Gravel
Exterior Walls	Brick
Interior Walls	Drywall
Heating Type	Hot Water
Heating Fuel	Oil
AC Type	None/partial
Gross Bldg Area	
Total Living Area	

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	75960	75960
Patio	1664	0
Wood Deck	201	0
Porch, Open	1502	0
Total Area		

Report Created On 8/27/2018

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT03XC206

Coventry Town Hall
1712 Main Street
Coventry, CT 06238

June 20, 2018

EBI Project Number: 6218004561

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	8.70 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

June 20, 2018

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT03XC206 – Coventry Town Hall**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1712 Main Street, Coventry, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT 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.

General 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 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 done for the proposed SPRINT Wireless antenna facility located at **1712 Main Street, Coventry, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT 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.

For all calculations, all equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. 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. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) 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.

9) The antenna mounting height centerlines of the proposed antennas are **179.92 feet** above ground level (AGL) for **Sector A**, **179.92 feet** above ground level (AGL) for **Sector B** and **179.92 feet** above ground level (AGL) for Sector C.

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**179.92 feet**	Height (AGL):	**179.92 feet**	Height (AGL):	**179.92 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**1.08 %**	Antenna B1 MPE%	**1.08 %**	Antenna C1 MPE%	**1.08 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**179.92 feet**	Height (AGL):	**179.92 feet**	Height (AGL):	**179.92 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**0.74 %**	Antenna B2 MPE%	**0.74 %**	Antenna C2 MPE%	**0.74 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**1.82 %**
Nextel	0.42 %
Unknown	3.11 %
Verizon Wireless	2.49 %
MetroPCS	0.86 %
Site Total MPE %:	**8.70 %**

SPRINT Sector A Total:	1.82 %
SPRINT Sector B Total:	1.82 %
SPRINT Sector C Total:	1.82 %
Site Total:	8.70 %

SPRINT _ Frequency Band / Technology Max Power Values (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**
Sprint 850 MHz CDMA	1	376.73	179.92	0.45	850 MHz	567	0.09%
Sprint 850 MHz LTE	2	941.82	179.92	2.24	850 MHz	567	0.39%
Sprint 1900 MHz (PCS) CDMA	5	511.82	179.92	3.04	1900 MHz (PCS)	1000	0.30%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	179.92	3.04	1900 MHz (PCS)	1000	0.30%
Sprint 2500 MHz (BRS) LTE	8	778.09	179.92	7.40	2500 MHz (BRS)	1000	0.74%
						Total:	**1.82%**

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 SPRINT 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:

SPRINT Sector	Power Density Value (%)
Sector A:	1.82 %
Sector B:	1.82 %
Sector C:	1.82 %
SPRINT Maximum Total (per sector):	1.82 %
Site Total:	8.70 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.70 %** 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.

MASER CONSULTING
— CONNECTICUT —

Self-Support Tower & Antenna Mount Structural Analysis & Modifications

Rev. 5

FOR

Coventry Town Hall

Site ID: CT03XC206
1712 Main Street
Coventry, Ct 06238

Mount Utilization (before Modifications): 172.0%
Mount Utilization (after Modifications): 84.3%
Self-Support Tower Utilization (before Modifications): 121.0%
Self-Support Tower Utilization (after Modifications): 91.7%

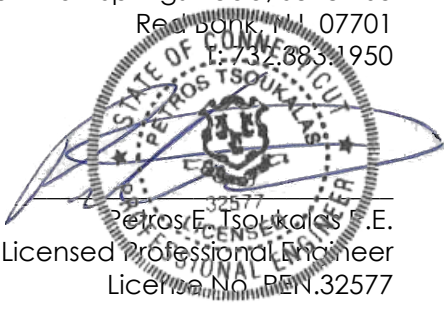
July 23, 2018

Prepared For

Sprint
201 State Route 17 North
Rutherford, NJ 07070

Prepared By

Maser Consulting Connecticut
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
T: 732.383.1950



Petros E. Tsoukalas P.E.
Connecticut Licensed Professional Engineer
License NO. PEN.32577

MC Project No. 17924002A

Objective:

The objective of this report is to determine the capacity of the existing modified 190' Self-Support tower structure and the existing antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting Connecticut has performed limited field observations on August 30, 2017 to verify the existing condition of the structure and to locate and quantify the existing wireless appurtenances where possible, from ground level. Maser Consulting Connecticut has reviewed the following documents in completing this report:

- RFDS 45753 provided by Sprint, dated October 18, 2017
- Previous Structural Analysis Report, performed by CENTEK Engineering, Project No. 14001.057, dated December 03, 2014
- Previous Antenna Mount Modifications Report, performed by Maser Consulting Connecticut, dated February 6, 2018
- Previous Structural Analysis Report, performed by Maser Consulting Connecticut, dated April 12, 2018
- Previous Structural Modification Report, performed by Maser Consulting Connecticut, dated June 06, 2018
- Previous Construction Drawings, prepared by Maser Consulting Connecticut, dated April 6, 2018

The existing structure is an existing 190'-0'', three-legged, tapered lattice Self-Support tower originally designed and manufactured by ROHN, with a top face width of 4'-8'' and bottom face width of 19'-0''. The existing **SPRINT** equipment is supported on existing sector frames at a centerline of approximately 179'-11" above ground level, which will be analyzed under a separate report. This report is based upon this information, as well as the information obtained in the field.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- 2016 Connecticut State Building Code, Incorporating the 2012 IBC
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-222-G
    - Basic Wind Speed – 102 mph (3 Second Gust)
    - Exposure Category – B
    - Structural Class – II
    - Topographic Category – 1
    - Ice Wind – 40 mph
    - Ice Thickness – 1"
- Specification for Structural Steel Buildings ANSI/AISC 360-10, American Institute of Steel Construction (AISC)

Loading used in this analysis is found in Appendix A of this report.

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the existing modified Self-Support tower and antenna support mount are structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, or if the increase in the forces in the structure are deemed to be negligible or acceptable, then the proposed equipment can be installed as intended.

Tower Numerics, tnx Tower, a tower analysis and design program, designed specifically for the telecommunications industry and for all applicable codes and standards, was used for this structural analysis. The existing antenna mount in all sectors has been modeled in RISA-3D, a comprehensive structural analysis program. The program performs design checks of structures under user specified loads. The user specified loads have been calculated separately based on the requirements of the above referenced codes. The program performs an analysis based on the steel code to determine the adequacy of the members, and produces the reactions at the connection points of the mounts to the existing structure. Additional calculations were then prepared to analyze the mount connection points with the proposed loading conditions.

General Site Design Assumption:

- Structural Steel Main Legs Diagonals and Girts are constructed of A572-50 Grade Steel.
- Structural Steel Plate members are constructed of A36 Grade.
- Structural Bolts are assumed to be A325N grade.
- Tower is installed to plumb and is maintained properly without any structural deficiencies or deteriorations to the original design.
- The existing tower foundations are assumed to have been constructed per the original design drawings. As such the calculated foundation capacities are used for comparison to the base reactions of this analysis.
- All engineering services are performed on the basis that the information used is current and correct.
- It is assumed that the telecommunication equipment supports, antenna supports, and existing structure have been designed by a registered licensed professional engineer for the existing loads acting on the structure, as required by all applicable codes, prior to the proposed modifications listed within this report, if any.
- It is assumed that information provided by the client regarding the structure itself, the antenna models, feed lines, and other relevant information is current and correct.
- It is the responsibility of the client to ensure that the information provided to Maser Consulting Connecticut and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that the original design, material production, fabrication, and erection of the existing structure was performed in accordance with accepted industry design standards and in accordance with all applicable codes. Further, it is assumed that the existing structure and appurtenances have been properly maintained in accordance with all applicable codes and manufacturer's specifications and no structural defects and/or deterioration to the structural members has occurred.
- It is assumed all other existing appurtenances, antennas, cables, etc. belonging to others have been installed and supported per code and per specifications so as not to damage any existing structural support members, and that any contributing loads from adjacent equipment has been taken into consideration for their design.

- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information we supply.
- **It is assumed that tower foundation and geotechnical data from previous Structural Analysis Report, performed by CENTEK Engineering, Project No. 14001.057, dated December 03, 2014 is accurate.**

Site Specific Design Parameters:

The following design parameters have been utilized in this report:

- *Structural Steel Pipes are constructed of A53 Grade B Steel*
- Install Perfect Vision P/N: PV-VSK-B vertical stabilizer kit with P/N: PV-SMU2080-01 bracket at 2'-0" below the bottom connection of existing sector frame. Connect the stabilizer kit to the bottom V-frame angles with a spacing of 7'-6".

Modification Description:

The proposed modifications for existing Self-Support tower consists of:

- *Replace existing diagonal members L3x3x1/4 with new diagonal members L3 1/2x3 1/2x1/4 from 20'-0" to 40'-0" above ground level. Use Grade A572-50.*
- *Replace existing diagonal members L1 3/4x1 3/4x3/16 with new diagonal members L2x2x1/4 from 140'-0" to 160'-0" above ground level. Use Grade A36.*
- *Install secondary horizontal members L2x2x1/4 from 120'-0" to 124'-0" above ground level. Use Grade A36.*
- *Reinforce existing tower leg members ROHN 6 EHS members with half HSS7.625x0.375 round tube members from 40'-0" to 60'-0" above ground level. Use Grade A572-50 or 50 ksi yield strength steel. Remove all existing secondary horizontals.*

See the latest Construction Drawings prepared by Maser Consulting Connecticut for additional details.

Calculations:

The calculations are found in Appendix A of this report.

Conclusion:

The existing modified Self-Support tower was analyzed for the loading in the applicable codes and standards. The tower has been determined to be structurally **ADEQUATE** to support the proposed and existing antennas, based upon the aforementioned assumptions, **once the proposed modifications as described above are properly installed.** The self-support tower has been determined to be stressed to a maximum of **91.7%** of its structural capacity with the maximum usage occurring at the tower leg members between 100' to 120' above ground level. Also, the tower foundation has been determined to be **ADEQUATE** to support the proposed and existing loading, with **65.5%** of its overturning moment capacity and **44.4%** of soil bearing capacity. Therefore, the proposed **SPRINT** installation **CAN** be placed as intended **once the proposed modifications as described above are properly installed**.

Maser Consulting Connecticut has determined the existing antenna support mount has **ADEQUATE** structural capacity to support the proposed loading. The existing antenna support mount has been determined to be stressed to a maximum of **84.3%** of its structural capacity with the maximum usage occurring at the L2x2x3/16 support angles. Therefore, the proposed **Sprint** installation **CAN** be installed as intended **once the proposed modifications as described above are properly installed**.

Maser Consulting Connecticut reserves the right to amend this report if additional information about the existing members, foundation and geotechnical data is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

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.
Sincerely,

Maser Consulting Connecticut

Petros E. Tsoukalas P.E.
Connecticut Licensed Professional Engineer
License No. PEN.32577

Dejian Xu, P.E.
Project Engineer

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APPENDIX A

Client:	Sprint	Computed By:	AB
Site Name:	Coventry Town Hall	Date:	4/11/2018
Project No.	17924002A	Verified By:	PET
Title:	Antenna Mount Analysis	Page:	1

Version 3.3

1. LOADING SUMMARY

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	RFS	APXVTM14-ALU-I20	Proposed	Alpha, Beta, & Gamma
3	COMMSCOPE	NNVV-65B-R4	Proposed	Alpha, Beta, & Gamma
3	ALCATEL-LUCENT	TD-RRH8x20-25	Proposed	Alpha, Beta, & Gamma
3	ALCATEL-LUCENT	RRH4x45-1900	Relocated	Alpha, Beta, & Gamma
6	ALCATEL-LUCENT	RRH 2x50-800	Proposed	Alpha, Beta, & Gamma

ANALYSIS AND DESIGN

Client:	Sprint	Computed By:	AB
Site Name:	Coventry Town Hall	Date:	4/11/2018
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I. DESIGN INPUTS

Calculations for gravity and lateral loading on equipment and support mounts are determined as per the ANSI/TIA-222-G Code, Addendum 2

Wind Load Inputs Parameters

				Reference	Equation
Antenna Centerline	z	179.92	ft		
Normal Wind Speed (3 sec. Gust):	V	102	mph	Ref. 1, Eqn. 16-33	
Normal Wind Speed with Ice (3 sec. gust):	V_i	40.0	mph	(Figure a5-2a, p. 233)	
Service Wind Speed:	V_s	60.0	mph	(Figure a5-2a, p. 233)	
Design Ice Thickness:	t_i	1.00	in	(Figure A1-2a, p. 233)	
Exposure Category:		B		Ref. 3, Section 2.6.5.1	
Structure Class:		II		Ref. 3, Table 2-1	
Gust Effect Factor:	G_h	0.85		Ref. 3, Section 2.6.7	
Wind Directionality Factor:	K_d	0.85		Ref. 3, Table 2-2	
Topographic Category:		1		Ref. 3, Section 2.6.6.2	

Wind Load Coefficients

Importance Factors:

Non-Iced:	I	1		Ref. 3, Table 2-3	
Iced:	I_{ice}	1		(Table 2-3, P. 39)	

Exposure Category Coefficients:

3-s Gust-Speed Power Law Exponent:	α	7.0		Ref. 3, Table 2-4	
Nominal Height of the Atmospheric Boundary Layer:	Z_g	1200	ft	Ref. 3, Table 2-4	
Min. Value for k_z:	Kz_{min}	0.70		Ref. 3, Table 2-4	
Terrain Constant:	K_e	0.90		Ref. 3, Table 2-4	
Velocity Pressure Exposure Coefficient:	K_z	1.169		Ref. 3, Section 2.6.5.2	$=2.01 \cdot (z/z_g)^{2/\alpha}$

Topographic Category Coefficients:

Topographic Constant:	K_t	N/A		Ref. 3, Table 2-5	
Height Attenuation Factor:	f	N/A		Ref. 3, Table 2-5	
Height Reduction Factor:	K_h	N/A		Ref. 3, Section 2.6.6.4	$=e^{(f \cdot z/H)}$
Topographic Factor:	K_{zt}	1.00		Ref.3, Section 2.6.6.4	$=[1+(K_e \cdot K_t/K_h)]^2$

Ice Accumulation:

Ice Velocity Pressure Exposure Coefficient:	K_{iz}	1.18			$=(z/33)^{0.10}$
Factored Ice Thickness:	t_{iz}	2.37	in	(Section 2.6.8, p. 16)	$=2.0 \cdot t_i \cdot I \cdot K_{iz} \cdot K_{zt}$
Ice Density:	ρ_i	56.00	pcf		

Design Wind Pressures:

Velocity Pressure:	q_z	26.46	psf	Ref. 3, Section 2.6.9.6	$=0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I$
Velocity Pressure (With Ice):	q_{zi}	4.07	psf	(Section 2.6.9.6, P. 25)	$=.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V_i^2 \cdot I$
Velocity Pressure (Service):	q_{zs}	9.16	psf	(Section 2.6.9.6, P. 25)	$=.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V_i^2 \cdot I$

MASER

Client:	Sprint	Computed By:	AB
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II. CALCULATIONS

- ***Wind Load on Appurtenances***

Dimensions and Force Coefficients

Antenna/ Appurtenance	Non-Iced Condition								Iced Condition							
	Mounting Pipe			Equipment					Mounting Pipe			Equipment				
	Length (in)	Diameter (in)	Force Coefficient C_a	Height (in)	Width (in)	Depth (in)	Force Coefficient $C_{a\ Front}$	$C_{a\ Side}$	Length (in)	Diameter (in)	Force Coefficient C_a	Height (in)	Width (in)	Depth (in)	Force Coefficient $C_{a\ Front}$	$C_{a\ Side}$
APXVTM14-ALU-I20	96.0	2.375	1.200	56.30	12.60	6.30	1.29	1.46	100.7	7.1	0.959	61.04	17.34	11.04	1.25	1.33
NNVV-65B-R4	96.0	2.375	1.200	72.00	19.60	7.80	1.25	1.47	100.7	7.1	0.959	76.74	24.34	12.54	1.23	1.36
TD-RRH8x20-25	0.0	0.000	0.000	26.10	18.60	6.70	1.20	1.26	0.0	0.0	0.000	30.84	23.34	11.44	1.20	1.21
RRH4x45-1900	0.0	0.000	0.000	25.00	12.00	12.00	1.20	1.20	0.0	0.0	0.000	29.74	16.74	16.74	1.20	1.20
RRH 2x50-800	0.0	0.000	0.000	16.00	13.00	10.00	1.20	1.20	0.0	0.0	0.000	20.74	17.74	14.74	1.20	1.20
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					
	0.0	0.000	0.000						0.0	0.0	0.000					

Antenna/ Appurtenance	# of Brackets	Non-Iced Condition				Iced Condition			
		Wind Force (lbs.) F_N	F_T	Controlling Wind Force (lbs.)	Gravity (lbs.)	Wind Force (lbs.) F_N	F_T	Controlling Wind Force (lbs.)	Gravity (lbs.)
APXVTM14-ALU-I20	2	80.2	61.9	**80.2**	**33.9**	19.9	19.1	**19.9**	**121.2**
NNVV-65B-R4	2	143.3	86.0	**143.3**	**46.2**	30.0	24.0	**30.0**	**217.2**
TD-RRH8x20-25	1	91.0	34.5	**91.0**	**76.2**	20.7	10.2	**20.7**	**164.7**
RRH4x45-1900	2	28.1	28.1	**28.1**	**34.8**	7.2	7.2	**7.2**	**69.4**
RRH 2x50-800	2	19.5	15.0	**19.5**	**34.6**	5.3	4.4	**5.3**	**47.0**

****** ALL CALCULATED LOADS ARE PER MOUNTING BRACKET. TO GET THE TOTAL EQUIPMENT LOAD, MULTIPLY THE INDIVIDUAL LOADS BY THE NUMBER OF BRACKETS***

- ***Wind Load on Framing Members***

Member Category	Member Shape	Length (in)	Member Surface	Non-Iced Condition			Iced Condition					
				Exposed Wind Height (in)	Force Coefficient C_a	Wind Load (plf)	Exposed Wind Height (in)	Depth (in)	Length (in)	Force Coefficient C_a	Wind Load (plf)	Ice Weight (plf)
Equal Angle	L2.5x2.5	160	Square	2.50	2.00	9.37	7.24	7.24	164.74	1.92	4.02	17.10
Equal Angle	L2x2	88	Square	2.00	2.00	7.50	6.74	6.74	92.74	1.63	3.16	15.05
Pipe	Pipe 2.5	51	Round	2.88	1.04	5.60	7.61	7.61	55.74	0.81	1.77	15.18
Pipe	Pipe 2.0	108	Round	2.38	1.20	5.34	7.11	7.11	112.74	1.00	2.04	13.74

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BASIC EQUATIONS

ANSI/TIA-222-G Reference

Importance Factor:

$$I := \begin{cases} 1.0 & \text{if Class} = \text{"II"} \\ 1.15 & \text{if Class} = \text{"III"} \end{cases}$$

Table 2-3, Pg. 39

Force Coefficient:
(Square)

$$C_{f\_square}(h,w) := \begin{cases} 1.2 & \text{if } \frac{h}{w} \le 2.5 \\ \left[1.2 + \frac{0.2}{4.5}\cdot\left(\frac{h}{w} - 2.5\right)\right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \le 7 \\ \left[1.4 + \frac{0.6}{18}\cdot\left(\frac{h}{w} - 7\right)\right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \le 25 \\ 2.0 & \text{otherwise} \end{cases}$$

Table 2-8, P. 42

Force Coefficient:
(Round)

$$C_{f\_round}(h,w) := \begin{cases} 0.7 & \text{if } \frac{h}{w} \le 2.5 \\ \left[0.7 + \frac{0.1}{4.5}\cdot\left(\frac{h}{w} - 2.5\right)\right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \le 7 \\ \left[0.8 + \frac{0.4}{18}\cdot\left(\frac{h}{w} - 7\right)\right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \le 25 \\ 1.2 & \text{otherwise} \end{cases}$$

Table 2-8, P. 42

Terrain Exposure Constants:

Table 2-4, P. 40

$$\alpha := \begin{cases} 7.0 & \text{if Exp} = \text{"B"} \\ 9.5 & \text{if Exp} = \text{"C"} \\ 11.5 & \text{if Exp} = \text{"D"} \end{cases} \quad Z_g := \begin{cases} 1200\text{ft} & \text{if Exp} = \text{"B"} \\ 900\text{ft} & \text{if Exp} = \text{"C"} \\ 700\text{ft} & \text{if Exp} = \text{"D"} \end{cases} \quad K_{zmin} := \begin{cases} 0.70 & \text{if Exp} = \text{"B"} \\ 0.85 & \text{if Exp} = \text{"C"} \\ 1.03 & \text{if Exp} = \text{"D"} \end{cases}$$

BASIC EQUATIONS

ANSI/TIA-222-G Reference

Velocity Pressure Coefficient:

$$Kz(z) := \left| \begin{array}{l} K_z \leftarrow \max\left[2.01 \cdot \left(\frac{z}{Z_g} \right)^{\frac{2}{\alpha}}, K_{zmin} \right] \\ K_z \leftarrow \min\left(K_z, 2.01 \right) \end{array} \right.$$

$K_z := Kz(z)$ Section 2.6.5, P. 13

$$Kzt(z) := K_{zt} \leftarrow \left| \begin{array}{l} 1.0 \text{ if Topo = "1"} \\ \text{otherwise} \\ \quad \left| \begin{array}{l} K_e \leftarrow \left| \begin{array}{l} 0.90 \text{ if Exp = "B"} \\ 1.00 \text{ if Exp = "C"} \\ 1.10 \text{ if Exp = "D"} \end{array} \right. \\ K_t \leftarrow \left| \begin{array}{l} 0.43 \text{ if Topo = "2"} \\ 0.53 \text{ if Topo = "3"} \\ 0.72 \text{ if Topo = "4"} \end{array} \right. \\ f \leftarrow \left| \begin{array}{l} 1.25 \text{ if Topo = "2"} \\ 2.00 \text{ if Topo = "3"} \\ 1.50 \text{ if Topo = "4"} \end{array} \right. \\ K_h \leftarrow e^{\left(\frac{f \cdot z}{CH} \right)} \\ \left(1 + \frac{K_e \cdot K_t}{K_h} \right)^2 \end{array} \right. \end{array} \right.$$

Section 2.6.6.4, p. 14

Table 2-4 p. 40

Table 2-5 p. 40

Table 2-5 p. 40

Section 2.6.6.4, P. 14

Section 2.6.6.4, P. 14

$K_{zt} := Kzt(z)$

Velocity Pressure: Section 2.6.9.6, P. 25

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot psf$$

LOAD EQUATIONS

WIND LOAD

Area (Normal): $AN_{area} = H_{ant} \cdot Want$

Area (Side): $AT_{area} = H_{ant} \cdot Dant$

Force Coefficient (Normal): $C_{fn} = C_{fsquare}(H_{ant}, Want)$

Force Coefficient (Side): $C_{fs} = C_{fsquare}(H_{ant}, Dant)$

Pipe Area (Normal): $AN_p = \max[(L_p - H_{ant}) * Dp, 0]$

Pipe Area (Side): $AT_p = L_p \cdot Dp$

Force Coefficient (Normal): $C_{fp} = C_{fround}(Lp, Dp)$

Normal Effective Projected Area: $E_{pan} = (C_{fn} \cdot ANarea) + (Cfp \cdot ANp)$

Side Effective Projected Area: $E_{pat} = (C_{fs} \cdot ATarea) + (Cfp \cdot ATp)$

Effective Projected Area: $EPA = max(E_{pan}, Epat)$

Wind Force: $F_{ant} = q_z \cdot Gh \cdot EPA$

ICE DEAD LOAD

Largest Out-to-Out Dimension: $D_{ant} = \sqrt{{D_{ant}}^2 + {W_{ant}}^2}$

Cross Sectional Area of Ice: $A_{ice\_ant} = \pi \cdot tiz \cdot (Dant + tiz)$

Total Ice Dead Load: $DL_{ice\_ant} = \boldsymbol{\rho_i} \cdot (Aice_{\_ant} \cdot Hant)$

ICE WIND LOAD

Dimensions: $H_{i_{ant}} = H_{ant} + 2tiz$

$W_{i_{ant}} = W_{ant} + 2tiz$

$D_{i_{ant}} = D_{ant} + 2tiz$

Area (Normal): $AIN_{area} = H_{i\_ant} \cdot W_{i\_ant}$

Area (Side): $AIT_{area} = H_{i\_ant} \cdot D_{i\_ant}$

Force Coefficient (Normal): $Ci_{fn} = C_{fsquare}(H_{i\_ant}, W_{i\_ant})$

Force Coefficient (Side): $Ci_{fs} = C_{fsquare}(H_{i\_ant}, D_{i\_ant})$

Pipe Area (Normal): $AN_p = \max[(L_{ip} - H_{i\_ant}) * D_{ip}, 0]$

Pipe Area (Side): $AT_p = L_{ip} \cdot Dip$

Force Coefficient (Normal): $C_{fp} = C_{fround}(L_{ip}, D_{ip})$

Normal Effective Projected Area: $E_{pain} = (Ci_{fn} \cdot ANarea) + (Cfp \cdot ANp)$

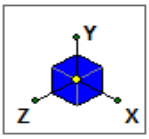
Side Effective Projected Area: $E_{pait} = (Ci_{fs} \cdot ATarea) + (Cfp \cdot ATp)$

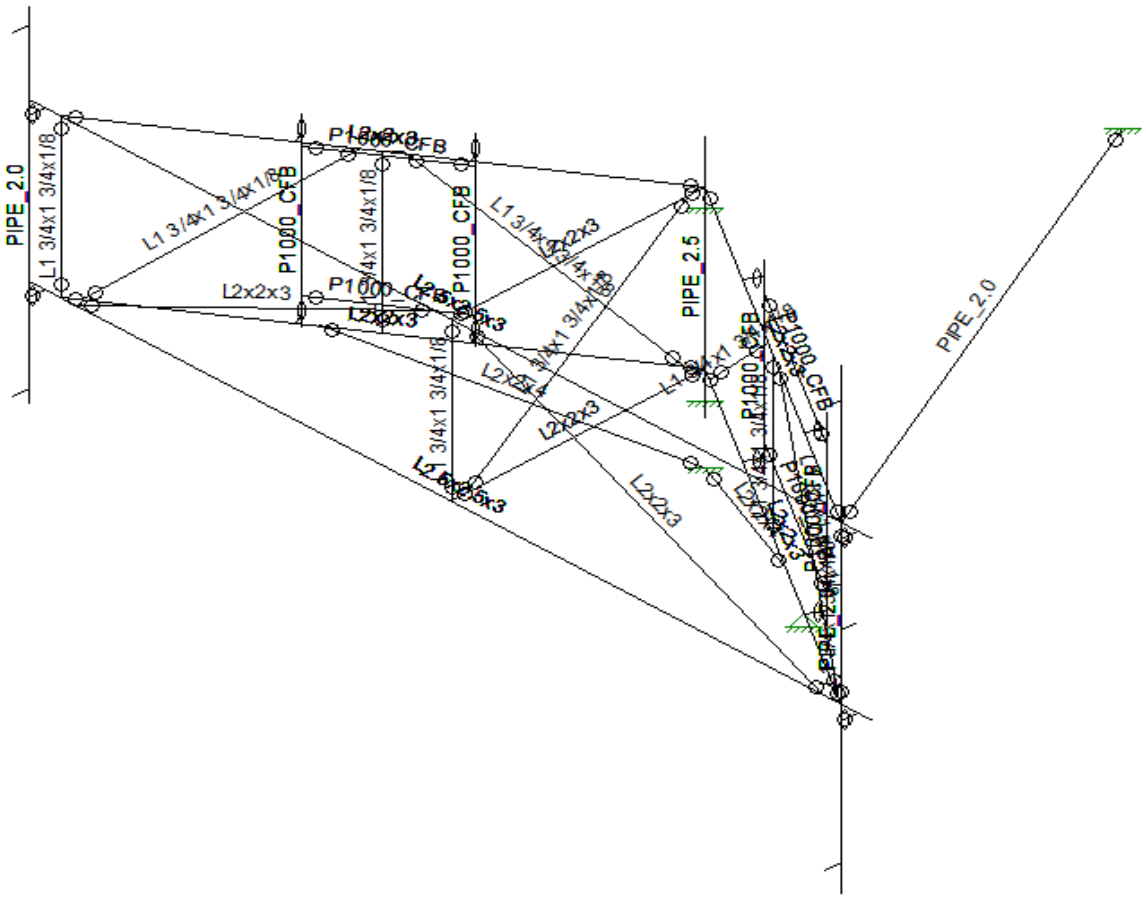
Effective Projected Area: $EPA_i = max(E_{pain}, Epait)$

Wind Force: $F_{i\_ant} = q_z \cdot Gh \cdot EPAi$

III. ATTACHMENTS

RISA MODEL





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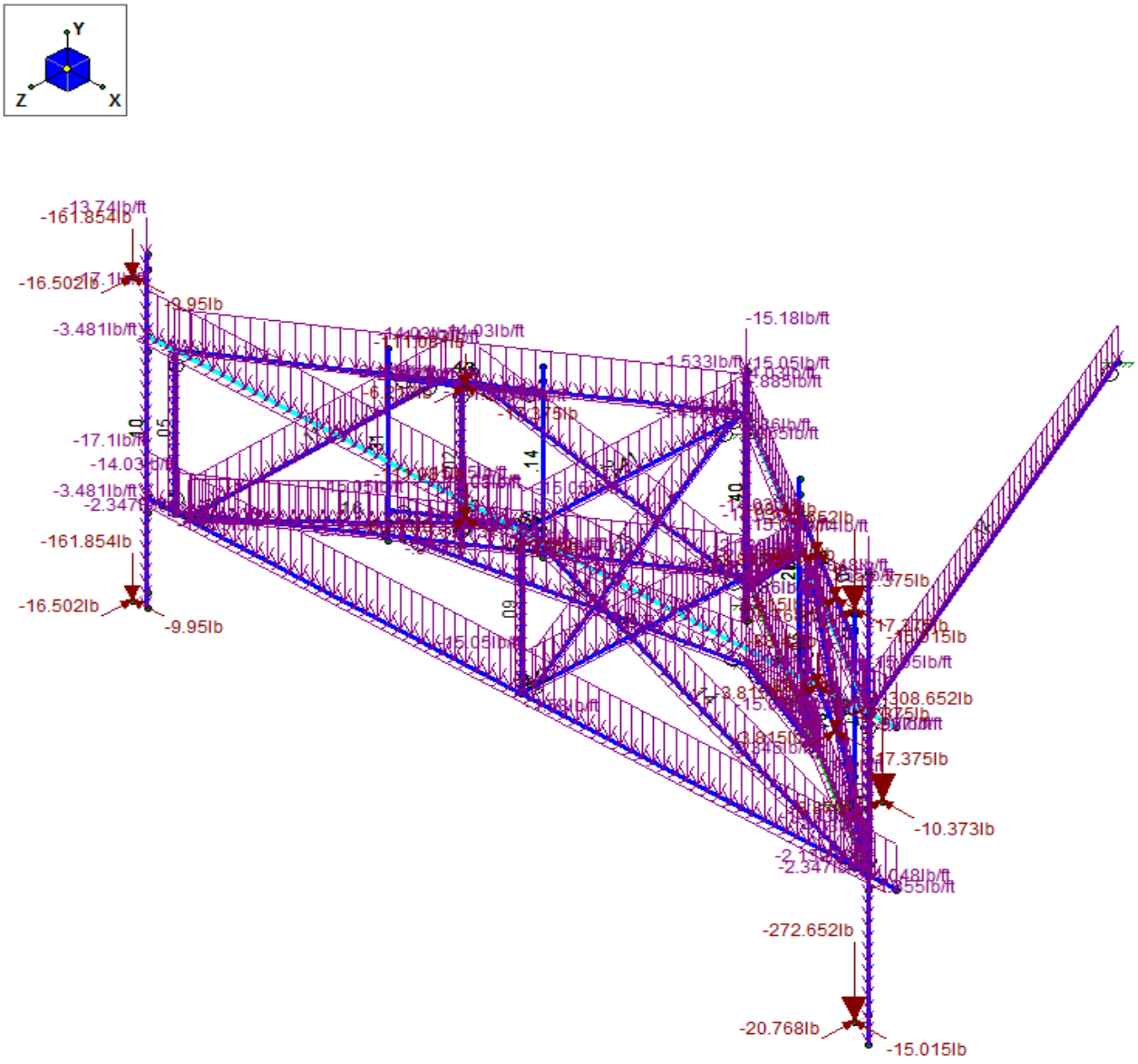
RISA WORST CASE LOADING



Member Code Checks Displayed
Loads: LC 17, 1.2D+1.0ICE+1.0W3ICE
Envelope Only Solution

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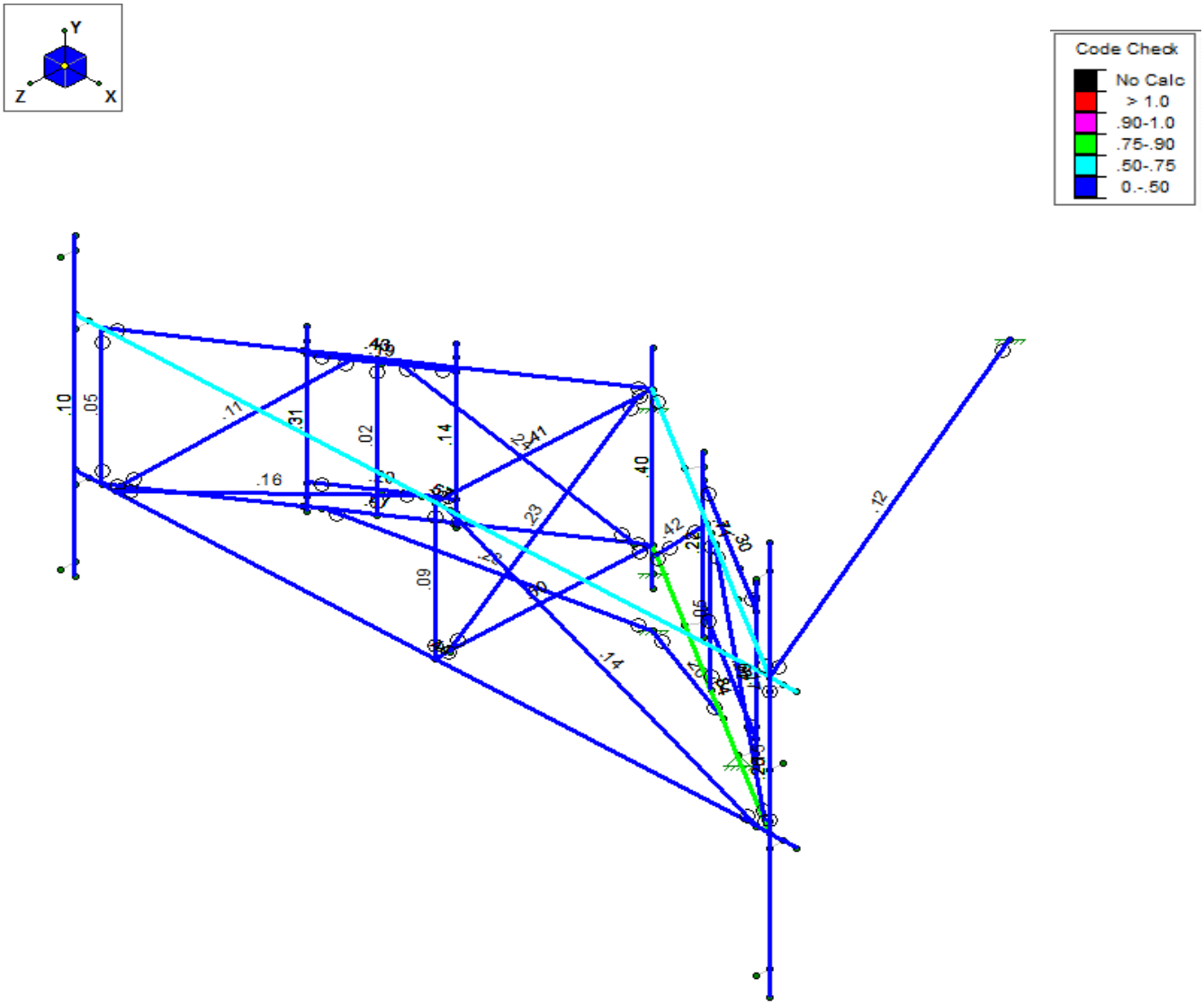
RISA CODE CHECK



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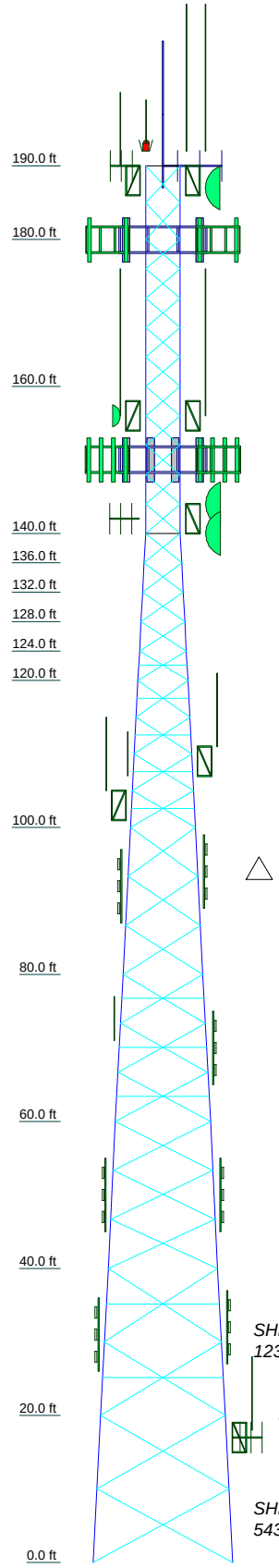
APPENDIX B

Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EHS	ROHN 6 EH	B	ROHN 5 EH		ROHN 4 EH			ROHN 3.5 EH			ROHN 3 EH	ROHN 2.5 STD	A
Leg Grade	A572-50													
Diagonals	L3 1/2x3 1/2x1/4		L3x3x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L2x2x3/16		L1 3/4x1 3/4x3/16				L2x2x1/4	L1 3/4x1 3/4x3/16	
Diagonal Grade	A572-50			A36										
Top Girts				N.A.							C			C
Sec. Horizontals	N.A.	L3x3x5/16	N.A.	L2 1/2x2 1/2x1/4	N.A.	L2x2x1/4						N.A.		N.A.
Face Width (ft)	19	16.99	14.85	12.92	10.83	8.83	6.76	5.944	5.536	5.128	4.72	4.69	4.65	
# Panels @ (ft)		4 @ 10		9 @ 6.66667		4 @ 5			15 @ 4				2 @ 5	
Weight (lb) 21503.0		3579.0	3774.6	3786.8	2809.2	2001.8	1827.9	326.1	255.7	251.2	246.8	273.9	1267.4	774.7	328.0



ALL REAC
ARE FACT

MAX. COR
DOWN:
SHEAR:

UPLIFT:
SHEAR:

AXIAL
184860
SHEAR
12377 lb

TORQUE
40 mph WIND - 1

AXIA
43471 lb
SHEAR
54311 lb

TORQUE 16 kip-ft
REACTIONS - 102 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) Obstruction Lights	192	LNX-6514DS-T4M (Verizon)	150
PD1142-3	192	HBXX-6517DS-A2M (Verizon)	150
ASP-705	192	LNX-6514DS-T4M (Verizon)	150
ASP-705	192	HBXX-6517DS-A2M (Verizon)	150
DB420	192	LNX-6514DS-T4M (Verizon)	150
Halo	192	HBXX-6517DS-A2M (Verizon)	150
4'x3" Dia. Omni	190	LNX-6514DS-T4M (Verizon)	150
3' Yagi	190	HBXX-6517DS-A2M (Verizon)	150
3' Yagi	190	RRH 2x60-AWS (Verizon)	150
Pirod 4' Side Mount Standoff (1)	188	RRH 2x60-AWS (Verizon)	150
Pirod 4' Side Mount Standoff (1)	188	RRH 2x60-AWS (Verizon)	150
Pirod 4' Side Mount Standoff (1)	188	RRH 2x60-PCS (Verizon)	150
Paraflector	187	RRH 2x60-PCS (Verizon)	150
PD1142-2A	187	RRH 2x60-PCS (Verizon)	150
Rohn 6'x14' Boom Gate (3) (Sprint)	179.917	DB-T1-6Z-8AB-0Z (Verizon)	150
RRH 4x45 1900RRH (Sprint)	179.917	DB-T1-6Z-8AB-0Z (Verizon)	150
RRH 4x45 1900RRH (Sprint)	179.917	Paraflector	144
RRH 4x45 1900RRH (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	142
APXVTM14-ALU-I20 (Sprint)	179.917	DB264-A	142
APXVTM14-ALU-I20 (Sprint)	179.917	DB436-C	142
APXVTM14-ALU-I20 (Sprint)	179.917	DB230-2A	142
TD-RRH8x20-25 (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	142
TD-RRH8x20-25 (Sprint)	179.917	Paraflector	140
TD-RRH8x20-25 (Sprint)	179.917	Single Dipole	136
(2) RRH-2X50-800 (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	113
(2) RRH-2X50-800 (Sprint)	179.917	Dipole	113
(2) RRH-2X50-800 (Sprint)	179.917	PD320	110
NNVV-65B-R4 (Sprint)	179.917	14'x3" Dia. Omni	109
NNVV-65B-R4 (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	109
NNVV-65B-R4 (Sprint)	179.917	14'x3" Dia. Omni	103
Pirod 4' Side Mount Standoff (1)	156	Pirod 4' Side Mount Standoff (1)	103
ASP-705	156	GPS	102
Pirod 4' Side Mount Standoff (1)	156	1' Standoff Pipe	102
ASP-705	156	DB212 Single Dipole	94
3-ft Dish	156	15-ft Single Dipole	92
Pirod 12' T-Frame Sector Mount (1) (Verizon)	150	PD320	74
		15-ft Single Dipole	70
Pirod 12' T-Frame Sector Mount (1) (Verizon)	150	DB212 Single Dipole	50
		15-ft Single Dipole	50
Pirod 12' T-Frame Sector Mount (1) (Verizon)	150	DB212 Single Dipole	32
		15-ft Single Dipole	31
LNX-6514DS-T4M (Verizon)	150	Pirod 4' Side Mount Standoff (1)	17
HBXX-6517DS-A2M (Verizon)	150	3' Yagi	17
LNX-6514DS-T4M (Verizon)	150	PD400	17
HBXX-6517DS-A2M (Verizon)	150		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2 STD	C	L1 3/4x1 3/4x3/16
B	6.0 EHS + HALF HSS7.625X0.375 (MOD)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 102 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 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. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.NT
10. Welds are fabricated with ER-70S-6 electrodes.
11. TOWER RATING: 91.7%

