Filed by:
Kri Pelletier, Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3804 - kpelletier@sbasite.com

July 16, 2018

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

Notice of Exempt Modification
161 North Chestnut Hill Rd, Killingworth, CT
41 22 50.04 N
-72 36 7.43 W
Sprint #: CT33XC581

Dear Ms. Bachman:

Sprint currently maintains antennas at the 147-foot level of the existing 150-foot Monopole Tower at 161 North Chestnut Hill Rd., in Killingworth, CT. The tower is owned by SBA Towers II, LLC. The property is owned by the Madison Rod & Gun Club, Inc. Sprint now intends to replace (6) existing cell antennas with (6) newer technology cell antennas at the 147-foot level of the tower. The proposed full scope of work is as follows:

Remove: N/A

Remove and Replace:

- Remove:
  - (6) Decibel - DB908H90-EM – Panel Antennas
- Replace with:
  - (3) RFS APXVTM14-C-I20 – Panel Antennas
  - (3) Commscope NNVV-65B-R4 – Panel Antennas
- Remove:
  - (6) 1-5/8" lines
- Replace with:
  - (4) 1-1/4" hybrid

Install:

- (3) ALU 1900 MHz RRUs
- (6) ALU 800 MHz RRUs
- (3) ALU TD-RRH8x20-25 RRUs
- Mount Reinforcement Kit:
  - (1) Sitepro PRK 1245 L
  - (1) Sitepro HRK14-U
  - (1) Sitepro PRK-SFS-H-L

Existing Equipment to Remain (Including entitlements):

- (1) LP Platform
  At 50':
- (1) GPS
- (1) Stand-off arm
- (1) ½" line

This facility was originally approved by the Town of Killingworth's Planning and Zoning Commission on September 7, 1999. Special Permit was issued for a telecommunications Tower with a leased parcel of 300'x300'. Utilities from North Chestnut Hill Road were to be placed underground. A chain link fence was to be placed on the northern side of the parcel and screened with evergreens. No further tower conditions were set and this modification complies with all.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Killingworth's First Selectman, Catherine Iino, and Zoning Enforcement Officer, Cathie S. Jefferson, as well as to the property owner. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification 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 modifications to the above-referenced telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
203.446.7700 + C
kpelletier@sbasite.com
Attachments

cc: Catherine Iino, First Selectwoman / with attachments
Town of Killingworth, 323 Route 81, Killingworth, CT 06419
Cathie S. Jefferson, Zoning Enforcement Officer / with attachments
Town of Killingworth, 323 Route 81, Killingworth, CT 06419
Madison Rod & Gun Club, Inc. / with attachments
161 North Chestnut Hill Road, Killingworth, CT 06419

POWER DENSITY

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):	**147 feet**	Height (AGL):	**147 feet**	Height (AGL):	**147 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%	**1.64 %**	Antenna B1 MPE%	**1.64 %**	Antenna C1 MPE%	**1.64 %**
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):	**147 feet**	Height (AGL):	**147 feet**	Height (AGL):	**147 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%	**1.13 %**	Antenna B2 MPE%	**1.13 %**	Antenna C2 MPE%	**1.13 %**

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	**2.77 %**
No additional carriers located at this facility	NA
Site Total MPE %:	**2.77 %**

SPRINT Sector A Total:	2.77 %
SPRINT Sector B Total:	2.77 %
SPRINT Sector C Total:	2.77 %
Site Total:	2.77 %

SPRINT _ Frequency Band / Technology Max Power Values (Per Sector)	# 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	147	0.68	850 MHz	567	0.12%
Sprint 850 MHz LTE	2	941.82	147	3.41	850 MHz	567	0.60%
Sprint 1900 MHz (PCS) CDMA	5	511.82	147	4.63	1900 MHz (PCS)	1000	0.46%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	147	4.63	1900 MHz (PCS)	1000	0.46%
Sprint 2500 MHz (BRS) LTE	8	778.09	147	11.26	2500 MHz (BRS)	1000	1.13%
						Total:	**2.77%**

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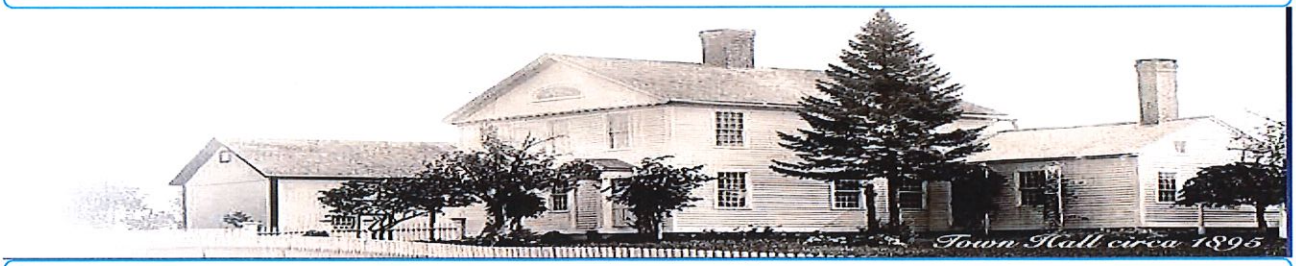
The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.



Information on the Property Records for the Municipality of Killingworth was last updated on 5/5/2018.

Property Summary Information

Parcel Data And Values | Building | Outbuildings | Sales | Permits | Google Map

Parcel Information

Location:	161 N CHESTNUT HILL ROAD	Property Use:	Club-Hall	Primary Use:	Sportsman Club
Unique ID:	00109200	Map Block Lot:	18-03	Acres:	43.40
490 Acres:	0.00	Zone:	R-2	Volume / Page:	0058/0041
Developers Map / Lot:		Census:	6401		

Value Information

	Appraised Value	Assessed Value
Land	367,971	257,580
Buildings	52,599	36,820
Detached Outbuildings	214,796	150,360
Total	635,366	444,760

Owner's Information

Owner's Data
MADISON ROD & GUN CLUB INC C/O ROBERT GARAMELLA P O BOX 734 KILLINGWORTH CT 06419

Back To Search (JavaScript:window.history.back(1);)

Print View (PrintPage.aspx?towncode=070&uniqueid=00109200)

Information Published With Permission From The Assessor

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: CT33XC581

SBA North Guilford
North Chestnut Hill Road
Killingworth, CT 06419

June 29, 2018

EBI Project Number: 6218004712

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	2.77 %

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

EBI Consulting
environmental | engineering | due diligence

June 29, 2018

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

Emissions Analysis for Site: **CT33XC581 – SBA North Guilford**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **North Chestnut Hill Road, Killingworth, 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 **North Chestnut Hill Road, Killingworth, 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 **147 feet** above ground level (AGL) for **Sector A**, **147 feet** above ground level (AGL) for **Sector B** and **147 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):	**147 feet**	Height (AGL):	**147 feet**	Height (AGL):	**147 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%	**1.64 %**	Antenna B1 MPE%	**1.64 %**	Antenna C1 MPE%	**1.64 %**
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):	**147 feet**	Height (AGL):	**147 feet**	Height (AGL):	**147 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%	**1.13 %**	Antenna B2 MPE%	**1.13 %**	Antenna C2 MPE%	**1.13 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.77 %**
No additional carriers located at this facility	NA
Site Total MPE %:	**2.77 %**

SPRINT Sector A Total:	2.77 %
SPRINT Sector B Total:	2.77 %
SPRINT Sector C Total:	2.77 %
Site Total:	2.77 %

SPRINT _ Frequency Band / Technology Max Power Values (Per Sector)	# 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	147	0.68	850 MHz	567	0.12%
Sprint 850 MHz LTE	2	941.82	147	3.41	850 MHz	567	0.60%
Sprint 1900 MHz (PCS) CDMA	5	511.82	147	4.63	1900 MHz (PCS)	1000	0.46%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	147	4.63	1900 MHz (PCS)	1000	0.46%
Sprint 2500 MHz (BRS) LTE	8	778.09	147	11.26	2500 MHz (BRS)	1000	1.13%
						Total:	**2.77%**

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:	2.77 %
Sector B:	2.77 %
Sector C:	2.77 %
SPRINT Maximum Total (per sector):	2.77 %
Site Total:	2.77 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **2.77 %** 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.

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 150 ft SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02077-S

Customer Site Name: Madison 2 CT

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT33XC581 / North Guilford

Site Location: North Chestnut Hill Rd

Killingworth, Connecticut

Middlesex County

Latitude: 41.380566

Longitude: -72.602064

6/5/18

Analysis Result:

Max Structural Usage: 50.3% [Pass]

Max Foundation Usage: 40.0% [Pass]

Additional Usage Caused by Mount Modification: +5.5%

Report Prepared By : Manoj Kandel

Introduction

The purpose of this report is to summarize the analysis results on the 150 ft SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower design prepared by PJF, job# 29299-676, dated 11/02/1999
Foundation Drawing	Foundation design prepared by PJF, job#29299-676, dated 11/02/1999
Geotechnical Report	Geotechnical report prepared by Dr. Clarence Welti P.E.; P.C., dated 09/21/1999
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.173, S_1 = 0.061

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
-	147.0	6	Decibel - DB908H90-EM - Panel	Low Profile Platform	(6) 1 5/8"	Sprint Nextel
-	50.0	1	GPS*	Stand-off arm	(1) 1/2"	

Asterisk * denotes variance/unleased equipment installed on tower at time of analysis

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	147.0	3	RFS APXVTM14-C-I20 - Panel	Low Profile Platform w/ Mount Reinforcement Kit: (1) Sitepro PRK-1245L (1) Sitepro HRK14-U (1) Sitepro PRK-SFS-H-L	(4) 1-1/4" Hybrid	Sprint Nextel
2		3	Commscope NNVV-65B-R4 - Panel			
3		3	ALU 1900 MHz			
4		6	ALU 800 MHz			
5		3	ALU TD-RRH8x20-25			
6	50.0	1	GPS	Stand-off arm	(1) 1/2"	

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**45.4%**	**37.4%**	**50.3%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	2750.0	24.0
Analysis Reactions	1664.6	16.4
Factored Reactions*	3712.5	32.4
% of Design Reactions	44.8%	50.6%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity)

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.8990 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

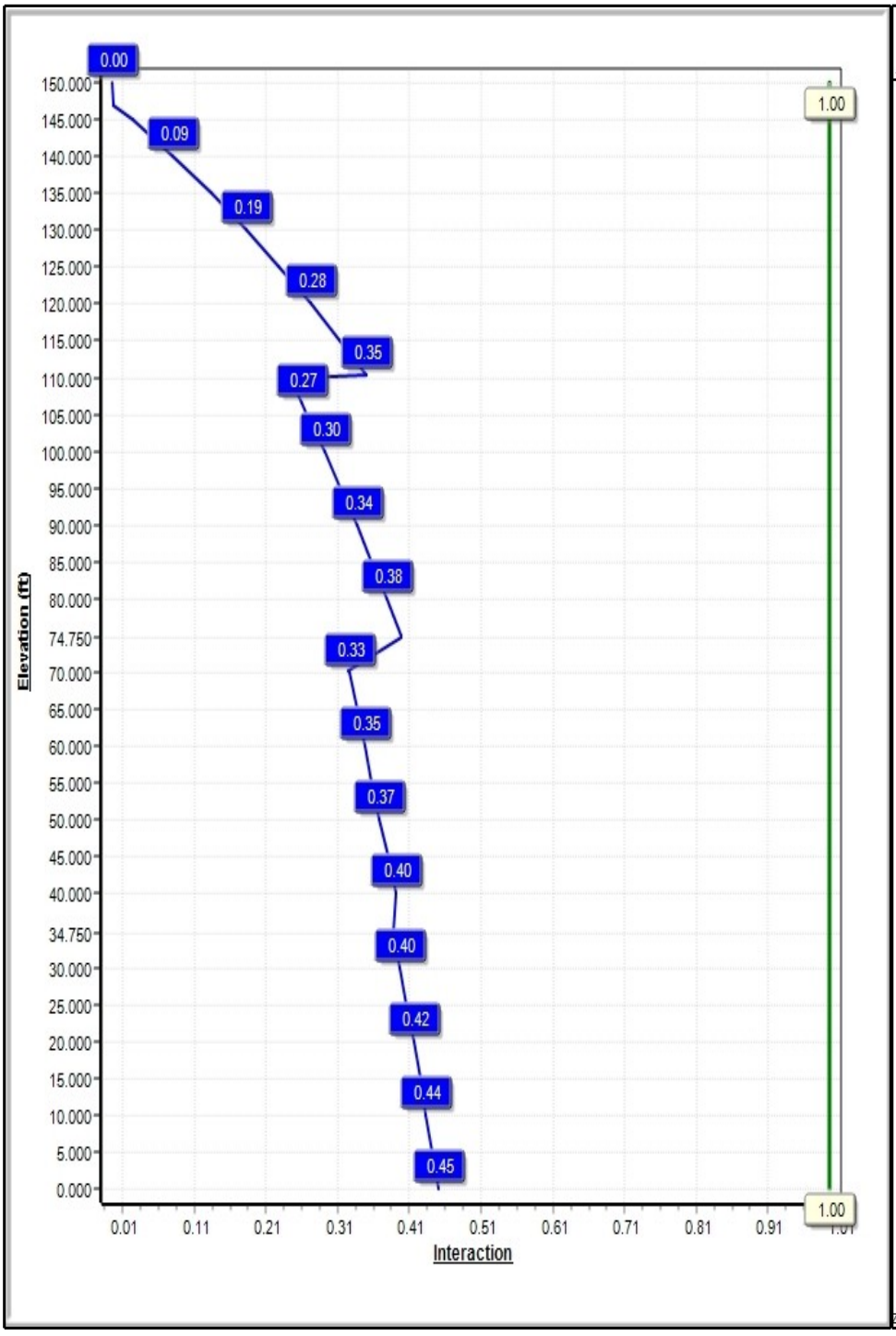
Usage Diagram - Max Ratio 45.43% at 0.0ft

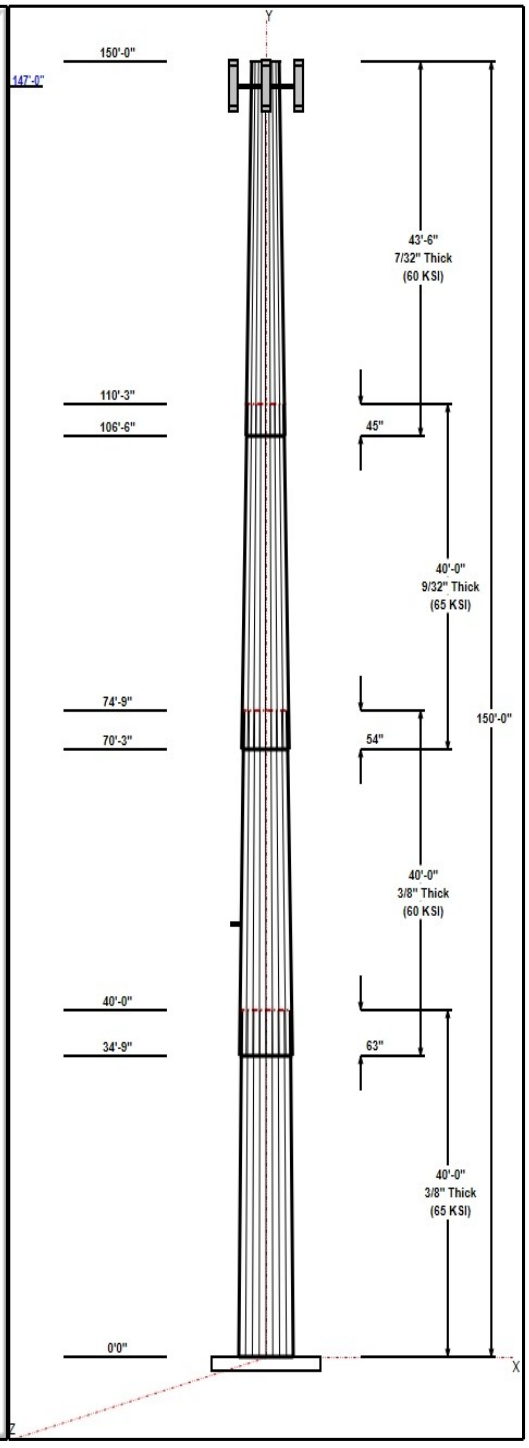
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	25
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 101 mph Wind





Structure: CT02077-S-SBA

Type: Tapered
Site Name: Madison 2 CT
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.18000

6/5/2018

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	40.00	40.05	47.25	0.375		0.18000	65
2	40.00	34.54	41.74	0.375	Slip	0.18000	60
3	40.00	28.72	35.92	0.281	Slip	0.18000	65
4	43.50	22.00	29.83	0.219	Slip	0.18000	60

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
147.00	147.00	3	RFS APXVTM14-C-I20	Sprint Nextel
147.00	147.00	3	Commscope	Sprint Nextel
147.00	147.00	1	Sitepro PRK-1245L	Sprint Nextel
147.00	147.00	1	Sitepro HRK14-U	Sprint Nextel
147.00	147.00	1	Sitepro PRK-SFS-H-L	Sprint Nextel
147.00	147.00	3	ALU 1900 MHz	Sprint Nextel
147.00	147.00	6	ALU 800 MHz	Sprint Nextel
147.00	147.00	3	ALU TD-RRH8x20-25	Sprint Nextel
147.00	147.00	1	Low Profile Platform	Sprint Nextel
50.00	50.00	1	3 ft Standoff	Sprint Nextel
50.00	50.00	1	GPS	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	147.00	Inside	1-1/4" Hybrid	Sprint Nextel
0.00	50.00	Outside	1/2" Coax	Sprint Nextel

Anchor Bolts

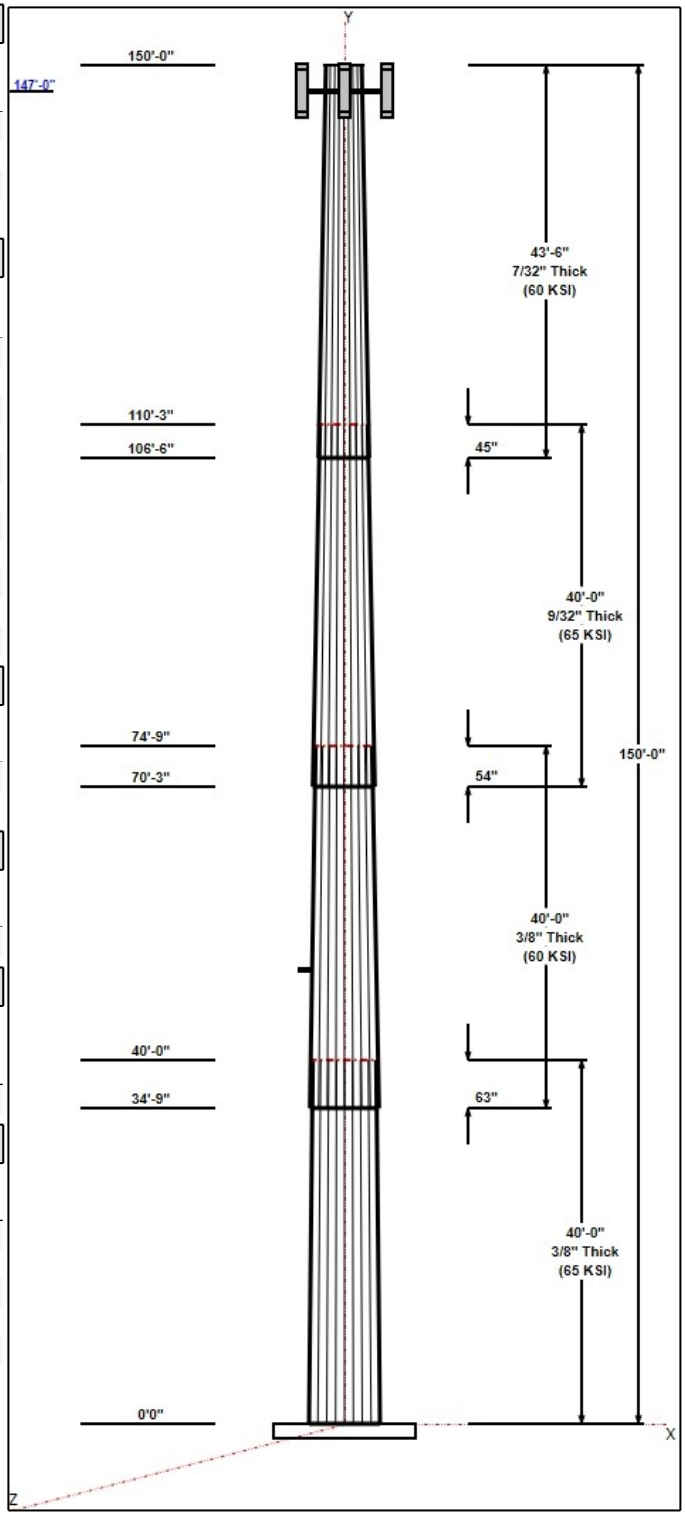
Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	54.0	50.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	1664.6	16.4	28.2
0.9D + 1.6W 101 mph Wind	1650.1	16.4	21.2
1.2D + 1.0Di + 1.0Wi 50 mph Wind	471.4	4.7	43.0
1.2D + 1.0E	146.8	1.3	28.2
0.9D + 1.0E	145.4	1.3	21.2
1.0D + 1.0W 60 mph Wind	365.2	3.6	23.5



Structure: CT02077-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Madison 2 CT
Height: 150.00 (ft)

6/5/2018

Tower Engineering Solutions

Shaft Properties

Structure:	CT02077-S-SBA		**Code:**	EIA/TIA-222-G	6/5/2018
Site Name:	Madison 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	40.000	0.3750	65		0.00	7,011
2	18	40.000	0.3750	60	Slip	63.00	6,119
3	18	40.000	0.2813	65	Slip	54.00	3,893
4	18	43.500	0.2188	60	Slip	45.00	2,641
					Total Shaft Weight:		**19,664**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	47.25	0.00	55.79	15488.15	20.81	126.00	40.05	40.00	47.22	9391.28	17.42	106.8	0.180001
2	41.74	34.75	49.24	10647.09	18.22	111.32	34.54	74.75	40.67	5999.39	14.83	92.12	0.180001
3	35.92	70.25	31.82	5104.91	21.10	127.68	28.72	110.25	25.39	2593.74	16.59	102.0	0.180001
4	29.83	106.5	20.56	2278.04	22.63	136.33	22.00	150.00	15.13	906.64	16.32	100.5	0.180001

Load Summary

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	147.00	RFS APXVTM14-C-I20	3	56.20	6.34	0.77	216.22	7.451	0.77	0.00	0.00
2	147.00	Commscope NNVV-65B-R4	3	77.40	12.27	0.75	362.38	13.723	0.75	0.00	0.00
3	147.00	Sitepro PRK-1245L	1	464.91	9.50	1.00	788.80	19.428	1.00	0.00	0.00
4	147.00	Sitepro HRK14-U	1	302.36	8.13	1.00	660.46	16.060	1.00	0.00	0.00
5	147.00	Sitepro PRK-SFS-H-L	1	230.00	6.70	1.00	550.47	13.702	1.00	0.00	0.00
6	147.00	ALU 1900 MHz	3	44.00	3.80	0.67	152.94	5.187	0.67	0.00	0.00
7	147.00	ALU 800 MHz	6	53.00	2.49	0.67	126.81	3.631	0.67	0.00	0.00
8	147.00	ALU TD-RRH8x20-25	3	70.00	4.05	0.67	180.19	4.861	0.67	0.00	0.00
9	147.00	Low Profile Platform	1	1200.00	25.00	1.00	2245.02	45.900	1.00	0.00	0.00
10	50.00	3 ft Standoff	1	40.00	2.63	1.00	111.93	7.978	1.00	0.00	0.00
11	50.00	GPS	1	10.00	1.00	1.00	36.27	1.638	1.00	0.00	0.00
		Totals:	**24**	**3,308.07**			**7,889.03**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	147.00	(4) 1-1/4" Hybrid	0.00	Inside
0.00	50.00	(1) 1/2" Coax	0.65	Outside

Shaft Section Properties

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	47.250	55.791	15488.1	20.81	126.00	76.9	645.6	0.0
5.00		0.3750	46.350	54.720	14613.0	20.38	123.60	77.4	621.0	940.1
10.00		0.3750	45.450	53.649	13771.5	19.96	121.20	77.9	596.8	921.9
15.00		0.3750	44.550	52.577	12963.0	19.54	118.80	78.4	573.1	903.7
20.00		0.3750	43.650	51.506	12186.7	19.11	116.40	78.9	549.9	885.4
25.00		0.3750	42.750	50.435	11442.0	18.69	114.00	79.4	527.2	867.2
30.00		0.3750	41.850	49.364	10728.4	18.27	111.60	79.9	504.9	849.0
34.75	Bot - Section 2	0.3750	40.995	48.346	10078.5	17.87	109.32	80.4	484.2	789.7
35.00		0.3750	40.950	48.293	10045.0	17.84	109.20	80.4	483.1	83.0
40.00	Top - Section 1	0.3750	40.800	48.114	9934.0	17.77	108.80	0.0	0.0	1640.3
45.00		0.3750	39.900	47.043	9285.2	17.35	106.40	75.5	458.4	809.5
50.00		0.3750	39.000	45.972	8665.2	16.93	104.00	75.9	437.6	791.3
55.00		0.3750	38.100	44.900	8073.5	16.50	101.60	76.2	417.4	773.0
60.00		0.3750	37.200	43.829	7509.3	16.08	99.20	76.2	397.6	754.8
65.00		0.3750	36.300	42.758	6972.1	15.66	96.80	76.2	378.3	736.6
70.00		0.3750	35.400	41.687	6461.1	15.23	94.40	76.2	359.5	718.4
70.25	Bot - Section 3	0.3750	35.355	41.633	6436.2	15.21	94.28	76.2	358.6	35.4
74.75	Top - Section 2	0.2813	35.108	31.093	4764.7	20.60	124.80	0.0	0.0	1111.8
75.00		0.2813	35.063	31.053	4746.2	20.57	124.64	77.2	266.6	26.4
80.00		0.2813	34.162	30.250	4387.2	20.00	121.45	77.9	252.9	521.5
85.00		0.2813	33.262	29.446	4046.8	19.44	118.25	78.5	239.6	507.8
90.00		0.2813	32.362	28.643	3724.5	18.88	115.05	79.2	226.7	494.2
95.00		0.2813	31.462	27.839	3419.7	18.31	111.85	79.9	214.1	480.5
100.00		0.2813	30.562	27.035	3132.1	17.75	108.65	80.5	201.8	466.8
105.00		0.2813	29.662	26.232	2861.0	17.18	105.45	81.2	190.0	453.1
106.50	Bot - Section 4	0.2813	29.392	25.991	2782.9	17.01	104.49	81.4	186.5	133.3
110.00		0.2813	28.762	25.428	2606.1	16.62	102.25	81.9	178.5	548.5
110.25	Top - Section 3	0.2188	29.155	20.095	2125.8	22.08	133.25	0.0	0.0	38.7
115.00		0.2188	28.300	19.501	1942.9	21.40	129.34	71.3	135.2	320.0
120.00		0.2188	27.400	18.876	1762.0	20.67	125.23	72.0	126.7	326.5
125.00		0.2188	26.500	18.251	1592.7	19.95	121.12	72.8	118.4	315.8
130.00		0.2188	25.600	17.626	1434.6	19.22	117.00	73.6	110.4	305.2
135.00		0.2188	24.700	17.001	1287.3	18.49	112.89	74.3	102.7	294.6
140.00		0.2188	23.800	16.376	1150.5	17.77	108.78	75.1	95.2	283.9
145.00		0.2188	22.900	15.751	1023.7	17.04	104.66	75.8	88.1	273.3
147.00		0.2188	22.540	15.501	975.8	16.75	103.02	76.1	85.3	106.3
150.00		0.2188	22.000	15.126	906.6	16.32	100.55	76.2	81.2	156.3
										19663.8

