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

September 14, 2017

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

Notice of Exempt Modification
130 Welles Rd., Groton, CT 06340
41 23 34.14 N
-71 58 11.76 W
Sprint #: CT33XC585_2.5

Dear Ms. Bachman:

Sprint currently maintains antennas at the 117.5-foot level of the existing 118-foot Monopole Tower at 130 Welles Road in Groton, CT. The tower is owned by SBA 2012 TC Assets, LLC. The property is owned by the Town of Groton. Sprint now intends to install (3) additional newer technology cell antennas at the 117.5-foot level of the tower.

Please note: previous approval was given by the Siting Council on 6/16/14 under EM-SPRINT-059T-140530. A Notification of Construction Not Complete was sent 9/15/15. Sprint now intends to resume construction. The proposed full scope of work is as follows:

Remove: None

Remove and Replace: None

Install:

(3) RFS APXVTM14-C-I20 – Panel Antennas
(3) ALU RRU 8 x 20-25 RRUs

Existing Equipment to Remain (Including entitlements):

(3) RFS APXVSPP18-C-A20 – Panel Antennas
(4) ACU-A20-N-RET
(4) 1-1/4" Hybrid
(3) ALU 1900 MHz RRHs
(3) ALU 800 MHz RRHs
(3) ALU 800 MHz Filters

This facility was approved by the Council on 12/19/02 under Docket No. 230. The 120' monopole was to be no taller than necessary to provide proposed telecommunications services sufficient to accommodate the antennas of Sprint and other entities, both public and private. The tower was not to exceed a height of 120' above ground level and was to be placed so that no edge was closer than 65' of the wetland areas. A D&M plan was to be provided, and recalculated RF reports to be run when changes to emissions were proposed. This modification complies with all conditions.

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 Groton's Town Manager, John Burt (as both elected official and representative for the property owner, the Town of Groton), as well as to the Town of Groton's Director of Planning, Jonathan Reiner. (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: John Burt, Town Manager / with attachments
Town of Groton, 134 Groton Long Point Road, Groton, CT 06340
Jonathan J. Riener, AICP, Director of Planning / with attachments
Town of Groton, 134 Groton Long Point Road, Groton, CT 06340

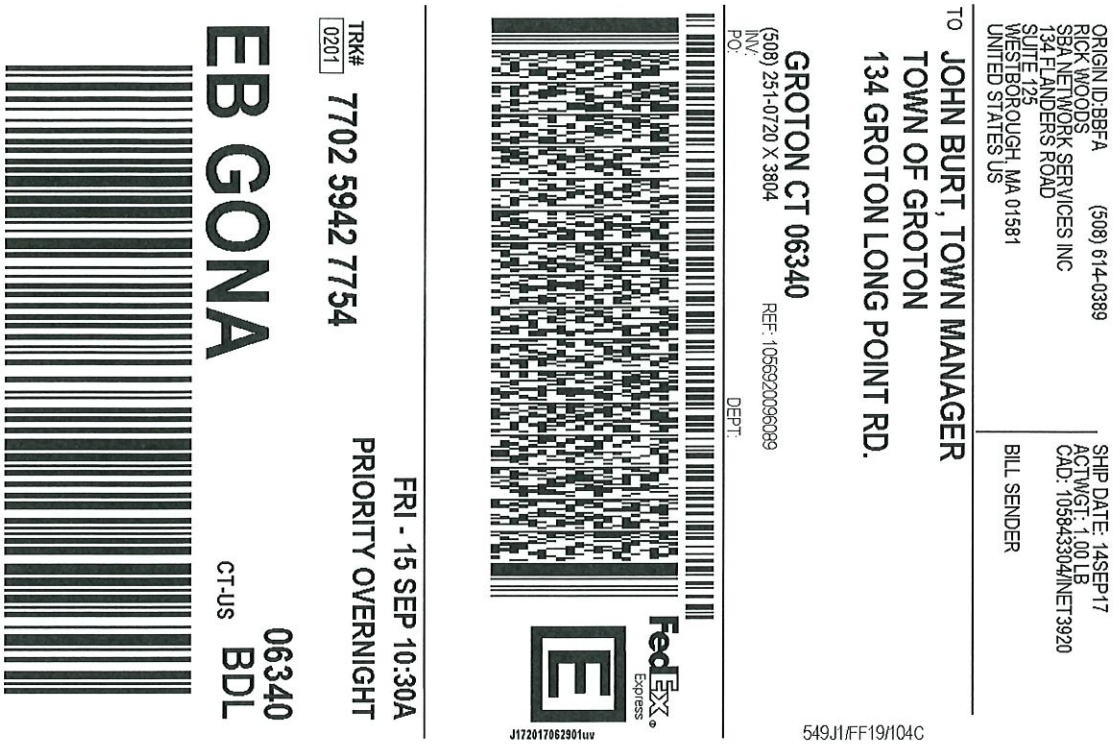
POWER DENSITY

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	117.5 feet	Height (AGL):	117.5 feet	Height (AGL):	117.5 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	2.47 %	Antenna B1 MPE%	2.47 %	Antenna C1 MPE%	2.47 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXV9TM14-ALU-I20	Make / Model:	RFS APXV9TM14-ALU-I20	Make / Model:	RFS APXV9TM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	117.5 feet	Height (AGL):	117.5 feet	Height (AGL):	117.5 feet
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	1.80 %	Antenna B2 MPE%	1.80 %	Antenna C2 MPE%	1.80 %

Site Composite MPE%	
Carrier	MPE %
SPRINT – Max per sector	4.27 %
T-Mobile	0.04 %
Site Total MPE %:	4.31 %

SPRINT Sector A Total:	4.27 %
SPRINT Sector B Total:	4.27 %
SPRINT Sector C Total:	4.27 %
Site Total:	4.31 %



After printing this label:
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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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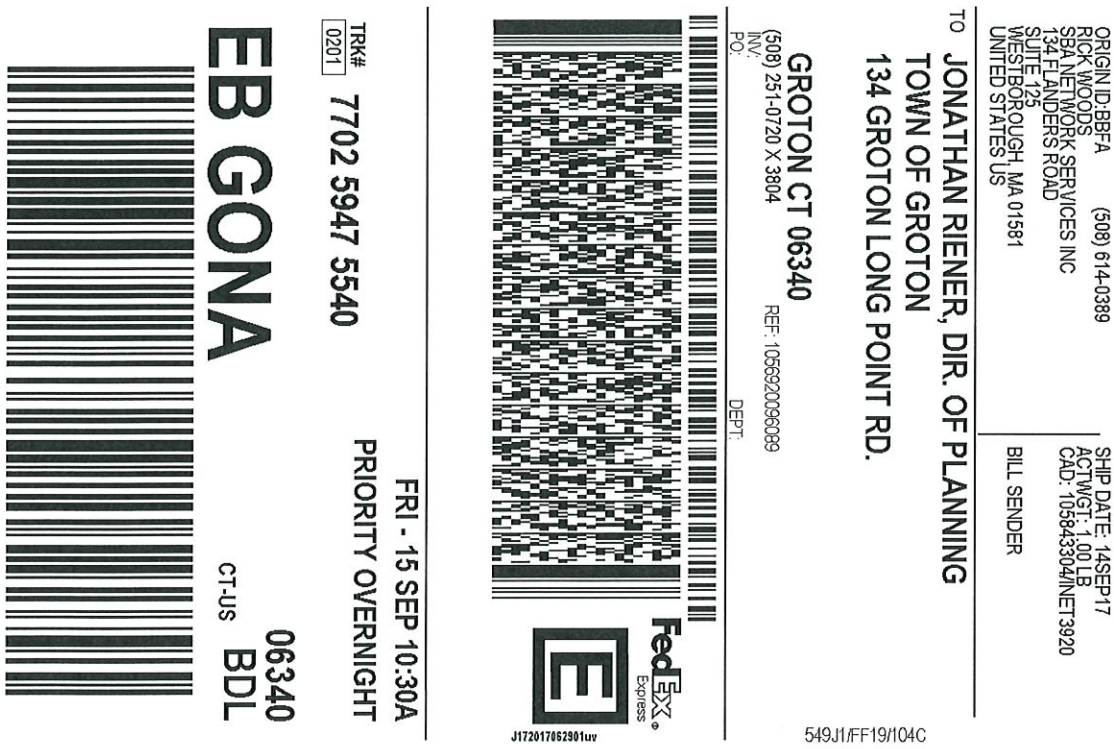
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



