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

January 30, 2018

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

Notice of Exempt Modification
97 Chaplin Road, Eastford, CT 06242
41 51 51.8 N
-72 5 46.4 W
Sprint #: CT33XC613 _DOMU

Dear Ms. Bachman:

Sprint currently maintains antennas at the 145-foot of the existing 148-foot Monopole Tower at 97 Chaplin Rd., Eastford, CT. The tower is owned by SBA 2012 TC Assets, LLC The property is owned by Desiato Sand and Gravel. Sprint now intends to remove (6) existing cell antennas and replace with (3) newer technology cell antennas at the 145-foot level of the tower. Sprint's proposed full scope of work is as follows:

Remove:

- (6) Andrew DB980H90E-KL – Panel Antennas
- (6) 1-5/8" lines

Remove and Replace: N/A

Install:

- (3) KMW ETCR-654L12H6 – Panel Antennas
- (3) ALU 1900 Mhz RRHs
- (6) ALU 800 Mhz RRHs
- (3) ALU TD-RRH8x20-25 – RRUs
- (1) Platform reinforcement kit Site Pro 1 – PRK-1245L
- (1) Ring Mount - Sitepro1 Part UGLM
- (3) Standoff arms – Sitepro Part MM02
- (6) Pipes / (3) Back to back pipe mount kit – sitepro1 part BBPM-K2
- (4) 1-1/4" Fiber

Existing Equipment to Remain (Including entitlements):

- (3) T-Arms

This facility was approved by the Council under Docket #232 on January 28, 2003. Approval was given for a monopole tower not to exceed 150 feet above ground level. A D&M plan was to be produced, and updated RF reports provided upon changes to the tower. Space was to be given for public and private antennas. There were no conditions placed on the tower beyond the aforementioned. It is SBA's opinion that this modification is in full compliance.

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 Eastford's First Selectman, Arthur Brodeur, and Planning Commission Chair, Effie Vinal, 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: Arthur Brodeur, First Selectman / with attachments
Town of Eastford, 16 Westford Road, Eastford, CT 06242
Effie Vinal, Planning Commission Chair, / with attachments
Town of Eastford, 16 Westford Road, Eastford, CT 06242
Desiato Sand and Gravel / with attachments
999 Stafford Rd. Storrs Mansfield CT 06268-1803

POWER DENSITY

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6
Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd
Height (AGL):	**145 feet**	Height (AGL):	**145 feet**	Height (AGL):	**145 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count	18	Channel Count	18	Channel Count	18
Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts
ERP (W):	11,775.31	ERP (W):	11,775.31	ERP (W):	11,775.31
Antenna A1 MPE%	**2.38 %**	Antenna B1 MPE%	**2.38 %**	Antenna C1 MPE%	**2.38 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.38 %**
No Additional Carriers	NA
Site Total MPE %:	**2.38 %**

SPRINT Sector A Total:	2.38 %
SPRINT Sector B Total:	2.38 %
SPRINT Sector C Total:	2.38 %
Site Total:	2.38 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	145	0.80	850 MHz	567	0.14%
Sprint 850 MHz LTE	2	432.54	145	1.61	850 MHz	567	0.29%
Sprint 1900 MHz (PCS) CDMA	5	535.94	145	4.99	1900 MHz (PCS)	1000	0.50%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	145	4.99	1900 MHz (PCS)	1000	0.50%
Sprint 2500 MHz (BRS) LTE	8	639.78	145	9.52	2500 MHz (BRS)	1000	0.95%
						Total:	**2.38%**

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ORIGIN ID:BBFA (508) 614-0389
RICK WOODS
SBA NETWORK SERVICES INC
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 30JAN18
ACTWGT: 1.00 LB
CAD: 105843304/INET3980

BILL SENDER

TO **EFFIE VINAL, PLANNING COMMISION**
TOWN OF EASTFORD
PLANNING DEPT.
16 WESTFORD RD.
EASTFORD CT 06242
(508) 251-0720 X 3804 REF: 10-56-92009-6089
INV:
PO: DEPT:

552J1/122D/DCA5

J1811180126O1uv

FedEx Express

TRK# 0201 **7713 5904 5350**

WED - 31 JAN 4:30P
PRIORITY OVERNIGHT

EB GONA

06242
CT-US **BDL**

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ORIGN ID:BBFA (508) 614-0389
RICK WOODS
SBA NETWORK SERVICES INC
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 30JAN18
ACTWGT: 1.00 LB
CAD: 105843304/INET3980

BILL SENDER

TO PRESIDENT OF MANAGER
DESIATO SAND & GRAVEL
999 STAFFORD RD.
STORRS
MANSFIELD CT 06268
(508) 251-0720 X 3804

REF: 10-56-92009-6089
INV:
PO:
DEPT:

552J1/122D/DCA5

J1811180126O1uv

FedEx Express

TRK# 0201 7713 5902 4124

WED - 31 JAN 12:00P
PRIORITY OVERNIGHT

EB GONA

06268
CT-US BDL

After printing this label:
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97 CHAPLIN RD TOWER

Location	97 CHAPLIN RD TOWER	**Assessment**	$64,750
Mblu	35/ 25/ 6T/ /	**Appraisal**	$92,500
Acct#	00026701	**PID**	101064
Owner	DESIATO SAND AND GRAVEL	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$92,500	$0	$92,500
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$64,750	$0	$64,750

Owner of Record

Owner	DESIATO SAND AND GRAVEL	**Sale Price**	$0
Co-Owner	SPRINT/SBA COMM COMMUNICATIONS CORP	**Certificate**	
Address	5900 NW BROKEN SOUND PARKWAY BOCA RATON BOCA RATON, FL 33487	**Book & Page**	27/ 002
		Sale Date	01/16/1987

SBA
Desiato : 999 Stafford Rd. Storrs Mansfield CT 06268

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
DESIATO SAND AND GRAVEL	$0		27/ 002	01/16/1987

Building Information

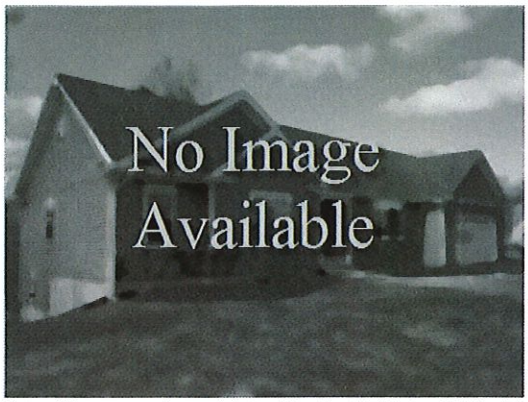
Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Photo

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	

Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	



(http://images.vgsi.com/photos/EastfordCTPhotos//default.jpg)

Building Layout

Building Layout

Building Sub-Areas	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 1060
Description VACANT W/ OUTBUILDINGS
Zone
Neighborhood
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 0
Frontage
Depth
Assessed Value $0
Appraised Value $0

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
	CELL TOWER			1 UNIT	$90,000	1
SHD2	W/LIGHTS ETC			120 S.F.	$2,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**

2014	$92,500	$0	$92,500
2013	$92,500	$0	$92,500

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$64,750	$0	$64,750
2013	$64,750	$0	$64,750

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: CT33XC613

Eastford-Desiato/SSUSA
97 Chaplin Road
Eastford, CT 06242

December 15, 2017

EBI Project Number: 6217005711

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	2.38 %

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

EBI Consulting
environmental | engineering | due diligence

December 15, 2017

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

Emissions Analysis for Site: **CT33XC613 – Eastford-Desiato/SSUSA**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **97 Chaplin Road, Eastford, 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.

Public 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 **97 Chaplin Road, Eastford, 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 20 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 **KMW ETCR-654L12H6** 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 **145 feet** above ground level (AGL) for **Sector A**, **145 feet** above ground level (AGL) for **Sector B** and **145 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:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6
Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd
Height (AGL):	**145 feet**	Height (AGL):	**145 feet**	Height (AGL):	**145 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count	18	Channel Count	18	Channel Count	18
Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts
ERP (W):	11,775.31	ERP (W):	11,775.31	ERP (W):	11,775.31
Antenna A1 MPE%	**2.38 %**	Antenna B1 MPE%	**2.38 %**	Antenna C1 MPE%	**2.38 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.38 %**
No Additional Carriers	NA
Site Total MPE %:	**2.38 %**

SPRINT Sector A Total:	2.38 %
SPRINT Sector B Total:	2.38 %
SPRINT Sector C Total:	2.38 %
Site Total:	2.38 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	145	0.80	850 MHz	567	0.14%
Sprint 850 MHz LTE	2	432.54	145	1.61	850 MHz	567	0.29%
Sprint 1900 MHz (PCS) CDMA	5	535.94	145	4.99	1900 MHz (PCS)	1000	0.50%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	145	4.99	1900 MHz (PCS)	1000	0.50%
Sprint 2500 MHz (BRS) LTE	8	639.78	145	9.52	2500 MHz (BRS)	1000	0.95%
						Total:	**2.38%**

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:	2.38 %
Sector B:	2.38 %
Sector C:	2.38 %
SPRINT Maximum Total (per sector):	2.38 %
Site Total:	2.38 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **2.38 %** 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 148 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46145-A

Customer Site Name: Eastford-desiato/Ssusa

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT33XC613 / Eastford Desiato/SSUSA

Site Location: 97 Chaplin Road

Eastford, Connecticut

Windham County

Latitude: 41.864389

Longitude: -72.096222

Analysis Result:

Max Structural Usage: 95.0% [Pass]

Max Foundation Usage: 41% [Pass]

Report Prepared By : Jie Chen

Introduction

The purpose of this report is to summarize the analysis results on the 148 ft EEI 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	EEI, Job # 11523-E01, Dated 4/24/2003
Foundation Drawing	EEI, Job # 11523-E01, Dated 4/24/2003
Geotechnical Report	Dr. Clarence Welti, Dated 3/20/2003
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 1" 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

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
-	145.0	6	Andrew DB980H90E-KL - Panel	(3) T-Arm	(6) 1 5/8"	Sprint Nextel

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	145.0	3	KMW ETCR-654L12H6 - Panel	(3) T-Arm & Ring Mount	(4) 1 1/4" Fiber	Sprint Nextel
2		3	ALU 1900 Mhz RRH			
3		6	ALU 800 Mhz RRH			
4		3	ALU TD-RRH8x20-25 - RRU			

All transmission lines are considered running inside of the pole shafts.

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:	**50.7%**	**40.2%**	**95.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	1891.8	18.7
Analysis Reactions	1409.9	14.5
Factored Reactions*	2553.9	25.2
% of Design Reactions	55.2%	57.7%

* 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 1.1084 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-222-G standards and the 2012 IBC under the design basic wind speed 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.

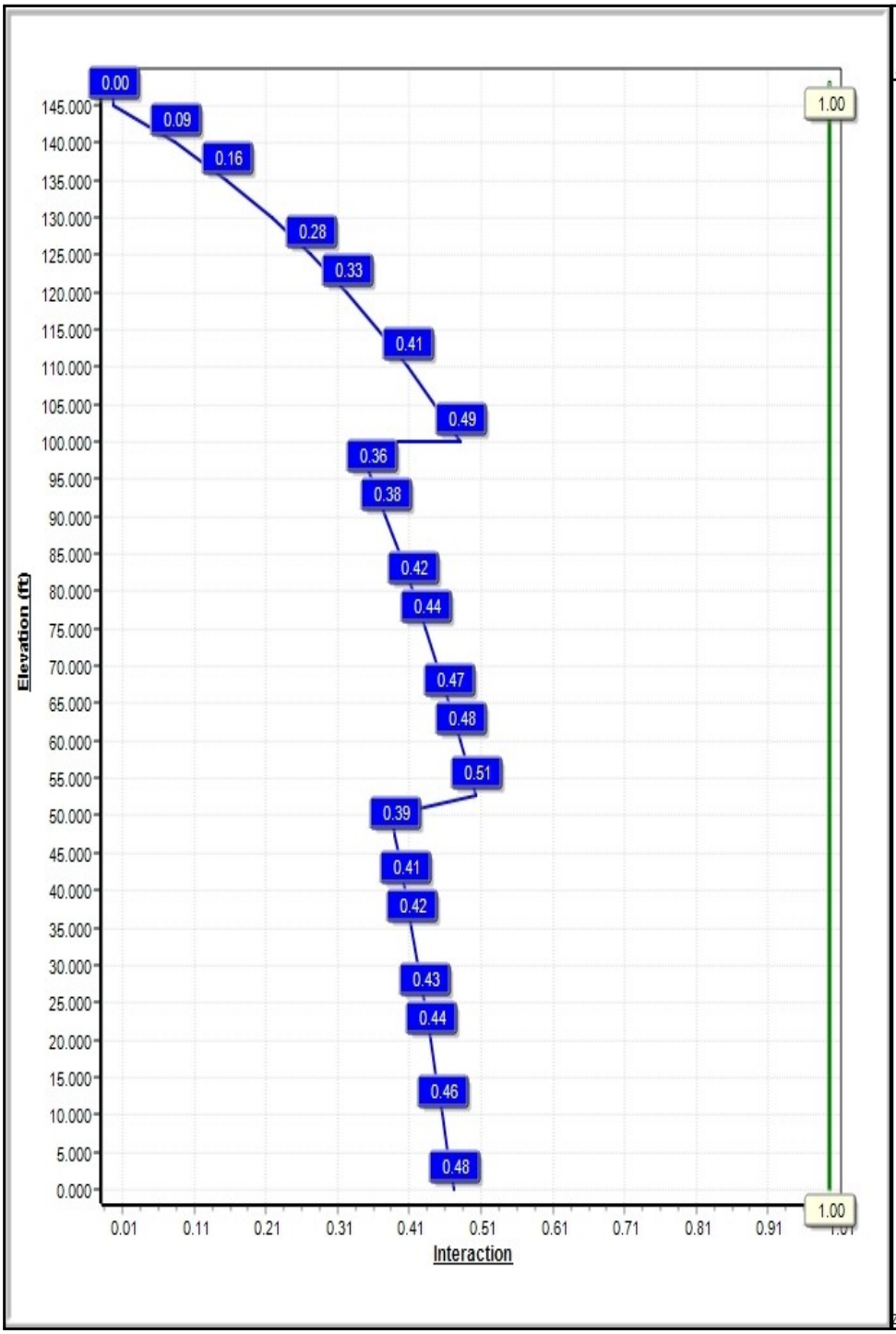
Usage Diagram - Max Ratio 50.72% at 52.7ft

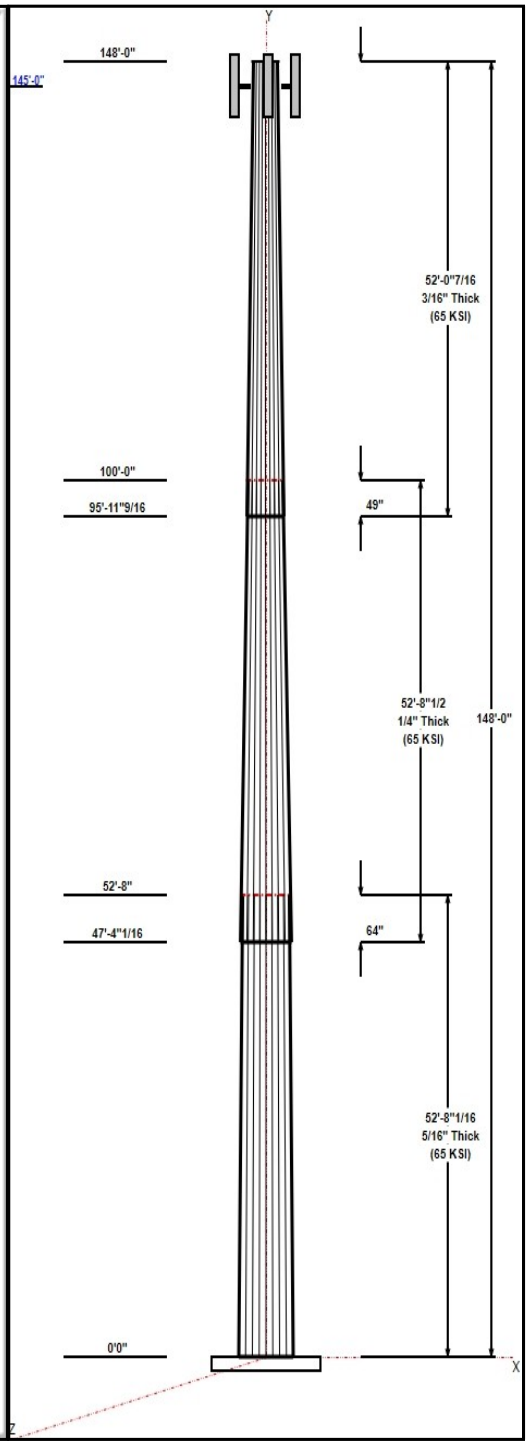
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B	
Height:	148.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

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: CT46145-A-SBA

Type: Tapered
Site Name: Eastford-desiato/Ssusa
Height: 148.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.21706

11/9/2017

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	52.67	36.82	48.25	0.313		0.21706	65
2	52.71	27.03	38.48	0.250	Slip	0.21706	65
3	52.04	17.00	28.30	0.188	Slip	0.21706	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
145.00	145.00	3	ETCR-654L12H6	Sprint Nextel
145.00	145.00	3	1900MHz RRH	Sprint Nextel
145.00	145.00	6	800 MHz RRH	Sprint Nextel
145.00	145.00	3	TD-RRH8x20-25	Sprint Nextel
145.00	145.00	3	T-Arm	Sprint Nextel
145.00	145.00	1	Ring Mount	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	145.00	Inside	1 1/4" Fiber	Sprint Nextel