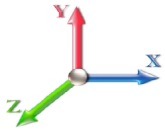
Wind Loading - Shaft

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	17.366	19.10	337.86	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	331.43	0.650	0.000	5.00	19.801	12.87	393.4	0.0	1128.1
10.00		1.00	0.70	17.366	19.10	324.99	0.650	0.000	5.00	19.420	12.62	385.8	0.0	1106.3
15.00		1.00	0.70	17.366	19.10	318.56	0.650	0.000	5.00	19.039	12.38	378.3	0.0	1084.4
20.00		1.00	0.70	17.366	19.10	312.12	0.650	0.000	5.00	18.658	12.13	370.7	0.0	1062.5
25.00		1.00	0.70	17.366	19.10	305.68	0.650	0.000	5.00	18.278	11.88	363.1	0.0	1040.6
30.00		1.00	0.70	17.381	19.12	299.38	0.650	0.000	5.00	17.897	11.63	355.9	0.0	1018.8
34.75	Bot - Section 2	1.00	0.73	18.126	19.94	299.48	0.650	0.000	4.75	16.649	10.82	345.2	0.0	947.6
35.00		1.00	0.73	18.163	19.98	299.46	0.650	0.000	0.25	0.883	0.57	18.3	0.0	99.6
40.00	Top - Section 1	1.00	0.76	18.870	20.76	298.52	0.650	0.000	5.00	17.453	11.34	376.8	0.0	1968.3
45.00		1.00	0.79	19.516	21.47	302.45	0.650	0.000	5.00	17.072	11.10	381.1	0.0	971.4
50.00	Appurtenance(s)	1.00	0.81	20.112	22.12	300.11	0.650	0.000	5.00	16.691	10.85	384.0	0.0	949.5
55.00		1.00	0.83	20.667	22.73	297.20	0.650	0.000	5.00	16.310	10.60	385.6	0.0	927.7
60.00		1.00	0.85	21.187	23.31	293.81	0.650	0.000	5.00	15.929	10.35	386.1	0.0	905.8
65.00		1.00	0.87	21.678	23.85	290.00	0.650	0.000	5.00	15.549	10.11	385.6	0.0	883.9
70.00		1.00	0.89	22.142	24.36	285.82	0.650	0.000	5.00	15.168	9.86	384.2	0.0	862.0
70.25	Bot - Section 3	1.00	0.89	22.164	24.38	285.60	0.650	0.000	0.25	0.748	0.49	19.0	0.0	42.5
74.75	Top - Section 2	1.00	0.91	22.561	24.82	281.54	0.650	0.000	4.50	13.523	8.79	349.0	0.0	1334.1
75.00		1.00	0.91	22.582	24.84	285.90	0.650	0.000	0.25	0.742	0.48	19.2	0.0	31.7
80.00		1.00	0.93	23.003	25.30	281.14	0.650	0.000	5.00	14.644	9.52	385.4	0.0	625.8
85.00		1.00	0.94	23.404	25.74	276.11	0.650	0.000	5.00	14.264	9.27	381.9	0.0	609.4
90.00		1.00	0.96	23.790	26.17	270.85	0.650	0.000	5.00	13.883	9.02	377.8	0.0	593.0
95.00		1.00	0.97	24.160	26.58	265.36	0.650	0.000	5.00	13.502	8.78	373.2	0.0	576.6
100.00		1.00	0.99	24.517	26.97	259.66	0.650	0.000	5.00	13.121	8.53	368.0	0.0	560.2
105.00		1.00	1.00	24.861	27.35	253.78	0.650	0.000	5.00	12.740	8.28	362.4	0.0	543.8
106.50	Bot - Section 4	1.00	1.01	24.962	27.46	251.98	0.650	0.000	1.50	3.748	2.44	107.0	0.0	159.9
110.00		1.00	1.02	25.194	27.71	247.72	0.650	0.000	3.50	8.741	5.68	251.9	0.0	658.2
110.25	Top - Section 3	1.00	1.02	25.210	27.73	247.41	0.650	0.000	0.25	0.617	0.40	17.8	0.0	46.5
115.00		1.00	1.03	25.516	28.07	245.29	0.650	0.000	4.75	11.547	7.51	337.0	0.0	384.0
120.00		1.00	1.04	25.828	28.41	238.94	0.650	0.000	5.00	11.783	7.66	348.2	0.0	391.8
125.00		1.00	1.05	26.131	28.74	232.44	0.650	0.000	5.00	11.402	7.41	340.9	0.0	379.0
130.00		1.00	1.07	26.425	29.07	225.81	0.650	0.000	5.00	11.022	7.16	333.2	0.0	366.2
135.00		1.00	1.08	26.712	29.38	219.05	0.650	0.000	5.00	10.641	6.92	325.2	0.0	353.5
140.00		1.00	1.09	26.991	29.69	212.16	0.650	0.000	5.00	10.260	6.67	316.8	0.0	340.7
145.00		1.00	1.10	27.263	29.99	205.17	0.650	0.000	5.00	9.879	6.42	308.1	0.0	328.0
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	202.34	0.650	0.000	2.00	3.845	2.50	120.4	0.0	127.6
150.00		1.00	1.11	27.528	30.28	198.06	0.650	0.000	3.00	5.653	3.67	178.0	0.0	187.6
								Totals:	**150.00**			**10,914.5**		**23,596.5**

Discrete Appurtenance Forces

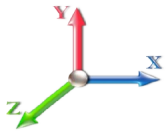
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	Sitepro HRK14-U	1	27.370	30.107	1.00	1.00	8.13	362.83	0.000	0.000	391.63	0.00	0.00
2	147.00	ALU TD-RRH8x20-25	3	27.370	30.107	0.60	0.90	7.33	252.00	0.000	0.000	352.92	0.00	0.00
3	147.00	ALU 800 MHz	6	27.370	30.107	0.60	0.90	9.01	381.60	0.000	0.000	433.96	0.00	0.00
4	147.00	ALU 1900 MHz	3	27.370	30.107	0.60	0.90	6.87	158.40	0.000	0.000	331.13	0.00	0.00
5	147.00	Sitepro PRK-SFS-H-L	1	27.370	30.107	1.00	1.00	6.70	276.00	0.000	0.000	322.74	0.00	0.00
6	147.00	Low Profile Platform	1	27.370	30.107	1.00	1.00	25.00	1440.00	0.000	0.000	1204.27	0.00	0.00
7	147.00	Sitepro PRK-1245L	1	27.370	30.107	1.00	1.00	9.50	557.89	0.000	0.000	457.62	0.00	0.00
8	147.00	Commscope	3	27.370	30.107	0.68	0.90	24.85	278.64	0.000	0.000	1196.88	0.00	0.00
9	147.00	RFS APXVTM14-C-I20	3	27.370	30.107	0.69	0.90	13.18	202.32	0.000	0.000	634.93	0.00	0.00
10	50.00	GPS	1	20.112	22.123	1.00	1.00	1.00	12.00	0.000	0.000	35.40	0.00	0.00
11	50.00	3 ft Standoff	1	20.112	22.123	1.00	1.00	2.63	48.00	0.000	0.000	93.09	0.00	0.00
							Totals:		**3,969.68**			**5,454.58**		

Total Applied Force Summary

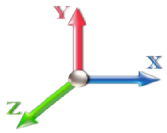
Structure:	CT02077-S-SBA		**Code:**	EIA/TIA-222-G	6/5/2018
Site Name:	Madison 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 9

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		393.38	1151.99	0.00	0.00
10.00		385.82	1130.12	0.00	0.00
15.00		378.25	1108.25	0.00	0.00
20.00		370.69	1086.38	0.00	0.00
25.00		363.12	1064.51	0.00	0.00
30.00		355.86	1042.64	0.00	0.00
34.75		345.25	970.25	0.00	0.00
35.00		18.34	100.76	0.00	0.00
40.00		376.75	1992.16	0.00	0.00
45.00		381.14	995.25	0.00	0.00
50.00	(2) attachments	512.52	1033.38	0.00	0.00
55.00		385.63	950.55	0.00	0.00
60.00		386.11	928.68	0.00	0.00
65.00		385.59	906.81	0.00	0.00
70.00		384.20	884.94	0.00	0.00
70.25		18.98	43.67	0.00	0.00
74.75		349.01	1354.75	0.00	0.00
75.00		19.17	32.87	0.00	0.00
80.00		385.37	648.69	0.00	0.00
85.00		381.90	632.29	0.00	0.00
90.00		377.83	615.88	0.00	0.00
95.00		373.18	599.48	0.00	0.00
100.00		368.01	583.07	0.00	0.00
105.00		362.35	566.67	0.00	0.00
106.50		107.03	166.80	0.00	0.00
110.00		251.94	674.22	0.00	0.00
110.25		17.80	47.61	0.00	0.00
115.00		337.05	405.75	0.00	0.00
120.00		348.16	414.66	0.00	0.00
125.00		340.86	401.90	0.00	0.00
130.00		333.19	389.14	0.00	0.00
135.00		325.17	376.38	0.00	0.00
140.00		316.80	363.62	0.00	0.00
145.00		308.12	350.86	0.00	0.00
147.00	(22) attachments	5446.48	4046.45	0.00	0.00
150.00		178.04	187.59	0.00	0.00
	Totals:	**16,369.09**	**28,248.97**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

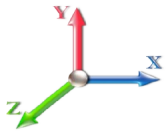
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	17.366	0.00	0.96
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	17.366	0.00	0.96
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	17.366	0.00	0.96
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	17.366	0.00	0.96
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	17.366	0.00	0.96
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	17.381	0.00	0.96
34.75	1/2" Coax	Yes	4.75	0.000	0.65	0.26	0.00	0.015	0.000	18.126	0.00	0.91
35.00	1/2" Coax	Yes	0.25	0.000	0.65	0.01	0.00	0.016	0.000	18.163	0.00	0.05
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	18.870	0.00	0.96
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	19.516	0.00	0.96
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	20.112	0.00	0.96
									Totals:		**0.0**	**9.6**

Calculated Forces

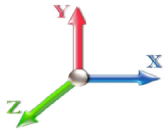
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.23	-16.41	0.00	-1664.6	0.00	1664.61	3862.72	1931.36	7438.96	3725.01	0.00	0.000	0.000	0.454
5.00	-27.03	-16.08	0.00	-1582.5	0.00	1582.58	3813.07	1906.53	7201.22	3605.96	0.08	-0.149	0.000	0.446
10.00	-25.86	-15.76	0.00	-1502.1	0.00	1502.18	3762.45	1881.23	6965.41	3487.88	0.32	-0.299	0.000	0.438
15.00	-24.72	-15.44	0.00	-1423.3	0.00	1423.38	3710.88	1855.44	6731.63	3370.82	0.71	-0.450	0.000	0.429
20.00	-23.59	-15.12	0.00	-1346.1	0.00	1346.18	3658.35	1829.17	6500.00	3254.83	1.26	-0.602	0.000	0.420
25.00	-22.49	-14.81	0.00	-1270.5	0.00	1270.57	3604.86	1802.43	6270.60	3139.96	1.98	-0.755	0.000	0.411
30.00	-21.42	-14.49	0.00	-1196.5	0.00	1196.55	3550.41	1775.20	6043.57	3026.27	2.85	-0.908	0.000	0.401
34.75	-20.44	-14.16	0.00	-1127.7	0.00	1127.71	3497.79	1748.89	5830.16	2919.41	3.83	-1.055	0.000	0.392
35.00	-20.32	-14.17	0.00	-1124.1	0.00	1124.17	3495.00	1747.50	5818.99	2913.82	3.88	-1.063	0.000	0.392
40.00	-18.29	-13.80	0.00	-1053.3	0.00	1053.35	3250.32	1625.16	5391.43	2699.72	5.08	-1.217	0.000	0.396
45.00	-17.27	-13.44	0.00	-984.36	0.00	984.36	3196.65	1598.32	5183.26	2595.48	6.44	-1.371	0.000	0.385
50.00	-16.22	-12.94	0.00	-917.16	0.00	917.16	3142.12	1571.06	4977.74	2492.57	7.95	-1.517	0.000	0.373
55.00	-15.25	-12.57	0.00	-852.44	0.00	852.44	3079.27	1539.64	4763.42	2385.25	9.62	-1.662	0.000	0.362
60.00	-14.30	-12.19	0.00	-789.59	0.00	789.59	3005.81	1502.91	4537.76	2272.25	11.44	-1.807	0.000	0.352
65.00	-13.38	-11.81	0.00	-728.64	0.00	728.64	2932.35	1466.17	4317.57	2162.00	13.40	-1.951	0.000	0.342
70.00	-12.49	-11.41	0.00	-669.59	0.00	669.59	2858.89	1429.44	4102.86	2054.48	15.52	-2.093	0.000	0.330
70.25	-12.44	-11.41	0.00	-666.73	0.00	666.73	2855.21	1427.61	4092.27	2049.18	15.63	-2.101	0.000	0.330
74.75	-11.08	-11.02	0.00	-615.41	0.00	615.41	2159.70	1079.85	3089.90	1547.25	17.67	-2.228	0.000	0.403
75.00	-11.03	-11.02	0.00	-612.66	0.00	612.66	2157.84	1078.92	3083.21	1543.90	17.79	-2.235	0.000	0.402
80.00	-10.37	-10.64	0.00	-557.58	0.00	557.58	2120.07	1060.03	2950.23	1477.31	20.23	-2.411	0.000	0.382
85.00	-9.72	-10.26	0.00	-504.40	0.00	504.40	2081.33	1040.67	2818.76	1411.47	22.84	-2.583	0.000	0.362
90.00	-9.10	-9.88	0.00	-453.12	0.00	453.12	2041.64	1020.82	2688.91	1346.45	25.64	-2.751	0.000	0.341
95.00	-8.49	-9.50	0.00	-403.74	0.00	403.74	2000.99	1000.49	2560.80	1282.30	28.61	-2.915	0.000	0.319
100.00	-7.90	-9.12	0.00	-356.26	0.00	356.26	1959.38	979.69	2434.52	1219.07	31.74	-3.073	0.000	0.296
105.00	-7.34	-8.74	0.00	-310.65	0.00	310.65	1916.81	958.40	2310.19	1156.81	35.04	-3.224	0.000	0.272
106.50	-7.17	-8.63	0.00	-297.54	0.00	297.54	1903.85	951.92	2273.28	1138.33	36.06	-3.270	0.000	0.265
110.00	-6.50	-8.35	0.00	-267.33	0.00	267.33	1873.28	936.64	2187.91	1095.58	38.50	-3.371	0.000	0.248
110.25	-6.45	-8.34	0.00	-265.24	0.00	265.24	1276.16	638.08	1517.80	760.03	38.67	-3.378	0.000	0.354
115.00	-6.04	-7.99	0.00	-225.64	0.00	225.64	1251.06	625.53	1443.65	722.90	42.10	-3.506	0.000	0.317
120.00	-5.63	-7.63	0.00	-185.69	0.00	185.69	1223.82	611.91	1366.60	684.32	45.85	-3.657	0.000	0.276
125.00	-5.24	-7.28	0.00	-147.54	0.00	147.54	1195.72	597.86	1290.67	646.29	49.75	-3.791	0.000	0.233
130.00	-4.86	-6.93	0.00	-111.16	0.00	111.16	1166.78	583.39	1215.94	608.87	53.78	-3.907	0.000	0.187
135.00	-4.50	-6.58	0.00	-76.53	0.00	76.53	1136.98	568.49	1142.51	572.10	57.92	-4.000	0.000	0.138
140.00	-4.15	-6.24	0.00	-43.62	0.00	43.62	1106.33	553.17	1070.48	536.04	62.15	-4.066	0.000	0.085
145.00	-3.82	-5.91	0.00	-12.40	0.00	12.40	1074.83	537.42	999.94	500.71	66.43	-4.101	0.000	0.028
147.00	-0.17	-0.19	0.00	-0.57	0.00	0.57	1061.99	531.00	972.17	486.81	68.14	-4.104	0.000	0.001
150.00	0.00	-0.18	0.00	0.00	0.00	0.00	1037.33	518.67	926.40	463.89	70.72	-4.105	0.000	0.000

Wind Loading - Shaft

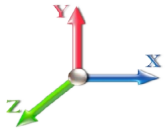
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	17.366	19.10	337.86	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	331.43	0.650	0.000	5.00	19.801	12.87	393.4	0.0	846.1
10.00		1.00	0.70	17.366	19.10	324.99	0.650	0.000	5.00	19.420	12.62	385.8	0.0	829.7
15.00		1.00	0.70	17.366	19.10	318.56	0.650	0.000	5.00	19.039	12.38	378.3	0.0	813.3
20.00		1.00	0.70	17.366	19.10	312.12	0.650	0.000	5.00	18.658	12.13	370.7	0.0	796.9
25.00		1.00	0.70	17.366	19.10	305.68	0.650	0.000	5.00	18.278	11.88	363.1	0.0	780.5
30.00		1.00	0.70	17.381	19.12	299.38	0.650	0.000	5.00	17.897	11.63	355.9	0.0	764.1
34.75	Bot - Section 2	1.00	0.73	18.126	19.94	299.48	0.650	0.000	4.75	16.649	10.82	345.2	0.0	710.7
35.00		1.00	0.73	18.163	19.98	299.46	0.650	0.000	0.25	0.883	0.57	18.3	0.0	74.7
40.00	Top - Section 1	1.00	0.76	18.870	20.76	298.52	0.650	0.000	5.00	17.453	11.34	376.8	0.0	1476.2
45.00		1.00	0.79	19.516	21.47	302.45	0.650	0.000	5.00	17.072	11.10	381.1	0.0	728.5
50.00	Appurtenance(s)	1.00	0.81	20.112	22.12	300.11	0.650	0.000	5.00	16.691	10.85	384.0	0.0	712.1
55.00		1.00	0.83	20.667	22.73	297.20	0.650	0.000	5.00	16.310	10.60	385.6	0.0	695.7
60.00		1.00	0.85	21.187	23.31	293.81	0.650	0.000	5.00	15.929	10.35	386.1	0.0	679.3
65.00		1.00	0.87	21.678	23.85	290.00	0.650	0.000	5.00	15.549	10.11	385.6	0.0	662.9
70.00		1.00	0.89	22.142	24.36	285.82	0.650	0.000	5.00	15.168	9.86	384.2	0.0	646.5
70.25	Bot - Section 3	1.00	0.89	22.164	24.38	285.60	0.650	0.000	0.25	0.748	0.49	19.0	0.0	31.9
74.75	Top - Section 2	1.00	0.91	22.561	24.82	281.54	0.650	0.000	4.50	13.523	8.79	349.0	0.0	1000.6
75.00		1.00	0.91	22.582	24.84	285.90	0.650	0.000	0.25	0.742	0.48	19.2	0.0	23.8
80.00		1.00	0.93	23.003	25.30	281.14	0.650	0.000	5.00	14.644	9.52	385.4	0.0	469.3
85.00		1.00	0.94	23.404	25.74	276.11	0.650	0.000	5.00	14.264	9.27	381.9	0.0	457.0
90.00		1.00	0.96	23.790	26.17	270.85	0.650	0.000	5.00	13.883	9.02	377.8	0.0	444.7
95.00		1.00	0.97	24.160	26.58	265.36	0.650	0.000	5.00	13.502	8.78	373.2	0.0	432.4
100.00		1.00	0.99	24.517	26.97	259.66	0.650	0.000	5.00	13.121	8.53	368.0	0.0	420.1
105.00		1.00	1.00	24.861	27.35	253.78	0.650	0.000	5.00	12.740	8.28	362.4	0.0	407.8
106.50	Bot - Section 4	1.00	1.01	24.962	27.46	251.98	0.650	0.000	1.50	3.748	2.44	107.0	0.0	119.9
110.00		1.00	1.02	25.194	27.71	247.72	0.650	0.000	3.50	8.741	5.68	251.9	0.0	493.6
110.25	Top - Section 3	1.00	1.02	25.210	27.73	247.41	0.650	0.000	0.25	0.617	0.40	17.8	0.0	34.9
115.00		1.00	1.03	25.516	28.07	245.29	0.650	0.000	4.75	11.547	7.51	337.0	0.0	288.0
120.00		1.00	1.04	25.828	28.41	238.94	0.650	0.000	5.00	11.783	7.66	348.2	0.0	293.8
125.00		1.00	1.05	26.131	28.74	232.44	0.650	0.000	5.00	11.402	7.41	340.9	0.0	284.3
130.00		1.00	1.07	26.425	29.07	225.81	0.650	0.000	5.00	11.022	7.16	333.2	0.0	274.7
135.00		1.00	1.08	26.712	29.38	219.05	0.650	0.000	5.00	10.641	6.92	325.2	0.0	265.1
140.00		1.00	1.09	26.991	29.69	212.16	0.650	0.000	5.00	10.260	6.67	316.8	0.0	255.5
145.00		1.00	1.10	27.263	29.99	205.17	0.650	0.000	5.00	9.879	6.42	308.1	0.0	246.0
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	202.34	0.650	0.000	2.00	3.845	2.50	120.4	0.0	95.7
150.00		1.00	1.11	27.528	30.28	198.06	0.650	0.000	3.00	5.653	3.67	178.0	0.0	140.7
								Totals:	**150.00**			**10,914.5**		**17,697.4**

Discrete Appurtenance Forces

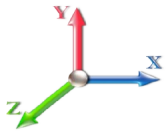
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	Sitepro HRK14-U	1	27.370	30.107	1.00	1.00	8.13	272.12	0.000	0.000	391.63	0.00	0.00
2	147.00	ALU TD-RRH8x20-25	3	27.370	30.107	0.60	0.90	7.33	189.00	0.000	0.000	352.92	0.00	0.00
3	147.00	ALU 800 MHz	6	27.370	30.107	0.60	0.90	9.01	286.20	0.000	0.000	433.96	0.00	0.00
4	147.00	ALU 1900 MHz	3	27.370	30.107	0.60	0.90	6.87	118.80	0.000	0.000	331.13	0.00	0.00
5	147.00	Sitepro PRK-SFS-H-L	1	27.370	30.107	1.00	1.00	6.70	207.00	0.000	0.000	322.74	0.00	0.00
6	147.00	Low Profile Platform	1	27.370	30.107	1.00	1.00	25.00	1080.00	0.000	0.000	1204.27	0.00	0.00
7	147.00	Sitepro PRK-1245L	1	27.370	30.107	1.00	1.00	9.50	418.42	0.000	0.000	457.62	0.00	0.00
8	147.00	Commscope	3	27.370	30.107	0.68	0.90	24.85	208.98	0.000	0.000	1196.88	0.00	0.00
9	147.00	RFS APXVTM14-C-I20	3	27.370	30.107	0.69	0.90	13.18	151.74	0.000	0.000	634.93	0.00	0.00
10	50.00	GPS	1	20.112	22.123	1.00	1.00	1.00	9.00	0.000	0.000	35.40	0.00	0.00
11	50.00	3 ft Standoff	1	20.112	22.123	1.00	1.00	2.63	36.00	0.000	0.000	93.09	0.00	0.00
							Totals:		**2,977.26**			**5,454.58**		

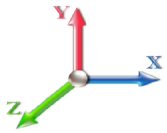
Total Applied Force Summary

Structure:	CT02077-S-SBA		**Code:**	EIA/TIA-222-G	6/5/2018
Site Name:	Madison 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		393.38	863.99	0.00	0.00
10.00		385.82	847.59	0.00	0.00
15.00		378.25	831.18	0.00	0.00
20.00		370.69	814.78	0.00	0.00
25.00		363.12	798.38	0.00	0.00
30.00		355.86	781.98	0.00	0.00
34.75		345.25	727.68	0.00	0.00
35.00		18.34	75.57	0.00	0.00
40.00		376.75	1494.12	0.00	0.00
45.00		381.14	746.44	0.00	0.00
50.00	(2) attachments	512.52	775.03	0.00	0.00
55.00		385.63	712.91	0.00	0.00
60.00		386.11	696.51	0.00	0.00
65.00		385.59	680.11	0.00	0.00
70.00		384.20	663.70	0.00	0.00
70.25		18.98	32.75	0.00	0.00
74.75		349.01	1016.06	0.00	0.00
75.00		19.17	24.65	0.00	0.00
80.00		385.37	486.52	0.00	0.00
85.00		381.90	474.22	0.00	0.00
90.00		377.83	461.91	0.00	0.00
95.00		373.18	449.61	0.00	0.00
100.00		368.01	437.30	0.00	0.00
105.00		362.35	425.00	0.00	0.00
106.50		107.03	125.10	0.00	0.00
110.00		251.94	505.66	0.00	0.00
110.25		17.80	35.71	0.00	0.00
115.00		337.05	304.31	0.00	0.00
120.00		348.16	310.99	0.00	0.00
125.00		340.86	301.42	0.00	0.00
130.00		333.19	291.85	0.00	0.00
135.00		325.17	282.28	0.00	0.00
140.00		316.80	272.71	0.00	0.00
145.00		308.12	263.14	0.00	0.00
147.00	(22) attachments	5446.48	3034.84	0.00	0.00
150.00		178.04	140.69	0.00	0.00
	Totals:	**16,369.09**	**21,186.73**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

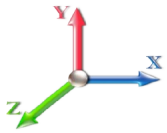
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	17.366	0.00	0.72
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	17.366	0.00	0.72
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	17.366	0.00	0.72
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	17.366	0.00	0.72
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	17.366	0.00	0.72
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	17.381	0.00	0.72
34.75	1/2" Coax	Yes	4.75	0.000	0.65	0.26	0.00	0.015	0.000	18.126	0.00	0.68
35.00	1/2" Coax	Yes	0.25	0.000	0.65	0.01	0.00	0.016	0.000	18.163	0.00	0.04
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	18.870	0.00	0.72
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	19.516	0.00	0.72
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	20.112	0.00	0.72
									Totals:		**0.0**	**7.2**