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Back

Parcel Detail

130 WELLES RD

Property Information

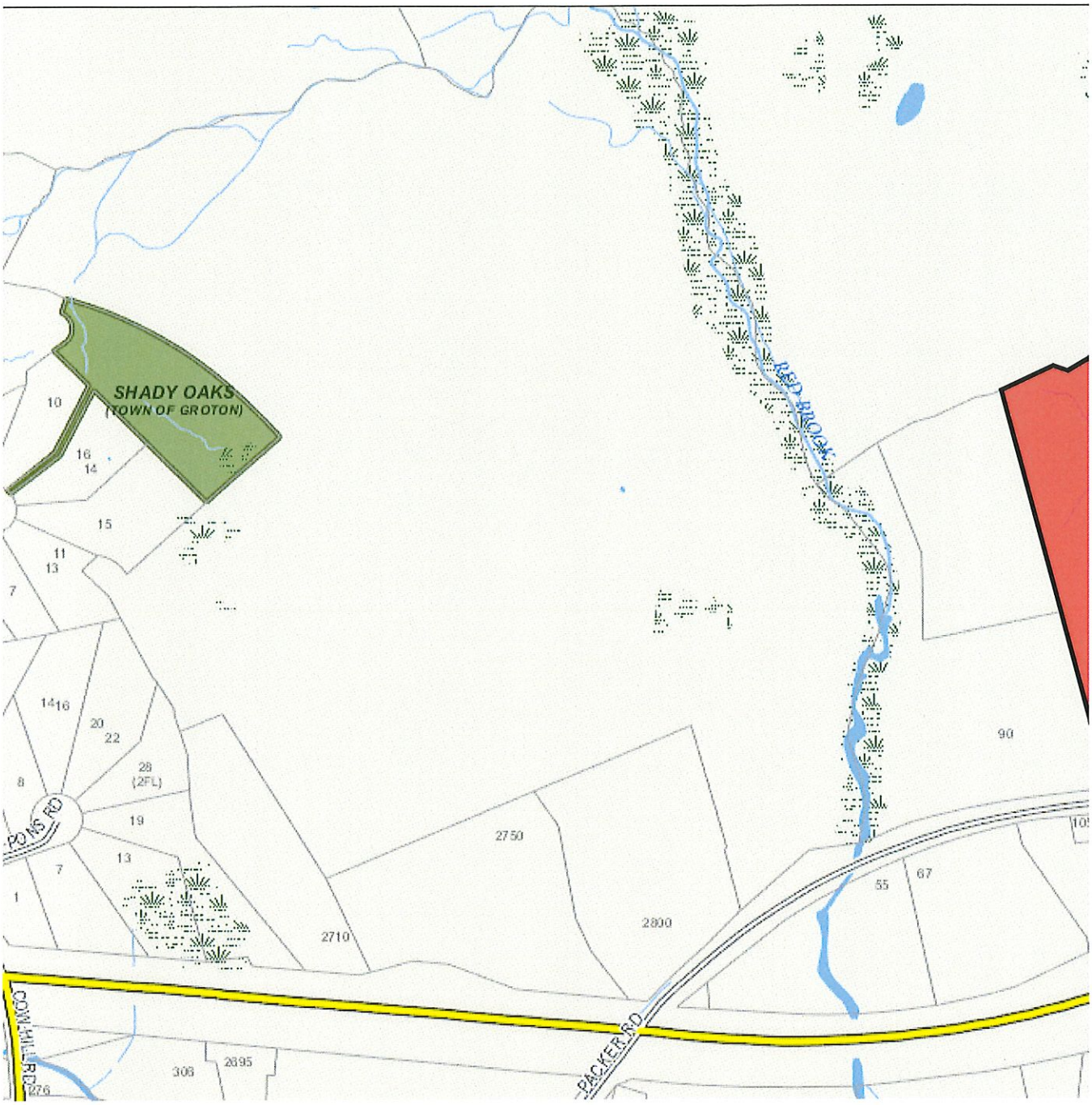
PIN: 271014348692 E
PROPERTY TYPE: EXEMPT
DISTRICT: OLD MYSTIC FIRE DISTRICT
OWNER: GROTON TOWN OF
ACREAGE: 8.55AC.
ZONING: RU-80
USE CODE: MUNICIPALITY
CT GRAND LIST CODE: COMMERCIAL
LIVING UNITS: N/A
NEIGHBORHOOD: 3010
DEED BOOK/PAGE: 137/622
LAND VALUE: $246,300
BUILDING VALUE: $109,700
TOTAL VALUE: $356,000
GROSS ASSESSED VALUE: $249,200

Structure Information

CARD: 1 OF 1
BUILDING #: 1
IMPROVED NAME: PUBLIC WORKS
YEAR BUILT: 1990
 # OF UNITS: 1

Tools

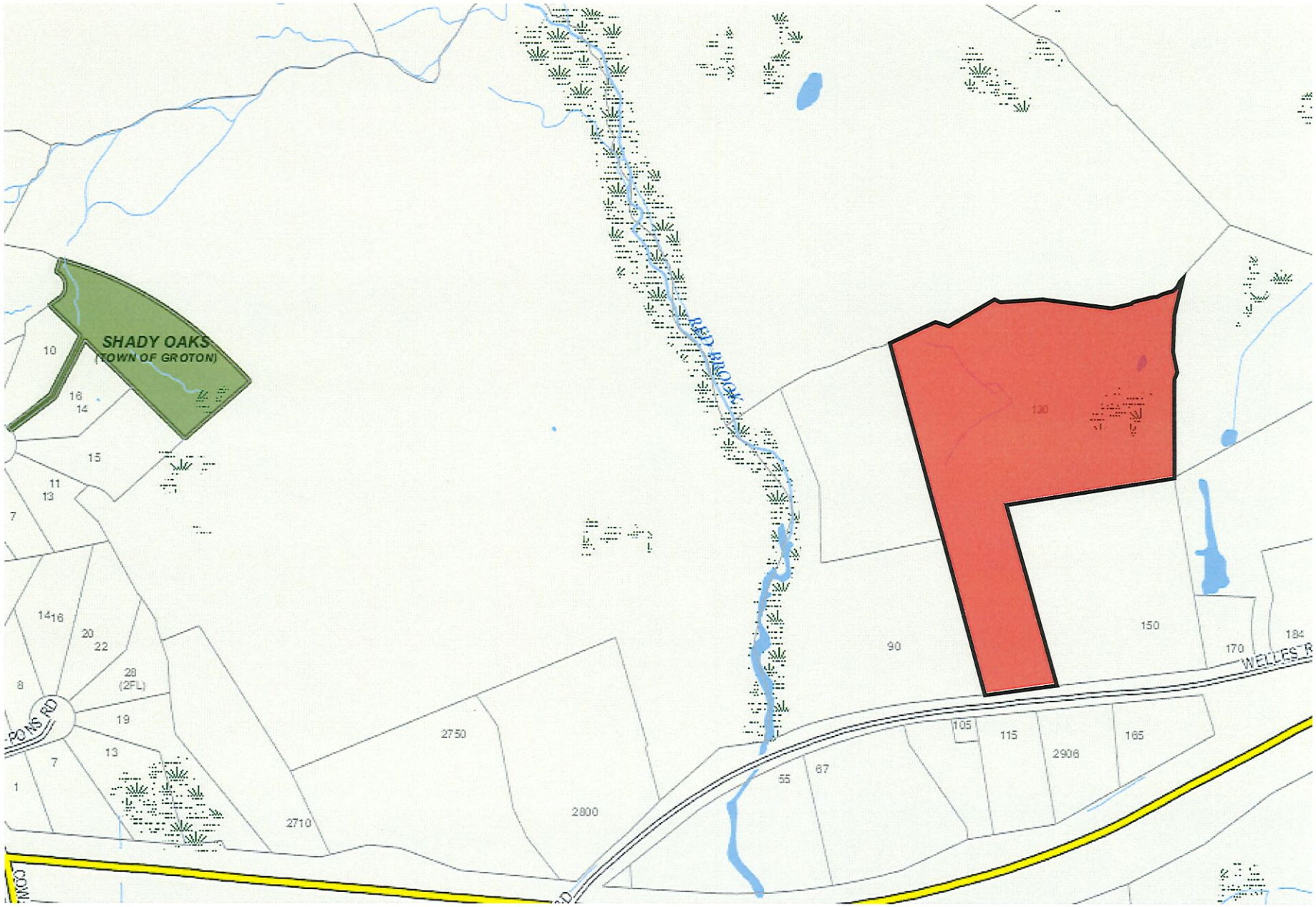
GrotonGIS Lite



130 WELLES RD

PIN: **271014348692 E**
TYPE: **EXEMPT**
DISTRICT: **OLD MYSTIC FIRE DISTRICT**
ACREAGE: **8.55 AC.**
ZONING: **RU-80**

Get More Info | Zoom To Extent | Clear Selection


SHADY OAKS
(TOWN OF GROTON)
10
16
14
15
11
13
7
14
16
20
22
28
(2FL)
8
19
13
7
1
2750
2710
2800
55
67
105
115
2906
165
90
150
170
184
130
WELLES R
RED BROOK

PIN: 271014348092 E
TYPE: EXEMPT
DISTRICT: OLD MYSTIC FIRE DISTRICT
ACREAGE: 8.55 AC.
ZONING: RU-80

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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: CT33XC585

South Ledyard - Town Dump
130 Welles Road
Groton, CT 06340

September 7, 2017

EBI Project Number: 6217003984

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	4.31 %

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

EBI Consulting
environmental | engineering | due diligence

September 7, 2017

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

Emissions Analysis for Site: **CT33XC585 – South Ledyard - Town Dump**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **130 Welles Road, Groton, 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **130 Welles Road, Groton, 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 **RFS APXVSPP18-C-A20 and the RFS APXV9TM14-ALU-120** 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 **117.5 feet** above ground level (AGL) for **Sector A**, **117.5 feet** above ground level (AGL) for **Sector B** and **117.5 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:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**117.5 feet**	Height (AGL):	**117.5 feet**	Height (AGL):	**117.5 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	**2.47 %**	Antenna B1 MPE%	**2.47 %**	Antenna C1 MPE%	**2.47 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXV9TM14-ALU-I20	Make / Model:	RFS APXV9TM14-ALU-I20	Make / Model:	RFS APXV9TM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**117.5 feet**	Height (AGL):	**117.5 feet**	Height (AGL):	**117.5 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.80 %**	Antenna B2 MPE%	**1.80 %**	Antenna C2 MPE%	**1.80 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**4.27 %**
T-Mobile	0.04 %
Site Total MPE %:	**4.31 %**

SPRINT Sector A Total:	4.27 %
SPRINT Sector B Total:	4.27 %
SPRINT Sector C Total:	4.27 %
Site Total:	4.31 %

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (µW/cm²)	Frequency (MHz)	Allowable MPE (µW/cm²)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	117.5	1.27	850 MHz	567	0.22%
Sprint 850 MHz LTE	2	437.55	117.5	2.53	850 MHz	567	0.45%
Sprint 1900 MHz (PCS) CDMA	5	622.47	117.5	9.00	1900 MHz (PCS)	1000	0.90%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	117.5	9.00	1900 MHz (PCS)	1000	0.90%
Sprint 2500 MHz (BRS) LTE	8	778.09	117.5	18.00	2500 MHz (BRS)	1000	1.80%
						Total:	**4.27%**

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:	4.27 %
Sector B:	4.27 %
Sector C:	4.27 %
SPRINT Maximum Total (per sector):	4.27 %
Site Total:	4.31 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.31 %** 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 118 ft PennSummit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46142-A

Customer Site Name: South Ledyard- Town Dump

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT33XC585 / South Ledyard- Town Dump