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Consulting Engineers

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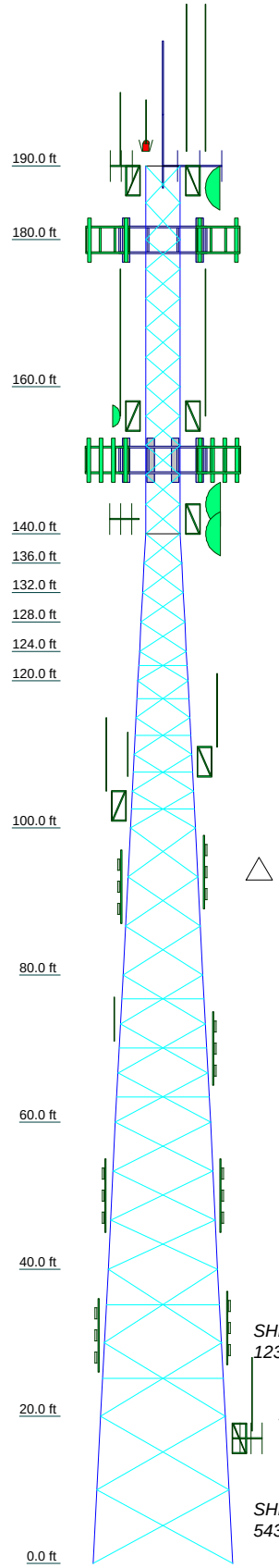
Phone: (856) 797-0412
FAX:

Job: **17924002A**			
Project: **Coventry Town Hall**			
Client: Sprint	Drawn by: dxu	App'd:	
Code: TIA-222-G	Date: 07/19/18	Scale: NTS	
Path: R:\All\Offices\Montvale\Projects\2017\17924000A\17924002A\Structural\SA and MA\Rev 5\tnx Tower\CT03XC206.eri		Dwg No. E-1	

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14
Legs		A	ROHN 2.5 STD	ROHN 3 EH	ROHN 3.5 EH					ROHN 4 EH	ROHN 5 EH		B	ROHN 6 EH	ROHN 8 EHS
Leg Grade		A572-50													
Diagonals		L1 3/4x1 3/4x3/16		L2x2x1/4	L1 3/4x1 3/4x3/16					L2x2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x1/4	L3x3x1/4	A572-50	L3 1/2x3 1/2x1/4
Diagonal Grade		A36													
Top Girts		C		N.A.	C							N.A.			
Sec. Horizontals		C		N.A.						L2x2x1/4	N.A.	L2 1/2x2 1/2x1/4	N.A.	L3x3x5/16	N.A.
Face Width (ft)	19	4.65		4.69	4.72	4.128	4.536	4.944	5.352	6.76	8.83	10.83	12.92	14.85	16.99
# Panels @ (ft)		2 @ 5		15 @ 4						4 @ 5		9 @ 6.66667			4 @ 10
Weight (lb)	21503.0	328.0	774.7	1267.4	273.9	246.8	251.2	255.7	326.1	1827.9	2001.8	2809.2	3786.8	3774.6	3579.0



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 350399 lb
SHEAR: 34209 lb

UPLIFT: -310573 lb
SHEAR: 30882 lb

AXIAL 184860 lb
SHEAR 12377 lb *MOMENT 1388 kip-ft*
TORQUE 2 kip-ft
40 mph WIND - 1.0000 in ICE
AXIAL 43471 lb
SHEAR 54311 lb *MOMENT 5527 kip-ft*
TORQUE 16 kip-ft
REACTIONS - 102 mph WIND

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2 STD	C	L1 3/4x1 3/4x3/16
B	6.0 EHS + HALF HSS7.625X0.375 (MOD)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

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3. Tower designed for a 102 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 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. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.
11. TOWER RATING: 91.7%

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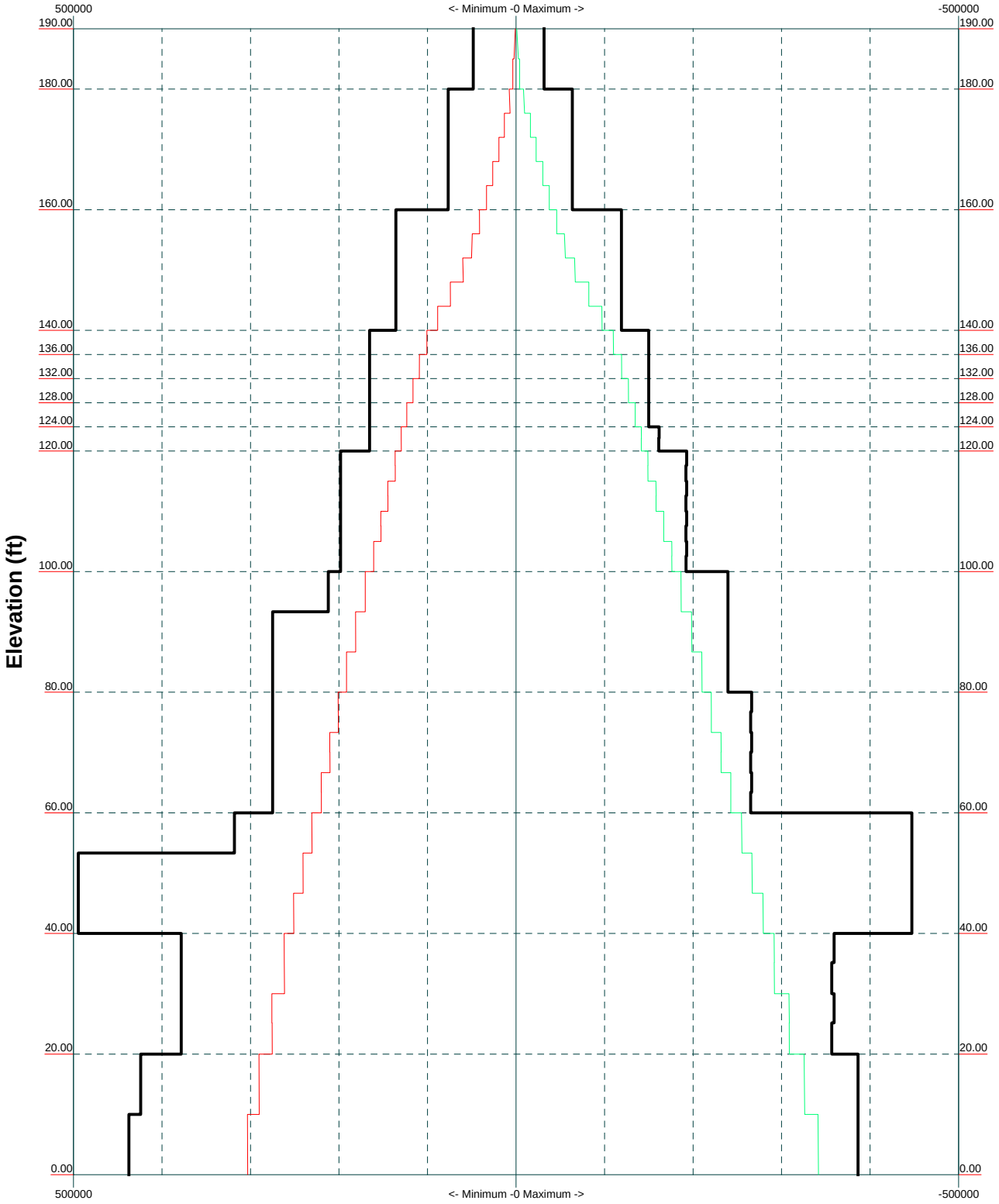
Project: ***Coventry Town Hall***		
Client: Sprint	Drawn by: dxu	App'd:
Code: TIA-222-G	Date: 07/19/18	Scale: NTS
Path: R:\All\Offices\Montvale\Projects\2017\17924000A\17924002A\Structural\SA and MA\Rev 5\tnx Tower\CT03XC206.eri		Dwg No. E-1

TIA-222-G - 102 mph/40 mph 1.0000 in Ice Exposure B

Leg Capacity ——— **Leg Compression (lb)**



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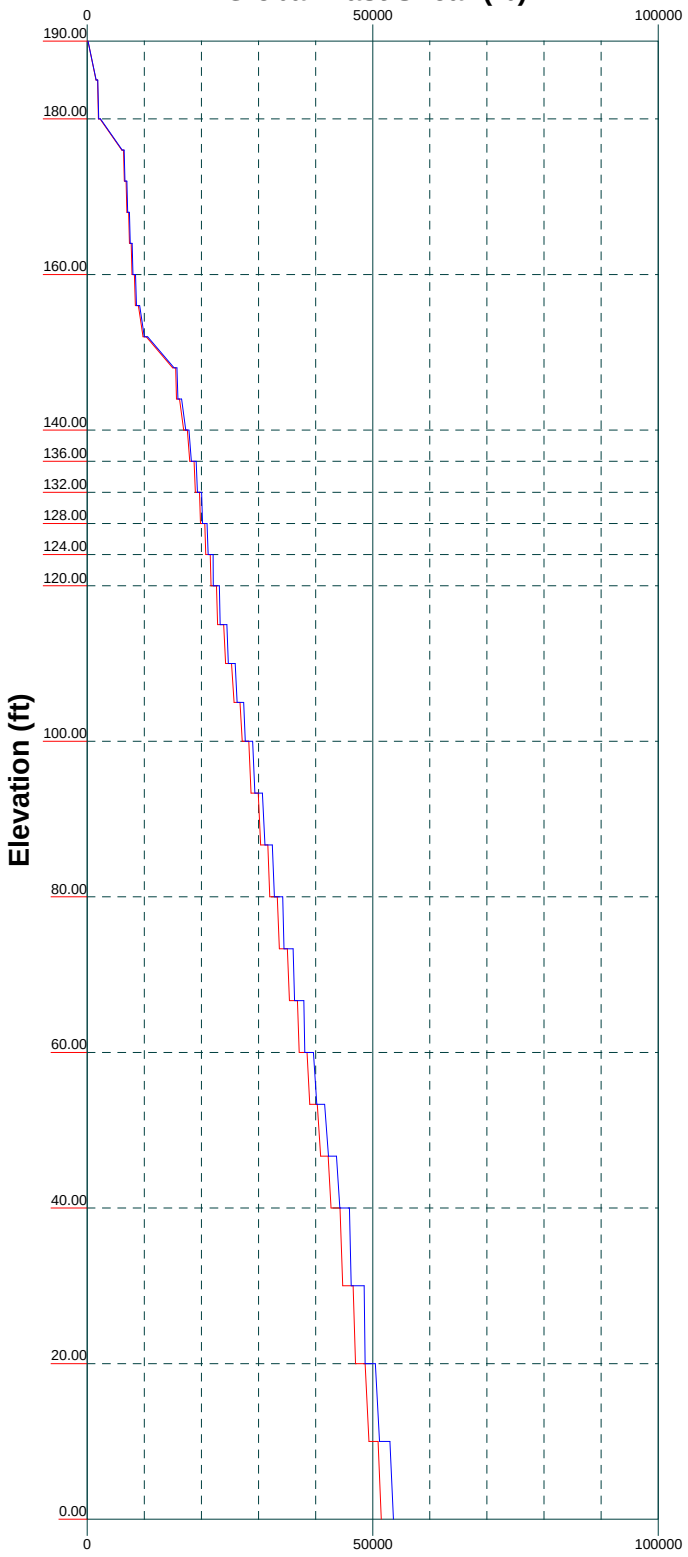
Project: Coventry Town Hall		
Client: Sprint	Drawn by: dxu	App'd:
Code: TIA-222-G	Date: 07/19/18	Scale: NTS
Path: R:\All\Offices\Montvale\Projects\2017\17924000A\17924002A\Structural\SA and MA\Rev 5\tnx Tower\CT03XC206.eri		Dwg No. E-3

TIA-222-G - 102 mph/40 mph 1.0000 in Ice Exposure B

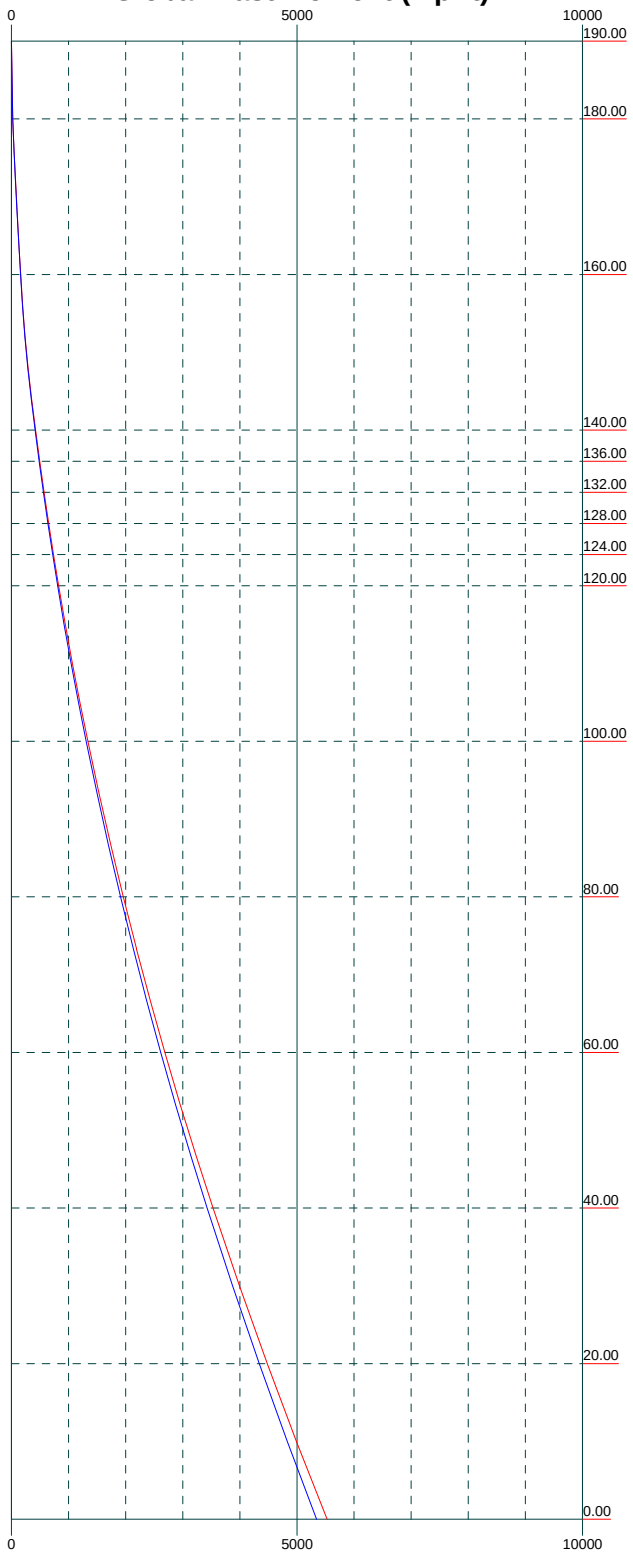
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (lb)



Global Mast Moment (kip-ft)



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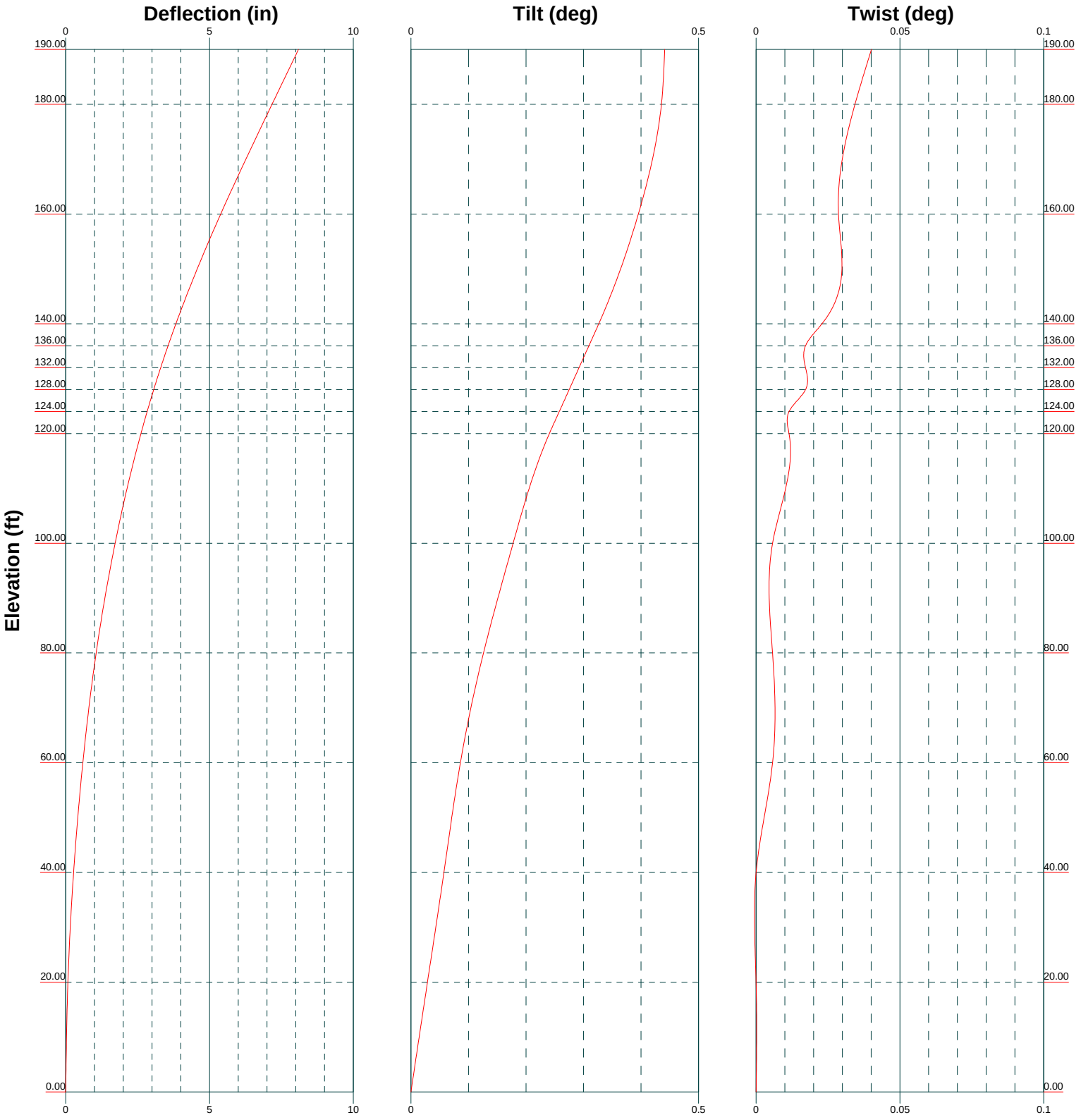
Job: 17924002A		
Project: Coventry Town Hall		
Client: Sprint	Drawn by: dxu	App'd:
Code: TIA-222-G	Date: 07/19/18	Scale: NTS
Path: R:\All\Offices\Montvale\Projects\2017\17924000A\17924002A\Structural\SA and MA\Rev 5\tnx Tower\CT03XC206.eri		Dwg No. E-4

TIA-222-G - Service - 60 mph

Maximum Values



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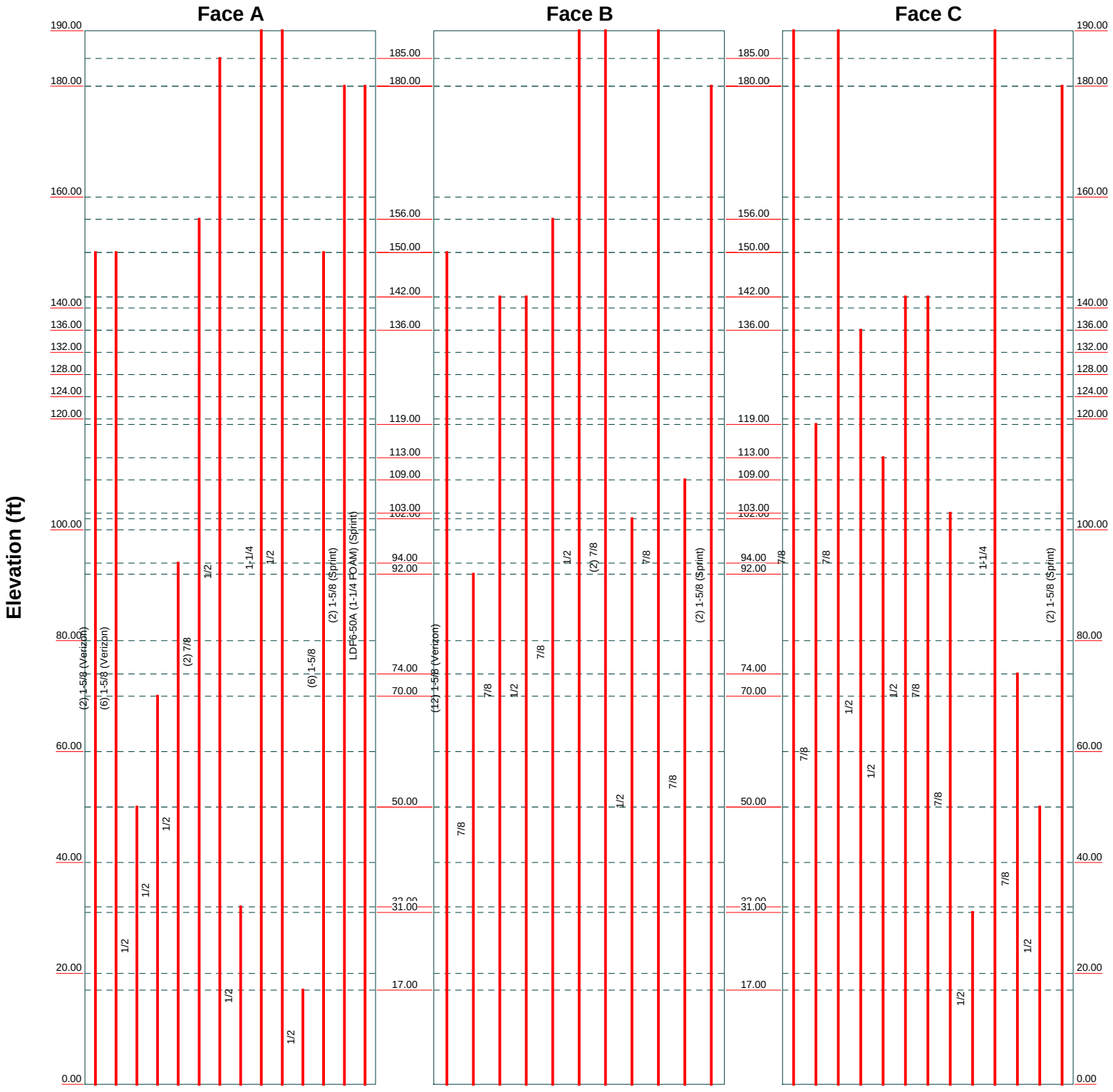
Job: 17924002A		
Project: Coventry Town Hall		
Client: Sprint	Drawn by: dxu	App'd:
Code: TIA-222-G	Date: 07/19/18	Scale: NTS
Path: R:\All Offices\Montvale\Projects\2017\17924000A\17924002A\Structural\SA and MA\Rev 5\tnx Tower\CT03XC206.eri		Dwg No. E-5

Feed Line Distribution Chart
0' - 190'

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



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Job: ***17924002A***		
Project: ***Coventry Town Hall***		
Client: Sprint	Drawn by: dxu	App'd:
Code: TIA-222-G	Date: 07/19/18	Scale: NTS
Path: R:\All\Offices\Montvale\Projects\2017\17924000A\17924002A\Structural\SA and MA\Rev 5\lmx Tower\CT03XC206.eri		Dwg No. E-7

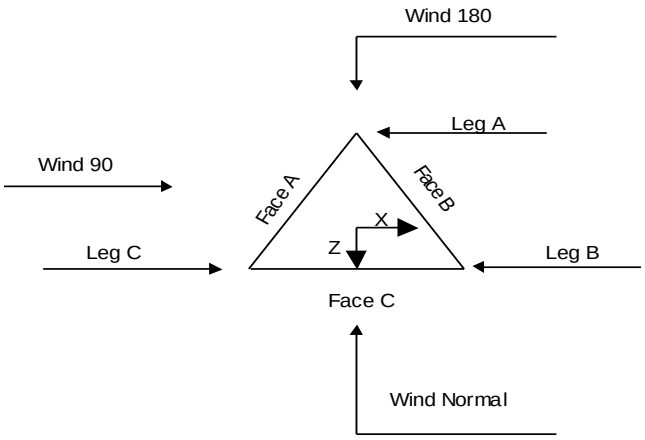
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 190.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.65 ft at the top and 19.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
Basic wind speed of 102 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
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	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	190.00-180.00			4.65	1	10.00
T2	180.00-160.00			4.65	1	20.00
T3	160.00-140.00			4.69	1	20.00
T4	140.00-136.00			4.72	1	4.00
T5	136.00-132.00			5.13	1	4.00
T6	132.00-128.00			5.54	1	4.00
T7	128.00-124.00			5.94	1	4.00
T8	124.00-120.00			6.35	1	4.00
T9	120.00-100.00			6.76	1	20.00
T10	100.00-80.00			8.83	1	20.00
T11	80.00-60.00			10.83	1	20.00
T12	60.00-40.00			12.92	1	20.00
T13	40.00-20.00			14.85	1	20.00
T14	20.00-0.00			16.99	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	190.00-180.00	5.00	X Brace	No	Yes	0.0000	0.0000

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
T2	180.00-160.00	4.00	X Brace	No	No	0.0000	0.0000
T3	160.00-140.00	4.00	X Brace	No	Yes	0.0000	0.0000
T4	140.00-136.00	4.00	X Brace	No	Yes	0.0000	0.0000
T5	136.00-132.00	4.00	X Brace	No	Yes	0.0000	0.0000
T6	132.00-128.00	4.00	X Brace	No	Yes	0.0000	0.0000
T7	128.00-124.00	4.00	X Brace	No	Yes	0.0000	0.0000
T8	124.00-120.00	4.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-100.00	5.00	X Brace	No	Yes	0.0000	0.0000
T10	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T11	80.00-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T12	60.00-40.00	6.67	X Brace	No	Yes	0.0000	0.0000
T13	40.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	20.00-0.00	10.00	X Brace	No	Yes	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 190.00-180.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 160.00-140.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T4 140.00-136.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 136.00-132.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T6 132.00-128.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T7 128.00-124.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T8 124.00-120.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T9 120.00-100.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T10 100.00-80.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T11 80.00-60.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T12 60.00-40.00	Arbitrary Shape	6.0 EHS + HALF HSS7.625X0.375 (MOD)	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T13 40.00-20.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T14 20.00-0.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 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 190.00-180.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 140.00-136.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T8 124.00-120.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 120.00-100.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 80.00-60.00	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T13 40.00-20.00	Equal Angle	L3x3x5/16	A36 (36 ksi)	Solid Round		A572-50 (50 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 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	30.0000	30.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 140.00-136.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 136.00-132.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 132.00-128.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 128.00-124.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 124.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T12 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T13	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
40.00-20.00 T14 20.00-0.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1.05	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	Yes	Yes	1	1	1	1	1	1	1	1
190.00-180.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
140.00-136.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
136.00-132.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
132.00-128.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
128.00-124.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
124.00-120.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 190.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-136.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 136.00-132.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 132.00-128.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 128.00-124.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 124.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 190.00-180.00	Flange	0.6250 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-136.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 136.00-132.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 132.00-128.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 128.00-124.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 124.00-120.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T9 120.00-100.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T10 100.00-80.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 80.00-60.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T12 60.00-40.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T13 40.00-20.00	Flange	1.0000 A325N	8	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T14 20.00-0.00	Flange	1.0000 A325N	8	0.7500 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1-5/8 (Verizon)	B	No	Ar (CaAa)	150.00 - 0.00	-2.0000	-0.3	12	12	1.9800	1.9800		1.04
1-5/8 (Verizon)	A	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.28	2	2	1.9800	1.9800		1.04
1-5/8 (Verizon)	A	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.35	6	6	1.9800	1.9800		1.04
1/2	A	No	Ar (CaAa)	50.00 - 0.00	0.0000	0.07	1	1	0.5800	0.5800		0.25
1/2	A	No	Ar (CaAa)	70.00 - 0.00	0.0000	0.06	1	1	0.5800	0.5800		0.25
1/2	A	No	Ar (CaAa)	94.00 - 0.00	0.0000	0.05	1	1	0.5800	0.5800		0.25
7/8	A	No	Ar (CaAa)	156.00 - 0.00	0.0000	0.03	2	2	1.1100	1.1100		0.54
1/2	A	No	Ar (CaAa)	185.00 - 0.00	0.0000	-0.02	1	1	0.5800	0.5800		0.25
1/2	A	No	Ar (CaAa)	32.00 - 0.00	0.0000	-0.03	1	1	0.5800	0.5800		0.25
1-1/4	A	No	Ar (CaAa)	190.00 - 0.00	0.0000	-0.05	1	1	1.5500	1.5500		0.66
1/2	A	No	Ar (CaAa)	190.00 - 0.00	0.0000	-0.06	1	1	0.5800	0.5800		0.25
1/2	A	No	Ar (CaAa)	17.00 - 0.00	0.0000	-0.07	1	1	0.5800	0.5800		0.25
7/8	B	No	Ar (CaAa)	92.00 - 0.00	0.0000	0.08	1	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	142.00 - 0.00	0.0000	0.07	1	1	1.1100	1.1100		0.54
1/2	B	No	Ar (CaAa)	142.00 - 0.00	0.0000	0.06	1	1	0.5800	0.5800		0.25
7/8	B	No	Ar (CaAa)	156.00 - 0.00	0.0000	0.05	1	1	1.1100	1.1100		0.54
1/2	B	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.04	1	1	0.5800	0.5800		0.25
7/8	B	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.025	2	2	1.1100	1.1100		0.54
1/2	B	No	Ar (CaAa)	102.00 - 0.00	0.0000	-0.02	1	1	0.5800	0.5800		0.25
7/8	B	No	Ar (CaAa)	190.00 - 0.00	0.0000	-0.05	1	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CaAa)	109.00 - 0.00	0.0000	-0.06	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.06	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CaAa)	119.00 - 0.00	0.0000	0.05	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.04	1	1	1.1100	1.1100		0.54
1/2	C	No	Ar (CaAa)	136.00 - 0.00	0.0000	0.03	1	1	0.5800	0.5800		0.25
1/2	C	No	Ar (CaAa)	113.00 - 0.00	0.0000	0.02	1	1	0.5800	0.5800		0.25
1/2	C	No	Ar (CaAa)	142.00 - 0.00	0.0000	-0.02	1	1	0.5800	0.5800		0.25
7/8	C	No	Ar (CaAa)	142.00 - 0.00	0.0000	-0.03	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CaAa)	103.00 - 0.00	0.0000	-0.05	1	1	1.1100	1.1100		0.54
1/2	C	No	Ar (CaAa)	31.00 - 0.00	0.0000	-0.06	1	1	0.5800	0.5800		0.25
1-1/4	C	No	Ar (CaAa)	190.00 - 0.00	0.0000	-0.04	1	1	1.5500	1.5500		0.66
7/8	C	No	Ar (CaAa)	74.00 - 0.00	0.0000	-0.07	1	1	1.1100	1.1100		0.54
1/2	C	No	Ar (CaAa)	50.00 - 0.00	0.0000	-0.08	1	1	0.5800	0.5800		0.25

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1-5/8	A	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.28	6	6	1.9800	1.9800		1.90
1-5/8 (Sprint)	A	No	Ar (CaAa)	180.00 - 0.00	0.0000	0	2	2	1.9800	1.9800		1.04
1-5/8 (Sprint)	B	No	Ar (CaAa)	180.00 - 0.00	0.0000	0	2	2	1.9800	1.9800		1.04
1-5/8 (Sprint)	C	No	Ar (CaAa)	180.00 - 0.00	0.0000	0	2	2	1.9800	1.9800		1.04
LDF6-50A (1-1/4 FOAM) (Sprint)	A	No	Ar (CaAa)	180.00 - 0.00	0.0000	0	1	1	1.5500	1.5500		0.66

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	190.00-180.00	A	0.000	0.000	2.420	0.000	10.35
		B	0.000	0.000	3.910	0.000	18.70
		C	0.000	0.000	3.770	0.000	17.40
T2	180.00-160.00	A	0.000	0.000	16.440	0.000	78.00
		B	0.000	0.000	15.740	0.000	79.00
		C	0.000	0.000	15.460	0.000	76.40
T3	160.00-140.00	A	0.000	0.000	47.712	0.000	292.48
		B	0.000	0.000	41.614	0.000	214.02
		C	0.000	0.000	15.798	0.000	77.98
T4	140.00-136.00	A	0.000	0.000	15.264	0.000	98.80
		B	0.000	0.000	13.772	0.000	71.04
		C	0.000	0.000	3.768	0.000	18.44
T5	136.00-132.00	A	0.000	0.000	15.264	0.000	98.80
		B	0.000	0.000	13.772	0.000	71.04
		C	0.000	0.000	4.000	0.000	19.44
T6	132.00-128.00	A	0.000	0.000	15.264	0.000	98.80
		B	0.000	0.000	13.772	0.000	71.04
		C	0.000	0.000	4.000	0.000	19.44
T7	128.00-124.00	A	0.000	0.000	15.264	0.000	98.80
		B	0.000	0.000	13.772	0.000	71.04
		C	0.000	0.000	4.000	0.000	19.44
T8	124.00-120.00	A	0.000	0.000	15.264	0.000	98.80
		B	0.000	0.000	13.772	0.000	71.04
		C	0.000	0.000	4.000	0.000	19.44
T9	120.00-100.00	A	0.000	0.000	76.320	0.000	494.00
		B	0.000	0.000	69.975	0.000	360.56
		C	0.000	0.000	23.196	0.000	112.33
T10	100.00-80.00	A	0.000	0.000	77.132	0.000	497.50
		B	0.000	0.000	73.572	0.000	377.48
		C	0.000	0.000	25.600	0.000	123.80
T11	80.00-60.00	A	0.000	0.000	78.060	0.000	501.50
		B	0.000	0.000	74.460	0.000	381.80
		C	0.000	0.000	27.154	0.000	131.36
T12	60.00-40.00	A	0.000	0.000	79.220	0.000	506.50
		B	0.000	0.000	74.460	0.000	381.80
		C	0.000	0.000	28.400	0.000	137.10
T13	40.00-20.00	A	0.000	0.000	80.496	0.000	512.00
		B	0.000	0.000	74.460	0.000	381.80
		C	0.000	0.000	29.618	0.000	142.35
T14	20.00-0.00	A	0.000	0.000	81.946	0.000	518.25

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
		B	0.000	0.000	74.460	0.000	381.80
		C	0.000	0.000	30.140	0.000	144.60

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	190.00-180.00	A	2.376	0.000	0.000	14.301	0.000	253.07
		B		0.000	0.000	23.676	0.000	353.80
		C		0.000	0.000	18.028	0.000	333.81
T2	180.00-160.00	A	2.356	0.000	0.000	77.671	0.000	1297.75
		B		0.000	0.000	78.503	0.000	1172.04
		C		0.000	0.000	67.266	0.000	1132.27
T3	160.00-140.00	A	2.327	0.000	0.000	180.453	0.000	3078.51
		B		0.000	0.000	152.572	0.000	2594.32
		C		0.000	0.000	68.912	0.000	1150.59
T4	140.00-136.00	A	2.308	0.000	0.000	53.638	0.000	931.20
		B		0.000	0.000	47.440	0.000	835.35
		C		0.000	0.000	17.638	0.000	294.32
T5	136.00-132.00	A	2.301	0.000	0.000	53.572	0.000	928.34
		B		0.000	0.000	47.386	0.000	832.76
		C		0.000	0.000	19.674	0.000	326.47
T6	132.00-128.00	A	2.294	0.000	0.000	53.504	0.000	925.40
		B		0.000	0.000	47.331	0.000	830.11
		C		0.000	0.000	19.631	0.000	325.02
T7	128.00-124.00	A	2.287	0.000	0.000	53.434	0.000	922.39
		B		0.000	0.000	47.275	0.000	827.39
		C		0.000	0.000	19.587	0.000	323.53
T8	124.00-120.00	A	2.279	0.000	0.000	53.362	0.000	919.29
		B		0.000	0.000	47.217	0.000	824.59
		C		0.000	0.000	19.541	0.000	322.00
T9	120.00-100.00	A	2.256	0.000	0.000	265.662	0.000	4547.23
		B		0.000	0.000	241.235	0.000	4182.96
		C		0.000	0.000	115.968	0.000	1906.54
T10	100.00-80.00	A	2.211	0.000	0.000	270.476	0.000	4563.03
		B		0.000	0.000	261.095	0.000	4454.35
		C		0.000	0.000	127.730	0.000	2076.17
T11	80.00-60.00	A	2.156	0.000	0.000	275.472	0.000	4564.73
		B		0.000	0.000	262.698	0.000	4407.00
		C		0.000	0.000	132.968	0.000	2127.75
T12	60.00-40.00	A	2.085	0.000	0.000	281.064	0.000	4547.97
		B		0.000	0.000	259.029	0.000	4248.92
		C		0.000	0.000	137.627	0.000	2146.47
T13	40.00-20.00	A	1.981	0.000	0.000	284.961	0.000	4453.49
		B		0.000	0.000	253.693	0.000	4023.77
		C		0.000	0.000	142.092	0.000	2125.87
T14	20.00-0.00	A	1.775	0.000	0.000	282.301	0.000	4112.15
		B		0.000	0.000	243.110	0.000	3593.98
		C		0.000	0.000	134.875	0.000	1859.38

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	190.00-180.00	0.1926	0.2093	-0.1084	0.2494
T2	180.00-160.00	-0.0790	0.0149	-0.2946	0.0464
T3	160.00-140.00	-0.2590	-2.2876	-0.2062	-1.3123
T4	140.00-136.00	-0.2400	-3.1415	-0.0632	-1.7497
T5	136.00-132.00	-0.2475	-3.4190	-0.0691	-1.9534
T6	132.00-128.00	-0.2486	-3.6730	-0.0639	-2.1125
T7	128.00-124.00	-0.2498	-3.9252	-0.0587	-2.2708
T8	124.00-120.00	-0.2428	-4.0415	-0.0493	-2.2393
T9	120.00-100.00	-0.2207	-4.5606	-0.0047	-2.5291
T10	100.00-80.00	-0.1073	-5.5482	0.1981	-3.2265
T11	80.00-60.00	-0.0604	-6.2451	0.2432	-3.6753
T12	60.00-40.00	-0.0660	-7.0079	0.2150	-4.3232
T13	40.00-20.00	-0.0923	-7.7948	0.1353	-4.8026
T14	20.00-0.00	-0.1610	-8.7033	-0.0364	-5.7316

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	8	1/2	180.00 - 185.00	0.6000	0.4572
T1	10	1-1/4	180.00 - 190.00	0.6000	0.4572
T1	11	1/2	180.00 - 190.00	0.6000	0.4572
T1	17	1/2	180.00 - 190.00	0.6000	0.4572
T1	18	7/8	180.00 - 190.00	0.6000	0.4572
T1	20	7/8	180.00 - 190.00	0.6000	0.4572
T1	22	7/8	180.00 - 190.00	0.6000	0.4572
T1	24	7/8	180.00 - 190.00	0.6000	0.4572
T1	31	1-1/4	180.00 - 190.00	0.6000	0.4572
T2	8	1/2	160.00 - 180.00	0.6000	0.4650
T2	10	1-1/4	160.00 - 180.00	0.6000	0.4650
T2	11	1/2	160.00 - 180.00	0.6000	0.4650
T2	17	1/2	160.00 - 180.00	0.6000	0.4650
T2	18	7/8	160.00 - 180.00	0.6000	0.4650
T2	20	7/8	160.00 - 180.00	0.6000	0.4650
T2	22	7/8	160.00 - 180.00	0.6000	0.4650
T2	24	7/8	160.00 - 180.00	0.6000	0.4650
T2	31	1-1/4	160.00 - 180.00	0.6000	0.4650