Anchor Bolts

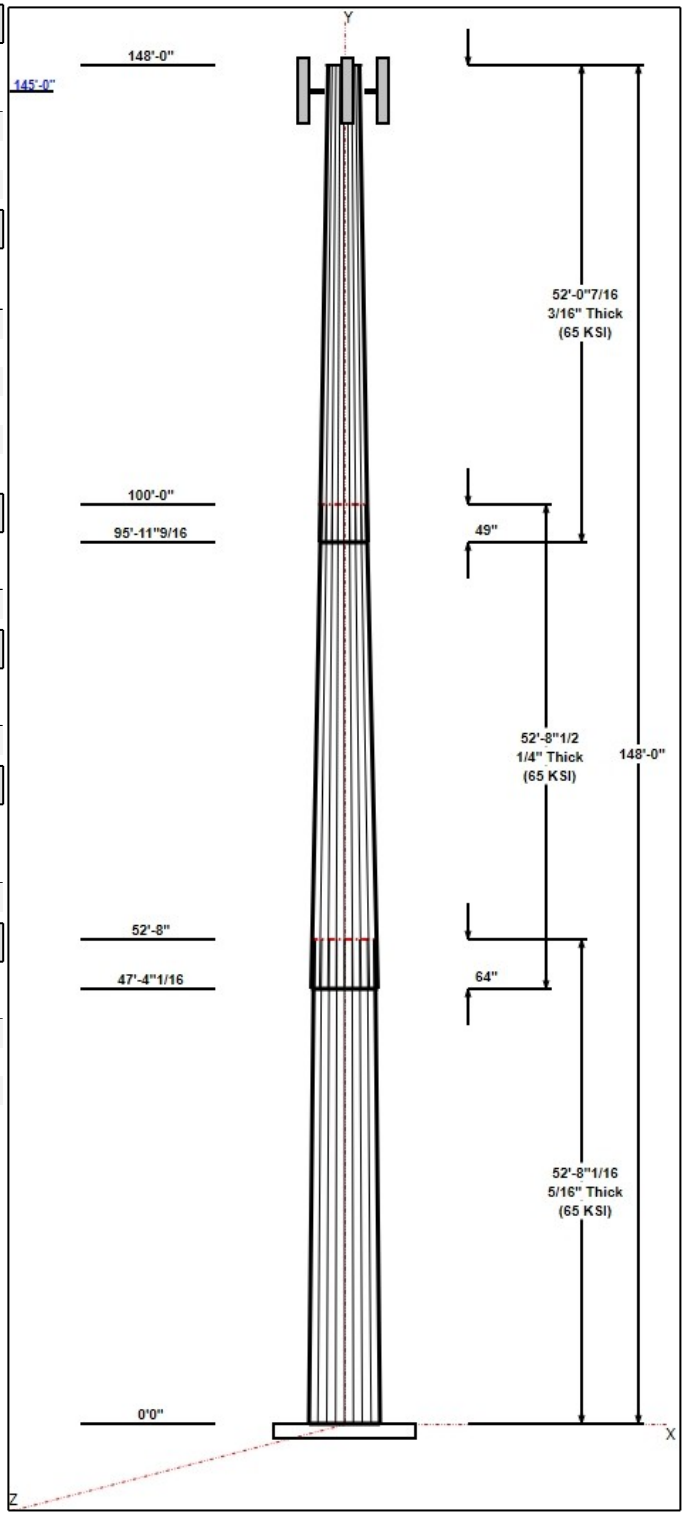
Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	63.0	60.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	1409.9	14.5	20.8
0.9D + 1.6W 101 mph Wind	1398.8	14.5	15.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	412.0	4.3	37.9
1.0D + 1.0W 60 mph Wind	309.6	3.2	17.4

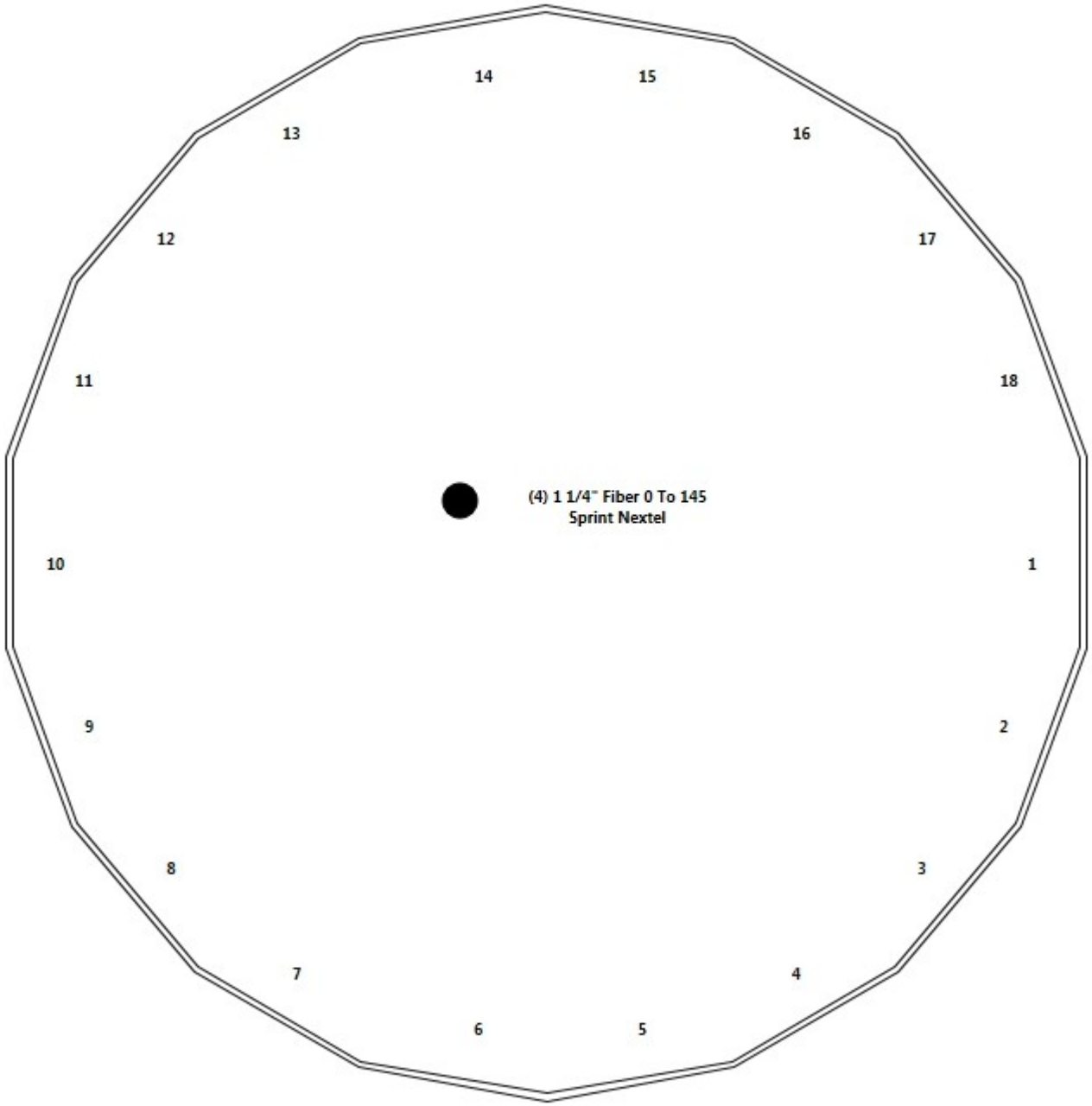


Structure: CT46145-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Eastford-desiato/Ssusa
Height: 148.00 (ft)

11/9/2017

Tower Engineering Solutions



Shaft Properties

Structure:	CT46145-A-SBA		**Code:**	EIA/TIA-222-G	11/9/2017
Site Name:	Eastford-desiato/Ssusa		**Exposure:**	B	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	52.670	0.3125	65		0.00	7,505
2	18	52.710	0.2500	65	Slip	64.00	4,626
3	18	52.037	0.1875	65	Slip	49.00	2,367
					Total Shaft Weight:		**14,498**

	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	48.25	0.00	47.55	13804.50	25.81	154.40	36.82	52.67	36.21	6096.04	19.36	117.8	0.217061
2	38.48	47.34	30.33	5599.24	25.73	153.90	27.03	100.05	21.25	1926.20	17.66	108.1	0.217061
3	28.30	95.96	16.73	1669.62	25.20	150.91	17.00	148.00	10.01	357.31	14.58	90.67	0.217061

Load Summary

Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
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	145.00	ETCR-654L12H6	3	99.00	15.71	0.90	548.73	17.974	0.90	0.00	0.00
2	145.00	1900MHz RRH	3	44.00	3.80	0.90	189.06	5.647	0.90	0.00	0.00
3	145.00	800 MHz RRH	6	53.00	2.49	0.90	151.28	4.010	0.90	0.00	0.00
4	145.00	TD-RRH8x20-25	3	70.00	4.05	0.90	227.05	5.158	0.90	0.00	0.00
5	145.00	T-Arm	3	400.00	10.00	0.90	771.05	21.595	0.90	0.00	0.00
6	145.00	Ring Mount	1	350.00	5.00	1.00	739.61	9.638	1.00	0.00	0.00
		Totals:	**19**	**2,507.00**			**6,854.96**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	145.00	(4) 1 1/4" Fiber	0.00	Inside

Shaft Section Properties

Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
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		0.3125	48.250	47.546	13804.5	25.81	154.40	71.0	563.5	0.0
5.00		0.3125	47.165	46.470	12888.0	25.20	150.93	71.8	538.2	799.8
10.00		0.3125	46.079	45.393	12012.9	24.59	147.45	72.5	513.5	781.5
15.00		0.3125	44.994	44.317	11178.4	23.98	143.98	73.2	489.3	763.2
20.00		0.3125	43.909	43.241	10383.5	23.36	140.51	73.9	465.8	744.8
25.00		0.3125	42.823	42.164	9627.1	22.75	137.04	74.6	442.8	726.5
30.00		0.3125	41.738	41.088	8908.5	22.14	133.56	75.4	420.4	708.2
35.00		0.3125	40.653	40.011	8226.5	21.53	130.09	76.1	398.6	689.9
40.00		0.3125	39.568	38.935	7580.2	20.92	126.62	76.8	377.3	671.6
45.00		0.3125	38.482	37.858	6968.7	20.30	123.14	77.5	356.7	653.3
47.34	Bot - Section 2	0.3125	37.975	37.355	6694.6	20.02	121.52	77.9	347.2	299.0
50.00		0.3125	37.397	36.782	6391.0	19.69	119.67	78.2	336.6	608.7
52.67	Top - Section 1	0.2500	37.317	29.412	5105.8	24.91	149.27	0.0	0.0	600.9
55.00		0.2500	36.812	29.011	4899.6	24.55	147.25	72.5	262.2	231.6
60.00		0.2500	35.726	28.149	4476.1	23.79	142.91	73.4	246.8	486.3
65.00		0.2500	34.641	27.288	4077.7	23.02	138.56	74.3	231.9	471.6
70.00		0.2500	33.556	26.427	3703.8	22.26	134.22	75.2	217.4	457.0
75.00		0.2500	32.470	25.566	3353.3	21.49	129.88	76.1	203.4	442.3
80.00		0.2500	31.385	24.705	3025.8	20.73	125.54	77.0	189.9	427.7
85.00		0.2500	30.300	23.844	2720.3	19.96	121.20	77.9	176.8	413.0
90.00		0.2500	29.215	22.983	2436.0	19.19	116.86	78.8	164.2	398.3
95.00		0.2500	28.129	22.121	2172.3	18.43	112.52	79.7	152.1	383.7
95.96	Bot - Section 3	0.2500	27.920	21.955	2123.8	18.28	111.68	79.9	149.8	72.2
100.00		0.2500	27.044	21.260	1928.4	17.66	108.18	80.6	140.4	523.0
100.05	Top - Section 2	0.1875	27.409	16.199	1516.6	24.36	146.18	0.0	0.0	5.9
105.00		0.1875	26.334	15.560	1343.9	23.35	140.45	73.9	100.5	267.7
110.00		0.1875	25.248	14.914	1183.4	22.33	134.66	75.1	92.3	259.2
115.00		0.1875	24.163	14.268	1036.2	21.31	128.87	76.3	84.5	248.2
120.00		0.1875	23.078	13.622	901.8	20.29	123.08	77.5	77.0	237.3
125.00		0.1875	21.992	12.976	779.5	19.27	117.29	78.7	69.8	226.3
130.00		0.1875	20.907	12.330	668.8	18.25	111.50	79.9	63.0	215.3
135.00		0.1875	19.822	11.684	569.1	17.23	105.72	81.1	56.5	204.3
140.00		0.1875	18.736	11.039	479.9	16.21	99.93	82.3	50.4	193.3
145.00		0.1875	17.651	10.393	400.5	15.19	94.14	82.6	44.7	182.3
148.00		0.1875	17.000	10.005	357.3	14.58	90.67	82.6	41.4	104.1
										14498.0

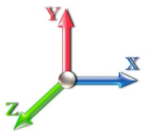
Wind Loading - Shaft

Structure: CT46145-A-SBA
Site Name: Eastford-desiato/Ssusa
Height: 148.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1 **Topography:** 1

Code: EIA/TIA-222-G 11/9/2017
Exposure: B
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

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	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	345.01	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	337.25	0.650	0.000	5.00	20.185	13.12	401.0	0.0	959.7
10.00		1.00	0.70	17.366	19.10	329.49	0.650	0.000	5.00	19.726	12.82	391.9	0.0	937.8
15.00		1.00	0.70	17.366	19.10	321.73	0.650	0.000	5.00	19.266	12.52	382.8	0.0	915.8
20.00		1.00	0.70	17.366	19.10	313.97	0.650	0.000	5.00	18.807	12.22	373.6	0.0	893.8
25.00		1.00	0.70	17.366	19.10	306.21	0.650	0.000	5.00	18.348	11.93	364.5	0.0	871.8
30.00		1.00	0.70	17.381	19.12	298.58	0.650	0.000	5.00	17.889	11.63	355.7	0.0	849.9
35.00		1.00	0.73	18.163	19.98	297.29	0.650	0.000	5.00	17.430	11.33	362.2	0.0	827.9
40.00		1.00	0.76	18.870	20.76	294.92	0.650	0.000	5.00	16.970	11.03	366.3	0.0	805.9
45.00		1.00	0.79	19.516	21.47	291.70	0.650	0.000	5.00	16.511	10.73	368.6	0.0	783.9
47.34	Bot - Section 2	1.00	0.80	19.800	21.78	289.95	0.650	0.000	2.34	7.559	4.91	171.2	0.0	358.8
50.00		1.00	0.81	20.112	22.12	287.77	0.650	0.000	2.66	8.606	5.59	198.0	0.0	730.5
52.67	Top - Section 1	1.00	0.82	20.413	22.45	285.43	0.650	0.000	2.67	8.497	5.52	198.4	0.0	721.1
55.00		1.00	0.83	20.667	22.73	287.15	0.650	0.000	2.33	7.308	4.75	172.8	0.0	277.9
60.00		1.00	0.85	21.187	23.31	282.17	0.650	0.000	5.00	15.345	9.97	371.9	0.0	583.5
65.00		1.00	0.87	21.678	23.85	276.75	0.650	0.000	5.00	14.886	9.68	369.2	0.0	565.9
70.00		1.00	0.89	22.142	24.36	270.93	0.650	0.000	5.00	14.427	9.38	365.4	0.0	548.3
75.00		1.00	0.91	22.582	24.84	264.76	0.650	0.000	5.00	13.968	9.08	360.8	0.0	530.8
80.00		1.00	0.93	23.003	25.30	258.28	0.650	0.000	5.00	13.508	8.78	355.5	0.0	513.2
85.00		1.00	0.94	23.404	25.74	251.52	0.650	0.000	5.00	13.049	8.48	349.4	0.0	495.6
90.00		1.00	0.96	23.790	26.17	244.50	0.650	0.000	5.00	12.590	8.18	342.6	0.0	478.0
95.00		1.00	0.97	24.160	26.58	237.24	0.650	0.000	5.00	12.131	7.89	335.3	0.0	460.4
95.96	Bot - Section 3	1.00	0.98	24.230	26.65	235.82	0.650	0.000	0.96	2.284	1.48	63.3	0.0	86.7
100.00		1.00	0.99	24.517	26.97	229.77	0.650	0.000	4.04	9.515	6.18	266.9	0.0	627.6
100.05	Top - Section 2	1.00	0.99	24.520	26.97	229.70	0.650	0.000	0.05	0.108	0.07	3.0	0.0	7.1
105.00		1.00	1.00	24.861	27.35	225.30	0.650	0.000	4.95	11.263	7.32	320.3	0.0	321.2
110.00		1.00	1.02	25.194	27.71	217.45	0.650	0.000	5.00	10.912	7.09	314.5	0.0	311.1
115.00		1.00	1.03	25.516	28.07	209.43	0.650	0.000	5.00	10.453	6.79	305.1	0.0	297.9
120.00		1.00	1.04	25.828	28.41	201.24	0.650	0.000	5.00	9.994	6.50	295.3	0.0	284.7
125.00		1.00	1.05	26.131	28.74	192.90	0.650	0.000	5.00	9.534	6.20	285.0	0.0	271.5
130.00		1.00	1.07	26.425	29.07	184.41	0.650	0.000	5.00	9.075	5.90	274.4	0.0	258.3
135.00		1.00	1.08	26.712	29.38	175.78	0.650	0.000	5.00	8.616	5.60	263.3	0.0	245.2
140.00		1.00	1.09	26.991	29.69	167.03	0.650	0.000	5.00	8.157	5.30	251.9	0.0	232.0
145.00	Appurtenance(s)	1.00	1.10	27.263	29.99	158.14	0.650	0.000	5.00	7.698	5.00	240.1	0.0	218.8
148.00		1.00	1.11	27.423	30.17	152.75	0.650	0.000	3.00	4.398	2.86	138.0	0.0	124.9
								Totals:	**148.00**			**9,978.3**		**17,397.6**

Discrete Appurtenance Forces

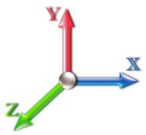
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

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	145.00	ETCR-654L12H6	3	27.263	29.989	0.81	0.90	38.18	356.40	0.000	0.000	1831.75	0.00	0.00
2	145.00	1900MHz RRH	3	27.263	29.989	0.81	0.90	9.23	158.40	0.000	0.000	443.07	0.00	0.00
3	145.00	800 MHz RRH	6	27.263	29.989	0.81	0.90	12.10	381.60	0.000	0.000	580.66	0.00	0.00
4	145.00	TD-RRH8x20-25	3	27.263	29.989	0.81	0.90	9.84	252.00	0.000	0.000	472.22	0.00	0.00
5	145.00	T-Arm	3	27.263	29.989	0.68	0.75	20.25	1440.00	0.000	0.000	971.65	0.00	0.00
6	145.00	Ring Mount	1	27.263	29.989	1.00	1.00	5.00	420.00	0.000	0.000	239.91	0.00	0.00
							Totals:		**3,008.40**			**4,539.25**		

Total Applied Force Summary

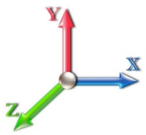
Structure:	CT46145-A-SBA		**Code:**	EIA/TIA-222-G	11/9/2017
Site Name:	Eastford-desiato/Ssusa		**Exposure:**	B	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 9

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		401.01	975.59	0.00	0.00
10.00		391.89	953.61	0.00	0.00
15.00		382.76	931.63	0.00	0.00
20.00		373.64	909.66	0.00	0.00
25.00		364.52	887.68	0.00	0.00
30.00		355.69	865.70	0.00	0.00
35.00		362.17	843.72	0.00	0.00
40.00		366.34	821.75	0.00	0.00
45.00		368.63	799.77	0.00	0.00
47.34		171.22	366.22	0.00	0.00
50.00		198.01	738.93	0.00	0.00
52.67		198.42	729.51	0.00	0.00
55.00		172.78	285.30	0.00	0.00
60.00		371.94	599.35	0.00	0.00
65.00		369.16	581.77	0.00	0.00
70.00		365.43	564.19	0.00	0.00
75.00		360.84	546.60	0.00	0.00
80.00		355.47	529.02	0.00	0.00
85.00		349.39	511.44	0.00	0.00
90.00		342.65	493.86	0.00	0.00
95.00		335.29	476.28	0.00	0.00
95.96		63.32	89.74	0.00	0.00
100.00		266.88	640.36	0.00	0.00
100.05		3.04	7.29	0.00	0.00
105.00		320.33	336.87	0.00	0.00
110.00		314.50	326.92	0.00	0.00
115.00		305.12	313.74	0.00	0.00
120.00		295.28	300.55	0.00	0.00
125.00		285.02	287.36	0.00	0.00
130.00		274.35	274.18	0.00	0.00
135.00		263.29	260.99	0.00	0.00
140.00		251.86	247.80	0.00	0.00
145.00	(19) attachments	4779.33	3243.02	0.00	0.00
148.00		137.98	124.94	0.00	0.00
	Totals:	**14,517.55**	**20,865.33**	**0.00**	**0.00**