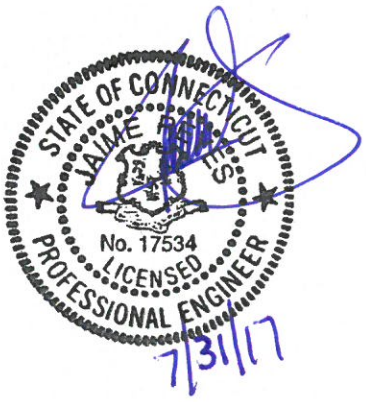
Site Location: 130 Welles Road

Groton, Connecticut

New London County

Latitude: 41.392666

Longitude: -71.969805



Analysis Result:

Max Structural Usage: 86.0% [Pass]

Max Foundation Usage: 69.0% [Pass]

Report Prepared By : Fabiaye Arinyedokiari

Introduction

The purpose of this report is to summarize the analysis results on the 118 ft PennSummit 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	Paul J. Ford and Company, Job #29203-0083 dated April 24, 2003
Foundation Drawing	Paul J. Ford and Company, Job #29203-0083 dated September 12, 2003
Geotechnical Report	Criscuolo Shepard Associates, PC, File #2001.916 dated April 10, 2001
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} = 135.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.161, S_1 = 0.058

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
-	117.5	3	RFS APXVSPP18-C-A20 - Panel	Low Profile Platform	(4) 1-1/4" Hybrid	Sprint Nextel
-		3	RFS APXVTM14-C-I20 - Panel			
-		4	ACU-A20-N – RET			
-	114.0	3	Alcatel Lucent RRU8x20-25	Collar Mount		
-		3	Alcatel Lucent 1900MHz RRH			
-		3	Alcatel Lucent 800 MHz RRH			
-		3	Alcatel Lucent 800 MHz Filter			
8	108.0	3	Ericsson AIR 21 B4A B2P - Panel	(3) T-Arm	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
9		3	Ericsson AIR 21 B2A B4P - Panel			

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	117.0	3	RFS APXVSPP18-C-A20 - Panel	Low Profile Platform	(4) 1-1/4" Hybrid	Sprint Nextel
2		4	ACU-A20-N – RET			
3		3	56.3"x12.6"x6.3" - Panel			
4	114.0	3	26.1"x18.6"x6.7" RRU	Collar Mount		
5		3	Alcatel Lucent 1900MHz RRH			
6		3	Alcatel Lucent 800 MHz RRH			
7		3	Alcatel Lucent 800 MHz Filter			

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:	**77.0%**	**86.0%**	**68.7%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	1461.0	17.0
Analysis Reactions	1611.8	18.4
Factored Reactions*	1972.4	23.0
% of Design Reactions	81.7%	80.3%

* 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 1.2138 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

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

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

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

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

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

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

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

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

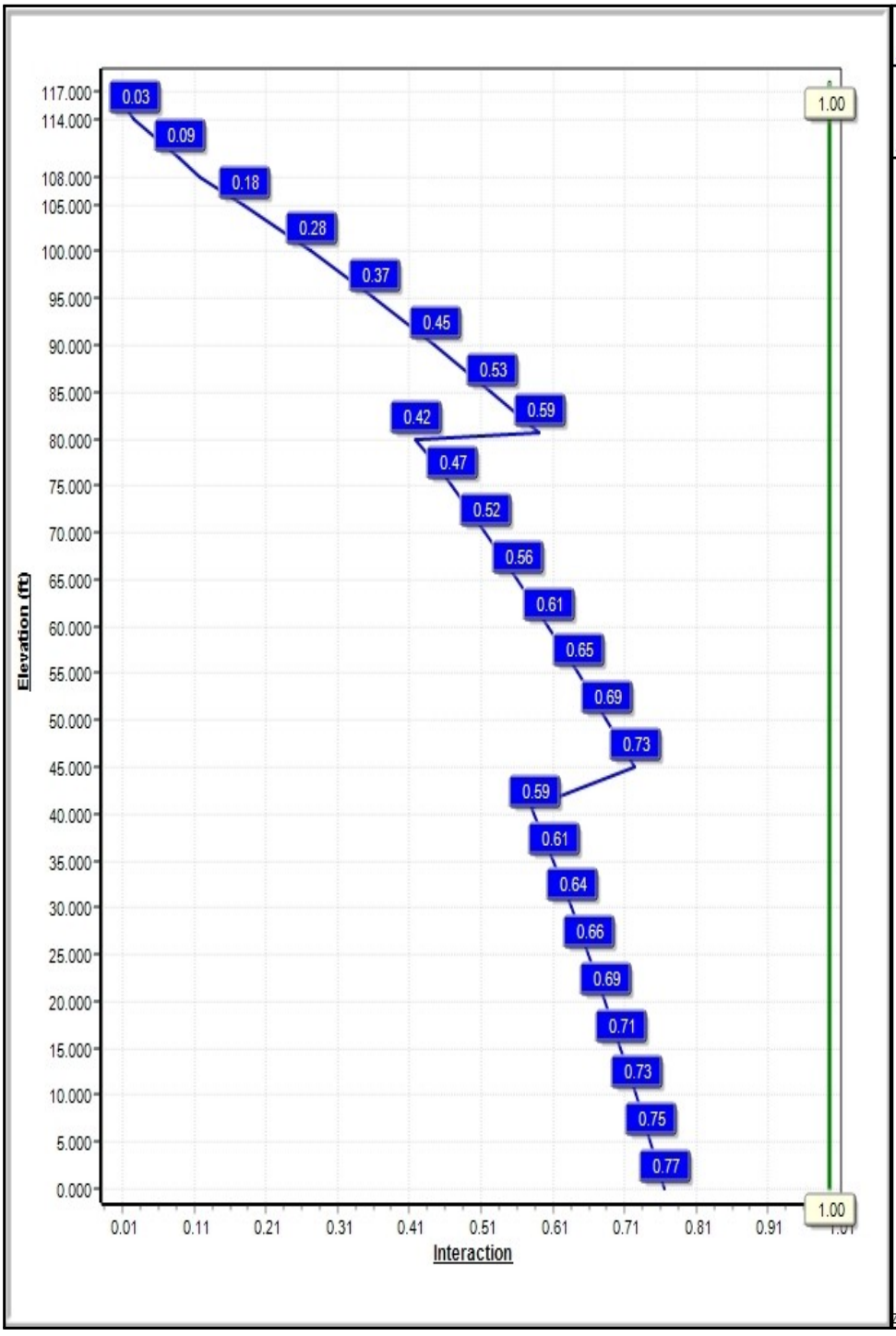
Usage Diagram - Max Ratio 76.98% at 0.0ft

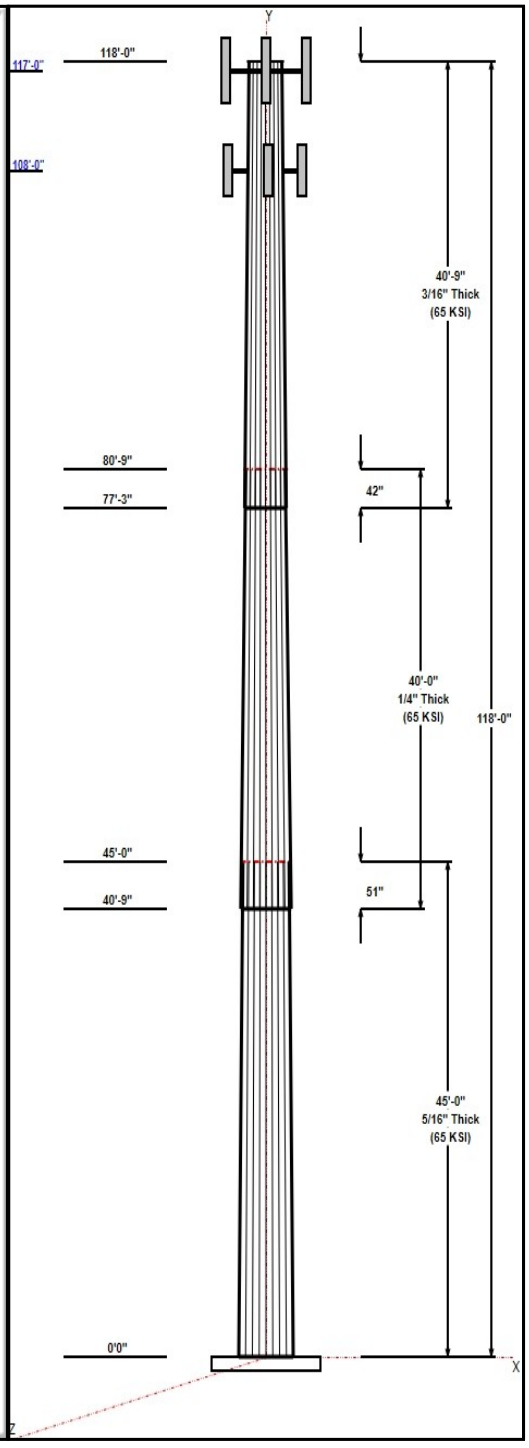
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017
Site Name:	South Ledyard- Town Dump	**Exposure:**	C	
Height:	118.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Tower Engineering Solutions

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

Load Case : 1.2D + 1.6W 105 mph Wind





Structure: CT46142-A-SBA

Type: Tapered
Site Name: South Ledyard- Town Dump
Height: 118.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.15100

7/31/2017

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	32.15	38.94	0.313		0.15100	65
2	40.00	27.25	33.29	0.250	Slip	0.15100	65
3	40.75	22.00	28.15	0.188	Slip	0.15100	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
117.00	117.00	3	APXVSPP18-C-A20	Sprint Nextel
117.00	117.00	4	ACU-A20-N	Sprint Nextel
117.00	117.00	3	56.3"x12.6"x6.3" Panel	Sprint Nextel
117.00	117.00	1	Low Profile Platform-flat	Sprint Nextel
114.00	114.00	3	Flush Mount	Sprint Nextel
114.00	114.00	3	26.1"x18.6"x6.7" RRU	Sprint Nextel
114.00	114.00	3	1900MHz RRH	Sprint Nextel
114.00	114.00	3	800 MHz RRH	Sprint Nextel
114.00	114.00	3	800 Filter	Sprint Nextel
108.00	108.00	3	AIR 21 B4A B2P	T-Mobile
108.00	108.00	3	AIR 21 B2A B4P	T-Mobile
108.00	108.00	3	T-Arm (Round)	T-Mobile