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	35	1-5/8	160.00 - 180.00	0.6000	0.4650
T2	36	1-5/8	160.00 - 180.00	0.6000	0.4650
T2	37	1-5/8	160.00 - 180.00	0.6000	0.4650
T2	38	LDF6-50A (1-1/4 FOAM)	160.00 - 180.00	0.6000	0.4650
T3	1	1-5/8	140.00 - 150.00	0.6000	0.4490
T3	2	1-5/8	140.00 - 150.00	0.6000	0.4490
T3	3	1-5/8	140.00 - 150.00	0.6000	0.4490
T3	7	7/8	140.00 - 156.00	0.6000	0.4490
T3	8	1/2	140.00 - 160.00	0.6000	0.4490
T3	10	1-1/4	140.00 - 160.00	0.6000	0.4490
T3	11	1/2	140.00 - 160.00	0.6000	0.4490
T3	14	7/8	140.00 - 142.00	0.6000	0.4490
T3	15	1/2	140.00 - 142.00	0.6000	0.4490
T3	16	7/8	140.00 - 156.00	0.6000	0.4490
T3	17	1/2	140.00 - 160.00	0.6000	0.4490
T3	18	7/8	140.00 - 160.00	0.6000	0.4490
T3	20	7/8	140.00 - 160.00	0.6000	0.4490
T3	22	7/8	140.00 - 160.00	0.6000	0.4490
T3	24	7/8	140.00 - 160.00	0.6000	0.4490
T3	27	1/2	140.00 - 142.00	0.6000	0.4490
T3	28	7/8	140.00 - 142.00	0.6000	0.4490
T3	31	1-1/4	140.00 - 160.00	0.6000	0.4490
T3	34	1-5/8	140.00 - 150.00	0.6000	0.4490
T3	35	1-5/8	140.00 - 160.00	0.6000	0.4490
T3	36	1-5/8	140.00 - 160.00	0.6000	0.4490
T3	37	1-5/8	140.00 - 160.00	0.6000	0.4490
T3	38	LDF6-50A (1-1/4 FOAM)	140.00 - 160.00	0.6000	0.4490
T4	1	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	2	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	3	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	7	7/8	136.00 - 140.00	0.6000	0.3617

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	8	1/2	136.00 - 140.00	0.6000	0.3617
T4	10	1-1/4	136.00 - 140.00	0.6000	0.3617
T4	11	1/2	136.00 - 140.00	0.6000	0.3617
T4	14	7/8	136.00 - 140.00	0.6000	0.3617
T4	15	1/2	136.00 - 140.00	0.6000	0.3617
T4	16	7/8	136.00 - 140.00	0.6000	0.3617
T4	17	1/2	136.00 - 140.00	0.6000	0.3617
T4	18	7/8	136.00 - 140.00	0.6000	0.3617
T4	20	7/8	136.00 - 140.00	0.6000	0.3617
T4	22	7/8	136.00 - 140.00	0.6000	0.3617
T4	24	7/8	136.00 - 140.00	0.6000	0.3617
T4	27	1/2	136.00 - 140.00	0.6000	0.3617
T4	28	7/8	136.00 - 140.00	0.6000	0.3617
T4	31	1-1/4	136.00 - 140.00	0.6000	0.3617
T4	34	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	35	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	36	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	37	1-5/8	136.00 - 140.00	0.6000	0.3617
T4	38	LDF6-50A (1-1/4 FOAM)	136.00 - 140.00	0.6000	0.3617
T5	1	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	2	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	3	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	7	7/8	132.00 - 136.00	0.6000	0.4892
T5	8	1/2	132.00 - 136.00	0.6000	0.4892
T5	10	1-1/4	132.00 - 136.00	0.6000	0.4892
T5	11	1/2	132.00 - 136.00	0.6000	0.4892
T5	14	7/8	132.00 - 136.00	0.6000	0.4892
T5	15	1/2	132.00 - 136.00	0.6000	0.4892
T5	16	7/8	132.00 - 136.00	0.6000	0.4892
T5	17	1/2	132.00 - 136.00	0.6000	0.4892
T5	18	7/8	132.00 - 136.00	0.6000	0.4892

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	20	7/8	132.00 - 136.00	0.6000	0.4892
T5	22	7/8	132.00 - 136.00	0.6000	0.4892
T5	24	7/8	132.00 - 136.00	0.6000	0.4892
T5	25	1/2	132.00 - 136.00	0.6000	0.4892
T5	27	1/2	132.00 - 136.00	0.6000	0.4892
T5	28	7/8	132.00 - 136.00	0.6000	0.4892
T5	31	1-1/4	132.00 - 136.00	0.6000	0.4892
T5	34	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	35	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	36	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	37	1-5/8	132.00 - 136.00	0.6000	0.4892
T5	38	LDF6-50A (1-1/4 FOAM)	132.00 - 136.00	0.6000	0.4892
T6	1	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	2	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	3	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	7	7/8	128.00 - 132.00	0.6000	0.5084
T6	8	1/2	128.00 - 132.00	0.6000	0.5084
T6	10	1-1/4	128.00 - 132.00	0.6000	0.5084
T6	11	1/2	128.00 - 132.00	0.6000	0.5084
T6	14	7/8	128.00 - 132.00	0.6000	0.5084
T6	15	1/2	128.00 - 132.00	0.6000	0.5084
T6	16	7/8	128.00 - 132.00	0.6000	0.5084
T6	17	1/2	128.00 - 132.00	0.6000	0.5084
T6	18	7/8	128.00 - 132.00	0.6000	0.5084
T6	20	7/8	128.00 - 132.00	0.6000	0.5084
T6	22	7/8	128.00 - 132.00	0.6000	0.5084
T6	24	7/8	128.00 - 132.00	0.6000	0.5084
T6	25	1/2	128.00 - 132.00	0.6000	0.5084
T6	27	1/2	128.00 - 132.00	0.6000	0.5084
T6	28	7/8	128.00 - 132.00	0.6000	0.5084
T6	31	1-1/4	128.00 - 132.00	0.6000	0.5084

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	34	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	35	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	36	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	37	1-5/8	128.00 - 132.00	0.6000	0.5084
T6	38	LDF6-50A (1-1/4 FOAM)	128.00 - 132.00	0.6000	0.5084
T7	1	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	2	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	3	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	7	7/8	124.00 - 128.00	0.6000	0.5251
T7	8	1/2	124.00 - 128.00	0.6000	0.5251
T7	10	1-1/4	124.00 - 128.00	0.6000	0.5251
T7	11	1/2	124.00 - 128.00	0.6000	0.5251
T7	14	7/8	124.00 - 128.00	0.6000	0.5251
T7	15	1/2	124.00 - 128.00	0.6000	0.5251
T7	16	7/8	124.00 - 128.00	0.6000	0.5251
T7	17	1/2	124.00 - 128.00	0.6000	0.5251
T7	18	7/8	124.00 - 128.00	0.6000	0.5251
T7	20	7/8	124.00 - 128.00	0.6000	0.5251
T7	22	7/8	124.00 - 128.00	0.6000	0.5251
T7	24	7/8	124.00 - 128.00	0.6000	0.5251
T7	25	1/2	124.00 - 128.00	0.6000	0.5251
T7	27	1/2	124.00 - 128.00	0.6000	0.5251
T7	28	7/8	124.00 - 128.00	0.6000	0.5251
T7	31	1-1/4	124.00 - 128.00	0.6000	0.5251
T7	34	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	35	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	36	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	37	1-5/8	124.00 - 128.00	0.6000	0.5251
T7	38	LDF6-50A (1-1/4 FOAM)	124.00 - 128.00	0.6000	0.5251
T8	1	1-5/8	120.00 - 124.00	0.6000	0.4230
T8	2	1-5/8	120.00 - 124.00	0.6000	0.4230

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	3	1-5/8	120.00 - 124.00	0.6000	0.4230
T8	7	7/8	120.00 - 124.00	0.6000	0.4230
T8	8	1/2	120.00 - 124.00	0.6000	0.4230
T8	10	1-1/4	120.00 - 124.00	0.6000	0.4230
T8	11	1/2	120.00 - 124.00	0.6000	0.4230
T8	14	7/8	120.00 - 124.00	0.6000	0.4230
T8	15	1/2	120.00 - 124.00	0.6000	0.4230
T8	16	7/8	120.00 - 124.00	0.6000	0.4230
T8	17	1/2	120.00 - 124.00	0.6000	0.4230
T8	18	7/8	120.00 - 124.00	0.6000	0.4230
T8	20	7/8	120.00 - 124.00	0.6000	0.4230
T8	22	7/8	120.00 - 124.00	0.6000	0.4230
T8	24	7/8	120.00 - 124.00	0.6000	0.4230
T8	25	1/2	120.00 - 124.00	0.6000	0.4230
T8	27	1/2	120.00 - 124.00	0.6000	0.4230
T8	28	7/8	120.00 - 124.00	0.6000	0.4230
T8	31	1-1/4	120.00 - 124.00	0.6000	0.4230
T8	34	1-5/8	120.00 - 124.00	0.6000	0.4230
T8	35	1-5/8	120.00 - 124.00	0.6000	0.4230
T8	36	1-5/8	120.00 - 124.00	0.6000	0.4230
T8	37	1-5/8	120.00 - 124.00	0.6000	0.4230
T8	38	LDF6-50A (1-1/4 FOAM)	120.00 - 124.00	0.6000	0.4230
T9	1	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	2	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	3	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	7	7/8	100.00 - 120.00	0.6000	0.5057
T9	8	1/2	100.00 - 120.00	0.6000	0.5057
T9	10	1-1/4	100.00 - 120.00	0.6000	0.5057
T9	11	1/2	100.00 - 120.00	0.6000	0.5057
T9	14	7/8	100.00 - 120.00	0.6000	0.5057
T9	15	1/2	100.00 - 120.00	0.6000	0.5057

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	16	7/8	100.00 - 120.00	0.6000	0.5057
T9	17	1/2	100.00 - 120.00	0.6000	0.5057
T9	18	7/8	100.00 - 120.00	0.6000	0.5057
T9	19	1/2	100.00 - 102.00	0.6000	0.5057
T9	20	7/8	100.00 - 120.00	0.6000	0.5057
T9	21	7/8	100.00 - 109.00	0.6000	0.5057
T9	22	7/8	100.00 - 120.00	0.6000	0.5057
T9	23	7/8	100.00 - 119.00	0.6000	0.5057
T9	24	7/8	100.00 - 120.00	0.6000	0.5057
T9	25	1/2	100.00 - 120.00	0.6000	0.5057
T9	26	1/2	100.00 - 113.00	0.6000	0.5057
T9	27	1/2	100.00 - 120.00	0.6000	0.5057
T9	28	7/8	100.00 - 120.00	0.6000	0.5057
T9	29	7/8	100.00 - 103.00	0.6000	0.5057
T9	31	1-1/4	100.00 - 120.00	0.6000	0.5057
T9	34	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	35	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	36	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	37	1-5/8	100.00 - 120.00	0.6000	0.5057
T9	38	LDF6-50A (1-1/4 FOAM)	100.00 - 120.00	0.6000	0.5057
T10	1	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	2	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	3	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	6	1/2	80.00 - 94.00	0.6000	0.6000
T10	7	7/8	80.00 - 100.00	0.6000	0.6000
T10	8	1/2	80.00 - 100.00	0.6000	0.6000
T10	10	1-1/4	80.00 - 100.00	0.6000	0.6000
T10	11	1/2	80.00 - 100.00	0.6000	0.6000
T10	13	7/8	80.00 - 92.00	0.6000	0.6000
T10	14	7/8	80.00 - 100.00	0.6000	0.6000
T10	15	1/2	80.00 - 100.00	0.6000	0.6000
T10	16	7/8	80.00 - 100.00	0.6000	0.6000
T10	17	1/2	80.00 - 100.00	0.6000	0.6000
T10	18	7/8	80.00 - 100.00	0.6000	0.6000
T10	19	1/2	80.00 - 100.00	0.6000	0.6000
T10	20	7/8	80.00 - 100.00	0.6000	0.6000
T10	21	7/8	80.00 - 100.00	0.6000	0.6000
T10	22	7/8	80.00 - 100.00	0.6000	0.6000
T10	23	7/8	80.00 - 100.00	0.6000	0.6000
T10	24	7/8	80.00 - 100.00	0.6000	0.6000
T10	25	1/2	80.00 - 100.00	0.6000	0.6000
T10	26	1/2	80.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	27	1/2	80.00 - 100.00	0.6000	0.6000
T10	28	7/8	80.00 - 100.00	0.6000	0.6000
T10	29	7/8	80.00 - 100.00	0.6000	0.6000
T10	31	1-1/4	80.00 - 100.00	0.6000	0.6000
T10	34	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	35	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	36	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	37	1-5/8	80.00 - 100.00	0.6000	0.6000
T10	38	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	0.6000	0.6000
T11	1	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	2	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	3	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	5	1/2	60.00 - 70.00	0.6000	0.6000
T11	6	1/2	60.00 - 80.00	0.6000	0.6000
T11	7	7/8	60.00 - 80.00	0.6000	0.6000
T11	8	1/2	60.00 - 80.00	0.6000	0.6000
T11	10	1-1/4	60.00 - 80.00	0.6000	0.6000
T11	11	1/2	60.00 - 80.00	0.6000	0.6000
T11	13	7/8	60.00 - 80.00	0.6000	0.6000
T11	14	7/8	60.00 - 80.00	0.6000	0.6000
T11	15	1/2	60.00 - 80.00	0.6000	0.6000
T11	16	7/8	60.00 - 80.00	0.6000	0.6000
T11	17	1/2	60.00 - 80.00	0.6000	0.6000
T11	18	7/8	60.00 - 80.00	0.6000	0.6000
T11	19	1/2	60.00 - 80.00	0.6000	0.6000
T11	20	7/8	60.00 - 80.00	0.6000	0.6000
T11	21	7/8	60.00 - 80.00	0.6000	0.6000
T11	22	7/8	60.00 - 80.00	0.6000	0.6000
T11	23	7/8	60.00 - 80.00	0.6000	0.6000
T11	24	7/8	60.00 - 80.00	0.6000	0.6000
T11	25	1/2	60.00 - 80.00	0.6000	0.6000
T11	26	1/2	60.00 - 80.00	0.6000	0.6000
T11	27	1/2	60.00 - 80.00	0.6000	0.6000
T11	28	7/8	60.00 - 80.00	0.6000	0.6000
T11	29	7/8	60.00 - 80.00	0.6000	0.6000
T11	31	1-1/4	60.00 - 80.00	0.6000	0.6000
T11	32	7/8	60.00 - 74.00	0.6000	0.6000
T11	34	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	35	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	36	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	37	1-5/8	60.00 - 80.00	0.6000	0.6000
T11	38	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.6000
T12	1	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	2	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	3	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	4	1/2	40.00 - 50.00	0.6000	0.6000
T12	5	1/2	40.00 - 60.00	0.6000	0.6000
T12	6	1/2	40.00 - 60.00	0.6000	0.6000
T12	7	7/8	40.00 - 60.00	0.6000	0.6000
T12	8	1/2	40.00 - 60.00	0.6000	0.6000
T12	10	1-1/4	40.00 - 60.00	0.6000	0.6000
T12	11	1/2	40.00 - 60.00	0.6000	0.6000
T12	13	7/8	40.00 - 60.00	0.6000	0.6000
T12	14	7/8	40.00 - 60.00	0.6000	0.6000
T12	15	1/2	40.00 - 60.00	0.6000	0.6000
T12	16	7/8	40.00 - 60.00	0.6000	0.6000
T12	17	1/2	40.00 - 60.00	0.6000	0.6000
T12	18	7/8	40.00 - 60.00	0.6000	0.6000
T12	19	1/2	40.00 - 60.00	0.6000	0.6000
T12	20	7/8	40.00 - 60.00	0.6000	0.6000
T12	21	7/8	40.00 - 60.00	0.6000	0.6000
T12	22	7/8	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	23	7/8	40.00 - 60.00	0.6000	0.6000
T12	24	7/8	40.00 - 60.00	0.6000	0.6000
T12	25	1/2	40.00 - 60.00	0.6000	0.6000
T12	26	1/2	40.00 - 60.00	0.6000	0.6000
T12	27	1/2	40.00 - 60.00	0.6000	0.6000
T12	28	7/8	40.00 - 60.00	0.6000	0.6000
T12	29	7/8	40.00 - 60.00	0.6000	0.6000
T12	31	1-1/4	40.00 - 60.00	0.6000	0.6000
T12	32	7/8	40.00 - 60.00	0.6000	0.6000
T12	33	1/2	40.00 - 50.00	0.6000	0.6000
T12	34	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	35	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	36	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	37	1-5/8	40.00 - 60.00	0.6000	0.6000
T12	38	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.6000
T13	1	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	2	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	3	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	4	1/2	20.00 - 40.00	0.6000	0.6000
T13	5	1/2	20.00 - 40.00	0.6000	0.6000
T13	6	1/2	20.00 - 40.00	0.6000	0.6000
T13	7	7/8	20.00 - 40.00	0.6000	0.6000
T13	8	1/2	20.00 - 40.00	0.6000	0.6000
T13	9	1/2	20.00 - 32.00	0.6000	0.6000
T13	10	1-1/4	20.00 - 40.00	0.6000	0.6000
T13	11	1/2	20.00 - 40.00	0.6000	0.6000
T13	13	7/8	20.00 - 40.00	0.6000	0.6000
T13	14	7/8	20.00 - 40.00	0.6000	0.6000
T13	15	1/2	20.00 - 40.00	0.6000	0.6000
T13	16	7/8	20.00 - 40.00	0.6000	0.6000
T13	17	1/2	20.00 - 40.00	0.6000	0.6000
T13	18	7/8	20.00 - 40.00	0.6000	0.6000
T13	19	1/2	20.00 - 40.00	0.6000	0.6000
T13	20	7/8	20.00 - 40.00	0.6000	0.6000
T13	21	7/8	20.00 - 40.00	0.6000	0.6000
T13	22	7/8	20.00 - 40.00	0.6000	0.6000
T13	23	7/8	20.00 - 40.00	0.6000	0.6000
T13	24	7/8	20.00 - 40.00	0.6000	0.6000
T13	25	1/2	20.00 - 40.00	0.6000	0.6000
T13	26	1/2	20.00 - 40.00	0.6000	0.6000
T13	27	1/2	20.00 - 40.00	0.6000	0.6000
T13	28	7/8	20.00 - 40.00	0.6000	0.6000
T13	29	7/8	20.00 - 40.00	0.6000	0.6000
T13	30	1/2	20.00 - 31.00	0.6000	0.6000
T13	31	1-1/4	20.00 - 40.00	0.6000	0.6000
T13	32	7/8	20.00 - 40.00	0.6000	0.6000
T13	33	1/2	20.00 - 40.00	0.6000	0.6000
T13	34	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	35	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	36	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	37	1-5/8	20.00 - 40.00	0.6000	0.6000
T13	38	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	1	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	2	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	3	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	4	1/2	0.00 - 20.00	0.6000	0.6000
T14	5	1/2	0.00 - 20.00	0.6000	0.6000
T14	6	1/2	0.00 - 20.00	0.6000	0.6000
T14	7	7/8	0.00 - 20.00	0.6000	0.6000
T14	8	1/2	0.00 - 20.00	0.6000	0.6000
T14	9	1/2	0.00 - 20.00	0.6000	0.6000
T14	10	1-1/4	0.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	11	1/2	0.00 - 20.00	0.6000	0.6000
T14	12	1/2	0.00 - 17.00	0.6000	0.6000
T14	13	7/8	0.00 - 20.00	0.6000	0.6000
T14	14	7/8	0.00 - 20.00	0.6000	0.6000
T14	15	1/2	0.00 - 20.00	0.6000	0.6000
T14	16	7/8	0.00 - 20.00	0.6000	0.6000
T14	17	1/2	0.00 - 20.00	0.6000	0.6000
T14	18	7/8	0.00 - 20.00	0.6000	0.6000
T14	19	1/2	0.00 - 20.00	0.6000	0.6000
T14	20	7/8	0.00 - 20.00	0.6000	0.6000
T14	21	7/8	0.00 - 20.00	0.6000	0.6000
T14	22	7/8	0.00 - 20.00	0.6000	0.6000
T14	23	7/8	0.00 - 20.00	0.6000	0.6000
T14	24	7/8	0.00 - 20.00	0.6000	0.6000
T14	25	1/2	0.00 - 20.00	0.6000	0.6000
T14	26	1/2	0.00 - 20.00	0.6000	0.6000
T14	27	1/2	0.00 - 20.00	0.6000	0.6000
T14	28	7/8	0.00 - 20.00	0.6000	0.6000
T14	29	7/8	0.00 - 20.00	0.6000	0.6000
T14	30	1/2	0.00 - 20.00	0.6000	0.6000
T14	31	1-1/4	0.00 - 20.00	0.6000	0.6000
T14	32	7/8	0.00 - 20.00	0.6000	0.6000
T14	33	1/2	0.00 - 20.00	0.6000	0.6000
T14	34	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	35	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	36	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	37	1-5/8	0.00 - 20.00	0.6000	0.6000
T14	38	LDF6-50A (1-1/4 FOAM)	0.00 - 20.00	0.6000	0.6000

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	From Leg	2.00 0.00 0.00	0.0000	188.00	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	From Leg	2.00 0.00 0.00	0.0000	188.00	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	From Leg	2.00 0.00 0.00	0.0000	188.00	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
(2) Obstruction Lights	C	From Leg	0.00 0.00 0.00	0.0000	192.00	No Ice 1/2" Ice 1" Ice	0.18 0.25 0.32	0.18 0.25 0.32	10.00 10.00 10.00
PD1142-3	C	From Leg	0.00 0.00 4.00	0.0000	192.00	No Ice 1/2" Ice 1" Ice	0.48 0.55 0.62	0.48 0.55 0.62	10.00 10.00 10.00
3' Yagi	C	From Leg	1.00 0.00	0.0000	190.00	No Ice 1/2" Ice	2.08 3.79	2.08 3.79	30.00 50.00

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" Ice	5.50	5.50	70.00
PD1142-2A	C	From Leg	4.00	0.0000	187.00	No Ice	0.79	0.79	10.00
			0.00			1/2" Ice	0.91	0.91	10.00
			8.00			1" Ice	1.03	1.03	10.00
Pirod 4' Side Mount Standoff	C	From Leg	2.00	0.0000	156.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
ASP-705	C	From Leg	4.00	0.0000	156.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
DB230-2A	C	From Leg	1.00	0.0000	142.00	No Ice	3.00	3.00	11.00
			0.00			1/2" Ice	5.40	5.40	15.00
			0.00			1" Ice	7.80	7.80	19.00
PD320	C	From Leg	1.00	0.0000	110.00	No Ice	2.03	2.03	10.00
			0.00			1/2" Ice	4.58	4.58	30.00
			0.00			1" Ice	7.13	7.13	50.00
Pirod 4' Side Mount Standoff	C	From Leg	2.00	0.0000	103.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
14'x3" Dia. Omni	C	From Leg	4.00	0.0000	103.00	No Ice	4.20	4.20	40.00
			0.00			1/2" Ice	5.63	5.63	70.00
			7.00			1" Ice	7.06	7.06	100.00
15-ft Single Dipole	C	From Leg	1.00	0.0000	92.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
PD320	C	From Leg	1.00	0.0000	74.00	No Ice	2.03	2.03	10.00
			0.00			1/2" Ice	4.58	4.58	30.00
			0.00			1" Ice	7.13	7.13	50.00
15-ft Single Dipole	C	From Leg	1.00	0.0000	50.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
15-ft Single Dipole	C	From Leg	1.00	0.0000	31.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
ASP-705	B	From Leg	1.00	0.0000	192.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
ASP-705	B	From Leg	4.00	0.0000	192.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
Paraflector	B	From Leg	4.00	0.0000	187.00	No Ice	8.90	8.90	40.00
			0.00			1/2" Ice	10.70	10.70	60.00
			0.00			1" Ice	12.50	12.50	80.00
Pirod 4' Side Mount Standoff	B	From Leg	2.00	0.0000	156.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
ASP-705	B	From Leg	4.00	0.0000	156.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
Paraflector	B	From Leg	4.00	0.0000	144.00	No Ice	8.90	8.90	40.00
			0.00			1/2" Ice	10.70	10.70	60.00
			0.00			1" Ice	12.50	12.50	80.00
Paraflector	B	From Leg	4.00	0.0000	140.00	No Ice	8.90	8.90	40.00
			0.00			1/2" Ice	10.70	10.70	60.00
			0.00			1" Ice	12.50	12.50	80.00
Pirod 4' Side Mount Standoff	B	From Leg	2.00	0.0000	142.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00	0.0000	109.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
14'x3" Dia. Omni	B	From Leg	4.00	0.0000	109.00	No Ice	4.20	4.20	40.00
			0.00			1/2" Ice	5.63	5.63	70.00
			7.00			1" Ice	7.06	7.06	100.00
GPS	B	From Leg	1.00	0.0000	102.00	No Ice	1.00	1.00	10.00
			0.00			1/2" Ice	1.50	1.50	10.00
			0.00			1" Ice	2.00	2.00	10.00
1' Standoff Pipe	B	From Leg	0.50	0.0000	102.00	No Ice	0.16	0.16	10.00
			0.00			1/2" Ice	0.23	0.23	10.00
			0.00			1" Ice	0.30	0.30	10.00
DB212 Single Dipole	B	From Leg	1.00	0.0000	94.00	No Ice	1.60	1.60	30.00
			0.00			1/2" Ice	3.20	3.20	40.00
			0.00			1" Ice	4.80	4.80	50.00
15-ft Single Dipole	B	From Leg	1.00	0.0000	70.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
DB212 Single Dipole	B	From Leg	1.00	0.0000	50.00	No Ice	1.60	1.60	30.00
			0.00			1/2" Ice	3.20	3.20	40.00
			0.00			1" Ice	4.80	4.80	50.00
DB212 Single Dipole	B	From Leg	1.00	0.0000	32.00	No Ice	1.60	1.60	30.00
			0.00			1/2" Ice	3.20	3.20	40.00
			0.00			1" Ice	4.80	4.80	50.00
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00	0.0000	17.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
PD400	B	From Leg	4.00	0.0000	17.00	No Ice	3.14	3.14	20.00
			0.00			1/2" Ice	4.48	4.48	40.00
			6.00			1" Ice	5.82	5.82	60.00
3' Yagi	B	From Leg	1.00	0.0000	17.00	No Ice	2.08	2.08	30.00
			0.00			1/2" Ice	3.79	3.79	50.00
			0.00			1" Ice	5.50	5.50	70.00
DB420	A	From Leg	1.00	0.0000	192.00	No Ice	3.33	3.33	30.00
			0.00			1/2" Ice	5.99	5.99	40.00
			10.00			1" Ice	8.65	8.65	50.00
4'x3" Dia. Omni	A	From Leg	4.00	0.0000	190.00	No Ice	1.00	1.00	20.00
			0.00			1/2" Ice	1.25	1.25	20.00
			2.00			1" Ice	1.50	1.50	20.00
Halo	A	From Leg	4.00	0.0000	192.00	No Ice	4.00	4.00	10.00
			0.00			1/2" Ice	5.60	5.60	30.00
			0.00			1" Ice	7.20	7.20	50.00
3' Yagi	A	From Leg	1.00	0.0000	190.00	No Ice	2.08	2.08	30.00
			0.00			1/2" Ice	3.79	3.79	50.00
			0.00			1" Ice	5.50	5.50	70.00
Pirod 4' Side Mount Standoff (1)	A	From Leg	2.00	0.0000	142.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
DB264-A	A	From Leg	4.00	0.0000	142.00	No Ice	3.16	3.16	40.00
			0.00			1/2" Ice	5.69	5.69	50.00
			0.00			1" Ice	8.22	8.22	60.00
DB436-C	A	From Leg	4.00	0.0000	142.00	No Ice	0.45	0.45	10.00
			0.00			1/2" Ice	0.81	0.81	10.00
			0.00			1" Ice	1.17	1.17	10.00
Single Dipole	A	From Leg	4.00	0.0000	136.00	No Ice	1.60	1.60	30.00
			0.00			1/2" Ice	3.20	3.20	40.00

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
			3.00			1" Ice	4.80	4.80	50.00
Pirod 4' Side Mount Standoff (1)	A	From Leg	2.00 0.00 0.00	0.0000	113.00	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
Dipole	A	From Leg	4.00 0.00 3.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice	3.16 5.69 8.22	3.16 5.69 8.22	40.00 50.00 60.00
Rohn 6'x14' Boom Gate (3) (Sprint)	C	None		0.0000	179.92	No Ice 1/2" Ice 1" Ice	52.00 61.90 71.80	52.00 61.90 71.80	1750.00 2190.00 2630.00
RRH 4x45 1900RRH (Sprint)	A	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	1.87 2.05 2.23	1.18 1.33 1.48	40.00 55.63 73.92
RRH 4x45 1900RRH (Sprint)	B	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	1.87 2.05 2.23	1.18 1.33 1.48	40.00 55.63 73.92
RRH 4x45 1900RRH (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	1.87 2.05 2.23	1.18 1.33 1.48	40.00 55.63 73.92
APXVTM14-ALU-I20 (Sprint)	A	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	7.13 7.84 8.50	5.51 6.69 7.73	85.40 146.02 213.80
APXVTM14-ALU-I20 (Sprint)	B	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	7.13 7.84 8.50	5.51 6.69 7.73	85.40 146.02 213.80
APXVTM14-ALU-I20 (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	7.13 7.84 8.50	5.51 6.69 7.73	85.40 146.02 213.80
TD-RRH8x20-25 (Sprint)	A	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	4.03 4.28 4.54	1.53 1.70 1.89	76.20 103.25 133.82
TD-RRH8x20-25 (Sprint)	B	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	4.03 4.28 4.54	1.53 1.70 1.89	76.20 103.25 133.82
TD-RRH8x20-25 (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	4.03 4.28 4.54	1.53 1.70 1.89	76.20 103.25 133.82
(2) RRH-2X50-800 (Sprint)	A	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.36 1.52 1.68	53.00 71.28 92.39
(2) RRH-2X50-800 (Sprint)	B	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.36 1.52 1.68	53.00 71.28 92.39
(2) RRH-2X50-800 (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	179.92	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.36 1.52 1.68	53.00 71.28 92.39
Pirod 12' T-Frame Sector Mount (1) (Verizon)	A	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Pirod 12' T-Frame Sector Mount (1) (Verizon)	B	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Pirod 12' T-Frame Sector Mount (1) (Verizon)	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
LNX-6514DS-T4M (Verizon)	A	From Leg	4.00 -6.00	0.0000	150.00	No Ice 1/2" Ice	8.20 8.66	5.42 5.88	31.30 81.94

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	A	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(Verizon)			-4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	A	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(Verizon)			0.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	A	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(Verizon)			4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	B	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(Verizon)			-6.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	B	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(Verizon)			-4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	B	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(Verizon)			0.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	B	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(Verizon)			4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	C	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(Verizon)			-6.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	C	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(Verizon)			-4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	C	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(Verizon)			0.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	C	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(Verizon)			4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
RRH 2x60-AWS	A	From Leg	4.00	0.0000	150.00	No Ice	1.73	1.33	50.00
(Verizon)			4.00			1/2" Ice	1.90	1.48	66.28
			0.00			1" Ice	2.07	1.64	85.25
RRH 2x60-AWS	B	From Leg	4.00	0.0000	150.00	No Ice	1.73	1.33	50.00
(Verizon)			4.00			1/2" Ice	1.90	1.48	66.28
			0.00			1" Ice	2.07	1.64	85.25
RRH 2x60-AWS	C	From Leg	4.00	0.0000	150.00	No Ice	1.73	1.33	50.00
(Verizon)			4.00			1/2" Ice	1.90	1.48	66.28
			0.00			1" Ice	2.07	1.64	85.25
RRH 2x60-PCS	A	From Leg	4.00	0.0000	150.00	No Ice	1.87	1.18	40.00
(Verizon)			-4.00			1/2" Ice	2.05	1.33	55.63
			0.00			1" Ice	2.23	1.48	73.92
RRH 2x60-PCS	B	From Leg	4.00	0.0000	150.00	No Ice	1.87	1.18	40.00
(Verizon)			-4.00			1/2" Ice	2.05	1.33	55.63
			0.00			1" Ice	2.23	1.48	73.92
RRH 2x60-PCS	C	From Leg	4.00	0.0000	150.00	No Ice	1.87	1.18	40.00
(Verizon)			-4.00			1/2" Ice	2.05	1.33	55.63
			0.00			1" Ice	2.23	1.48	73.92
DB-T1-6Z-8AB-0Z	A	From Leg	2.00	0.0000	150.00	No Ice	5.60	2.33	60.00
(Verizon)			0.00			1/2" Ice	5.92	2.56	80.00
			0.00			1" Ice	6.24	2.79	100.00
DB-T1-6Z-8AB-0Z	B	From Leg	2.00	0.0000	150.00	No Ice	5.60	2.33	60.00
(Verizon)			0.00			1/2" Ice	5.92	2.56	80.00

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
			0.00			1" Ice	6.24	2.79	100.00
NNVV-65B-R4	A	From Leg	3.00	0.0000	179.92	No Ice	12.75	7.65	113.90
(Sprint)			0.00			1/2" Ice	13.45	8.94	207.14
			0.00			1" Ice	14.12	10.07	309.10
NNVV-65B-R4	B	From Leg	3.00	0.0000	179.92	No Ice	12.75	7.65	113.90
(Sprint)			0.00			1/2" Ice	13.45	8.94	207.14
			0.00			1" Ice	14.12	10.07	309.10
NNVV-65B-R4	C	From Leg	3.00	0.0000	179.92	No Ice	12.75	7.65	113.90
(Sprint)			0.00			1/2" Ice	13.45	8.94	207.14
			0.00			1" Ice	14.12	10.07	309.10

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
3-ft Dish	C	Paraboloid w/o Radome	From Leg	4.00	Worst		156.00	3.00	No Ice	3.14	80.00
				0.00					1/2" Ice	3.41	100.00
				0.00					1" Ice	3.68	120.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	1.2D+1.6W (pattern 1) 0 deg - No Ice
4	1.2D+1.6W (pattern 2) 0 deg - No Ice
5	0.9 Dead+1.6 Wind 0 deg - No Ice
6	1.2 Dead+1.6 Wind 30 deg - No Ice
7	1.2D+1.6W (pattern 1) 30 deg - No Ice
8	1.2D+1.6W (pattern 2) 30 deg - No Ice
9	0.9 Dead+1.6 Wind 30 deg - No Ice
10	1.2 Dead+1.6 Wind 60 deg - No Ice
11	1.2D+1.6W (pattern 1) 60 deg - No Ice
12	1.2D+1.6W (pattern 2) 60 deg - No Ice
13	0.9 Dead+1.6 Wind 60 deg - No Ice
14	1.2 Dead+1.6 Wind 90 deg - No Ice
15	1.2D+1.6W (pattern 1) 90 deg - No Ice
16	1.2D+1.6W (pattern 2) 90 deg - No Ice
17	0.9 Dead+1.6 Wind 90 deg - No Ice
18	1.2 Dead+1.6 Wind 120 deg - No Ice
19	1.2D+1.6W (pattern 1) 120 deg - No Ice
20	1.2D+1.6W (pattern 2) 120 deg - No Ice
21	0.9 Dead+1.6 Wind 120 deg - No Ice
22	1.2 Dead+1.6 Wind 150 deg - No Ice

Comb. No.	Description
23	1.2D+1.6W (pattern 1) 150 deg - No Ice
24	1.2D+1.6W (pattern 2) 150 deg - No Ice
25	0.9 Dead+1.6 Wind 150 deg - No Ice
26	1.2 Dead+1.6 Wind 180 deg - No Ice
27	1.2D+1.6W (pattern 1) 180 deg - No Ice
28	1.2D+1.6W (pattern 2) 180 deg - No Ice
29	0.9 Dead+1.6 Wind 180 deg - No Ice
30	1.2 Dead+1.6 Wind 210 deg - No Ice
31	1.2D+1.6W (pattern 1) 210 deg - No Ice
32	1.2D+1.6W (pattern 2) 210 deg - No Ice
33	0.9 Dead+1.6 Wind 210 deg - No Ice
34	1.2 Dead+1.6 Wind 240 deg - No Ice
35	1.2D+1.6W (pattern 1) 240 deg - No Ice
36	1.2D+1.6W (pattern 2) 240 deg - No Ice
37	0.9 Dead+1.6 Wind 240 deg - No Ice
38	1.2 Dead+1.6 Wind 270 deg - No Ice
39	1.2D+1.6W (pattern 1) 270 deg - No Ice
40	1.2D+1.6W (pattern 2) 270 deg - No Ice
41	0.9 Dead+1.6 Wind 270 deg - No Ice
42	1.2 Dead+1.6 Wind 300 deg - No Ice
43	1.2D+1.6W (pattern 1) 300 deg - No Ice
44	1.2D+1.6W (pattern 2) 300 deg - No Ice
45	0.9 Dead+1.6 Wind 300 deg - No Ice
46	1.2 Dead+1.6 Wind 330 deg - No Ice
47	1.2D+1.6W (pattern 1) 330 deg - No Ice
48	1.2D+1.6W (pattern 2) 330 deg - No Ice
49	0.9 Dead+1.6 Wind 330 deg - No Ice
50	1.2 Dead+1.0 Ice+1.0 Temp
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
63	Dead+Wind 0 deg - Service
64	Dead+Wind 30 deg - Service
65	Dead+Wind 60 deg - Service
66	Dead+Wind 90 deg - Service
67	Dead+Wind 120 deg - Service
68	Dead+Wind 150 deg - Service
69	Dead+Wind 180 deg - Service
70	Dead+Wind 210 deg - Service
71	Dead+Wind 240 deg - Service
72	Dead+Wind 270 deg - Service
73	Dead+Wind 300 deg - Service
74	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	190 - 180	Leg	Max Tension	13	3573.28	-0.13	-0.03