Calculated Forces

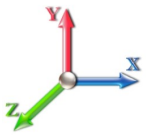
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

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	-20.85	-14.54	0.00	-1409.9	0.00	1409.95	3039.86	1519.93	5995.78	3002.34	0.00	0.000	0.000	0.477
5.00	-19.84	-14.19	0.00	-1337.2	0.00	1337.23	3001.16	1500.58	5784.56	2896.58	0.08	-0.142	0.000	0.468
10.00	-18.85	-13.84	0.00	-1266.2	0.00	1266.28	2961.07	1480.53	5574.20	2791.24	0.30	-0.285	0.000	0.460
15.00	-17.89	-13.50	0.00	-1197.0	0.00	1197.07	2919.58	1459.79	5364.88	2686.43	0.68	-0.431	0.000	0.452
20.00	-16.95	-13.16	0.00	-1129.5	0.00	1129.58	2876.69	1438.34	5156.78	2582.22	1.21	-0.579	0.000	0.443
25.00	-16.03	-12.83	0.00	-1063.7	0.00	1063.77	2832.41	1416.20	4950.10	2478.73	1.90	-0.729	0.000	0.435
30.00	-15.13	-12.50	0.00	-999.62	0.00	999.62	2786.73	1393.36	4745.03	2376.04	2.74	-0.882	0.000	0.426
35.00	-14.26	-12.17	0.00	-937.11	0.00	937.11	2739.66	1369.83	4541.75	2274.25	3.75	-1.036	0.000	0.417
40.00	-13.42	-11.82	0.00	-876.28	0.00	876.28	2691.19	1345.59	4340.45	2173.45	4.92	-1.193	0.000	0.408
45.00	-12.60	-11.46	0.00	-817.18	0.00	817.18	2641.32	1320.66	4141.32	2073.74	6.25	-1.352	0.000	0.399
47.34	-12.22	-11.30	0.00	-790.41	0.00	790.41	2617.54	1308.77	4049.05	2027.54	6.93	-1.429	0.000	0.395
50.00	-11.47	-11.10	0.00	-760.32	0.00	760.32	2590.07	1295.03	3944.54	1975.20	7.76	-1.517	0.000	0.389
52.67	-10.73	-10.90	0.00	-730.69	0.00	730.69	1908.61	954.30	2910.23	1457.28	8.63	-1.605	0.000	0.507
55.00	-10.43	-10.74	0.00	-705.30	0.00	705.30	1893.52	946.76	2847.57	1425.90	9.43	-1.683	0.000	0.500
60.00	-9.80	-10.38	0.00	-651.61	0.00	651.61	1860.12	930.06	2713.74	1358.89	11.30	-1.880	0.000	0.485
65.00	-9.20	-10.03	0.00	-599.69	0.00	599.69	1825.33	912.66	2580.95	1292.39	13.38	-2.079	0.000	0.469
70.00	-8.62	-9.67	0.00	-549.56	0.00	549.56	1789.14	894.57	2449.37	1226.50	15.66	-2.280	0.000	0.453
75.00	-8.05	-9.31	0.00	-501.22	0.00	501.22	1751.55	875.78	2319.19	1161.32	18.16	-2.481	0.000	0.436
80.00	-7.51	-8.96	0.00	-454.64	0.00	454.64	1712.57	856.29	2190.61	1096.93	20.86	-2.684	0.000	0.419
85.00	-6.98	-8.61	0.00	-409.83	0.00	409.83	1672.20	836.10	2063.81	1033.44	23.78	-2.887	0.000	0.401
90.00	-6.48	-8.27	0.00	-366.76	0.00	366.76	1630.42	815.21	1938.98	970.93	26.91	-3.090	0.000	0.382
95.00	-6.01	-7.92	0.00	-325.42	0.00	325.42	1587.26	793.63	1816.30	909.50	30.26	-3.292	0.000	0.362
95.96	-5.91	-7.86	0.00	-317.79	0.00	317.79	1578.78	789.39	1792.93	897.80	30.93	-3.333	0.000	0.358
100.00	-5.27	-7.57	0.00	-286.05	0.00	286.05	1542.69	771.35	1695.98	849.25	33.81	-3.496	0.000	0.340
100.05	-5.25	-7.57	0.00	-285.70	0.00	285.70	1060.56	530.28	1187.41	594.59	33.85	-3.498	0.000	0.486
105.00	-4.91	-7.25	0.00	-248.20	0.00	248.20	1035.33	517.66	1113.06	557.36	37.58	-3.693	0.000	0.450
110.00	-4.57	-6.93	0.00	-211.95	0.00	211.95	1008.46	504.23	1038.86	520.20	41.58	-3.937	0.000	0.412
115.00	-4.26	-6.62	0.00	-177.29	0.00	177.29	980.21	490.10	965.69	483.57	45.82	-4.171	0.000	0.371
120.00	-3.95	-6.32	0.00	-144.17	0.00	144.17	950.55	475.28	893.76	447.54	50.31	-4.392	0.000	0.326
125.00	-3.67	-6.03	0.00	-112.57	0.00	112.57	919.50	459.75	823.24	412.23	55.02	-4.594	0.000	0.277
130.00	-3.40	-5.74	0.00	-82.43	0.00	82.43	887.06	443.53	754.32	377.72	59.92	-4.772	0.000	0.222
135.00	-3.15	-5.46	0.00	-53.73	0.00	53.73	853.21	426.61	687.20	344.11	65.00	-4.917	0.000	0.160
140.00	-2.92	-5.19	0.00	-26.42	0.00	26.42	817.98	408.99	622.06	311.49	70.20	-5.017	0.000	0.089
145.00	-0.11	-0.15	0.00	-0.45	0.00	0.45	772.13	386.06	552.49	276.66	75.47	-5.057	0.000	0.002
148.00	0.00	-0.14	0.00	0.00	0.00	0.00	743.33	371.67	511.84	256.30	78.65	-5.057	0.000	0.000

Wind Loading - Shaft

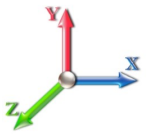
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

TES 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	345.01	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	337.25	0.650	0.000	5.00	20.185	13.12	401.0	0.0	719.8
10.00		1.00	0.70	17.366	19.10	329.49	0.650	0.000	5.00	19.726	12.82	391.9	0.0	703.3
15.00		1.00	0.70	17.366	19.10	321.73	0.650	0.000	5.00	19.266	12.52	382.8	0.0	686.8
20.00		1.00	0.70	17.366	19.10	313.97	0.650	0.000	5.00	18.807	12.22	373.6	0.0	670.4
25.00		1.00	0.70	17.366	19.10	306.21	0.650	0.000	5.00	18.348	11.93	364.5	0.0	653.9
30.00		1.00	0.70	17.381	19.12	298.58	0.650	0.000	5.00	17.889	11.63	355.7	0.0	637.4
35.00		1.00	0.73	18.163	19.98	297.29	0.650	0.000	5.00	17.430	11.33	362.2	0.0	620.9
40.00		1.00	0.76	18.870	20.76	294.92	0.650	0.000	5.00	16.970	11.03	366.3	0.0	604.4
45.00		1.00	0.79	19.516	21.47	291.70	0.650	0.000	5.00	16.511	10.73	368.6	0.0	587.9
47.34	Bot - Section 2	1.00	0.80	19.800	21.78	289.95	0.650	0.000	2.34	7.559	4.91	171.2	0.0	269.1
50.00		1.00	0.81	20.112	22.12	287.77	0.650	0.000	2.66	8.606	5.59	198.0	0.0	547.9
52.67	Top - Section 1	1.00	0.82	20.413	22.45	285.43	0.650	0.000	2.67	8.497	5.52	198.4	0.0	540.8
55.00		1.00	0.83	20.667	22.73	287.15	0.650	0.000	2.33	7.308	4.75	172.8	0.0	208.4
60.00		1.00	0.85	21.187	23.31	282.17	0.650	0.000	5.00	15.345	9.97	371.9	0.0	437.6
65.00		1.00	0.87	21.678	23.85	276.75	0.650	0.000	5.00	14.886	9.68	369.2	0.0	424.4
70.00		1.00	0.89	22.142	24.36	270.93	0.650	0.000	5.00	14.427	9.38	365.4	0.0	411.3
75.00		1.00	0.91	22.582	24.84	264.76	0.650	0.000	5.00	13.968	9.08	360.8	0.0	398.1
80.00		1.00	0.93	23.003	25.30	258.28	0.650	0.000	5.00	13.508	8.78	355.5	0.0	384.9
85.00		1.00	0.94	23.404	25.74	251.52	0.650	0.000	5.00	13.049	8.48	349.4	0.0	371.7
90.00		1.00	0.96	23.790	26.17	244.50	0.650	0.000	5.00	12.590	8.18	342.6	0.0	358.5
95.00		1.00	0.97	24.160	26.58	237.24	0.650	0.000	5.00	12.131	7.89	335.3	0.0	345.3
95.96	Bot - Section 3	1.00	0.98	24.230	26.65	235.82	0.650	0.000	0.96	2.284	1.48	63.3	0.0	65.0
100.00		1.00	0.99	24.517	26.97	229.77	0.650	0.000	4.04	9.515	6.18	266.9	0.0	470.7
100.05	Top - Section 2	1.00	0.99	24.520	26.97	229.70	0.650	0.000	0.05	0.108	0.07	3.0	0.0	5.4
105.00		1.00	1.00	24.861	27.35	225.30	0.650	0.000	4.95	11.263	7.32	320.3	0.0	240.9
110.00		1.00	1.02	25.194	27.71	217.45	0.650	0.000	5.00	10.912	7.09	314.5	0.0	233.3
115.00		1.00	1.03	25.516	28.07	209.43	0.650	0.000	5.00	10.453	6.79	305.1	0.0	223.4
120.00		1.00	1.04	25.828	28.41	201.24	0.650	0.000	5.00	9.994	6.50	295.3	0.0	213.5
125.00		1.00	1.05	26.131	28.74	192.90	0.650	0.000	5.00	9.534	6.20	285.0	0.0	203.6
130.00		1.00	1.07	26.425	29.07	184.41	0.650	0.000	5.00	9.075	5.90	274.4	0.0	193.8
135.00		1.00	1.08	26.712	29.38	175.78	0.650	0.000	5.00	8.616	5.60	263.3	0.0	183.9
140.00		1.00	1.09	26.991	29.69	167.03	0.650	0.000	5.00	8.157	5.30	251.9	0.0	174.0
145.00	Appurtenance(s)	1.00	1.10	27.263	29.99	158.14	0.650	0.000	5.00	7.698	5.00	240.1	0.0	164.1
148.00		1.00	1.11	27.423	30.17	152.75	0.650	0.000	3.00	4.398	2.86	138.0	0.0	93.7
								Totals:	**148.00**			**9,978.3**		**13,048.2**

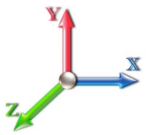
Discrete Appurtenance Forces

Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

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	145.00	ETCR-654L12H6	3	27.263	29.989	0.81	0.90	38.18	267.30	0.000	0.000	1831.75	0.00	0.00
2	145.00	1900MHz RRH	3	27.263	29.989	0.81	0.90	9.23	118.80	0.000	0.000	443.07	0.00	0.00
3	145.00	800 MHz RRH	6	27.263	29.989	0.81	0.90	12.10	286.20	0.000	0.000	580.66	0.00	0.00
4	145.00	TD-RRH8x20-25	3	27.263	29.989	0.81	0.90	9.84	189.00	0.000	0.000	472.22	0.00	0.00
5	145.00	T-Arm	3	27.263	29.989	0.68	0.75	20.25	1080.00	0.000	0.000	971.65	0.00	0.00
6	145.00	Ring Mount	1	27.263	29.989	1.00	1.00	5.00	315.00	0.000	0.000	239.91	0.00	0.00
							Totals:		**2,256.30**			**4,539.25**		

Total Applied Force Summary

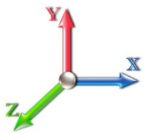
Structure:	CT46145-A-SBA		**Code:**	EIA/TIA-222-G	11/9/2017
Site Name:	Eastford-desiato/Ssusa		**Exposure:**	B	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

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		401.01	731.69	0.00	0.00
10.00		391.89	715.21	0.00	0.00
15.00		382.76	698.72	0.00	0.00
20.00		373.64	682.24	0.00	0.00
25.00		364.52	665.76	0.00	0.00
30.00		355.69	649.28	0.00	0.00
35.00		362.17	632.79	0.00	0.00
40.00		366.34	616.31	0.00	0.00
45.00		368.63	599.83	0.00	0.00
47.34		171.22	274.67	0.00	0.00
50.00		198.01	554.19	0.00	0.00
52.67		198.42	547.13	0.00	0.00
55.00		172.78	213.98	0.00	0.00
60.00		371.94	449.51	0.00	0.00
65.00		369.16	436.33	0.00	0.00
70.00		365.43	423.14	0.00	0.00
75.00		360.84	409.95	0.00	0.00
80.00		355.47	396.77	0.00	0.00
85.00		349.39	383.58	0.00	0.00
90.00		342.65	370.39	0.00	0.00
95.00		335.29	357.21	0.00	0.00
95.96		63.32	67.31	0.00	0.00
100.00		266.88	480.27	0.00	0.00
100.05		3.04	5.46	0.00	0.00
105.00		320.33	252.66	0.00	0.00
110.00		314.50	245.19	0.00	0.00
115.00		305.12	235.30	0.00	0.00
120.00		295.28	225.41	0.00	0.00
125.00		285.02	215.52	0.00	0.00
130.00		274.35	205.63	0.00	0.00
135.00		263.29	195.74	0.00	0.00
140.00		251.86	185.85	0.00	0.00
145.00	(19) attachments	4779.33	2432.26	0.00	0.00
148.00		137.98	93.70	0.00	0.00
	Totals:	**14,517.55**	**15,649.00**	**0.00**	**0.00**

Calculated Forces

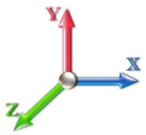
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

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	-15.63	-14.54	0.00	-1398.7	0.00	1398.77	3039.86	1519.93	5995.78	3002.34	0.00	0.000	0.000	0.471
5.00	-14.86	-14.17	0.00	-1326.0	0.00	1326.09	3001.16	1500.58	5784.56	2896.58	0.08	-0.140	0.000	0.463
10.00	-14.12	-13.81	0.00	-1255.2	0.00	1255.24	2961.07	1480.53	5574.20	2791.24	0.30	-0.283	0.000	0.455
15.00	-13.39	-13.46	0.00	-1186.1	0.00	1186.18	2919.58	1459.79	5364.88	2686.43	0.67	-0.427	0.000	0.446
20.00	-12.67	-13.11	0.00	-1118.8	0.00	1118.89	2876.69	1438.34	5156.78	2582.22	1.20	-0.574	0.000	0.438
25.00	-11.98	-12.77	0.00	-1053.3	0.00	1053.33	2832.41	1416.20	4950.10	2478.73	1.88	-0.723	0.000	0.429
30.00	-11.30	-12.44	0.00	-989.47	0.00	989.47	2786.73	1393.36	4745.03	2376.04	2.72	-0.874	0.000	0.421
35.00	-10.64	-12.09	0.00	-927.29	0.00	927.29	2739.66	1369.83	4541.75	2274.25	3.72	-1.027	0.000	0.412
40.00	-10.00	-11.74	0.00	-866.83	0.00	866.83	2691.19	1345.59	4340.45	2173.45	4.87	-1.182	0.000	0.403
45.00	-9.39	-11.38	0.00	-808.12	0.00	808.12	2641.32	1320.66	4141.32	2073.74	6.20	-1.339	0.000	0.393
47.34	-9.10	-11.21	0.00	-781.53	0.00	781.53	2617.54	1308.77	4049.05	2027.54	6.87	-1.415	0.000	0.389
50.00	-8.53	-11.02	0.00	-751.66	0.00	751.66	2590.07	1295.03	3944.54	1975.20	7.68	-1.502	0.000	0.384
52.67	-7.98	-10.81	0.00	-722.25	0.00	722.25	1908.61	954.30	2910.23	1457.28	8.55	-1.589	0.000	0.500
55.00	-7.74	-10.65	0.00	-697.06	0.00	697.06	1893.52	946.76	2847.57	1425.90	9.34	-1.666	0.000	0.493
60.00	-7.27	-10.29	0.00	-643.79	0.00	643.79	1860.12	930.06	2713.74	1358.89	11.19	-1.861	0.000	0.478
65.00	-6.81	-9.93	0.00	-592.33	0.00	592.33	1825.33	912.66	2580.95	1292.39	13.25	-2.058	0.000	0.462
70.00	-6.37	-9.57	0.00	-542.67	0.00	542.67	1789.14	894.57	2449.37	1226.50	15.51	-2.255	0.000	0.446
75.00	-5.94	-9.22	0.00	-494.80	0.00	494.80	1751.55	875.78	2319.19	1161.32	17.98	-2.455	0.000	0.430
80.00	-5.53	-8.86	0.00	-448.72	0.00	448.72	1712.57	856.29	2190.61	1096.93	20.66	-2.655	0.000	0.412
85.00	-5.14	-8.51	0.00	-404.40	0.00	404.40	1672.20	836.10	2063.81	1033.44	23.54	-2.855	0.000	0.394
90.00	-4.75	-8.17	0.00	-361.83	0.00	361.83	1630.42	815.21	1938.98	970.93	26.64	-3.056	0.000	0.376
95.00	-4.40	-7.82	0.00	-320.99	0.00	320.99	1587.26	793.63	1816.30	909.50	29.95	-3.255	0.000	0.356
95.96	-4.32	-7.76	0.00	-313.45	0.00	313.45	1578.78	789.39	1792.93	897.80	30.61	-3.295	0.000	0.352
100.00	-3.85	-7.48	0.00	-282.11	0.00	282.11	1542.69	771.35	1695.98	849.25	33.46	-3.456	0.000	0.335
100.05	-3.83	-7.48	0.00	-281.76	0.00	281.76	1060.56	530.28	1187.41	594.59	33.50	-3.458	0.000	0.478
105.00	-3.57	-7.16	0.00	-244.72	0.00	244.72	1035.33	517.66	1113.06	557.36	37.18	-3.651	0.000	0.443
110.00	-3.32	-6.84	0.00	-208.93	0.00	208.93	1008.46	504.23	1038.86	520.20	41.14	-3.891	0.000	0.405
115.00	-3.08	-6.53	0.00	-174.73	0.00	174.73	980.21	490.10	965.69	483.57	45.33	-4.121	0.000	0.365
120.00	-2.85	-6.23	0.00	-142.07	0.00	142.07	950.55	475.28	893.76	447.54	49.76	-4.339	0.000	0.321
125.00	-2.64	-5.94	0.00	-110.91	0.00	110.91	919.50	459.75	823.24	412.23	54.41	-4.538	0.000	0.272
130.00	-2.44	-5.66	0.00	-81.22	0.00	81.22	887.06	443.53	754.32	377.72	59.26	-4.714	0.000	0.218
135.00	-2.26	-5.38	0.00	-52.94	0.00	52.94	853.21	426.61	687.20	344.11	64.27	-4.856	0.000	0.157
140.00	-2.09	-5.12	0.00	-26.03	0.00	26.03	817.98	408.99	622.06	311.49	69.41	-4.955	0.000	0.086
145.00	-0.08	-0.15	0.00	-0.44	0.00	0.44	772.13	386.06	552.49	276.66	74.62	-4.994	0.000	0.002
148.00	0.00	-0.14	0.00	0.00	0.00	0.00	743.33	371.67	511.84	256.30	77.76	-4.995	0.000	0.000