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	117.00	Inside	1-1/4" Hybrid	Sprint Nextel
0.00	117.00	Outside	Safety Cable	
0.00	108.00	Inside	1 5/8" Coax	T-Mobile
0.00	108.00	Inside	1 5/8" Fiber	T-Mobile

Anchor Bolts

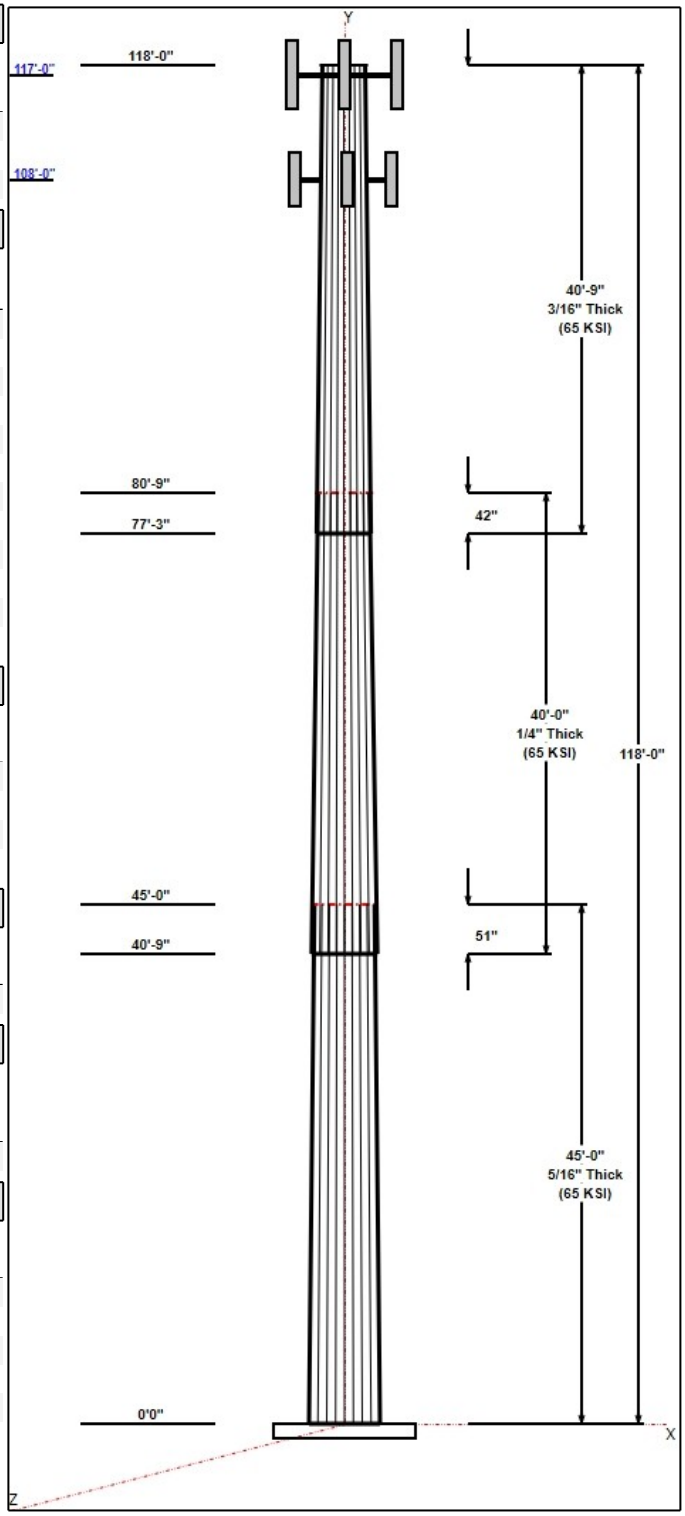
Qty	Specifications	Grade (ksi)	Arrangement
8	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	44.0	55.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	1611.8	18.4	20.8
0.9D + 1.6W 105 mph Wind	1594.6	18.4	15.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	403.1	4.7	32.7
1.2D + 1.0E	112.6	1.1	20.8
0.9D + 1.0E	111.3	1.1	15.6
1.0D + 1.0W 60 mph Wind	327.2	3.8	17.3



Structure: CT46142-A-SBA - Coax Line Placement

Type: Monopole
Site Name: South Ledyard- Town Dump
Height: 118.00 (ft)

7/31/2017

Tower Engineering Solutions

Shaft Properties

Structure:	CT46142-A-SBA		**Code:**	EIA/TIA-222-G	7/31/2017
Site Name:	South Ledyard- Town Dump		**Exposure:**	C	
Height:	118.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.3125	65		0.00	5,351
2	18	40.000	0.2500	65	Slip	51.00	3,242
3	18	40.750	0.1875	65	Slip	42.00	2,054
					Total Shaft Weight:		**10,647**

	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	38.94	0.00	38.32	7224.13	20.56	124.62	32.15	45.00	31.58	4043.24	16.73	102.8	0.151000
2	33.29	40.75	26.22	3615.72	22.07	133.16	27.25	80.75	21.42	1973.17	17.81	109.0	0.151000
3	28.15	77.25	16.64	1644.47	25.06	150.15	22.00	118.00	12.98	780.30	19.28	117.3	0.151000

Load Summary

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	117.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	225.61	10.745	0.83	0.00	0.00
2	117.00	ACU-A20-N	4	1.00	0.14	0.79	5.19	0.429	0.79	0.00	0.00
3	117.00	56.3"x12.6"x6.3" Panel	3	55.10	6.34	0.78	210.80	7.424	0.80	0.00	0.00
4	117.00	Low Profile Platform-flat	1	1200.00	25.00	1.00	2221.43	45.429	1.00	0.00	0.00
5	114.00	Flush Mount	3	350.00	5.00	1.00	635.26	8.396	1.00	0.00	0.00
6	114.00	26.1"x18.6"x6.7" RRU	3	70.00	4.05	0.68	176.87	4.840	0.70	0.00	0.00
7	114.00	1900MHz RRH	3	60.00	2.77	0.75	141.18	4.004	0.75	0.00	0.00
8	114.00	800 MHz RRH	3	53.00	2.49	0.75	124.96	3.603	0.75	0.00	0.00
9	114.00	800 Filter	3	8.80	0.67	0.67	22.91	1.094	0.67	0.00	0.00
10	108.00	AIR 21 B4A B2P	3	90.40	6.09	0.86	252.81	7.150	0.86	0.00	0.00
11	108.00	AIR 21 B2A B4P	3	90.40	6.09	0.86	252.81	7.150	0.86	0.00	0.00
12	108.00	T-Arm (Round)	3	350.00	8.00	0.67	586.43	14.755	0.67	0.00	0.00
		Totals:	**35**	**4,758.10**			**10,131.05**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	117.00	(4) 1-1/4" Hybrid	0.00	Inside
0.00	117.00	(1) Safety Cable	0.00	Outside
0.00	108.00	(12) 1 5/8" Coax	0.00	Inside
0.00	108.00	(1) 1 5/8" Fiber	0.00	Inside

Shaft Section Properties

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3125	38.943	38.315	7224.1	20.56	124.62	77.2	365.4	0.0
5.00		0.3125	38.188	37.566	6808.8	20.14	122.20	77.7	351.2	645.5
10.00		0.3125	37.433	36.818	6409.7	19.71	119.79	78.2	337.3	632.8
15.00		0.3125	36.678	36.069	6026.5	19.28	117.37	78.7	323.6	620.0
20.00		0.3125	35.923	35.320	5658.9	18.86	114.95	79.2	310.3	607.3
25.00		0.3125	35.168	34.571	5306.5	18.43	112.54	79.7	297.2	594.6
30.00		0.3125	34.413	33.822	4969.1	18.01	110.12	80.2	284.4	581.8
35.00		0.3125	33.658	33.073	4646.3	17.58	107.71	80.7	271.9	569.1
40.00		0.3125	32.903	32.325	4337.8	17.15	105.29	81.2	259.7	556.3
40.75	Bot - Section 2	0.3125	32.790	32.212	4292.7	17.09	104.93	81.3	257.9	82.4
45.00	Top - Section 1	0.2500	32.648	25.707	3409.1	21.62	130.59	0.0	0.0	836.7
50.00		0.2500	31.893	25.108	3176.3	21.08	127.57	76.6	196.2	432.3
55.00		0.2500	31.138	24.509	2954.3	20.55	124.55	77.2	186.9	422.1
60.00		0.2500	30.383	23.910	2742.9	20.02	121.53	77.9	177.8	411.9
65.00		0.2500	29.628	23.311	2541.9	19.49	118.51	78.5	169.0	401.7
70.00		0.2500	28.873	22.712	2350.9	18.95	115.49	79.1	160.4	391.5
75.00		0.2500	28.118	22.112	2169.7	18.42	112.47	79.7	152.0	381.3
77.25	Bot - Section 3	0.2500	27.778	21.843	2091.3	18.18	111.11	80.0	148.3	168.3
80.00		0.2500	27.363	21.513	1998.1	17.89	109.45	80.4	143.8	357.4
80.75	Top - Section 2	0.1875	27.625	16.328	1553.0	24.57	147.33	0.0	0.0	96.5
85.00		0.1875	26.983	15.946	1446.5	23.96	143.91	73.2	105.6	233.4
90.00		0.1875	26.228	15.497	1327.7	23.25	139.88	74.0	99.7	267.5
95.00		0.1875	25.473	15.047	1215.5	22.54	135.86	74.9	94.0	259.8
100.00		0.1875	24.718	14.598	1109.9	21.83	131.83	75.7	88.4	252.2
105.00		0.1875	23.963	14.149	1010.5	21.12	127.80	76.6	83.1	244.5
108.00		0.1875	23.510	13.879	953.8	20.70	125.39	77.1	79.9	143.1
110.00		0.1875	23.208	13.700	917.3	20.41	123.78	77.4	77.8	93.8
114.00		0.1875	22.604	13.340	846.9	19.85	120.55	78.1	73.8	184.0
115.00		0.1875	22.453	13.250	829.9	19.70	119.75	78.2	72.8	45.2
117.00		0.1875	22.151	13.071	796.6	19.42	118.14	78.6	70.8	89.6
118.00		0.1875	22.000	12.981	780.3	19.28	117.33	78.7	69.9	44.3
										10647.0