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	18	-4136.06	-0.02	-0.02
			Max. Mx	34	-2491.62	-0.21	0.03
			Max. My	6	-262.35	-0.12	-0.26
			Max. Vy	42	439.90	-0.00	0.00
			Max. Vx	26	-542.21	-0.00	0.00
		Diagonal	Max Tension	26	1625.59	0.00	0.00
			Max. Compression	2	-1641.50	0.00	0.00
			Max. Mx	55	319.33	0.02	0.00
			Max. My	6	-436.13	-0.00	-0.01
			Max. Vy	55	-25.55	0.02	0.00
			Max. Vx	6	1.76	-0.00	-0.01
		Top Girt	Max Tension	35	373.18	0.00	0.00
			Max. Compression	11	-398.71	0.00	0.00
			Max. Mx	50	-18.53	-0.05	0.00
			Max. My	2	-159.59	0.00	-0.00
			Max. Vy	50	38.94	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T2	180 - 160	Leg	Max Tension	13	33389.95	-0.07	0.00
			Max. Compression	18	-37496.83	0.15	0.00
			Max. Mx	37	-36690.07	0.15	0.00
			Max. My	6	-1577.30	-0.00	0.19
			Max. Vy	3	1223.68	0.04	0.02
			Max. Vx	14	1181.00	0.00	-0.03
		Diagonal	Max Tension	46	3667.72	0.00	0.00
			Max. Compression	22	-3746.13	0.00	0.00
			Max. Mx	55	614.24	0.03	0.00
			Max. My	46	-2902.53	-0.00	-0.01
			Max. Vy	55	-27.64	0.03	0.00
			Max. Vx	26	2.44	0.00	0.00
T3	160 - 140	Leg	Max Tension	13	88548.76	-0.72	0.04
			Max. Compression	2	-97209.79	0.80	-0.01
			Max. Mx	27	57119.53	0.84	0.02
			Max. My	15	-2127.77	-0.02	-0.98
			Max. Vy	2	-836.56	0.83	-0.03
			Max. Vx	14	914.11	-0.02	0.82
		Diagonal	Max Tension	14	7413.12	0.00	0.00
			Max. Compression	34	-7773.15	0.00	0.00
			Max. Mx	18	5610.02	0.08	0.01
			Max. My	6	-6683.18	-0.05	-0.02
			Max. Vy	51	-38.47	0.05	0.00
			Max. Vx	6	7.46	-0.05	-0.02
T4	140 - 136	Leg	Max Tension	13	100672.36	-0.26	-0.01
			Max. Compression	2	-110059.45	0.21	0.00
			Max. Mx	18	-109875.81	0.80	0.05
			Max. My	46	-3335.55	-0.04	0.91
			Max. Vy	34	252.90	0.80	-0.04
			Max. Vx	26	293.55	0.40	0.06
		Diagonal	Max Tension	29	4364.20	0.00	0.00
			Max. Compression	2	-4647.16	0.00	0.00
			Max. Mx	14	2431.59	0.03	0.00
			Max. My	26	-3442.31	-0.01	0.01
			Max. Vy	53	26.16	0.02	0.00
			Max. Vx	26	-3.93	0.00	0.00
		Top Girt	Max Tension	10	403.31	0.00	0.00
			Max. Compression	18	-522.12	0.00	0.00
			Max. Mx	50	-12.44	-0.04	0.00
			Max. My	51	44.00	0.00	0.00
			Max. Vy	50	-38.09	0.00	0.00
			Max. Vx	51	-1.12	0.00	0.00
T5	136 - 132	Leg	Max Tension	13	109262.86	-0.51	0.01
			Max. Compression	2	-119419.10	0.55	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	18	-119164.58	0.55	0.01
			Max. My	46	-3586.05	-0.04	0.91
			Max. Vy	18	-111.89	0.55	0.01
			Max. Vx	14	269.01	-0.04	0.90
		Diagonal	Max Tension	22	4178.68	0.00	0.00
			Max. Compression	22	-4328.33	0.00	0.00
			Max. Mx	2	2751.40	0.03	-0.00
			Max. My	33	-3128.82	-0.02	0.01
			Max. Vy	51	-29.88	0.03	0.00
			Max. Vx	51	1.98	0.00	0.00
T6	132 - 128	Leg	Max Tension	13	116409.04	-0.51	0.01
			Max. Compression	2	-127046.54	0.49	0.00
			Max. Mx	18	-126672.12	0.55	0.01
			Max. My	14	-4461.22	-0.02	0.56
			Max. Vy	57	68.66	-0.17	0.00
			Max. Vx	14	-134.51	-0.02	0.56
		Diagonal	Max Tension	22	4018.55	0.00	0.00
			Max. Compression	22	-4219.26	0.00	0.00
			Max. Mx	10	2687.02	0.03	-0.00
			Max. My	26	-3766.98	-0.01	0.01
			Max. Vy	51	-30.23	0.03	-0.00
			Max. Vx	52	2.03	0.00	0.00
T7	128 - 124	Leg	Max Tension	13	123459.40	-0.49	0.01
			Max. Compression	2	-134711.98	-0.04	0.00
			Max. Mx	10	123025.43	-0.49	0.01
			Max. My	14	-4597.72	-0.02	0.56
			Max. Vy	18	160.98	0.49	0.00
			Max. Vx	14	50.89	-0.02	0.56
		Diagonal	Max Tension	22	4176.00	0.00	0.00
			Max. Compression	22	-4348.08	0.00	0.00
			Max. Mx	51	497.09	0.03	-0.00
			Max. My	51	-32.82	0.02	-0.00
			Max. Vy	51	-32.65	0.03	-0.00
			Max. Vx	51	2.06	0.00	0.00
T8	124 - 120	Leg	Max Tension	13	129795.07	0.00	0.00
			Max. Compression	2	-141574.41	1.67	0.00
			Max. Mx	2	-141470.11	1.67	0.00
			Max. My	6	-4409.57	-0.08	-0.94
			Max. Vy	2	1289.63	1.67	0.00
			Max. Vx	14	-488.13	-0.08	0.93
		Diagonal	Max Tension	25	4539.25	0.02	0.00
			Max. Compression	22	-4737.90	0.00	0.00
			Max. Mx	51	470.03	0.03	0.00
			Max. My	2	-4650.05	-0.01	-0.01
			Max. Vy	53	33.90	0.03	-0.00
			Max. Vx	51	-1.66	0.00	0.00
		Secondary Horizontal	Max Tension	14	1389.85	0.01	-0.01
			Max. Compression	17	-1362.46	0.00	0.01
			Max. Mx	55	297.96	0.02	0.00
			Max. My	6	-1327.08	0.01	0.01
			Max. Vy	55	-37.22	0.02	0.00
			Max. Vx	62	-3.31	0.00	0.00
T9	120 - 100	Leg	Max Tension	13	160940.49	0.88	-0.00
			Max. Compression	2	-176097.07	2.04	-0.01
			Max. Mx	2	-158119.14	2.30	0.00
			Max. My	14	-5214.84	-0.09	1.16
			Max. Vy	2	-1526.39	2.30	0.00
			Max. Vx	14	576.32	-0.09	1.16
		Diagonal	Max Tension	25	5367.43	0.02	0.00
			Max. Compression	2	-5614.05	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	51	634.60	0.05	0.00
			Max. My	2	-5333.43	-0.02	-0.01
			Max. Vy	53	47.21	0.05	-0.00
			Max. Vx	62	-2.42	0.00	0.00
		Secondary Horizontal	Max Tension	14	1885.53	0.01	-0.01
			Max. Compression	17	-1798.00	0.01	0.01
			Max. Mx	57	86.51	0.04	0.01
			Max. My	6	-1565.90	0.01	0.01
			Max. Vy	57	-47.90	0.04	0.01
			Max. Vx	62	-3.64	0.00	0.00
T10	100 - 80	Leg	Max Tension	13	191542.26	-0.93	0.02
			Max. Compression	2	-210136.09	0.03	-0.02
			Max. Mx	18	-185622.48	1.01	0.01
			Max. My	14	-7826.39	-0.04	1.30
			Max. Vy	34	-231.90	1.01	-0.02
			Max. Vx	14	-164.12	-0.04	1.30
		Diagonal	Max Tension	22	6053.55	0.00	0.00
			Max. Compression	22	-6333.17	0.00	0.00
			Max. Mx	51	919.02	0.09	-0.01
			Max. My	51	54.57	0.08	-0.01
			Max. Vy	53	66.14	0.09	-0.01
			Max. Vx	51	-3.76	0.00	0.00
T11	80 - 60	Leg	Max Tension	13	220139.98	1.50	0.01
			Max. Compression	2	-242746.16	-0.65	-0.01
			Max. Mx	2	-231560.82	3.38	0.01
			Max. My	14	-8883.89	-0.14	1.65
			Max. Vy	2	-1635.90	3.38	0.01
			Max. Vx	14	556.98	-0.14	1.65
		Diagonal	Max Tension	25	6679.14	0.05	0.00
			Max. Compression	22	-7041.22	0.00	0.00
			Max. Mx	51	776.40	0.12	0.01
			Max. My	62	-2011.51	0.10	-0.01
			Max. Vy	53	81.46	0.12	-0.01
			Max. Vx	62	-4.08	0.00	0.00
		Secondary Horizontal	Max Tension	6	1959.03	0.02	-0.00
			Max. Compression	9	-1896.54	0.02	0.01
			Max. Mx	55	389.75	0.10	0.02
			Max. My	52	-54.24	0.10	0.02
			Max. Vy	55	-79.04	0.10	0.02
			Max. Vx	62	-5.10	0.00	0.00
T12	60 - 40	Leg	Max Tension	45	251293.70	-1.29	-0.00
			Max. Compression	2	-279314.04	-0.31	-0.02
			Max. Mx	2	-255176.54	1.51	0.01
			Max. My	38	-11635.82	-0.05	-1.87
			Max. Vy	18	-410.73	1.50	-0.00
			Max. Vx	38	233.33	-0.05	-1.87
		Diagonal	Max Tension	22	7994.27	0.00	0.00
			Max. Compression	22	-8142.14	0.00	0.00
			Max. Mx	53	1803.23	0.16	0.02
			Max. My	51	-106.31	0.15	-0.02
			Max. Vy	53	102.50	0.16	0.02
			Max. Vx	51	-5.05	0.00	0.00
T13	40 - 20	Leg	Max Tension	45	275932.93	2.61	-0.03
			Max. Compression	2	-308847.27	-0.38	-0.03
			Max. Mx	2	-308658.42	4.79	0.00
			Max. My	14	-12496.64	-0.37	3.42
			Max. Vy	2	-1732.84	4.79	0.00
			Max. Vx	14	851.59	-0.37	3.42
		Diagonal	Max Tension	25	8483.97	0.13	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	18	-9165.75	0.00	0.00
			Max. Mx	51	2044.44	0.25	0.03
			Max. My	18	-9128.10	-0.04	0.03
			Max. Vy	61	125.82	0.24	0.03
			Max. Vx	62	-6.99	0.00	0.00
		Secondary Horizontal	Max Tension	38	1754.60	0.04	-0.01
			Max. Compression	17	-1781.03	0.04	0.02
			Max. Mx	54	936.63	0.18	0.03
			Max. My	52	-110.00	0.18	0.04
			Max. Vy	54	-114.89	0.18	0.03
			Max. Vx	62	-7.39	0.00	0.00
T14	20 - 0	Leg	Max Tension	13	303480.32	-2.31	0.02
			Max. Compression	2	-341705.20	0.00	-0.00
			Max. Mx	51	-134855.29	3.09	-0.00
			Max. My	14	-14801.09	-0.14	4.02
			Max. Vy	51	-604.37	-2.72	-0.01
			Max. Vx	14	516.26	-0.14	4.02
		Diagonal	Max Tension	25	9578.34	0.00	0.00
			Max. Compression	22	-10126.86	0.00	0.00
			Max. Mx	53	251.65	0.29	0.04
			Max. My	61	-3061.46	0.26	-0.04
			Max. Vy	53	126.35	0.29	0.04
			Max. Vx	61	-7.10	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	34	348203.88	29445.84	-17335.21
	Max. H_x	34	348203.88	29445.84	-17335.21
	Max. H_z	13	-310573.02	-26629.85	15638.28
	Min. Vert	13	-310573.02	-26629.85	15638.28
	Min. H_x	13	-310573.02	-26629.85	15638.28
	Min. H_z	34	348203.88	29445.84	-17335.21
Leg B	Max. Vert	18	348251.02	-29365.79	-17475.64
	Max. H_x	45	-310538.31	26544.24	15785.52
	Max. H_z	45	-310538.31	26544.24	15785.52
	Min. Vert	45	-310538.31	26544.24	15785.52
	Min. H_x	18	348251.02	-29365.79	-17475.64
	Min. H_z	18	348251.02	-29365.79	-17475.64
Leg A	Max. Vert	2	350399.26	161.40	34208.87
	Max. H_x	39	15940.85	3256.17	1022.78
	Max. H_z	2	350399.26	161.40	34208.87
	Min. Vert	29	-308929.14	-170.10	-30851.26
	Min. H_x	15	15940.86	-3255.25	1022.69
	Min. H_z	29	-308929.14	-170.10	-30851.26

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead Only	36225.53	0.00	-0.00	-19.75	-0.37	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	43470.64	0.00	-54311.37	-5527.21	-0.50	5.45
1.2D+1.6W (pattern 1) 0 deg - No Ice	43470.64	0.00	-54094.43	-5486.14	-0.48	4.77
1.2D+1.6W (pattern 2) 0 deg - No Ice	43470.64	0.00	-40973.82	-4078.39	-0.47	3.99
0.9 Dead+1.6 Wind 0 deg - No Ice	32602.98	0.01	-54311.37	-5512.15	-0.39	5.45
1.2 Dead+1.6 Wind 30 deg - No Ice	43470.64	26134.06	-45265.47	-4650.43	-2671.68	-1.57
1.2D+1.6W (pattern 1) 30 deg - No Ice	43470.64	26025.59	-45077.59	-4614.86	-2651.12	-2.35
1.2D+1.6W (pattern 2) 30 deg - No Ice	43470.64	19925.00	-34511.11	-3458.48	-1983.46	-4.01
0.9 Dead+1.6 Wind 30 deg - No Ice	32602.98	26134.05	-45265.48	-4636.77	-2667.13	-1.55
1.2 Dead+1.6 Wind 60 deg - No Ice	43470.64	44675.63	-25793.49	-2668.18	-4580.62	-7.93
1.2D+1.6W (pattern 1) 60 deg - No Ice	43470.64	44487.76	-25685.02	-2647.65	-4545.04	-8.60
1.2D+1.6W (pattern 2) 60 deg - No Ice	43470.64	34186.70	-19737.70	-1992.08	-3409.55	-10.68
0.9 Dead+1.6 Wind 60 deg - No Ice	32602.98	44675.63	-25793.49	-2657.80	-4572.89	-7.89
1.2 Dead+1.6 Wind 90 deg - No Ice	43470.64	52268.08	-0.02	-23.86	-5342.82	-12.66
1.2D+1.6W (pattern 1) 90 deg - No Ice	43470.64	52051.14	-0.02	-23.87	-5301.75	-13.05
1.2D+1.6W (pattern 2) 90 deg - No Ice	43471.12	39850.27	-0.37	-23.86	-3966.45	-14.97
0.9 Dead+1.6 Wind 90 deg - No Ice	32602.98	52268.08	-0.01	-17.88	-5333.84	-12.61
1.2 Dead+1.6 Wind 120 deg - No Ice	43470.64	47035.03	27155.68	2727.83	-4766.54	-14.51
1.2D+1.6W (pattern 1) 120 deg - No Ice	43470.64	46847.15	27047.22	2707.29	-4730.97	-14.51
1.2D+1.6W (pattern 2) 120 deg - No Ice	43470.64	35484.37	20486.91	2003.42	-3511.83	-15.80
0.9 Dead+1.6 Wind 120 deg - No Ice	32602.98	47035.03	27155.68	2729.27	-4758.57	-14.47
1.2 Dead+1.6 Wind 150 deg - No Ice	43470.64	26134.03	45265.48	4602.80	-2671.68	-11.04
1.2D+1.6W (pattern 1) 150 deg - No Ice	43470.64	26025.56	45077.61	4567.23	-2651.13	-10.65
1.2D+1.6W (pattern 2) 150 deg - No Ice	43470.64	19925.00	34511.11	3410.83	-1983.48	-10.96
0.9 Dead+1.6 Wind 150 deg - No Ice	32602.98	26134.02	45265.49	4601.09	-2667.13	-11.02
1.2 Dead+1.6 Wind 180 deg - No Ice	43470.64	0.00	51586.98	5264.91	-0.51	-5.47
1.2D+1.6W (pattern 1) 180 deg - No Ice	43470.64	0.00	51370.04	5223.84	-0.49	-4.80
1.2D+1.6W (pattern 2) 180 deg - No Ice	43470.64	0.00	39475.40	3912.67	-0.47	-4.02
0.9 Dead+1.6 Wind 180 deg - No Ice	32602.98	0.00	51586.97	5262.09	-0.39	-5.47
1.2 Dead+1.6 Wind 210 deg - No Ice	43470.64	-26134.01	45265.49	4602.84	2670.69	1.57
1.2D+1.6W (pattern 1) 210 deg - No Ice	43470.64	-26025.54	45077.62	4567.26	2650.16	2.35

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
1.2D+1.6W (pattern 2) 210 deg - No Ice	43470.64	-19925.00	34511.11	3410.85	1982.54	4.01
0.9 Dead+1.6 Wind 210 deg - No Ice	32602.98	-26134.03	45265.49	4601.14	2666.37	1.55
1.2 Dead+1.6 Wind 240 deg - No Ice	43470.64	-47035.03	27155.68	2727.88	4765.62	9.06
1.2D+1.6W (pattern 1) 240 deg - No Ice	43470.64	-46847.15	27047.22	2707.33	4730.06	9.73
1.2D+1.6W (pattern 2) 240 deg - No Ice	43470.64	-35484.37	20486.91	2003.45	3510.92	11.80
0.9 Dead+1.6 Wind 240 deg - No Ice	32602.98	-47035.03	27155.68	2729.32	4757.87	9.02
1.2 Dead+1.6 Wind 270 deg - No Ice	43470.64	-52268.08	-0.02	-23.86	5341.93	12.66
1.2D+1.6W (pattern 1) 270 deg - No Ice	43470.64	-52051.14	-0.02	-23.87	5300.86	13.05
1.2D+1.6W (pattern 2) 270 deg - No Ice	43471.12	-39850.27	-0.37	-23.86	3965.56	14.97
0.9 Dead+1.6 Wind 270 deg - No Ice	32602.98	-52268.08	-0.01	-17.88	5333.17	12.61
1.2 Dead+1.6 Wind 300 deg - No Ice	43470.64	-44675.63	-25793.49	-2668.23	4579.71	13.41
1.2D+1.6W (pattern 1) 300 deg - No Ice	43470.64	-44487.76	-25685.02	-2647.69	4544.14	13.41
1.2D+1.6W (pattern 2) 300 deg - No Ice	43470.64	-34186.70	-19737.70	-1992.11	3408.65	14.70
0.9 Dead+1.6 Wind 300 deg - No Ice	32602.98	-44675.63	-25793.49	-2657.85	4572.20	13.37
1.2 Dead+1.6 Wind 330 deg - No Ice	43470.64	-26134.04	-45265.48	-4650.48	2670.72	11.04
1.2D+1.6W (pattern 1) 330 deg - No Ice	43470.64	-26025.58	-45077.61	-4614.91	2650.19	10.65
1.2D+1.6W (pattern 2) 330 deg - No Ice	43470.64	-19925.00	-34511.11	-3458.50	1982.54	10.96
0.9 Dead+1.6 Wind 330 deg - No Ice	32602.98	-26134.05	-45265.47	-4636.82	2666.39	11.02
1.2 Dead+1.0 Ice+1.0 Temp	184859.53	0.00	0.00	-165.38	-3.77	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	184859.53	0.00	-12377.31	-1387.99	-3.77	1.18
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	184859.53	6139.54	-10634.00	-1219.49	-612.30	0.23
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	184859.53	10605.65	-6123.17	-773.10	-1056.21	-0.78
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	184859.53	12279.09	-0.00	-165.48	-1220.84	-1.59
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	184859.53	10719.07	6188.66	445.78	-1062.51	-2.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	184859.53	6139.54	10634.00	888.54	-612.31	-1.82
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	184859.53	-0.00	12246.34	1049.79	-3.79	-1.18
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	184859.53	-6139.54	10634.00	888.54	604.74	-0.23
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	184859.53	-10719.07	6188.66	445.78	1054.95	0.82
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	184859.53	-12279.09	-0.00	-165.48	1213.29	1.59
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	184859.53	-10605.64	-6123.17	-773.10	1048.67	1.96
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	184859.53	-6139.54	-10634.00	-1219.49	604.77	1.82

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead+Wind 0 deg - Service	36225.53	0.00	-11745.54	-1208.81	-0.37	1.18
Dead+Wind 30 deg - Service	36225.53	5651.82	-9789.25	-1019.38	-577.46	-0.34
Dead+Wind 60 deg - Service	36225.53	9661.68	-5578.18	-591.13	-989.87	-1.71
Dead+Wind 90 deg - Service	36225.53	11303.65	0.00	-19.84	-1154.54	-2.72
Dead+Wind 120 deg - Service	36225.53	10171.94	5872.77	574.65	-1030.05	-3.13
Dead+Wind 150 deg - Service	36225.53	5651.82	9789.25	979.70	-577.46	-2.39
Dead+Wind 180 deg - Service	36225.53	0.00	11156.35	1122.74	-0.37	-1.18
Dead+Wind 210 deg - Service	36225.53	-5651.82	9789.25	979.71	576.71	0.34
Dead+Wind 240 deg - Service	36225.53	-10171.94	5872.77	574.65	1029.31	1.95
Dead+Wind 270 deg - Service	36225.53	-11303.65	0.00	-19.84	1153.80	2.72
Dead+Wind 300 deg - Service	36225.53	-9661.68	-5578.18	-591.13	989.13	2.89
Dead+Wind 330 deg - Service	36225.53	-5651.82	-9789.25	-1019.38	576.72	2.39

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-36225.53	-0.00	-0.00	36225.53	0.00	0.000%
2	0.00	-43470.64	-54311.37	-0.00	43470.64	54311.37	0.000%
3	0.00	-43470.64	-54094.44	-0.00	43470.64	54094.43	0.000%
4	0.00	-43470.64	-40973.82	-0.00	43470.64	40973.82	0.000%
5	0.00	-32602.98	-54311.37	-0.01	32602.98	54311.37	0.000%
6	26134.03	-43470.64	-45265.47	-26134.06	43470.64	45265.47	0.000%
7	26025.57	-43470.64	-45077.60	-26025.59	43470.64	45077.59	0.000%
8	19925.00	-43470.64	-34511.11	-19925.00	43470.64	34511.11	0.000%
9	26134.03	-32602.98	-45265.47	-26134.05	32602.98	45265.48	0.000%
10	44675.62	-43470.64	-25793.48	-44675.63	43470.64	25793.49	0.000%
11	44487.75	-43470.64	-25685.02	-44487.76	43470.64	25685.02	0.000%
12	34186.69	-43470.64	-19737.70	-34186.70	43470.64	19737.70	0.000%
13	44675.62	-32602.98	-25793.48	-44675.63	32602.98	25793.49	0.000%
14	52268.07	-43470.64	0.00	-52268.08	43470.64	0.02	0.000%
15	52051.13	-43470.64	0.00	-52051.14	43470.64	0.02	0.000%
16	39850.00	-43470.64	0.00	-39850.27	43471.12	0.37	0.001%
17	52268.07	-32602.98	0.00	-52268.08	32602.98	0.01	0.000%
18	47035.03	-43470.64	27155.69	-47035.03	43470.64	-27155.68	0.000%
19	46847.16	-43470.64	27047.22	-46847.15	43470.64	-27047.22	0.000%
20	35484.37	-43470.64	20486.91	-35484.37	43470.64	-20486.91	0.000%
21	47035.03	-32602.98	27155.69	-47035.03	32602.98	-27155.68	0.000%
22	26134.03	-43470.64	45265.47	-26134.03	43470.64	-45265.48	0.000%
23	26025.57	-43470.64	45077.60	-26025.56	43470.64	-45077.61	0.000%
24	19925.00	-43470.64	34511.11	-19925.00	43470.64	-34511.11	0.000%
25	26134.03	-32602.98	45265.47	-26134.02	32602.98	-45265.49	0.000%
26	-0.00	-43470.64	51586.97	-0.00	43470.64	-51586.98	0.000%
27	-0.00	-43470.64	51370.03	-0.00	43470.64	-51370.04	0.000%
28	-0.00	-43470.64	39475.39	-0.00	43470.64	-39475.40	0.000%
29	-0.00	-32602.98	51586.97	-0.00	32602.98	-51586.97	0.000%
30	-26134.03	-43470.64	45265.47	26134.01	43470.64	-45265.49	0.000%
31	-26025.57	-43470.64	45077.60	26025.54	43470.64	-45077.62	0.000%
32	-19925.00	-43470.64	34511.11	19925.00	43470.64	-34511.11	0.000%
33	-26134.03	-32602.98	45265.47	26134.03	32602.98	-45265.49	0.000%
34	-47035.03	-43470.64	27155.69	47035.03	43470.64	-27155.68	0.000%
35	-46847.16	-43470.64	27047.22	46847.15	43470.64	-27047.22	0.000%
36	-35484.37	-43470.64	20486.91	35484.37	43470.64	-20486.91	0.000%
37	-47035.03	-32602.98	27155.69	47035.03	32602.98	-27155.68	0.000%
38	-52268.07	-43470.64	0.00	52268.08	43470.64	0.02	0.000%
39	-52051.13	-43470.64	0.00	52051.14	43470.64	0.02	0.000%
40	-39850.00	-43470.64	-0.00	39850.27	43471.12	0.37	0.001%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
41	-52268.07	-32602.98	0.00	52268.08	32602.98	0.01	0.000%
42	-44675.62	-43470.64	-25793.48	44675.63	43470.64	25793.49	0.000%
43	-44487.75	-43470.64	-25685.02	44487.76	43470.64	25685.02	0.000%
44	-34186.69	-43470.64	-19737.70	34186.70	43470.64	19737.70	0.000%
45	-44675.62	-32602.98	-25793.48	44675.63	32602.98	25793.49	0.000%
46	-26134.03	-43470.64	-45265.47	26134.04	43470.64	45265.48	0.000%
47	-26025.57	-43470.64	-45077.60	26025.58	43470.64	45077.61	0.000%
48	-19925.00	-43470.64	-34511.11	19925.00	43470.64	34511.11	0.000%
49	-26134.03	-32602.98	-45265.47	26134.05	32602.98	45265.47	0.000%
50	0.00	-184859.53	-0.00	-0.00	184859.53	-0.00	0.000%
51	0.00	-184859.53	-12377.31	-0.00	184859.53	12377.31	0.000%
52	6139.54	-184859.53	-10634.00	-6139.54	184859.53	10634.00	0.000%
53	10605.65	-184859.53	-6123.17	-10605.65	184859.53	6123.17	0.000%
54	12279.09	-184859.53	-0.00	-12279.09	184859.53	0.00	0.000%
55	10719.07	-184859.53	6188.66	-10719.07	184859.53	-6188.66	0.000%
56	6139.54	-184859.53	10634.00	-6139.54	184859.53	-10634.00	0.000%
57	-0.00	-184859.53	12246.35	0.00	184859.53	-12246.34	0.000%
58	-6139.54	-184859.53	10634.00	6139.54	184859.53	-10634.00	0.000%
59	-10719.07	-184859.53	6188.66	10719.07	184859.53	-6188.66	0.000%
60	-12279.09	-184859.53	-0.00	12279.09	184859.53	0.00	0.000%
61	-10605.65	-184859.53	-6123.17	10605.64	184859.53	6123.17	0.000%
62	-6139.54	-184859.53	-10634.00	6139.54	184859.53	10634.00	0.000%
63	0.00	-36225.53	-11745.54	-0.00	36225.53	11745.54	0.000%
64	5651.82	-36225.53	-9789.25	-5651.82	36225.53	9789.25	0.000%
65	9661.68	-36225.53	-5578.18	-9661.68	36225.53	5578.18	0.000%
66	11303.65	-36225.53	0.00	-11303.65	36225.53	-0.00	0.000%
67	10171.94	-36225.53	5872.77	-10171.94	36225.53	-5872.77	0.000%
68	5651.82	-36225.53	9789.25	-5651.82	36225.53	-9789.25	0.000%
69	0.00	-36225.53	11156.35	-0.00	36225.53	-11156.35	0.000%
70	-5651.82	-36225.53	9789.25	5651.82	36225.53	-9789.25	0.000%
71	-10171.94	-36225.53	5872.77	10171.94	36225.53	-5872.77	0.000%
72	-11303.65	-36225.53	-0.00	11303.65	36225.53	-0.00	0.000%
73	-9661.68	-36225.53	-5578.18	9661.68	36225.53	5578.18	0.000%
74	-5651.82	-36225.53	-9789.25	5651.82	36225.53	9789.25	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	0.00000069
3	Yes	4	0.00000001	0.00000069
4	Yes	4	0.00000001	0.00000125
5	Yes	4	0.00000001	0.00000077
6	Yes	4	0.00000001	0.00000220
7	Yes	4	0.00000001	0.00000207
8	Yes	4	0.00000001	0.00000161
9	Yes	4	0.00000001	0.00000203
10	Yes	4	0.00000001	0.00000135
11	Yes	4	0.00000001	0.00000138
12	Yes	4	0.00000001	0.00000161
13	Yes	4	0.00000001	0.00000103
14	Yes	4	0.00000001	0.00000235
15	Yes	4	0.00000001	0.00000232
16	Yes	4	0.00000001	0.00000183
17	Yes	4	0.00000001	0.00000213

18	Yes	4	0.00000001	0.00000074
19	Yes	4	0.00000001	0.00000076
20	Yes	4	0.00000001	0.00000128
21	Yes	4	0.00000001	0.00000078
22	Yes	4	0.00000001	0.00000194
23	Yes	4	0.00000001	0.00000191
24	Yes	4	0.00000001	0.00000155
25	Yes	4	0.00000001	0.00000187
26	Yes	4	0.00000001	0.00000136
27	Yes	4	0.00000001	0.00000137
28	Yes	4	0.00000001	0.00000162
29	Yes	4	0.00000001	0.00000103
30	Yes	4	0.00000001	0.00000220
31	Yes	4	0.00000001	0.00000206
32	Yes	4	0.00000001	0.00000162
33	Yes	4	0.00000001	0.00000203
34	Yes	4	0.00000001	0.00000066
35	Yes	4	0.00000001	0.00000071
36	Yes	4	0.00000001	0.00000127
37	Yes	4	0.00000001	0.00000074
38	Yes	4	0.00000001	0.00000235
39	Yes	4	0.00000001	0.00000233
40	Yes	4	0.00000001	0.00000183
41	Yes	4	0.00000001	0.00000213
42	Yes	4	0.00000001	0.00000138
43	Yes	4	0.00000001	0.00000140
44	Yes	4	0.00000001	0.00000162
45	Yes	4	0.00000001	0.00000104
46	Yes	4	0.00000001	0.00000195
47	Yes	4	0.00000001	0.00000193
48	Yes	4	0.00000001	0.00000155
49	Yes	4	0.00000001	0.00000188
50	Yes	4	0.00000001	0.00001589
51	Yes	4	0.00000001	0.00010841
52	Yes	4	0.00000001	0.00010844
53	Yes	4	0.00000001	0.00010755
54	Yes	4	0.00000001	0.00010484
55	Yes	4	0.00000001	0.00010143
56	Yes	4	0.00000001	0.00009877
57	Yes	4	0.00000001	0.00009770
58	Yes	4	0.00000001	0.00009782
59	Yes	4	0.00000001	0.00009995
60	Yes	4	0.00000001	0.00010336
61	Yes	4	0.00000001	0.00010643
62	Yes	4	0.00000001	0.00010784
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	4	0.00000001	0.00000001
68	Yes	4	0.00000001	0.00000001
69	Yes	4	0.00000001	0.00000001
70	Yes	4	0.00000001	0.00000001
71	Yes	4	0.00000001	0.00000001
72	Yes	4	0.00000001	0.00000001
73	Yes	4	0.00000001	0.00000001
74	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	8.094	63	0.4409	0.0404
T2	180 - 160	7.173	63	0.4363	0.0361
T3	160 - 140	5.389	63	0.3964	0.0271
T4	140 - 136	3.831	63	0.3273	0.0218
T5	136 - 132	3.559	63	0.3101	0.0188
T6	132 - 128	3.302	63	0.2930	0.0163
T7	128 - 124	3.059	63	0.2760	0.0145
T8	124 - 120	2.831	63	0.2591	0.0131
T9	120 - 100	2.616	63	0.2425	0.0118
T10	100 - 80	1.718	63	0.1753	0.0072
T11	80 - 60	1.058	63	0.1286	0.0052
T12	60 - 40	0.595	63	0.0832	0.0036
T13	40 - 20	0.274	63	0.0587	0.0022
T14	20 - 0	0.076	63	0.0269	0.0011

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	(2) Obstruction Lights	63	8.094	0.4409	0.0404	254988
190.00	3' Yagi	63	8.094	0.4409	0.0404	254988
188.00	Pirod 4' Side Mount Standoff (1)	63	7.910	0.4404	0.0396	254988
187.00	PD1142-2A	63	7.818	0.4401	0.0391	254988
179.92	Rohn 6'x14' Boom Gate (3)	63	7.166	0.4362	0.0360	110249
156.00	3-ft Dish	63	5.055	0.3847	0.0263	18050
150.00	Pirod 12' T-Frame Sector Mount (1)	63	4.573	0.3653	0.0255	16111
144.00	Paraflector	63	4.118	0.3434	0.0240	14544
142.00	DB230-2A	63	3.973	0.3355	0.0230	13966
140.00	Paraflector	63	3.831	0.3273	0.0218	13142
136.00	Single Dipole	63	3.559	0.3101	0.0188	12175
113.00	Pirod 4' Side Mount Standoff (1)	63	2.270	0.2158	0.0098	16749
110.00	PD320	63	2.133	0.2055	0.0091	17597
109.00	Pirod 4' Side Mount Standoff (1)	63	2.088	0.2021	0.0088	17900
103.00	Pirod 4' Side Mount Standoff (1)	63	1.836	0.1836	0.0076	19941
102.00	GPS	63	1.796	0.1808	0.0074	20292
94.00	DB212 Single Dipole	63	1.497	0.1604	0.0065	21817
92.00	15-ft Single Dipole	63	1.428	0.1557	0.0062	22040
74.00	PD320	63	0.901	0.1140	0.0047	26163
70.00	15-ft Single Dipole	63	0.805	0.1043	0.0044	28317
50.00	15-ft Single Dipole	63	0.419	0.0699	0.0029	38780
32.00	DB212 Single Dipole	63	0.179	0.0468	0.0017	37204
31.00	15-ft Single Dipole	63	0.169	0.0451	0.0017	36633
17.00	Pirod 4' Side Mount Standoff (1)	63	0.059	0.0223	0.0009	37019

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	37.145	2	2.0279	0.1868
T2	180 - 160	32.910	2	2.0069	0.1668

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T3	160 - 140	24.706	2	1.8221	0.1251
T4	140 - 136	17.551	2	1.5008	0.1009
T5	136 - 132	16.301	2	1.4214	0.0870
T6	132 - 128	15.126	2	1.3426	0.0754
T7	128 - 124	14.012	2	1.2643	0.0672
T8	124 - 120	12.965	2	1.1869	0.0607
T9	120 - 100	11.980	2	1.1106	0.0547
T10	100 - 80	7.867	2	0.8024	0.0378
T11	80 - 60	4.846	2	0.5883	0.0270
T12	60 - 40	2.725	2	0.3804	0.0187
T13	40 - 20	1.257	2	0.2683	0.0113
T14	20 - 0	0.352	2	0.1227	0.0056

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	(2) Obstruction Lights	2	37.145	2.0279	0.1868	50539
190.00	3' Yagi	2	37.145	2.0279	0.1868	50539
188.00	Pirod 4' Side Mount Standoff (1)	2	36.297	2.0257	0.1830	50539
187.00	PD1142-2A	2	35.872	2.0245	0.1811	50539
179.92	Rohn 6'x14' Boom Gate (3)	2	32.875	2.0065	0.1666	23824
156.00	3-ft Dish	2	23.169	1.7677	0.1218	3911
150.00	Pirod 12' T-Frame Sector Mount (1)	2	20.956	1.6775	0.1182	3484
144.00	Paraflector	2	18.868	1.5757	0.1108	3140
142.00	DB230-2A	2	18.201	1.5390	0.1065	3016
140.00	Paraflector	2	17.551	1.5008	0.1009	2844
136.00	Single Dipole	2	16.301	1.4214	0.0870	2652
113.00	Pirod 4' Side Mount Standoff (1)	2	10.396	0.9880	0.0476	3652
110.00	PD320	2	9.767	0.9404	0.0452	3838
109.00	Pirod 4' Side Mount Standoff (1)	2	9.564	0.9251	0.0444	3905
103.00	Pirod 4' Side Mount Standoff (1)	2	8.408	0.8404	0.0399	4353
102.00	GPS	2	8.225	0.8274	0.0392	4430
94.00	DB212 Single Dipole	2	6.856	0.7338	0.0341	4764
92.00	15-ft Single Dipole	2	6.540	0.7126	0.0330	4812
74.00	PD320	2	4.126	0.5214	0.0244	5714
70.00	15-ft Single Dipole	2	3.689	0.4769	0.0227	6186
50.00	15-ft Single Dipole	2	1.920	0.3196	0.0148	8476
32.00	DB212 Single Dipole	2	0.823	0.2138	0.0089	8136
31.00	15-ft Single Dipole	2	0.775	0.2063	0.0086	8012
17.00	Pirod 4' Side Mount Standoff (1)	2	0.272	0.1018	0.0048	8106

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	190	Leg	A325N	0.6250	4	893.32	20708.70	0.043 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	1625.59	5811.33	0.280 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Top Girt	A325N	0.6250	1	373.18	5811.33	0.064 ✔	1	Member Block Shear
T2	180	Leg	A325N	0.7500	4	8347.49	29820.60	0.280 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3667.72	5811.33	0.631 ✔	1	Member Block Shear
T3	160	Leg	A325N	0.8750	4	22141.20	40589.10	0.545 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7413.12	9107.81	0.814 ✔	1	Member Block Shear
T4	140	Diagonal	A325N	0.6250	1	4364.20	5811.33	0.751 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	1	403.31	5811.33	0.069 ✔	1	Member Block Shear
T5	136	Diagonal	A325N	0.6250	1	4178.68	5811.33	0.719 ✔	1	Member Block Shear
T6	132	Diagonal	A325N	0.6250	1	4018.55	5811.33	0.692 ✔	1	Member Block Shear
T7	128	Diagonal	A325N	0.6250	1	4176.00	5811.33	0.719 ✔	1	Member Block Shear
T8	124	Leg	A325N	1.0000	4	32414.30	53014.40	0.611 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4539.25	5811.33	0.781 ✔	1	Member Block Shear
T9	120	Leg	A325N	1.0000	4	40195.00	53014.40	0.758 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5367.43	6830.86	0.786 ✔	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	2	942.76	8224.22	0.115 ✔	1	Member Block Shear
T10	100	Leg	A325N	1.0000	4	47885.60	53014.40	0.903 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6053.55	7830.00	0.773 ✔	1	Member Bearing
T11	80	Leg	A325N	1.0000	6	36655.00	53014.40	0.691 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6679.14	10440.00	0.640 ✔	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	2	979.51	9583.59	0.102 ✔	1	Member Block Shear
T12	60	Leg	A325N	1.0000	6	41882.30	53014.40	0.790 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7994.27	11700.00	0.683 ✔	1	Member Bearing
T13	40	Leg	A325N	1.0000	8	34455.10	53014.40	0.650 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	9165.75	12425.20	0.738 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	2	890.52	12425.20	0.072 ✔	1	Bolt Shear
T14	20	Leg	A325N	1.0000	8	37935.00	53014.40	0.716 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9578.34	14137.50	0.678 ✔	1	Member Bearing

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	190 - 180	ROHN 2 STD	10.00	5.00	76.2 K=1.00	1.0745	-4136.06	31617.20	0.131 [1] ✔
T2	180 - 160	ROHN 2.5 STD	20.00	4.00	50.7 K=1.00	1.7040	-37496.80	63560.30	0.590 [1] ✔
T3	160 - 140	ROHN 3 EH	20.00	4.00	42.2 K=1.00	3.0159	-97209.80	119117.00	0.816 [1] ✔
T4	140 - 136	ROHN 3.5 EH	4.01	4.01	36.8 K=1.00	3.6784	-110059.00	149924.00	0.734 [1] ✔
T5	136 - 132	ROHN 3.5 EH	4.01	4.01	36.8 K=1.00	3.6784	-119419.00	149924.00	0.797 [1] ✔
T6	132 - 128	ROHN 3.5 EH	4.01	4.01	36.8 K=1.00	3.6784	-127047.00	149924.00	0.847 [1] ✔
T7	128 - 124	ROHN 3.5 EH	4.01	4.01	36.8 K=1.00	3.6784	-134712.00	149924.00	0.899 [1] ✔
T8	124 - 120	ROHN 3.5 EH	4.01	2.07	19.0 K=1.00	3.6784	-141541.00	161229.00	0.878 [1] ✔
T9	120 - 100	ROHN 4 EH	20.04	2.58	21.0 K=1.00	4.4074	-176093.00	192061.00	0.917 [1] ✔
T10	100 - 80	ROHN 5 EH	20.03	6.68	43.6 K=1.00	6.1120	-210136.00	239388.00	0.878 [1] ✔
T11	80 - 60	ROHN 5 EH	20.04	3.43	22.4 K=1.00	6.1120	-242746.00	265136.00	0.916 [1] ✔
T12	60 - 40	6.0 EHS + HALF HSS7.625X0.375 (MOD)	20.03	6.68	37.1 K=1.00	10.9922	-279314.00	447204.00	0.625 [1] ✔
T13	40 - 20	ROHN 6 EH	20.04	5.17	28.3 K=1.00	8.4049	-308847.00	356741.00	0.866 [1] ✔
T14	20 - 0	ROHN 8 EHS	20.03	10.02	41.2 K=1.00	9.7193	-341705.00	386395.00	0.884 [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 $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	6.83	3.15	112.5 K=1.02	0.6211	-1641.50	10333.60	0.159 [1] ✔
T2	180 - 160	L1 3/4x1 3/4x3/16	6.16	2.81	103.5 K=1.06	0.6211	-3746.13	11446.10	0.327 [1] ✔
T3	160 - 140	L2x2x1/4	6.18	2.78	94.1 K=1.10	0.9380	-7773.15	19074.20	0.408 [1] ✔
T4	140 - 136	L1 3/4x1 3/4x3/16	6.35	2.97	107.8 K=1.04	0.6211	-4647.16	10913.00	0.426 [1] ✔
T5	136 - 132	L1 3/4x1 3/4x3/16	6.67	3.13	112.1 K=1.02	0.6211	-4328.33	10385.60	0.417 [1] ✔
T6	132 - 128	L1 3/4x1 3/4x3/16	7.00	3.30	116.5 K=1.01	0.6211	-4219.26	9851.90	0.428 [1] ✔
T7	128 - 124	L1 3/4x1 3/4x3/16	7.34	3.47	121.3 K=1.00	0.6211	-4348.08	9277.95	0.469 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	124 - 120	L1 3/4x1 3/4x3/16	7.68	3.64	127.4 K=1.00	0.6211	-4737.90	8568.38	0.553 [1]
T9	120 - 100	L2x2x3/16	9.92	4.78	145.4 K=1.00	0.7150	-5323.69	7637.07	0.697 [1]
T10	100 - 80	L2 1/2x2 1/2x3/16	12.44	6.02	146.0 K=1.00	0.9020	-6333.17	9563.61	0.662 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	14.23	6.93	169.4 K=1.00	1.1900	-7041.22	9369.88	0.751 [1]
T12	60 - 40	L3x3x1/4	15.99	7.70	156.1 K=1.00	1.4400	-8142.14	13352.40	0.610 [1]
T13	40 - 20	L3 1/2x3 1/2x1/4	19.26	9.50	164.3 K=1.00	1.6900	-8897.70	14151.80	0.629 [1]
T14	20 - 0	L3 1/2x3 1/2x1/4	21.03	10.26	177.3 K=1.00	1.6900	-10126.90	12139.10	0.834 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal 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 $\frac{P_u}{\phi P_n}$
T8	124 - 120	L2x2x1/4	6.55	6.22	121.5 K=0.99	0.9380	-1362.46	13965.80	0.098 [1]
T9	120 - 100	L2x2x1/4	7.53	6.76	128.1 K=0.96	0.9380	-1798.00	12814.60	0.140 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	11.86	11.01	151.8 K=0.88	1.1900	-1896.54	11663.90	0.163 [1]
T13	40 - 20	L3x3x5/16	16.44	15.49	170.2 K=0.84	1.7800	-1781.03	13884.10	0.128 [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	190 - 180	L1 3/4x1 3/4x3/16	4.65	4.21	147.2 K=1.00	0.6211	-398.71	6477.07	0.062 [1]
T4	140 - 136	L1 3/4x1 3/4x3/16	4.72	4.19	146.4 K=1.00	0.6211	-522.12	6550.73	0.080 [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	190 - 180	ROHN 2 STD	10.00	5.00	76.2	1.0745	3573.28	48353.90	0.074 [1] ✔
T2	180 - 160	ROHN 2.5 STD	20.00	4.00	50.7	1.7040	33390.00	76682.30	0.435 [1] ✔
T3	160 - 140	ROHN 3 EH	20.00	4.00	42.2	3.0159	88564.90	135717.00	0.653 [1] ✔
T4	140 - 136	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	100672.00	165529.00	0.608 [1] ✔
T5	136 - 132	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	109263.00	165529.00	0.660 [1] ✔
T6	132 - 128	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	116409.00	165529.00	0.703 [1] ✔
T7	128 - 124	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	123459.00	165529.00	0.746 [1] ✔
T8	124 - 120	ROHN 3.5 EH	4.01	1.94	17.8	3.6784	129795.00	165529.00	0.784 [1] ✔
T9	120 - 100	ROHN 4 EH	20.04	2.43	19.7	4.4074	160940.00	198335.00	0.811 [1] ✔
T10	100 - 80	ROHN 5 EH	20.03	6.68	43.6	6.1120	191542.00	275039.00	0.696 [1] ✔
T11	80 - 60	ROHN 5 EH	20.04	3.25	21.2	6.1120	220140.00	275039.00	0.800 [1] ✔
T12	60 - 40	6.0 EHS + HALF HSS7.625X0.375 (MOD)	20.03	6.68	37.1	10.9922	251294.00	494649.00	0.508 [1] ✔
T13	40 - 20	ROHN 6 EH	20.04	4.85	26.5	8.4049	275933.00	378222.00	0.730 [1] ✔
T14	20 - 0	ROHN 8 EHS	20.03	10.02	41.2	9.7193	303480.00	437369.00	0.694 [1] ✔