Wind Loading - Shaft

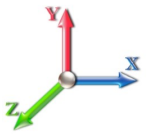
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

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	1.656	5.00	21.565	25.88	121.1	506.4	1466.1
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.775	5.00	21.205	25.45	119.1	532.0	1469.7
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.848	5.00	20.807	24.97	116.9	542.3	1458.0
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.902	5.00	20.392	24.47	114.6	545.8	1439.6
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.945	5.00	19.969	23.96	112.2	545.4	1417.2
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.981	5.00	19.540	23.45	109.9	542.4	1392.2
35.00		1.00	0.73	4.451	4.90	0.00	1.200	2.012	5.00	19.106	22.93	112.3	537.5	1365.4
40.00		1.00	0.76	4.625	5.09	0.00	1.200	2.039	5.00	18.669	22.40	114.0	531.2	1337.1
45.00		1.00	0.79	4.783	5.26	0.00	1.200	2.063	5.00	18.230	21.88	115.1	523.8	1307.7
47.34	Bot - Section 2	1.00	0.80	4.852	5.34	0.00	1.200	2.073	2.34	8.366	10.04	53.6	243.0	601.8
50.00		1.00	0.81	4.929	5.42	0.00	1.200	2.085	2.66	9.531	11.44	62.0	278.0	1008.5
52.67	Top - Section 1	1.00	0.82	5.003	5.50	0.00	1.200	2.096	2.67	9.429	11.32	62.3	276.2	997.2
55.00		1.00	0.83	5.065	5.57	0.00	1.200	2.105	2.33	8.125	9.75	54.3	239.0	516.9
60.00		1.00	0.85	5.193	5.71	0.00	1.200	2.123	5.00	17.115	20.54	117.3	503.2	1086.7
65.00		1.00	0.87	5.313	5.84	0.00	1.200	2.140	5.00	16.670	20.00	116.9	492.9	1058.8
70.00		1.00	0.89	5.426	5.97	0.00	1.200	2.156	5.00	16.224	19.47	116.2	482.1	1030.4
75.00		1.00	0.91	5.534	6.09	0.00	1.200	2.171	5.00	15.777	18.93	115.3	470.9	1001.6
80.00		1.00	0.93	5.637	6.20	0.00	1.200	2.185	5.00	15.329	18.40	114.1	459.2	972.4
85.00		1.00	0.94	5.736	6.31	0.00	1.200	2.198	5.00	14.881	17.86	112.7	447.3	942.9
90.00		1.00	0.96	5.830	6.41	0.00	1.200	2.211	5.00	14.433	17.32	111.1	435.0	913.0
95.00		1.00	0.97	5.921	6.51	0.00	1.200	2.223	5.00	13.983	16.78	109.3	422.4	882.8
95.96	Bot - Section 3	1.00	0.98	5.938	6.53	0.00	1.200	2.225	0.96	2.642	3.17	20.7	80.9	167.6
100.00		1.00	0.99	6.008	6.61	0.00	1.200	2.234	4.04	11.019	13.22	87.4	334.8	962.4
100.05	Top - Section 2	1.00	0.99	6.009	6.61	0.00	1.200	2.235	0.05	0.126	0.15	1.0	3.9	11.0
105.00		1.00	1.00	6.093	6.70	0.00	1.200	2.245	4.95	13.117	15.74	105.5	397.9	719.1
110.00		1.00	1.02	6.174	6.79	0.00	1.200	2.256	5.00	12.792	15.35	104.3	388.3	699.4
115.00		1.00	1.03	6.253	6.88	0.00	1.200	2.266	5.00	12.341	14.81	101.9	374.8	672.7
120.00		1.00	1.04	6.330	6.96	0.00	1.200	2.276	5.00	11.890	14.27	99.3	361.1	645.8
125.00		1.00	1.05	6.404	7.04	0.00	1.200	2.285	5.00	11.439	13.73	96.7	347.1	618.6
130.00		1.00	1.07	6.476	7.12	0.00	1.200	2.294	5.00	10.987	13.18	93.9	333.0	591.4
135.00		1.00	1.08	6.546	7.20	0.00	1.200	2.303	5.00	10.535	12.64	91.0	318.7	563.9
140.00		1.00	1.09	6.615	7.28	0.00	1.200	2.311	5.00	10.083	12.10	88.0	304.3	536.3
145.00	Appurtenance(s)	1.00	1.10	6.681	7.35	0.00	1.200	2.319	5.00	9.630	11.56	84.9	289.7	508.5
148.00		1.00	1.11	6.721	7.39	0.00	1.200	2.324	3.00	5.560	6.67	49.3	168.5	293.5
								Totals:	**148.00**			**3,204.1**		**30,656.4**

Discrete Appurtenance Forces

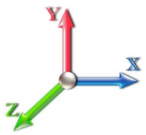
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

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	145.00	ETCR-654L12H6	3	6.681	7.350	0.81	0.90	43.68	1705.58	0.000	0.000	321.01	0.00	0.00
2	145.00	1900MHz RRH	3	6.681	7.350	0.81	0.90	13.72	499.98	0.000	0.000	100.85	0.00	0.00
3	145.00	800 MHz RRH	6	6.681	7.350	0.81	0.90	19.49	844.68	0.000	0.000	143.23	0.00	0.00
4	145.00	TD-RRH8x20-25	3	6.681	7.350	0.81	0.90	12.53	723.16	0.000	0.000	92.12	0.00	0.00
5	145.00	T-Arm	3	6.681	7.350	0.68	0.75	43.73	2313.16	0.000	0.000	321.40	0.00	0.00
6	145.00	Ring Mount	1	6.681	7.350	1.00	1.00	9.64	709.61	0.000	0.000	70.84	0.00	0.00
							Totals:		**6,796.16**			**1,049.44**		

Total Applied Force Summary

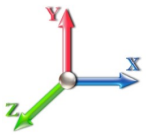
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

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	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		121.15	1481.99	0.00	0.00
10.00		119.13	1485.58	0.00	0.00
15.00		116.89	1473.89	0.00	0.00
20.00		114.56	1455.43	0.00	0.00
25.00		112.18	1433.05	0.00	0.00
30.00		109.86	1408.08	0.00	0.00
35.00		112.26	1381.22	0.00	0.00
40.00		113.96	1352.94	0.00	0.00
45.00		115.09	1323.54	0.00	0.00
47.34		53.59	609.22	0.00	0.00
50.00		62.01	1016.95	0.00	0.00
52.67		62.27	1005.70	0.00	0.00
55.00		54.32	524.31	0.00	0.00
60.00		117.30	1102.53	0.00	0.00
65.00		116.90	1074.66	0.00	0.00
70.00		116.21	1046.29	0.00	0.00
75.00		115.26	1017.48	0.00	0.00
80.00		114.07	988.27	0.00	0.00
85.00		112.67	958.71	0.00	0.00
90.00		111.07	928.83	0.00	0.00
95.00		109.29	898.65	0.00	0.00
95.96		20.71	170.65	0.00	0.00
100.00		87.39	975.21	0.00	0.00
100.05		1.00	11.16	0.00	0.00
105.00		105.49	734.79	0.00	0.00
110.00		104.26	715.26	0.00	0.00
115.00		101.87	688.53	0.00	0.00
120.00		99.34	661.61	0.00	0.00
125.00		96.69	634.49	0.00	0.00
130.00		93.92	607.19	0.00	0.00
135.00		91.03	579.73	0.00	0.00
140.00		88.04	552.10	0.00	0.00
145.00	(19) attachments	1134.38	7320.49	0.00	0.00
148.00		49.33	293.47	0.00	0.00
	Totals:	**4,253.50**	**37,911.97**	**0.00**	**0.00**

Calculated Forces

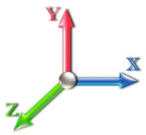
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

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

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	-37.91	-4.27	0.00	-411.95	0.00	411.95	3039.86	1519.93	5995.78	3002.34	0.00	0.000	0.000	0.150
5.00	-36.43	-4.17	0.00	-390.62	0.00	390.62	3001.16	1500.58	5784.56	2896.58	0.02	-0.041	0.000	0.147
10.00	-34.94	-4.08	0.00	-369.77	0.00	369.77	2961.07	1480.53	5574.20	2791.24	0.09	-0.083	0.000	0.144
15.00	-33.46	-3.98	0.00	-349.38	0.00	349.38	2919.58	1459.79	5364.88	2686.43	0.20	-0.126	0.000	0.142
20.00	-32.00	-3.89	0.00	-329.48	0.00	329.48	2876.69	1438.34	5156.78	2582.22	0.35	-0.169	0.000	0.139
25.00	-30.57	-3.79	0.00	-310.04	0.00	310.04	2832.41	1416.20	4950.10	2478.73	0.55	-0.213	0.000	0.136
30.00	-29.16	-3.70	0.00	-291.07	0.00	291.07	2786.73	1393.36	4745.03	2376.04	0.80	-0.257	0.000	0.133
35.00	-27.77	-3.60	0.00	-272.56	0.00	272.56	2739.66	1369.83	4541.75	2274.25	1.09	-0.302	0.000	0.130
40.00	-26.42	-3.50	0.00	-254.54	0.00	254.54	2691.19	1345.59	4340.45	2173.45	1.44	-0.348	0.000	0.127
45.00	-25.09	-3.40	0.00	-237.02	0.00	237.02	2641.32	1320.66	4141.32	2073.74	1.82	-0.394	0.000	0.124
47.34	-24.48	-3.35	0.00	-229.09	0.00	229.09	2617.54	1308.77	4049.05	2027.54	2.02	-0.416	0.000	0.122
50.00	-23.46	-3.29	0.00	-220.18	0.00	220.18	2590.07	1295.03	3944.54	1975.20	2.26	-0.442	0.000	0.121
52.67	-22.46	-3.23	0.00	-211.40	0.00	211.40	1908.61	954.30	2910.23	1457.28	2.52	-0.467	0.000	0.157
55.00	-21.93	-3.18	0.00	-203.88	0.00	203.88	1893.52	946.76	2847.57	1425.90	2.75	-0.490	0.000	0.155
60.00	-20.83	-3.08	0.00	-187.96	0.00	187.96	1860.12	930.06	2713.74	1358.89	3.29	-0.547	0.000	0.150
65.00	-19.75	-2.97	0.00	-172.57	0.00	172.57	1825.33	912.66	2580.95	1292.39	3.90	-0.604	0.000	0.144
70.00	-18.70	-2.86	0.00	-157.72	0.00	157.72	1789.14	894.57	2449.37	1226.50	4.56	-0.662	0.000	0.139
75.00	-17.68	-2.75	0.00	-143.42	0.00	143.42	1751.55	875.78	2319.19	1161.32	5.29	-0.720	0.000	0.134
80.00	-16.70	-2.64	0.00	-129.67	0.00	129.67	1712.57	856.29	2190.61	1096.93	6.07	-0.777	0.000	0.128
85.00	-15.74	-2.53	0.00	-116.46	0.00	116.46	1672.20	836.10	2063.81	1033.44	6.92	-0.835	0.000	0.122
90.00	-14.81	-2.42	0.00	-103.81	0.00	103.81	1630.42	815.21	1938.98	970.93	7.82	-0.893	0.000	0.116
95.00	-13.91	-2.31	0.00	-91.71	0.00	91.71	1587.26	793.63	1816.30	909.50	8.79	-0.950	0.000	0.110
95.96	-13.74	-2.29	0.00	-89.49	0.00	89.49	1578.78	789.39	1792.93	897.80	8.98	-0.961	0.000	0.108
100.00	-12.76	-2.19	0.00	-80.25	0.00	80.25	1542.69	771.35	1695.98	849.25	9.81	-1.007	0.000	0.103
100.05	-12.75	-2.19	0.00	-80.15	0.00	80.15	1060.56	530.28	1187.41	594.59	9.82	-1.008	0.000	0.147
105.00	-12.02	-2.09	0.00	-69.28	0.00	69.28	1035.33	517.66	1113.06	557.36	10.90	-1.062	0.000	0.136
110.00	-11.30	-1.98	0.00	-58.83	0.00	58.83	1008.46	504.23	1038.86	520.20	12.05	-1.130	0.000	0.124
115.00	-10.61	-1.88	0.00	-48.91	0.00	48.91	980.21	490.10	965.69	483.57	13.27	-1.195	0.000	0.112
120.00	-9.95	-1.78	0.00	-39.52	0.00	39.52	950.55	475.28	893.76	447.54	14.55	-1.256	0.000	0.099
125.00	-9.32	-1.67	0.00	-30.63	0.00	30.63	919.50	459.75	823.24	412.23	15.90	-1.311	0.000	0.084
130.00	-8.71	-1.57	0.00	-22.26	0.00	22.26	887.06	443.53	754.32	377.72	17.30	-1.359	0.000	0.069
135.00	-8.13	-1.47	0.00	-14.40	0.00	14.40	853.21	426.61	687.20	344.11	18.74	-1.398	0.000	0.051
140.00	-7.58	-1.37	0.00	-7.04	0.00	7.04	817.98	408.99	622.06	311.49	20.22	-1.425	0.000	0.032
145.00	-0.29	-0.06	0.00	-0.17	0.00	0.17	772.13	386.06	552.49	276.66	21.72	-1.436	0.000	0.001
148.00	0.00	-0.05	0.00	0.00	0.00	0.00	743.33	371.67	511.84	256.30	22.62	-1.436	0.000	0.000

Wind Loading - Shaft

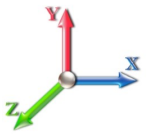
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	6.129	6.74	204.96	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	200.35	0.650	0.000	5.00	20.185	13.12	88.4	0.0	799.8
10.00		1.00	0.70	6.129	6.74	195.74	0.650	0.000	5.00	19.726	12.82	86.4	0.0	781.5
15.00		1.00	0.70	6.129	6.74	191.13	0.650	0.000	5.00	19.266	12.52	84.4	0.0	763.2
20.00		1.00	0.70	6.129	6.74	186.52	0.650	0.000	5.00	18.807	12.22	82.4	0.0	744.8
25.00		1.00	0.70	6.129	6.74	181.91	0.650	0.000	5.00	18.348	11.93	80.4	0.0	726.5
30.00		1.00	0.70	6.134	6.75	177.37	0.650	0.000	5.00	17.889	11.63	78.5	0.0	708.2
35.00		1.00	0.73	6.410	7.05	176.61	0.650	0.000	5.00	17.430	11.33	79.9	0.0	689.9
40.00		1.00	0.76	6.659	7.33	175.20	0.650	0.000	5.00	16.970	11.03	80.8	0.0	671.6
45.00		1.00	0.79	6.887	7.58	173.29	0.650	0.000	5.00	16.511	10.73	81.3	0.0	653.3
47.34	Bot - Section 2	1.00	0.80	6.988	7.69	172.24	0.650	0.000	2.34	7.559	4.91	37.8	0.0	299.0
50.00		1.00	0.81	7.098	7.81	170.95	0.650	0.000	2.66	8.606	5.59	43.7	0.0	608.7
52.67	Top - Section 1	1.00	0.82	7.204	7.92	169.56	0.650	0.000	2.67	8.497	5.52	43.8	0.0	600.9
55.00		1.00	0.83	7.294	8.02	170.59	0.650	0.000	2.33	7.308	4.75	38.1	0.0	231.6
60.00		1.00	0.85	7.477	8.22	167.63	0.650	0.000	5.00	15.345	9.97	82.0	0.0	486.3
65.00		1.00	0.87	7.650	8.42	164.40	0.650	0.000	5.00	14.886	9.68	81.4	0.0	471.6
70.00		1.00	0.89	7.814	8.60	160.95	0.650	0.000	5.00	14.427	9.38	80.6	0.0	457.0
75.00		1.00	0.91	7.969	8.77	157.29	0.650	0.000	5.00	13.968	9.08	79.6	0.0	442.3
80.00		1.00	0.93	8.118	8.93	153.44	0.650	0.000	5.00	13.508	8.78	78.4	0.0	427.7
85.00		1.00	0.94	8.260	9.09	149.42	0.650	0.000	5.00	13.049	8.48	77.1	0.0	413.0
90.00		1.00	0.96	8.396	9.24	145.25	0.650	0.000	5.00	12.590	8.18	75.6	0.0	398.3
95.00		1.00	0.97	8.526	9.38	140.94	0.650	0.000	5.00	12.131	7.89	74.0	0.0	383.7
95.96	Bot - Section 3	1.00	0.98	8.551	9.41	140.09	0.650	0.000	0.96	2.284	1.48	14.0	0.0	72.2
100.00		1.00	0.99	8.652	9.52	136.50	0.650	0.000	4.04	9.515	6.18	58.9	0.0	523.0
100.05	Top - Section 2	1.00	0.99	8.653	9.52	136.45	0.650	0.000	0.05	0.108	0.07	0.7	0.0	5.9
105.00		1.00	1.00	8.774	9.65	133.84	0.650	0.000	4.95	11.263	7.32	70.7	0.0	267.7
110.00		1.00	1.02	8.891	9.78	129.18	0.650	0.000	5.00	10.912	7.09	69.4	0.0	259.2
115.00		1.00	1.03	9.005	9.91	124.41	0.650	0.000	5.00	10.453	6.79	67.3	0.0	248.2
120.00		1.00	1.04	9.115	10.03	119.55	0.650	0.000	5.00	9.994	6.50	65.1	0.0	237.3
125.00		1.00	1.05	9.222	10.14	114.59	0.650	0.000	5.00	9.534	6.20	62.9	0.0	226.3
130.00		1.00	1.07	9.326	10.26	109.55	0.650	0.000	5.00	9.075	5.90	60.5	0.0	215.3
135.00		1.00	1.08	9.427	10.37	104.43	0.650	0.000	5.00	8.616	5.60	58.1	0.0	204.3
140.00		1.00	1.09	9.525	10.48	99.22	0.650	0.000	5.00	8.157	5.30	55.6	0.0	193.3
145.00	Appurtenance(s)	1.00	1.10	9.621	10.58	93.95	0.650	0.000	5.00	7.698	5.00	53.0	0.0	182.3
148.00		1.00	1.11	9.678	10.65	90.74	0.650	0.000	3.00	4.398	2.86	30.4	0.0	104.1
								Totals:	**148.00**			**2,200.9**		**14,498.0**

Discrete Appurtenance Forces

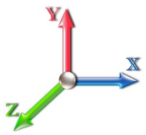
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	145.00	ETCR-654L12H6	3	9.621	10.583	0.81	0.90	38.18	297.00	0.000	0.000	404.02	0.00	0.00
2	145.00	1900MHz RRH	3	9.621	10.583	0.81	0.90	9.23	132.00	0.000	0.000	97.73	0.00	0.00
3	145.00	800 MHz RRH	6	9.621	10.583	0.81	0.90	12.10	318.00	0.000	0.000	128.07	0.00	0.00
4	145.00	TD-RRH8x20-25	3	9.621	10.583	0.81	0.90	9.84	210.00	0.000	0.000	104.16	0.00	0.00
5	145.00	T-Arm	3	9.621	10.583	0.68	0.75	20.25	1200.00	0.000	0.000	214.31	0.00	0.00
6	145.00	Ring Mount	1	9.621	10.583	1.00	1.00	5.00	350.00	0.000	0.000	52.92	0.00	0.00
							Totals:		**2,507.00**			**1,001.21**		