Wind Loading - Shaft

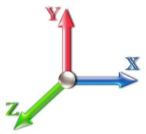
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 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	0.85	22.791	25.07	319.00	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	312.82	0.650	0.000	5.00	16.317	10.61	425.4	0.0	774.6
10.00		1.00	0.85	22.791	25.07	306.63	0.650	0.000	5.00	15.997	10.40	417.1	0.0	759.3
15.00		1.00	0.85	22.791	25.07	300.45	0.650	0.000	5.00	15.678	10.19	408.8	0.0	744.0
20.00		1.00	0.90	24.182	26.60	303.11	0.650	0.000	5.00	15.359	9.98	424.9	0.0	728.8
25.00		1.00	0.95	25.345	27.88	303.80	0.650	0.000	5.00	15.039	9.78	436.1	0.0	713.5
30.00		1.00	0.98	26.337	28.97	303.03	0.650	0.000	5.00	14.720	9.57	443.5	0.0	698.2
35.00		1.00	1.01	27.206	29.93	301.23	0.650	0.000	5.00	14.400	9.36	448.2	0.0	682.9
40.00		1.00	1.04	27.981	30.78	298.64	0.650	0.000	5.00	14.081	9.15	450.7	0.0	667.6
40.75	Bot - Section 2	1.00	1.05	28.091	30.90	298.20	0.650	0.000	0.75	2.085	1.35	67.0	0.0	98.8
45.00	Top - Section 1	1.00	1.07	28.684	31.55	295.43	0.650	0.000	4.25	11.857	7.71	389.1	0.0	1004.0
50.00		1.00	1.09	29.327	32.26	296.36	0.650	0.000	5.00	13.653	8.87	458.1	0.0	518.7
55.00		1.00	1.12	29.922	32.91	292.26	0.650	0.000	5.00	13.334	8.67	456.4	0.0	506.5
60.00		1.00	1.14	30.475	33.52	287.80	0.650	0.000	5.00	13.015	8.46	453.7	0.0	494.3
65.00		1.00	1.16	30.993	34.09	283.02	0.650	0.000	5.00	12.695	8.25	450.1	0.0	482.0
70.00		1.00	1.17	31.480	34.63	277.97	0.650	0.000	5.00	12.376	8.04	445.7	0.0	469.8
75.00		1.00	1.19	31.941	35.13	272.67	0.650	0.000	5.00	12.056	7.84	440.5	0.0	457.6
77.25	Bot - Section 3	1.00	1.20	32.140	35.35	270.22	0.650	0.000	2.25	5.321	3.46	195.6	0.0	201.9
80.00		1.00	1.21	32.377	35.62	267.16	0.650	0.000	2.75	6.503	4.23	240.9	0.0	428.9
80.75	Top - Section 2	1.00	1.21	32.441	35.69	266.32	0.650	0.000	0.75	1.757	1.14	65.2	0.0	115.9
85.00		1.00	1.22	32.793	36.07	265.14	0.650	0.000	4.25	9.819	6.38	368.4	0.0	280.0
90.00		1.00	1.24	33.190	36.51	259.27	0.650	0.000	5.00	11.257	7.32	427.4	0.0	321.0
95.00		1.00	1.25	33.570	36.93	253.25	0.650	0.000	5.00	10.937	7.11	420.0	0.0	311.8
100.00		1.00	1.27	33.935	37.33	247.07	0.650	0.000	5.00	10.618	6.90	412.2	0.0	302.6
105.00		1.00	1.28	34.285	37.71	240.76	0.650	0.000	5.00	10.298	6.69	403.9	0.0	293.5
108.00	Appurtenance(s)	1.00	1.29	34.489	37.94	236.91	0.650	0.000	3.00	6.026	3.92	237.7	0.0	171.7
110.00		1.00	1.29	34.623	38.08	234.32	0.650	0.000	2.00	3.953	2.57	156.6	0.0	112.6
114.00	Appurtenance(s)	1.00	1.30	34.884	38.37	229.08	0.650	0.000	4.00	7.753	5.04	309.4	0.0	220.8
115.00		1.00	1.30	34.948	38.44	227.76	0.650	0.000	1.00	1.906	1.24	76.2	0.0	54.3
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	225.10	0.650	0.000	2.00	3.774	2.45	151.4	0.0	107.5
118.00		1.00	1.31	35.138	38.65	223.77	0.650	0.000	1.00	1.868	1.21	75.1	0.0	53.2
								Totals:	**118.00**			**10,155.4**		**12,776.4**

Discrete Appurtenance Forces

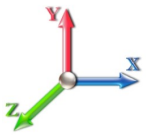
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 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	117.00	56.3"x12.6"x6.3" Panel	3	35.075	38.583	0.78	1.00	14.84	198.36	0.000	0.000	915.84	0.00	0.00
2	117.00	ACU-A20-N	4	35.075	38.583	0.79	1.00	0.44	4.80	0.000	0.000	27.31	0.00	0.00
3	117.00	APXVSPP18-C-A20	3	35.075	38.583	0.83	1.00	19.97	205.20	0.000	0.000	1232.78	0.00	0.00
4	117.00	Low Profile Platform-flat	1	35.075	38.583	1.00	1.00	25.00	1440.00	0.000	0.000	1543.31	0.00	0.00
5	114.00	800 MHz RRH	3	34.884	38.372	0.75	1.00	5.60	190.80	0.000	0.000	343.97	0.00	0.00
6	114.00	800 Filter	3	34.884	38.372	0.67	1.00	1.35	31.68	0.000	0.000	82.68	0.00	0.00
7	114.00	1900MHz RRH	3	34.884	38.372	0.75	1.00	6.23	216.00	0.000	0.000	382.65	0.00	0.00
8	114.00	26.1"x18.6"x6.7" RRU	3	34.884	38.372	0.68	1.00	8.26	252.00	0.000	0.000	507.25	0.00	0.00
9	114.00	Flush Mount	3	34.884	38.372	1.00	1.00	15.00	1260.00	0.000	0.000	920.93	0.00	0.00
10	108.00	T-Arm (Round)	3	34.489	37.938	0.50	0.75	12.06	1260.00	0.000	0.000	732.05	0.00	0.00
11	108.00	AIR 21 B2A B4P	3	34.489	37.938	0.69	0.80	12.57	325.44	0.000	0.000	762.99	0.00	0.00
12	108.00	AIR 21 B4A B2P	3	34.489	37.938	0.69	0.80	12.57	325.44	0.000	0.000	762.99	0.00	0.00
							Totals:		**5,709.72**			**8,214.76**		

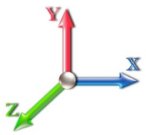
Total Applied Force Summary

Structure:	CT46142-A-SBA		**Code:**	EIA/TIA-222-G	7/31/2017
Site Name:	South Ledyard- Town Dump		**Exposure:**	C	
Height:	118.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 9

Load Case: 1.2D + 1.6W 105 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		425.43	880.64	0.00	0.00
10.00		417.10	865.35	0.00	0.00
15.00		408.77	850.06	0.00	0.00
20.00		424.88	834.77	0.00	0.00
25.00		436.06	819.48	0.00	0.00
30.00		443.50	804.20	0.00	0.00
35.00		448.18	788.91	0.00	0.00
40.00		450.74	773.62	0.00	0.00
40.75		66.99	114.72	0.00	0.00
45.00		389.07	1094.14	0.00	0.00
50.00		458.08	624.75	0.00	0.00
55.00		456.43	612.52	0.00	0.00
60.00		453.73	600.29	0.00	0.00
65.00		450.11	588.05	0.00	0.00
70.00		445.69	575.82	0.00	0.00
75.00		440.54	563.59	0.00	0.00
77.25		195.65	249.63	0.00	0.00
80.00		240.87	487.23	0.00	0.00
80.75		65.20	131.76	0.00	0.00
85.00		368.38	370.16	0.00	0.00
90.00		427.41	426.99	0.00	0.00
95.00		420.04	417.82	0.00	0.00
100.00		412.20	408.65	0.00	0.00
105.00		403.92	399.47	0.00	0.00
108.00	(9) attachments	2495.79	2146.16	0.00	0.00
110.00		156.58	122.43	0.00	0.00
114.00	(15) attachments	2546.89	2190.93	0.00	0.00
115.00		76.22	59.20	0.00	0.00
117.00	(11) attachments	3870.69	1965.65	0.00	0.00
118.00		75.09	53.19	0.00	0.00
	Totals:	**18,370.18**	**20,820.17**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

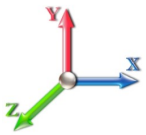
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.64
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.64
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.64
20.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	24.182	0.00	1.64
25.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	25.345	0.00	1.64
30.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	26.337	0.00	1.64
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.206	0.00	1.64
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.981	0.00	1.64
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.011	0.000	28.091	0.00	0.25
45.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.012	0.000	28.684	0.00	1.39
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.327	0.00	1.64
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.922	0.00	1.64
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.475	0.00	1.64
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.993	0.00	1.64
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.480	0.00	1.64
75.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.941	0.00	1.64
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.07	0.00	0.013	0.000	32.140	0.00	0.74
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.014	0.000	32.377	0.00	0.90
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.014	0.000	32.441	0.00	0.25
85.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.014	0.000	32.793	0.00	1.39
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.190	0.00	1.64
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.570	0.00	1.64
100.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	33.935	0.00	1.64
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	34.285	0.00	1.64
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.016	0.000	34.489	0.00	0.98
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.016	0.000	34.623	0.00	0.66
114.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.016	0.000	34.884	0.00	1.31
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.017	0.000	34.948	0.00	0.33
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.017	0.000	35.075	0.00	0.66
									Totals:		**0.0**	**38.3**