[1] $P_u / \phi P_n$ 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	190 - 180	L1 3/4x1 3/4x3/16	6.83	3.15	73.1	0.3604	1625.59	15675.30	0.104 [1] ✔
T2	180 - 160	L1 3/4x1 3/4x3/16	6.16	2.81	65.4	0.3604	3667.72	15675.30	0.234 [1] ✔
T3	160 - 140	L2x2x1/4	6.18	2.78	57.2	0.5629	7413.12	24485.10	0.303 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	140 - 136	L1 3/4x1 3/4x3/16	6.35	2.97	69.0	0.3604	4364.20	15675.30	0.278 [1]
T5	136 - 132	L1 3/4x1 3/4x3/16	6.67	3.13	72.7	0.3604	4178.68	15675.30	0.267 [1]
T6	132 - 128	L1 3/4x1 3/4x3/16	7.00	3.30	76.4	0.3604	4018.55	15675.30	0.256 [1]
T7	128 - 124	L1 3/4x1 3/4x3/16	7.34	3.47	80.2	0.3604	4176.00	15675.30	0.266 [1]
T8	124 - 120	L1 3/4x1 3/4x3/16	7.68	3.64	84.1	0.3604	4539.25	15675.30	0.290 [1]
T9	120 - 100	L2x2x3/16	9.48	4.56	90.9	0.4308	5367.43	18739.00	0.286 [1]
T10	100 - 80	L2 1/2x2 1/2x3/16	12.44	6.02	94.7	0.5710	6053.55	24839.90	0.244 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	13.62	6.63	105.3	0.7519	6679.14	32706.60	0.204 [1]
T12	60 - 40	L3x3x1/4	15.99	7.70	100.9	0.9394	7994.27	45794.50	0.175 [1]
T13	40 - 20	L3 1/2x3 1/2x1/4	19.26	9.50	105.9	1.1269	8483.97	54935.20	0.154 [1]
T14	20 - 0	L3 1/2x3 1/2x1/4	21.03	10.26	114.4	1.1034	9578.34	53792.60	0.178 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal 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 $\frac{P_u}{\phi P_n}$
T8	124 - 120	L2x2x1/4	6.55	6.22	122.5	0.9380	1389.85	30391.20	0.046 [1]
T9	120 - 100	L2x2x1/4	7.53	6.76	140.9	0.5629	1885.53	24485.10	0.077 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	11.86	11.01	177.9	0.7519	1959.03	32706.60	0.060 [1]
T13	40 - 20	L3x3x5/16	15.37	14.42	192.8	1.1592	1754.60	50426.00	0.035 [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	190 - 180	L1 3/4x1 3/4x3/16	4.65	4.21	99.5	0.3604	373.18	15675.30	0.024 [1] ✔
T4	140 - 136	L1 3/4x1 3/4x3/16	4.72	4.19	99.0	0.3604	403.31	15675.30	0.026 [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	190 - 180	Leg	ROHN 2 STD	2	-4136.06	31617.20	13.1	Pass
T2	180 - 160	Leg	ROHN 2.5 STD	20	-37496.80	63560.30	59.0	Pass
T3	160 - 140	Leg	ROHN 3 EH	54	-97209.80	119117.00	81.6	Pass
T4	140 - 136	Leg	ROHN 3.5 EH	87	-110059.00	149924.00	73.4	Pass
T5	136 - 132	Leg	ROHN 3.5 EH	99	-119419.00	149924.00	79.7	Pass
T6	132 - 128	Leg	ROHN 3.5 EH	108	-127047.00	149924.00	84.7	Pass
T7	128 - 124	Leg	ROHN 3.5 EH	117	-134712.00	149924.00	89.9	Pass
T8	124 - 120	Leg	ROHN 3.5 EH	126	-141541.00	161229.00	87.8	Pass
T9	120 - 100	Leg	ROHN 4 EH	138	-176093.00	192061.00	91.7	Pass
T10	100 - 80	Leg	ROHN 5 EH	177	-210136.00	239388.00	87.8	Pass
							90.3 (b)	
T11	80 - 60	Leg	ROHN 5 EH	198	-242746.00	265136.00	91.6	Pass
T12	60 - 40	Leg	6.0 EHS + HALF HSS7.625X0.375 (MOD)	228	-279314.00	447204.00	62.5	Pass
							79.0 (b)	
T13	40 - 20	Leg	ROHN 6 EH	249	-308847.00	356741.00	86.6	Pass
T14	20 - 0	Leg	ROHN 8 EHS	270	-341705.00	386395.00	88.4	Pass
T1	190 - 180	Diagonal	L1 3/4x1 3/4x3/16	10	-1641.50	10333.60	15.9	Pass
							28.0 (b)	
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	24	-3746.13	11446.10	32.7	Pass
							63.1 (b)	
T3	160 - 140	Diagonal	L2x2x1/4	55	-7773.15	19074.20	40.8	Pass
							81.4 (b)	
T4	140 - 136	Diagonal	L1 3/4x1 3/4x3/16	94	-4647.16	10913.00	42.6	Pass
							75.1 (b)	
T5	136 - 132	Diagonal	L1 3/4x1 3/4x3/16	102	-4328.33	10385.60	41.7	Pass
							71.9 (b)	
T6	132 - 128	Diagonal	L1 3/4x1 3/4x3/16	111	-4219.26	9851.90	42.8	Pass
							69.2 (b)	
T7	128 - 124	Diagonal	L1 3/4x1 3/4x3/16	120	-4348.08	9277.95	46.9	Pass
							71.9 (b)	
T8	124 - 120	Diagonal	L1 3/4x1 3/4x3/16	129	-4737.90	8568.38	55.3	Pass
							78.1 (b)	
T9	120 - 100	Diagonal	L2x2x3/16	141	-5323.69	7637.07	69.7	Pass
							78.6 (b)	
T10	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	180	-6333.17	9563.61	66.2	Pass
							77.3 (b)	
T11	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	201	-7041.22	9369.88	75.1	Pass
T12	60 - 40	Diagonal	L3x3x1/4	231	-8142.14	13352.40	61.0	Pass
							68.3 (b)	
T13	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	252	-8897.70	14151.80	62.9	Pass
							73.8 (b)	
T14	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	273	-10126.90	12139.10	83.4	Pass
T8	124 - 120	Secondary Horizontal	L2x2x1/4	135	-1362.46	13965.80	9.8	Pass
T9	120 - 100	Secondary Horizontal	L2x2x1/4	165	-1798.00	12814.60	14.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T11	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x1/4	214	-1896.54	11663.90	16.3	Pass
T13	40 - 20	Secondary Horizontal	L3x3x5/16	258	-1781.03	13884.10	12.8	Pass
T1	190 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-398.71	6477.07	6.2	Pass
							6.4 (b)	
T4	140 - 136	Top Girt	L1 3/4x1 3/4x3/16	90	-522.12	6550.73	8.0	Pass
							Summary	
							Leg (T9) 91.7	Pass
							Diagonal (T14) 83.4	Pass
							Secondary Horizontal (T11) 16.3	Pass
							Top Girt (T4) 8.0	Pass
							Bolt Checks 90.3	Pass
							RATING = 91.7	**Pass**

Foundation and Geotechnical data per previous Structural Analysis Report, performed by CENTEK Engineering, Project No. 14001.057, dated December 03, 2014

Reactions from tnx Tower:

ANSI/TIA-222-G Reference

Axial Load on Base Footing: $P_{app} := 43.5 \cdot kip$

Shear Load on Base Footing: $V_{app} := 54.3kip$

Moment Load on Base Footing: $M_{app} := 5527ft \cdot kip$

Depth to Top of Footing: $D_f := 0 \cdot ft$

Width of Pier: $W_{pier} := 0 \cdot ft$

Width of Mat: $W_{mat} := 32 \cdot ft$

Depth of Mat: $D_{mat} := 32 \cdot ft$

Thickness of Mat: $D := 4.5 \cdot ft$

Height of Pier Above Grade: $D_{up} := 0.0 \cdot ft$

Concrete Volumes:

Square Pier Volume: $V_{pier} := \frac{W_{pier}^2 \cdot \pi}{4} \cdot (D_f + D_{up})$ $V_{pier} = 0 \cdot ft^3$

Mat Volume: $V_{mat} := W_{mat} \cdot D_{mat} \cdot D$ $V_{mat} = 4608 \cdot ft^3$

Total Volume: $V_{conc} := 3 \cdot V_{pier} + V_{mat}$ $V_{conc} = 4608 \cdot ft^3$

Soil Volume:

Total Volume of Soil $V_{soil} := W_{mat} \cdot D_{mat} \cdot D_f - 3 \cdot V_{pier}$ $V_{soil} = 0 \cdot ft^3$

Concrete and Soil Weights:

Unit Weight of Soil: $\gamma_{soil} := 120pcf$

Unit Weight of Concrete: $\gamma_{conc} := 150pcf$

Total Concrete Weight: $W_{conc} := V_{conc} \cdot \gamma_{conc}$ $W_{conc} = 691.2 \cdot kip$

Total Soil Weight: $W_{soil} := V_{soil} \cdot \gamma_{soil}$ $W_{soil} = 0 \cdot kip$

Overturning Moment Check:

Total Applied Moment: $M_a := M_{app} + V_{app} \cdot (D_f + D)$ $M_a = 5771.3 \cdot kip \cdot ft$

Strength Reduction Factor: $\phi := 0.75$

Resisting Moment: $M_R := \frac{W_{mat}}{2} \cdot (P_{app} + W_{conc} + W_{soil})$ $M_R = 11755.2 \cdot kip \cdot ft$

Overturning Check: $Test := \begin{cases} \text{"GOOD"} & \text{if } M_a \le \phi \cdot M_R \\ \text{"No Good"} & \text{otherwise} \end{cases}$ Test = "GOOD"

Usage: $Usage := \frac{M_a}{(\phi \cdot M_R)}$ $Usage = 65.5 \cdot \%$

Bearing Capacity Check:

Total Applied Moment: $P_a := P_{app} + W_{conc} + W_{soil}$ $P_a = 734.7 \cdot kip$

Bearing Area: $A_b := W_{mat} \cdot D_{mat}$ $A_b = 1024 \cdot ft^2$

Section Modulus: $S_{mat} := \frac{(D_{mat} \cdot W_{mat}^2)}{6}$ $S_{mat} = 5461.3 \cdot ft^3$

Bearing Pressure: $\sigma_1 := \frac{P_a}{A_b} + \frac{M_a}{S_{mat}}$ $\sigma_1 = 1.774 \cdot ksf$

$\sigma_2 := \frac{P_a}{A_b} - \frac{M_a}{S_{mat}}$ $\sigma_2 = -0.339 \cdot ksf$

Allowable Bearing Pressure: $\sigma_a := 4.0 \cdot ksf$

Bearing Check: $Test := \begin{cases} \text{"GOOD"} & \text{if } \max(\sigma_1, \sigma_2) \le \sigma_a \\ \text{"No Good"} & \text{otherwise} \end{cases}$ Test = "GOOD"

Usage: $Usage := \frac{\max(\sigma_1, \sigma_2)}{\sigma_a}$ $Usage = 44.4 \cdot \%$

SITE ID: CT03XC206
SITE NAME: COVENTRY TOWN HALL

1712 MAIN STREET
COVENTRY, CT 06238

DO MACRO PROJECT

SITE INFORMATION

ADDRESS:	1712 MAIN STREET COVENTRY, CT 06238
JURISDICTION:	TOWN OF COVENTRY
COUNTY :	TOLLAND
PROPERTY OWNER:	TOWN OF COVENTRY 1712 MAIN STREET COVENTRY, CT 06238
APPLICANT:	SPRINT 201 STATE ROUTE 17 NORTH RUTHERFORD, NJ 07070
LATITUDE (NAD 83):	N 41.77983°
LONGITUDE (NAD 83):	W 72.31006°
CURRENT USE:	UNMANNED TELECOMMUNICATIONS FACILITY
PROPOSED USE:	NO CHANGE
UTILITY COMPANY:	CONNECTICUT LIGHT AND POWER PHONE: 800-266-2000

RF CONFIGURATION

THE CONTRACTOR SHALL OBTAIN THE LATEST RF DATA SHEET AND CONFIRM SAME WITH THE SPRINT CONSTRUCTION MANAGER PRIOR TO START OF CONSTRUCTION.

PROJECT CONTACTS

	NAME:	COMPANY:	PHONE #:
ENGINEER:	PETROS TSOUKALAS	MASER CONSULTING P.A.	856.797.0412
CONSTRUCTION:	TOM JUPIN	CHERUNDOLO CONSULTING	973.819.9033

STRUCTURAL STATEMENT

THE PROPOSED ANTENNA AND EQUIPMENT INSTALLATION SHALL BE EVALUATED INCLUDING THE NEW LOAD CONDITIONS ON THE SUPPORTING ELEMENTS OF THE EXISTING STRUCTURE. THESE PLANS HAVE BEEN DEVELOPED FOR THE PROPOSED TELECOMMUNICATION FACILITY TO BE OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY CHERUNDOLO CONSULTING. MASER HAS INCORPORATED THE SCOPE OF WORK WITHIN THESE PLANS. ELEMENTS OF THE STRUCTURE AFFECTED BY THE SCOPE OF WORK SHALL BE ANALYZED UNDER SEPARATE COVER. MASER ASSUMES NO RESPONSIBILITY FOR ANY ELEMENTS OF THE SITE NOT AFFECTED BY THE SCOPE OR FOR CHANGES TO THE SCOPE OF WORK NOT SPECIFICALLY SHOWN ON THESE DRAWINGS.

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CONSTRUCTION:_____ DATE: _____

LEASING/SITE ACQUISITION: _____ DATE: _____

RF ENGINEERING: _____ DATE: _____

LANDLORD/PROPERTY OWNER: _____ DATE: _____

LOCAL MAP

NO SCALE

DRIVING DIRECTIONS

FROM SPRINT OFFICES, RUTHERFORD, NJ: GET ON I-80 E IN HACKENSACK FROM NJ-17 N. HEAD SOUTH. SLIGHT LEFT TOWARD VETERANS BLVD. TURN LEFT TOWARD VETERANS BLVD. TURN RIGHT TOWARD VETERANS BLVD. TURN LEFT TOWARD VETERANS BLVD. TURN LEFT ONTO VETERANS BLVD. TURN LEFT ONTO BOROUGH ST. TURN RIGHT ONTO NJ-17 N. TAKE THE POLIFLY RD/I-80 E/HACKENSACK EXIT. MERGE ONTO TERRACE AVE. CONTINUE ONTO POLIFLY RD. TURN RIGHT ONTO THE RAMP TO NEW JERSEY TURNPIKE. TAKE I-87 N, HUTCHINSON RIVER PKWY N. CT-15 N, I-91 N AND I-384 TO US-44 E IN BOLTON. MERGE ONTO I-80 E. MERGE ONTO I-95 N. USE THE RIGHT 2 LANES TO CONTINUE ON I-95 AND FOLLOW SIGNS FOR GW BRIDGE (LOWER LEVEL)/PALISADES PARKWAY/US-9W. KEEP RIGHT TO STAY ON I-95, FOLLOW SIGNS FOR US-1 N/US-9 N/GEORGE WASHINGTON BRIDGE. CONTINUE ONTO US-1 N/U.S. 9 N. CONTINUE ONTO I-95 LOWER LEVEL N/U.S. 1 LOWER LEVEL N. USE THE LEFT LANE TO TAKE THE UPPER LEVEL EXIT. KEEP LEFT AND MERGE ONTO U.S. 9 N. ENTERING NEW YORK. CONTINUE ONTO INTERSTATE 95 UPPER LEVEL N/US-1 UPPER LEVEL N. CONTINUE ONTO I-95 N. USE THE RIGHT 2 LANES TO TAKE EXIT 1C-D FOR ALBANY N TOWARD ALBANY. MERGE ONTO I-87 N. TAKE EXIT 4 TOWARD CROSS COUNTY PKWY E. MERGE ONTO CENTRAL PARK AVE. USE THE RIGHT LANE TO TAKE THE CROSS COUNTY PKWY E RAMP. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR HUTCHINSON PKWY AND MERGE ONTO CROSS COUNTY PKWY/NEW YORK STATE REFERENCE RTE 907K. MERGE ONTO HUTCHINSON RIVER PKWY N. KEEP RIGHT AT THE FORK TO STAY ON HUTCHINSON RIVER PKWY N. ENTERING CONNECTICUT. CONTINUE ONTO CT-15 N. KEEP LEFT TO STAY ON CT-15 N. TAKE EXIT 68 N-E TO MERGE ONTO I-91 N TOWARD CT-66 E/HARTFORD/MIDDLETOWN. TAKE EXIT 29 TO MERGE ONTO CT-15 N/US-5 N TOWARD I-84 E/E. ARTFORD/BOSTON. CONTINUE ONTO CT-15 N. USE THE LEFT 2 LANES TO MERGE ONTO I-84 E TOWARD BOSTON. USE THE RIGHT 2 LANES TO TAKE EXIT 59 FOR I-384 E TOWARD PROVIDENCE. KEEP LEFT TO CONTINUE TOWARD I-384. CONTINUE ONTO I-384.CONTINUE ONTO US-44 E/US-6 E. FOLLOW US-44 E AND CT-31 S/MAIN ST TO GARDNER TAVERN LN IN COVENTRY. KEEP LEFT TO CONTINUE ON US-44 E. FOLLOW SIGNS FOR COVENTRY/MANSFIELD. TURN RIGHT ONTO CT-31 S/MAIN ST. TURN LEFT ONTO RIPLEY HILL RD .TURN RIGHT ONTO GARDNER TAVERN LN.

DRAWING INDEX

NYC DOB NUMBER	SHEET TITLE	REV.
T-001.00	TITLE SHEET	5
ANT-001.00	GENERAL NOTES - 1	5
ANT-002.00	GENERAL NOTES - 2	5
ANT-003.00	GENERAL NOTES - 3	5
ANT-004.00	SITE PLAN	5
ANT-005.00	EQUIPMENT PLAN	5
ANT-006.00	STRUCTURAL NOTES AND ELEVATION PLAN	5
ANT-007.00	ANTENNA ORIENTATION PLAN	5
ANT-008.00	DETAILS 1	5
ANT-009.00	DETAILS 2	5
ANT-010.00	ANTENNA SCHEDULE, WIRING DIAGRAM, BILL OF MATERIALS AND NOTES	5
ANT-011.00	FIBER PLUMBING DIAGRAMS 1	5
ANT-012.00	FIBER PLUMBING DIAGRAMS 11	5
ANT-013.00	CABLE COLOR CODING, DC POWER DETAILS & PANEL SCHEDULES	5
ANT-014.00	ELECTRICAL AND GROUNDING NOTES	5
ANT-015.00	GROUNDING SCHEMATIC AND DETAILS	5
ANT-016.00	ELEVATION VIEW	5
ANT-017.00	MODIFICATION DETAILS 1	5
ANT-018.00	MODIFICATION DETAILS 2	5
ANT-019.00	MODIFICATION NOTES	5

APPLICABLE BUILDING CODES & STANDARDS

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. 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 INTERNATIONAL BUILDING CODE
2. TIA/EIA-222-G OR LATEST EDITION
3. NFPA 780-LIGHTNING PROTECTION CODE 201
4. 2014 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

SCOPE OF WORK

SPRINT PROPOSED TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL (6) NEW PANEL ANTENNAS
- INSTALL (9) NEW RRH'S
- INSTALL (48) JUMPER CABLES
- INSTALL (4) HYBRID CABLE
- RELOCATE (3) EXISTING 1900 RRH FROM EQUIPMENT ROOM TO TOWER
- MODIFY EXISTING SELF-SUPPORT TOWER AND ANTENNA MOUNTS

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Fax: 570-842-5592

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PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

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SCALE :	JOB NUMBER :
AS SHOWN	17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
5	07/27/18	ISSUED FOR CONSTRUCTION	AF	ASN
4	06/08/18	REVISED PER COMMENTS	AMN	PET
3	04/06/18	REVISED PER COMMENTS	JRF	JKM
2	03/30/18	REVISED PER RFDS	JCM	JKM
1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/[illegible]	ISSUED FOR [illegible]	[illegible]	PET

STATE OF CONNECTICUT
PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER PEN.0027
PROFESSIONAL ENGINEER

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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-001.00

GENERAL NOTES

1. CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL HE OBTAINS, AT HIS OWN EXPENSE, ALL INSURANCE REQUIRED BY SPRINT, THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.
2. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATE "ISSUED FOR CONSTRUCTION.
3. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES OR OTHER PUBLIC AUTHORITIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
5. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS FOR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THIS PROJECT IN ACCORDANCE WITH THE OVERALL INTENT OF THESE DRAWINGS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING DEMOLITION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF REMOVAL OF THIS FACILITY.
7. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR AS REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE REMOVED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
9. THE DEMOLITION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL REMOVAL MEANS AND METHODS. THE DEMOLITION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.
10. THE CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. THE CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND RELATED PARTIES. THE SUBCONTRACTOR SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT EFFECTS THEIR WORK.
11. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON THE SITE AT ALL TIMES AND INSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA CONTRACTOR FURNISH 3 SETS OF REDLINE "AS-REMOVED" DRAWINGS TO SPRINT UPON COMPLETION OF THE WORK.
12. REPAIR MATERIALS INSTALLED SHALL MEET REQUIREMENTS OF CONTRACTORS DOCUMENTS. NO SUBSTITUTIONS ARE ALLOWED.
13. THE CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
14. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS EXISTING WHICH ARE NOT FOUND TO BE IN THE FIELD.
15. DEMOLITION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST-ACCEPTED PRACTICE. ALL SURFACES SHALL BE REPAIRED TO MATCH THEIR SURROUNDINGS AND PROVIDE WEATHER TIGHT SEAL ON SAME DAY AS REMOVAL.
16. THE CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROPERTY OWNER AND/OR PROPERTY MANAGEMENT COMPANY.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
18. THE CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING REMOVAL SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
19. THE CONTRACTOR SHALL KEEP CONTRACT AREA CLEAN, HAZARD FREE AND DISPOSE OF ALL DEBRIS AND RUBBISH. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
20. BEFORE FINAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT, TEMPORARY WORKS, UNUSED AND USELESS MATERIALS, RUBBISH AND TEMPORARY STRUCTURES.

TENANT SAFETY NOTES

1. CONSTRUCTION WORK SHALL BE CONFINED TO THE DESIGNATED AREA OF WORK SHOWN, AND WILL NOT CREATE DUST, OR OTHER SUCH INCONVENIENCES TO OTHER UNITS WITHIN THE BUILDING.
2. ALL EXISTING MEANS OF EGRESS FROM THE BUILDING ARE TO BE MAINTAINED CLEAR AND FREE OF ALL OBSTRUCTIONS, SUCH AS BUILDING MATERIALS, TOOLS, ETC.
3. CONSTRUCTION OPERATIONS SHALL NOT INVOLVE UNSCHEDULED INTERRUPTION OF HEATING, GAS, WATER, OR ELECTRICAL SERVICES TO OTHER UNITS OF THE BUILDING.
4. CONSTRUCTION OPERATIONS WILL BE CONFINED TO THE HOURS SET BY THE OWNER, CONDO BOARD, CO-OP BOARD, BUILDING MANAGER OR OTHER APPLICABLE GOVERNING ENTITY.
5. CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY SHORING AND BRACING WHEREVER STRUCTURAL WORK IS INVOLVED.
6. ALL BUILDING MATERIALS IN THE CONSTRUCTION AREA OR IN ANY AREA OF THE BUILDING ARE TO BE SECURED IN A LOCKED AREA. ACCESS TO SUCH AREA IS TO BE CONTROLLED BY THE OWNER AND GENERAL CONTRACTOR.
7. ALL FLAMMABLE MATERIALS ARE TO BE KEPT TIGHTLY SEALED IN THEIR RESPECTIVE MANUFACTURER'S CONTAINERS. SUCH MATERIALS ARE TO BE KEPT AWAY FROM ANY SOURCE OF HEAT.
8. ALL FLAMMABLE MATERIALS ARE TO BE USED AND STORED IN AN ADEQUATELY VENTED SPACE.
9. ALL ELECTRICAL POWER TO BE SHUT-OFF WHERE THERE IS EXPOSED CONDUIT.
10. THE CONTRACTOR SHALL PROVIDE FOR FULLY CHARGED AND OPERABLE FIRE EXTINGUISHERS MADE ACCESSIBLE DURING ALL PHASES OF DEMOLITION AND CONSTRUCTION.

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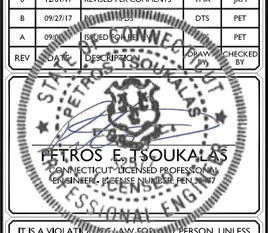

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.26967

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

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SHEET TITLE:
GENERAL NOTES - 1

SHEET NUMBER:
ANT-001.00

SECTION 01 100 - SCOPE OF WORK

THE WORK:
THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE CONSTRUCTION DRAWINGS AND ASSOCIATED OUTLINE SPECIFICATIONS AND THE SITE SPECIFIC WORK ORDER, DESCRIBE THE WORK TO BE PERFORMED BY THIS CONSTRUCTION CONTRACTOR (SUPPLIER).

RELATED DOCUMENTS:
A. THE REQUIREMENTS OF EACH SECTION OF THIS SPECIFICATION APPLY TO ALL SECTIONS, INDIVIDUALLY AND COLLECTIVELY.
B. RELATED DOCUMENTS: THE CONTRACTOR SHALL COMPLY WITH THE MOST CURRENT VERSION OF THE FOLLOWING SUPPLEMENTAL REQUIREMENTS FOR INSTALLATION AND TESTING.
1.EN-2012-001: (FIBER OPTIC, DC CABLE, AND DC CIRCUIT BREAKER TAGGING STANDARDS)
2.TS-0200 - (TRANSMISSION ANTENNA LINE ACCEPTANCE STANDARDS)
3.EL-0568: (FIBER TESTING POLICY)
4.NP-312-201: (EXTERIOR GROUNDING SYSTEM TESTING)
5.NP-760-500: ETHERNET, MICROWAVE, TESTING AND ACCEPTANCE

PRECEDENCE:
SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

NATIONALLY RECOGNIZED CODES AND STANDARDS:

THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
C. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
D. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE - "NEC") AND NFPA 101 (LIFE SAFETY CODE).
E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
G. AMERICAN CONCRETE INSTITUTE (ACI)
H. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
I. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
J. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
K. PORTLAND CEMENT ASSOCIATION (PCA)
L. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
M. BRICK INDUSTRY ASSOCIATION (BIA)
N. AMERICAN WELDING SOCIETY (AWS)
O. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
P. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
Q. DOOR AND HARDWARE INSTITUTE (DHI)
R. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
S. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

DEFINITIONS:
A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B. COMPANY: "SPRINT"; SPRINT NEXTEL CORPORATION AND IT'S OPERATING ENTITIES.
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D. CONTRACTOR: CONSTRUCTION CONTRACTOR, SUPPLIER, CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
F. CONSTRUCTION MANAGER - ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT.

SITE FAMILIARITY:
CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

POINT OF CONTACT:
COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

ON-SITE SUPERVISION:
THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

DRAWINGS REQUIRED AT JOBSITE:
THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
B. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

USE OF JOB SITE:
THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

UTILITY SERVICES:
WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED.

PERMITS/FEES:
WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONTRACTOR:
CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:
CONTRACTOR WILL UTILIZE ITS BEST EFFORTS TO WORK WITH SPRINT ELECTRONIC PROJECT MANAGEMENT SYSTEMS. CONTRACTOR UNDERSTANDS THAT SUFFICIENT INTERNET ACCESS, EQUIVALENT TO "BROADBAND" OR BETTER, IS REQUIRED TO TIMELY AND EFFECTIVELY UTILIZE SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS AND AGREES TO MAINTAIN APPROPRIATE CONNECTIONS FOR CONTRACTOR'S STAFF AND OFFICES THAT ARE COMPATIBLE WITH SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS

TEMPORARY UTILITIES AND FACILITIES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSOR'S OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

ACCESS TO WORK:
THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

DIMENSIONS:
VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

EXISTING CONDITIONS:
NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 - COMPANY FURNISHED MATERIAL AND EQUIPMENT

FURNISHED MATERIALS:
COMPANY FURNISHED MATERIALS AND EQUIPMENT TO BE INSTALLED BY THE CONTRACTOR (OFIC) IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

RECEIPT OF MATERIAL AND EQUIPMENT:
A. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
B. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
C. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
D. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

DELIVERABLES:
A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

SECTION 01 300 - CELL SITE CONSTRUCTION

NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S ISSUANCE OF THE WORK ORDER.
B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

GENERAL REQUIREMENTS FOR CONSTRUCTION:
A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

FUNCTIONAL REQUIREMENTS:
A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. CONTRACTOR SHALL TAKE ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND BACKHAUL (FIBER, COPPER, OR MICROWAVE).
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS, CONDUIT AND BOXES.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND PADS AND PLATFORMS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. CONDUCT ALL REQUIRED TESTS AND INSPECTIONS
19. PERFORM, DOCUMENT, AND CLOSE OUT ALL JURISDICTIONAL PERMITTING REQUIREMENTS AND ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
20. PERFORM ALL ADDITIONAL WORK AS IDENTIFIED IN SCOPE OF SERVICES ATTACHED TO THE SUPPLIER AGREEMENT FOR THIS PROJECT. THIS WORK MAY INCLUDE COMMISSIONING, INTEGRATION, SPECIAL WAREHOUSING, REVERSE LOGISTICS ACTIVITIES, ETC. PERFORM COMMISSIONING AND INTEGRATION ACTIVITIES PER APPLICABLE MOPS.

DELIVERABLES:
A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEST REPORTS AND DOCUMENTATION INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
1. PRODUCT SPECIFICATIONS FOR MATERIALS OR SPECIAL CONSTRUCTION IF REQUESTED BY SPRINT
2. ACTUALIZE ALL CONSTRUCTION RELATED MILESTONES IN SITERRA AND COMPLETE ALL ON-LINE FORMS AND COMPLETE DOCUMENT UP-LOADS. UPLOAD ALL REQUIRED CLOSEOUT DOCUMENTS AND FINAL SITE PHOTOS
3. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT LEFT ON SITE INSIDE BASE OF MAIN RF CABINET IN A PROTECTIVE POUCH.
4. ALL REQUIRED TEST REPORTS.
5. REQUIRED CLOSEOUT DOCUMENTATION INCLUDING BUT NOT LIMITED TO:
a. ALL JURISDICTIONAL PERMITTING AND OCCUPANCY INFORMATION
b. PDF SCAN OF REDLINES PRODUCED IN THE FIELD
c. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS
d. LIEN WAIVERS
e. FINAL PAYMENT APPLICATION
f. REQUIRED FINAL CONSTRUCTION PHOTOS
g. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
h. LISTS OF SUBCONTRACTORS
B. PROVIDE ADDITIONAL DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
2. PROJECT PROGRESS REPORTS.
3. PRE-CONSTRUCTION MEETING NOTES.

SECTION 01 400 - TESTS, INSPECTIONS, SUBMITTALS, AND PROJECT CLOSEOUT

TESTS AND INSPECTIONS:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. COAX SWEEPS AND FIBER TESTS PER TS-0200 (CURRENT VERSION) ANTENNA LINE ACCEPTANCE STANDARDS
2. POST CONSTRUCTION HEIGHT VERIFICATION, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONCRETE BREAK TESTS
4. SITE RESISTANCE TO EARTH TEST
5. STRUCTURAL BACKFILL COMPACTION TESTS
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
7. ADDITIONAL TESTING AS REQUIRED ELSEWHERE IN THIS SPECIFICATION.

SUBMITTALS:
A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
B. UPLOAD THE FOLLOWING TO SITERRA AS APPLICABLE INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. CHEMICAL GROUNDING SYSTEM .
4. REINFORCEMENT CERTIFICATIONS
5. STRUCTURAL BACKFILL TEST RESULTS
6. SWEEP AND FIBER TESTS
7. ANTENNA AZIMUTH AND DOWN-TILT VERIFICATION
8. POST CONSTRUCTION HEIGHT VERIFICATION
9. ADDITIONAL SUBMITTALS MAY BE REQUIRED FOR SPECIAL CONSTRUCTION OR MINOR MATERIALS
C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

TESTING BY THIRD PARTY AGENCY:
A. EMPLOY AN AGENCY OF ENGINEERS AND SCIENTISTS WHO IS REGULARLY ENGAGED IN FIELD AND LABORATORY TESTING AND ANALYSIS. AGENCY SHALL HAVE BEEN IN BUSINESS A MINIMUM OF FIVE YEARS, AND BE LICENSED AS PROFESSIONAL ENGINEERS IN THE STATE WHERE THE PROJECT IS LOCATED. AGENCY IS SUBJECT TO APPROVAL BY COMPANY.
1. AGENCY MUST HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
B. REQUIRED THIRD PARTY TESTS:
1. SITE RESISTANCE TO EARTH TEST PER NP-312-201
2. CONCRETE CYLINDER BREAK TESTS FOR TOWER PIER AND ANCHORS PER NATIONALLY RECOGNIZED STANDARDS
3. STRUCTURAL SOILS COMPACTION TESTS PER NATIONALLY RECOGNIZED STANDARDS
4. REBAR PLACEMENT VERIFICATION WITH REPORT
5. TESTING TENSION STUDY FOR ROCK ANCHORS
6. ALL THIRD PARTY TESTS AS REQUIRED BY LOCAL JURISDICTION
C. REQUIRED TESTS BY CONTRACTOR
1. COAX SWEEP TESTS PER SPRINT STANDARD TS-0200
2. FIBER TESTS PER SPRINT STANDARD EL-0568
3. MICROWAVE LINK TESTS PER NP-760-500
4. ANTENNA AZIMUTHS AND DOWN TILT USING ELECTRONIC ALIGNMENT TOOL PER ANTENNA INSTALLATION SPECIFICATION HEREIN.
5. POST CONSTRUCTION HEIGHT VERIFICATION AS REQUIRED HEREWITH IN THE TOWER INSTALLATION SPECIFICATIONS.
6. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED HEREWITH IN THE ASPHALT PAVING SPECIFICATIONS.
7. FIELD QUALITY CONTROL TESTING AS SPECIFIED HEREWITH IN THE CONCRETE PAVING SPECIFICATIONS.
8. TESTING REQUIRED HEREWITH UNDER SPECIFICATIONS FOR AGGREGATE BASE FOR ROADWAYS
9. ALL OTHER TESTS REQUIRED BY LOCAL JURISDICTION
D. INSPECTIONS BY COMPANY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN INSPECTION ACTIVITIES, FINAL ACCEPTANCE / PUNCH WALK REVIEW, AND/OR AS A RESULT OF TESTING
E. SPRINT RESERVES THE RIGHT TO INSPECT THE CONSTRUCTION SITE AT ANY TIME VIA SITE WALKS AND/OR PHOTO REVIEWS. CONTRACTOR SHALL GIVE SPRINT 24 HOURS NOTICE PRIOR TO THE COMMENCEMENT OF THE FOLLOWING CONSTRUCTION ACTIVITIES AND PHOTOGRAPHS OF THE IN-PROGRESS WORK.
1. GROUNDING SYSTEM AND BURIED UTILITIES INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS, AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS, ASPHALT PAVING, AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE AND POST CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES. PRIOR TO CONSTRUCTION ACTIVITIES AND AFTER CONSTRUCTION IS COMPLETE, PROVIDE PHOTOGRAPHIC DOCUMENTATION OF ROOF, FLASHINGS, AND PARAPETS, BOTH BEFORE AND AFTER CONSTRUCTION IS COMPLETE.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. TOWER TOP AND INACCESSIBLE EQUIPMENT (RRUS, ANTENNAS, AND CABLING): PROVIDE PHOTOS OF THE BACKS OF ALL ANTENNAS, RRUS, COMBINERS, FILTERS, FIBER AND DC CABLING, CABLE COLOR CODING, EQUIPMENT GROUNDING AND CONNECTOR WATER PROOFING INCLUDING NAME PLATE AND SERIAL NUMBER FOR ALL SERIALIZED EQUIPMENT.

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SCALE : AS SHOWN
JOB NUMBER : 17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
5	07/27/18	ISSUED FOR CONSTRUCTION	AF	ASN
4	06/08/18	REVISED PER COMMENTS	AMN	PET
3	04/06/18	REVISED PER COMMENTS	JRF	JKM
2	03/30/18	REVISED PER RFDS	JCM	JKM
1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible] RFDS	DTS	PET
A	09/0[illegible]	ISSUED FOR RE[illegible]	[illegible]	PET

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN [illegible]

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFFESIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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 - 2

SHEET NUMBER : ANT-002.00

PROJECT CLOSEOUT:
A. FINAL ACCEPTANCE PUNCH WALK AND INSPECTION: AS IDENTIFIED IN THE SCOPE OF SERVICES, SPRINT WILL CONDUCT A FINAL PUNCH WALK OR FINAL DESK TOP PHOTO REVIEW (SITE MODIFICATIONS). PUNCH WALKS MUST BE SCHEDULED IN ADVANCE AS REQUIRED. AT THE PUNCH WALK / REVIEW, SPRINT MAY IDENTIFY CRITICAL DEFICIENCIES WHICH MUST BE CORRECTED PRIOR TO PUTTING SITE ON AIR. MINOR DEFICIENCIES MUST BE CORRECTED WITHIN 30 DAYS EXCEPT AS OTHERWISE REQUIRED. VERIFICATIONS OF CORRECTIONS MAY BE MADE BY COMPANY DURING A REPEAT SITE WALK OR DESK TOP PHOTO REVIEW AT COMPANY'S SOLE DISCRETION.
B. CLOSEOUT DOCUMENTATION: ALL CLOSEOUT DOCUMENTATION AND PHOTOGRAPHS SHALL BE UPLOADED PRIOR TO FINAL ACCEPTANCE. SPRINT WILL REVIEW CLOSEOUT DOCUMENTATION FOR PRESENCE AND CONTENT. CLOSEOUT DOCUMENTATION SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING AS APPLICABLE:
1. COAX SWEEP TESTS:
2. FIBER TESTS:
3. JURISDICTION FINAL INSPECTION DOCUMENTATION
4. REINFORCEMENT CERTIFICATION (MILL CERTIFICATION)
5. CONCRETE MIX DESIGN AND PRODUCT DATA (TOWER FOUNDATION)
6. LIEN WAIVERS AND RELEASES.
7. POST -CONSTRUCTION HEIGHT VERIFICATION
8. JURISDICTION CERTIFICATE OF OCCUPANCY
9. ELECTRONIC ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
10. STRUCTURAL BACKFILL TEST RESULTS (IF APPLICABLE)
11. CELL SITE UTILITY SETUP
12. AS-BUILT REDLINE CONSTRUCTION DRAWINGS (PDF SCAN OF FIELD MARKS)
13. AS-BUILT CONSTRUCTION DRAWINGS IN DWG AND PDF FORMATS
14. LIST OF SUB CONTRACTORS
15. APPROVED PERMITTING DOCUMENTS
16. FINAL SITE PHOTOS UP-LOADED TO SITERRA. INCLUDE THE FOLLOWING AS APPLICABLE:
    a. TOWER, ANTENNAS, RRUS, AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX/CABLE LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
    b. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
    c. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
    d. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

PROJECT PHOTOGRAPHS:
A. PROVIDE PROJECT CLOSEOUT GENERAL ARRANGEMENT PHOTOS OF ALL NEW WORK. THE FOLLOWING LIST REPRESENTS MINIMUM REQUIREMENTS AND MINIMUM QUANTITY. ADDITIONAL PHOTOS MAY BE REQUIRED TO ADEQUATELY DOCUMENT THE WORK.
   1. ASR AND RF MPE SIGNAGE (IF NOT IN PLACE, SUPPLIER NOTIFIES EMS FIELD REPRESENTATIVE)
   2. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR)
   3. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR) CLOSE UP SHOWING WEATHERPROOFING AND GROUNDING (AS REQUIRED). CLOSE-UP OF BACK SIDE OF EACH PERMANENT RRU SHOWING SERIAL NUMBER/BAR CODE.
   4. VIEW (1 EACH SECTOR) ALONG THE AZIMUTH AND TILT OF THE ANTENNAS
   5. TOP OF TOWER FROM GROUND, 1 EACH SECTOR
   6. MAINLINE HYBRID CABLE ROUTE DOWN TOWER SHOWING FASTENERS AND SUPPORT
   7. MAINLINE/HYBRID CABLE ROUTE ALONG ICE BRIDGE OR IN CABLE TRAY SHOWING FASTENERS AND SUPPORT
   8. GROUND MOUNTED RRU RACKS (FRONT AND BACK)
   9. FRONT, SIDE AND BACK ELEVATIONS OF ALL GROUND CABINETS
   10. VIEW OF COMPOUND FROM A DISTANCE
   11. VIEW OF EACH GROUND CABINET (POWER, RF, FIBER SPOOL, PPC POWER, PPC TELCO WITH DOOR OPEN)
   12. BACKHAUL FIBER MEET-ME-POINT AND CONDUIT ROUTE (MICROWAVE INSTALLATION IF NOT FIBER)
   13. AAV NETWORK INTERFACE DEVICE OR MICROWAVE RADIO INSTALLATION

DEFICIENCY CORRECTIONS:
CONTRACTOR IS RESPONSIBLE FOR ALL CORRECTIONS TO DEFICIENCIES IDENTIFIED THROUGH TESTING, REVIEW OF SUBMITTALS, INSPECTIONS AND CLOSEOUT REVIEWS.