Calculated Forces

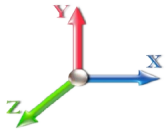
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-21.17	-16.40	0.00	-1650.1	0.00	1650.15	3862.72	1931.36	7438.96	3725.01	0.00	0.000	0.000	0.449
5.00	-20.26	-16.05	0.00	-1568.1	0.00	1568.17	3813.07	1906.53	7201.22	3605.96	0.08	-0.148	0.000	0.440
10.00	-19.37	-15.72	0.00	-1487.9	0.00	1487.90	3762.45	1881.23	6965.41	3487.88	0.31	-0.297	0.000	0.432
15.00	-18.50	-15.38	0.00	-1409.3	0.00	1409.32	3710.88	1855.44	6731.63	3370.82	0.70	-0.446	0.000	0.423
20.00	-17.65	-15.05	0.00	-1332.4	0.00	1332.41	3658.35	1829.17	6500.00	3254.83	1.25	-0.597	0.000	0.414
25.00	-16.82	-14.72	0.00	-1257.1	0.00	1257.17	3604.86	1802.43	6270.60	3139.96	1.96	-0.748	0.000	0.405
30.00	-16.01	-14.40	0.00	-1183.5	0.00	1183.56	3550.41	1775.20	6043.57	3026.27	2.82	-0.899	0.000	0.396
34.75	-15.27	-14.06	0.00	-1115.1	0.00	1115.19	3497.79	1748.89	5830.16	2919.41	3.79	-1.044	0.000	0.386
35.00	-15.17	-14.06	0.00	-1111.6	0.00	1111.67	3495.00	1747.50	5818.99	2913.82	3.85	-1.052	0.000	0.386
40.00	-13.65	-13.69	0.00	-1041.3	0.00	1041.37	3250.32	1625.16	5391.43	2699.72	5.03	-1.205	0.000	0.390
45.00	-12.88	-13.33	0.00	-972.92	0.00	972.92	3196.65	1598.32	5183.26	2595.48	6.37	-1.357	0.000	0.379
50.00	-12.08	-12.82	0.00	-906.30	0.00	906.30	3142.12	1571.06	4977.74	2492.57	7.87	-1.501	0.000	0.368
55.00	-11.35	-12.45	0.00	-842.17	0.00	842.17	3079.27	1539.64	4763.42	2385.25	9.52	-1.645	0.000	0.357
60.00	-10.63	-12.07	0.00	-779.94	0.00	779.94	3005.81	1502.91	4537.76	2272.25	11.32	-1.787	0.000	0.347
65.00	-9.94	-11.68	0.00	-719.60	0.00	719.60	2932.35	1466.17	4317.57	2162.00	13.27	-1.930	0.000	0.336
70.00	-9.27	-11.29	0.00	-661.18	0.00	661.18	2858.89	1429.44	4102.86	2054.48	15.36	-2.070	0.000	0.325
70.25	-9.23	-11.28	0.00	-658.36	0.00	658.36	2855.21	1427.61	4092.27	2049.18	15.47	-2.078	0.000	0.325
74.75	-8.21	-10.90	0.00	-607.60	0.00	607.60	2159.70	1079.85	3089.90	1547.25	17.49	-2.204	0.000	0.397
75.00	-8.17	-10.90	0.00	-604.87	0.00	604.87	2157.84	1078.92	3083.21	1543.90	17.61	-2.211	0.000	0.396
80.00	-7.67	-10.51	0.00	-550.39	0.00	550.39	2120.07	1060.03	2950.23	1477.31	20.01	-2.384	0.000	0.376
85.00	-7.18	-10.13	0.00	-497.82	0.00	497.82	2081.33	1040.67	2818.76	1411.47	22.60	-2.554	0.000	0.356
90.00	-6.71	-9.75	0.00	-447.16	0.00	447.16	2041.64	1020.82	2688.91	1346.45	25.37	-2.720	0.000	0.335
95.00	-6.25	-9.38	0.00	-398.39	0.00	398.39	2000.99	1000.49	2560.80	1282.30	28.30	-2.881	0.000	0.314
100.00	-5.81	-9.00	0.00	-351.51	0.00	351.51	1959.38	979.69	2434.52	1219.07	31.40	-3.037	0.000	0.291
105.00	-5.39	-8.63	0.00	-306.50	0.00	306.50	1916.81	958.40	2310.19	1156.81	34.66	-3.187	0.000	0.268
106.50	-5.26	-8.52	0.00	-293.56	0.00	293.56	1903.85	951.92	2273.28	1138.33	35.67	-3.232	0.000	0.261
110.00	-4.77	-8.24	0.00	-263.74	0.00	263.74	1873.28	936.64	2187.91	1095.58	38.07	-3.331	0.000	0.243
110.25	-4.72	-8.23	0.00	-261.68	0.00	261.68	1276.16	638.08	1517.80	760.03	38.25	-3.338	0.000	0.348
115.00	-4.42	-7.88	0.00	-222.60	0.00	222.60	1251.06	625.53	1443.65	722.90	41.63	-3.465	0.000	0.312
120.00	-4.11	-7.53	0.00	-183.18	0.00	183.18	1223.82	611.91	1366.60	684.32	45.34	-3.613	0.000	0.271
125.00	-3.82	-7.18	0.00	-145.53	0.00	145.53	1195.72	597.86	1290.67	646.29	49.20	-3.746	0.000	0.229
130.00	-3.54	-6.83	0.00	-109.65	0.00	109.65	1166.78	583.39	1215.94	608.87	53.18	-3.860	0.000	0.183
135.00	-3.27	-6.49	0.00	-75.49	0.00	75.49	1136.98	568.49	1142.51	572.10	57.27	-3.952	0.000	0.135
140.00	-3.01	-6.16	0.00	-43.03	0.00	43.03	1106.33	553.17	1070.48	536.04	61.45	-4.017	0.000	0.083
145.00	-2.77	-5.83	0.00	-12.23	0.00	12.23	1074.83	537.42	999.94	500.71	65.67	-4.051	0.000	0.027
147.00	-0.13	-0.19	0.00	-0.56	0.00	0.56	1061.99	531.00	972.17	486.81	67.37	-4.055	0.000	0.001
150.00	0.00	-0.18	0.00	0.00	0.00	0.00	1037.33	518.67	926.40	463.89	69.91	-4.055	0.000	0.000

Wind Loading - Shaft

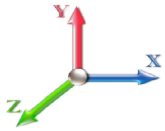
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	20.836	25.00	117.1	370.3	1498.4
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	20.529	24.64	115.3	390.1	1496.3
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	20.194	24.23	113.5	398.9	1483.3
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	19.847	23.82	111.5	402.8	1465.3
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	5.00	19.493	23.39	109.5	404.0	1444.6
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	19.135	22.96	107.6	403.3	1422.1
34.75	Bot - Section 2	1.00	0.73	4.442	4.89	0.00	1.200	1.508	4.75	17.843	21.41	104.6	381.3	1328.9
35.00		1.00	0.73	4.451	4.90	0.00	1.200	1.509	0.25	0.945	1.13	5.6	20.4	120.0
40.00	Top - Section 1	1.00	0.76	4.625	5.09	0.00	1.200	1.529	5.00	18.727	22.47	114.3	405.4	2373.7
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	5.00	18.361	22.03	115.9	401.6	1373.0
50.00	Appurtenance(s)	1.00	0.81	4.929	5.42	0.00	1.200	1.564	5.00	17.994	21.59	117.1	397.2	1346.8
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	5.00	17.626	21.15	117.8	392.3	1319.9
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	17.256	20.71	118.3	386.9	1292.7
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	16.886	20.26	118.4	381.1	1265.0
70.00		1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	16.516	19.82	118.3	374.9	1236.9
70.25	Bot - Section 3	1.00	0.89	5.432	5.98	0.00	1.200	1.618	0.25	0.816	0.98	5.8	18.7	61.3
74.75	Top - Section 2	1.00	0.91	5.529	6.08	0.00	1.200	1.628	4.50	14.743	17.69	107.6	337.0	1671.2
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	0.25	0.810	0.97	5.9	18.7	50.4
80.00		1.00	0.93	5.637	6.20	0.00	1.200	1.639	5.00	16.010	19.21	119.1	367.4	993.2
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	5.00	15.638	18.77	118.4	360.5	969.9
90.00		1.00	0.96	5.830	6.41	0.00	1.200	1.658	5.00	15.265	18.32	117.5	353.3	946.3
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	5.00	14.891	17.87	116.4	345.9	922.5
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	5.00	14.518	17.42	115.1	338.3	898.5
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	5.00	14.144	16.97	113.8	330.5	874.3
106.50	Bot - Section 4	1.00	1.01	6.118	6.73	0.00	1.200	1.686	1.50	4.169	5.00	33.7	98.5	258.4
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	3.50	9.728	11.67	79.3	229.1	887.3
110.25	Top - Section 3	1.00	1.02	6.178	6.80	0.00	1.200	1.692	0.25	0.688	0.83	5.6	16.3	62.8
115.00		1.00	1.03	6.253	6.88	0.00	1.200	1.699	4.75	12.892	15.47	106.4	303.3	687.3
120.00		1.00	1.04	6.330	6.96	0.00	1.200	1.707	5.00	13.205	15.85	110.3	311.0	702.8
125.00		1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	12.830	15.40	108.5	302.7	681.7
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	5.00	12.455	14.95	106.5	294.3	660.5
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	5.00	12.080	14.50	104.4	285.7	639.2
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	5.00	11.704	14.05	102.2	277.0	617.8
145.00		1.00	1.10	6.681	7.35	0.00	1.200	1.739	5.00	11.329	13.59	99.9	268.3	596.2
147.00	Appurtenance(s)	1.00	1.10	6.708	7.38	0.00	1.200	1.742	2.00	4.426	5.31	39.2	105.9	233.5
150.00		1.00	1.11	6.746	7.42	0.00	1.200	1.745	3.00	6.526	7.83	58.1	155.6	343.2
								Totals:	**150.00**			**3,378.5**		**34,225.1**

Discrete Appurtenance Forces

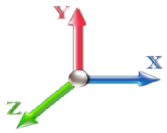
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	Sitepro HRK14-U	1	6.708	7.378	1.00	1.00	16.06	1023.29	0.000	0.000	118.49	0.00	0.00
2	147.00	ALU TD-RRH8x20-25	3	6.708	7.378	0.60	0.90	8.79	582.58	0.000	0.000	64.89	0.00	0.00
3	147.00	ALU 800 MHz	6	6.708	7.378	0.60	0.90	13.14	697.87	0.000	0.000	96.94	0.00	0.00
4	147.00	ALU 1900 MHz	3	6.708	7.378	0.60	0.90	9.38	391.63	0.000	0.000	69.24	0.00	0.00
5	147.00	Sitepro PRK-SFS-H-L	1	6.708	7.378	1.00	1.00	13.70	495.47	0.000	0.000	101.10	0.00	0.00
6	147.00	Low Profile Platform	1	6.708	7.378	1.00	1.00	45.90	2185.02	0.000	0.000	338.67	0.00	0.00
7	147.00	Sitepro PRK-1245L	1	6.708	7.378	1.00	1.00	19.43	786.69	0.000	0.000	143.34	0.00	0.00
8	147.00	Commscope	3	6.708	7.378	0.68	0.90	27.79	936.19	0.000	0.000	205.04	0.00	0.00
9	147.00	RFS APXVTM14-C-I20	3	6.708	7.378	0.69	0.90	15.49	682.39	0.000	0.000	114.30	0.00	0.00
10	50.00	GPS	1	4.929	5.422	1.00	1.00	1.64	30.27	0.000	0.000	8.88	0.00	0.00
11	50.00	3 ft Standoff	1	4.929	5.422	1.00	1.00	7.98	96.93	0.000	0.000	43.25	0.00	0.00
							Totals:		**7,908.32**			**1,304.14**		

Total Applied Force Summary

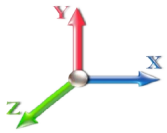
Structure:	CT02077-S-SBA		**Code:**	EIA/TIA-222-G	6/5/2018
Site Name:	Madison 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 19

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		117.05	1535.01	0.00	0.00
10.00		115.33	1534.57	0.00	0.00
15.00		113.45	1522.54	0.00	0.00
20.00		111.50	1505.42	0.00	0.00
25.00		109.51	1485.35	0.00	0.00
30.00		107.59	1463.33	0.00	0.00
34.75		104.63	1368.54	0.00	0.00
35.00		5.56	122.07	0.00	0.00
40.00		114.32	2415.88	0.00	0.00
45.00		115.92	1415.61	0.00	0.00
50.00	(2) attachments	169.21	1516.88	0.00	0.00
55.00		117.84	1342.84	0.00	0.00
60.00		118.28	1315.55	0.00	0.00
65.00		118.42	1287.86	0.00	0.00
70.00		118.30	1259.82	0.00	0.00
70.25		5.85	62.40	0.00	0.00
74.75		107.60	1691.78	0.00	0.00
75.00		5.92	51.57	0.00	0.00
80.00		119.14	1016.13	0.00	0.00
85.00		118.40	992.76	0.00	0.00
90.00		117.48	969.17	0.00	0.00
95.00		116.39	945.36	0.00	0.00
100.00		115.14	921.37	0.00	0.00
105.00		113.75	897.21	0.00	0.00
106.50		33.67	265.26	0.00	0.00
110.00		79.29	903.30	0.00	0.00
110.25		5.61	63.95	0.00	0.00
115.00		106.42	709.00	0.00	0.00
120.00		110.33	725.69	0.00	0.00
125.00		108.46	704.61	0.00	0.00
130.00		106.47	683.41	0.00	0.00
135.00		104.39	662.09	0.00	0.00
140.00		102.20	640.66	0.00	0.00
145.00		99.91	619.13	0.00	0.00
147.00	(22) attachments	1291.19	8023.78	0.00	0.00
150.00		58.12	343.23	0.00	0.00
	Totals:	**4,682.61**	**42,983.14**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

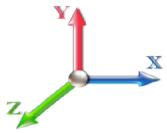
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.31	0.00	0.014	0.000	4.256	0.00	13.70
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.38	0.00	0.014	0.000	4.256	0.00	15.33
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.43	0.00	0.014	0.000	4.256	0.00	16.38
20.00	1/2" Coax	Yes	5.00	0.000	0.65	1.46	0.00	0.015	0.000	4.256	0.00	17.18
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.49	0.00	0.015	0.000	4.256	0.00	17.83
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.51	0.00	0.015	0.000	4.260	0.00	18.38
34.75	1/2" Coax	Yes	4.75	0.000	0.65	1.45	0.00	0.015	0.000	4.442	0.00	17.89
35.00	1/2" Coax	Yes	0.25	0.000	0.65	0.08	0.00	0.016	0.000	4.451	0.00	0.94
40.00	1/2" Coax	Yes	5.00	0.000	0.65	1.55	0.00	0.016	0.000	4.625	0.00	19.29
45.00	1/2" Coax	Yes	5.00	0.000	0.65	1.56	0.00	0.016	0.000	4.783	0.00	19.67
50.00	1/2" Coax	Yes	5.00	0.000	0.65	1.57	0.00	0.016	0.000	4.929	0.00	20.02
										Totals:	**0.0**	**176.6**

Calculated Forces

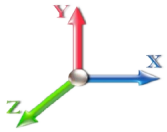
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.98	-4.70	0.00	-471.35	0.00	471.35	3862.72	1931.36	7438.96	3725.01	0.00	0.000	0.000	0.138
5.00	-41.44	-4.61	0.00	-447.86	0.00	447.86	3813.07	1906.53	7201.22	3605.96	0.02	-0.042	0.000	0.135
10.00	-39.91	-4.52	0.00	-424.81	0.00	424.81	3762.45	1881.23	6965.41	3487.88	0.09	-0.085	0.000	0.132
15.00	-38.38	-4.44	0.00	-402.19	0.00	402.19	3710.88	1855.44	6731.63	3370.82	0.20	-0.127	0.000	0.130
20.00	-36.87	-4.35	0.00	-380.01	0.00	380.01	3658.35	1829.17	6500.00	3254.83	0.36	-0.170	0.000	0.127
25.00	-35.38	-4.26	0.00	-358.26	0.00	358.26	3604.86	1802.43	6270.60	3139.96	0.56	-0.213	0.000	0.124
30.00	-33.92	-4.17	0.00	-336.96	0.00	336.96	3550.41	1775.20	6043.57	3026.27	0.81	-0.257	0.000	0.121
34.75	-32.55	-4.07	0.00	-317.14	0.00	317.14	3497.79	1748.89	5830.16	2919.41	1.08	-0.298	0.000	0.118
35.00	-32.42	-4.08	0.00	-316.13	0.00	316.13	3495.00	1747.50	5818.99	2913.82	1.10	-0.300	0.000	0.118
40.00	-30.01	-3.97	0.00	-295.73	0.00	295.73	3250.32	1625.16	5391.43	2699.72	1.44	-0.343	0.000	0.119
45.00	-28.59	-3.87	0.00	-275.85	0.00	275.85	3196.65	1598.32	5183.26	2595.48	1.82	-0.387	0.000	0.115
50.00	-27.07	-3.71	0.00	-256.50	0.00	256.50	3142.12	1571.06	4977.74	2492.57	2.25	-0.427	0.000	0.112
55.00	-25.73	-3.60	0.00	-237.95	0.00	237.95	3079.27	1539.64	4763.42	2385.25	2.71	-0.468	0.000	0.108
60.00	-24.41	-3.49	0.00	-219.95	0.00	219.95	3005.81	1502.91	4537.76	2272.25	3.23	-0.508	0.000	0.105
65.00	-23.12	-3.37	0.00	-202.52	0.00	202.52	2932.35	1466.17	4317.57	2162.00	3.78	-0.548	0.000	0.102
70.00	-21.86	-3.25	0.00	-185.65	0.00	185.65	2858.89	1429.44	4102.86	2054.48	4.38	-0.588	0.000	0.098
70.25	-21.80	-3.25	0.00	-184.84	0.00	184.84	2855.21	1427.61	4092.27	2049.18	4.41	-0.590	0.000	0.098
74.75	-20.10	-3.13	0.00	-170.21	0.00	170.21	2159.70	1079.85	3089.90	1547.25	4.98	-0.625	0.000	0.119
75.00	-20.05	-3.13	0.00	-169.43	0.00	169.43	2157.84	1078.92	3083.21	1543.90	5.01	-0.627	0.000	0.119
80.00	-19.03	-3.02	0.00	-153.76	0.00	153.76	2120.07	1060.03	2950.23	1477.31	5.70	-0.676	0.000	0.113
85.00	-18.04	-2.90	0.00	-138.66	0.00	138.66	2081.33	1040.67	2818.76	1411.47	6.43	-0.723	0.000	0.107
90.00	-17.07	-2.79	0.00	-124.14	0.00	124.14	2041.64	1020.82	2688.91	1346.45	7.21	-0.769	0.000	0.101
95.00	-16.13	-2.67	0.00	-110.20	0.00	110.20	2000.99	1000.49	2560.80	1282.30	8.04	-0.814	0.000	0.094
100.00	-15.20	-2.55	0.00	-96.85	0.00	96.85	1959.38	979.69	2434.52	1219.07	8.92	-0.857	0.000	0.087
105.00	-14.31	-2.43	0.00	-84.09	0.00	84.09	1916.81	958.40	2310.19	1156.81	9.84	-0.898	0.000	0.080
106.50	-14.04	-2.40	0.00	-80.44	0.00	80.44	1903.85	951.92	2273.28	1138.33	10.12	-0.911	0.000	0.078
110.00	-13.14	-2.31	0.00	-72.05	0.00	72.05	1873.28	936.64	2187.91	1095.58	10.80	-0.938	0.000	0.073
110.25	-13.07	-2.31	0.00	-71.47	0.00	71.47	1276.16	638.08	1517.80	760.03	10.85	-0.940	0.000	0.104
115.00	-12.37	-2.20	0.00	-60.51	0.00	60.51	1251.06	625.53	1443.65	722.90	11.80	-0.974	0.000	0.094
120.00	-11.64	-2.08	0.00	-49.54	0.00	49.54	1223.82	611.91	1366.60	684.32	12.84	-1.014	0.000	0.082
125.00	-10.94	-1.97	0.00	-39.13	0.00	39.13	1195.72	597.86	1290.67	646.29	13.93	-1.050	0.000	0.070
130.00	-10.26	-1.85	0.00	-29.30	0.00	29.30	1166.78	583.39	1215.94	608.87	15.04	-1.081	0.000	0.057
135.00	-9.59	-1.74	0.00	-20.04	0.00	20.04	1136.98	568.49	1142.51	572.10	16.19	-1.105	0.000	0.043
140.00	-8.96	-1.63	0.00	-11.35	0.00	11.35	1106.33	553.17	1070.48	536.04	17.36	-1.123	0.000	0.029
145.00	-8.34	-1.51	0.00	-3.22	0.00	3.22	1074.83	537.42	999.94	500.71	18.54	-1.132	0.000	0.014
147.00	-0.34	-0.06	0.00	-0.19	0.00	0.19	1061.99	531.00	972.17	486.81	19.01	-1.133	0.000	0.001
150.00	0.00	-0.06	0.00	0.00	0.00	0.00	1037.33	518.67	926.40	463.89	19.72	-1.133	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E					**Iterations**	23
Gust Response Factor	1.10			**Sds**	0.18	**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.39	**SA**	0.04	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		940.11	0.00	0.03	0.02	15.41	
10.00		921.88	0.01	0.05	0.03	22.24	
15.00		903.66	0.02	0.06	0.04	25.32	
20.00		885.43	0.03	0.07	0.04	26.61	
25.00		867.21	0.05	0.07	0.04	27.09	
30.00		848.98	0.08	0.07	0.04	27.27	
34.75	Bot - Section 2	789.65	0.10	0.07	0.04	25.97	
35.00		82.97	0.10	0.07	0.04	2.73	
40.00	Top - Section 1	1640.2	0.13	0.07	0.03	55.26	
45.00		809.49	0.17	0.07	0.03	27.71	
50.00	Appurtenance(s)	841.27	0.21	0.06	0.02	28.78	
55.00		773.04	0.25	0.05	0.02	25.61	
60.00		754.82	0.30	0.04	0.01	22.94	
65.00		736.59	0.35	0.03	0.01	18.71	
70.00		718.37	0.41	0.01	0.01	12.76	
70.25	Bot - Section 3	35.44	0.41	0.01	0.01	0.61	
74.75	Top - Section 2	1111.7	0.47	-0.01	0.01	9.09	
75.00		26.43	0.47	-0.01	0.01	0.20	
80.00		521.50	0.54	-0.03	0.01	-2.08	
85.00		507.83	0.61	-0.06	0.02	-7.80	
90.00		494.16	0.68	-0.08	0.03	-12.13	
95.00		480.49	0.76	-0.10	0.04	-14.42	
100.00		466.81	0.84	-0.12	0.07	-14.45	
105.00		453.14	0.93	-0.12	0.10	-12.23	
106.50	Bot - Section 4	133.28	0.95	-0.12	0.11	-3.31	
110.00		548.49	1.02	-0.11	0.14	-9.93	
110.25	Top - Section 3	38.72	1.02	-0.10	0.14	-0.68	
115.00		320.00	1.11	-0.06	0.19	-1.37	
120.00		326.47	1.21	0.01	0.26	4.72	
125.00		315.84	1.31	0.14	0.35	12.04	
130.00		305.20	1.42	0.32	0.45	20.38	
135.00		294.57	1.53	0.58	0.58	29.60	
140.00		283.93	1.65	0.93	0.73	39.57	
145.00		273.30	1.77	1.39	0.92	50.16	
147.00	Appurtenance(s)	3364.4	1.82	1.61	1.00	681.87	
150.00		156.32	1.89	1.98	1.14	36.43	
	Totals:	**22,971.9**				**1,170.7**	**Total Wind:** **16,369.1**

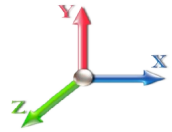
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	23
Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.39	**SA**	0.04	**Seismic Importance Factor**			1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.25	-1.25	0.00	-146.81	0.00	146.81	3862.72	1931.36	7438.96	3725.01		0.00	0.00	0.047
5.00	-27.10	-1.24	0.00	-140.55	0.00	140.55	3813.07	1906.53	7201.22	3605.96		0.01	-0.01	0.046
10.00	-25.97	-1.23	0.00	-134.34	0.00	134.34	3762.45	1881.23	6965.41	3487.88		0.03	-0.03	0.045
15.00	-24.86	-1.21	0.00	-128.21	0.00	128.21	3710.88	1855.44	6731.63	3370.82		0.06	-0.04	0.045
20.00	-23.77	-1.18	0.00	-122.18	0.00	122.18	3658.35	1829.17	6500.00	3254.83		0.11	-0.05	0.044
25.00	-22.71	-1.16	0.00	-116.26	0.00	116.26	3604.86	1802.43	6270.60	3139.96		0.18	-0.07	0.043
30.00	-21.66	-1.14	0.00	-110.45	0.00	110.45	3550.41	1775.20	6043.57	3026.27		0.25	-0.08	0.043
34.75	-20.69	-1.11	0.00	-105.04	0.00	105.04	3497.79	1748.89	5830.16	2919.41		0.34	-0.10	0.042
35.00	-20.59	-1.11	0.00	-104.76	0.00	104.76	3495.00	1747.50	5818.99	2913.82		0.35	-0.10	0.042
40.00	-18.60	-1.06	0.00	-99.20	0.00	99.20	3250.32	1625.16	5391.43	2699.72		0.46	-0.11	0.042
45.00	-17.60	-1.03	0.00	-93.90	0.00	93.90	3196.65	1598.32	5183.26	2595.48		0.58	-0.13	0.042
50.00	-16.57	-1.01	0.00	-88.73	0.00	88.73	3142.12	1571.06	4977.74	2492.57		0.72	-0.14	0.041
55.00	-15.62	-0.98	0.00	-83.70	0.00	83.70	3079.27	1539.64	4763.42	2385.25		0.87	-0.15	0.040
60.00	-14.69	-0.96	0.00	-78.79	0.00	78.79	3005.81	1502.91	4537.76	2272.25		1.04	-0.17	0.040
65.00	-13.78	-0.94	0.00	-73.99	0.00	73.99	2932.35	1466.17	4317.57	2162.00		1.22	-0.18	0.039
70.00	-12.90	-0.93	0.00	-69.27	0.00	69.27	2858.89	1429.44	4102.86	2054.48		1.42	-0.20	0.038
70.25	-12.86	-0.93	0.00	-69.04	0.00	69.04	2855.21	1427.61	4092.27	2049.18		1.43	-0.20	0.038
74.75	-11.50	-0.92	0.00	-64.86	0.00	64.86	2159.70	1079.85	3089.90	1547.25		1.63	-0.21	0.047
75.00	-11.47	-0.92	0.00	-64.63	0.00	64.63	2157.84	1078.92	3083.21	1543.90		1.64	-0.21	0.047
80.00	-10.82	-0.92	0.00	-60.04	0.00	60.04	2120.07	1060.03	2950.23	1477.31		1.87	-0.23	0.046
85.00	-10.19	-0.92	0.00	-55.44	0.00	55.44	2081.33	1040.67	2818.76	1411.47		2.12	-0.25	0.044
90.00	-9.57	-0.92	0.00	-50.84	0.00	50.84	2041.64	1020.82	2688.91	1346.45		2.39	-0.27	0.042
95.00	-8.97	-0.92	0.00	-46.24	0.00	46.24	2000.99	1000.49	2560.80	1282.30		2.68	-0.29	0.041
100.00	-8.39	-0.92	0.00	-41.63	0.00	41.63	1959.38	979.69	2434.52	1219.07		2.99	-0.30	0.038
105.00	-7.82	-0.92	0.00	-37.03	0.00	37.03	1916.81	958.40	2310.19	1156.81		3.32	-0.32	0.036
106.50	-7.65	-0.92	0.00	-35.65	0.00	35.65	1903.85	951.92	2273.28	1138.33		3.42	-0.33	0.035
110.00	-6.98	-0.92	0.00	-32.44	0.00	32.44	1873.28	936.64	2187.91	1095.58		3.67	-0.34	0.033
110.25	-6.93	-0.92	0.00	-32.21	0.00	32.21	1276.16	638.08	1517.80	760.03		3.68	-0.34	0.048
115.00	-6.52	-0.92	0.00	-27.85	0.00	27.85	1251.06	625.53	1443.65	722.90		4.03	-0.36	0.044
120.00	-6.11	-0.91	0.00	-23.27	0.00	23.27	1223.82	611.91	1366.60	684.32		4.41	-0.38	0.039
125.00	-5.71	-0.90	0.00	-18.72	0.00	18.72	1195.72	597.86	1290.67	646.29		4.82	-0.39	0.034
130.00	-5.32	-0.88	0.00	-14.23	0.00	14.23	1166.78	583.39	1215.94	608.87		5.24	-0.41	0.028
135.00	-4.94	-0.84	0.00	-9.85	0.00	9.85	1136.98	568.49	1142.51	572.10		5.67	-0.42	0.022
140.00	-4.58	-0.80	0.00	-5.63	0.00	5.63	1106.33	553.17	1070.48	536.04		6.11	-0.43	0.015
145.00	-4.23	-0.75	0.00	-1.61	0.00	1.61	1074.83	537.42	999.94	500.71		6.56	-0.43	0.007
147.00	-0.19	-0.04	0.00	-0.11	0.00	0.11	1061.99	531.00	972.17	486.81		6.74	-0.43	0.000
150.00	0.00	-0.04	0.00	0.00	0.00	0.00	1037.33	518.67	926.40	463.89		7.02	-0.43	0.000

Seismic Segment Forces (Factored)