Calculated Forces

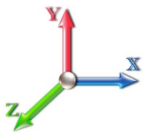
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 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	-20.77	-18.43	0.00	-1611.8	0.00	1611.83	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.770
5.00	-19.79	-18.11	0.00	-1519.7	0.00	1519.70	2627.56	1313.78	4087.72	2046.90	0.17	-0.308	0.000	0.750
10.00	-18.84	-17.78	0.00	-1429.1	0.00	1429.17	2591.79	1295.89	3951.04	1978.45	0.65	-0.616	0.000	0.730
15.00	-17.90	-17.46	0.00	-1340.2	0.00	1340.26	2555.34	1277.67	3815.58	1910.62	1.46	-0.924	0.000	0.709
20.00	-16.98	-17.11	0.00	-1252.9	0.00	1252.97	2518.21	1259.11	3681.41	1843.44	2.59	-1.230	0.000	0.687
25.00	-16.08	-16.74	0.00	-1167.4	0.00	1167.42	2480.41	1240.21	3548.60	1776.94	4.04	-1.534	0.000	0.664
30.00	-15.21	-16.35	0.00	-1083.7	0.00	1083.73	2441.94	1220.97	3417.21	1711.15	5.81	-1.836	0.000	0.640
35.00	-14.35	-15.95	0.00	-1001.9	0.00	1001.98	2402.79	1201.39	3287.30	1646.09	7.90	-2.134	0.000	0.615
40.00	-13.55	-15.51	0.00	-922.23	0.00	922.23	2362.96	1181.48	3158.94	1581.82	10.29	-2.429	0.000	0.589
40.75	-13.40	-15.47	0.00	-910.59	0.00	910.59	2356.93	1178.46	3139.82	1572.24	10.67	-2.474	0.000	0.585
45.00	-12.25	-15.09	0.00	-844.84	0.00	844.84	1757.80	878.90	2340.38	1171.93	12.99	-2.721	0.000	0.728
50.00	-11.58	-14.66	0.00	-769.39	0.00	769.39	1730.99	865.49	2250.57	1126.96	15.99	-3.005	0.000	0.690
55.00	-10.91	-14.24	0.00	-696.07	0.00	696.07	1703.50	851.75	2161.57	1082.39	19.31	-3.333	0.000	0.650
60.00	-10.26	-13.80	0.00	-624.89	0.00	624.89	1675.34	837.67	2073.46	1038.27	22.97	-3.651	0.000	0.608
65.00	-9.64	-13.37	0.00	-555.87	0.00	555.87	1646.50	823.25	1986.29	994.62	26.96	-3.957	0.000	0.565
70.00	-9.03	-12.92	0.00	-489.05	0.00	489.05	1616.99	808.49	1900.13	951.48	31.26	-4.250	0.000	0.520
75.00	-8.46	-12.47	0.00	-424.42	0.00	424.42	1586.80	793.40	1815.05	908.87	35.85	-4.526	0.000	0.473
77.25	-8.20	-12.28	0.00	-396.36	0.00	396.36	1573.00	786.50	1777.13	889.88	38.01	-4.647	0.000	0.451
80.00	-7.71	-12.01	0.00	-362.61	0.00	362.61	1555.94	777.97	1731.10	866.84	40.73	-4.789	0.000	0.424
80.75	-7.56	-11.95	0.00	-353.60	0.00	353.60	1065.47	532.73	1202.43	602.11	41.48	-4.827	0.000	0.595
85.00	-7.18	-11.58	0.00	-302.83	0.00	302.83	1050.73	525.37	1157.88	579.80	45.87	-5.029	0.000	0.530
90.00	-6.74	-11.14	0.00	-244.94	0.00	244.94	1032.77	516.39	1105.80	553.72	51.28	-5.298	0.000	0.449
95.00	-6.32	-10.71	0.00	-189.22	0.00	189.22	1014.14	507.07	1054.14	527.85	56.95	-5.531	0.000	0.365
100.00	-5.93	-10.28	0.00	-135.67	0.00	135.67	994.83	497.42	1002.97	502.23	62.84	-5.721	0.000	0.277
105.00	-5.56	-9.84	0.00	-84.29	0.00	84.29	974.85	487.42	952.34	476.88	68.90	-5.862	0.000	0.183
108.00	-3.67	-7.14	0.00	-54.76	0.00	54.76	962.53	481.27	922.25	461.81	72.60	-5.920	0.000	0.123
110.00	-3.56	-6.98	0.00	-40.47	0.00	40.47	954.18	477.09	902.32	451.83	75.08	-5.949	0.000	0.094
114.00	-1.65	-4.22	0.00	-12.57	0.00	12.57	937.17	468.59	862.79	432.04	80.07	-5.982	0.000	0.031
115.00	-1.60	-4.13	0.00	-8.35	0.00	8.35	932.85	466.42	852.98	427.13	81.32	-5.985	0.000	0.021
117.00	-0.05	-0.08	0.00	-0.08	0.00	0.08	924.13	462.06	833.45	417.34	83.83	-5.988	0.000	0.000
118.00	0.00	-0.08	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	85.08	-5.988	0.000	0.000

Wind Loading - Shaft

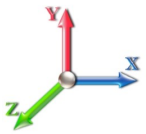
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 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	0.85	22.791	25.07	319.00	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	312.82	0.650	0.000	5.00	16.317	10.61	425.4	0.0	581.0
10.00		1.00	0.85	22.791	25.07	306.63	0.650	0.000	5.00	15.997	10.40	417.1	0.0	569.5
15.00		1.00	0.85	22.791	25.07	300.45	0.650	0.000	5.00	15.678	10.19	408.8	0.0	558.0
20.00		1.00	0.90	24.182	26.60	303.11	0.650	0.000	5.00	15.359	9.98	424.9	0.0	546.6
25.00		1.00	0.95	25.345	27.88	303.80	0.650	0.000	5.00	15.039	9.78	436.1	0.0	535.1
30.00		1.00	0.98	26.337	28.97	303.03	0.650	0.000	5.00	14.720	9.57	443.5	0.0	523.6
35.00		1.00	1.01	27.206	29.93	301.23	0.650	0.000	5.00	14.400	9.36	448.2	0.0	512.2
40.00		1.00	1.04	27.981	30.78	298.64	0.650	0.000	5.00	14.081	9.15	450.7	0.0	500.7
40.75	Bot - Section 2	1.00	1.05	28.091	30.90	298.20	0.650	0.000	0.75	2.085	1.35	67.0	0.0	74.1
45.00	Top - Section 1	1.00	1.07	28.684	31.55	295.43	0.650	0.000	4.25	11.857	7.71	389.1	0.0	753.0
50.00		1.00	1.09	29.327	32.26	296.36	0.650	0.000	5.00	13.653	8.87	458.1	0.0	389.1
55.00		1.00	1.12	29.922	32.91	292.26	0.650	0.000	5.00	13.334	8.67	456.4	0.0	379.9
60.00		1.00	1.14	30.475	33.52	287.80	0.650	0.000	5.00	13.015	8.46	453.7	0.0	370.7
65.00		1.00	1.16	30.993	34.09	283.02	0.650	0.000	5.00	12.695	8.25	450.1	0.0	361.5
70.00		1.00	1.17	31.480	34.63	277.97	0.650	0.000	5.00	12.376	8.04	445.7	0.0	352.4
75.00		1.00	1.19	31.941	35.13	272.67	0.650	0.000	5.00	12.056	7.84	440.5	0.0	343.2
77.25	Bot - Section 3	1.00	1.20	32.140	35.35	270.22	0.650	0.000	2.25	5.321	3.46	195.6	0.0	151.4
80.00		1.00	1.21	32.377	35.62	267.16	0.650	0.000	2.75	6.503	4.23	240.9	0.0	321.7
80.75	Top - Section 2	1.00	1.21	32.441	35.69	266.32	0.650	0.000	0.75	1.757	1.14	65.2	0.0	86.9
85.00		1.00	1.22	32.793	36.07	265.14	0.650	0.000	4.25	9.819	6.38	368.4	0.0	210.0
90.00		1.00	1.24	33.190	36.51	259.27	0.650	0.000	5.00	11.257	7.32	427.4	0.0	240.7
95.00		1.00	1.25	33.570	36.93	253.25	0.650	0.000	5.00	10.937	7.11	420.0	0.0	233.9
100.00		1.00	1.27	33.935	37.33	247.07	0.650	0.000	5.00	10.618	6.90	412.2	0.0	227.0
105.00		1.00	1.28	34.285	37.71	240.76	0.650	0.000	5.00	10.298	6.69	403.9	0.0	220.1
108.00	Appurtenance(s)	1.00	1.29	34.489	37.94	236.91	0.650	0.000	3.00	6.026	3.92	237.7	0.0	128.8
110.00		1.00	1.29	34.623	38.08	234.32	0.650	0.000	2.00	3.953	2.57	156.6	0.0	84.5
114.00	Appurtenance(s)	1.00	1.30	34.884	38.37	229.08	0.650	0.000	4.00	7.753	5.04	309.4	0.0	165.6
115.00		1.00	1.30	34.948	38.44	227.76	0.650	0.000	1.00	1.906	1.24	76.2	0.0	40.7
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	225.10	0.650	0.000	2.00	3.774	2.45	151.4	0.0	80.6
118.00		1.00	1.31	35.138	38.65	223.77	0.650	0.000	1.00	1.868	1.21	75.1	0.0	39.9
								Totals:	**118.00**			**10,155.4**		**9,582.3**

Discrete Appurtenance Forces

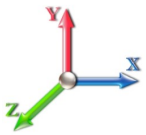
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 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	117.00	56.3"x12.6"x6.3" Panel	3	35.075	38.583	0.78	1.00	14.84	148.77	0.000	0.000	915.84	0.00	0.00
2	117.00	ACU-A20-N	4	35.075	38.583	0.79	1.00	0.44	3.60	0.000	0.000	27.31	0.00	0.00
3	117.00	APXVSPP18-C-A20	3	35.075	38.583	0.83	1.00	19.97	153.90	0.000	0.000	1232.78	0.00	0.00
4	117.00	Low Profile Platform-flat	1	35.075	38.583	1.00	1.00	25.00	1080.00	0.000	0.000	1543.31	0.00	0.00
5	114.00	800 MHz RRH	3	34.884	38.372	0.75	1.00	5.60	143.10	0.000	0.000	343.97	0.00	0.00
6	114.00	800 Filter	3	34.884	38.372	0.67	1.00	1.35	23.76	0.000	0.000	82.68	0.00	0.00
7	114.00	1900MHz RRH	3	34.884	38.372	0.75	1.00	6.23	162.00	0.000	0.000	382.65	0.00	0.00
8	114.00	26.1"x18.6"x6.7" RRU	3	34.884	38.372	0.68	1.00	8.26	189.00	0.000	0.000	507.25	0.00	0.00
9	114.00	Flush Mount	3	34.884	38.372	1.00	1.00	15.00	945.00	0.000	0.000	920.93	0.00	0.00
10	108.00	T-Arm (Round)	3	34.489	37.938	0.50	0.75	12.06	945.00	0.000	0.000	732.05	0.00	0.00
11	108.00	AIR 21 B2A B4P	3	34.489	37.938	0.69	0.80	12.57	244.08	0.000	0.000	762.99	0.00	0.00
12	108.00	AIR 21 B4A B2P	3	34.489	37.938	0.69	0.80	12.57	244.08	0.000	0.000	762.99	0.00	0.00
							Totals:		**4,282.29**			**8,214.76**		