Total Applied Force Summary

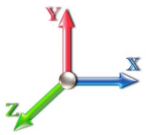
Structure:	CT46145-A-SBA		**Code:**	EIA/TIA-222-G	11/9/2017
Site Name:	Eastford-desiato/Ssusa		**Exposure:**	B	
Height:	148.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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		88.45	812.99	0.00	0.00
10.00		86.44	794.68	0.00	0.00
15.00		84.42	776.36	0.00	0.00
20.00		82.41	758.05	0.00	0.00
25.00		80.40	739.73	0.00	0.00
30.00		78.45	721.42	0.00	0.00
35.00		79.88	703.10	0.00	0.00
40.00		80.80	684.79	0.00	0.00
45.00		81.31	666.47	0.00	0.00
47.34		37.76	305.19	0.00	0.00
50.00		43.67	615.77	0.00	0.00
52.67		43.76	607.92	0.00	0.00
55.00		38.11	237.75	0.00	0.00
60.00		82.04	499.46	0.00	0.00
65.00		81.42	484.81	0.00	0.00
70.00		80.60	470.15	0.00	0.00
75.00		79.59	455.50	0.00	0.00
80.00		78.41	440.85	0.00	0.00
85.00		77.06	426.20	0.00	0.00
90.00		75.58	411.55	0.00	0.00
95.00		73.95	396.90	0.00	0.00
95.96		13.97	74.79	0.00	0.00
100.00		58.86	533.64	0.00	0.00
100.05		0.67	6.07	0.00	0.00
105.00		70.65	280.73	0.00	0.00
110.00		69.37	272.44	0.00	0.00
115.00		67.30	261.45	0.00	0.00
120.00		65.13	250.46	0.00	0.00
125.00		62.87	239.47	0.00	0.00
130.00		60.51	228.48	0.00	0.00
135.00		58.07	217.49	0.00	0.00
140.00		55.55	206.50	0.00	0.00
145.00	(19) attachments	1054.16	2702.51	0.00	0.00
148.00		30.43	104.11	0.00	0.00
	Totals:	**3,202.09**	**17,387.78**	**0.00**	**0.00**

Calculated Forces

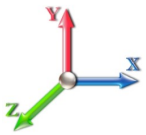
Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	-17.39	-3.21	0.00	-309.57	0.00	309.57	3039.86	1519.93	5995.78	3002.34	0.00	0.000	0.000	0.109
5.00	-16.57	-3.13	0.00	-293.54	0.00	293.54	3001.16	1500.58	5784.56	2896.58	0.02	-0.031	0.000	0.107
10.00	-15.78	-3.05	0.00	-277.90	0.00	277.90	2961.07	1480.53	5574.20	2791.24	0.07	-0.063	0.000	0.105
15.00	-15.00	-2.97	0.00	-262.66	0.00	262.66	2919.58	1459.79	5364.88	2686.43	0.15	-0.095	0.000	0.103
20.00	-14.24	-2.90	0.00	-247.81	0.00	247.81	2876.69	1438.34	5156.78	2582.22	0.27	-0.127	0.000	0.101
25.00	-13.50	-2.82	0.00	-233.33	0.00	233.33	2832.41	1416.20	4950.10	2478.73	0.42	-0.160	0.000	0.099
30.00	-12.77	-2.75	0.00	-219.23	0.00	219.23	2786.73	1393.36	4745.03	2376.04	0.60	-0.193	0.000	0.097
35.00	-12.07	-2.67	0.00	-205.49	0.00	205.49	2739.66	1369.83	4541.75	2274.25	0.82	-0.227	0.000	0.095
40.00	-11.38	-2.60	0.00	-192.12	0.00	192.12	2691.19	1345.59	4340.45	2173.45	1.08	-0.262	0.000	0.093
45.00	-10.72	-2.52	0.00	-179.14	0.00	179.14	2641.32	1320.66	4141.32	2073.74	1.37	-0.297	0.000	0.090
47.34	-10.41	-2.48	0.00	-173.27	0.00	173.27	2617.54	1308.77	4049.05	2027.54	1.52	-0.313	0.000	0.089
50.00	-9.79	-2.44	0.00	-166.66	0.00	166.66	2590.07	1295.03	3944.54	1975.20	1.70	-0.333	0.000	0.088
52.67	-9.19	-2.39	0.00	-160.16	0.00	160.16	1908.61	954.30	2910.23	1457.28	1.89	-0.352	0.000	0.115
55.00	-8.95	-2.36	0.00	-154.58	0.00	154.58	1893.52	946.76	2847.57	1425.90	2.07	-0.369	0.000	0.113
60.00	-8.45	-2.28	0.00	-142.80	0.00	142.80	1860.12	930.06	2713.74	1358.89	2.48	-0.412	0.000	0.110
65.00	-7.96	-2.20	0.00	-131.41	0.00	131.41	1825.33	912.66	2580.95	1292.39	2.93	-0.456	0.000	0.106
70.00	-7.49	-2.12	0.00	-120.42	0.00	120.42	1789.14	894.57	2449.37	1226.50	3.44	-0.500	0.000	0.102
75.00	-7.03	-2.04	0.00	-109.82	0.00	109.82	1751.55	875.78	2319.19	1161.32	3.98	-0.544	0.000	0.099
80.00	-6.59	-1.96	0.00	-99.61	0.00	99.61	1712.57	856.29	2190.61	1096.93	4.58	-0.588	0.000	0.095
85.00	-6.17	-1.89	0.00	-89.79	0.00	89.79	1672.20	836.10	2063.81	1033.44	5.22	-0.633	0.000	0.091
90.00	-5.75	-1.81	0.00	-80.36	0.00	80.36	1630.42	815.21	1938.98	970.93	5.90	-0.678	0.000	0.086
95.00	-5.36	-1.74	0.00	-71.30	0.00	71.30	1587.26	793.63	1816.30	909.50	6.64	-0.722	0.000	0.082
95.96	-5.28	-1.72	0.00	-69.63	0.00	69.63	1578.78	789.39	1792.93	897.80	6.78	-0.731	0.000	0.081
100.00	-4.75	-1.66	0.00	-62.67	0.00	62.67	1542.69	771.35	1695.98	849.25	7.42	-0.766	0.000	0.077
100.05	-4.74	-1.66	0.00	-62.60	0.00	62.60	1060.56	530.28	1187.41	594.59	7.43	-0.767	0.000	0.110
105.00	-4.46	-1.59	0.00	-54.38	0.00	54.38	1035.33	517.66	1113.06	557.36	8.24	-0.810	0.000	0.102
110.00	-4.19	-1.52	0.00	-46.44	0.00	46.44	1008.46	504.23	1038.86	520.20	9.12	-0.863	0.000	0.093
115.00	-3.93	-1.45	0.00	-38.84	0.00	38.84	980.21	490.10	965.69	483.57	10.05	-0.914	0.000	0.084
120.00	-3.68	-1.38	0.00	-31.59	0.00	31.59	950.55	475.28	893.76	447.54	11.04	-0.963	0.000	0.074
125.00	-3.44	-1.32	0.00	-24.66	0.00	24.66	919.50	459.75	823.24	412.23	12.07	-1.007	0.000	0.064
130.00	-3.21	-1.26	0.00	-18.06	0.00	18.06	887.06	443.53	754.32	377.72	13.15	-1.046	0.000	0.051
135.00	-2.99	-1.20	0.00	-11.77	0.00	11.77	853.21	426.61	687.20	344.11	14.26	-1.078	0.000	0.038
140.00	-2.79	-1.14	0.00	-5.79	0.00	5.79	817.98	408.99	622.06	311.49	15.40	-1.100	0.000	0.022
145.00	-0.10	-0.03	0.00	-0.10	0.00	0.10	772.13	386.06	552.49	276.66	16.56	-1.108	0.000	0.000
148.00	0.00	-0.03	0.00	0.00	0.00	0.00	743.33	371.67	511.84	256.30	17.25	-1.108	0.000	0.000

Final Analysis Summary

Structure:	CT46145-A-SBA	**Code:**	EIA/TIA-222-G	11/9/2017	
Site Name:	Eastford-desiato/Ssusa	**Exposure:**	B		
Height:	148.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

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	14.5	0.00	20.85	0.00	0.00	1409.95
0.9D + 1.6W 101 mph Wind	14.5	0.00	15.63	0.00	0.00	1398.77
1.2D + 1.0Di + 1.0Wi 50 mph Wind	4.3	0.00	37.91	0.00	0.00	411.95
1.0D + 1.0W 60 mph Wind	3.2	0.00	17.39	0.00	0.00	309.57

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	-10.73	-10.90	0.00	-730.69	0.00	-730.69	1908.61	954.30	2910.23	1457.28	52.67	0.507
0.9D + 1.6W 101 mph Wind	-7.98	-10.81	0.00	-722.25	0.00	-722.25	1908.61	954.30	2910.23	1457.28	52.67	0.500
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-22.46	-3.23	0.00	-211.40	0.00	-211.40	1908.61	954.30	2910.23	1457.28	52.67	0.157
1.0D + 1.0W 60 mph Wind	-9.19	-2.39	0.00	-160.16	0.00	-160.16	1908.61	954.30	2910.23	1457.28	52.67	0.115

Monopole Mat Foundation Design

			Date: 11/9/2017
Customer Name:	Sprint Nextel	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	148
Site Number:	CT46145-A-SBA	**Engineer Name:**	J. Chen
Engr. Number:	41967	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

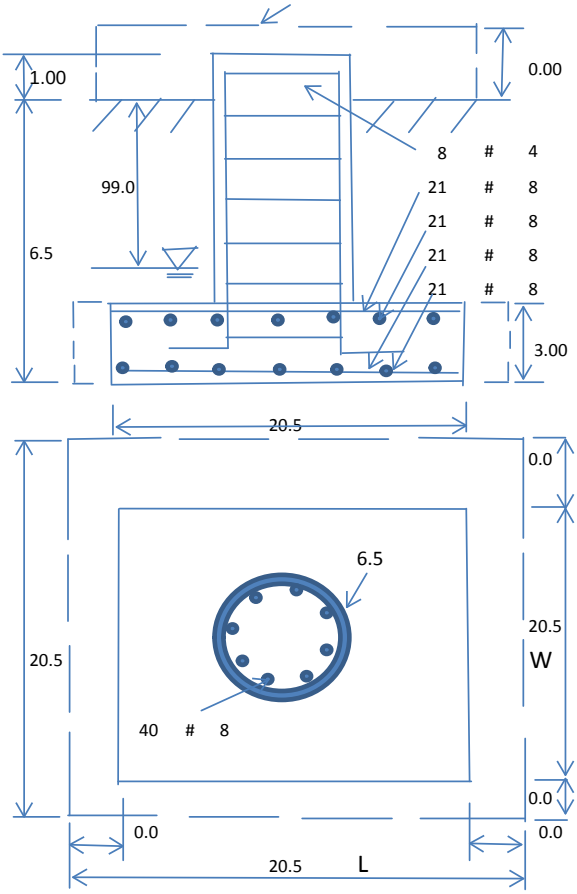
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	37.9	Shear Force (Kips):	14.5
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1409.9
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.5	Depth of Base BG (ft.):	6.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	20.5	Width of Pad (ft.):	20.5
Final Length of pad (ft)	20.5	Final width of pad (ft):	20.5
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	40	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	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):	21	Qty. of Rebar in Pad (W):	21	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	21	Qty. of Rebar in Pad (W):	21	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:		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.):	1354.73	Total Dry Soil Weight (Kips):	149.07
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	149.07	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1410.07	Total Dry Concrete Weight (Kips):	211.51
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	211.51	Total Vertical Load on Base (Kips):	398.49

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2035	<	Allowable Factored Soil Bearing (psf):	9000	0.23	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3714.9	>	Design Factored Momont (kips-ft):	1519	0.41	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.45	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		

(1) Concrete Pier:

					Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	4817.8	>	Design Factored Moment (Mu, Kips-Ft	1475.2	0.31	OK!
Calculated Shear Capacity (Kips):	517.4	>	Design Factored Shear (Kips):	14.5	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	1706.4	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	6294.2	>	Design Factored Axial Load (Pu Kips):	37.9	0.01	OK!
Moment & Axial Strength Combination:	0.31	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio is satisfied per ACI				

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	656.9	>	One-Way Factored Shear (L-D. Kips):	114.8	0.17	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	656.9	>	One-Way Factored Shear (W-D., Kips)	114.8	0.17	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	720.7	>	One-Way Factored Shear (C-C, Kips):	104.0	0.14	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0021	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0021		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2367.1	>	Moment at Bottom (L-Direct. K-Ft):	246.4	0.10	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2367.1	>	Moment at Bottom (W-Direct. K-Ft):	246.4	0.10	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3323.3	>	Moment at Bottom (C-C Dir. K-Ft):	348.5	0.10	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0021	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0021		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	2367.1	>	Moment at the top (L-Dir Kips-Ft):	94.8	0.04	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	2367.1	>	Moment at the top (W-Dir Kips-Ft):	94.8	0.04	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3323.3	>	Moment at the top (C-C Direc. K-Ft):	161.8	0.05	OK!

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.

Sprint®

SITE NAME: EASTFORD-DESIATO/SSUSA

SITE NUMBER: CT33XC613

AUGMENT ID: CT33XC613Q17.2

SITE ADDRESS: 97 CHAPLIN ROAD
EASTFORD, CT 06242

JURISDICTION: TOWN OF EASTFORD/ CT SITING COUNCIL

SITE TYPE: EXISTING 148' MONOPOLE

PROGRAM: DO MACRO UPGRADE EQUIPMENT DEPLOYMENT

PROJECT INFORMATION

SITE INFORMATION

LATTITUDE: (PER SBA RECORD)	41° 51' 51.80" N (41.86439°)
LONGITUDE: (PER SBA RECORD)	72° 05' 46.40" W (-72.09622°)
GROUND ELEVATION:	520'± AMSL (PER GOOGLE EARTH)
STRUCTURE HEIGHT:	148'± AGL (FROM SBA RECORD)
STRUCTURE TYPE:	MONOPOLE
ZONING JURISDICTION	TOWN OF EASTFORD/ CT SITING COUNCIL
ZONING DISTRICT/ OCCUPANCY:	N/A (CT SITING COUNCIL)
COUNTY:	WINDHAM

APPLICANT

SPRINT
1 INTERNATIONAL BLVD. SUITE 800
MAHWAH, NJ 07495

PROPERTY OWNER:

N/F DESIATO SAND AND GRAVEL
999 STAFFORD ROAD
STORRS, CT 06268

TOWER OWNER:

SBA 2012 TC ASSETS, LLC
8051 CONGRESS AVENUE
BOCA RATON, FL 33487
(561) 995-7670

SBA SITE ID:	CT46145-A
SBA SITE NAME:	EASTFORD-DESIATO/SSUSA

SBA CONTACT:

STEPHEN ROTH
(860) 539-4920
SRoth@sbasite.com

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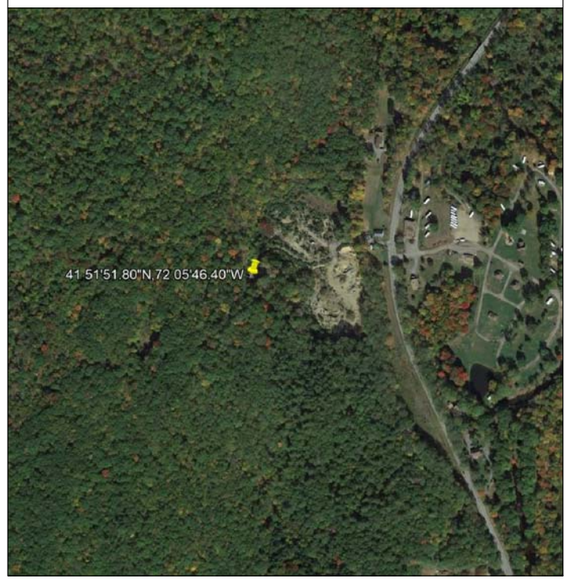
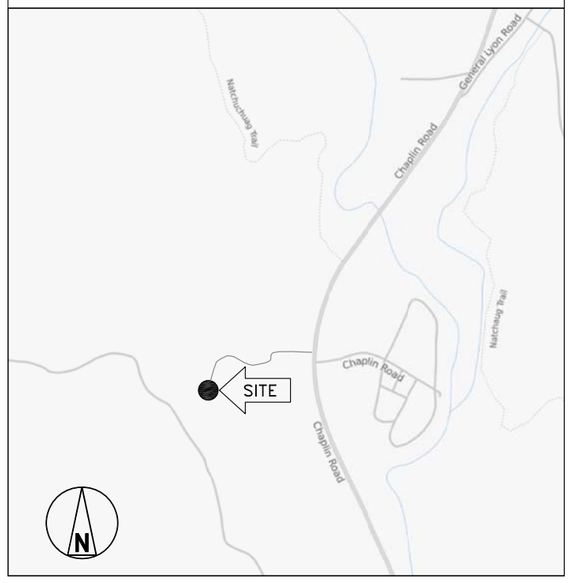
LOCATION MAP N.T.S.



AREA MAP N.T.S.



SCOPE OF WORK

1. REMOVE (3) EXISTING SPRINT ANTENNAS.
2. REMOVE AND REPLACE (3) EXISTING SPRINT ANTENNAS AND ANTENNA MOUNTING PIPE MASTS WITH (3) NEW SPRINT TRI-BAND ANTENNAS.
3. TRIM EXISTING SPRINT SECTOR MOUNTING RAIL AS REQUIRED.
4. INSTALL (1) COLLAR MOUNT WITH STANDOFFS AND PIPE MOUNTS FOR RRHS.
5. REMOVE AND RELOCATE (3) EXISTING SPRINT 1900 MHZ RRHS FROM GROUND LEVEL TO ANTENNA LEVEL.
6. INSTALL (6) NEW SPRINT 800 MHZ RRHS.
7. INSTALL (3) NEW SPRINT 2500 MHZ RRHS.
8. REMOVE EXISTING COAX CABLES.
9. INSTALL (4) HYBRID CABLES.

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

SHEET NO.	SHEET DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
SP-1	OUTLINE SPECIFICATIONS	1
SP-2	OUTLINE SPECIFICATIONS	1
SP-3	OUTLINE SPECIFICATIONS	1
A-1	COMPOUND PLAN	1
A-2	ELEVATION AND ANTENNA PLANS	1
A-3	TOWER EQUIPMENT DETAILS	1
S-1	ANTENNA AND RRH MOUNTING DETAILS	1
E-1	ELECTRICAL AND GROUNDING DETAILS	1
RF-1	RF DATA SHEET	1
RF-2	PLUMBING DIAGRAM AND RAN WIRING	1

CODE COMPLIANCE

1. 2016 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS.
2. 2014 NATIONAL ELECTRICAL CODE WITH AMENDMENTS
3. TIA-EIA-222-G

BASED ON INFORMATION PROVIDED BY SPRINT, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).

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.

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

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

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA
SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
TITLE SHEET

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

A. TOP HAT
B. HOW TO INSTALL A NEW CABINET
C. BASE BAND UNIT IN EXISTING UNIT
D. INSTALLATION OF BATTERIES
E. INSTALLATION OF HYBRID CABLE
F. INSTALLATION OF RRH'S
G. CABLING
H. TS–0200 REV 4 – ANTENNA LINE ACCEPTANCE STANDARDS
I. SPRINT CELL SITE ENGINEERING NOTICE – EN 2012–001, REV 1.
J. COMMISSIONING MOPS
K. SPRINT CELL SITE ENGINEERING NOTICE – EN–2013–002
L. SPRINT ENGINEERING LETTER – EL–0504
M. SPRINT ENGINEERING LETTER – EL–0568
N. SPRINT TECHNICAL SPECIFICATION – TS–0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

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

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. 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

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:

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.