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E					**Iterations**	23
Gust Response Factor	1.10			**Sds**	0.18	**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.39	**SA**	0.04	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		940.11	0.00	0.03	0.02	15.41	
10.00		921.88	0.01	0.05	0.03	22.24	
15.00		903.66	0.02	0.06	0.04	25.32	
20.00		885.43	0.03	0.07	0.04	26.61	
25.00		867.21	0.05	0.07	0.04	27.09	
30.00		848.98	0.08	0.07	0.04	27.27	
34.75	Bot - Section 2	789.65	0.10	0.07	0.04	25.97	
35.00		82.97	0.10	0.07	0.04	2.73	
40.00	Top - Section 1	1640.2	0.13	0.07	0.03	55.26	
45.00		809.49	0.17	0.07	0.03	27.71	
50.00	Appurtenance(s)	841.27	0.21	0.06	0.02	28.78	
55.00		773.04	0.25	0.05	0.02	25.61	
60.00		754.82	0.30	0.04	0.01	22.94	
65.00		736.59	0.35	0.03	0.01	18.71	
70.00		718.37	0.41	0.01	0.01	12.76	
70.25	Bot - Section 3	35.44	0.41	0.01	0.01	0.61	
74.75	Top - Section 2	1111.7	0.47	-0.01	0.01	9.09	
75.00		26.43	0.47	-0.01	0.01	0.20	
80.00		521.50	0.54	-0.03	0.01	-2.08	
85.00		507.83	0.61	-0.06	0.02	-7.80	
90.00		494.16	0.68	-0.08	0.03	-12.13	
95.00		480.49	0.76	-0.10	0.04	-14.42	
100.00		466.81	0.84	-0.12	0.07	-14.45	
105.00		453.14	0.93	-0.12	0.10	-12.23	
106.50	Bot - Section 4	133.28	0.95	-0.12	0.11	-3.31	
110.00		548.49	1.02	-0.11	0.14	-9.93	
110.25	Top - Section 3	38.72	1.02	-0.10	0.14	-0.68	
115.00		320.00	1.11	-0.06	0.19	-1.37	
120.00		326.47	1.21	0.01	0.26	4.72	
125.00		315.84	1.31	0.14	0.35	12.04	
130.00		305.20	1.42	0.32	0.45	20.38	
135.00		294.57	1.53	0.58	0.58	29.60	
140.00		283.93	1.65	0.93	0.73	39.57	
145.00		273.30	1.77	1.39	0.92	50.16	
147.00	Appurtenance(s)	3364.4	1.82	1.61	1.00	681.87	
150.00		156.32	1.89	1.98	1.14	36.43	
	Totals:	**22,971.9**				**1,170.7**	**Total Wind:** **16,369.1**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	23
Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.39	**SA**	0.04	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-21.19	-1.25	0.00	-145.41	0.00	145.41	3862.72	1931.36	7438.96	3725.01		0.00	0.00	0.045
5.00	-20.32	-1.24	0.00	-139.16	0.00	139.16	3813.07	1906.53	7201.22	3605.96		0.01	-0.01	0.044
10.00	-19.47	-1.22	0.00	-132.96	0.00	132.96	3762.45	1881.23	6965.41	3487.88		0.03	-0.03	0.043
15.00	-18.64	-1.20	0.00	-126.85	0.00	126.85	3710.88	1855.44	6731.63	3370.82		0.06	-0.04	0.043
20.00	-17.83	-1.18	0.00	-120.84	0.00	120.84	3658.35	1829.17	6500.00	3254.83		0.11	-0.05	0.042
25.00	-17.03	-1.15	0.00	-114.96	0.00	114.96	3604.86	1802.43	6270.60	3139.96		0.17	-0.07	0.041
30.00	-16.25	-1.13	0.00	-109.19	0.00	109.19	3550.41	1775.20	6043.57	3026.27		0.25	-0.08	0.041
34.75	-15.52	-1.10	0.00	-103.82	0.00	103.82	3497.79	1748.89	5830.16	2919.41		0.34	-0.09	0.040
35.00	-15.44	-1.10	0.00	-103.54	0.00	103.54	3495.00	1747.50	5818.99	2913.82		0.34	-0.10	0.040
40.00	-13.95	-1.05	0.00	-98.03	0.00	98.03	3250.32	1625.16	5391.43	2699.72		0.45	-0.11	0.041
45.00	-13.20	-1.02	0.00	-92.78	0.00	92.78	3196.65	1598.32	5183.26	2595.48		0.57	-0.12	0.040
50.00	-12.43	-1.00	0.00	-87.66	0.00	87.66	3142.12	1571.06	4977.74	2492.57		0.71	-0.14	0.039
55.00	-11.71	-0.97	0.00	-82.69	0.00	82.69	3079.27	1539.64	4763.42	2385.25		0.86	-0.15	0.038
60.00	-11.02	-0.95	0.00	-77.83	0.00	77.83	3005.81	1502.91	4537.76	2272.25		1.03	-0.17	0.038
65.00	-10.34	-0.93	0.00	-73.09	0.00	73.09	2932.35	1466.17	4317.57	2162.00		1.21	-0.18	0.037
70.00	-9.67	-0.92	0.00	-68.43	0.00	68.43	2858.89	1429.44	4102.86	2054.48		1.41	-0.19	0.037
70.25	-9.64	-0.92	0.00	-68.20	0.00	68.20	2855.21	1427.61	4092.27	2049.18		1.42	-0.20	0.037
74.75	-8.62	-0.91	0.00	-64.07	0.00	64.07	2159.70	1079.85	3089.90	1547.25		1.61	-0.21	0.045
75.00	-8.60	-0.91	0.00	-63.85	0.00	63.85	2157.84	1078.92	3083.21	1543.90		1.62	-0.21	0.045
80.00	-8.11	-0.91	0.00	-59.31	0.00	59.31	2120.07	1060.03	2950.23	1477.31		1.85	-0.23	0.044
85.00	-7.64	-0.91	0.00	-54.77	0.00	54.77	2081.33	1040.67	2818.76	1411.47		2.10	-0.25	0.042
90.00	-7.18	-0.91	0.00	-50.23	0.00	50.23	2041.64	1020.82	2688.91	1346.45		2.36	-0.26	0.041
95.00	-6.73	-0.91	0.00	-45.69	0.00	45.69	2000.99	1000.49	2560.80	1282.30		2.65	-0.28	0.039
100.00	-6.29	-0.91	0.00	-41.14	0.00	41.14	1959.38	979.69	2434.52	1219.07		2.96	-0.30	0.037
105.00	-5.86	-0.91	0.00	-36.60	0.00	36.60	1916.81	958.40	2310.19	1156.81		3.28	-0.32	0.035
106.50	-5.74	-0.91	0.00	-35.24	0.00	35.24	1903.85	951.92	2273.28	1138.33		3.38	-0.32	0.034
110.00	-5.23	-0.91	0.00	-32.06	0.00	32.06	1873.28	936.64	2187.91	1095.58		3.62	-0.34	0.032
110.25	-5.20	-0.91	0.00	-31.84	0.00	31.84	1276.16	638.08	1517.80	760.03		3.64	-0.34	0.046
115.00	-4.89	-0.91	0.00	-27.53	0.00	27.53	1251.06	625.53	1443.65	722.90		3.99	-0.35	0.042
120.00	-4.58	-0.90	0.00	-23.01	0.00	23.01	1223.82	611.91	1366.60	684.32		4.36	-0.37	0.037
125.00	-4.28	-0.89	0.00	-18.51	0.00	18.51	1195.72	597.86	1290.67	646.29		4.76	-0.39	0.032
130.00	-3.99	-0.87	0.00	-14.07	0.00	14.07	1166.78	583.39	1215.94	608.87		5.18	-0.40	0.027
135.00	-3.71	-0.83	0.00	-9.74	0.00	9.74	1136.98	568.49	1142.51	572.10		5.60	-0.41	0.020
140.00	-3.43	-0.79	0.00	-5.57	0.00	5.57	1106.33	553.17	1070.48	536.04		6.04	-0.42	0.013
145.00	-3.17	-0.74	0.00	-1.60	0.00	1.60	1074.83	537.42	999.94	500.71		6.49	-0.43	0.006
147.00	-0.14	-0.04	0.00	-0.11	0.00	0.11	1061.99	531.00	972.17	486.81		6.67	-0.43	0.000
150.00	0.00	-0.04	0.00	0.00	0.00	0.00	1037.33	518.67	926.40	463.89		6.94	-0.43	0.000

Wind Loading - Shaft

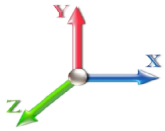
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	200.71	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	196.89	0.650	0.000	5.00	19.801	12.87	86.8	0.0	940.1
10.00		1.00	0.70	6.129	6.74	193.06	0.650	0.000	5.00	19.420	12.62	85.1	0.0	921.9
15.00		1.00	0.70	6.129	6.74	189.24	0.650	0.000	5.00	19.039	12.38	83.4	0.0	903.7
20.00		1.00	0.70	6.129	6.74	185.42	0.650	0.000	5.00	18.658	12.13	81.8	0.0	885.4
25.00		1.00	0.70	6.129	6.74	181.59	0.650	0.000	5.00	18.278	11.88	80.1	0.0	867.2
30.00		1.00	0.70	6.134	6.75	177.85	0.650	0.000	5.00	17.897	11.63	78.5	0.0	849.0
34.75	Bot - Section 2	1.00	0.73	6.397	7.04	177.91	0.650	0.000	4.75	16.649	10.82	76.2	0.0	789.7
35.00		1.00	0.73	6.410	7.05	177.90	0.650	0.000	0.25	0.883	0.57	4.0	0.0	83.0
40.00	Top - Section 1	1.00	0.76	6.659	7.33	177.34	0.650	0.000	5.00	17.453	11.34	83.1	0.0	1640.3
45.00		1.00	0.79	6.887	7.58	179.67	0.650	0.000	5.00	17.072	11.10	84.1	0.0	809.5
50.00	Appurtenance(s)	1.00	0.81	7.098	7.81	178.28	0.650	0.000	5.00	16.691	10.85	84.7	0.0	791.3
55.00		1.00	0.83	7.294	8.02	176.56	0.650	0.000	5.00	16.310	10.60	85.1	0.0	773.0
60.00		1.00	0.85	7.477	8.22	174.54	0.650	0.000	5.00	15.929	10.35	85.2	0.0	754.8
65.00		1.00	0.87	7.650	8.42	172.28	0.650	0.000	5.00	15.549	10.11	85.0	0.0	736.6
70.00		1.00	0.89	7.814	8.60	169.79	0.650	0.000	5.00	15.168	9.86	84.7	0.0	718.4
70.25	Bot - Section 3	1.00	0.89	7.822	8.60	169.66	0.650	0.000	0.25	0.748	0.49	4.2	0.0	35.4
74.75	Top - Section 2	1.00	0.91	7.962	8.76	167.25	0.650	0.000	4.50	13.523	8.79	77.0	0.0	1111.8
75.00		1.00	0.91	7.969	8.77	169.84	0.650	0.000	0.25	0.742	0.48	4.2	0.0	26.4
80.00		1.00	0.93	8.118	8.93	167.01	0.650	0.000	5.00	14.644	9.52	85.0	0.0	521.5
85.00		1.00	0.94	8.260	9.09	164.03	0.650	0.000	5.00	14.264	9.27	84.2	0.0	507.8
90.00		1.00	0.96	8.396	9.24	160.90	0.650	0.000	5.00	13.883	9.02	83.3	0.0	494.2
95.00		1.00	0.97	8.526	9.38	157.64	0.650	0.000	5.00	13.502	8.78	82.3	0.0	480.5
100.00		1.00	0.99	8.652	9.52	154.25	0.650	0.000	5.00	13.121	8.53	81.2	0.0	466.8
105.00		1.00	1.00	8.774	9.65	150.76	0.650	0.000	5.00	12.740	8.28	79.9	0.0	453.1
106.50	Bot - Section 4	1.00	1.01	8.809	9.69	149.69	0.650	0.000	1.50	3.748	2.44	23.6	0.0	133.3
110.00		1.00	1.02	8.891	9.78	147.16	0.650	0.000	3.50	8.741	5.68	55.6	0.0	548.5
110.25	Top - Section 3	1.00	1.02	8.897	9.79	146.98	0.650	0.000	0.25	0.617	0.40	3.9	0.0	38.7
115.00		1.00	1.03	9.005	9.91	145.72	0.650	0.000	4.75	11.547	7.51	74.3	0.0	320.0
120.00		1.00	1.04	9.115	10.03	141.94	0.650	0.000	5.00	11.783	7.66	76.8	0.0	326.5
125.00		1.00	1.05	9.222	10.14	138.08	0.650	0.000	5.00	11.402	7.41	75.2	0.0	315.8
130.00		1.00	1.07	9.326	10.26	134.14	0.650	0.000	5.00	11.022	7.16	73.5	0.0	305.2
135.00		1.00	1.08	9.427	10.37	130.13	0.650	0.000	5.00	10.641	6.92	71.7	0.0	294.6
140.00		1.00	1.09	9.525	10.48	126.04	0.650	0.000	5.00	10.260	6.67	69.9	0.0	283.9
145.00		1.00	1.10	9.621	10.58	121.88	0.650	0.000	5.00	9.879	6.42	68.0	0.0	273.3
147.00	Appurtenance(s)	1.00	1.10	9.659	10.62	120.20	0.650	0.000	2.00	3.845	2.50	26.6	0.0	106.3
150.00		1.00	1.11	9.715	10.69	117.66	0.650	0.000	3.00	5.653	3.67	39.3	0.0	156.3
								Totals:	**150.00**			**2,407.4**		**19,663.8**

Discrete Appurtenance Forces

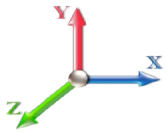
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	Sitepro HRK14-U	1	9.659	10.625	1.00	1.00	8.13	302.36	0.000	0.000	86.38	0.00	0.00
2	147.00	ALU TD-RRH8x20-25	3	9.659	10.625	0.60	0.90	7.33	210.00	0.000	0.000	77.84	0.00	0.00
3	147.00	ALU 800 MHz	6	9.659	10.625	0.60	0.90	9.01	318.00	0.000	0.000	95.72	0.00	0.00
4	147.00	ALU 1900 MHz	3	9.659	10.625	0.60	0.90	6.87	132.00	0.000	0.000	73.04	0.00	0.00
5	147.00	Sitepro PRK-SFS-H-L	1	9.659	10.625	1.00	1.00	6.70	230.00	0.000	0.000	71.19	0.00	0.00
6	147.00	Low Profile Platform	1	9.659	10.625	1.00	1.00	25.00	1200.00	0.000	0.000	265.62	0.00	0.00
7	147.00	Sitepro PRK-1245L	1	9.659	10.625	1.00	1.00	9.50	464.91	0.000	0.000	100.94	0.00	0.00
8	147.00	Commscope	3	9.659	10.625	0.68	0.90	24.85	232.20	0.000	0.000	263.99	0.00	0.00
9	147.00	RFS APXVTM14-C-I20	3	9.659	10.625	0.69	0.90	13.18	168.60	0.000	0.000	140.04	0.00	0.00
10	50.00	GPS	1	7.098	7.807	1.00	1.00	1.00	10.00	0.000	0.000	7.81	0.00	0.00
11	50.00	3 ft Standoff	1	7.098	7.807	1.00	1.00	2.63	40.00	0.000	0.000	20.53	0.00	0.00
							Totals:		**3,308.07**			**1,203.10**		

Total Applied Force Summary

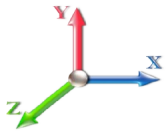
Structure:	CT02077-S-SBA		**Code:**	EIA/TIA-222-G	6/5/2018
Site Name:	Madison 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 28

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		86.77	959.99	0.00	0.00
10.00		85.10	941.76	0.00	0.00
15.00		83.43	923.54	0.00	0.00
20.00		81.76	905.31	0.00	0.00
25.00		80.09	887.09	0.00	0.00
30.00		78.49	868.86	0.00	0.00
34.75		76.15	808.54	0.00	0.00
35.00		4.05	83.96	0.00	0.00
40.00		83.10	1660.13	0.00	0.00
45.00		84.07	829.37	0.00	0.00
50.00	(2) attachments	113.05	861.15	0.00	0.00
55.00		85.06	792.12	0.00	0.00
60.00		85.16	773.90	0.00	0.00
65.00		85.05	755.67	0.00	0.00
70.00		84.74	737.45	0.00	0.00
70.25		4.19	36.39	0.00	0.00
74.75		76.98	1128.95	0.00	0.00
75.00		4.23	27.39	0.00	0.00
80.00		85.00	540.58	0.00	0.00
85.00		84.24	526.91	0.00	0.00
90.00		83.34	513.24	0.00	0.00
95.00		82.31	499.57	0.00	0.00
100.00		81.17	485.89	0.00	0.00
105.00		79.92	472.22	0.00	0.00
106.50		23.61	139.00	0.00	0.00
110.00		55.57	561.85	0.00	0.00
110.25		3.93	39.68	0.00	0.00
115.00		74.34	338.12	0.00	0.00
120.00		76.79	345.55	0.00	0.00
125.00		75.18	334.92	0.00	0.00
130.00		73.49	324.28	0.00	0.00
135.00		71.72	313.65	0.00	0.00
140.00		69.88	303.01	0.00	0.00
145.00		67.96	292.38	0.00	0.00
147.00	(22) attachments	1201.31	3372.04	0.00	0.00
150.00		39.27	156.32	0.00	0.00
	Totals:	**3,610.47**	**23,540.81**	**0.00**	**0.00**

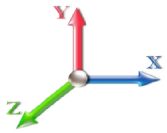
Linear Appurtenance Segment Forces (Factored)

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	6.129	0.00	0.80
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	6.129	0.00	0.80
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	6.129	0.00	0.80
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	6.129	0.00	0.80
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	6.129	0.00	0.80
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	6.134	0.00	0.80
34.75	1/2" Coax	Yes	4.75	0.000	0.65	0.26	0.00	0.015	0.000	6.397	0.00	0.76
35.00	1/2" Coax	Yes	0.25	0.000	0.65	0.01	0.00	0.016	0.000	6.410	0.00	0.04
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	6.659	0.00	0.80
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	6.887	0.00	0.80
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.016	0.000	7.098	0.00	0.80
									Totals:		**0.0**	**8.0**

Calculated Forces

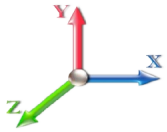
Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-23.54	-3.62	0.00	-365.16	0.00	365.16	3862.72	1931.36	7438.96	3725.01	0.00	0.000	0.000	0.104
5.00	-22.58	-3.54	0.00	-347.08	0.00	347.08	3813.07	1906.53	7201.22	3605.96	0.02	-0.033	0.000	0.102
10.00	-21.63	-3.47	0.00	-329.37	0.00	329.37	3762.45	1881.23	6965.41	3487.88	0.07	-0.066	0.000	0.100
15.00	-20.71	-3.40	0.00	-312.03	0.00	312.03	3710.88	1855.44	6731.63	3370.82	0.16	-0.099	0.000	0.098
20.00	-19.80	-3.32	0.00	-295.05	0.00	295.05	3658.35	1829.17	6500.00	3254.83	0.28	-0.132	0.000	0.096
25.00	-18.91	-3.25	0.00	-278.43	0.00	278.43	3604.86	1802.43	6270.60	3139.96	0.43	-0.166	0.000	0.094
30.00	-18.04	-3.18	0.00	-262.17	0.00	262.17	3550.41	1775.20	6043.57	3026.27	0.62	-0.199	0.000	0.092
34.75	-17.23	-3.11	0.00	-247.05	0.00	247.05	3497.79	1748.89	5830.16	2919.41	0.84	-0.231	0.000	0.090
35.00	-17.15	-3.11	0.00	-246.28	0.00	246.28	3495.00	1747.50	5818.99	2913.82	0.85	-0.233	0.000	0.089
40.00	-15.49	-3.03	0.00	-230.74	0.00	230.74	3250.32	1625.16	5391.43	2699.72	1.11	-0.267	0.000	0.090
45.00	-14.66	-2.95	0.00	-215.60	0.00	215.60	3196.65	1598.32	5183.26	2595.48	1.41	-0.301	0.000	0.088
50.00	-13.79	-2.84	0.00	-200.86	0.00	200.86	3142.12	1571.06	4977.74	2492.57	1.74	-0.332	0.000	0.085
55.00	-13.00	-2.75	0.00	-186.68	0.00	186.68	3079.27	1539.64	4763.42	2385.25	2.11	-0.364	0.000	0.082
60.00	-12.23	-2.67	0.00	-172.90	0.00	172.90	3005.81	1502.91	4537.76	2272.25	2.51	-0.396	0.000	0.080
65.00	-11.47	-2.59	0.00	-159.55	0.00	159.55	2932.35	1466.17	4317.57	2162.00	2.94	-0.427	0.000	0.078
70.00	-10.73	-2.50	0.00	-146.61	0.00	146.61	2858.89	1429.44	4102.86	2054.48	3.40	-0.459	0.000	0.075
70.25	-10.70	-2.50	0.00	-145.99	0.00	145.99	2855.21	1427.61	4092.27	2049.18	3.43	-0.460	0.000	0.075
74.75	-9.57	-2.41	0.00	-134.75	0.00	134.75	2159.70	1079.85	3089.90	1547.25	3.87	-0.488	0.000	0.092
75.00	-9.54	-2.41	0.00	-134.14	0.00	134.14	2157.84	1078.92	3083.21	1543.90	3.90	-0.490	0.000	0.091
80.00	-9.00	-2.33	0.00	-122.08	0.00	122.08	2120.07	1060.03	2950.23	1477.31	4.43	-0.528	0.000	0.087
85.00	-8.47	-2.25	0.00	-110.43	0.00	110.43	2081.33	1040.67	2818.76	1411.47	5.01	-0.566	0.000	0.082
90.00	-7.96	-2.16	0.00	-99.21	0.00	99.21	2041.64	1020.82	2688.91	1346.45	5.62	-0.603	0.000	0.078
95.00	-7.46	-2.08	0.00	-88.40	0.00	88.40	2000.99	1000.49	2560.80	1282.30	6.27	-0.639	0.000	0.073
100.00	-6.97	-2.00	0.00	-78.00	0.00	78.00	1959.38	979.69	2434.52	1219.07	6.96	-0.673	0.000	0.068
105.00	-6.50	-1.91	0.00	-68.02	0.00	68.02	1916.81	958.40	2310.19	1156.81	7.68	-0.706	0.000	0.062
106.50	-6.36	-1.89	0.00	-65.15	0.00	65.15	1903.85	951.92	2273.28	1138.33	7.90	-0.716	0.000	0.061
110.00	-5.80	-1.83	0.00	-58.54	0.00	58.54	1873.28	936.64	2187.91	1095.58	8.44	-0.738	0.000	0.057
110.25	-5.76	-1.83	0.00	-58.08	0.00	58.08	1276.16	638.08	1517.80	760.03	8.48	-0.740	0.000	0.081
115.00	-5.42	-1.75	0.00	-49.41	0.00	49.41	1251.06	625.53	1443.65	722.90	9.23	-0.768	0.000	0.073
120.00	-5.07	-1.67	0.00	-40.67	0.00	40.67	1223.82	611.91	1366.60	684.32	10.05	-0.801	0.000	0.064
125.00	-4.74	-1.59	0.00	-32.31	0.00	32.31	1195.72	597.86	1290.67	646.29	10.90	-0.830	0.000	0.054
130.00	-4.41	-1.52	0.00	-24.35	0.00	24.35	1166.78	583.39	1215.94	608.87	11.79	-0.856	0.000	0.044
135.00	-4.10	-1.44	0.00	-16.76	0.00	16.76	1136.98	568.49	1142.51	572.10	12.70	-0.876	0.000	0.033
140.00	-3.80	-1.37	0.00	-9.56	0.00	9.56	1106.33	553.17	1070.48	536.04	13.62	-0.891	0.000	0.021
145.00	-3.51	-1.30	0.00	-2.72	0.00	2.72	1074.83	537.42	999.94	500.71	14.56	-0.898	0.000	0.009
147.00	-0.16	-0.04	0.00	-0.12	0.00	0.12	1061.99	531.00	972.17	486.81	14.94	-0.899	0.000	0.000
150.00	0.00	-0.04	0.00	0.00	0.00	0.00	1037.33	518.67	926.40	463.89	15.50	-0.899	0.000	0.000

Final Analysis Summary

Structure:	CT02077-S-SBA	**Code:**	EIA/TIA-222-G	6/5/2018	
Site Name:	Madison 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	16.4	0.00	28.23	0.00	0.00	1664.61
0.9D + 1.6W 101 mph Wind	16.4	0.00	21.17	0.00	0.00	1650.15
1.2D + 1.0Di + 1.0Wi 50 mph Wind	4.7	0.00	42.98	0.00	0.00	471.35
1.2D + 1.0E	1.3	0.00	28.25	0.00	0.00	146.81
0.9D + 1.0E	1.3	0.00	21.19	0.00	0.00	145.41
1.0D + 1.0W 60 mph Wind	3.6	0.00	23.54	0.00	0.00	365.16

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-28.23	-16.41	0.00	-1664.6	0.00	-1664.6	3862.72	1931.3	7438.96	3725.01	0.00	0.454
0.9D + 1.6W 101 mph Wind	-21.17	-16.40	0.00	-1650.1	0.00	-1650.1	3862.72	1931.3	7438.96	3725.01	0.00	0.449
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-42.98	-4.70	0.00	-471.35	0.00	-471.35	3862.72	1931.3	7438.96	3725.01	0.00	0.138
1.2D + 1.0E	-6.93	-0.92	0.00	-32.21	0.00	-32.21	1276.16	638.08	1517.80	760.03	110.25	0.048
0.9D + 1.0E	-5.20	-0.91	0.00	-31.84	0.00	-31.84	1276.16	638.08	1517.80	760.03	110.25	0.046
1.0D + 1.0W 60 mph Wind	-23.54	-3.62	0.00	-365.16	0.00	-365.16	3862.72	1931.3	7438.96	3725.01	0.00	0.104

Base Plate Summary

Structure:	CT02077-S-SB		**Code:**	EIA/TIA-222-G	6/5/2018
Site Name:	Madison 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 32

Tower Engineering Solutions

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	50.00	**Bolt Circle:**	54.00
Moment (kip-ft):	2750.00	**Width (in):**	54.00	**Number Bolts:**	16.00
Axial (kip):	25.00	**Style:**	Clipped	**Bolt Type:**	2.25" 18J
Shear (kip):	24.00	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	2.25
Analysis		**Clip Length (in):**	11.00	**Yield (ksi):**	75.00
Moment (kip-ft):	1664.61	**Effective Len (in):**	7.50	**Ultimate (ksi):**	100.00
Axial (kip):	42.98	**Moment (kip-in):**	321.18	**Arrangement:**	Clustered
Shear (kip):	16.41	**Allow Stress (ksi):**	67.50	**Cluster Dist (in):**	6.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	45.00
Moment Design %:	60.53	**Stress Ratio:**	0.50	Compression	
				Force (kip):	95.16
				Allowable (kip):	260.00
				Ratio:	0.37
				Tension	
				Force (kip):	89.79
				Allowable (kip):	260.00
				Ratio:	0.35

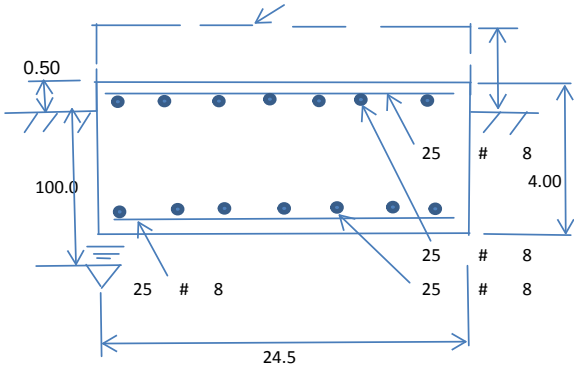
Monopole Mat Foundation Design

			Date: 10/31/2017
Customer Name:	SBA Communcations Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	150
Site Number:		**Engineer Name:**	H. Lei
Engr. Number:		**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

Analysis or Design? Analysis

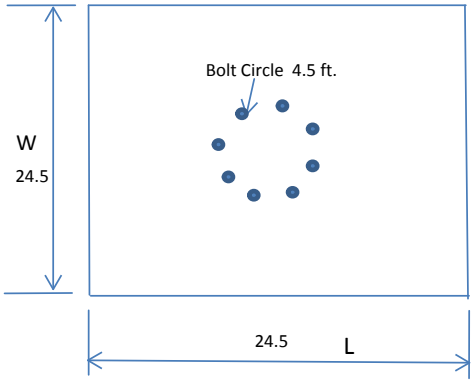


Base Reactions (Factored):

Axial Load (Kips):	28.2	Shear Force (Kips):	16.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1664.6
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Anchor Bolt Circle (ft.):	4.50	Depth of Base BG (ft.):	3.50
Thickness of Pad (ft):	4.00		
Length of Pad (ft.):	24.5	Width of Pad (ft.):	24.5
Final Length of pad (ft)	24.5	Final width of pad (ft):	24.5



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	8			
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	25	Qty. of Rebar in Pad (W):	25

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	25	Qty. of Rebar in Pad (W):	25
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Water Table B.G.S. (ft):	100.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	24000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2401.00	Total Dry Concrete Weight (Kips):	360.15
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	360.15	Total Vertical Load on Base (Kips):	388.35

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1676	<	Allowable Factored Soil Bearing (psf): 18000	0.09	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4316.1	>	Design Factored Momont (kips-ft): 1731	0.40	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.49	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1074.9	>	One-Way Factored Shear (L-D. Kips):	166.4	0.15	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1074.9	>	One-Way Factored Shear (W-D., Kips)	166.4	0.15	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1300.7	>	One-Way Factored Shear (C-C, Kips):	296.2	0.23	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0015	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0015		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3884.7	>	Moment at Bottom (L-Direct. K-Ft):	502.7	0.13	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3884.7	>	Moment at Bottom (W-Direct. K-Ft):	502.7	0.13	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	5477.0	>	Moment at Bottom (C-C Dir. K-Ft):	710.9	0.13	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0015	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0015		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	3884.7	>	Moment at the top (L-Dir Kips-Ft):	65.1	0.02	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	3884.7	>	Moment at the top (W-Dir Kips-Ft):	65.1	0.02	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	5477.0	>	Moment at the top (C-C Direc. K-Ft):	261.4	0.05	OK!