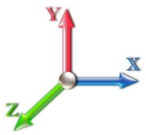
Total Applied Force Summary

Structure:	CT46142-A-SBA		**Code:**	EIA/TIA-222-G	7/31/2017
Site Name:	South Ledyard- Town Dump		**Exposure:**	C	
Height:	118.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Load Case: 0.9D + 1.6W 105 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		425.43	660.48	0.00	0.00
10.00		417.10	649.01	0.00	0.00
15.00		408.77	637.55	0.00	0.00
20.00		424.88	626.08	0.00	0.00
25.00		436.06	614.61	0.00	0.00
30.00		443.50	603.15	0.00	0.00
35.00		448.18	591.68	0.00	0.00
40.00		450.74	580.21	0.00	0.00
40.75		66.99	86.04	0.00	0.00
45.00		389.07	820.61	0.00	0.00
50.00		458.08	468.56	0.00	0.00
55.00		456.43	459.39	0.00	0.00
60.00		453.73	450.21	0.00	0.00
65.00		450.11	441.04	0.00	0.00
70.00		445.69	431.87	0.00	0.00
75.00		440.54	422.69	0.00	0.00
77.25		195.65	187.22	0.00	0.00
80.00		240.87	365.42	0.00	0.00
80.75		65.20	98.82	0.00	0.00
85.00		368.38	277.62	0.00	0.00
90.00		427.41	320.25	0.00	0.00
95.00		420.04	313.37	0.00	0.00
100.00		412.20	306.49	0.00	0.00
105.00		403.92	299.61	0.00	0.00
108.00	(9) attachments	2495.79	1609.62	0.00	0.00
110.00		156.58	91.82	0.00	0.00
114.00	(15) attachments	2546.89	1643.20	0.00	0.00
115.00		76.22	44.40	0.00	0.00
117.00	(11) attachments	3870.69	1474.24	0.00	0.00
118.00		75.09	39.89	0.00	0.00
	Totals:	**18,370.18**	**15,615.13**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

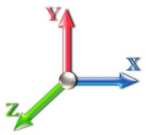
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.23
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.23
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	22.791	0.00	1.23
20.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	24.182	0.00	1.23
25.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	25.345	0.00	1.23
30.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	26.337	0.00	1.23
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.206	0.00	1.23
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	27.981	0.00	1.23
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.011	0.000	28.091	0.00	0.18
45.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.012	0.000	28.684	0.00	1.04
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.327	0.00	1.23
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	29.922	0.00	1.23
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.475	0.00	1.23
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	30.993	0.00	1.23
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.480	0.00	1.23
75.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	31.941	0.00	1.23
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.07	0.00	0.013	0.000	32.140	0.00	0.55
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.014	0.000	32.377	0.00	0.68
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.014	0.000	32.441	0.00	0.18
85.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.014	0.000	32.793	0.00	1.04
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.190	0.00	1.23
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	33.570	0.00	1.23
100.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	33.935	0.00	1.23
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	34.285	0.00	1.23
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.016	0.000	34.489	0.00	0.74
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.016	0.000	34.623	0.00	0.49
114.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.016	0.000	34.884	0.00	0.98
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.017	0.000	34.948	0.00	0.25
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.017	0.000	35.075	0.00	0.49
									Totals:		**0.0**	**28.7**

Calculated Forces

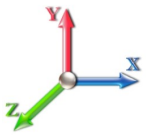
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 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	-15.57	-18.41	0.00	-1594.6	0.00	1594.65	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.760
5.00	-14.81	-18.06	0.00	-1502.5	0.00	1502.59	2627.56	1313.78	4087.72	2046.90	0.16	-0.305	0.000	0.740
10.00	-14.07	-17.72	0.00	-1412.2	0.00	1412.27	2591.79	1295.89	3951.04	1978.45	0.65	-0.609	0.000	0.719
15.00	-13.35	-17.37	0.00	-1323.6	0.00	1323.69	2555.34	1277.67	3815.58	1910.62	1.45	-0.913	0.000	0.698
20.00	-12.64	-17.00	0.00	-1236.8	0.00	1236.84	2518.21	1259.11	3681.41	1843.44	2.56	-1.215	0.000	0.676
25.00	-11.95	-16.61	0.00	-1151.8	0.00	1151.84	2480.41	1240.21	3548.60	1776.94	4.00	-1.515	0.000	0.653
30.00	-11.28	-16.21	0.00	-1068.7	0.00	1068.78	2441.94	1220.97	3417.21	1711.15	5.74	-1.813	0.000	0.629
35.00	-10.62	-15.80	0.00	-987.74	0.00	987.74	2402.79	1201.39	3287.30	1646.09	7.80	-2.107	0.000	0.605
40.00	-10.01	-15.35	0.00	-908.76	0.00	908.76	2362.96	1181.48	3158.94	1581.82	10.16	-2.398	0.000	0.579
40.75	-9.89	-15.31	0.00	-897.24	0.00	897.24	2356.93	1178.46	3139.82	1572.24	10.54	-2.442	0.000	0.575
45.00	-9.02	-14.92	0.00	-832.19	0.00	832.19	1757.80	878.90	2340.38	1171.93	12.83	-2.686	0.000	0.716
50.00	-8.50	-14.49	0.00	-757.58	0.00	757.58	1730.99	865.49	2250.57	1126.96	15.79	-2.965	0.000	0.677
55.00	-7.99	-14.05	0.00	-685.15	0.00	685.15	1703.50	851.75	2161.57	1082.39	19.07	-3.289	0.000	0.638
60.00	-7.49	-13.61	0.00	-614.90	0.00	614.90	1675.34	837.67	2073.46	1038.27	22.68	-3.601	0.000	0.597
65.00	-7.01	-13.17	0.00	-546.84	0.00	546.84	1646.50	823.25	1986.29	994.62	26.61	-3.903	0.000	0.554
70.00	-6.55	-12.73	0.00	-481.00	0.00	481.00	1616.99	808.49	1900.13	951.48	30.85	-4.190	0.000	0.510
75.00	-6.12	-12.28	0.00	-417.37	0.00	417.37	1586.80	793.40	1815.05	908.87	35.38	-4.462	0.000	0.463
77.25	-5.92	-12.08	0.00	-389.75	0.00	389.75	1573.00	786.50	1777.13	889.88	37.51	-4.581	0.000	0.442
80.00	-5.56	-11.82	0.00	-356.53	0.00	356.53	1555.94	777.97	1731.10	866.84	40.19	-4.721	0.000	0.415
80.75	-5.44	-11.76	0.00	-347.67	0.00	347.67	1065.47	532.73	1202.43	602.11	40.93	-4.758	0.000	0.583
85.00	-5.15	-11.39	0.00	-297.70	0.00	297.70	1050.73	525.37	1157.88	579.80	45.26	-4.956	0.000	0.519
90.00	-4.82	-10.95	0.00	-240.77	0.00	240.77	1032.77	516.39	1105.80	553.72	50.59	-5.221	0.000	0.440
95.00	-4.51	-10.52	0.00	-186.00	0.00	186.00	1014.14	507.07	1054.14	527.85	56.17	-5.450	0.000	0.357
100.00	-4.22	-10.10	0.00	-133.38	0.00	133.38	994.83	497.42	1002.97	502.23	61.98	-5.636	0.000	0.270
105.00	-3.94	-9.67	0.00	-82.91	0.00	82.91	974.85	487.42	952.34	476.88	67.95	-5.775	0.000	0.178
108.00	-2.59	-7.03	0.00	-53.90	0.00	53.90	962.53	481.27	922.25	461.81	71.59	-5.833	0.000	0.120
110.00	-2.51	-6.86	0.00	-39.85	0.00	39.85	954.18	477.09	902.32	451.83	74.04	-5.861	0.000	0.091
114.00	-1.14	-4.16	0.00	-12.40	0.00	12.40	937.17	468.59	862.79	432.04	78.96	-5.893	0.000	0.030
115.00	-1.10	-4.08	0.00	-8.24	0.00	8.24	932.85	466.42	852.98	427.13	80.19	-5.897	0.000	0.021
117.00	-0.03	-0.08	0.00	-0.08	0.00	0.08	924.13	462.06	833.45	417.34	82.66	-5.900	0.000	0.000
118.00	0.00	-0.08	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	83.89	-5.900	0.000	0.000