SECTION 01 500 - PROJECT REPORTING

WEEKLY REPORTS:
A. CONTRACTOR SHALL REPORT TO SPRINT AT MINIMUM ON A WEEKLY BASIS VIA SITERRA BY UPDATING ALL APPLICABLE POST END KEEPING MILESTONES WITH ACTUAL AND FORECASTED COMPLETION DATES.
B. ADDITIONAL REQUIREMENTS FOR REPORTING MAY BE IDENTIFIED ELSEWHERE OR REQUIRED BY THE SCOPE OF SERVICES OR SPRINT'S LOCAL MARKET CONSTRUCTION MANAGER. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.
PROJECT CONFERENCE CALLS:
SPRINT MAY HOLD PERIODIC PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.
FINAL PROJECT ACCEPTANCE: PRIOR TO SPRINTS FINAL PROJECT ACCEPTANCE. ALL REQUIRED MILESTONE ACTUALS MUST BE UPDATED IN SITERRA AND ALL REQUIRED REPORTING TASKS MUST BE COMPLETE.

SECTION 11 700 - ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION

SUMMARY:
THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRU'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRU'S:
THE NUMBER AND TYPE OF ANTENNAS AND RRU'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:
HYBRID CABLE WILL BE DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

JUMPERS AND CONNECTORS:
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRU'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRU'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE, MIN. LENGTH FOR JUMPER SHALL BE 10'-0".

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:
INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:
THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS.
A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.
B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

HYBRID CABLE INSTALLATION:
A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.
C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.
   1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE INSTALLED INSIDE MONOPOLE WITH CABLE SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER.
   2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
      a. FIBER: SUPPORT FIBER BUNDLES USING 1/2 " VELCRO STRAPS OF THE REQUIRED LENGTH AT 18" O.C. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
      b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
   3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
   4. CABLE INSTALLATION:
      a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
      b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
      c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS.
   5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
   6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED IN TS 0200 (CURRENT VERSION).
   7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:
A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.
B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2 " WIDE ELECTRICAL TAPE EXTENDING 2 " BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBS) AND RELATED EQUIPMENT

SUMMARY:
A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).
B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRED BY THE APPLICABLE INSTALLATION MOPS.
C. COMPLY WITH MANUFACTURER'S INSTALLATION AND START-UP REQUIREMENTS.

DC CIRCUIT BREAKER LABELING
A. NEW DC CIRCUIT IS REQUIRED IN MMBS CABINET SHALL BE CLEARLY IDENTIFIED AS TO RRU BEING SERVICED.

SECTION 26 100 - BASIC ELECTRICAL REQUIREMENTS

SUMMARY:
THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS

QUALITY ASSURANCE:
A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.
B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.
C. MATERIALS AND EQUIPMENT: ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS.

SUPPORTING DEVICES:
A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
   1. ALLIED TUBE AND CONDUIT.
   2. B-LINE SYSTEM.
   3. UNISTRUT DIVERSIFIED PRODUCTS.
   4. THOMAS & BETTS.
B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
   1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
   2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
   3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
   4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
   5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
   6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
   7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
   8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
   9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

SUPPORTING DEVICES:
A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.
B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.
C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:
   1. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.
   2. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

ELECTRICAL IDENTIFICATION:
A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.
B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR UNDERGROUND RUNS. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED - SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.
B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.
C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.
D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.
E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6-FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRED BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.
F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

HUBS AND BOXES:
A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKNUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.
B. CABLE TERMINATION FITTINGS FOR CONDUIT
   1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL BY ROXTEC.
   2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.
C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.
D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKET COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.
E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

SUPPLEMENTAL GROUNDING SYSTEM:
A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM TO THE EXTENT INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS EXCEPT AS OTHERWISE NOTED.
B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPADES WITH NO-OX.
C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

EXISTING STRUCTURE:
A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

CONDUIT AND CONDUCTOR INSTALLATION:
A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

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713 Clover Lane
Moscow, PA 18444
Phone: 973-207-4248
Fax: 570-842-5592

SCALE: AS SHOWN
JOB NUMBER: 17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
5	07/27/18	ISSUED FOR CONSTRUCTION	AF	ASN
4	06/08/18	REVISED PER COMMENTS	AMN	PET
3	04/06/18	REVISED PER COMMENTS	JRF	JKM
2	03/30/18	REVISED PER RFDS	JCM	JKM
1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/01/17	ISSUED FOR REVIEW	[illegible]	PET

PETROS E. SOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER: PEN.0027

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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 - 3

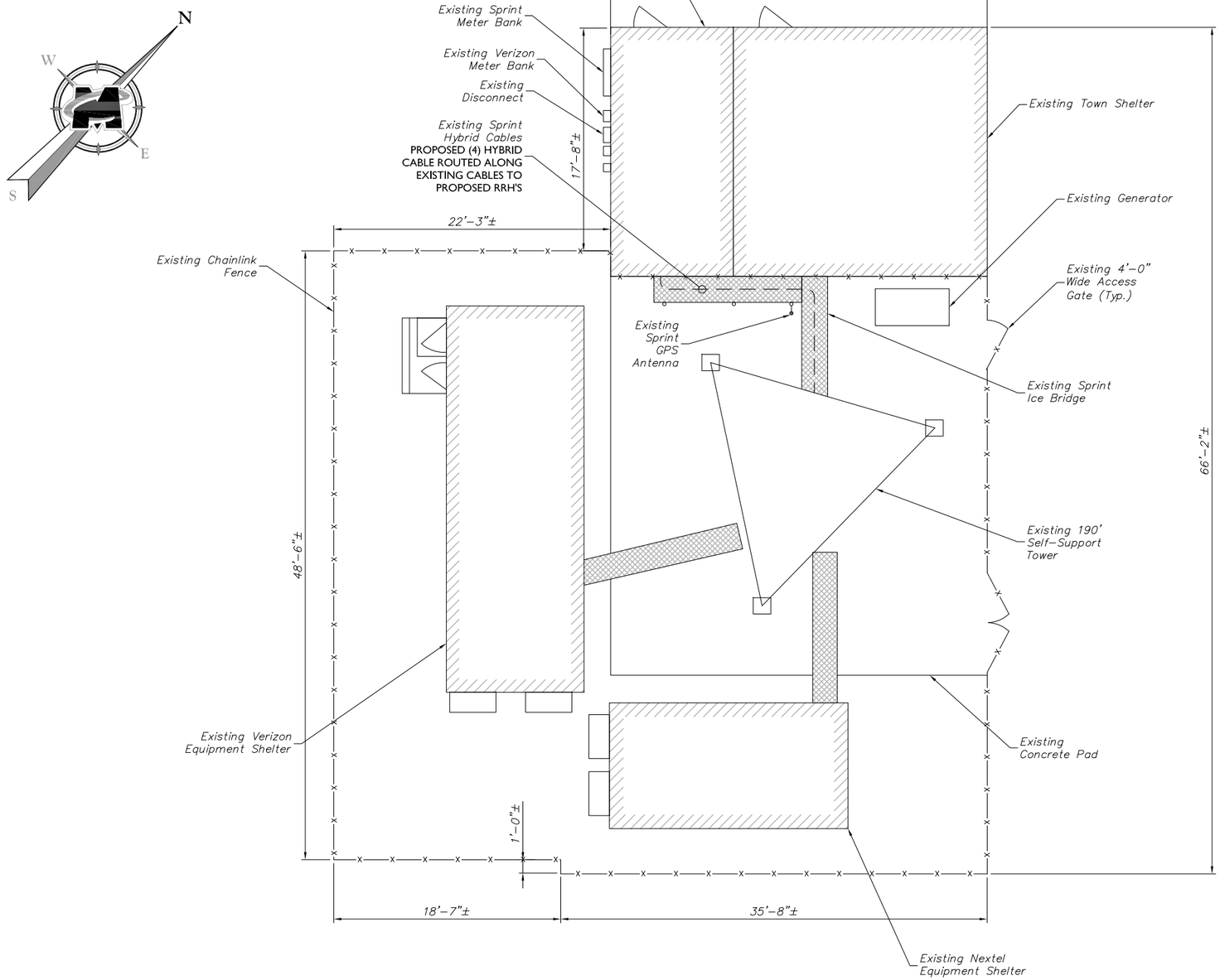
SHEET NUMBER: ANT-003.00

GENERAL NOTES:

1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:

   A. DRAWINGS ENTITLED "TOWN HALL", PREPARED BY CLOUGH, HARBOUR & ASSOCIATES LLP OF WALLINGFORD, CONNECTICUT DATED 11/31/10.

2. 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.



SITE PLAN

5 0 2.5 5 10

SCALE : 1" = 5'
(DO NOT SCALE 11"X17" DRAWINGS)

LEGEND

LIGHT LINE WORK INDICATES EXISTING OBJECTS
HEAVY LINE WORK INDICATED PROPOSED OBJECTS

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SCALE :	JOB NUMBER :
AS SHOWN	17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
5	07/27/18	ISSUED FOR CONSTRUCTION	AF	ASN
4	06/08/18	REVISED PER COMMENTS	AMN	PET
3	04/06/18	REVISED PER COMMENTS	JRF	JKM
2	03/30/18	REVISED PER RFDS	JCM	JKM
1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/[illegible]	ISSUED FOR [illegible]	[illegible]	PET

STATE OF CONNECTICUT
PETROS E. TSOUKALAS
LICENSED PROFESSIONAL ENGINEER

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER LICENSE NUMBER PEN.[illegible]7

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

RED BANK OFFICE
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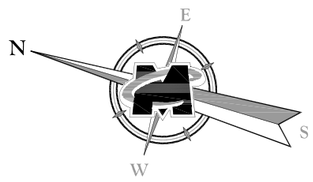
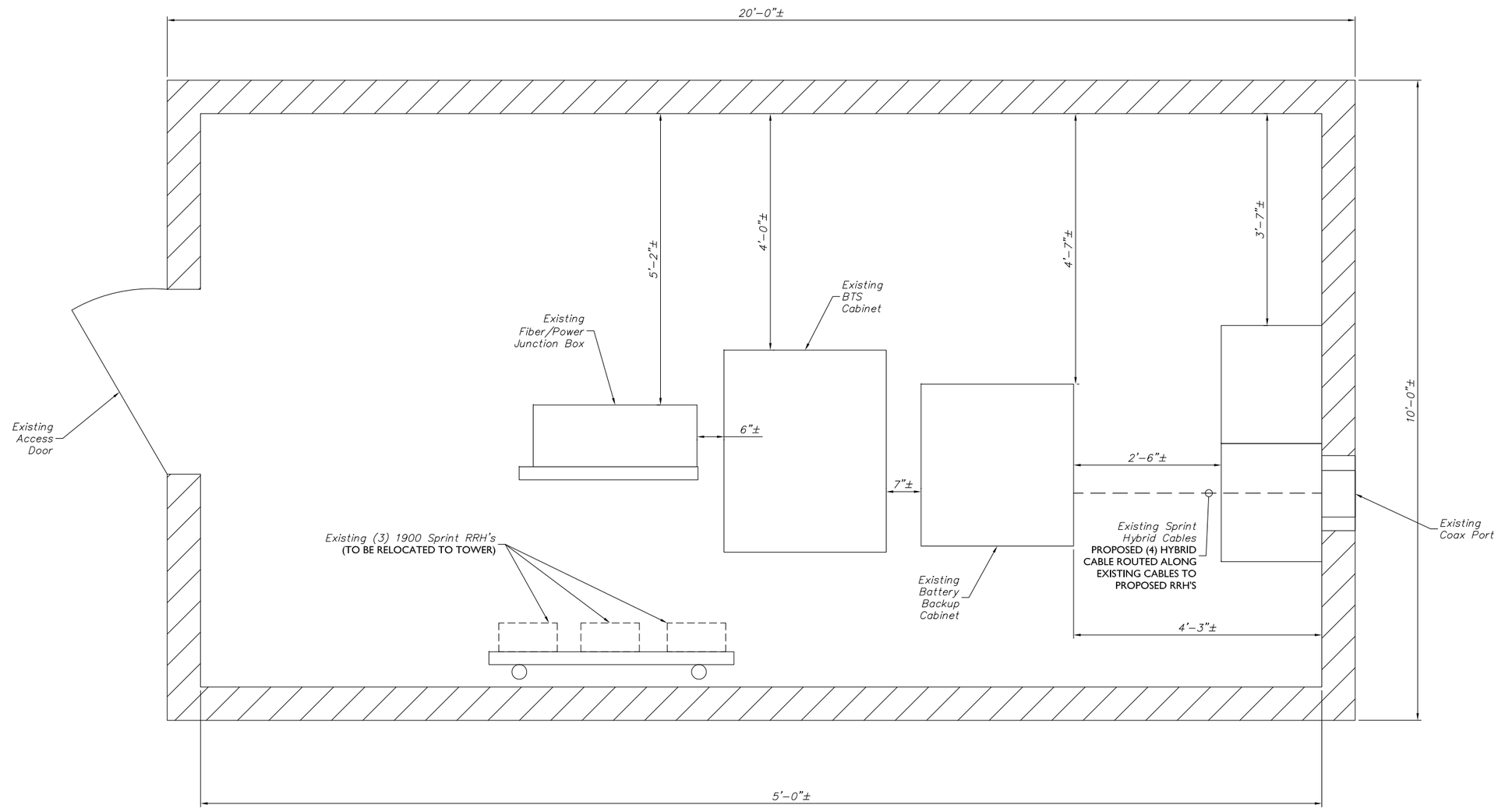
Fax: 732.383.1984

SHEET TITLE :
SITE PLAN

SHEET NUMBER :
ANT-004.00





EQUIPMENT PLAN

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

LEGEND

LIGHT LINE WORK INDICATES EXISTING OBJECTS
HEAVY LINE WORK INDICATED PROPOSED OBJECTS

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SCALE :	JOB NUMBER :
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0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/[illegible]	ISSUED FOR [illegible]	[illegible]	PET

STATE OF CONNECTICUT
PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.0027
LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFFESIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

RED BANK OFFICE
331 Newman Springs Road
Suite 203
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SHEET TITLE :
EQUIPMENT PLAN

SHEET NUMBER :
ANT-005.00

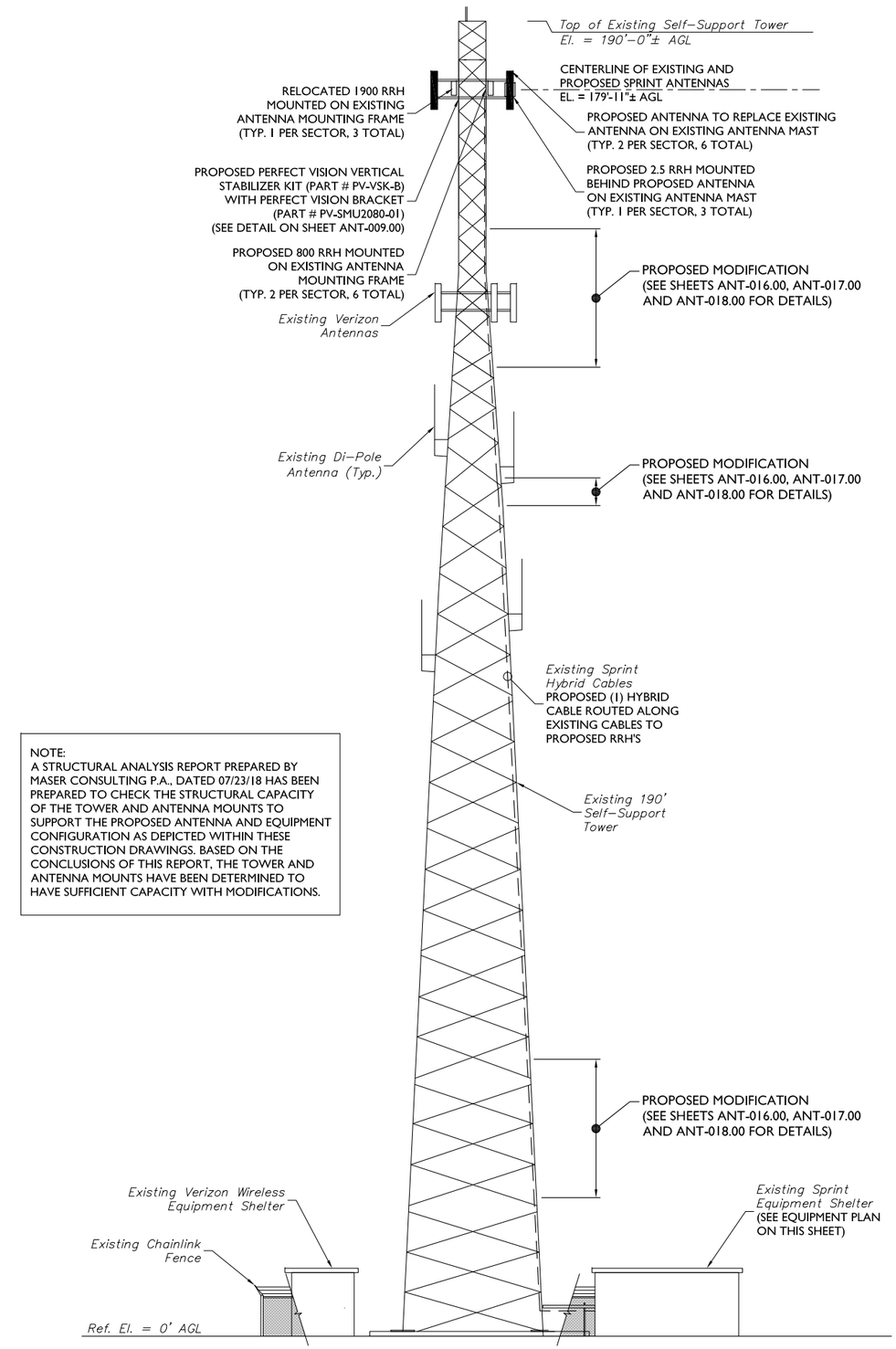
MODIFICATION NOTES:

1. IF THE EXISTING CONDITIONS ARE NOT AS REPRESENTED ON THESE DRAWINGS, MASER CONSULTING SHOULD BE CONTACTED IMMEDIATELY TO RE-RVALUATE THE STRUCTURE BASED ON THE FIELD CONDITIONS AND DIMENSIONS FOUND.
2. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE DRAWINGS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
3. THIS DRAWING DOES NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTORS SHALL SUPERVISE AND DIRECT THE WORK AND THEY SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
4. CONTRACTOR SHALL VERIFY PLACEMENT OF ALL NEW PIECES FOR ADEQUATE FIT, CLEARANCES, AND DESIGN INTENT BEFORE FABRICATION STARTS.
5. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE STABILITY, SAFETY OF THE STRUCTURE AND MOUNTS (AS APPLICABLE), AND THE ADEQUACY OF TEMPORARY OR INCOMPLETE CONNECTIONS DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THIS INCLUDES WHATEVER PROVISIONS NEED TO BE TAKEN TO PROTECT THE PROPERTY IN THE VICINITY OF THE TOWER DURING CONSTRUCTION.
7. DURING CONSTRUCTION THE CONTRACTOR SHALL COORDINATE WITH THE TOWER/STRUCTURE OWNER AND CORDON OFF AREAS BELOW AND AROUND THE WORK TO PREVENT INJURY TO PERSONS AND/OR PROPERTY. DAMAGES RESULTING FROM THE CONTRACTORS WORK SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
8. BACK CHARGES FOR CORRECTIVE WORK OR REPLACEMENT MATERIALS WILL NOT BE ACCEPTED UNLESS EXPRESSLY AUTHORIZED BY MASER CONSULTING BEFORE ANY SUCH COSTS ARE INCURRED.
9. POST CONSTRUCTION INSPECTION TO BE COMPLETED BY OTHERS.
10. ALL FIELD CONNECTIONS, UNLESS NOTED OTHERWISE , SHALL BE BOLTED.
11. CUTTING OR BURNING OF STEEL IN THE FIELD IS STRICTLY PROHIBITED. CONTRACTOR SHALL COORDINATE WITH TOWER OWNER AND FOLLOW ALL PROCEDURES FOR DRILLING AND INSTALLING NW FASTENERS IN STRUCTURE TO AVOID DAMAGE TO STRUCTURE, CABLES, AND EXISTING APPURTENANCES.
12. WHERE STEEL IS IN CONTACT WITH ALUMINUM PROVIDE ADEQUATE BARRIER TO PREVENT OXIDATION OF THE STEEL AND ALUMINUM.
13. ALL BOLT HOLES SHALL BE $\frac{1}{16}$" LARGER THAN BOLT DIAMETER. ALL BOLTS SHALL HAVE ONE FLAT WASHER, ONE LOCK WASHER, AND ONE NUT UNLESS NOTED OTHERWISE.
14. COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE CURRENT EDITIONS OF THE FOLLOWING STANDARDS AND CODES:
    - 14.1. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
    - 14.2. AMERICAN IRON AND STEEL INSTITUTE (AISI) "DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS".
    - 14.3. ASTM A563-04 "STANDARD SPECIFICATION FOR CARBON AND ALLOY STEEL NUTS".
    - 14.4. ASTM F436-03 "STANDARD SPECIFICATION FOR HARDENED STEEL WASHERS"
    - 14.5. ASTM A325-04 "STANDARD SPECIFICATION FOR STRUCTURAL BOLTS, STEEL, HEAT TREATED, $\frac{120}{105}$ KSI MENIMUM TENSILE STRENGTH".
    - 14.6. ASTM A153/A153M-09 "STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
    - 14.7. ASTM 123/A1123M-09 "STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS".
15. ALL STEEL WORK SHALL BE ASTM A572 GRADE 50 FOR W-FLANGE SECTIONS AND A36 FOR ALL OTHER SHAPES AND GALVANIZED UNLESS NOTED OTHERWISE, GALVANIZED COATING THICKNESS TO BE G90.
16. SHOP WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO PERFORM THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", LRFD 3RD EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
17. UNLESS NOTED OTHERWISE ALL BOLTS SHALL BE INSTALLED WITH HEADS UP OR TOWARD THE OUTSIDE FACE, AND NUTS DOWN OR ON THE SIDE MOST PROTECTED FROM WEATHER.
18. USE PRECAUTIONS & PROCEDURES PER AWS D1.1 WHEN WELDING GALVANIZED MATERIALS. AT COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.
19. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS - LOAD AND RESISTANCE FACTOR DESIGN".
20. MEMBERS SHALL BE LAID PLUMB AND TRUE AS SHOWN ON THE DRAWINGS.
21. COPE ALL FRAMING AT ENDS AS NECESSARY, UNLESS NOTED OTHERWISE.
22. THE GENERAL CONTRACTOR AND THEIR SUBCONSULTANTS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK.
23. ONLY ONE ANGLE IS TO BE REMOVED AND REPLACED AT A TIME.

LEGEND

LIGHT LINE WORK INDICATES EXISTING OBJECTS

HEAVY LINE WORK INDICATED PROPOSED OBJECTS



NOTE:
A STRUCTURAL ANALYSIS REPORT PREPARED BY MASER CONSULTING P.A., DATED 07/23/18 HAS BEEN PREPARED TO CHECK THE STRUCTURAL CAPACITY OF THE TOWER AND ANTENNA MOUNTS TO SUPPORT THE PROPOSED ANTENNA AND EQUIPMENT CONFIGURATION AS DEPICTED WITHIN THESE CONSTRUCTION DRAWINGS. BASED ON THE CONCLUSIONS OF THIS REPORT, THE TOWER AND ANTENNA MOUNTS HAVE BEEN DETERMINED TO HAVE SUFFICIENT CAPACITY WITH MODIFICATIONS.

ELEVATION (LOOKING WEST)

10 8 6 4 2 0 5 10 20

SCALE : 1" = 10'
(DO NOT SCALE 11"X17" DRAWINGS)

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SCALE :	JOB NUMBER :
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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.0021647
LICENSED PROFESSIONAL ENGINEER

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
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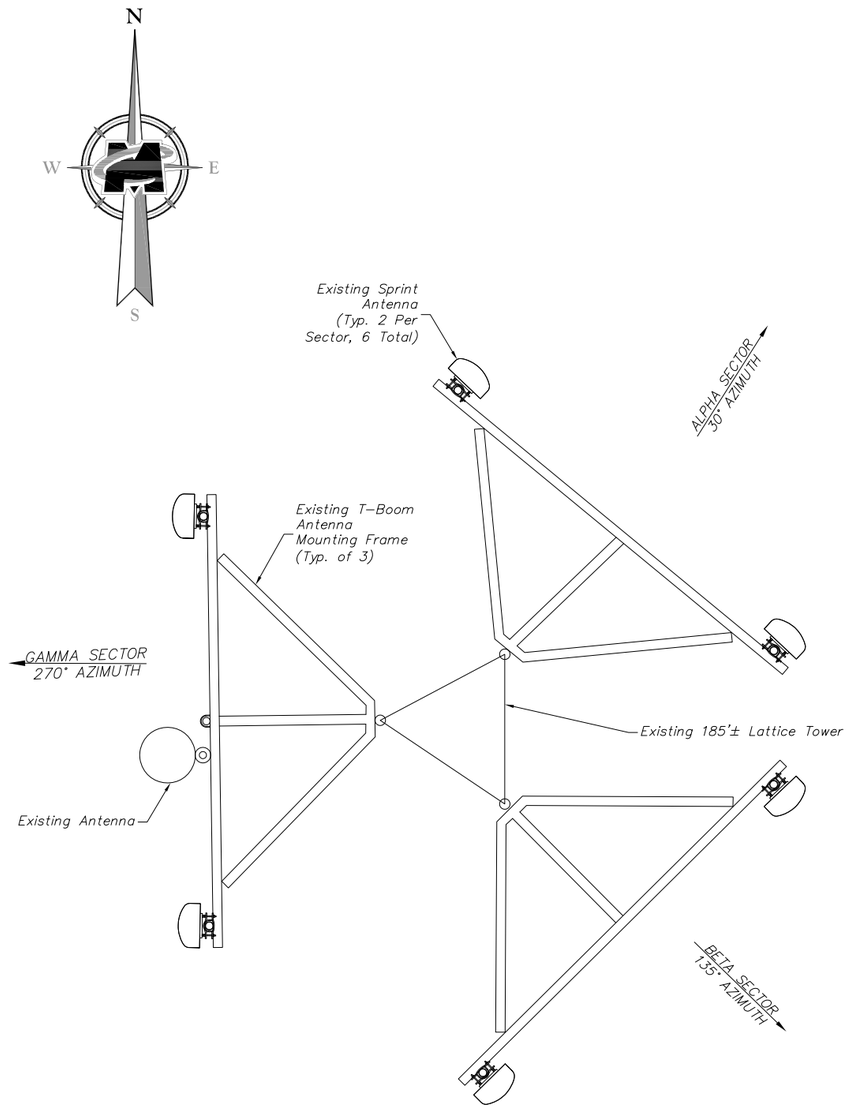
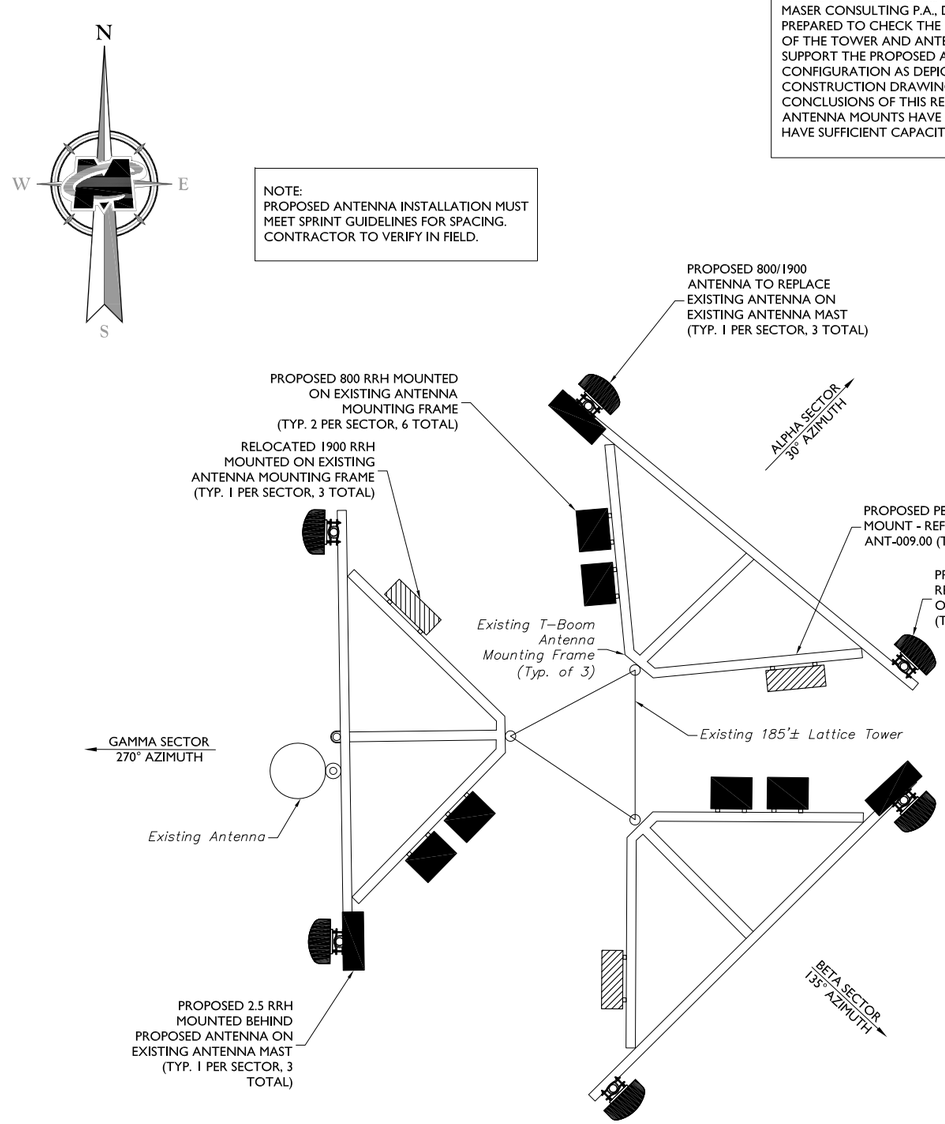
SHEET TITLE :
STRUCTUAL NOTES AND ELEVATION PLAN

SHEET NUMBER :
ANT-006.00



EXISTING ANTENNA LAYOUT

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



PROPOSED ANTENNA LAYOUT

SCALE : 1" = 1'
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NOTE:
PROPOSED ANTENNA INSTALLATION MUST MEET SPRINT GUIDELINES FOR SPACING. CONTRACTOR TO VERIFY IN FIELD.

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SCALE :	JOB NUMBER :
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B	09/27/17	[illegible]	DTS	PET
A	09/[illegible]/17	ISSUED FOR [illegible]	[illegible]	PET

STATE OF CONNECTICUT
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CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.0021
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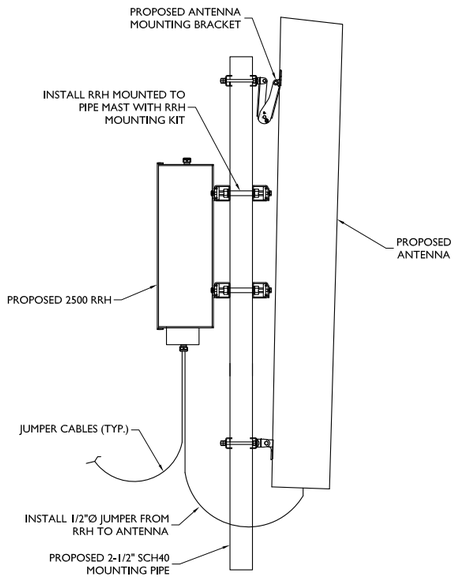
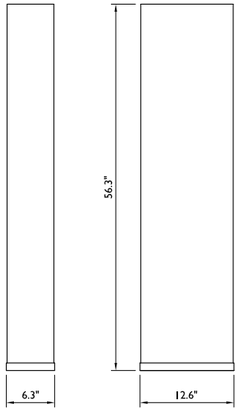
SHEET TITLE :
ANTENNA
ORIENTATION PLAN

SHEET NUMBER :
ANT-007.00



ANTENNA AND RRH MOUNTING DETAIL

NOT TO SCALE

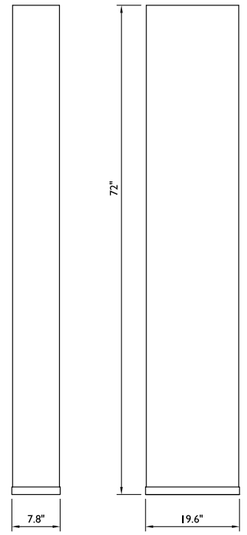


WEIGHT = 56.2 LBS

RFS APXVTM14-ALU-I20

ANTENNA DETAIL

NOT TO SCALE

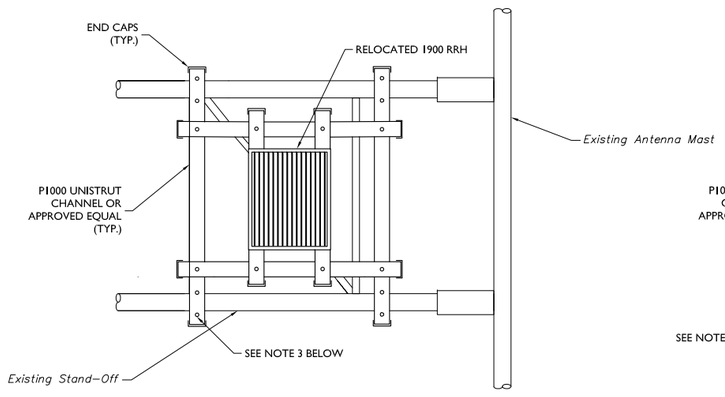


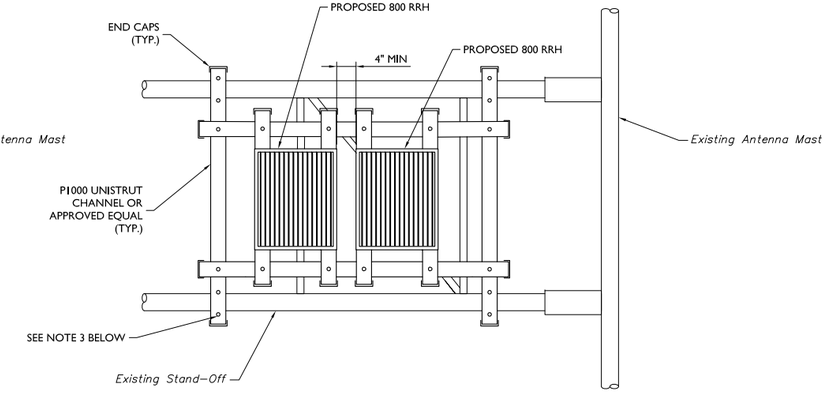
WEIGHT = 56 LBS

COMMSCOPE NNVV-65B-R4

ANTENNA DETAIL

NOT TO SCALE



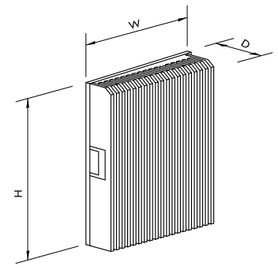


NOTES:

1. SPRINT SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. ALU INSTALLS RRH AND MAKES CABLE TERMINATIONS.
2. A SUPPORT FRAME FOR ANY EQUIPMENT SHALL BE INSTALLED ON A MINIMUM OF TWO HORIZONTAL UNISTRUTS THAT ENGAGE A MINIMUM OF TWO VERTICAL PIPE MASTS (MAXIMUM 4'-6" CLEAR SPAN). INSTALL VERTICAL UNISTRUT CHANNELS AS REQUIRED TO ALIGN FRAME WITH EQUIPMENT MOUNTING HOLES. FASTEN UNISTRUT CHANNELS TOGETHER WITH 3/8" UNISTRUT BOLTING HARDWARE AND SPRING NUTS.
3. EACH UNISTRUT TO BE MOUNTED TO EXISTING STAND-OFF ARM USING 1/2"Ø U-BOLTS.
4. MOUNT RRH TO UNISTRUT WITH 3/8"Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.

REMOTE RADIO HEAD (RRH) MOUNTING DETAIL

NOT TO SCALE



MODEL:	HEIGHT (H)	WIDTH (W)	DEPTH (D)	WEIGHT	STATUS
ALU TD-RRH8x20-25	26"	18.6"	6.7"	76.2 LBS	PROPOSED
ALU RRH-2x50-800	16"	13"	10"	69.1 LBS	PROPOSED
ALU RRH-4x45-1900	25"	12"	12"	69.5 LBS	RELOCATED

RRH SPECIFICATIONS

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AS SHOWN	17924002A

REV	DATE	DESCRIPTION	BY	CHECKED BY
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4	06/08/18	REVISED PER COMMENTS	AMN	PET
3	04/06/18	REVISED PER COMMENTS	JRF	JKM
2	03/30/18	REVISED PER RFDS	JCM	JKM
1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/[illegible]	ISSUED FOR [illegible]	[illegible]	PET

STATE OF CONNECTICUT
PETROS E TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER PEN.26967
LICENSED PROFESSIONAL ENGINEER

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SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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331 Newman Springs Road
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Red Bank, NJ 07701-5699
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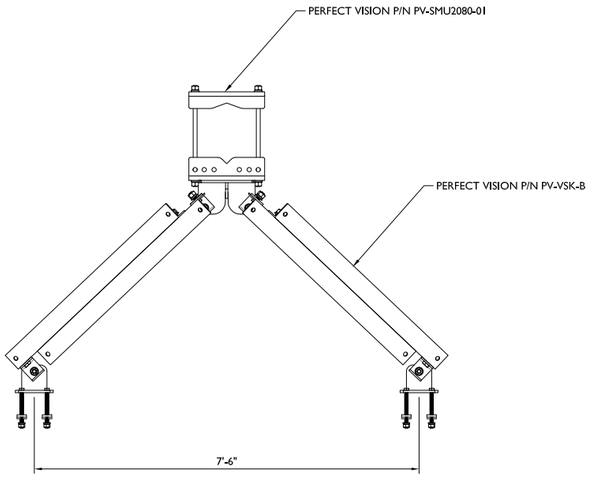
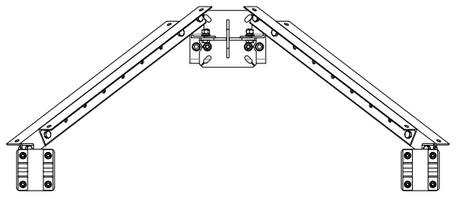
Fax: 732.383.1984

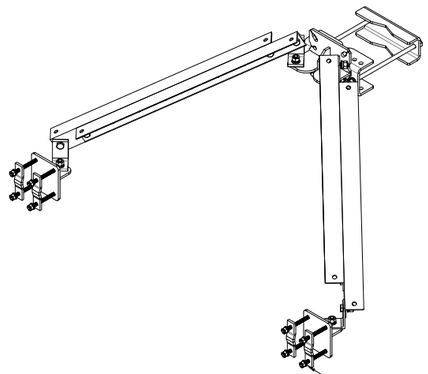
SHEET TITLE:
DETAILS - 1

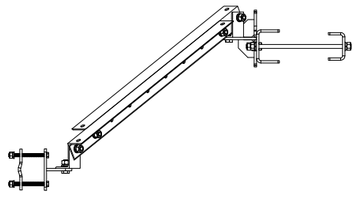
SHEET NUMBER:
ANT-008.00



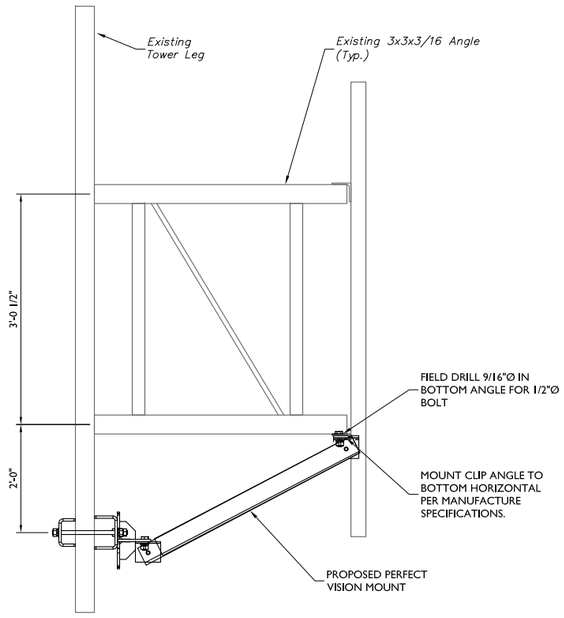


NOTE:
1. PERFECT VISION P/N PV-VSK-B VERTICAL STABILIZER KIT TO BE USED WITH PERFECT VISION P/N PV-SMU2080-01 TO CONNECT TO THE TOWER.