CONTINUE SHEET SP-2

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

SBA
SBA COMMUNICATIONS CORP.
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Hadley, MA 01035 (413) 320–4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED
PROFESSIONAL ENGINEER
1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA
SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP–1

CONTINUED FROM SP-1:

SECTION 01 400 - SUBMITTALS, TESTS, AND INSPECTIONS

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.

C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

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 SPRINT TS–0200 CURRENT VERSION 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: 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.
1. 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.
2. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
3. 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)
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

E. 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.

F. 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 01 500 - PROJECT REPORTING

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. SHELTER 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.

SECTION 07 500 - ROOF CUTTING, PATCHING AND REPAIR

SUMMARY:
THIS SECTION SPECIFIES CUTTING AND PATCHING EXISTING ROOFING SYSTEMS WHERE CONDUIT OR CABLES EXIT THE BUILDING ONTO THE ROOF OR BUILDING–MOUNTED ANTENNAS, AND AS REQUIRED FOR WATERTIGHT PERFORMANCE. ROOFTOP ENTRY OPENINGS IN MEMBRANE ROOFTOPS SHALL BE CONSTRUCTED TO COMPLY WITH LANDLORD, ANY EXISTING WARRANTY, AND LOCAL JURISDICTIONAL STANDARDS.

1.4 SUBMITTALS:

A. PRE–CONSTRUCTION ROOF PHOTOS: COMPLETE A ROOF INSPECTION PRIOR TO THE INSTALLATION OF SPRINT EQUIPMENT ON ANY ROOFTOP BUILD. AT A MINIMUM INSPECT AND PHOTOGRAPH (MINIMUM 3 EA.) ALL AREAS IMPACTED BY THE ADDITION OF THE SPRINT EQUIPMENT.

B. PROVIDE SIMILAR PHOTOGRAPHS SHOWING ROOF CONDITIONS AFTER CONSTRUCTION (MINIMUM 3 EA.)

C. ROOF INSPECTION PHOTOGRAPHS SHOULD BE UPLOADED WITH CLOSEOUT PHOTOGRAPHS.

SECTION 09 900 - PAINTING

QUALITY ASSURANCE:

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR THREE YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. COMPLY WITH ALL ENVIRONMENTAL REGULATIONS FOR VOLATILE ORGANIC COMPOUNDS.

CONTINUE SHEET SP-3

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

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

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 (413) 320–4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED
PROFESSIONAL ENGINEER
1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA
SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP–2

CONTINUED FROM SP-2:

MATERIALS:

A. MANUFACTURERS: BENJAMIN MOORE, ICI DEVOE COATINGS, PPG, SHERWIN WILLIAMS OR APPROVED EQUAL. PROVIDE PREMIUM GRADE, PROFESSIONAL-QUALITY PRODUCTS FOR COATING SYSTEMS.

PAINT SCHEDULE:

A. EXTERIOR ANTENNAE AND ANTENNA MOUNTING HARDWARE: ONE COAT OF PRIMER AND TWO FINISH COATS. PAINT FOR ANTENNAE SHALL BE NON-METALLIC BASED AND CONTAIN NO METALLIC PARTICLES. PROVIDE COLORS AND PATTERNS AS REQUIRED TO MASK APPEARANCE OF ANTENNAE ON ADJACENT BUILDING SURFACES AND AS ACCEPTABLE TO THE OWNER. REFER TO ANTENNA MANUFACTURER'S INSTRUCTIONS WHENEVER POSSIBLE.

B. ROOF TOP CONSTRUCTION: TOUCH UP – PREPARE SURFACES TO BE REPAIRED. FOLLOW INDUSTRY STANDARDS AND REQUIREMENTS OF OWNER TO MATCH EXISTING COATING AND FINISH.

PAINTING APPLICATION:

1. INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
2. COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
3. MATCH APPROVED MOCK-UPS FOR COLOR, TEXTURE, AND PATTERN. RE-COAT OR REMOVE AND REPLACE WORK WHICH DOES NOT MATCH OR SHOWS LOSS OF ADHESION.
4. CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

1. GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
2. FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. ALL METAL COMPONENTS SHALL BE HANDLED WITH CARE TO PREVENT DAMAGE TO THE COMPONENTS, THEIR PRESERVATIVE TREATMENT, OR THEIR PROTECTIVE COATINGS.

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

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

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

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

JUMPERS AND CONNECTORS:
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRH'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRH'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE. DO NOT USE SUPERFLEX OUTDOORS. JUMPERS SHALL BE FACTORY FABRICATED IN APPROPRIATE LENGTHS WITH A MAXIMUM OF 4 FEET EXCESS PER JUMPER AND HAVE CONNECTORS AT EACH END, MANUFACTURED BY SUPPLIER. IF JUMPERS ARE FIELD FABRICATED, FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION OF CONNECTORS

REMOTE ELECTRICAL TILT (RET) CABLES:

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

ANTENNA INSTALLATION:
THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS.

A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.

B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

HYBRID CABLES INSTALLATION:

A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.

C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.
2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBTS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
   a. FIBER: SUPPORT FIBER BUNDLES USING ½" VELCRO STRAPS OF THE REQUIRED LENGTH @ 18" OC. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
   b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
4. CABLE INSTALLATION:
   a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
   b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
   c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURES RECOMMENDED MAXIMUM BEND RADIUS.
5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED PER SPRINT TS 0200 CURRENT VERSION.
7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE-EN 2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.

1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 – INSTALLATION OF MULTIMODAL BASE STATIONS (MMBTS) AND RELATED EQUIPMENT

SUMMARY:

A. THIS SECTION SPECIFIES MMBTS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

DC CIRCUIT BREAKER LABELING

A. LABEL CIRCUIT BREAKERS ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.

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

SUMMARY:

A. THIS SECTION SPECIFIES MMBTS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

SUPPORTING DEVICES:

A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
1. ALLIED TUBE AND CONDUIT
2. B-LINE SYSTEM
3. UNISTRUT DIVERSIFIED PRODUCTS
4. THOMAS & BETTS

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

SUPPORTING DEVICES:

A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.

B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.

C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:

D. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.

E. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

ELECTRICAL IDENTIFICATION:

A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.

B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

CONDUIT:

A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR ENCASED RUNS IN CONCRETE. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED – SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.

B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.

C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.

D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.

E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6-FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRE BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.

F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

HUBS AND BOXES:

A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKNUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.

B. CABLE TERMINATION FITTINGS FOR CONDUIT
1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL.
2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO – CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.

C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.

D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKETED COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.

E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

SUPPLEMENTAL GROUNDING SYSTEM

A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS AS INDICATED.

B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPADES WITH NO OX.

C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

EXISTING STRUCTURE:

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

CONDUIT AND CONDUCTOR INSTALLATION:

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

B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

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1 INTERNATIONAL BLVD, SUITE 800
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WESTBOROUGH, MA 01581 TEL: (508) 251-0720

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

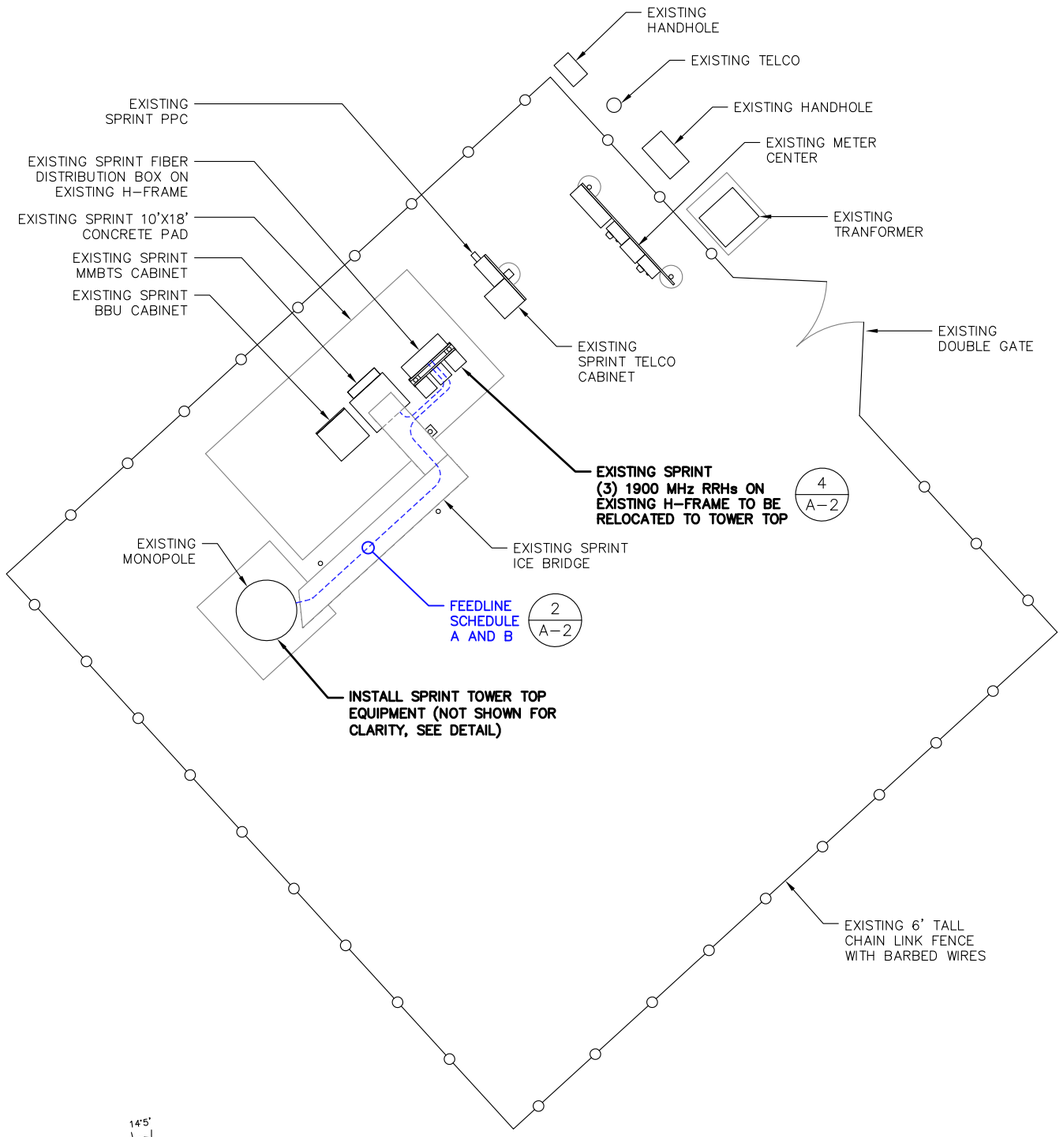
REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA

SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-3



COMPOUND PLAN

SCALE: 1"=10' (11"x17")
1"=5' (22"x34")

1 / A-1

10 5 0 10

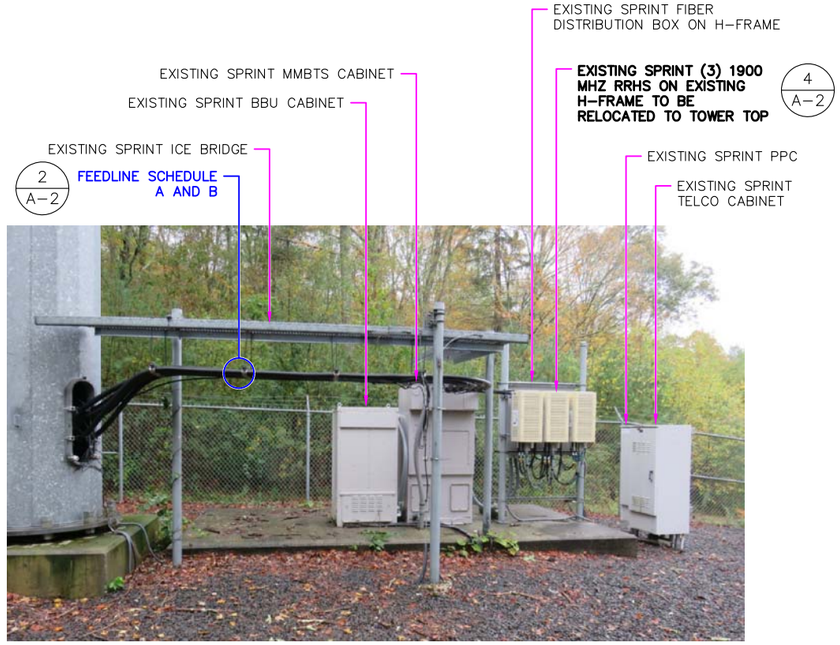


IMAGE SOURCE: PROTERRA 10/8/2017
(VIEW FROM SOUTHEAST)

IMAGE SOURCE: PROTERRA 10/8/2017
(VIEW FROM NORTHEAST)

EQUIPMENT PLAN PHOTO DETAIL

SCALE: N.T.S.

2 / A-1

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1 INTERNATIONAL BLVD, SUITE 800
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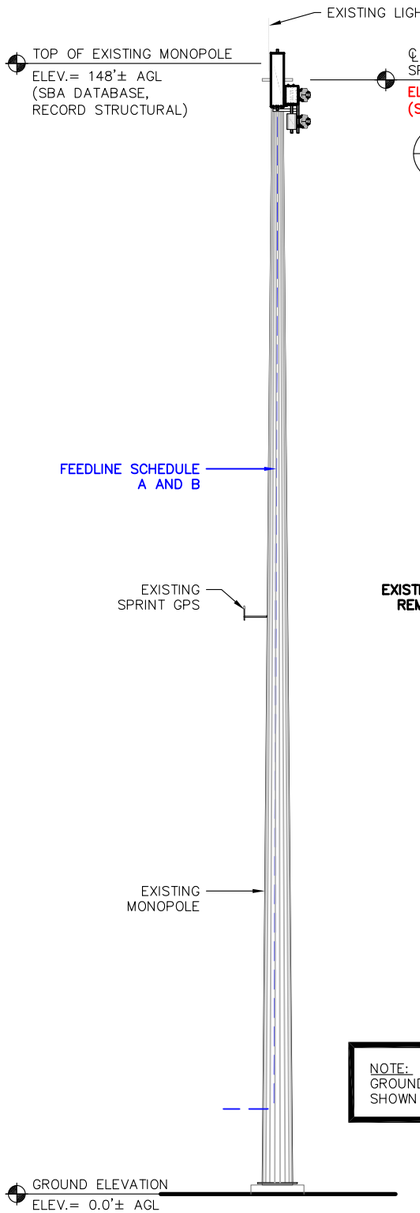
SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



ELEVATION

1 / A-2

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

20 10 0 20

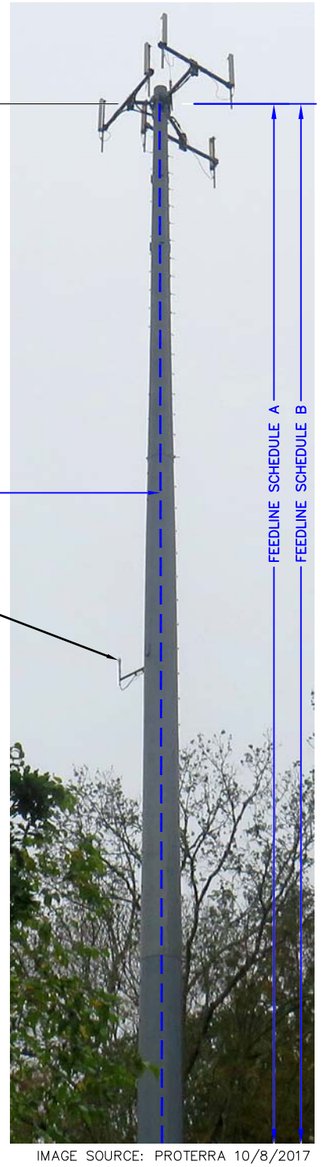


IMAGE SOURCE: PROTERRA 10/8/2017

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (6) 1⅝" COAX TO 145' RAD EXISTING TO BE REMOVED: (1) ½" GPS CABLE TO 75'±	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 145' RAD;	UP INSIDE MONOPOLE TO RAD

NOTE:
EXISTING SPRINT EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER

TOWER ELEVATION PHOTO DETAIL

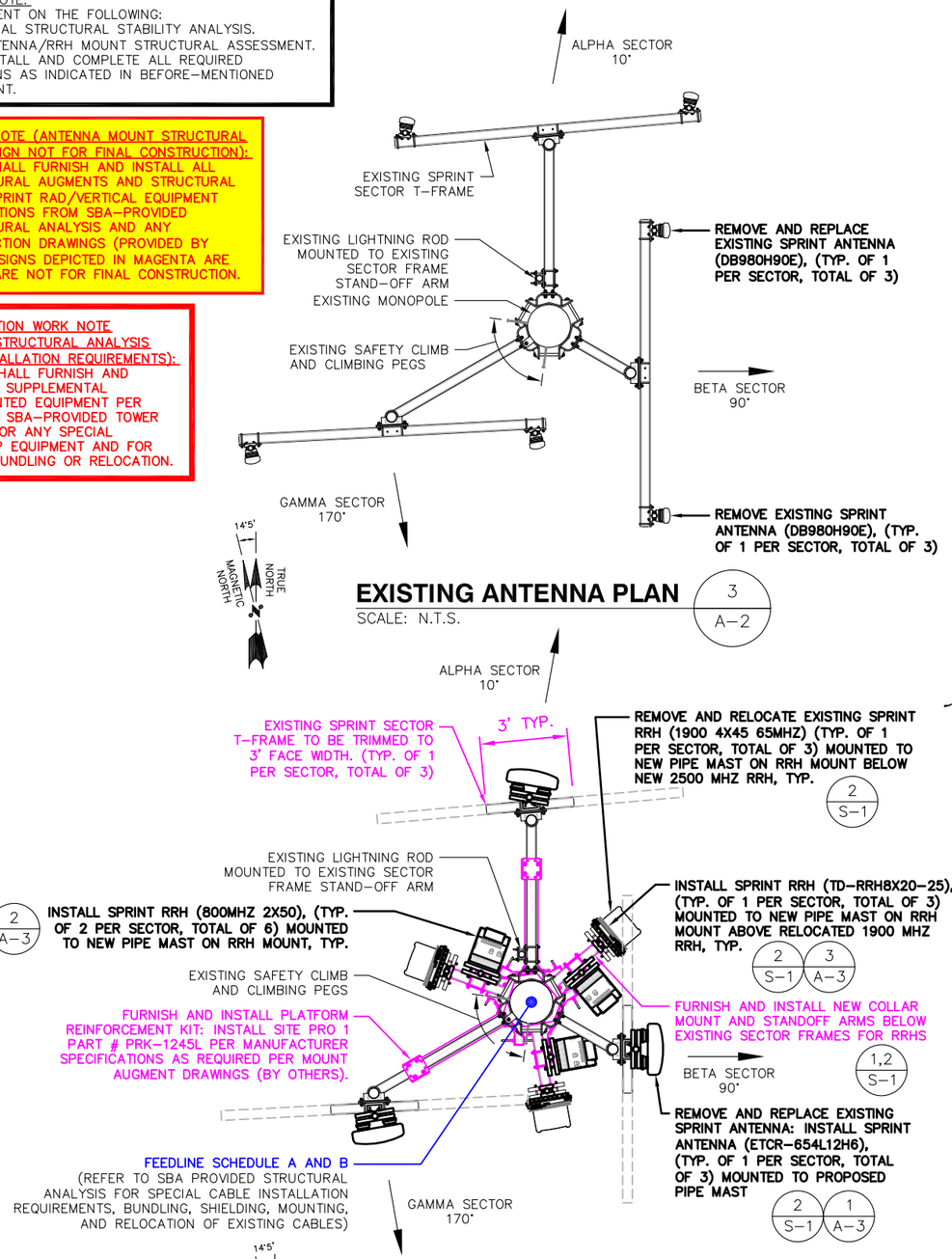
2 / A-2

SCALE: N.T.S.