Antenna Mount Structural Analysis

Source: SBA Date: 11.14.2017

SBA Site:	CT02077-S Madison 2 CT
Sprint Site Number:	CT33XC581
Project:	Sprint DO Macro Upgrade
Prepared For:	Sprint
Mount Description:	(1) Platform
Site Location:	N Chestnut Hill Rd, Killingworth, CT Middlesex County 41.380566°, -72.602064°
Design Codes:	ANSI/TIA-222-G IBC 2012 w/ 2016 CT Building Code
Analysis Load Case:	Sprint Final Configuration
Analysis Result:	**Adequate @ 76%** - Once Augmented See Conclusion

Revision 0
March 21, 2018

CT33XC581-PASSING-MOUNT-STRUCTURAL-ANALYSIS-03-21-18

1.0 Introduction

An antenna mount structural analysis has been performed on Sprint's existing mount assembly located at the CT02077-S Madison 2 CT communications site in Middlesex County, CT considering the final equipment loading configuration listed in Section 3.0.

2.0 Analysis Criteria

An elastic three-dimensional model of the mount structure has been analyzed pursuant to the following criteria:

- IBC 2012 – International Building Code.
- ANSI/TIA-222-G – Structural Standard for Antenna Supporting Structures and Antennas.
- AISC – Steel Construction Manual.
- ANSI/AWS D1.1 – Structural Welding Code.

Wind w/o ice = 130 mph (3-sec gust Ultimate Wind Speed) Wind w/o ice = 101 mph (3-sec gust Equivalent per TIA-222-G Tower Code)	
Wind with ice = 50 mph (3-sec gust, 3/4" Ice) Exposure Category B	Topographic Category 1 Structure Class II

The following documents were provided:

- Mount and Tower Record Documents
  SBA
- Tower Structural Analysis
  TES, 1/4/18.
- RF Design
  Sprint DOMU Project

The results of the analysis are illustrated in Section 4.0. If any of the existing or proposed conditions reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

3.0 Appurtenance Information

Table 3.1 – Sprint Final Configuration[1]

COR	(Quantity) Appurtenance Make/Model	Mount Description
147.0'±	(3) RFS APXVTM14-ALU-I20	*(1) Platform*
	(3) COMMSCOPE NNVV-65B-R4	
	(6) ALU 800MHz RRH	
	(3) ALU 1900MHz RRH	
	(3) ALU 2500MHz RRH	

1. *Refer to antenna installation Construction Drawings (by others, when applicable) for additional information regarding final antenna and equipment orientations.*
2. *Panel antennas to be installed in Positions 1 and 3 (as close to the center of face near existing standoff as possible. RRH units to be installed on dual swivel brackets behind panel antennas in Positions 1 and 3.*

4.0 Analysis Results

Table 4.1 – Existing Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final Sprint Configuration	Angle Rail	>200%	**Inadequate[3]**

1. *Refer to the Calculations & Software Output portion of this report for mount component and structural information.*
2. *Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.3. 105% is an acceptable allowable stress percentage for mount components.*
3. *Structural augments to the existing mount structure are required to obtain a mount structure capable of supporting the currently proposed final loading configuration in Table 3.1.*

Table 4.2 – Augmented Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final Sprint Configuration	Angle Rail	76%	**Adequate Once Augmented[3]**

1. *Refer to the Calculations & Software Output portion of this report for mount component and structural information.*
2. *Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.3. 105% is an acceptable allowable stress percentage for mount components.*
3. *Refer to GeoStructural Mount Augmentation Drawings and Section 5.0 for information regarding required mount augments.*

Table 4.3 – Structural Component Material Strengths

Structural Component	Nominal Strength/Material[1]
Pipe	F_y = 35 ksi (A53, Gr. B)
Tube	F_y = 46 ksi (A500, Gr. B)
Structural Shapes (L, C, W, etc.), Plate / Bar	F_y = 36 ksi (A36)
Uni-Strut	F_y = 33 ksi (A570, Gr. 33)
Connection Bolts	A325
Stainless Steel Bolts	18-8 Stainless, Grade 316/304 F_y = 74 ksi (Yield) & F_u = 29 ksi (Tension)
U-Bolts / Threaded Rod	SAE J429 Grade 2 (Substitution: ASTM A449) F_y = 57 ksi (Yield) & F_u = 74 ksi (Tension)
Welds	E70XX Electrodes

1. *Strengths listed were assumed for this analysis and are based upon ASTM, AISC, RCSC, AWS and ACI preferred specification values. Values and materials are consistent with industry standards. Material strengths were taken from original design documents when available.*

5.0 Conclusion & Recommendations

Based on Sprint's final equipment loading configuration, the existing mount assembly does not have sufficient capacity to support the loading considered in this analysis pursuant to the listed standards. Structural augments (reinforcements) will be required and are briefly summarized below:

- Install Platform Reinforcement Kit; located 4' below the existing collar mount and attaching to the middle of the existing back-to-back angle platform member at the platform corners.
  - Sitepro1 PRK-1245L, (1) total.
- Install Handrail Kit; located 3.0' above the existing platform rail and attaching to the mount pipes.
  - Sitepro1 HRK14-U, (1) total. Attach all mount pipes to new handrail with kit-provided cross-over plates. (6) new Pipe2.0STD x 9' tall mount pipes will be required to span between the existing rail and new top and bottom rails.
- Install V-Brace Kit; located 2.5' below the existing platform rail and attaching to the new bottom handrail kit.
  - Sitepro1 PRK-SFS-H-L, (1) total. Attach kit ring mount in kit to monopole shaft.
    - If the PRK-SFS-H-L kit is not available, provide (6) total L2-1/2x2-1/2x3/16 x ~8' long replacement angles, field-cut and drill to suit.
  - Pipe2.0STD x 14.0' Horizontal Rail, (3) total. Attach SFS-H-L kit angles to new horizontal bottom rail.
  - Pipe2.0STD x ~4' long corner braces, (3) total. Attach to new horizontal bottom rail w/ Sitepro1 PUCK brackets, (6) total.
  - Sitepro1 SCX1-K, (6) total. Attach all mount pipes to new horizontal bottom rail.
- Panel antennas to be installed in Positions 1 and 3 (as close to the center of face near existing standoff as possible. RRH units to be installed on dual swivel brackets behind panel antennas in Positions 1 and 3.

Once the recommended augments are successfully implemented, the augmented mount assembly has sufficient capacity to support the loading considered in this analysis pursuant to the listed standards.

Augmentation Requirements:

- **In order to obtain a mount structure capable of supporting the currently proposed final loading configuration, upgrade augments must be installed in accordance with GeoStructural's *Mount Augmentation Drawings*.**
- **Antennas and equipment shall be installed centered vertically on the mount front face rails. If this assumption is incorrect, the results of this analysis will be affected.**

This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If any of the existing or proposed conditions (appurtenance loading, member sizes, etc.) reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

Prepared by:

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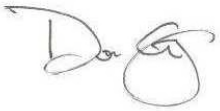
Reviewed and Approved by:



Don George, PE, SE, MLSE
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6.0 Standard Conditions

- All data required to complete our structural analysis was furnished by our client and provided record data. GeoStructural has not conducted a site visit or independent study to verify existing conditions and the results of this analysis are based solely on the information provided. It has been assumed that the tower, antenna support structure and foundation have been constructed according to the provided existing drawings, previous structural analysis reports, mapping documents, etc.

- The default Structure Classification is Class II in accordance with ANSI/TIA-222-G §A.2.2 & §A.15.3 and has been assumed for this analysis. The owner shall verify this classification conforms with original or desired reliability criteria.

- This analysis assumes that the structure has been properly installed and maintained in accordance with ANSI/TIA-222-G §15.5 and that no physical deterioration has occurred in any of the components of the structure. Damaged, missing, or rusted members were not considered.

- This analysis verifies the adequacy of the main components of the structure. Not all connections, welds, bolts, plates, etc. were individually detailed and analyzed. Where not specifically analyzed, the existing connection plates, welds, bolts, etc. were assumed adequate to develop the full capacity of the main structural members.

- No consideration has been made for unusual or extreme wind events, rime/in-cloud ice loadings, harmonic or nodal vibration, vortex shedding or other similar conditions.

- It is the owner's responsibility to determine the appropriate design wind speed and amount of ice accumulation beyond code minimum values that should be considered in the analysis.

- This analysis report does not constitute a maintenance and condition assessment. No certifications regarding maintenance and condition are expressed or implied. If desired, GeoStructural can provide these services under a subsequent contract.

- This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If desired, GeoStructural can provide these services under a subsequent contract.

7.0 Calculations & Software Output

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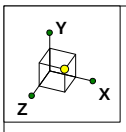

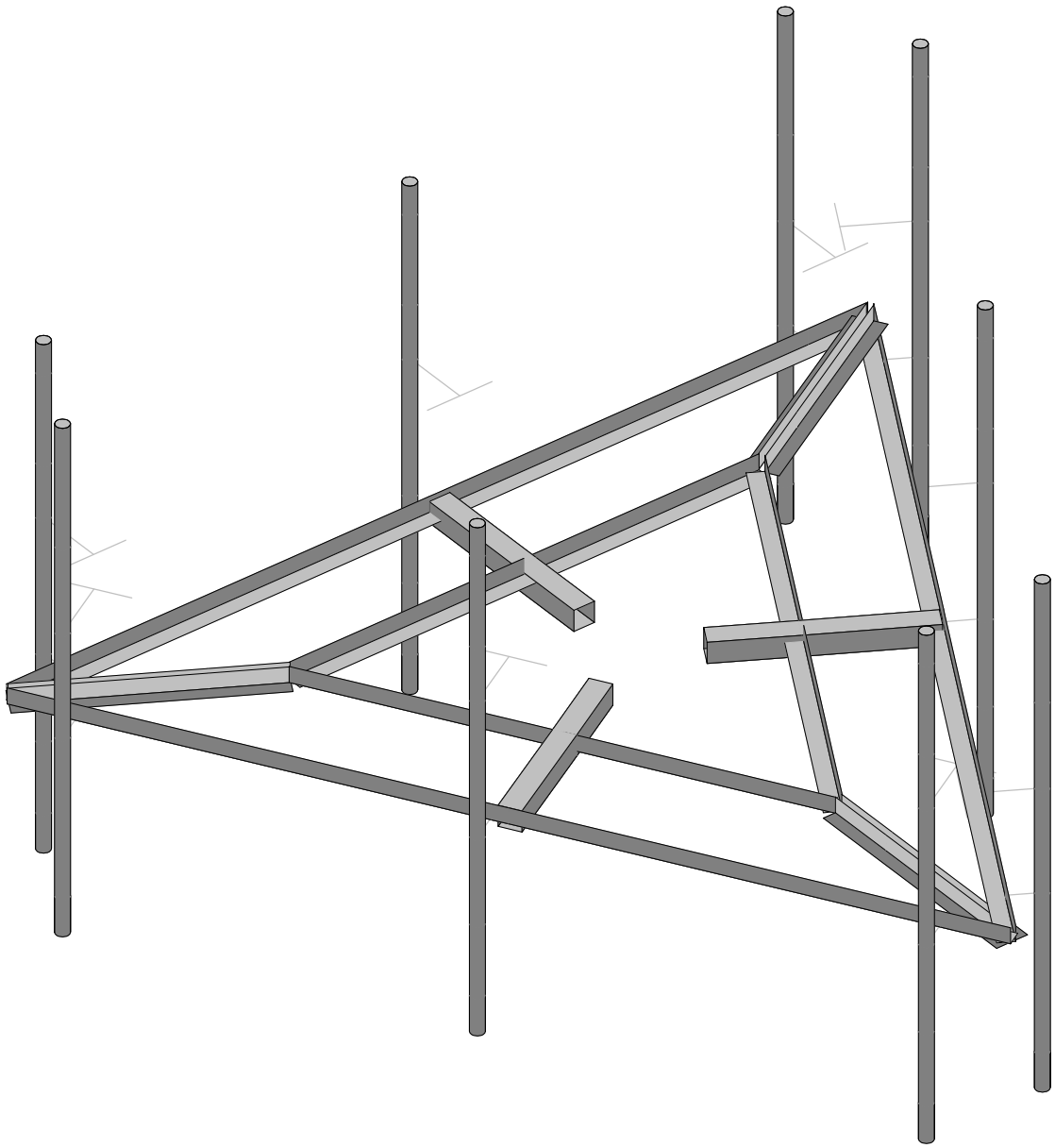

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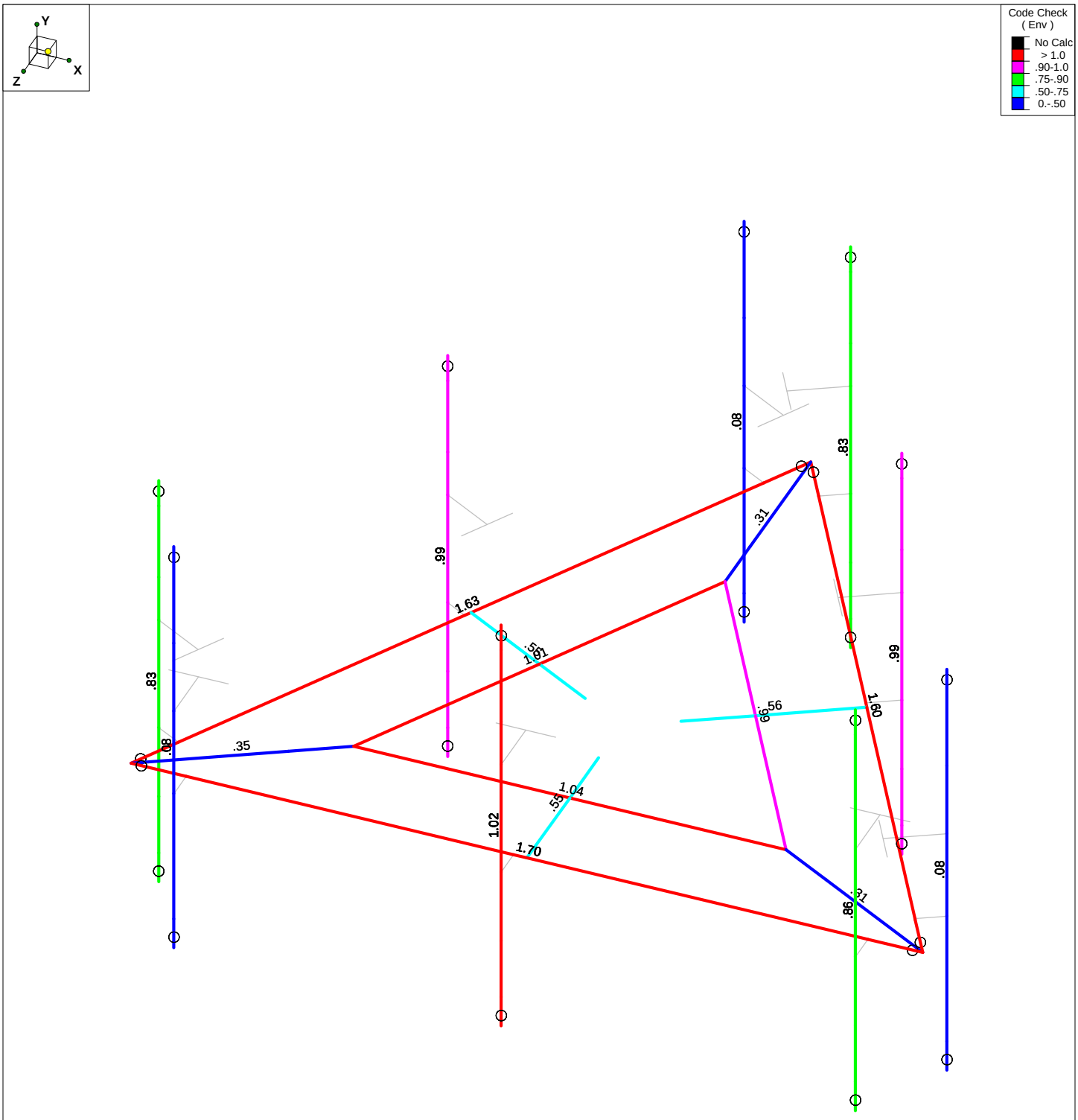

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Jesse Drennen, PE		Mar 21, 2018 at 1:32 PM
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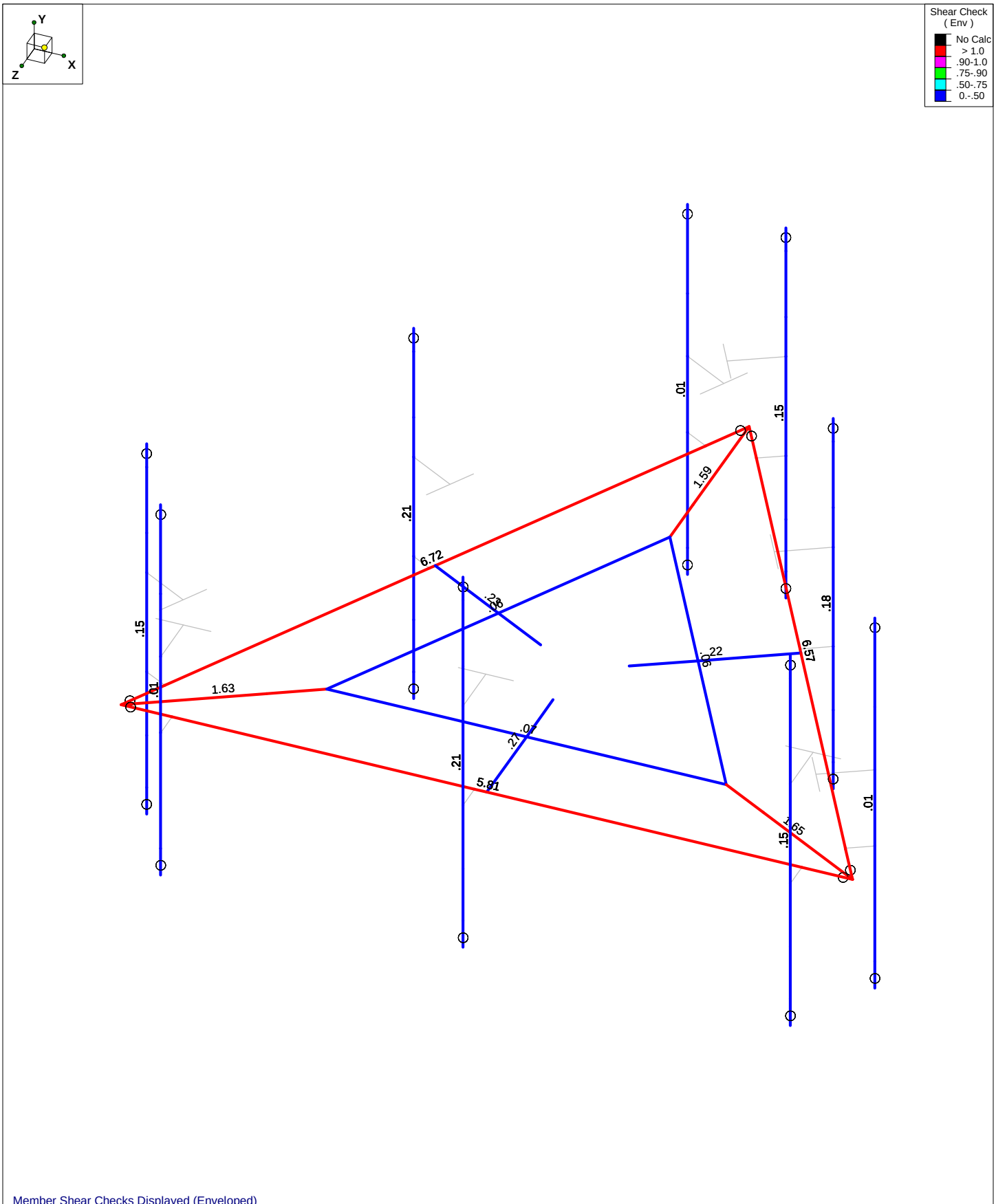
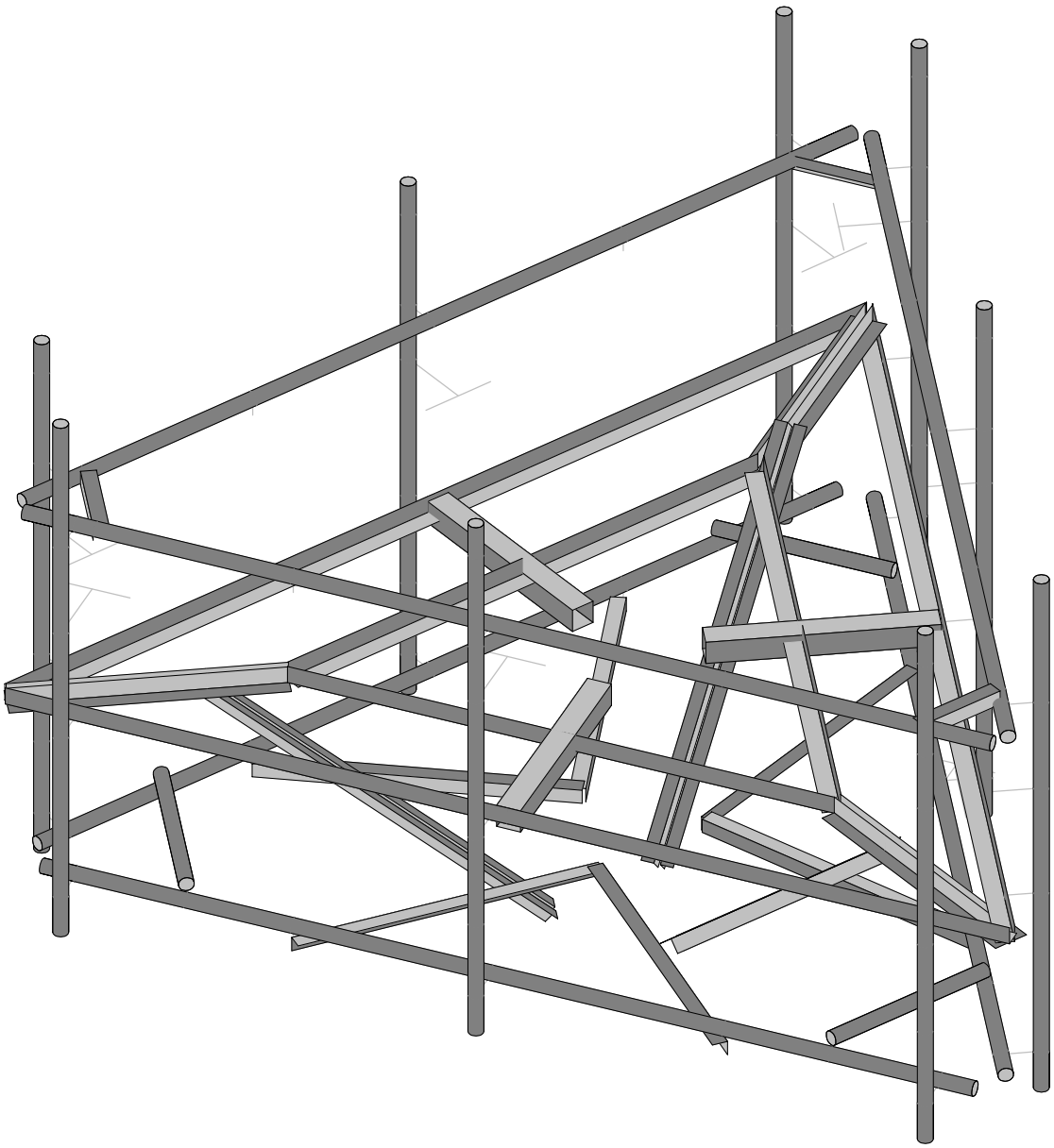


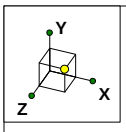
Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

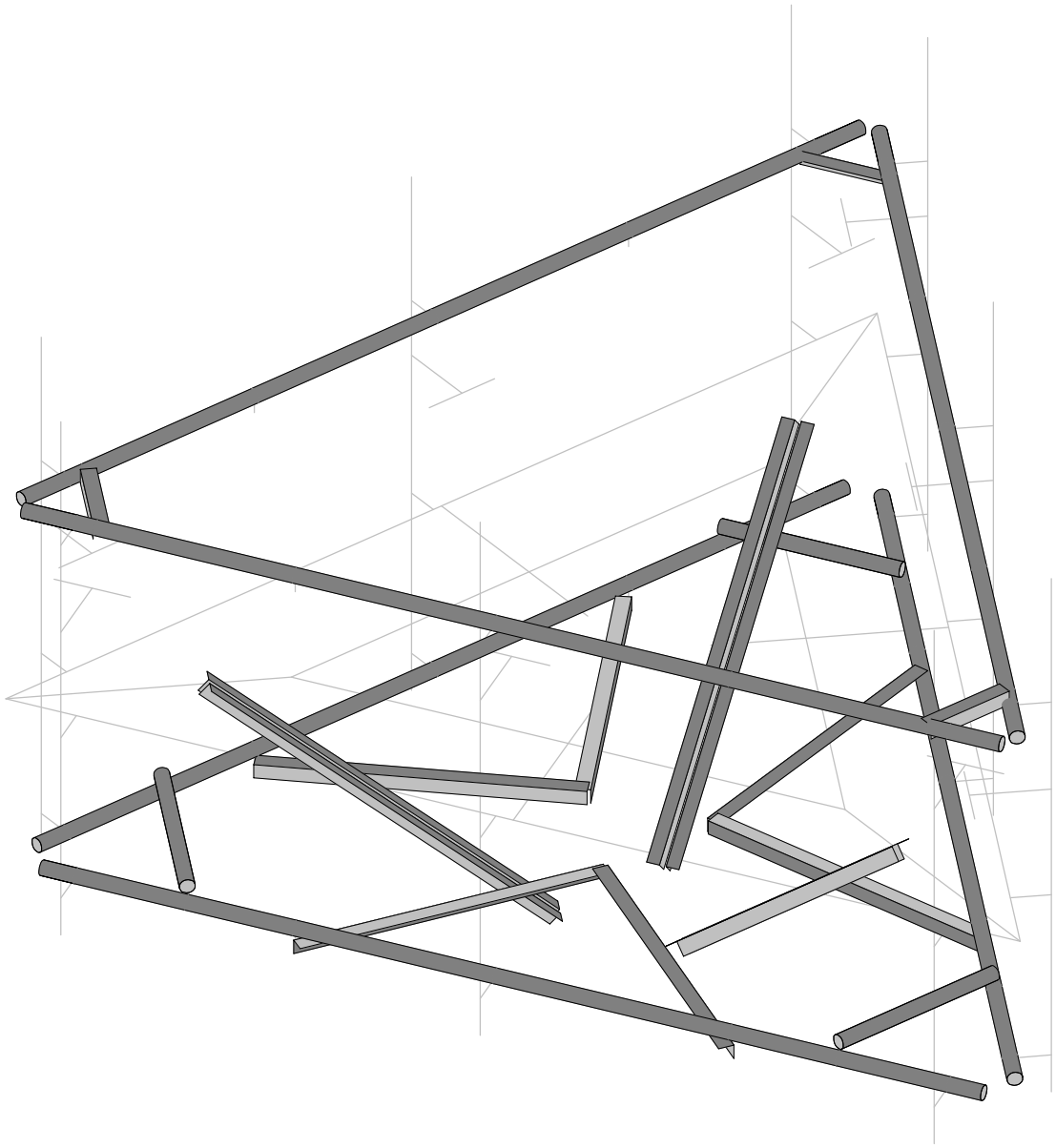
GeoStructural, LLC	CT33XC581	SK - 4
Jesse Drennen, PE		Mar 21, 2018 at 1:32 PM
		CT33XC581_Mount Analysis_R0 1...