MOUNT MODIFICATION
NOT TO SCALE



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A	09/[illegible]	ISSUED FOR [illegible]	[illegible]	PET

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PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.0021677
LICENSED PROFESSIONAL ENGINEER

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SITE ID: CT03XC206

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SHEET TITLE :
DETAILS - 2

SHEET NUMBER :
ANT-009.00

RF NOTES

1. ACTUAL CABLE LENGTHS SHALL BE DETERMINED PER SITE CONDITION BY SUBCONTRACTOR.
2. THE DESIGN IS BASED ON RF DATA SHEETS, SIGNED AND APPROVED.
3. RADIO SIGNAL CABLE AND RACEWAY SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC, NFPA 70), CHAPTER 8.
4. ALL SPECIFIED MATERIAL FOR EACH LOCATION (E.G., OUTDOORS, INDOORS-OCCUPIED, INDOORS-UNOCCUPIED, PLENUMS, RISER SHAFTS, ETC.) SHALL BE APPROVED, LISTED, OR LABELED AS REQUIRED BY THE NEC.
5. HARDLINE AND JUMPER CABLES SHALL BE SUPPORTED WITH HANGERS AND AT INTERVALS AS REQUIRED BY THE MANUFACTURER FOR 125 mph WIND SPEED AND EXPECTED ICE CONDITIONS. FOR SITES WITH TOWER HEIGHT OVER 300' OR ARE LOCATED IN THE EXTREME WEATHER/OPERATION AREAS, THE WORST CASE SCENARIO FOR 150 mph WIND SPEED AND 1" ICE CONDITION SHOULD BE APPLIED. ALL CABLES SHOULD BE SUPPORTED AT HALF THE DISTANCE OF THE MAXIMUM HANGER SPACING FROM THE CABLE CONNECTOR LOCATION TO THE 1ST HANGER. MANUFACTURER RECOMMENDED CABLE SUPPORT ACCESSORIES SHALL BE USED. PLASTIC CABLE TIES ARE NOT ACCEPTABLE. HANGER STACKING LIMIT SHOULD ALSO REFER TO VENDOR'S RECOMMENDATION.
6. THE OUTDOOR CABLE SUPPORT SYSTEM SHALL BE PROVIDED WITH AN ICE SHIELD TO SUPPORT AND PROTECT ANTENNA CABLE RUNS.
7. DRIP LOOPS SHALL BE REQUIRED ON ALL OUTSIDE CABLES. CABLES SHALL BE SLOPED AWAY FROM THE BUILDING OR OUTDOOR BTS CABINETS TO PREVENT WATER FROM ENTERING THROUGH THE COAXIAL CABLE PORT.
8. ALL FEEDER LINE AND JUMPER CONNECTORS SHALL BE 7/16 DIN CABLE CONNECTORS THAT MEET IP68 STANDARDS.
9. CONNECTORS IN INDOOR APPLICATIONS REQUIRE NO WEATHERPROOFING. OUTDOOR APPLICATIONS REQUIRE WEATHERPROOFING AND THE FOLLOWING PROCEDURES SHOULD BE FOLLOWED:

   RE-ENTERABLE AND RE-SEALABLE PLASTIC ENCLOSURE APPROVED BY CABLE MANUFACTURER AND CONTRACTOR IS RECOMMENDED METHOD TO WEATHERPROOF CONNECTORS.

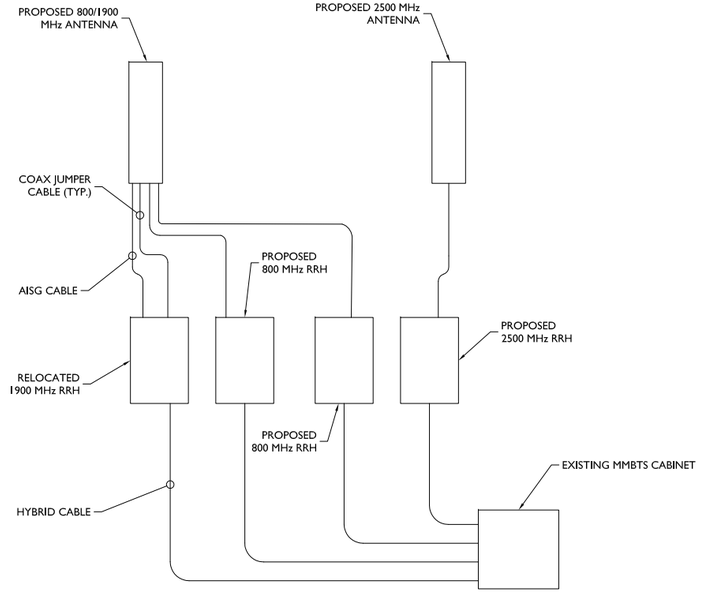
   ALSO ACCEPTABLE IS THE USE OF BUTYL RUBBER WEATHERPROOFING KIT APPROVED BY CABLE MANUFACTURE AND CONTRACTOR. START BUTYL RUBBER TAPE APPROXIMATELY 5 INCHES FROM THE CONNECTOR AND WRAP 2 INCHES TOWARD THE CONNECTOR, THEN REVERSE THE TAPE SO THAT THE STICKY SIDE IS UP. TAPE OVER THE CONNECTOR OR SURGE ARRESTOR UNTIL THREE (3) TO FOUR (4) INCHES BEYOND THE CONNECTOR AND REVERSE AGAIN WITH THE STICKY SIDE DOWN FOR ANOTHER TWO INCHES. FINISH WITH TWO LAYERS OF VINYL TAPE. COLD SHRINK IS STRICTLY PROHIBITED. SELF-BONDING, AMALGAMATING TAPE MAYBE USED AS AN ALTERNATIVE TO BUTYL RUBBER TAPE.
10. ANTENNAS SHALL BE PAINTED, WHEN REQUIRED, BY THE LANDLORD OR AUTHORITY HAVING JURISDICTION IN ACCORDANCE WITH ANTENNA MANUFACTURERS' SURFACE PREPARATION AND PAINTING REQUIREMENTS.
11. CABLE SHIELDS, AND TOWER CONDUITS SHALL BE GROUNDED AT THE TOP OF THE TOWER, WITHIN 10 FEET OF THEIR CONNECTORS, AND AT THE BOTTOM OF THE TOWER ABOUT 6 INCHES BEFORE THEY TURN TOWARD THE FACILITY. THEY SHALL BE GROUNDED AT THE MIDPOINT OF TOWERS THAT ARE BETWEEN 100 FEET AND 200 FEET HIGH, AND AT INTERVALS OF 100 FEET OR LESS ON TOWERS THAT ARE HIGHER THAN 200 FEET.
12. APPROVED GROUNDING KITS, WHICH INCLUDE GROUNDING STRAPS, SHALL BE USED TO GROUND THE COAXIAL CABLE SHIELDS, AND CONDUITS. THE GROUND CONDUCTORS FOR THE KITS AT THE TOP OF THE TOWER, AND IN THE MIDDLE SECTION OF THE TOWER, ARE BONDED DIRECTLY TO TOWER STEEL USING BOLTED, OR APPROVED CLAMP CONNECTIONS. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
13. ALL RADIO SIGNAL CABLE SHALL BE LABELED AND COLOR CODED PER MARKET REQUIREMENTS.
14. ANTENNA FEED LINE SYSTEM SWEEP TESTING SHALL BE PERFORMED AND REPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF PROJECT SPECIFICATIONS. CONTRACTOR WILL NOT ACCEPT A RADIO SIGNAL CABLE INSTALLATION WITH UNSATISFACTORY SWEEP TEST RESULTS.
15. PIM TESTS SHALL BE PERFORMED ON NEW AND MOVED OR MODIFIED COAXIAL CABLE INSTALLATIONS. TEST SHALL BE PERFORMED AND REPORTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
16. DC CONNECTORS AT OUTDOOR BIAS-Ts OR DIPLEXER/TRIPLEXER PORTS SHALL BE WEATHERPROOFED PER MANUFACTURER RECOMMENDATIONS.
17. AISG CONNECTIONS DO NOT REQUIRE ADDITIONAL WEATHERPROOFING UNLESS RECOMMENDED BY MANUFACTURER OR BY MARKET REQUIREMENTS.
18. INSTALL ONLY STANDARD RF JUMPER CABLES (e.g. LDF4 OR LCF12) AT TOWER-TOP APPLICATIONS. FLEXIBLE RF CABLES (e.g. FSJ4 OR SCF12) SHALL NOT BE USED.
19. CABLES AND CONNECTORS MUST BE PREPARED AND INSTALLED USING THE TOOLS RECOMMENDED BY THE COAXIAL CABLE MANUFACTURER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE CORRECT TOOLS ARE USED FOR THE SIZE AND TYPE OF COAX AND CONNECTOR. ALL ASPECTS OF INSTALLATION OF ALL COAXIAL CABLE SHALL FOLLOW THE CABLE MANUFACTURER'S RECOMMENDATIONS, INCLUDING THOSE FOR PULLING, MOUNTING AND GROUNDING.

PROPOSED ANTENNA CONFIGURATION

SECTOR		PROPOSED ANTENNA	TECH.	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH	ANT. CL. ELEV (ft.)	ELECTRICAL DOWNTILT	MECHANICAL DOWNTILT
ALPHA	A1	RFS APXVTM14-ALU-I20	2500	REPLACE	56.3	12.6	6.3	56.2	30°	180'	2°	0°
	A2	COMMSCOPE NNVV-65B-R4	800/1900	REPLACE	72	19.6	7.8	84.7	30°	180'	3°	0°
BETA	B1	RFS APXVTM14-ALU-I20	2500	REPLACE	56.3	12.6	6.3	56.2	135°	180'	2°	0°
	B2	COMMSCOPE NNVV-65B-R4	800/1900	REPLACE	72	19.6	7.8	84.7	135°	180'	3°	0°
GAMMA	C1	RFS APXVTM14-ALU-I20	2500	REPLACE	56.3	12.6	6.3	56.2	270°	180'	2°	0°
	C2	COMMSCOPE NNVV-65B-R4	800/1900	REPLACE	72	19.6	7.8	84.7	270°	180'	3°	0°

BILL OF MATERIALS

NUMBER	QUANTITY	DESCRIPTION	MANUFACTURER	MODEL NUMBER
1	3	PANEL ANTENNA	RFS	APXVTM14-ALU-I20
2	3	PANEL ANTENNA	COMMSCOPE	NNVV-65B-R4
3	3	2500MHZ RRH	ALU	TD-RRH8X20-25
4	6	800MHZ RRH	ALU	RRH-2X50-800
5	1000 LF	1-1/4"Ø HYBRID FIBER RISER	ALU	TBD
6	48	1/2"Ø JUMPER CABLE (8' LONG)	TBD	
7	-	TOWER MODIFICATIONS -SEE SHEET ANT-017.00	-	-
8	-	MOUNT MODIFICATIONS - SEE SHEET ANT-009.00	-	-



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A	09/01/17	ISSUED FOR COMMENTS		PET

STATE OF CONNECTICUT PETROS E. TSOUKALAS LICENSED PROFESSIONAL ENGINEER

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER: PEN.30017

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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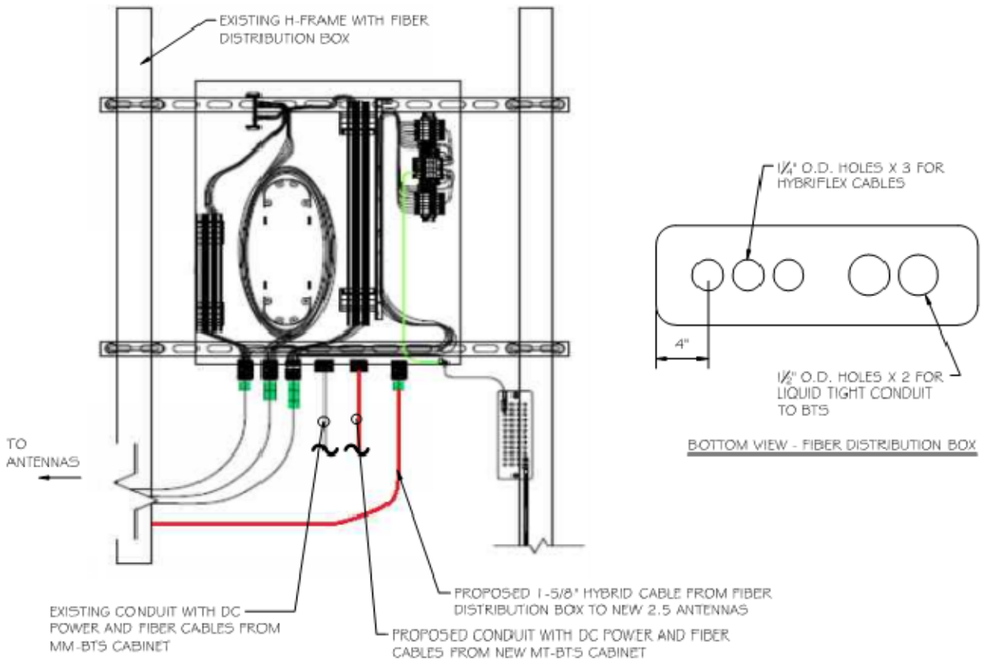
SHEET TITLE:
ANTENNA SCHEDULE, WIRING DIAGRAM, BILL OF MATERIALS AND NOTES

SHEET NUMBER:
ANT-010.00



TYPICAL FIBER DISTRIBUTION BOX DETAIL

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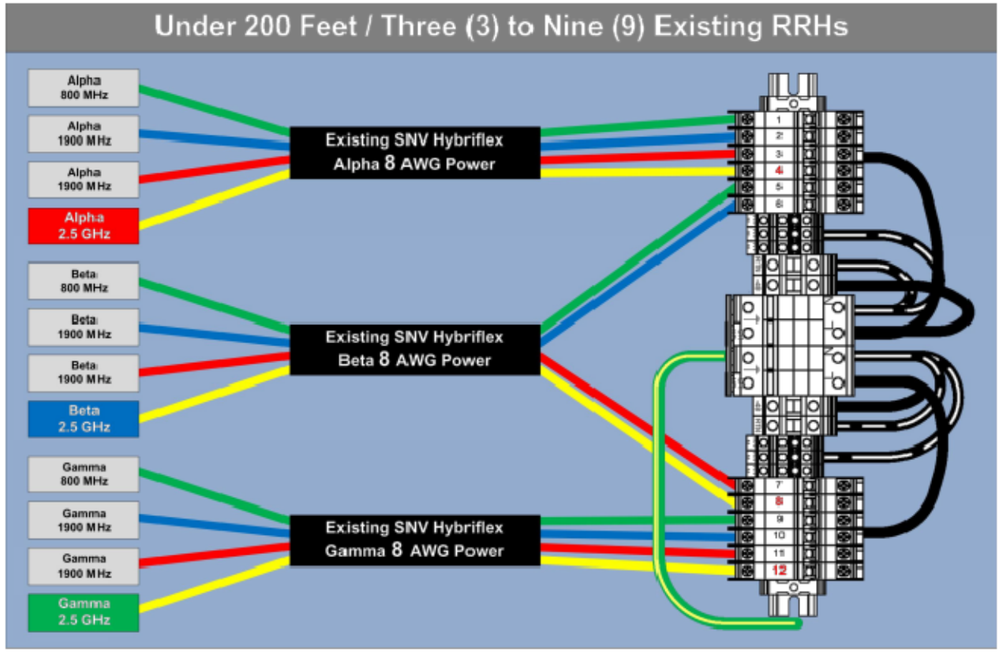

RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL

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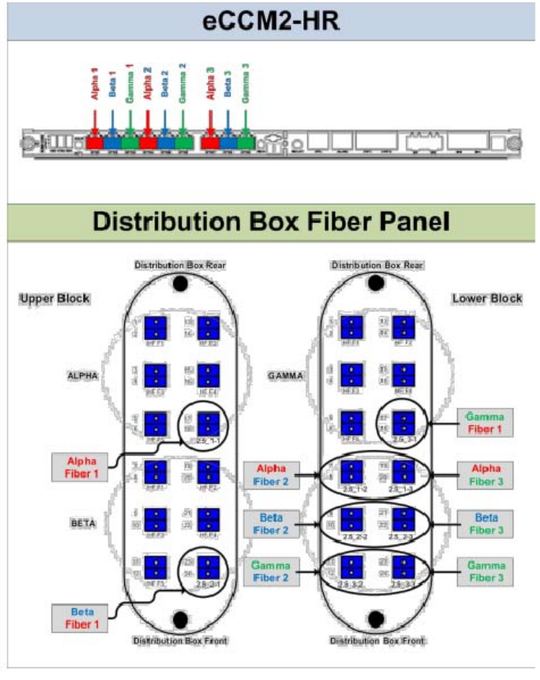

BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL

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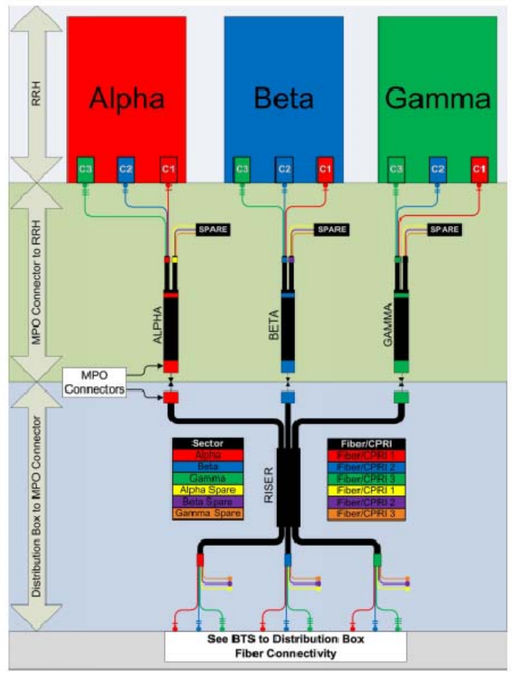

RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL

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A	09/[illegible]	ISSUED FOR REVIEW	[illegible]	PET

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PETROS E. TSOUKALAS
LICENSED PROFESSIONAL ENGINEER

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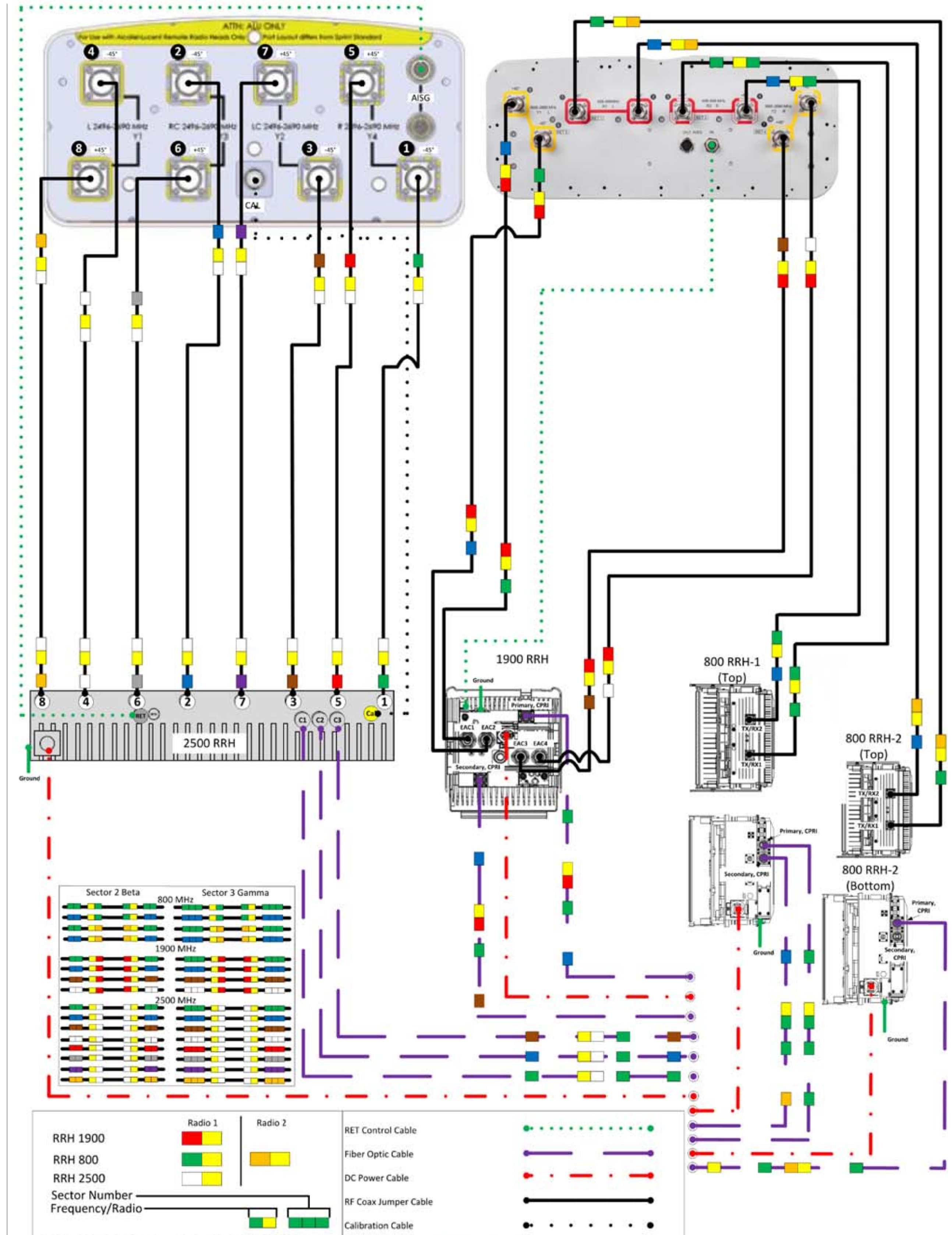
SHEET TITLE:
FIBER PLUMBING DIAGRAMS 1

SHEET NUMBER:
ANT-011.00

Prepared By	Revision Date	Revision Number	
Mark Elliott	March 13, 2018	R1	Sprint
Approved By	Approval Date		
RAN Hardware & Antenna Teams	Final-Macro Generated		

ALU 211 APXVTM14-ALU-I20 & NNVV-65B-R4 wo Filters



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B	09/27/17	[illegible]	DTS	PET
A	[illegible]	ISSUED FOR [illegible]	[illegible]	PET

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN [illegible]

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFFESIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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

SHEET TITLE :
FIBER PLUMBING DIAGRAMS 11

SHEET NUMBER :
ANT-012.00

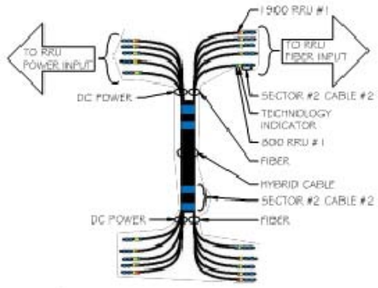
CABLE MARKING NOTES

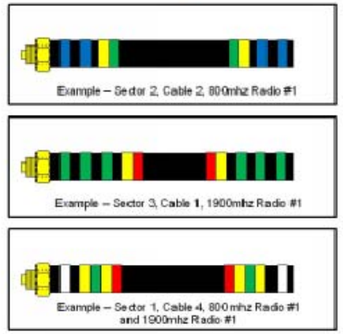
1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABEL

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

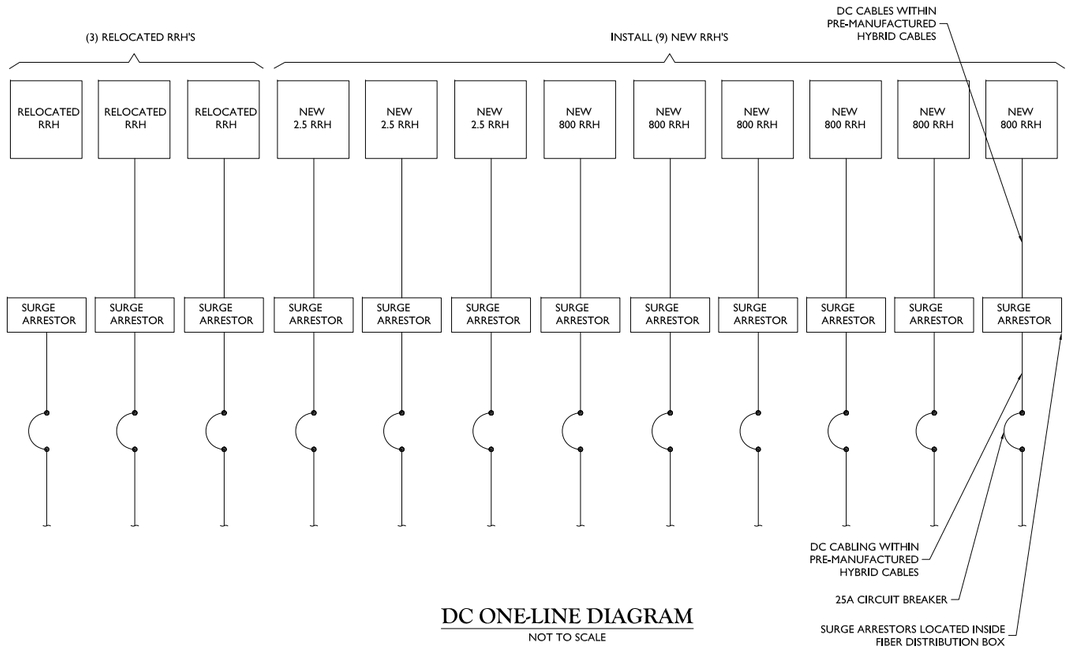
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL





COLOR CODING CHARTS
NOT TO SCALE



DC ONE-LINE DIAGRAM
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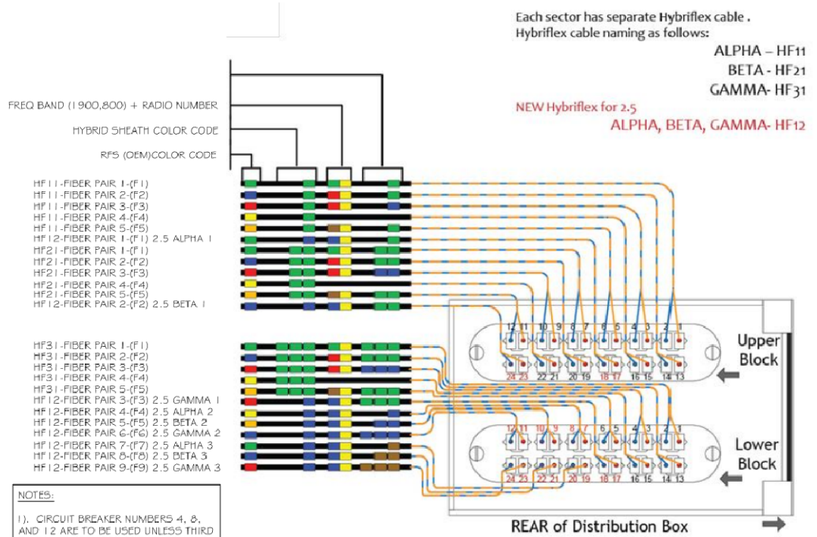

NOTES:
1). CIRCUIT BREAKER NUMBERS 4, 8, AND 12 ARE TO BE USED UNLESS THIRD DC RAIL IS REQUIRED FOR MICROWAVE.
2). USE DC POWER LOOP.
3). ALL UNUSED DC FEEDERS TO BE TERMINATED WITH WIRE NUTS AND TAPED.
4). REMOVE ALL DEBRIS FROM INTERIOR OF FIBER DISTRIBUTION BOX WHEN COMPLETE.

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SCALE:	JOB NUMBER:
AS SHOWN	17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
5	07/27/18	ISSUED FOR CONSTRUCTION	AF	ASN
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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
LICENSED PROFESSIONAL ENGINEER

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER: PEN.26427

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COVENTRY, CT 06238

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

SHEET TITLE:
CABLE COLOR CODING, DC POWER DETAILS & PANEL SCHEDULES

SHEET NUMBER:
ANT-013.00

GENERAL REQUIREMENTS:

1. THE WORK TO BE DONE UNDER THIS PROJECT INCLUDES PROVIDING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES, AND PERFORMING ALL OPERATIONS FOR COMPLETE AND OPERATING SYSTEMS. ANY WORK NOT SPECIFICALLY COVERED BY NECESSARY TO COMPLETE THIS INSTALLATION, SHALL BE PROVIDED. ALL EQUIPMENT AND WIRING TO BE NEW AND PROVIDED UNDER THIS CONTRACT UNLESS OTHERWISE NOTED.
2. ENTIRE INSTALLATION, INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL CONFORM TO THE 2011 EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AS WELL AS ALL APPLICABLE LAWS AND REGULATIONS AND REGULATORY BODIES HAVING JURISDICTION OVER THIS WORK.
3. THE TERM "FURNISH" SHALL MEAN TO OBTAIN AND SUPPLY THE JOB SITE. THE TERM "INSTALL" SHALL MEAN TO FIX IN POSITION AND CONNECT FOR USE. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL. THE TERM "CONTRACTOR" SHALL MEAN ELECTRICAL CONTRACTOR.
4. ONLY WRITTEN CHANGES AND/OR MODIFICATIONS APPROVED BY THE ENGINEER, CONSULTING ENGINEER OR OWNER'S REPRESENTATIVE WILL BE RECOGNIZED.
5. THE ELECTRICAL CONTRACTOR SHALL SUBMIT, FOR THE ENGINEER'S APPROVAL, DETAILED SHOP DRAWINGS OF ALL EQUIPMENT SPECIFIED.
6. CONTRACTOR SHALL COORDINATE WITH SPECIFICATIONS BY OTHER TRADES.
7. PROVIDE OPERATING AND MAINTENANCE MANUALS, PER SPECIFICATIONS, AND GIVE INSTRUCTIONS TO USER FOR ALL EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS CONTRACT AFTER ALL ARE CLEANED AND OPERATING.
8. KEEP PREMISES FREE FROM RUBBISH. REMOVE ALL ELECTRICAL RUBBISH FROM SITE.
9. ALL WORK SHALL BE INSTALLED CONCEALED UNLESS OTHERWISE NOTED.
10. THE WORK SHALL INCLUDE ALL PANELS, DEVICES, FEEDERS AND BRANCH CIRCUIT WIRING AS REQUIRED FOR THE DISTRIBUTION SYSTEM INDICATED AND CALLED FOR ON THE DRAWINGS. REQUIRED BY SPECIFICATIONS AND AS NECESSARY FOR COMPLETE FUNCTIONAL SYSTEMS PRESENTED AND INTENDED.
11. THE CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR, TOOLS, EQUIPMENT, CONSUMABLES AND SERVICES REQUIRED FOR OBTAINING, DELIVERY, INSTALLATION, CONNECTION, DISCONNECTION, REMOVAL, RELOCATION, REPAIR, REPLACEMENT, TESTING AND COMMISSIONING OF ALL EQUIPMENT AND DEVICES INCLUDED IN OR NECESSARY FOR THE WORK, AS APPLICABLE. THIS INCLUDES SCAFFOLDING, LADDERS, RIGGING, HOISTING, ETC.
12. ELECTRICAL WORK SHALL INCLUDE ALL REQUIRED CUTTING, PATCHING AND THE FULL RESTORATION OF WALL AND FLOOR STRUCTURE AND SURFACES. ALL EQUIPMENT, WALLS, FLOORS, ETC., DISTURBED OR DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER, AT THE CONTRACTORS EXPENSE.
13. BEFORE SUBMITTING HIS BID, THE CONTRACTOR SHALL FULLY ACQUAINT HIMSELF/HERSELF WITH THE JOB CONDITIONS AND DIFFICULTIES THAT WILL PERTAIN TO THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED, WHICH COULD NOT HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
14. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING UTILITIES.
15. UPON COMPLETION OF THE ELECTRICAL WORK, THE CONTRACTOR SHALL TEST THE COMPLETE ELECTRICAL SYSTEM FOR SHORTS, GROUNDS, AND PROPER OPERATION, IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
16. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN AND ADJUST ALL EQUIPMENT AND LIGHTING AND TEST SYSTEMS TO THE SATISFACTION OF OWNER AND ENGINEER. RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
17. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
18. EXACT ROUTING OF CONDUITS AND "MC" CABLES SHALL BE DETERMINED IN THE FIELD.
19. IF THE OWNER AND/OR HIS REPRESENTATIVE CONSIDERS ANY WORK TO BE INFERIOR, THE RESPECTIVE CONTRACTOR SHALL REPLACE SAME WITH CONTRACT STANDARD WORK WITHOUT ADDITIONAL CHARGE. ALL WORK SHALL BE DONE IN A NEAT, WORKMANLIKE MANNER. LEFT CLEAN AND FREE FROM DEFECTS, AND COMPLETELY OPERABLE.
20. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AS SHOWN ON THE DRAWINGS AND/OR AS SPECIFIED. ALL MATERIALS SHALL BE NEW, AND BEAR THE UL LABEL. ALL WORK SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.
21. DRAWINGS ARE TO BE CONSIDERED DIAGRAMMATIC, AND SHALL BE FOLLOWED AS CLOSELY AS CONDITIONS ALLOW TO COMPLETE THE INTENT OF THE CONTRACT. THE DRAWINGS AND SPECIFICATIONS COMPLIMENT AND VICE VERSA, IS TO BE INCLUDED IN THE SCOPE OF WORK.
22. ALL EQUIPMENT CONNECTIONS SHALL BE INSTALLED PER APPLICABLE SEISMIC REQUIREMENTS.
23. ENGINEER WILL MAKE A FINAL INSPECTION WITH THE OWNER AND CONTRACTOR AND WILL NOTIFY THE CONTRACTOR IN WRITING OF ALL PARTICULARS IN WHICH THIS INSPECTION REVEALS THAT THE WORK IS INCOMPLETE OR DEFECTIVE. THE CONTRACTOR SHALL IMMEDIATELY TAKE SUCH MEASURES AS ARE NECESSARY TO COMPLETE SUCH WORK OR REMEDY SUCH DEFICIENCIES.
24. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION, TRENCHING, AND BACKFILL AS REQUIRED FOR ELECTRICAL WORK. BACKFILL SHALL BE SUITABLE MATERIAL PROPERLY COMPACTED TO 95% DENSITY IN EACH LAYER OF SIX (6) INCH DEPTH. CONDUIT SHALL BE MINIMUM 36" BELOW FINISHED GRADE.

PROJECT COORDINATION:

1. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE OWNER OF ANY DISCREPANCIES, PRIOR TO COMMENCING WITH THE WORK.
2. THE CONTRACTOR SHALL REVIEW AND COORDINATE WITH THE DOCUMENTS OF ALL TRADES.
3. THE CONTRACTOR SHALL FURNISH A SCHEDULE INDICATING HIS PORTION OF TIME, WITHIN THE OVERALL SCHEDULE, REQUIRED TO COMPLETE THE WORK, IN CONJUNCTION WITH ALL TRADES. ALL WORK THAT MAY AFFECT OPERATION OF BUILDING SYSTEMS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.
4. SHUT DOWN OF POWER SHALL BE COORDINATED WITH THE OWNER, ARCHITECT AND PROJECT MANAGER AT LEAST 14 WORKING DAYS PRIOR TO SHUT DOWN. SHUT DOWNS LONGER THAN 2 DAYS SHALL BE COORDINATED WITH THE ABOVE PERSONNEL AT LEAST ONCE A MONTH IN ADVANCE. TEMPORARY POWER FOR CONSTRUCTION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR FOR SHUT DOWNS OVER 2 DAYS.
5. ALL CONDUITS AND DEVICE BOXES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR, INCLUDING ALL TECHNOLOGY CONDUITS AND BOXES.
6. INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. TEMPORARY SHUT DOWNS OF ANY SYSTEMS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER AND ARCHITECT.

PROTECTION OF WORK:

1. EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.

WARRANTIES AND BONDS:

1. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED IN WRITING FOR A MINIMUM OF ONE YEAR AFTER FINAL ACCEPTANCE BY OWNER.
2. OBTAIN AND DELIVER TO THE OWNER'S REPRESENTATIVE ALL GUARANTEES AND CERTIFICATES OF COMPLIANCE.

PERMITS:

1. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION FEES FOR ELECTRICAL WORK.

RACEWAYS:

1. ALL CONDUIT SHALL BE MINIMUM SIZE OF 3/4" FOR POWER CIRCUITS AND CONTROL CIRCUITS EXCEPT WHERE FLEXIBLE CONDUIT IS CALLED FOR ON PROJECT DOCUMENTS. ALL EXTERIOR EXPOSED CONDUIT SHALL BE GRC (GALVANIZED RIGID METAL CONDUIT). ALL UNDERGROUND, IN SLAB OR UNDER SLAB SHALL BE RNC (RIGID NONMETALLIC CONDUIT). CHANGE RIGID METALLIC CONDUIT FOR INTERMEDIATE METALLIC CONDUIT BEFORE EXITING OUT OF CONCRETE OR PENETRATING A WALL, FLOOR OR ROOF. EMT IS ALLOWED IN INTERIOR DRY LOCATIONS WHERE NOT SUBJECT TO DAMAGE.
2. ALL FLEXIBLE CONDUIT IN WET OR DRY AREAS SHALL BE LIQUID TIGHT CONDUIT. NONMETALLIC FLEXIBLE CONDUIT IS SPECIFICALLY PROHIBITED.
3. CONDUIT SHALL BE RUN AT RIGHT ANGLES AND PARALLEL TO BUILDING LINES, SHALL BE NEATLY RACKED AND SECURELY FASTENED. JUNCTION BOXES SHALL BE PROVIDED WHERE REQUIRED TO FACILITATE INSTALLATION OF WIRES.
4. ALL CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER.
5. ALL EMPTY RACEWAYS SHALL BE FURNISHED WITH A 200 LB. TEST NYLON DRAG LINE.
6. ARRANGEMENT OF CONDUIT AND EQUIPMENT SHALL BE AS INDICATED, UNLESS MODIFICATION IS REQUIRED TO AVOID INTERFERENCES.
7. FOR CONDUITS CROSSING EXPANSION JOINTS, PROVIDE EXPANSION FITTINGS FOR SIZE 1 1/4" AND LARGER. PROVIDE SECTIONS OF FLEXIBLE CONDUIT WITH GROUNDING JUMPERS FOR SIZES 1" AND SMALLER.
8. THE CONTRACTOR SHALL INSTALL DETECTABLE UNDERGROUND TAPES FOR THE PROTECTION, LOCATION AND IDENTIFICATION OF UNDERGROUND CONDUIT INSTALLATION.
9. EXACT ROUTING OF CONDUITS AND CABLES SHALL BE DETERMINED IN FIELD.