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 (ANTENNA MOUNT STRUCTURAL AUGMENT SCHEMATIC DESIGN NOT FOR FINAL CONSTRUCTION):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND STRUCTURAL MODIFICATIONS AT THE SPRINT RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.

SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.



EXISTING ANTENNA PLAN

3 / A-2

SCALE: N.T.S.

PROPOSED ANTENNA PLAN

4 / A-2

SCALE: N.T.S.

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

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1 INTERNATIONAL BLVD, SUITE 800
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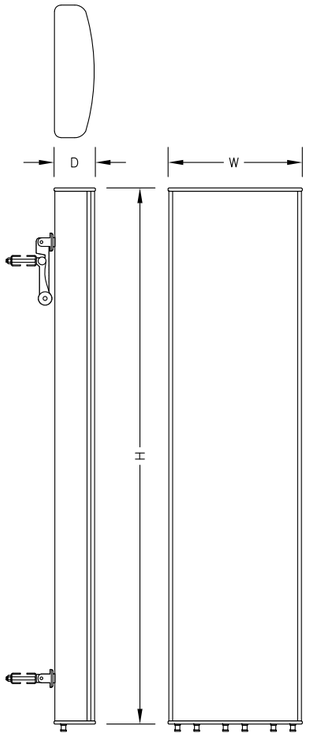
SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

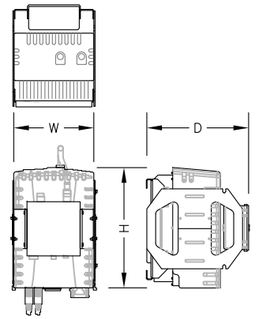
SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2



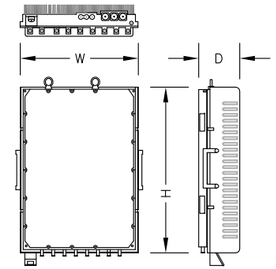
ANTENNA SPECIFICATIONS	
MANUF.	KMW
MODEL #	ETCR-654L12H6
HEIGHT	84.9"
WIDTH	21.0"
DEPTH	6.3"
WEIGHT	84.9± LBS.

ANTENNA DETAIL 1 / A-3
SCALE: N.T.S.



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

800 MHz RRH DETAIL 2 / A-3
SCALE: N.T.S.



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

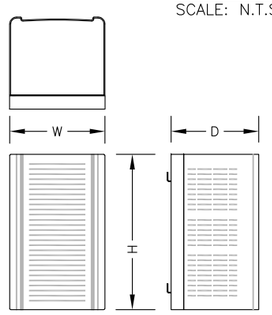
2.5 GHz RRH DETAIL 3 / A-3
SCALE: N.T.S.

MAJOR RF EQUIPMENT LIST

(GC SHALL FURNISH AND INSTALL ALL OTHER MATERIALS AND EQUIPMENT NOT SUPPLIED BY SPRINT)

DESCRIPTION	QUANTITY	UNITS	MAKE/MODEL/MATERIAL	PROVIDED BY
ANTENNA	3	EA	KMW ETCR-654L12H6	SPRINT
2500 RRH	3	EA	NOKIA (ALU) TD-RRH8x20-25	SPRINT
RELOCATE EXISTING 1900 RRH	3	EA	NOKIA (ALU) 1900 4x45 65MHZ	EXISTING TO BE RELOCATED
800 RRH	6	EA	NOKIA (ALU) 800MHz 2x50W	SPRINT
FIBER	4 @ 220'± FROM FIBER CABINET	LINEAR FEET LISTED [INCLUDES (2) 10' COILS]	1-1/4" HYBRIFLEX	SPRINT

SPRINT-PROVIDED EQUIPMENT SCHEDULE 4 / A-3
SCALE: N.T.S.



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

EXISTING 1900 MHz RRH DETAIL 5 / A-3
SCALE: N.T.S.

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1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

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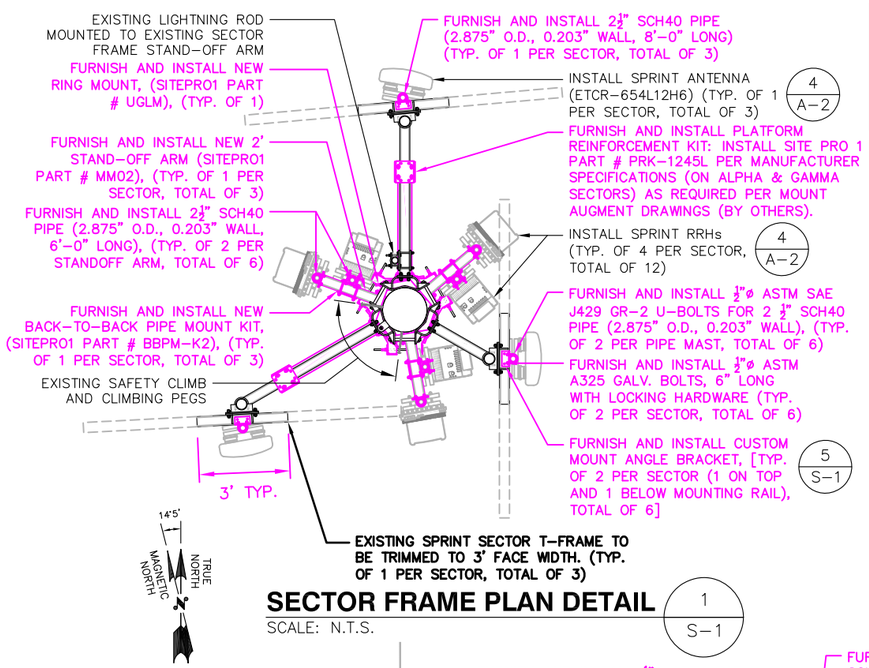
SITE NAME:
EASTFORD-DESIATO/SSUSA

SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
TOWER EQUIPMENT DETAILS

SHEET NUMBER
A-3



SECTOR FRAME PLAN DETAIL

1 S-1

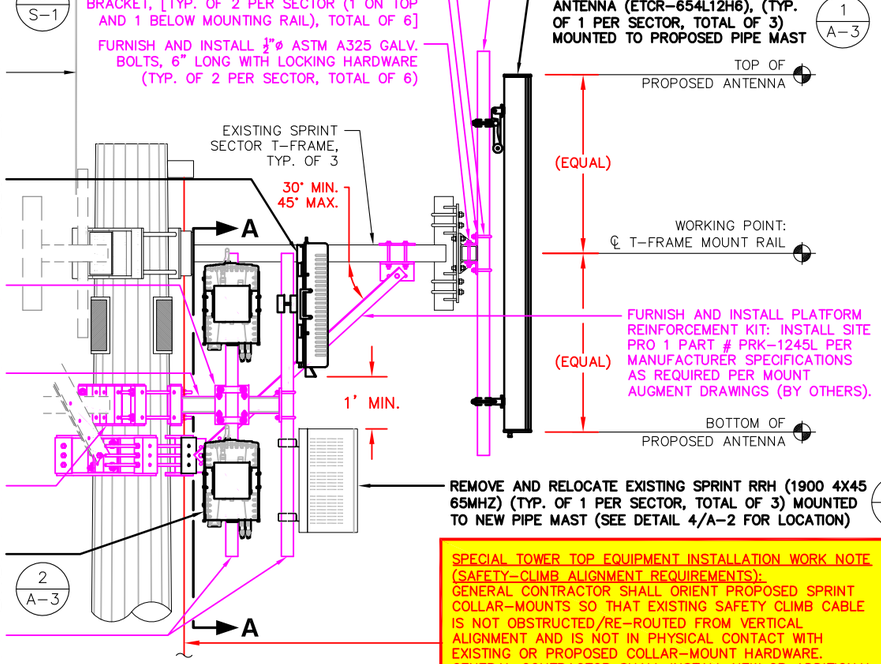
SCALE: N.T.S.

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 (ANTENNA MOUNT STRUCTURAL AUGMENT SCHEMATIC DESIGN NOT FOR FINAL CONSTRUCTION):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND STRUCTURAL MODIFICATIONS AT THE SPRINT RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.

SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION



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.

ANTENNA AND RRH MOUNTING DETAIL

2 S-1

SCALE: N.T.S.

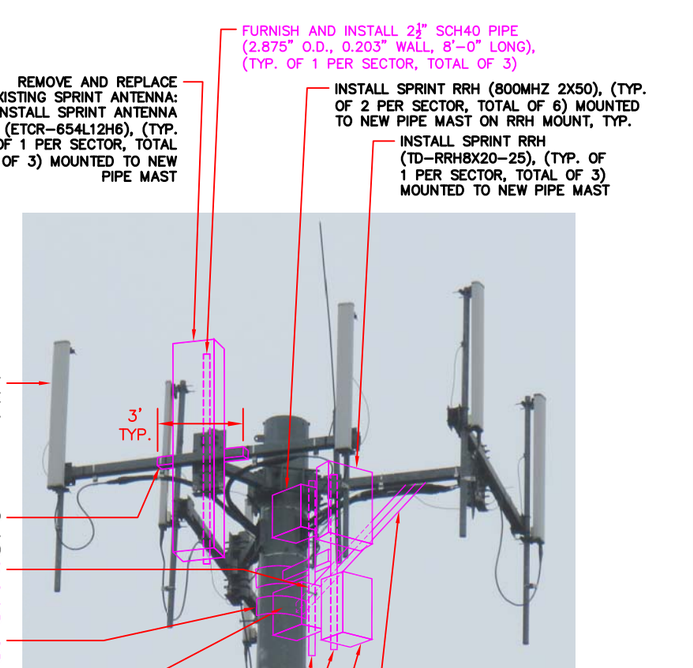
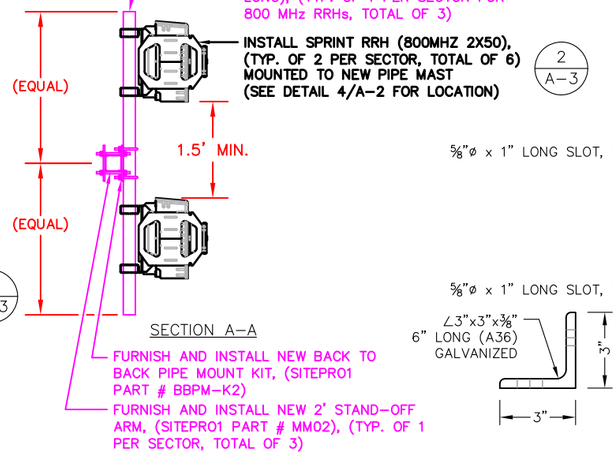


IMAGE SOURCE: PROTERRA 10/8/2017

ANTENNA AND RRH MOUNT PHOTO DETAIL

3 S-1

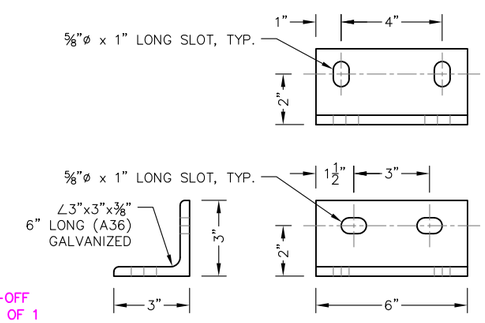
SCALE: N.T.S.



PROPOSED 800 MHZ RRH MOUNTING ELEVATION

4 S-1

SCALE: N.T.S.



ANTENNA MOUNT BRACKET DETAIL

5 S-1

SCALE: N.T.S.

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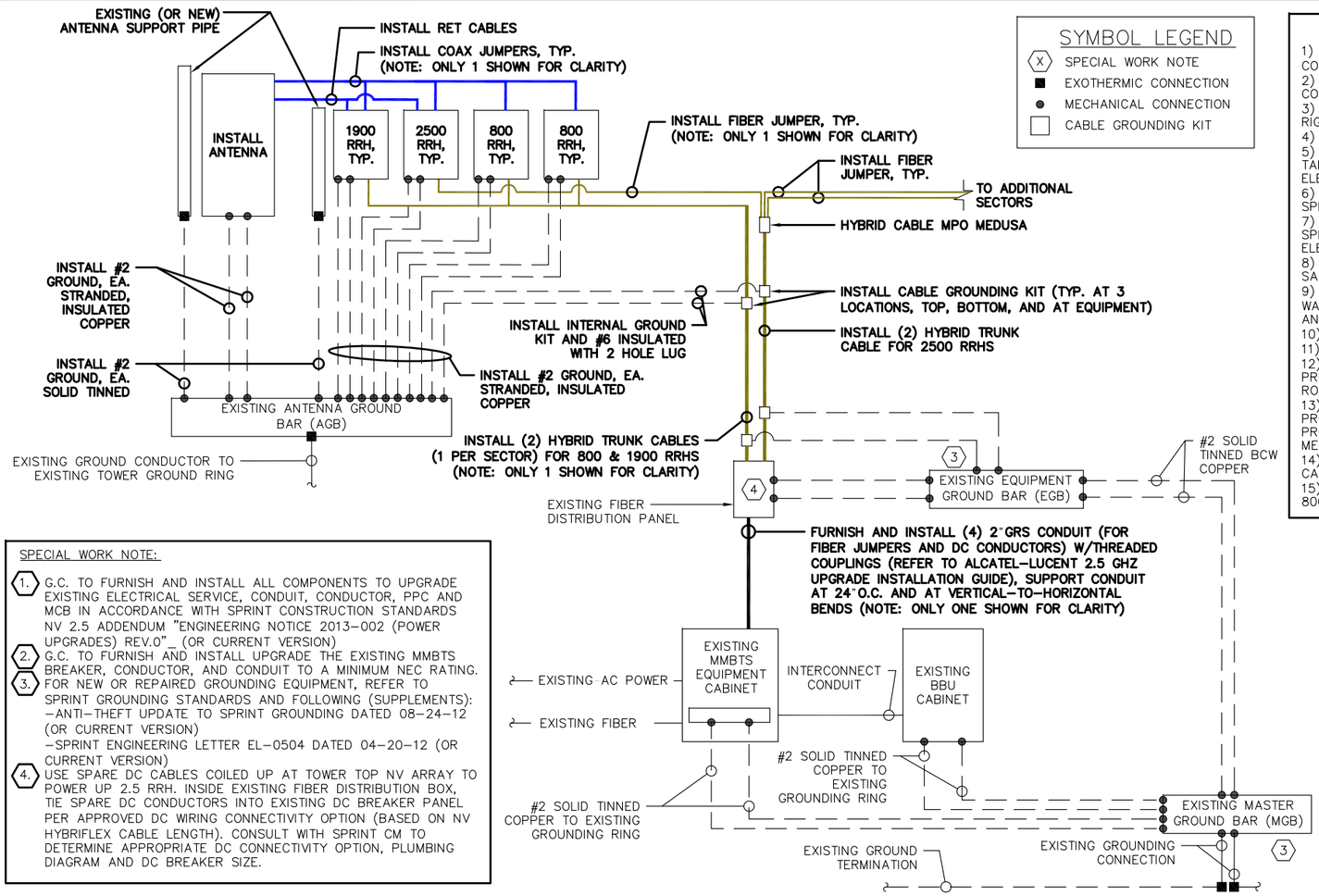
EASTFORD, CT 06242

SHEET TITLE
ANTENNA AND RRH MOUNTING DETAILS

SHEET NUMBER
S-1



SYMBOL LEGEND

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

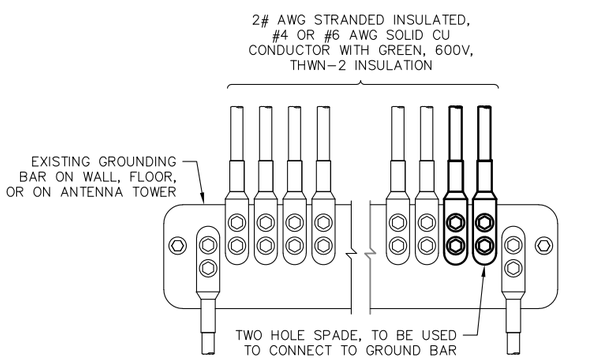
SPECIAL WORK NOTE:

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.

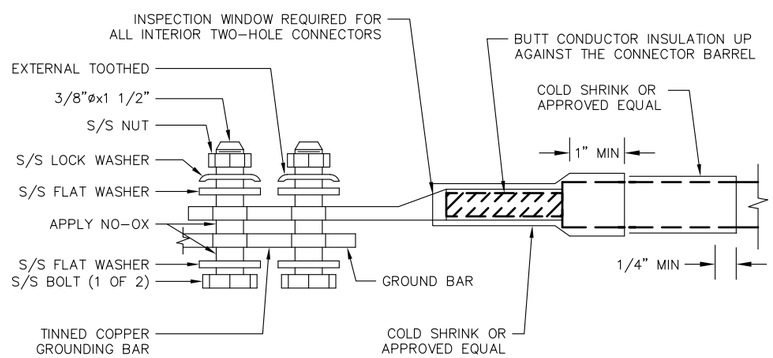


1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

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)
    -SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)

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4 Bay Road, Building A
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Hadley, MA 01035 (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
FOR SCHEMATIC ONLY
1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA

SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
ELECTRICAL AND GROUNDING DETAILS

SHEET NUMBER
E-1

SprintVision

RF Design Sheet

Site Identification	
Cascade	CT33XC613
SMS Schedule ID	12323310
SMS Schedule Name	DO Macro Upgrade
PID	DOKU_CT33XC613
RRU OEM	Alcatel Lucent
Switch OEM	ALU
RFDS Issue Date	
RFDS Revision Date	2017-03-13 00:00:00.0
RFDS Revision	1

Filter Analysis Complete	YES
RFDS - Issue Date	
Design Status	Complete
Border Analysis Complete	YES
Project Description	DO Macro Upgrade - Add 800 MHz (3G + 4G), 1900 MHz (4

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	
1900 LTE	
1900 EVDO	
1900 Voice	
800 LTE	
800 Voice	

Location Details	
Latitude	41.8644
Longitude	-72.09623
Market	Northern Connecticut
Region	Northeast
City	Eastford
State	CT
Zip Code	CT/06242
County	Windham

2500MHz	3
1900MHz	3
800MHz	3

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	KMW	KMW	KMW	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	10	90	170	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)	147	147	147	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	ETCR-654L12H6	ETCR-654L12H6	ETCR-654L12H6			
Weight (lbs)	85	85	85	N/A	N/A	N/A
Dimensions	84.9 x 21 x 6.3	84.9 x 21 x 6.3	84.9 x 21 x 6.3	N/A	N/A	N/A
Manufacturer	KMW	KMW	KMW	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qtyl	N/A 0	N/A 0	N/A 0	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	10	90	170	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)	147	147	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

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	KMW	KMW	KMW	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	10	90	170	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)	147	147	147	N/A	N/A	N/A
Antenna 1 Electrical DT	5	5	5	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

NOTE: RFDS PROVIDED BY SPRINT DATED 03/13/2017. EXCERPTS TAKEN DEPICT RELEVANT RF DESIGN INFORMATION.
A&E VENDOR SCOPE OF WORK LIMITED TO DESIGN OF MECHANICAL/STRUCUTRAL EQUIPMENT ATTACHMENTS.