Envelope Only Solution

GeoStructural, LLC	CT33XC581	SK - 1
Jesse Drennen, PE		Mar 21, 2018 at 1:34 PM
		CT33XC581_Mount Analysis_R0 1...





Envelope Only Solution

GeoStructural, LLC	CT33XC581	SK - 7
Jesse Drennen, PE		Mar 21, 2018 at 1:35 PM
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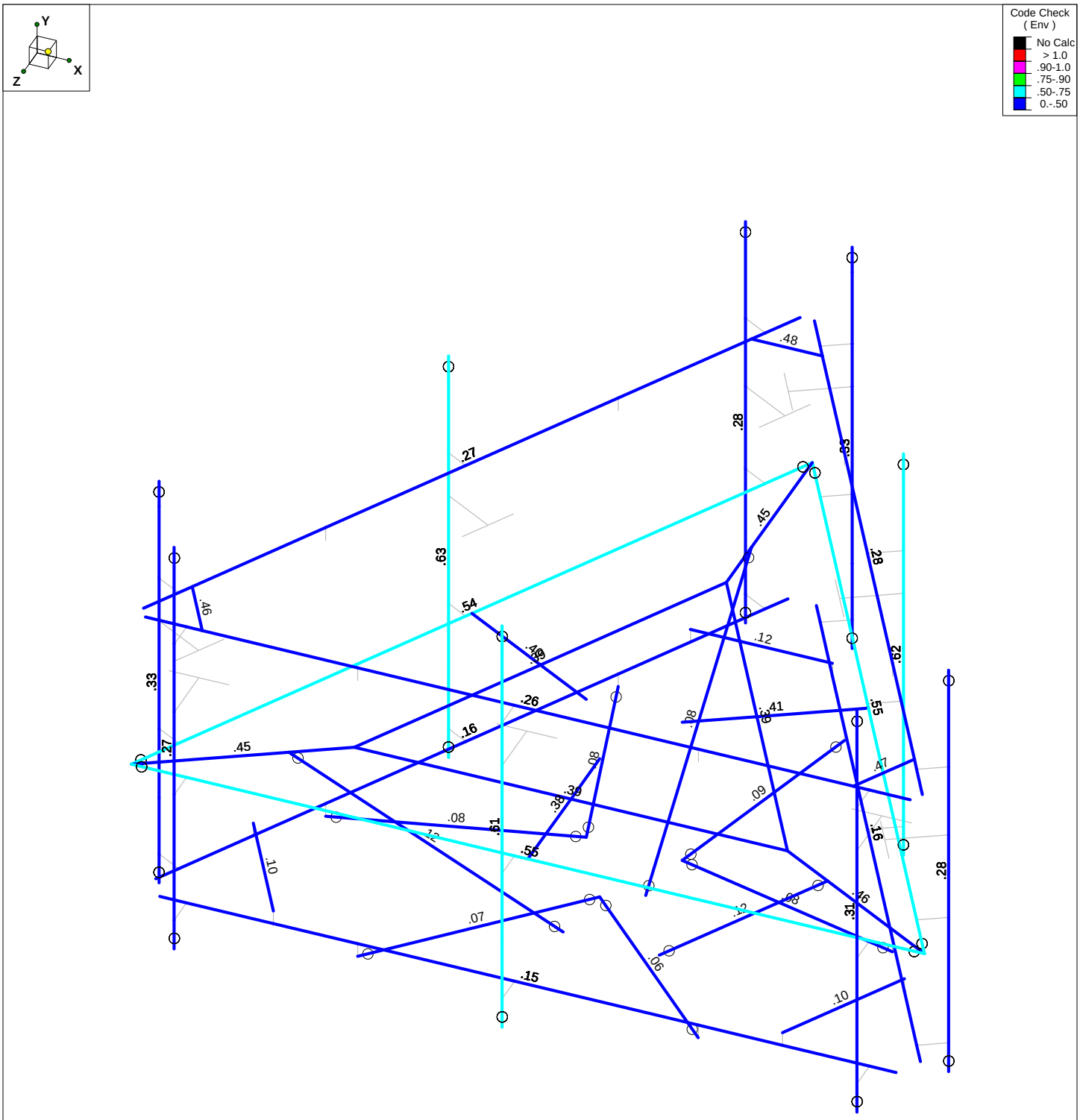
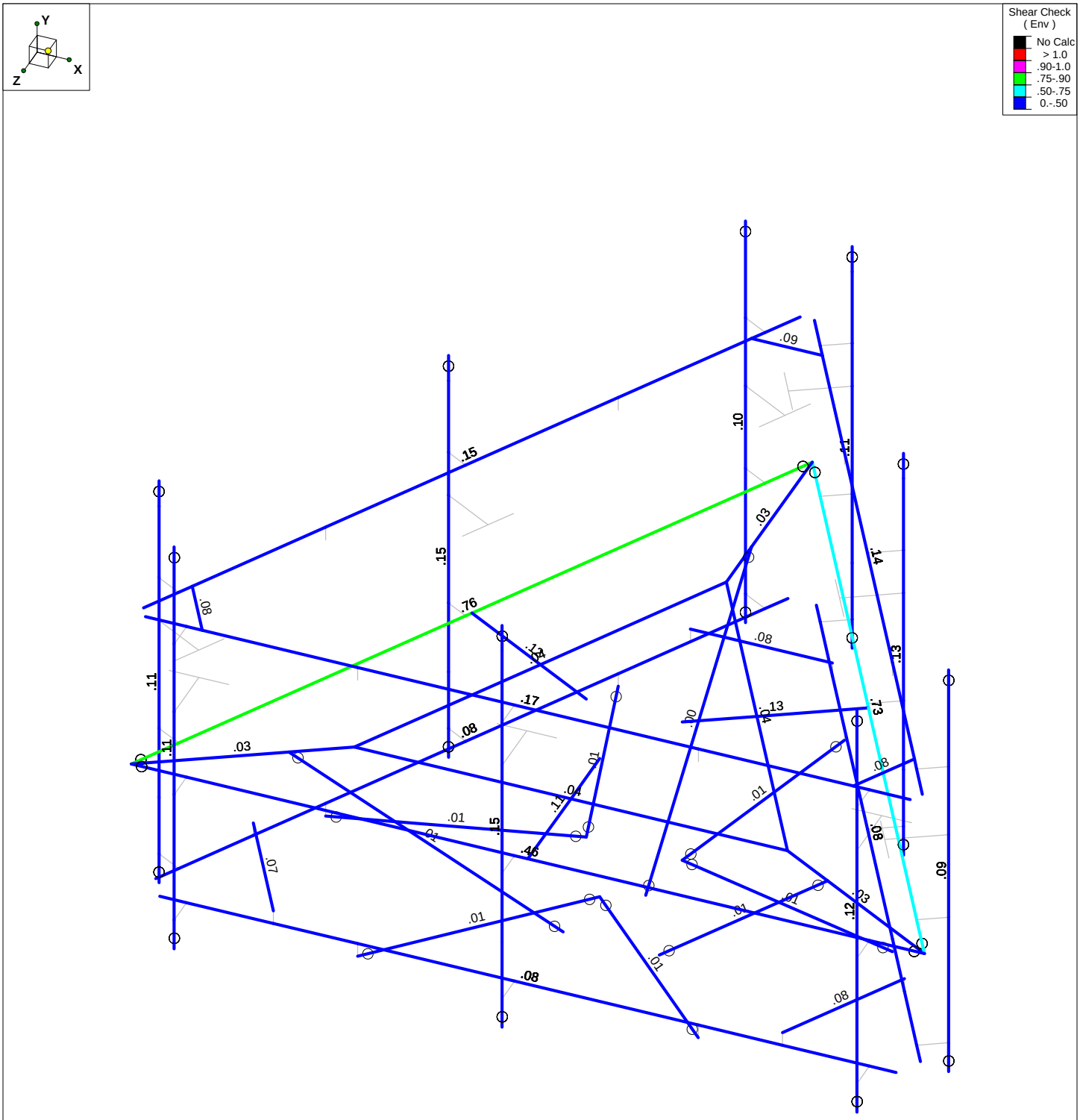


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

GeoStructural, LLC	CT33XC581	SK - 2
Jesse Drennen, PE		Mar 21, 2018 at 1:34 PM
		CT33XC581_Mount Analysis_R0 1...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

GeoStructural, LLC	CT33XC581	SK - 3
Jesse Drennen, PE		Mar 21, 2018 at 1:34 PM
		CT33XC581_Mount Analysis_R0 1...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	D	DL		-1		25		6		
2	Di	SL				25		48		
3	Lm [500]	LL				1				
4	Lv [250]	LL				2				
5	Woz	WL				25		48		
6	Wox	WL				25		48		
7	Wiz	WL				25		48		
8	Wix	WL				25		48		
9	Ez	EL				25				
10	Ex	EL				25				

Load Combination Design

	Description	ASIF	CD	Service	Hot Rol...	Cold Form...	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1) 1.4D				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	ASIF	CD	Service	Hot Rol...	Cold Form...	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
42	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	6) 1.2D+1.5Lv				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
71	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
72	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
73	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
74	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N25	max	0	1	0	1	0	1	0	1	0	1	0	1
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N30	max	0	1	0	1	0	1	0	1	0	1	0	1
4		min	0	1	0	1	0	1	0	1	0	1	0	1
5	N35	max	0	1	0	1	0	1	0	1	0	1	0	1
6		min	0	1	0	1	0	1	0	1	0	1	0	1
7	N42	max	2.235	16	1.181	34	3.231	3	2.242	36	3.255	21	3.818	35
8		min	-2.513	10	.291	65	-3.055	21	.47	18	-3.267	3	.8	66
9	N40	max	2.573	6	1.206	37	3.098	13	2.223	27	3.098	25	-.813	71
10		min	-2.286	24	.296	69	-2.946	19	.439	22	-3.109	7	-3.88	28
11	N44	max	2.939	5	1.188	34	1.39	14	-.957	63	2.069	5	.096	23
12		min	-2.914	23	.29	65	-1.715	8	-4.444	32	-2.044	23	-.116	5
13	N128	max	.057	17	1.928	26	-.15	20	0	1	0	66	0	60
14		min	-.057	23	.082	20	-2.052	26	0	1	0	60	0	66
15	N130	max	-.107	24	1.925	30	1.024	29	0	4	0	22	0	22
16		min	-1.771	30	.043	24	.045	23	0	22	0	4	0	4
17	N132	max	1.789	34	1.943	34	1.034	34	0	24	0	24	0	24
18		min	.142	16	.078	16	.069	17	0	6	0	6	0	6
19	N147	max	.074	72	.066	26	.326	57	0	26	0	1	0	23

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
20		min	-.139	43	.009	69	-.171	63	0	20	0	1	0	5
21	N152	max	.273	61	.066	30	.099	68	0	15	0	1	0	22
22		min	-.143	67	.009	73	-.19	62	0	9	0	1	0	28
23	N157	max	.138	71	.066	34	.103	70	0	25	0	1	0	36
24		min	-.289	53	.009	65	-.172	52	0	43	0	1	0	18
25	Totals:	max	6.519	5	9.268	31	6.409	14						
26		min	-6.519	23	2.223	74	-6.409	8						

Envelope Member Section Deflections Service

Member	Sec	x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y' Ratio	LC	(n) L/z' Ratio	LC
No Data to Print ...													

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M66	L3x3x4	.543	6.983	7	.760	6.983	y	10	32.733	46.656	1.688	2.278	1	H2-1
2	M65	L3x3x4	.545	6.983	3	.732	6.983	y	6	32.733	46.656	1.688	2.278	1	H2-1
3	M64_1	L3x3x4	.546	6.982	5	.463	6.982	y	2	32.733	46.656	1.688	2.278	1	H2-1
4	M41A	PIPE_2.0	.263	1.122	11	.168	1.122		2	17.855	32.13	1.872	1.872	1	H1-1b
5	M28	PIPE_2.0	.614	3.083	2	.155	5.25		5	14.916	32.13	1.872	1.872	2...	H1-1b
6	M118	PIPE_2.0	.630	3.083	11	.151	5.25		7	14.916	32.13	1.872	1.872	2...	H1-1b
7	M48	PIPE_2.0	.271	6.873	13	.150	12.3...		11	17.855	32.13	1.872	1.872	1	H1-1b
8	M47	PIPE_2.0	.285	6.873	10	.144	12.3...		6	17.855	32.13	1.872	1.872	1	H1-1b
9	M108	PIPE_2.0	.617	3.083	6	.132	5.25		3	14.916	32.13	1.872	1.872	2...	H1-1b
10	M53	HSS4x4x3	.407	0	10	.127	0	y	3	102.875	106.812	12.662	12.662	3...	H1-1b
11	M52	HSS4x4x3	.400	0	6	.124	0	y	7	102.875	106.812	12.662	12.662	3...	H1-1b
12	M54	PIPE_2.0	.308	3.083	11	.119	3.083		12	14.916	32.13	1.872	1.872	2...	H1-1b
13	M62B	PIPE_2.0	.332	3.083	3	.115	3.083		4	14.916	32.13	1.872	1.872	1...	H1-1b
14	M70	PIPE_2.0	.330	3.083	7	.114	3.083		8	14.916	32.13	1.872	1.872	2...	H1-1b
15	M60	HSS4x4x3	.384	0	29	.109	0	y	5	102.875	106.812	12.662	12.662	2...	H1-1b
16	M57C	PIPE_2.0	.273	3.083	5	.106	3.083		4	14.916	32.13	1.872	1.872	1...	H1-1b
17	M93	PIPE_2.0	.281	3.083	7	.102	3.083		12	14.916	32.13	1.872	1.872	1...	H1-1b
18	M75A	PIPE_2.0	.284	3.083	3	.091	3.083		8	14.916	32.13	1.872	1.872	1...	H1-1b
19	M51A	L2.5x2.5x3	.484	0	5	.088	1.25	y	5	27.293	29.192	.873	1.972	2...	H2-1
20	M72_1	PIPE_2.0	.115	2.5	5	.083	2.5		11	29.81	32.13	1.872	1.872	2...	H1-1b
21	M61B	PIPE_2.0	.158	6.618	37	.081	10.9...		12	17.855	32.13	1.872	1.872	1	H1-1b
22	M49A	L2.5x2.5x3	.459	0	10	.081	1.25	y	9	27.293	29.192	.873	1.972	1...	H2-1
23	M50	L2.5x2.5x3	.472	0	2	.080	1.25	y	13	27.293	29.192	.873	1.972	1...	H2-1
24	M62B_1	PIPE_2.0	.164	6.618	28	.080	10.9...		4	17.855	32.13	1.872	1.872	1	H1-1b
25	M57A_1	PIPE_2.0	.148	6.347	32	.077	2.026		8	17.855	32.13	1.872	1.872	1	H1-1b
26	M71_1	PIPE_2.0	.097	2.5	13	.076	2.5		7	29.81	32.13	1.872	1.872	2...	H1-1b
27	M70_1	PIPE_2.0	.101	0	3	.074	2.5		3	29.81	32.13	1.872	1.872	2...	H1-1b
28	M61	L3x3x4	.394	7.627	34	.038	7.627	z	34	13.292	46.656	1.688	3.517	2...	H2-1
29	M63	L3x3x4	.387	0	26	.038	0	z	26	13.292	46.656	1.688	3.514	2...	H2-1
30	M62	L3x3x4	.392	0	34	.037	0	z	34	13.292	46.656	1.688	3.51	2...	H2-1
31	M58	LL3x3x4x0	.459	1.067	34	.034	1.105	y	32	79.399	93.312	6.48	4.911	1...	H1-1b
32	M59	LL3x3x4x0	.452	1.067	30	.033	1.105	y	28	79.399	93.312	6.48	4.911	1...	H1-1b
33	M57	LL3x3x4x0	.452	1.067	26	.033	1.105	y	36	79.399	93.312	6.48	4.911	1...	H1-1b
34	M78_1	L2.5x2.5x3	.081	2.141	2	.010	0	y	8	15.939	29.192	.873	1.724	1...	H2-1
35	M84_1	L2.5x2.5x3	.081	2.141	2	.010	0	z	8	15.939	29.192	.873	1.724	1...	H2-1
36	M82_1	L2.5x2.5x3	.085	2.141	5	.009	4.282	y	12	15.939	29.192	.873	1.724	1...	H2-1
37	M80_1	L2.5x2.5x3	.085	2.141	11	.009	4.282	z	4	15.939	29.192	.873	1.724	1...	H2-1
38	M74_1	L2.5x2.5x3	.067	2.141	9	.009	4.282	y	4	15.939	29.192	.873	1.724	1...	H2-1
39	M76_1	L2.5x2.5x3	.062	2.141	7	.008	0	z	12	15.939	29.192	.873	1.724	1...	H2-1
40	M105	LL2.5x2.5x...	.118	3.01	5	.008	6.021	z	4	36.392	58.32	3.954	2.55	1...	H1-1b

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
41	M106	LL2.5x2.5x...	.117	3.01	11	.008	0	z	6	36.392	58.32	3.954	2.55	1...	H1-1b
42	M104	LL2.5x2.5x...	.085	3.01	27	.004	6.021	y	26	36.392	58.32	3.954	2.55	1...	H1-1b

SPECIAL CONSTRUCTION NOTE:
SPRINT WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.
* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT.
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

Sprint

PROGRAM: DO MACRO UPGRADE EQUIPMENT DEPLOYMENT

SITE NUMBER: CT33XC581

SITE ADDRESS: NORTH CHESTNUT HILL ROAD KILLINGWORTH, CT 06419

SITE TYPE: EXISTING 150' MONOPOLE

PROJECT INFORMATION

SITE INFORMATION:

LATITUDE: 41° 22' 49.9" N
(PER SBA RECORDS) 41.38056667°

LONGITUDE: -72° 36' 7.41" W
(PER SBA RECORDS) -72.60206389°

STRUCTURE HEIGHT: 150'±

STRUCTURE TYPE: MONOPOLE

APPLICANT:

SPRINT
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495

TOWER OWNER:

SBA TOWERS II LLC.
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

SBA SITE ID: CT02077-S

SBA SITE NAME: MADISON 2 CT

SBA CONTACT: STEPHEN ROTH
(860) 539-4920
sroth@sbasite.com

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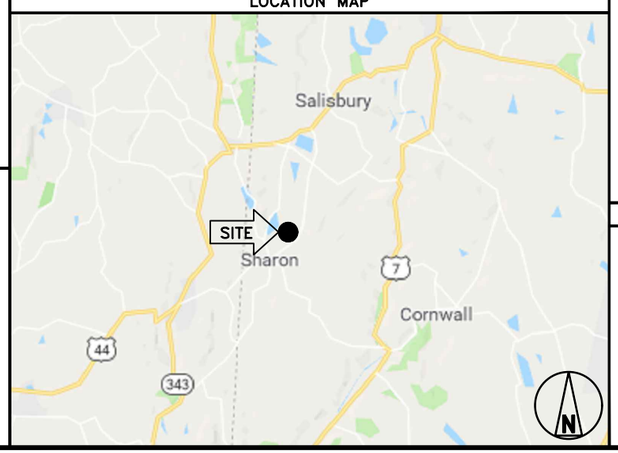
AREA MAP

LOCATION MAP



SCOPE OF WORK

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE (6) PANEL ANTENNAS
- REMOVE (6) EXISTING 1 5/8" COAX
- INSTALL (6) PANEL ANTENNAS
- INSTALL (3) 2.5 GHz RRH'S ON DUAL RRH MOUNT
- RELOCATE (3) 1900 MHz RRH'S ON DUAL RRH MOUNT
- INSTALL (6) 800 MHz RRH'S ON DUAL RRH MOUNT
- REMOVE (6) 1-5/8" COAX CABLES
- INSTALL (4) HYBRID CABLES
- INSTALL RAN EQUIPMENT INSIDE EXISTING MMBTS CABINET
- INSTALL STRUCTURAL AUGMENTS

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL 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 THESE CODES.

1. INTERNATIONAL BUILDING CODE (2012 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
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

GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   - ADA COMPLIANCE NOT REQUIRED.
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

DRAWING INDEX

APPROVALS

TITLE	SIGNATURE	DATE
PROJECT MANAGER:		
CONSTRUCTION:		
RF ENGINEER:		
ZONING/SITE ACQ:		
OPERATIONS:		
TOWER OWNER:		

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.

PLANS PREPARED FOR:
Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:
SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:
STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
4-10-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

SITE NUMBER:
CT33XC581

SITE ADDRESS:
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
TITLE SHEET
& PROJECT DATA

SHEET NUMBER:
T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; 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. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 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.

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

1.8 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.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS 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. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. 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.

1.10 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.

1.11 UTILITIES 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:

1.12 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.

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

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 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 LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 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.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

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

3.5 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

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. 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.

4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 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.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE 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.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND 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:

PLANS PREPARED FOR:

Sprint

1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

SBA

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:

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1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
4-10-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

SITE NUMBER:

CT33XC581

SITE ADDRESS:

NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:

OUTLINE SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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 TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS 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. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL 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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE 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. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

D. 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.

1.4 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 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. 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.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;

1. AZIMUTH, DOWNTILT, AGL – UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING 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.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM 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.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS – ANTENNALIGN ALIGNMENT TOOL (AAT)

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PROJECT MANAGER:
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SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
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www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
4-10-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

SITE NUMBER:
CT33XC581

SITE ADDRESS:
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
OUTLINE SPECIFICATIONS

SHEET NUMBER:
SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.

8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.

9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.

10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE 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.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.

2. STRUCTURAL BACKFILL COMPACTION REPORTS.

3. SITE RESISTANCE TO EARTH TEST.

4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION

5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.

6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.

2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;

3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.

4. TOWER, ANTENNAS 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 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.

5. 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;

6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.

7. 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.

8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.

9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY 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.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. 1SHELTER AND TOWER OVERVIEW.

2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).

3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).

4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).

5. PHOTOS OF TOWER SECTION STACKING.

6. CONCRETE TESTING / SAMPLES.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.

9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.

10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.

11. COAX CABLE ENTRY INTO SHELTER.

12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.

14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.

17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.

18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.

19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.

22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

25. ALL BTS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.

29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.

32. DOGHOUSE/CABLE EXIT FROM ROOF.

33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.

34. MASTER BUS BAR.

35. TELCO BOARD AND NIU.

36. ELECTRICAL DISTRIBUTION WALL.

37. CABLE ENTRY WITH SURGE SUPPRESSION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING – WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

PLANS PREPARED FOR:

Sprint

1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

SBA

SBA COMMUNICATIONS CORP.
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PLANS PREPARED BY:

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the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
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JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
4-10-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

SITE NUMBER:

CT33XC581

SITE ADDRESS:

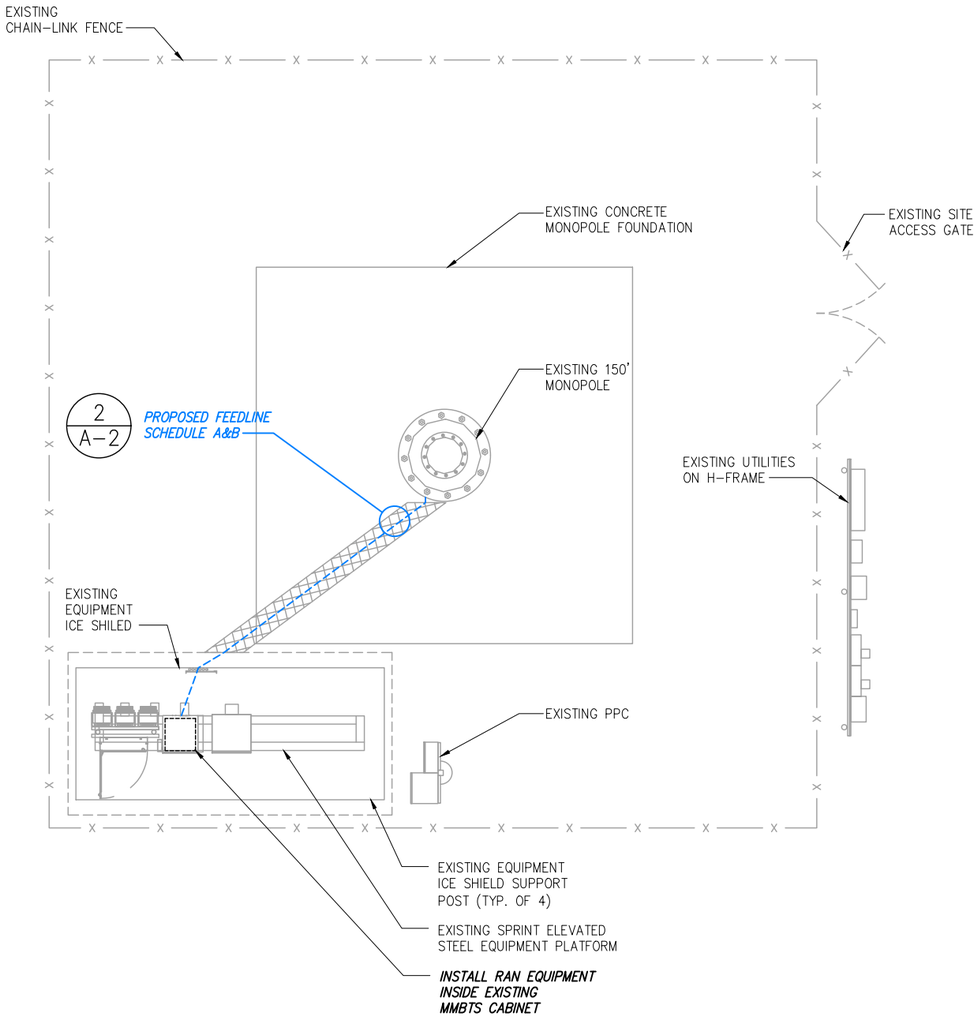
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

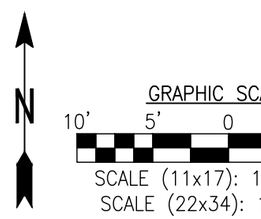
SHEET DESCRIPTION:

OUTLINE SPECIFICATIONS

SHEET NUMBER:

SP-3





GRAPHIC SCALE:

10' 5' 0 5' 10'

SCALE (11x17): 1" = 10'-0"

SCALE (22x34): 1" = 5'-0"

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

OVERALL SITE PLAN | SCALE: AS NOTED | 1

SOURCE: WESTCHESTER SERVICES 11/14/17

SPRINT EQUIPMENT PHOTO DETAIL | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

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TEL: (800) 357-7641

PROJECT MANAGER:

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CT33XC581

SITE ADDRESS:

NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:

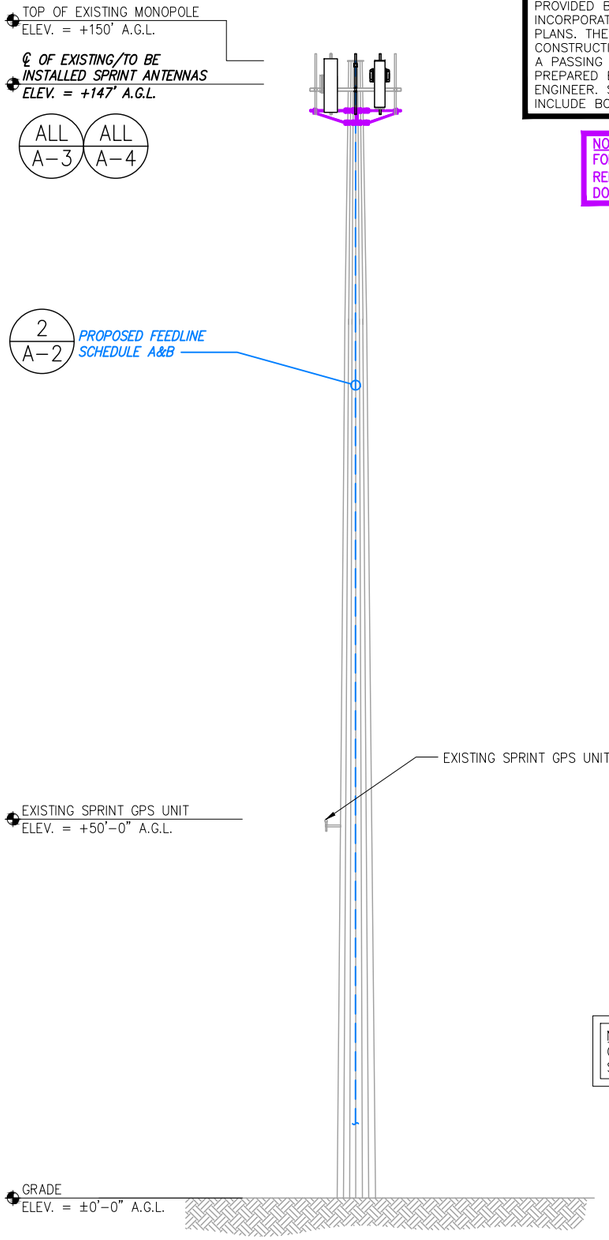
SITE PLAN

SHEET NUMBER:

A-1

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

NOTE:
FOR DETAILS OF MOUNT AUGMENT, REFER TO MOUNT AUGMENT CD'S DONE BY OTHERS.