WIRING:

1. ALL WIRE SHALL BE COPPER WITH TYPE THNN/THWN 600 VOLT INSULATION, MINIMUM #12 AWG FOR POWER AND LIGHTING CIRCUITS AND #16 AWG FOR CONTROL CIRCUITS.
2. UNDER NO CIRCUMSTANCES SHALL FEEDERS BE SPLICED.
3. ALL COMPUTER CIRCUITS SHALL HAVE SEPARATE NEUTRAL CONDUCTORS. ALL OTHER CIRCUITS MAY SHARE GROUND AND NEUTRAL CONDUCTORS.
4. WHERE EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES ARE SHOWN WITH CIRCUIT NUMBERS ONLY, THE MINIMUM BRANCH CIRCUITING REQUIREMENTS SHALL BE AS FOLLOWS.
5. CONTRACTOR SHALL INCREASE SIZE OF CIRCUIT WIRING/CONDUCTORS TO COMPENSATE FOR VOLTAGE DROP.
6. WIRE SIZES SHALL BE INCREASED TO COMPENSATE FOR VOLTAGE DROP AS FOLLOWS:

GROUNDING:

1. PROVIDE A COMPLETE EQUIPMENT GROUND SYSTEM FOR THE ELECTRICAL SYSTEM AS REQUIRED BY ARTICLE 250, OF THE NEC, AND AS SPECIFIED HEREIN.
2. ALL BRANCH CIRCUITS FOR POWER WIRING SHALL CONTAIN A COPPER GROUND WIRE. NO FLEXIBLE METAL CONDUIT OF ANY KIND OR LENGTH SHALL BE USED AS THE EQUIPMENT GROUNDING CONDUCTOR.
3. THE EQUIPMENT BONDING JUMPER SHALL BE PERMITTED TO BE INSTALLED INSIDE OR OUTSIDE OF A RACEWAY OR ENCLOSURE. WHERE INSTALLED ON OUTSIDE, THE LENGTH OF THE EQUIPMENT BONDING JUMPER SHALL NOT EXCEED 6 FEET AND SHALL BE ROUTED WITH THE RACEWAY OR ENCLOSURE. REFER TO NEC 2011 - 250.102 (E)
4. ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
5. ALL WIRES SHALL BE AWG THHN/THWN COPPER UNLESS NOTED OTHERWISE.
6. GROUNDING CONNECTIONS TO GROUND RODS, GROUND RING WIRE, TOWER BASE AND FENCE POSTS SHALL BE EXOTHERMIC ("CADWELDS") UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL. WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
7. GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRASS MECHANICAL CONNECTORS WITH STAINLESS STEEL HARDWARE (INCLUDE SCREW SET). CLEAN GROUND BAR TO SHINY METAL. AFTER MECHANICAL CONNECTION, TREAT WITH PROTECTIVE ANTIOXIDANT COATING.
8. GROUND COAXIAL CABLE SHIELDS AT BOTH ENDS WITH MANUFACTURERS' GROUNDING KITS.
9. ROUTE GROUNDING CONDUCTORS THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 12" RADIUS.
10. INSTALL #2 AWG GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 BARE TINNED COPPER WIRE FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
11. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC TYPE ("CADWELDS") TO GROUND RING. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO-HOLE LUGS.
12. EXOTHERMIC WELDS SHALL BE MADE IN ACCORDANCE WITH ERICO PRODUCTS BULLETIN A-AT.
13. CONSTRUCTION OF GROUND RING AND CONNECTIONS TO EXISTING GROUND RING SYSTEM SHALL BE DOCUMENTED WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PROVIDE PHOTOS TO CARRIER'S CONSTRUCTION MANAGER.
14. ALL GROUND LEADS EXCEPT THOSE TO THE EQUIPMENT ARE TO BE #2/0 TINNED. ALL EXTERIOR GROUND BARS TINNED COPPER.
15. PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHIELD (TM OF JET LUBE INC.) PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
16. ENGAGE IN INDEPENDENTLY ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT IMPEDANCE DOES NOT EXCEED FIVE OHMS TO GROUND BY MEANS OF "FALL OF POTENTIAL TEST". TEST SHALL BE WITNESSED BY CARRIER REPRESENTATIVE, AND RECORDED ON CARRIER'S "GROUND RESISTANCE TEST" FORM.
17. WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1' BELOW GRADE AND SEAL TOP WITH SILICONE MATERIAL.
18. PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
19. ANY SITE WHERE THE EQUIPMENT (BTS, CABLE BRIDGE, PPC, GENERATOR, ETC.) IS LOCATED WITHIN 6 FEET OF METAL FENCING THE BGR SHALL BE BONDED TO THE NEAREST FENCE POST USING (2) RUNS OF #2 BARE TINNED COPPER WIRE.

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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
LICENSED PROFESSIONAL ENGINEER

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER: PEN.30017

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SITE ID: CT03XC206

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COVENTRY, CT 06238

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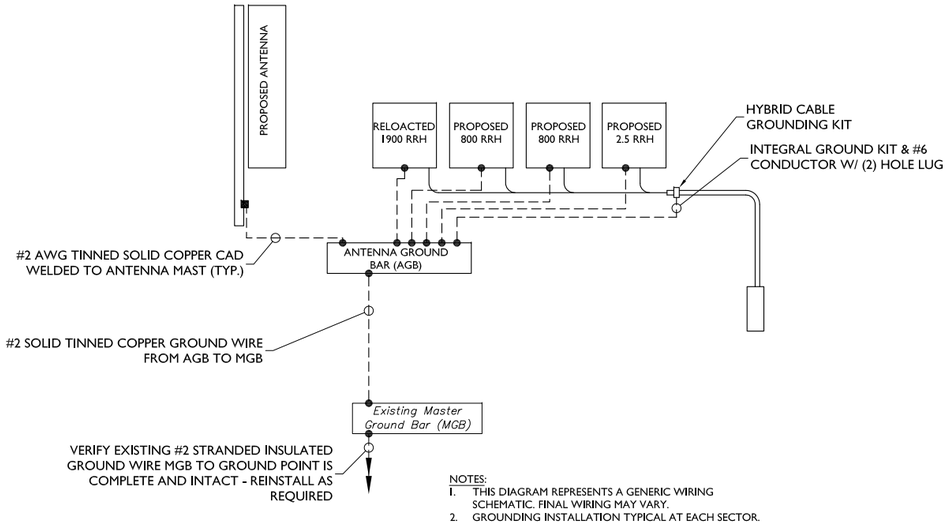
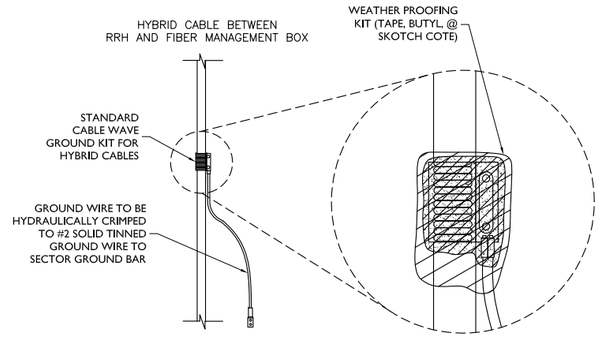
SHEET TITLE:
ELECTRICAL AND GROUNDING NOTES

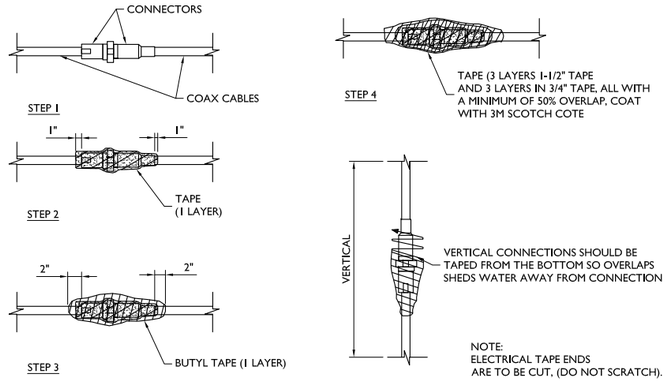
SHEET NUMBER:
ANT-014.00



NOTES:
1. THIS DIAGRAM REPRESENTS A GENERIC WIRING SCHEMATIC. FINAL WIRING MAY VARY.
2. GROUNDING INSTALLATION TYPICAL AT EACH SECTOR.

GROUNDING SCHEMATIC
NOT TO SCALE

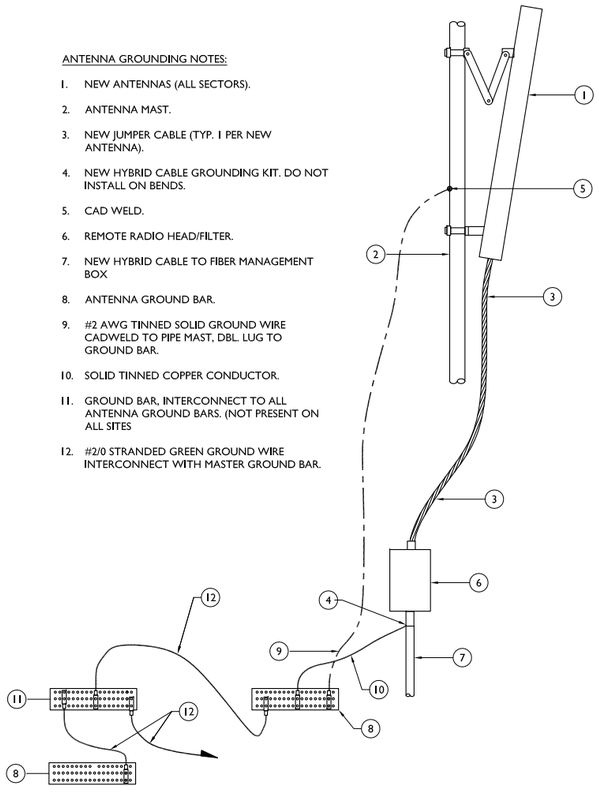




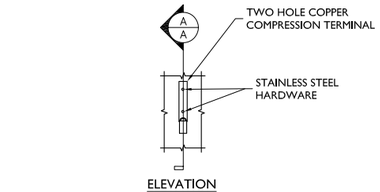
CABLE WRAPPING DETAIL
NOT TO SCALE

ANTENNA GROUNDING NOTES:

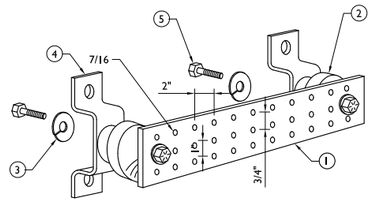
1. NEW ANTENNAS (ALL SECTORS).
2. ANTENNA MAST.
3. NEW JUMPER CABLE (TYP. 1 PER NEW ANTENNA).
4. NEW HYBRID CABLE GROUNDING KIT. DO NOT INSTALL ON BENDS.
5. CAD WELD.
6. REMOTE RADIO HEAD/FILTER.
7. NEW HYBRID CABLE TO FIBER MANAGEMENT BOX
8. ANTENNA GROUND BAR.
9. #2 AWG TINNED SOLID GROUND WIRE CADWELD TO PIPE MAST, DBL. LUG TO GROUND BAR.
10. SOLID TINNED COPPER CONDUCTOR.
11. GROUND BAR, INTERCONNECT TO ALL ANTENNA GROUND BARS. (NOT PRESENT ON ALL SITES
12. #2/0 STRANDED GREEN GROUND WIRE INTERCONNECT WITH MASTER GROUND BAR.



ANTENNA GROUNDING SCHEMATIC
NOT TO SCALE



TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



1. COPPER GROUND BAR, 1/4" X 4" X 20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION. (ACTUAL GROUND BAR SIZE WILL VARY BASED ON NUMBER OF GROUND CONNECTIONS)
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
3. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUAL
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
5. 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1 OR EQUAL

NOTE: INSULATORS SHALL BE ELIMINATED WHEN BONDING DIRECTLY TO MONOPOLE STRUCTURE. CONNECTION TO MONOPOLE STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

GROUND BAR DETAIL
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SCALE :	JOB NUMBER :
AS SHOWN	17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/01/17	ISSUED FOR REVIEW	DTS	PET

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.[illegible]

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

1712 MAIN STREET
COVENTRY, CT 06238

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

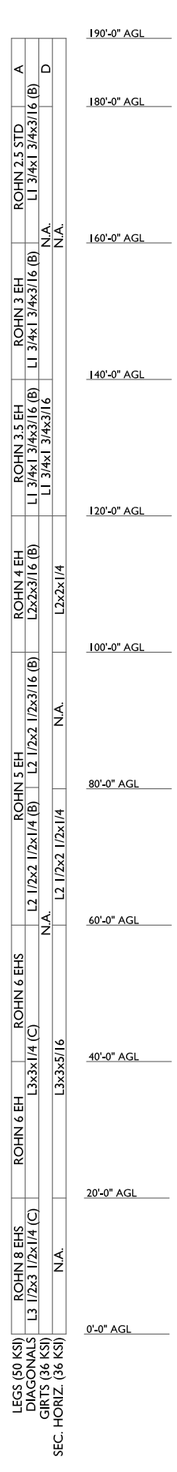
SHEET TITLE :
GROUNDING SCHEMATIC AND DETAILS

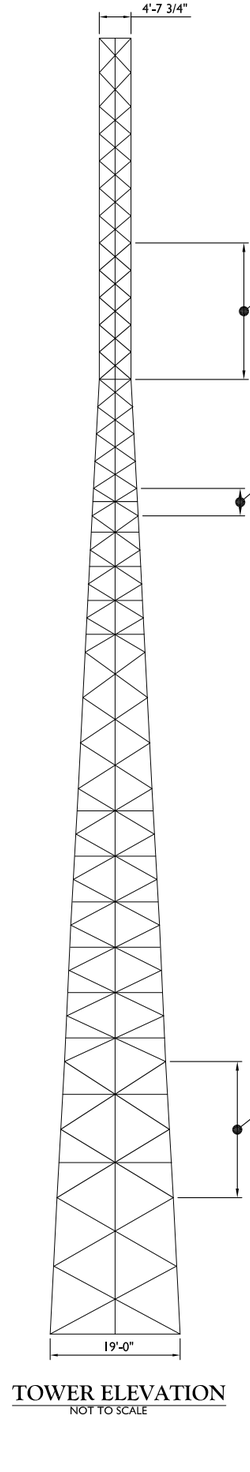
SHEET NUMBER :
ANT-015.00

NOTES:

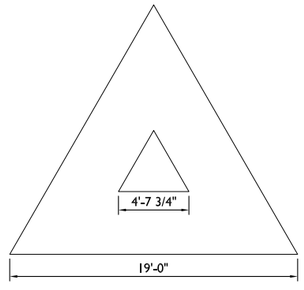
EQUIPMENT NOT SHOWN FOR CLARITY

SYMBOL LIST	
MARK	SIZE/GRADE
A	ROHN 2 STD
B	36 KSI
C	50 KSI





TOWER ELEVATION
NOT TO SCALE



TOWER PLAN
NOT TO SCALE

TOWER FOUNDATION REACTIONS	
REACTION TYPE	FORCE
COMPRESSION (MAX KIP PER LEG)	350.4
UPLIFT (MAX KIP PER LEG)	310.6
SHEAR (MAX KIP PER LEG)	34.2
BASE AXIAL (KIP)	43.5
OVERTURNING MOMENT (KIP-FT)	5527
SHEAR (KIP)	54.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) Obstruction Lights	192	LNX-6514DS-T4M (Verizon)	150
PD1142-3	192	HBXX-6517DS-A2M (Verizon)	150
ASP-705	192	LNX-6514DS-T4M (Verizon)	150
ASP-705	192	HBXX-6517DS-A2M (Verizon)	150
DB420	192	LNX-6514DS-T4M (Verizon)	150
Halo	192	HBXX-6517DS-A2M (Verizon)	150
4'x3" Dia. Omni	190	LNX-6514DS-T4M (Verizon)	150
3' Yagi	190	HBXX-6517DS-A2M (Verizon)	150
3' Yagi	190	RRH 2x60-AWS (Verizon)	150
Pirod 4' Side Mount Standoff (1)	188	RRH 2x60-AWS (Verizon)	150
Pirod 4' Side Mount Standoff (1)	188	RRH 2x60-AWS (Verizon)	150
Pirod 4' Side Mount Standoff (1)	188	RRH 2x60-PCS (Verizon)	150
Paraflector	187	RRH 2x60-PCS (Verizon)	150
PD1142-2A	187	RRH 2x60-PCS (Verizon)	150
Rohn 6'x14' Boom Gate (3) (Sprint)	179.917	DB-T1-6Z-8AB-0Z (Verizon)	150
RRH 4x45 1900RRH (Sprint)	179.917	DB-T1-6Z-8AB-0Z (Verizon)	150
RRH 4x45 1900RRH (Sprint)	179.917	Paraflector	144
RRH 4x45 1900RRH (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	142
APXVTM14-ALU-I20 (Sprint)	179.917	DB264-A	142
APXVTM14-ALU-I20 (Sprint)	179.917	DB436-C	142
APXVTM14-ALU-I20 (Sprint)	179.917	DB230-2A	142
TD-RRH8x20-25 (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	142
TD-RRH8x20-25 (Sprint)	179.917	Paraflector	140
TD-RRH8x20-25 (Sprint)	179.917	Single Dipole	136
(2) RRH-2X50-800 (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	113
(2) RRH-2X50-800 (Sprint)	179.917	Dipole	113
(2) RRH-2X50-800 (Sprint)	179.917	PD320	110
NNVV-65B-R4 (Sprint)	179.917	14'x3" Dia. Omni	109
NNVV-65B-R4 (Sprint)	179.917	Pirod 4' Side Mount Standoff (1)	109
NNVV-65B-R4 (Sprint)	179.917	14'x3" Dia. Omni	103
Pirod 4' Side Mount Standoff (1)	156	Pirod 4' Side Mount Standoff (1)	103
ASP-705	156	GPS	102
Pirod 4' Side Mount Standoff (1)	156	1' Standoff Pipe	102
ASP-705	156	DB212 Single Dipole	94
3-ft Dish	156	15-ft Single Dipole	92
Pirod 12' T-Frame Sector Mount (1) (Verizon)	150	PD320	74
		15-ft Single Dipole	70
Pirod 12' T-Frame Sector Mount (1) (Verizon)	150	DB212 Single Dipole	50
		15-ft Single Dipole	50
Pirod 12' T-Frame Sector Mount (1) (Verizon)	150	DB212 Single Dipole	32
		15-ft Single Dipole	31
LNX-6514DS-T4M (Verizon)	150	Pirod 4' Side Mount Standoff (1)	17
HBXX-6517DS-A2M (Verizon)	150	3' Yagi	17
LNX-6514DS-T4M (Verizon)	150	PD400	17
HBXX-6517DS-A2M (Verizon)	150		

NOTES:

1. YIELD STRENGTH OF EXISTING TOWER MEMBERS IS ASSUMED.
2. EXISTING TOWER MEMBERS WERE DETERMINED FROM PREVIOUS STRUCTURAL ANALYSIS REPORT, PERFORMED BY CENTEK ENGINEERING, PROJECT NO. 14001.057, DATED DECEMBER 03, 2014.
3. CONTRACTOR IS TO REMOVE AND REPLACE EXISTING APPURTENANCES, MOUNTS AND TOWER HARDWARE AS REQUIRED TO INSTALL THE PROPOSED REINFORCEMENTS.
4. CONTRACTOR SHALL PERFORM A TOWER INSPECTION PRIOR TO PURCHASE AND/OR FABRICATION OF MATERIAL.
5. THE MEANS AND METHODS OF INSTALLATION ARE THE RESPONSIBILITIES OF THE CONTRACTOR.
6. ZRC GALVANIZING COMPOUND OR EQUAL SHALL TREAT ALL WELDED AREAS.
7. CONTRACTOR SHALL NOT REUSE EXISTING BOLTS AND ASSOCIATED HARDWARE.
8. ONCE THE TOWER MODIFICATIONS HAVE BEEN COMPLETED, THE OVERALL TOWER USAGE WILL BE DETERMINED TO BE 91.7% FOR THE EXISTING AND PROPOSED LOADING.

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STATE OF CONNECTICUT
PETROS E. TSOUKALAS
LICENSED PROFESSIONAL ENGINEER

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.30647

SITE NAME: COVENTRY
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SITE ID: CT03XC206

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ELEVATION VIEW

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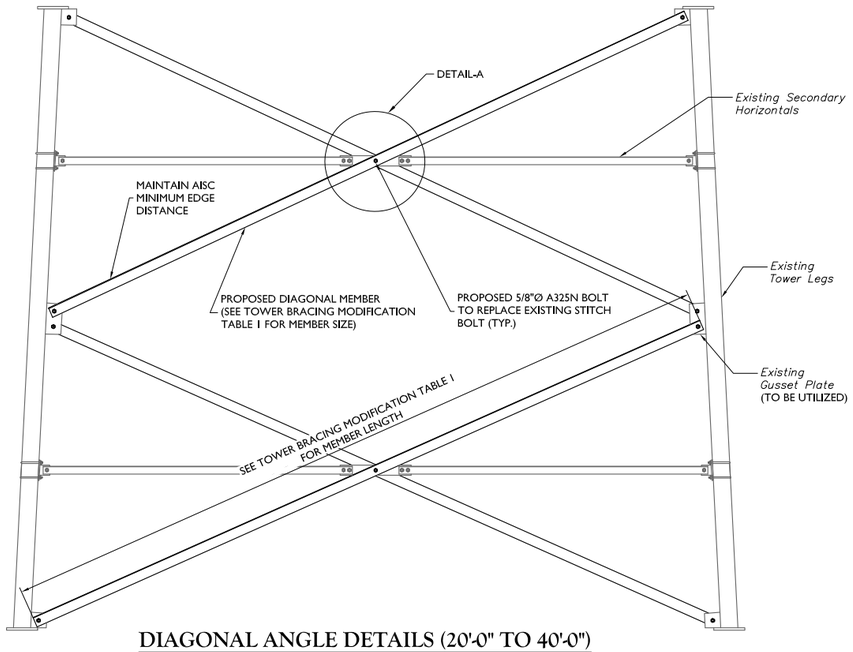
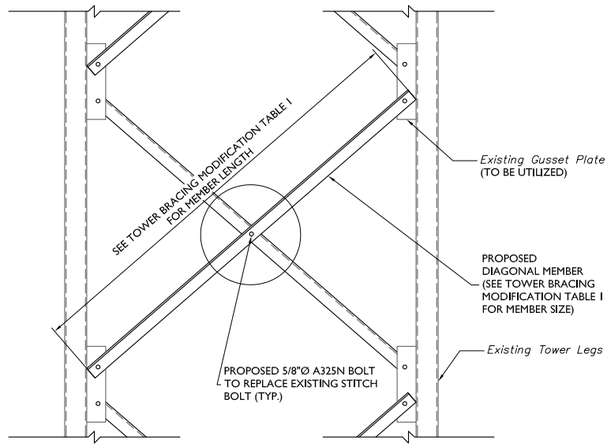


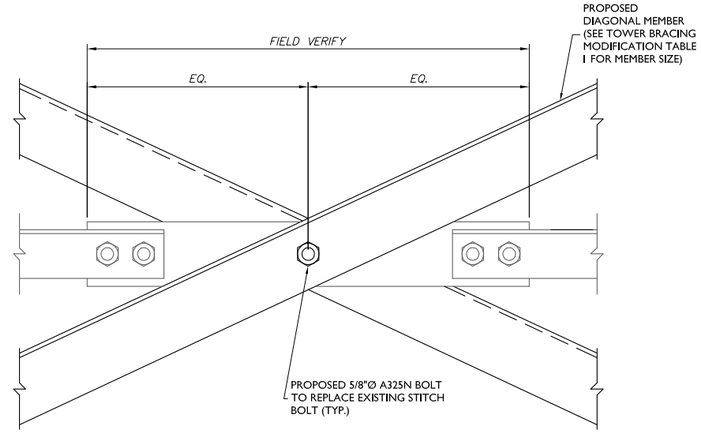
DIAGONAL ANGLE DETAILS (20'-0" TO 40'-0")

NOT TO SCALE



DIAGONAL ANGLE DETAILS (140'-0" TO 160'-0")

NOT TO SCALE



DETAIL-A

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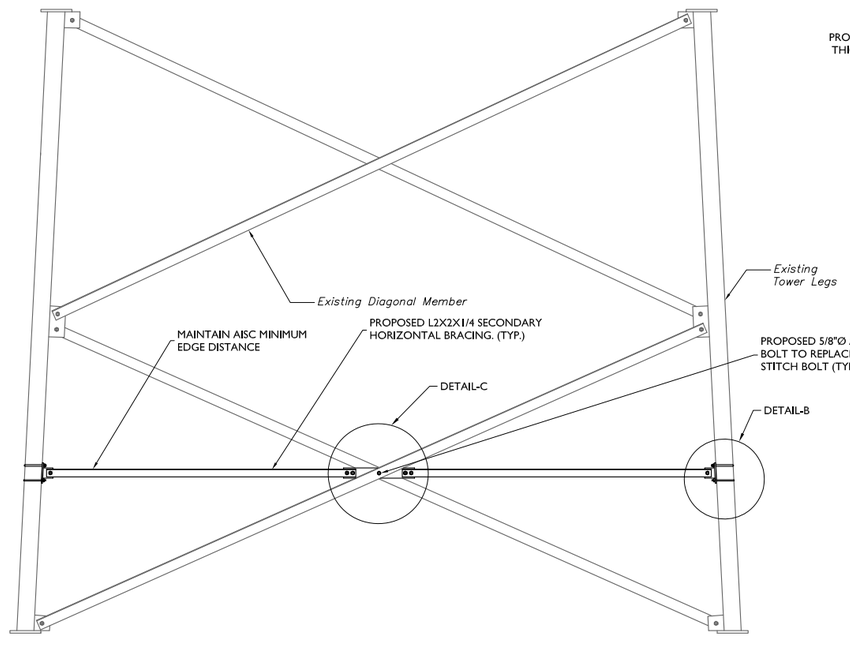
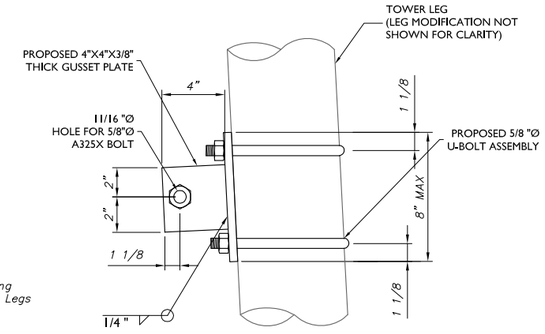


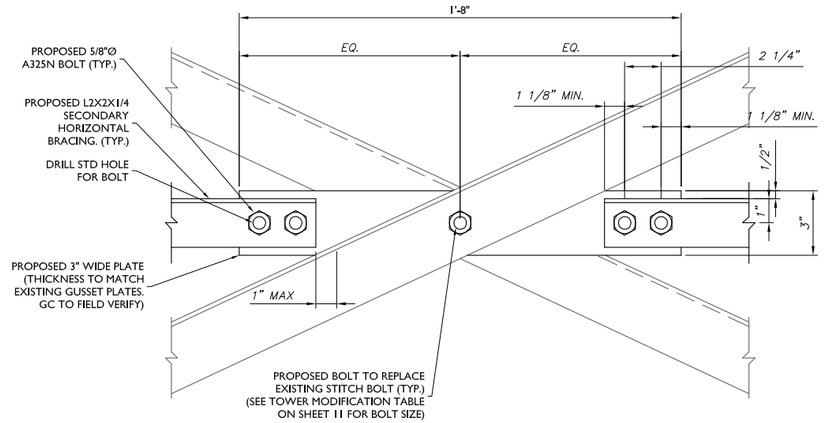
SECONDARY HORIZONTAL ANGLE DETAILS (120'-0" TO 124'-0")

NOT TO SCALE



DETAIL-B (SIDE VIEW)

NOT TO SCALE



DETAIL-C

NOT TO SCALE

TABLE 1 - TOWER BRACING MODIFICATION TABLE

ELEVATION (FT)	MEMBER TYPE	EXISTING MEMBER SIZE	QTY	PROPOSED MEMBER SIZE	QTY	LENGTH *	END BOLT**	QTY	CENTER BOLT**	QTY
20.00 - 40.00	DIAGONALS	L3x3x1/4	12	L3 1/2X3 1/2X1/4	12	±19'-3"	5/8" Ø A325	24	5/8" Ø A325	6
120.00 - 124.00	HORIZONTALS	-	-	L2X2X1/4	6	±3'-0"	5/8" Ø A325	18	5/8" Ø A325	3
140.00 - 160.00	DIAGONALS	L1 3/4x1 3/4x3/16	30	L2X2X1/4	30	±6'-2"	5/8" Ø A325	60	5/8" Ø A325	15

* LENGTH IS THEORETICAL. CONTRACTOR TO FIELD VERIFY THE LENGTH OF THE EXISTING MEMBERS IN THE FIELD PRIOR TO FABRICATION OF THE PROPOSED BRACING MEMBER
** PROPOSED A325 BOLTS NEED TO BE COVERED WITH ZINC/ALUMINUM CORROSION PROTECTIVE COATINGS.

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B	09/27/17	REVISED PER COMMENTS	DTS	PET
A	09/[illegible]	ISSUED FOR REVIEW	[illegible]	PET

STATE OF CONNECTICUT
PETROS E TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER PEN.26967
PROFESSIONAL ENGINEER

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

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COVENTRY, CT 06238

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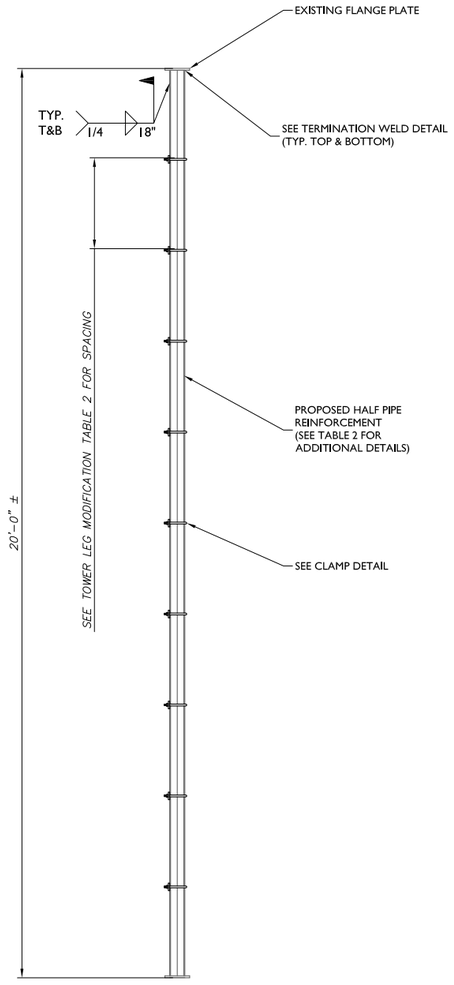
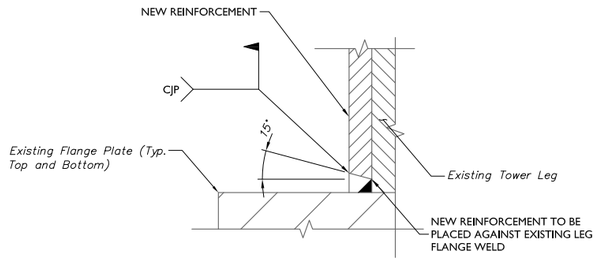
SHEET NUMBER:
ANT-017.00



TYPICAL LEG REINFORCEMENT DETAIL
NOT TO SCALE



TERMINATION WELD DETAIL
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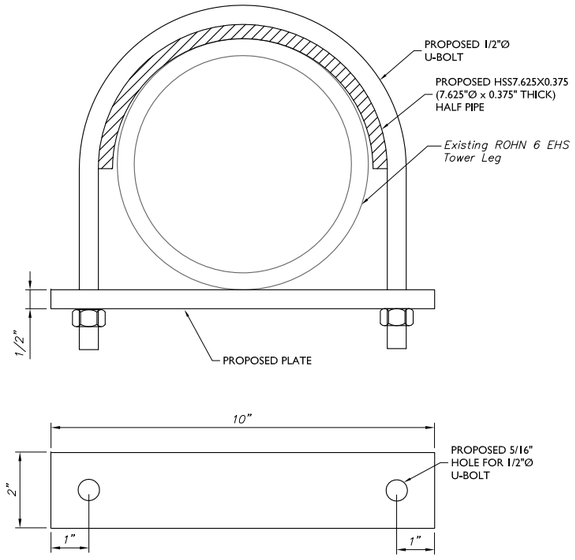
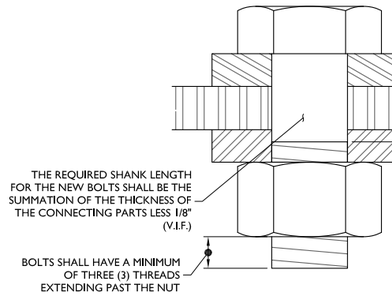


EL. 40' - 60'

TYPICAL LEG REINFORCEMENT CLAMP DETAIL
NOT TO SCALE



BOLT DETAIL
NOT TO SCALE

TABLE 2 - TOWER LEG MODIFICATION TABLE							
ELEVATION (FT)	MEMBER TYPE	EXISTING MEMBER SIZE	QTY	PROPOSED MEMBER SIZE	QTY	LENGTH *	U-BOLT SPACING
40.00 - 60.00	TOWER LEGS	ROHN 6 EHS	3	HSS7.625x0.375 ROUND TUBE	3	± 20'-0"	2'-0" MAX

* REMOVE ALL EXISTING SECONDARY HORIZONTALS FROM 40'-0" TO 60'-0" AGL.
** LENGTH IS THEORETICAL. CONTRACTOR TO FIELD VERIFY THE LENGTH OF THE EXISTING MEMBERS IN THE FIELD PRIOR TO FABRICATION OF THE PROPOSED MEMBER

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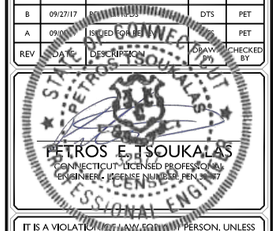

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, PERSUE NUMBER PEN.[illegible]

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SITE ID: CT03XC206

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SHEET TITLE :
MODIFICATION DETAILS 2

SHEET NUMBER :
ANT-018.00

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR DISSEMINATION OF REVISIONS TO CONTRACT DOCUMENTS AND REQUIREMENTS TO ALL SUBCONTRACTORS. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES AND EQUIPMENT MANUFACTURERS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING FIELD CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES, GROUNDS, DRAIN PIPES AND VENTS BEFORE COMMENCING WORK. CONTRACTOR SHALL NOTIFY ENGINEER IF ACTUAL CONDITIONS DIFFER SIGNIFICANTLY FROM WHAT IS SHOWN ON DRAWINGS.
3. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY PROJECT SITE, REMOVE AND DISPOSE OF OFF SITE RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES DAILY.
4. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE OWNER'S WRITTEN APPROVAL.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUCH COVERING, SHIELDING, AND BARRICADES AS REQUIRED TO PROTECT BYSTANDERS AND PASSERSBY, EQUIPMENT, SUPPLIES, ETC. FROM DUST, DEBRIS AND OTHER CAUSE OF DAMAGE RESULTING FROM CONSTRUCTION. ANY DAMAGE DURING CONSTRUCTION SHALL BE RESTORED TO PREVIOUS CONDITIONS.
6. IN AREAS WHERE EXISTING ANTENNA MOUNTS, TRANSMISSION LINES OR OTHER SUPPORTING EQUIPMENT IS TO BE REMOVED, THE EXISTING STRUCTURE SHALL BE REPAIRED AS REQUIRED.
7. ALL SAFETY AND OSHA REGULATIONS SHALL BE FOLLOWED STRICTLY. METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIAL ARE THE CONTRACTOR'S RESPONSIBILITY.
8. CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR ALL EXISTING ANTENNAS, TRANSMISSION LINES OR OTHER APPURTENANCES DURING CONSTRUCTION.
9. CONTRACTOR SHALL PROTECT EXISTING APPURTENANCES FROM DAMAGE DURING CONSTRUCTION.
10. NO ANTENNAS, CABLES, OR OTHER APPURTENANCES SHALL BE ADDED TO THE TOWER UNTIL THE MODIFICATION WORK IS COMPLETE.
11. ALL DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE DIMENSIONS WITH TOWER MANUFACTURER OR FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING MEMBERS.
12. THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.
13. ALL EXISTING PLANS, DETAILS, DIMENSIONS, AND ELEVATIONS INDICATE EXISTING CONDITIONS AS KNOWN. THE EXISTING INFORMATION SHOWN IS NOT INTENDED TO BE "AS BUILT" AND THE ACTUAL CONSTRUCTION MAY DIFFER FROM THAT SHOWN. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING DIMENSIONS AND ELEVATIONS PRIOR TO STARTING CONSTRUCTION. MINOR VARIATIONS CAN BE EXPECTED AND ANY REQUIRED DEVIATION FROM THE CONTRACT DOCUMENTS SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
14. MODIFICATION DETAILS REPRESENTS TYPICAL CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATION AS A RESULT OF SITE SPECIFIC CONDITIONS. REINFORCE ALL TOWER FACES IDENTICALLY, UNLESS OTHERWISE NOTED.
15. IN AREAS TO BE MODIFIED, ANY ANTENNA, COAX, OR CONDUIT SHALL BE TEMPORARILY MOVED AND THEN REPLACED AFTER COMPLETION OF WORK. COORDINATE WITH OWNER.
16. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL MATERIAL TO BE REMOVED.
17. CONTRACTOR SHALL ENSURE STABILITY OF TOWER DURING ALL WORK.
18. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TEMPORARY BRACING OF THE STRUCTURE DURING ALL STAGES OF CONSTRUCTION. THE STRUCTURE IS DESIGNED FOR A COMPLETED CONDITION ONLY AND THEREFORE MAY REQUIRE ADDITIONAL SUPPORT BEFORE COMPLETIONS.
19. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A COMMON ASSESSMENT BY MASER CONSULTING P.A.. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.
20. ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE. REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
21. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
22. INSPECTION OF THE MODIFICATIONS SHALL BE COMPLETED BY A THIRD PARTY. INSPECTION SHALL TAKE PLACE WITHIN 72 HOURS OF THE COMPLETION OF THE TOWER MODIFICATIONS. NO PROPOSED LOADING SHALL BE INSTALLED PRIOR TO INSPECTOR APPROVAL.

DESIGN LOADS

1. WIND: EIA/TIA-222-G
   NOMINAL WIND SPEED: 102MPH
   EXPOSURE CATEGORY B
   TOPOGRAPHIC CATEGORY 1
2. DESIGN BASED ON THE SAME TOWER LOADING AND ASSUMPTIONS NOTED IN STRUCTURAL ANALYSIS REPORT BY MASER CONSULTING CONNECTICUT DATED JUNE 06, 2018.
3. TOWER MODIFICATIONS WERE DESIGNED IN ACCORDANCE TO TIA-222-G AND 2016 CONNECTICUT STATE BUILDING CODE (IBC 2015), AS WELL AS APPLICABLE LOCAL BUILDING CODES.

STRUCTURAL STEEL

1. DESIGN, FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO AISC MANUAL OF STEEL CONSTRUCTION, FOURTEENTH EDITION.
2. CONNECTION BOLTS SHALL BE 3/4"Ø ASTM A325N UNLESS OTHERWISE NOTED.
3. FIELD WELDING SHALL BE PERFORMED BY WELDERS THAT ARE CERTIFIED (AWS "STANDARD QUALIFICATION PROCEDURE") TO PERFORM THE TYPE OF WORK REQUIRED. WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL". PROVIDE THE MINIMUM SIZE PER PART 8 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 14TH EDITION, WHEN WELD SIZES ARE NOT SHOWN. USE E70XX ELECTRODES FOR ALL WELDING.
4. RETURN ALL WELDS AT CORNERS TWICE THE NOMINAL SIZE OF THE WELD MINIMUM, UNLESS OTHERWISE NOTED.
5. TO REDUCE WARPING TO A MINIMUM WHEN WELDING TO EXISTING MEMBERS CARRYING LOAD, SHORE OR BRACE EXISTING MEMBER DURING WELDING.
6. ALL COPES, BLOCKS, CUT OUTS, AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENTRANT CORNERS SHAPED, NOTCHED FREE TO A RADIUS OF AT LEAST 1/2".
7. CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF STEEL CONSTRUCTION.
8. ALL NEW STRUCTURAL STEEL SHAPES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
9. ALL NEW STEEL BOLTS, NUTS, AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
10. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
11. ALL STRUCTURAL STEEL SHALL ABIDE BY THE FOLLOWING MATERIAL STRENGTH LIST UNLESS OTHERWISE NOTED:

PLATES	ASTM A572 (GR 36)
ANGLES	ASTM A36 (GR 36) (U.N.O)
SOLID ROUND	ASTM A572 (GR 50)
BOLTS	ASTM A325 (ALL BOLT HOLES STANDARD SIZE U.N.O.)
NUTS	ASTM A194-2H
WASHERS	ASTM F436
HOT-DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

SITE PREPARATION

1. PLACE CONCRETE AS SOON AS PRACTICAL AFTER EXCAVATION IS MADE TO PRESERVE THE INTEGRITY OF THE FOUNDATION, EXCAVATION AND BEARING CAPACITY. REMOVAL OF ANY WATER ACCUMULATED IN EXCAVATION IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE.
2. ALL EXCAVATIONS SHALL CONFORM TO CURRENT OSHA REQUIREMENTS. CONTRACTOR WILL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING, ALL EXCAVATIONS AND EXISTING STRUCTURES DURING CONSTRUCTION BY PROPER SAFEGUARDS WHICH MAY INCLUDE BRACING.
3. EXCAVATIONS SHALL BE FLAT AND LEVEL AND WELL CLEANED OF ALL LOOSE, WET SOIL OR ROCK. EXCAVATIONS SHALL BE FINISHED BY HAND. BACKFILL ANY OVEREXCAVATIONS.

CONTRACTOR NOTES

1. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND MASER CONSULTING P.A. THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND MASER CONSULTING P.A. ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND MASER CONSULTING P.A.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, MASER CONSULTING P.A. SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.
4. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.
6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS.
7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
8. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.
9. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
10. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH) CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER SHORING, TEMPORARY GLOBAL TOWER SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING. TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
11. MODIFICATIONS SHOWN SHALL BE INSTALLED ON ALL TOWER LEGS/FACES.

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SCALE: AS SHOWN

JOB NUMBER: 17924002A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
5	07/27/18	ISSUED FOR CONSTRUCTION	AF	ASN
4	06/08/18	REVISED PER COMMENTS	AMN	PET
3	04/06/18	REVISED PER COMMENTS	JRF	JKM
2	03/30/18	REVISED PER RFDS	JCM	JKM
1	02/08/18	REVISED PER MOUNT ANALYSES	YMA	JKM
0	12/01/17	REVISED PER COMMENTS	YMA	JKM
B	09/27/17	[illegible]	DTS	PET
A	09/07/17	ISSUED FOR REVIEW	DTS	PET

STATE OF CONNECTICUT · PETROS E. TSOUKALAS · 21615 · LICENSED PROFESSIONAL ENGINEER

PETROS E. TSOUKALAS
CONNECTICUT LICENSED PROFESSIONAL ENGINEER, LICENSE NUMBER PEN.21615

SITE NAME: COVENTRY TOWN HALL
SITE ID: CT03XC206

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SHEET TITLE: MODIFICATION NOTES

SHEET NUMBER: ANT-019.00