RF DATA SHEET

SCALE: N.T.S.

1
RF-1

SPRINT CONSTRUCTION STANDARDS:

GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS.

- CONSTRUCTION STANDARDS: INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES – CURRENT VERSION, INCLUDING EXHIBITS A–M.
- CONSTRUCTION SPECIFICATIONS: CONSTRUCTION STANDARDS EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES (CURRENT VERSION).
- GROUNDING STANDARDS: EXTERIOR GROUNDING SYSTEM DESIGN. GROUNDING STANDARDS (SUPPLEMENT): ANTI–THEFT UPDATE TO SPRINT GROUNDING 082412 AND SPRINT ENGINEERING LETTER EL–0504 DATED 04.20.12.
- WEATHER PROOFING STANDARDS: EXCERPT FROM CONSTRUCTION STANDARDS EXHIBIT A, SECTION 3.6 WEATHERPROOFING CONNECTORS AND GROUND KITS.
- COLOR CODING: SPRINT NEXTEL ANT AND LINE COLOR CODING PER SPRINT TS–0200 CURRENT VERSION.
- GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT IN RFDS, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING SPRINT–PROVIDED CONTACT INFORMATION FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE ANTENNA AT SAME CL HEIGHT AS PLAN AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS–BUILT DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
- AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5G. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
- GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION.
- GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREES. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS–BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS–BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL.
  HTTP://WWW.3ZTELECOM.COM/ANTENNA–ALIGNMENT–TOOL/.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

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	N/A	Hybriflex	N/A	N/A	N/A	N/A
Weight (Lbs.)	N/A	1	N/A	N/A	N/A	N/A
Dimensions (In.)	N/A	1.54	N/A	N/A	N/A	N/A
Manufacturer	N/A	ALU	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	16 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

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1 INTERNATIONAL BLVD, SUITE 800
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4 Bay Road, Building A
Suite 200
Hadley, MA 01035 (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1/29/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA

SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

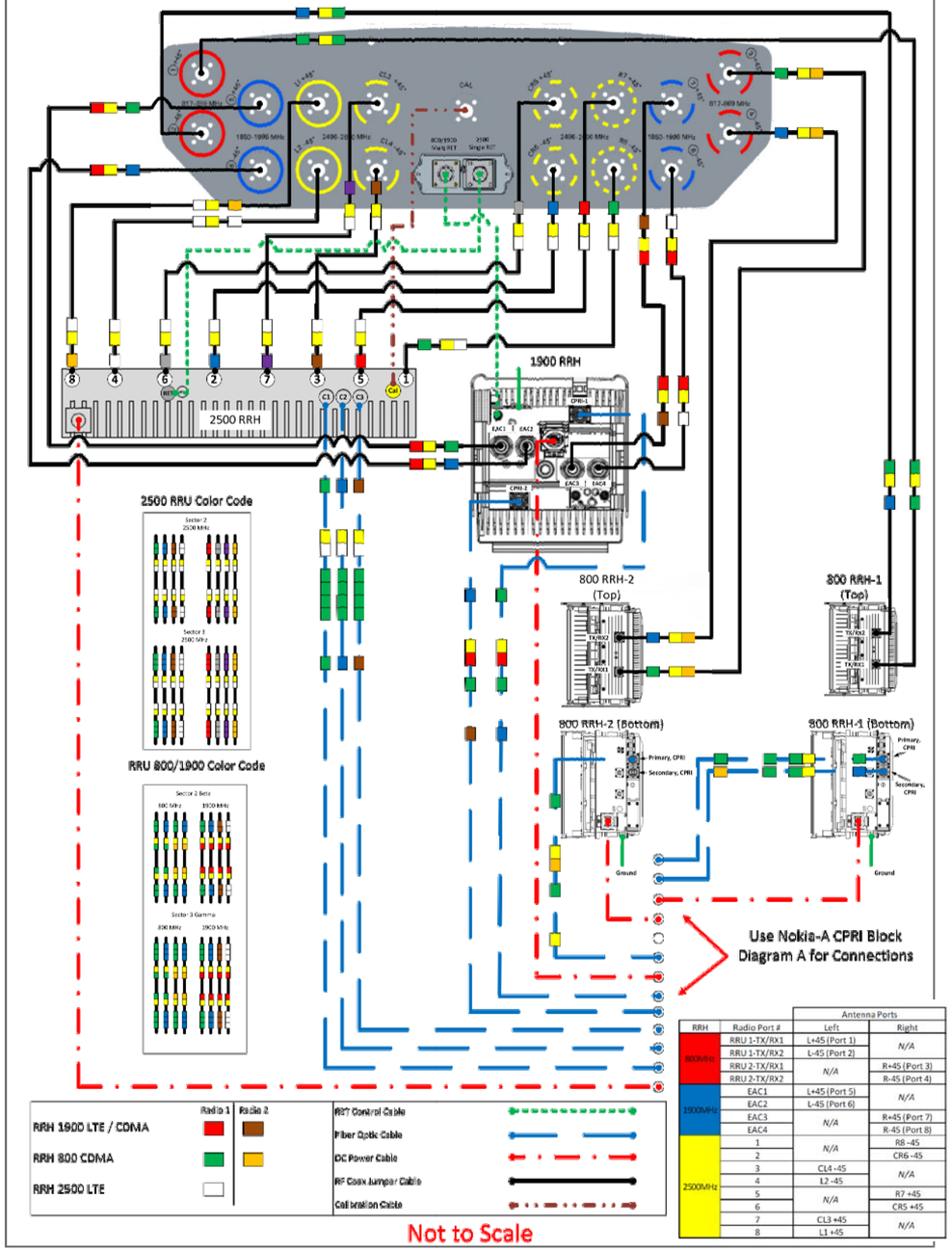
SHEET TITLE
RF DATA SHEET

SHEET NUMBER
RF-1

Prepared By	Creation Date / Revision Number	
Mark Elliott	September 12, 2016	R-4
Approved By	Approval Date	
TBD	TBD	

Sprint

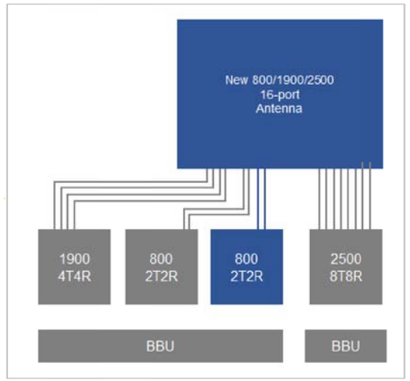
KMW 16 Port Nokia-A RRH 800, 1900, and 2500 (Sprint Scenario 4)



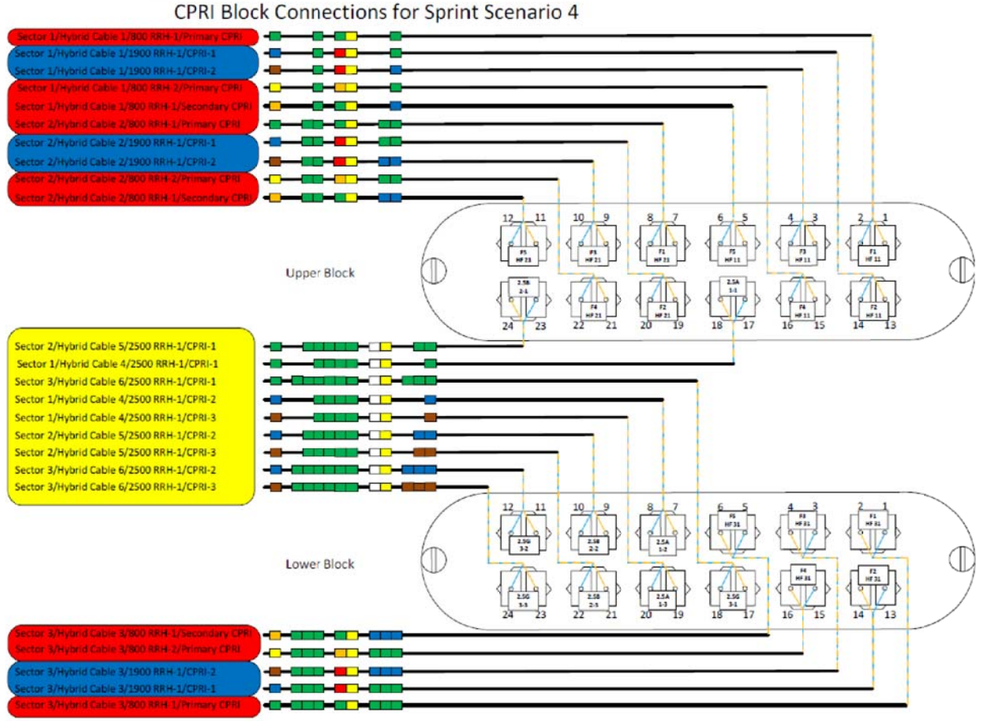
RRH	Radio Port #	Antenna Ports Left	Antenna Ports Right
800MHz	RRU 1-TX/RX1	L+45 (Port 1)	N/A
	RRU 1-TX/RX2	L-45 (Port 2)	
	RRU 2-TX/RX1	N/A	R+45 (Port 3)
	RRU 2-TX/RX2		R-45 (Port 4)
1900MHz	EAC1	L+45 (Port 5)	N/A
	EAC2	L-45 (Port 6)	
	EAC3	N/A	R+45 (Port 7)
	EAC4		R-45 (Port 8)
2500MHz	1	N/A	R8 -45
	2		CR6 -45
	3	CL4 -45	N/A
	4	L2 -45	
	5	N/A	R7 +45
	6		CR5 +45
	7	CL3 +45	N/A
	8	L1 +45	

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

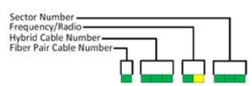
Future



CPRI Block Connections for Sprint Scenario 4



Frequency/Radio	Indicator	ID
800 #1	Yellow	Green
800 #2	Yellow	Orange
1900 #1	Yellow	Red
1900 #2	Yellow	Brown
1900 #3	Yellow	Blue
1900 #4	Yellow	Grey
2500 #1	Yellow	White
2500 #2	Yellow	Purple



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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED
PROFESSIONAL ENGINEER
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CHECKED BY: JMM/TEJ

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/29/18	ISSUED FOR CONSTRUCTION	PN
0	11/03/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT33XC613
SITE NAME:
EASTFORD-DESIATO/SSUSA
SITE ADDRESS:
97 CHAPLIN ROAD
EASTFORD, CT 06242

SHEET TITLE
PLUMBING DIAGRAM AND RAN WIRING

SHEET NUMBER
RF-2

CT33XC613
DO MACRO EQUIPMENT DEPLOYMENT

MOUNT AUGMENTATION @ 145'

MONOPOLE TOWER

EASTFORD, CT
WINDHAM COUNTY

SITE INFORMATION

STRUCTURE TYPE:	MONOPOLE
MOUNT TYPE:	T-ARMS
LATITUDE:	41.86438889 (NAD 83)
LONGITUDE:	-72.09622222 (NAD 83)
CITY, STATE:	EASTFORD, CT
COUNTY:	WINDHAM
SBA SITE:	CT46145-A Eastford-desiato/Ssusa

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: 2015 IBC (2016 CT) / TIA-222-G

RIGGING PLAN REQUIRED

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

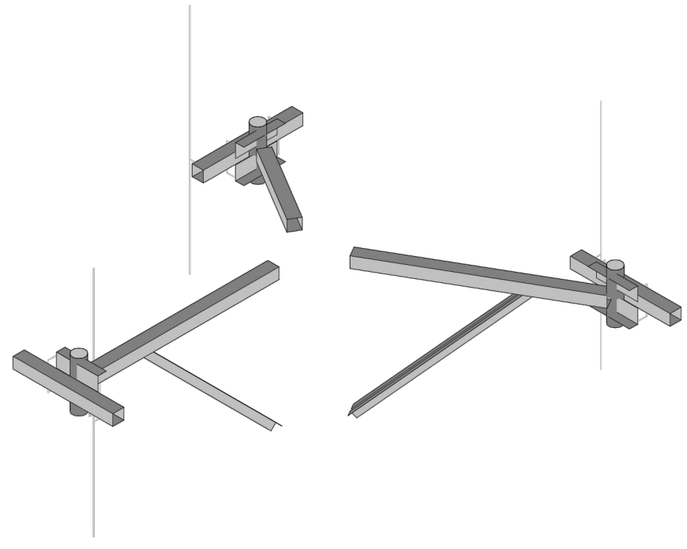
A PROPER RIGGING PLAN SHALL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO PROCEEDING ON ANY AUGMENTATIONS SHOWN HEREIN.

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)

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REVISIONS:

0	01/25/18	ISSUE FOR CONSTRUCTION	JAD

CHECKED BY: DWG

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC613

EASTFORD, CT

LATITUDE: 41.86438889
LONGITUDE: -72.09622222

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

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REVISIONS:

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CHECKED BY: DWG

SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC613

EASTFORD, CT

LATITUDE: 41.86438889
LONGITUDE: -72.09622222

SHEET TITLE:

NOTES AND SPECIFICATIONS

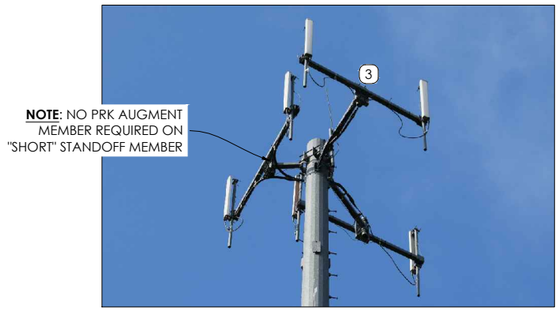
SHEET NUMBER:

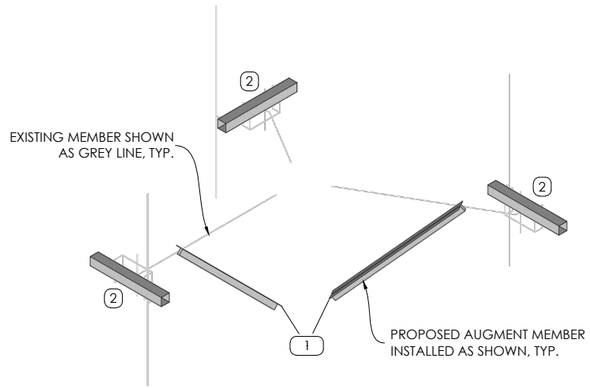
S2

T-ARMS @ 145' AUGMENTATION

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 STANDOFF MEMBER ~3.5' OUT FROM THE STANDOFF-TO-COLLAR INTERFACE AS SHOWN PER MANUF. SPECS. [(1) KIT TOTAL]
2	EXISTING TUBE STEEL FRONT FACE MEMBERS TO BE FIELD-CUT TO A TOTAL FACE WIDTH NOT TO EXCEED 3.0'. APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
3	PANEL ANTENNAS TO BE INSTALLED IN THE MIDDLE POSITION AS CLOSE TO CENTERED ON THE MOUNT FACE AS POSSIBLE. RRH UNITS TO BE INSTALLED ON MOUNT PIPES ON A SEPARATE COLLAR BELOW THE T-ARMS AS SHOWN IN CONSTRUCTION DRAWINGS. RRH COLLAR WILL NEED TO BE ROTATED TO FACILITATE THE INSTALLATION OF THE PRK KIT.
AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.	

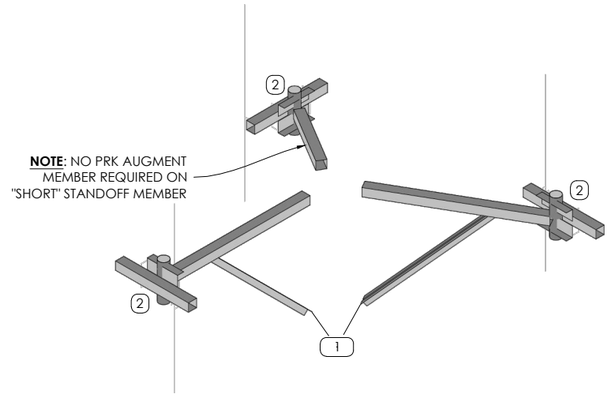




MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.

CONSTRUCTION NOTES

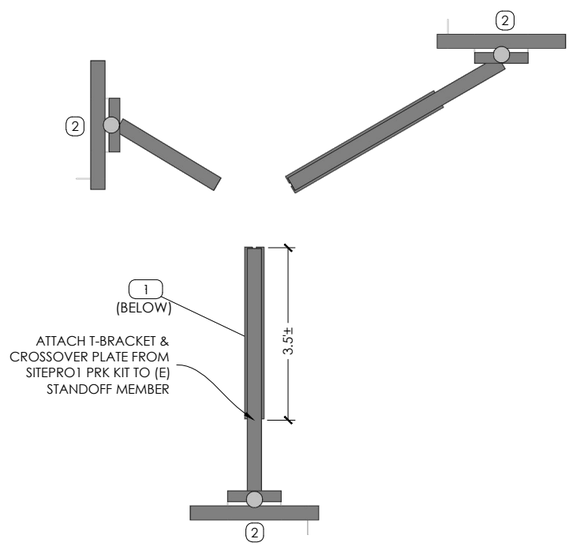
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF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



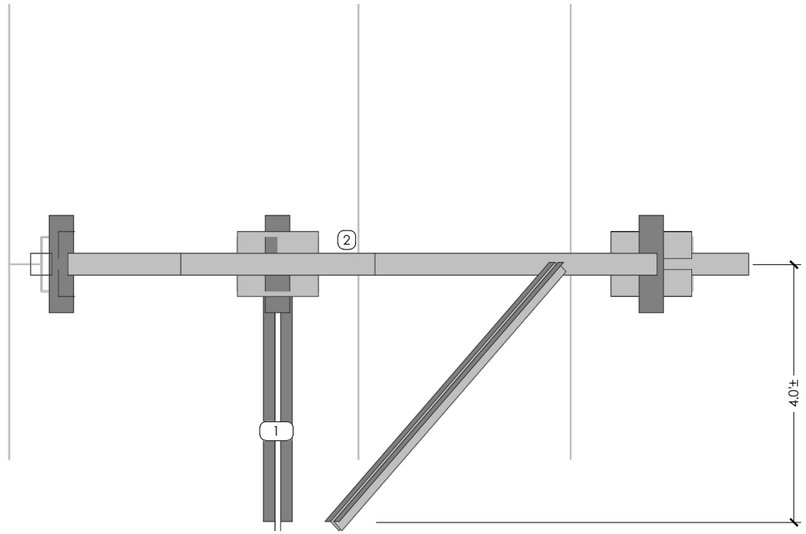
AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

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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AUGMENTATIONS, SECTIONS & DETAILS

SHEET NUMBER:

S3