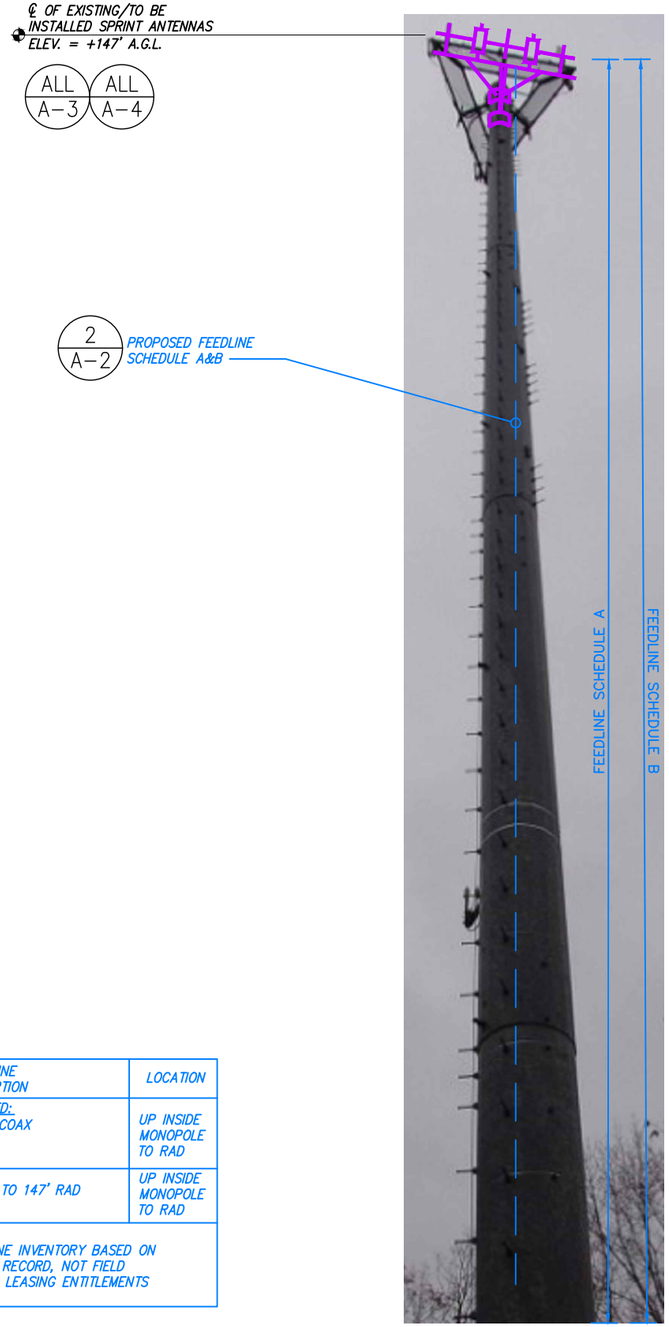
NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

SPECIAL INSTALLATION NOTE:
JUMPERS FROM RRHs TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

TOWER ELEVATION | NO SCALE | 1

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).



FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (6) 1 5/8" COAX	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 147' RAD	UP INSIDE MONOPOLE TO RAD

NOTE:
EXISTING SPRINT EQUIPMENT FEEDLINE INVENTORY BASED ON COLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

SOURCE: WESTCHESTER SERVICES 11/16/17

TOWER ELEVATION PHOTO DETAIL | NO SCALE | 2

PLANS PREPARED FOR:
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1 INTERNATIONAL BLVD, SUITE 800
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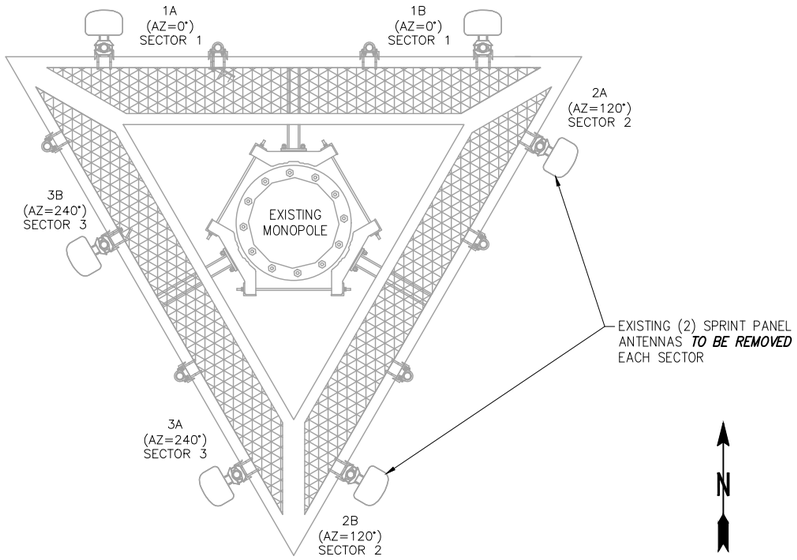
CT33XC581

SITE ADDRESS:
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

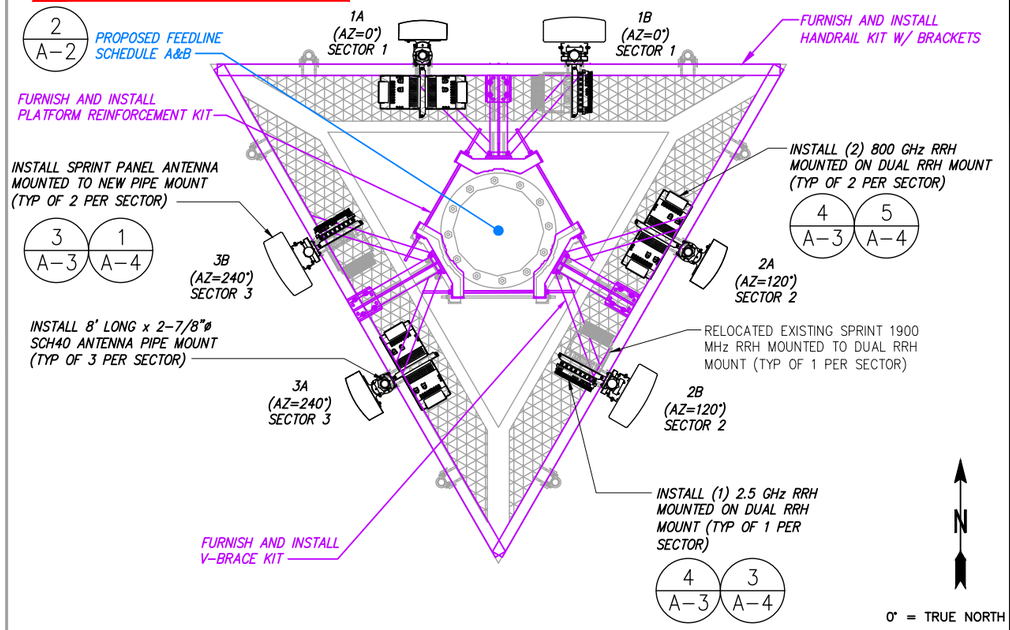


EXISTING ANTENNA & RRH LAYOUT | NO SCALE | 1

SPECIAL INSTALLATION NOTE:
JUMPERS FROM RRHs TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

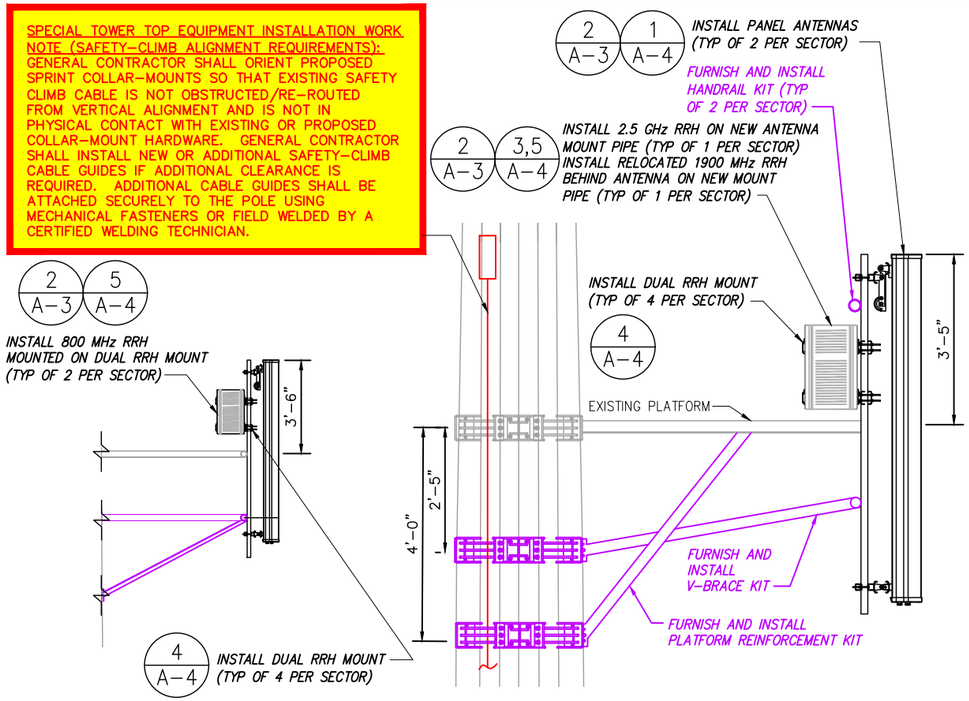
NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

NOTE:
FOR DETAILS OF MOUNT AUGMENT, REFER TO MOUNT AUGMENT CD'S DONE BY OTHERS.

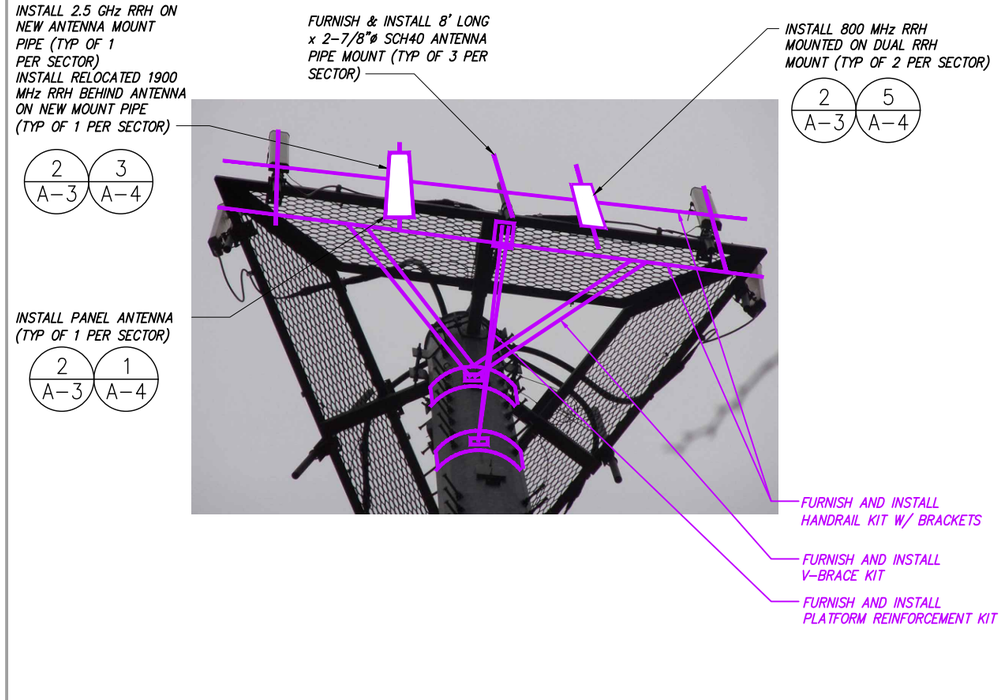


FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):
GENERAL CONTRACTOR SHALL ORIENT PROPOSED SPRINT COLLAR-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED COLLAR-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.



TYPICAL MOUNTING DETAIL | NO SCALE | 3



ANTENNA & RRH MOUNT PHOTO DETAIL | NO SCALE | 4

PLANS PREPARED FOR:
Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:
SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:
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Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:
STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
4-10-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

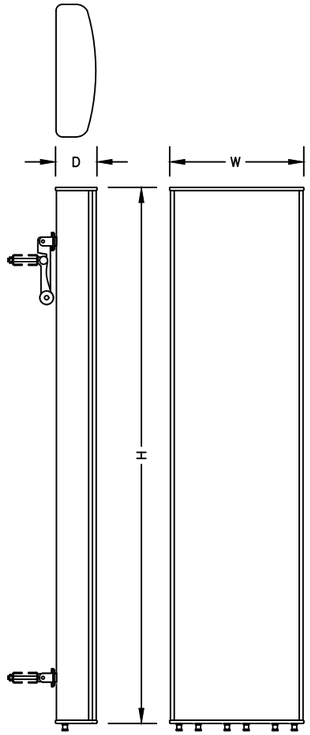
DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

SITE NUMBER:
CT33XC581

SITE ADDRESS:
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
ANTENNA LAYOUT
& MOUNTING DETAILS

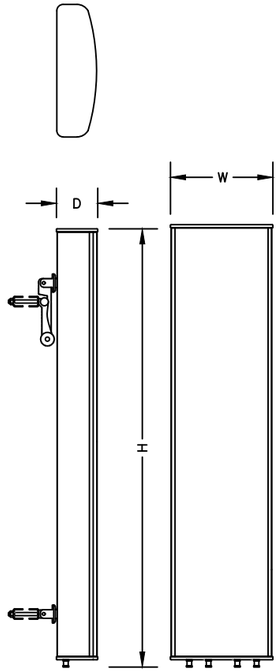
SHEET NUMBER:
A-3



ANTENNA SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	NNVV-65B-R4
HEIGHT	72"
WIDTH	19.6"
DEPTH	7.8"
WEIGHT	84.7± LBS.

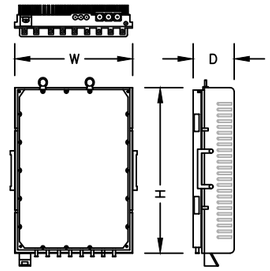
ANTENNA DETAIL | NO SCALE | 1



ANTENNA SPECIFICATIONS

MANUF.	RFS
MODEL #	APXVTM14-ALU-I20
HEIGHT	56.3"
WIDTH	12.6"
DEPTH	6.3"
WEIGHT	56.2± LBS.

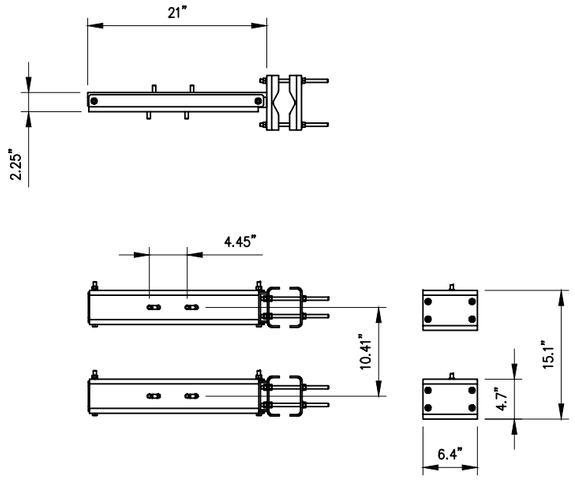
ANTENNA DETAIL | NO SCALE | 2



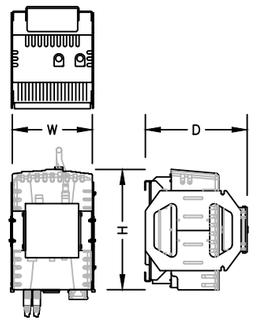
2.5 GHZ RRH SPECIFICATIONS

MANUF.	NOKIA (ALU)
MODEL #	TD-RRH8X20-25
HEIGHT	26.1"
WIDTH	18.6"
DEPTH	6.7"
WEIGHT	70± LBS

2.5 RRH | NO SCALE | 3



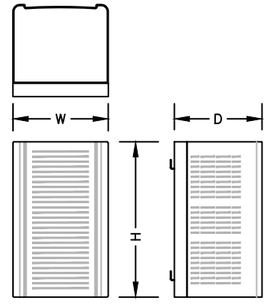
DUAL RRH MOUNT DETAIL | NO SCALE | 4



800 MHZ RRH SPECIFICATIONS

MANUF.	NOKIA (ALU)
MODEL #	800MHZ 2X50W
HEIGHT	19.7"
WIDTH	13"
DEPTH	10.8"
WEIGHT	53± LBS

800 MHz RRH | NO SCALE | 5



1900 MHZ RRH SPECIFICATIONS

MANUF.	NOKIA (ALU)
MODEL #	1900 4X45 65MHZ
HEIGHT	25"
WIDTH	11.1"
DEPTH	11.4"
WEIGHT	60± LBS

1900 MHz RRH (EXISTING TO BE RELOCATED) | NO SCALE | 6

PLANS PREPARED FOR:

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1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

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KILLINGWORTH, CT 06419

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	**Hybrid cable** MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	**Hybrid cable** MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	**Hybrid cable** MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	**Hybrid cable** MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

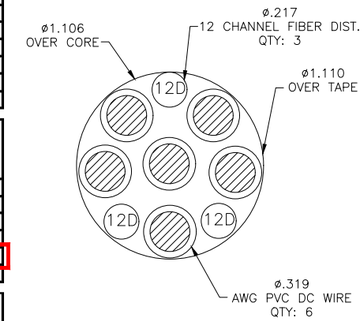
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	**Hybrid Jumper cable** MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	**Hybrid Jumper cable** MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

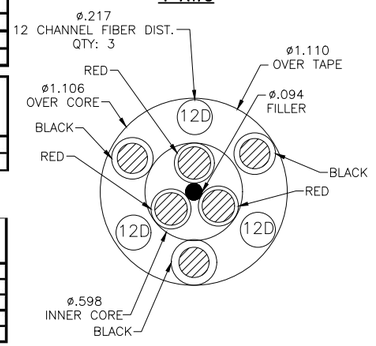
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.

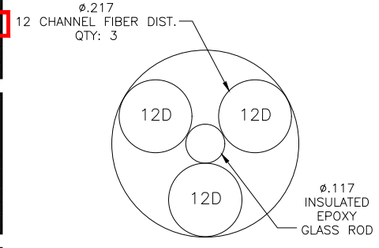
* SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG



8 & 6 AWG



FIBER ONLY

800/1900/2500 CROSS SECTION DATA | NO SCALE | 1

PLANS PREPARED FOR:
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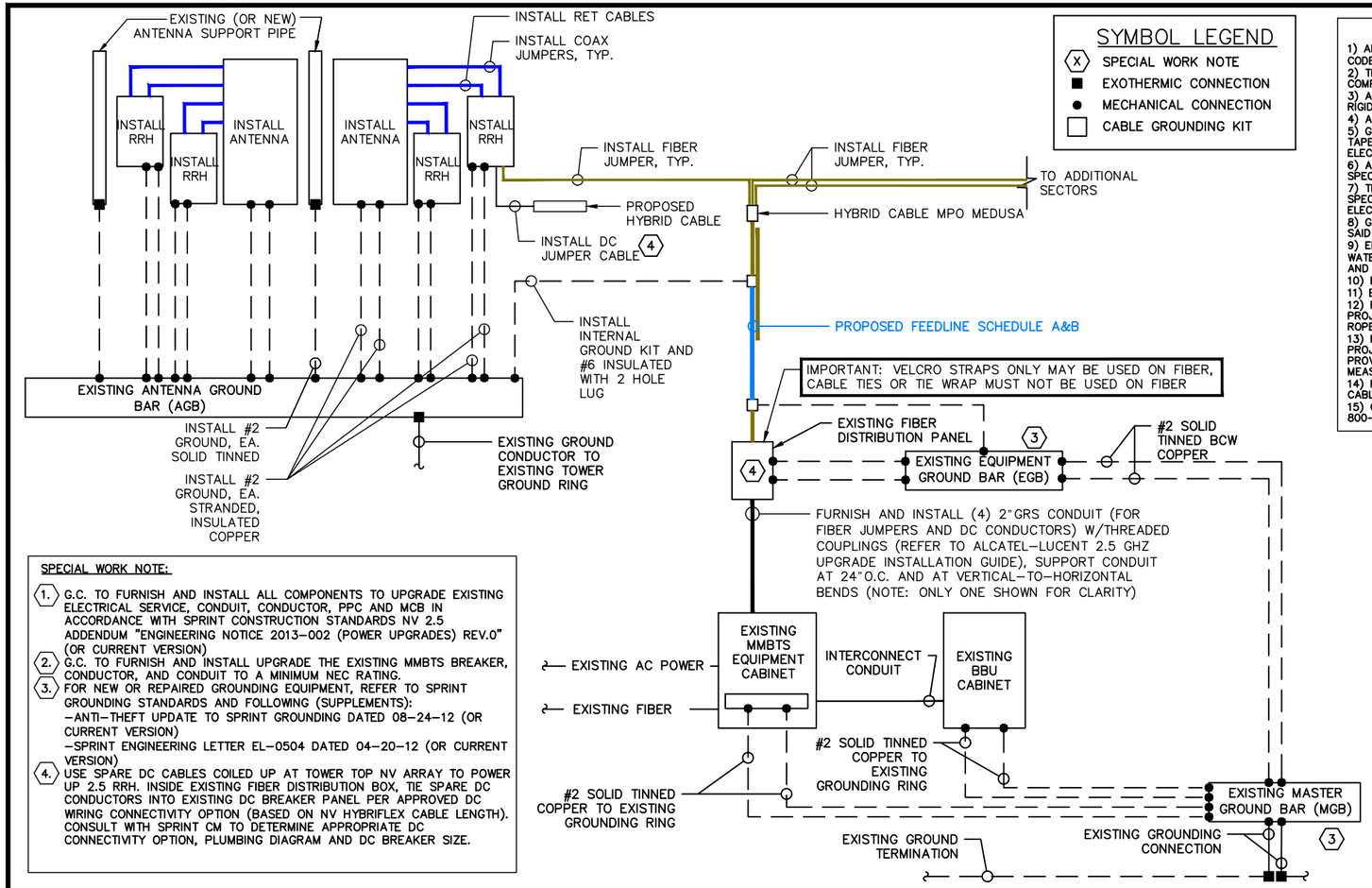
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
DETAILS

SHEET NUMBER:
A-5



SYMBOL LEGEND

- (X) SPECIAL WORK NOTE
- ■ EXOTHERMIC CONNECTION
- ● MECHANICAL CONNECTION
- □ CABLE GROUNDING KIT

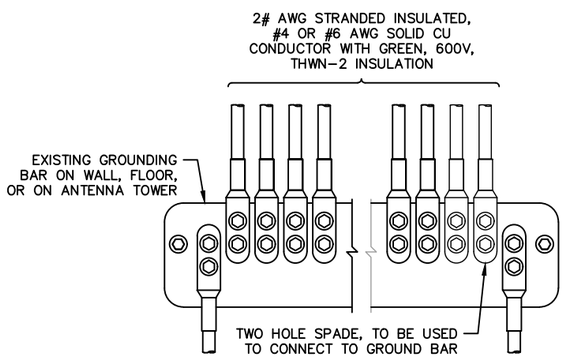
SPECIAL WORK NOTE:

1. G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013-002 (POWER UPGRADES) REV.0" (OR CURRENT VERSION)
2. G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMBTS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING.
3. FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
   -ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
   -SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)
4. USE SPARE DC CABLES COILED UP AT TOWER TOP NV ARRAY TO POWER UP 2.5 RRH. INSIDE EXISTING FIBER DISTRIBUTION BOX, TIE SPARE DC CONDUCTORS INTO EXISTING DC BREAKER PANEL PER APPROVED DC WIRING CONNECTIVITY OPTION (BASED ON NV HYBRIFLEX CABLE LENGTH). CONSULT WITH SPRINT CM TO DETERMINE APPROPRIATE DC CONNECTIVITY OPTION, PLUMBING DIAGRAM AND DC BREAKER SIZE.

TYPICAL POWER AND GROUNDING ONE LINE DIAGRAMS

1 / E-1

SCALE: N.T.S.

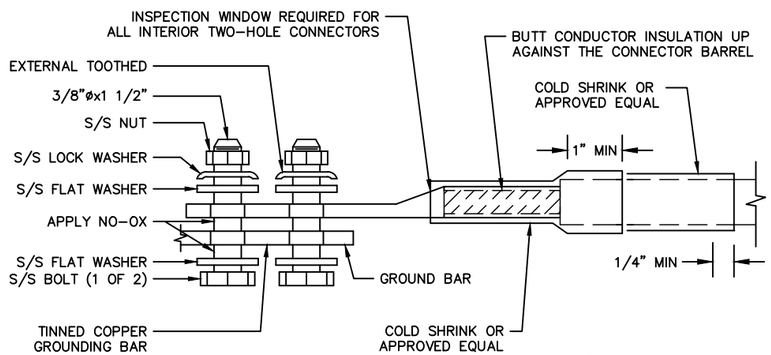


1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

2 / E-1

SCALE: N.T.S.



TWO HOLE LUG

3 / E-1

SCALE: N.T.S.

ELECTRICAL NOTES

1) ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2) THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
3) ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
4) ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
5) GENERAL CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
6) ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
7) THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
8) GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
9) ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
10) BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
11) ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
12) RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
13) RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
14) FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
15) COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.

PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
2. GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT SSEO DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES" AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING".
3. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
4. GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING, APPLY A NON-CORROSIVE APPROVED COMPOUND TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX" OR EQUAL.
5. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
6. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
7. ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
8. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
9. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
10. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
11. GROUND HYBRIFLEX SHIELD AT TOP, BOTTOM AND AT TRANSITION TO HYBRIFLEX JUMPER CABLES AT EQUIPMENT CABINET ENTRANCE USING MANUFACTURER'S GUIDELINES. WHEN HYBRIFLEX CABLE EXCEEDS 200', GROUND AT INTERVALS NOT EXCEEDING 100'.
12. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
13. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE. THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH AN ANTI-OXIDANT (THOMAS BETTS KOPR-SHILD) BEFORE MAKING THE CRIMP CONNECTIONS THE CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED TORQUES ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS.
14. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF-TAPPING SCREWS.
15. THE MASTER GROUND BAR (MGB) SHALL BE MADE OF BARE 1/4"x2" COPPER (FOR OUTDOOR APPLICATIONS IT SHALL BE TINNED COPPER) AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICAL INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
16. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
17. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI-CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH SPRINT CONSTRUCTION MANAGER.
18. FOR NEW OR REPAIRED GROUNDING EQUIPMENT. REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
    -ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
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KILLINGWORTH, CT 06419

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ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:
E-1

SprintVision

RF Design Sheet

Site Identification	
Cascade	CT33XC581
SMS Schedule ID	12323300
SMS Schedule Name	DO Macro Upgrade
PID	
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	2017-08-15 00:00:00.0
RFDS Revision Date	2017-10-20 11:04:03.0
RFDS Revision	3

Filter Analysis Complete	YES
RFDS - Issue Date	08/15/2017
Design Status	Complete
Project Description	DO Macro Upgrade - Add 800MHz (3/G + 4/G) and 2500 MHz

Contact Information	
Engineer Email	Bill.M.Hastings@sprint.com
Sprint Badged RF Engineer	Bill Hastings
RF Engineer Email	Bill.M.Hastings@sprint.com
RF Engineer Phone	978-590-9700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.B.Hull@Sprint.com
RF Manager Phone	617-233-2920

Carrier Count	
2500 LTE	3
1900 LTE	1
1900 EVDO	
1900 Voice	1
800 LTE	1
800 Voice	1

Location Details	
Latitude	41.38067
Longitude	-72.60208
Market	Northern Connecticut
Region	Northeast
City	Killingworth
State	CT
Zip Code	CT/06419
County	Middlesex

2500MHz	3
1900MHz	3
800MHz	3

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	TD-RRH8x20-25	TD-RRH8x20-25	TD-RRH8x20-25	N/A	N/A	N/A
Weight (lbs)	76.2	76.2	76.2	N/A	N/A	N/A
Dimensions	26 x 18.6 x 6.7	26 x 18.6 x 6.7	26 x 18.6 x 6.7	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Trunk Cable 1						
Model Number	Hybriflex	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	1	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.54	N/A	N/A	N/A	N/A	N/A
Manufacturer	ALU	N/A	N/A	N/A	N/A	N/A

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-2x50-800	RRH-2x50-800	RRH-2x50-800	N/A	N/A	N/A
Weight (lbs)	69.1	69.1	69.1	N/A	N/A	N/A
Dimensions	18 x 13 x 10	16 x 13 x 10	16 x 13 x 10	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	2	2	2	0	0	0

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	APXVTM14-ALU-I20	APXVTM14-ALU-I20	APXVTM14-ALU-I20			
Weight (lbs)	56.2	56.2	56.2	N/A	N/A	N/A
Dimensions	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	N/A	N/A	N/A
Manufacturer	RFS	RFS	RFS	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	2.5 Jumper 8	2.5 Jumper 8	2.5 Jumper 8	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	0	120	240	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	149.9671964	149.9671964	149.9671964	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	NNVV-65B-R4	NNVV-65B-R4	NNVV-65B-R4			
Weight (lbs)	84.7	84.7	84.7	N/A	N/A	N/A
Dimensions	72 x 19.6 x 7.8	72 x 19.6 x 7.8	72 x 19.6 x 7.8	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	800/1900 Jumper 4	800/1900 Jumper 4	800/1900 Jumper 4	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	0	120	240	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	149.9671964 * 147'	149.9671964 * 147'	149.9671964 * 147'	N/A	N/A	N/A
Antenna 1 Electrical DT	3	3	3	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

** DENOTES SPRINT RAD CENTER BASED ON SBA PROVIDED STRUCTURAL ANALYSIS*

PLANS PREPARED FOR:
Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:
SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:
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the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:
STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
4-10-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

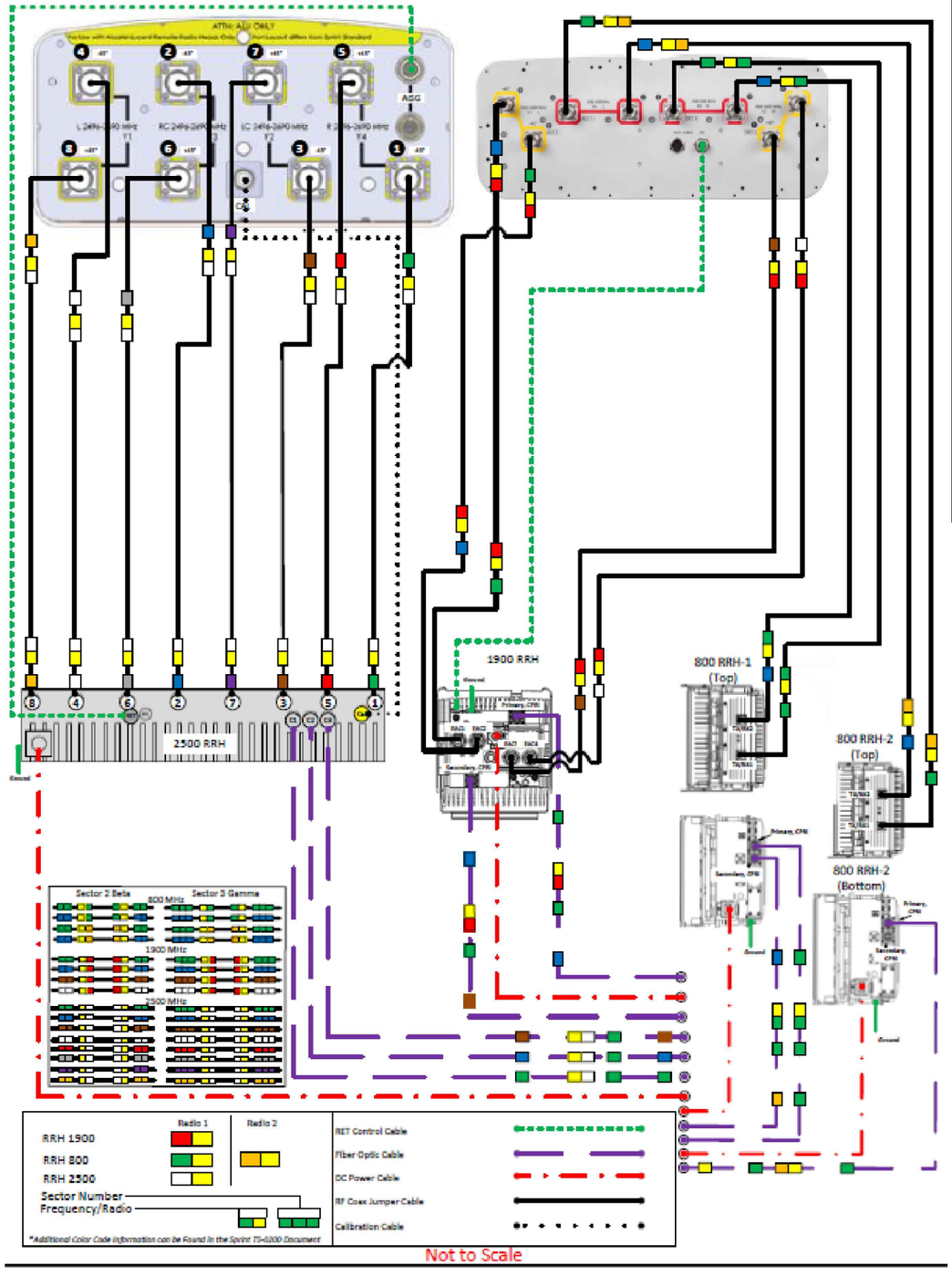
SITE NUMBER:
CT33XC581

SITE ADDRESS:
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
RF DATA SHEET

SHEET NUMBER:
RF-1

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



Not to Scale

Prepared By	Creation Date	Revision Number	Nokia-A Tri-Band Fiber Connections	Sprint
Mark Elliott	February 13, 2016	R-1	(Nokia-A Two-800, One-1900, & One-2500 RRH)	
Approved By	Approval Date			
RAN Hardware & Antenna Teams	February 23, 2017			

Nokia-A Site Upgrade: Adding 2500 and Second 800 RRH

Existing Cable(s)

NV Cable 1 – Provides power and fiber for the first 800 and 1900 RRHs of Sector 1
NV Cable 2 – Provides power and fiber for the first 800 and 1900 RRHs of Sector 2
NV Cable 3 – Provides power and fiber for the first 800 and 1900 RRHs of Sector 3

New Cable(s)

Auxiliary Cable 1 – Provides power and fiber for all 2500 RRHs (All Three Sectors)
Auxiliary Cable 2 – Provides power and fiber for all of the Second 800 RRHs (All Three Sectors)

Sector 1/NV Cable 1/800 RRH-1/Primary CPRI
Sector 1/NV Cable 1/1900 RRH-1/CPRI-1
Sector 1/NV Cable 1/1900 RRH-1/CPRI-2
Sector 1/Auxiliary Cable 2/800 RRH-2/Primary CPRI
Sector 1/NV Cable 1/800 RRH-1/Secondary CPRI
Sector 2/NV Cable 2/800 RRH-1/Primary CPRI
Sector 2/NV Cable 2/1900 RRH-1/CPRI-1
Sector 2/NV Cable 2/1900 RRH-1/CPRI-2
Sector 2/Auxiliary Cable 2/800 RRH-2/Primary CPRI
Sector 2/NV Cable 2/800 RRH-1/Secondary CPRI

Sector Number
Frequency/Radio
Fiber Cable Number
Fiber Pair Cable Number

Upper Block

Sector 2/Auxiliary Cable 1/2500 RRH-1/CPRI-1
Sector 1/Auxiliary Cable 1/2500 RRH-1/CPRI-1
Sector 3/Auxiliary Cable 1/2500 RRH-1/CPRI-1
Sector 1/Auxiliary Cable 1/2500 RRH-1/CPRI-2
Sector 1/Auxiliary Cable 1/2500 RRH-1/CPRI-3
Sector 2/Auxiliary Cable 1/2500 RRH-1/CPRI-2
Sector 2/Auxiliary Cable 1/2500 RRH-1/CPRI-3
Sector 3/Auxiliary Cable 1/2500 RRH-1/CPRI-2
Sector 3/Auxiliary Cable 1/2500 RRH-1/CPRI-3

Lower Block

Sector 3/NV Cable 3/800 RRH-1/Secondary CPRI
Sector 3/Auxiliary Cable 2/800 RRH-3/Primary CPRI
Sector 3/NV Cable 3/1900 RRH-1/CPRI-2
Sector 3/NV Cable 3/1900 RRH-1/CPRI-1
Sector 3/NV Cable 3/800 RRH-1/Primary CPRI

PLANS PREPARED FOR:
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1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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PROJECT MANAGER:
SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
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No. 23544
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LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/10/18	RWF	0

SITE NUMBER:
CT33XC581

SITE ADDRESS:
NORTH CHESTNUT HILL RD
KILLINGWORTH, CT 06419

SHEET DESCRIPTION:
PLUMBING DIAGRAM

SHEET NUMBER:
RF-2

CT33XC581
DO MACRO EQUIPMENT DEPLOYMENT

MOUNT AUGMENTATION @ 147'

MONOPOLE TOWER

KILLINGWORTH, CT
MIDDLESEX COUNTY

SITE INFORMATION

STRUCTURE TYPE:	MONOPOLE
MOUNT TYPE:	PLATFORM
LATITUDE:	41.380566 (NAD 83)
LONGITUDE:	-72.602064 (NAD 83)
CITY, STATE:	KILLINGWORTH, CT
COUNTY:	MIDDLESEX
SBA SITE:	CT02077-S Madison 2 CT

COORDINATES ARE FOR NAVIGATIONAL PURPOSES ONLY, NOT TO 1A ACCURACY.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE LABOR & MATERIALS FOR THE DISCREPANCIES.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE AND DESIGN STANDARD: 2012 IBC / TIA-222-G / 2016 CT

RIGGING PLAN REQUIRED

THIS SET OF PLANS DOES "NOT" CONSTITUTE A RIGGING PLAN.

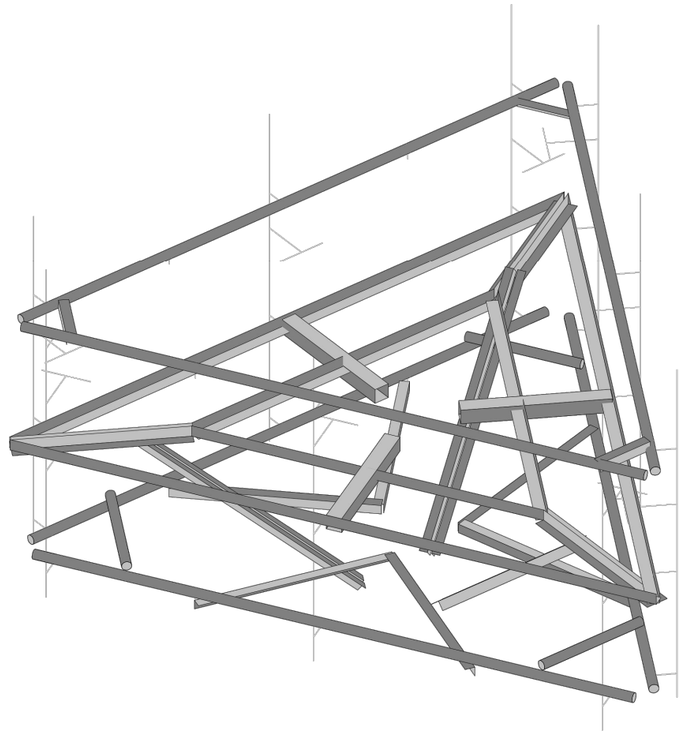
A PROPER RIGGING PLAN SHALL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO PROCEEDING ON ANY AUGMENTATIONS SHOWN HEREIN.

GENERAL DESIGN NOTES

1. THIS PLAN HAS BEEN DESIGNED UTILIZING THE CORRESPONDING MOUNT STRUCTURAL ANALYSIS.
2. THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
3. ALL STRUCTURE INFORMATION OBTAINED IN THE FORM OF FROM INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED DOCUMENTS. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) IN THE EVENT ANY DISCREPANCIES ARE DISCOVERED BETWEEN THESE DOCUMENTS AND THE AS-BUILT CONDITIONS IN THE FIELD IN A SITE VISIT THAT SHALL BE PERFORMED PRIOR TO STARTING FABRICATION OR CONSTRUCTION.
4. ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
5. ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE 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.
6. PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION (ONLY IF SPECIFICALLY REQUESTED BY ENGINEER).
7. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
8. ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

SHEET INDEX

MOUNT AUGMENTATION CONFIGURATION



AUGMENTATION SCOPE

AUGMENT ALL SECTORS OF CARRIER'S EXISTING MOUNT INSTALLATION AS REQUIRED (UNLESS NOTED OTHERWISE)

Sprint
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
P: 800.357.7641

SBA
134 FLANDERS RD., SUITE 125
WESTBOROUGH, MA 01581
P: 508.251.0720

GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
P: 530.539.4787
E: CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

REVISIONS:

0	04/16/18	ISSUE FOR CONSTRUCTION	JAD

CHECKED BY: DWG

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC581

KILLINGWORTH, CT

LATITUDE: 41.380566
LONGITUDE: -72.602064

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

S1

CONTRACTOR NOTES

1. PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED AUGMENTATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
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 AUGMENTATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED AUGMENTATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "AUGMENTATION INSPECTION NOTES" SHEET.
4. THE CONTRACTOR SHALL NOTIFY THE TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED AUGMENTATION INSPECTIONS & TESTING (WHEN APPLICABLE).
5. IT IS ASSUMED THAT ANY STRUCTURAL AUGMENTATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, ET CETERA.
6. 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.
7. CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE 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.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS

1. THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
2. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION TO ENSURE STABILITY. DESIGN AND SEQUENCING OF CONSTRUCTION SHORING AND BRACING IS OUTSIDE THE SCOPE OF THIS WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.

BOLTS

1. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED GALVANIZED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED FROM SHEAR PLANE.
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES, WITH BOLT HEADS FACING DOWN WHERE APPLICABLE.
3. ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG-TIGHT UNTIL THE SECTION IS FULLY COMPACTED AND ALL PLIES ARE JOINED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
4. BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG-TIGHT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1½ TURNS BEYOND SNUG-TIGHT.
5. ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND SECTION 4 OF THE TIA CODE.
2. PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES UNLESS OTHERWISE NOTED:
   - CHANNELS & ANGLES ..... ASTM A36, (Fy = 36 KSI)
   - PLATES ..... ASTM A36, (Fy = 36 KSI)
   - PIPES ..... ASTM A53 GR.B, (Fy = 35 KSI)
   - HSS ROUND ..... ASTM A500 GR.B, (Fy = 42 KSI)
   - HSS RECTANGULAR ..... ASTM A500 GR.B, (Fy = 46 KSI)
   - STRUCTURAL BOLTS ..... ASTM A325
   - U-BOLTS ..... ASTM A307 GR.A
   - NUTS FOR BOLTS ..... ASTM A563 (THREADING TO MATCH BOLT)
   - WASHERS FOR BOLTS ..... ASTM F436
   - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
3. NON PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS PER THE TIA CODE:
   - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
   - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
   - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
   - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH AND COLD GALVANIZED.
5. ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 STRUCTURAL WELDING CODE. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY. WELDING ELECTRODES SHALL BE E70XX.
6. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC SPECS AND CODES, LATEST EDITION.
7. UPON REQUEST, THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ENGINEER OF RECORD TO REVIEW FOR COMPLIANCE WITH DESIGN INTENT PRIOR TO THE START OF FABRICATION AND/OR ERECTION.
8. TORCH-CUTTING OF ANY KIND SHALL NOT BE PERMITTED.
9. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
10. ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN ½" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZINC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
11. MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)
√	FABRICATION INSPECTION
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

NOMINAL HOLE DIMENSIONS

BOLT Ø	STANDARD HOLE Ø
1/2"Ø	9/16"Ø
5/8"Ø	11/16"Ø
3/4"Ø	13/16"Ø
7/8"Ø	15/16"Ø
1"Ø	1 1/16"Ø

Sprint
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REVISIONS:

0	04/16/18	ISSUE FOR CONSTRUCTION	JAD

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STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC581

KILLINGWORTH, CT

LATITUDE: 41.380566
LONGITUDE: -72.602064

SHEET TITLE:

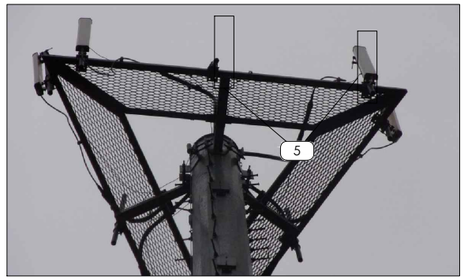
NOTES AND SPECIFICATIONS

SHEET NUMBER:

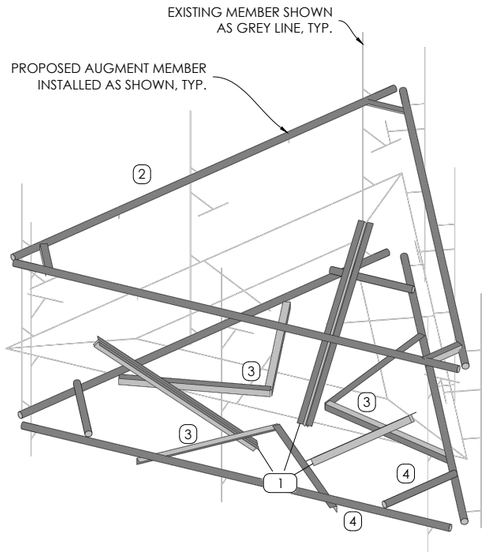
S2

NEW MOUNT AUGMENTATIONS

1	PLATFORM REINFORCEMENT KIT SITEPRO1 PART# PRK-1245L. ATTACH PRK COLLAR TO MONOPOLE SHAFT ~4.0' BELOW EXISTING STANDOFF CENTERLINE AND DOUBLE ANGLE KICKER BRACKET TO BACK-TO-BACK ANGLES AT PLATFORM CORNERS AS SHOWN PER MANUF. SPECS. [(1) KIT TOTAL]
2	HANDRAIL KIT COMPONENTS SITEPRO1 PART# HRK12-U OR HRK14-U. ATTACH TO MOUNT PIPES ~3.0' ABOVE EXISTING STANDOFF CENTERLINE. VERIFY MOUNT FACE WIDTH IN FIELD PRIOR TO ORDERING. [(1) KIT TOTAL]
3	HANDRAIL KIT COMPONENTS - V-BRACE KIT SITEPRO1 PART# PRK-SFS-H-L. ATTACH COLLAR MOUNT TO MONOPOLE SHAFT ~2.5' BELOW EXISTING STANDOFF CENTERLINE. NOTE: IF THE PRK-SFS-H-L KIT IS NOT AVAILABLE, PROVIDE (6) TOTAL L2½x2½x3/16 x ~8' LONG REPLACEMENT ANGLES, FIELD-CUT AND DRILL TO SUIT. [(1) KIT TOTAL]
4	HANDRAIL KIT COMPONENTS - BOTTOM FACE RAIL ▪ PIPE2.0STD X 14.0' HORIZ. RAIL, [(3) TOTAL]. ATTACH SFS-H-L KIT ANGLES TO NEW HORIZ. RAIL. ▪ PIPE2.0STD X ~4' LONG CORNER BRACE, [(3) TOTAL]. ATTACH TO NEW HORIZ. RAIL W/ (6) SITEPRO1 PART# PUCK BRACKETS. ▪ PIPE2.0STD x 8.0' MOUNT PIPES, [(9) TOTAL] W/ SITEPRO1 SCX-K, [(9) TOTAL] CROSS-OVER PLATES. ATTACH ALL MOUNT PIPES TO EXISTING AND NEW HORIZ. RAILS. ▪ 1/2"Ø OR 5/8"Ø U-BOLTS, (18) TOTAL. ATTACH ALL MOUNT PIPES TO EXISTING BOTTOM RAIL W/ (2) U-BOLTS.
5	· PANEL ANTENNAS TO BE INSTALLED IN POSITIONS 1 AND 3 (AS CLOSE TO THE CENTER OF FACE NEAR EXISTING STANDOFF AS POSSIBLE. RRH UNITS TO BE INSTALLED ON DUAL SWIVEL BRACKETS BEHIND PANEL ANTENNAS IN POSITIONS 1 AND 3.
AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.	



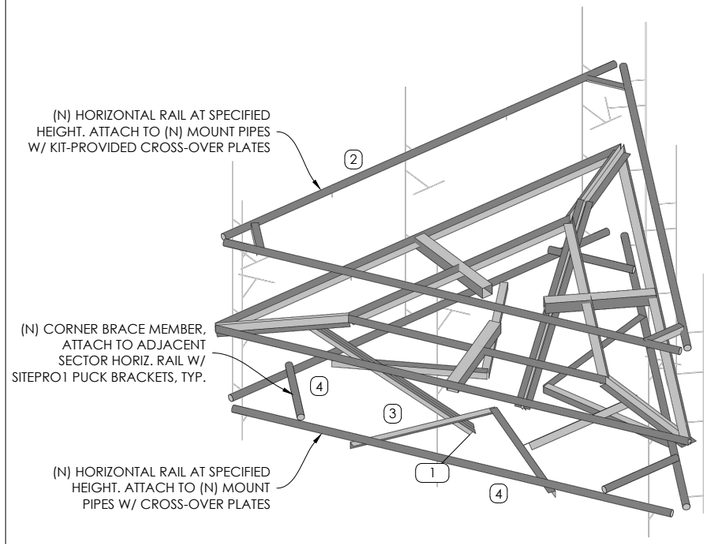
PLATFORM @ 147' AUGMENTATION



MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.

CONSTRUCTION NOTES

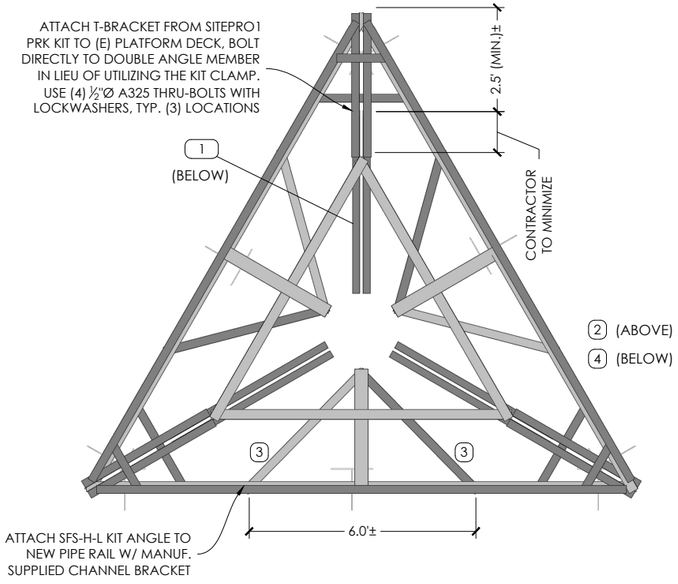
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF ELEMENTS (E.G. COAX, CLIPS, TMAs, ETC.) CONNECTED TO, OR IN THE DIRECT PATH, OF NEW AUGMENTATION MEMBERS.



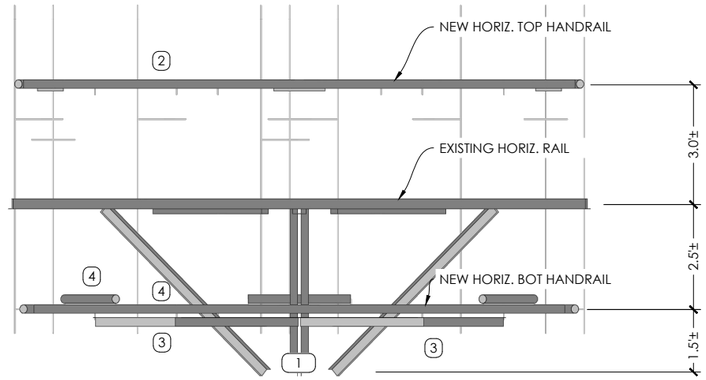
AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

INSTALLATION NOTES

1. AUGMENT MEMBER(S) MAY NEED TO BE FIELD-CUT TO LENGTH TO ACCOMMODATE THIS INSTALLATION. CONTRACTOR TO CUT AND DRILL TO SUIT AS REQUIRED AND APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
2. CONTRACTOR TO CHECK ALL EXISTING MEMBER CONNECTION BOLTS, PARTICULARLY STANDOFF TO TOWER BOLTS, FOR PROPER INSTALLATION AND TIGHTNESS.
3. COORDINATE PLACEMENT OF NEW AUGMENT MEMBERS WITH EXISTING TOWER AND CLIMBING FACILITY ELEMENTS (E.G. STEP PEGS, COAX PORTS, ETC.)
4. REFER TO CONSTRUCTION DRAWINGS (BY OTHERS) AND MOUNT STRUCTURAL ANALYSIS FOR APPROVED INSTALLATION LOCATIONS AND QUANTITIES OF APPURTENANCES.



AUGMENTED MOUNT PLAN
SCALE: N.T.S.



AUGMENTED MOUNT FRONT ELEVATION
SCALE: N.T.S.

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SHEET TITLE:

AUGMENTATIONS, SECTIONS & DETAILS

SHEET NUMBER:

S3