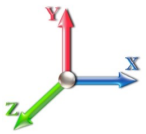
Wind Loading - Shaft

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

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	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	17.352	20.82	118.4	306.8	1081.4
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	17.107	20.53	116.7	323.2	1082.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	16.833	20.20	114.8	330.5	1074.5
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	16.547	19.86	119.8	333.7	1062.5
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	16.255	19.51	123.3	334.7	1048.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	15.958	19.15	125.8	334.0	1032.2
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	15.658	18.79	127.5	332.3	1015.2
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	15.355	18.43	128.6	329.7	997.3
40.75	Bot - Section 2	1.00	1.05	6.370	7.01	0.00	1.200	1.532	0.75	2.276	2.73	19.1	49.4	148.2
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	4.25	12.953	15.54	111.2	281.6	1285.7
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	14.957	17.95	131.3	327.6	846.3
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	14.650	17.58	131.2	323.4	829.9
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	14.342	17.21	130.8	318.8	813.1
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	14.033	16.84	130.2	313.9	796.0
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	13.723	16.47	129.3	308.7	778.6
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	13.413	16.10	128.2	303.3	760.9
77.25	Bot - Section 3	1.00	1.20	7.288	8.02	0.00	1.200	1.633	2.25	5.934	7.12	57.1	135.3	337.3
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	2.75	7.254	8.70	70.3	165.8	594.7
80.75	Top - Section 2	1.00	1.21	7.356	8.09	0.00	1.200	1.640	0.75	1.962	2.35	19.0	45.1	160.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	4.25	10.987	13.18	107.8	251.2	531.3
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	12.639	15.17	125.6	289.5	610.5
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	12.327	14.79	123.9	283.3	595.1
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	12.014	14.42	122.0	276.9	579.6
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	11.702	14.04	120.1	270.4	563.9
108.00	Appurtenance(s)	1.00	1.29	7.821	8.60	0.00	1.200	1.689	3.00	6.870	8.24	70.9	159.8	331.5
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	2.00	4.517	5.42	46.8	105.5	218.1
114.00	Appurtenance(s)	1.00	1.30	7.910	8.70	0.00	1.200	1.698	4.00	8.885	10.66	92.8	206.7	427.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	1.00	2.190	2.63	22.9	51.4	105.7
117.00	Appurtenance(s)	1.00	1.31	7.954	8.75	0.00	1.200	1.702	2.00	4.342	5.21	45.6	101.7	209.2
118.00		1.00	1.31	7.968	8.76	0.00	1.200	1.704	1.00	2.152	2.58	22.6	50.6	103.8
								Totals:	**118.00**			**2,933.7**		**20,021.4**

Discrete Appurtenance Forces

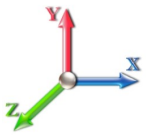
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	117.00	56.3"x12.6"x6.3" Panel	3	7.954	8.749	0.80	1.00	17.82	665.46	0.000	0.000	155.89	0.00	0.00
2	117.00	ACU-A20-N	4	7.954	8.749	0.79	1.00	1.36	16.36	0.000	0.000	11.87	0.00	0.00
3	117.00	APXVSPP18-C-A20	3	7.954	8.749	0.83	1.00	26.76	562.53	0.000	0.000	234.08	0.00	0.00
4	117.00	Low Profile Platform-flat	1	7.954	8.749	1.00	1.00	45.43	2161.43	0.000	0.000	397.45	0.00	0.00
5	114.00	800 MHz RRH	3	7.910	8.701	0.75	1.00	8.11	343.37	0.000	0.000	70.53	0.00	0.00
6	114.00	800 Filter	3	7.910	8.701	0.67	1.00	2.20	30.20	0.000	0.000	19.13	0.00	0.00
7	114.00	1900MHz RRH	3	7.910	8.701	0.75	1.00	9.01	387.83	0.000	0.000	78.39	0.00	0.00
8	114.00	26.1"x18.6"x6.7" RRU	3	7.910	8.701	0.70	1.00	10.16	572.60	0.000	0.000	88.43	0.00	0.00
9	114.00	Flush Mount	3	7.910	8.701	1.00	1.00	25.19	1815.78	0.000	0.000	219.16	0.00	0.00
10	108.00	T-Arm (Round)	3	7.821	8.603	0.50	0.75	22.24	1759.30	0.000	0.000	191.36	0.00	0.00
11	108.00	AIR 21 B2A B4P	3	7.821	8.603	0.69	0.80	14.76	812.66	0.000	0.000	126.95	0.00	0.00
12	108.00	AIR 21 B4A B2P	3	7.821	8.603	0.69	0.80	14.76	812.66	0.000	0.000	126.95	0.00	0.00
							Totals:		**9,940.17**			**1,720.19**		

Total Applied Force Summary

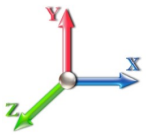
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		118.37	1198.69	0.00	0.00
10.00		116.70	1201.38	0.00	0.00
15.00		114.83	1194.37	0.00	0.00
20.00		119.77	1183.09	0.00	0.00
25.00		123.31	1169.33	0.00	0.00
30.00		125.80	1153.94	0.00	0.00
35.00		127.50	1137.37	0.00	0.00
40.00		128.60	1119.92	0.00	0.00
40.75		19.14	166.61	0.00	0.00
45.00		111.21	1390.18	0.00	0.00
50.00		131.29	969.62	0.00	0.00
55.00		131.20	953.52	0.00	0.00
60.00		130.82	937.00	0.00	0.00
65.00		130.18	920.13	0.00	0.00
70.00		129.31	902.96	0.00	0.00
75.00		128.24	885.51	0.00	0.00
77.25		57.08	393.40	0.00	0.00
80.00		70.30	663.40	0.00	0.00
80.75		19.05	179.68	0.00	0.00
85.00		107.85	637.62	0.00	0.00
90.00		125.56	735.80	0.00	0.00
95.00		123.86	720.60	0.00	0.00
100.00		122.03	705.23	0.00	0.00
105.00		120.09	689.71	0.00	0.00
108.00	(9) attachments	516.17	3791.71	0.00	0.00
110.00		46.81	235.93	0.00	0.00
114.00	(15) attachments	568.42	3612.99	0.00	0.00
115.00		22.90	114.62	0.00	0.00
117.00	(11) attachments	844.88	3632.85	0.00	0.00
118.00		22.63	103.75	0.00	0.00
	Totals:	**4,653.92**	**32,700.91**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

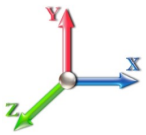
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	1.19	0.00	0.010	0.000	5.168	0.00	12.93
10.00	Safety Cable	Yes	5.00	0.000	0.38	1.27	0.00	0.010	0.000	5.168	0.00	14.46
15.00	Safety Cable	Yes	5.00	0.000	0.38	1.31	0.00	0.010	0.000	5.168	0.00	15.46
20.00	Safety Cable	Yes	5.00	0.000	0.38	1.35	0.00	0.010	0.000	5.483	0.00	16.21
25.00	Safety Cable	Yes	5.00	0.000	0.38	1.37	0.00	0.011	0.000	5.747	0.00	16.83
30.00	Safety Cable	Yes	5.00	0.000	0.38	1.40	0.00	0.011	0.000	5.972	0.00	17.35
35.00	Safety Cable	Yes	5.00	0.000	0.38	1.42	0.00	0.011	0.000	6.169	0.00	17.80
40.00	Safety Cable	Yes	5.00	0.000	0.38	1.43	0.00	0.011	0.000	6.345	0.00	18.21
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.22	0.00	0.011	0.000	6.370	0.00	2.74
45.00	Safety Cable	Yes	4.25	0.000	0.38	1.23	0.00	0.012	0.000	6.504	0.00	15.79
50.00	Safety Cable	Yes	5.00	0.000	0.38	1.46	0.00	0.012	0.000	6.650	0.00	18.91
55.00	Safety Cable	Yes	5.00	0.000	0.38	1.47	0.00	0.012	0.000	6.785	0.00	19.22
60.00	Safety Cable	Yes	5.00	0.000	0.38	1.49	0.00	0.012	0.000	6.910	0.00	19.51
65.00	Safety Cable	Yes	5.00	0.000	0.38	1.50	0.00	0.012	0.000	7.028	0.00	19.78
70.00	Safety Cable	Yes	5.00	0.000	0.38	1.51	0.00	0.013	0.000	7.138	0.00	20.03
75.00	Safety Cable	Yes	5.00	0.000	0.38	1.52	0.00	0.013	0.000	7.243	0.00	20.27
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.68	0.00	0.013	0.000	7.288	0.00	9.17
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.84	0.00	0.014	0.000	7.342	0.00	11.27
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.23	0.00	0.014	0.000	7.356	0.00	3.08
85.00	Safety Cable	Yes	4.25	0.000	0.38	1.30	0.00	0.014	0.000	7.436	0.00	17.60
90.00	Safety Cable	Yes	5.00	0.000	0.38	1.54	0.00	0.014	0.000	7.526	0.00	20.91
95.00	Safety Cable	Yes	5.00	0.000	0.38	1.55	0.00	0.014	0.000	7.612	0.00	21.11
100.00	Safety Cable	Yes	5.00	0.000	0.38	1.55	0.00	0.015	0.000	7.695	0.00	21.30
105.00	Safety Cable	Yes	5.00	0.000	0.38	1.56	0.00	0.015	0.000	7.774	0.00	21.48
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.94	0.00	0.016	0.000	7.821	0.00	12.95
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.63	0.00	0.016	0.000	7.851	0.00	8.66
114.00	Safety Cable	Yes	4.00	0.000	0.38	1.26	0.00	0.016	0.000	7.910	0.00	17.43
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.31	0.00	0.017	0.000	7.925	0.00	4.36
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.63	0.00	0.017	0.000	7.954	0.00	8.75
										Totals:	**0.0**	**443.6**

Calculated Forces

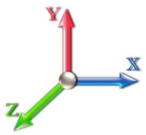
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

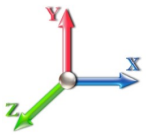
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-32.70	-4.68	0.00	-403.13	0.00	403.13	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.203
5.00	-31.49	-4.60	0.00	-379.75	0.00	379.75	2627.56	1313.78	4087.72	2046.90	0.04	-0.077	0.000	0.198
10.00	-30.29	-4.52	0.00	-356.76	0.00	356.76	2591.79	1295.89	3951.04	1978.45	0.16	-0.154	0.000	0.192
15.00	-29.09	-4.44	0.00	-334.15	0.00	334.15	2555.34	1277.67	3815.58	1910.62	0.37	-0.231	0.000	0.186
20.00	-27.90	-4.35	0.00	-311.95	0.00	311.95	2518.21	1259.11	3681.41	1843.44	0.65	-0.307	0.000	0.180
25.00	-26.72	-4.26	0.00	-290.19	0.00	290.19	2480.41	1240.21	3548.60	1776.94	1.01	-0.383	0.000	0.174
30.00	-25.57	-4.16	0.00	-268.91	0.00	268.91	2441.94	1220.97	3417.21	1711.15	1.45	-0.458	0.000	0.168
35.00	-24.42	-4.05	0.00	-248.13	0.00	248.13	2402.79	1201.39	3287.30	1646.09	1.97	-0.532	0.000	0.161
40.00	-23.30	-3.93	0.00	-227.89	0.00	227.89	2362.96	1181.48	3158.94	1581.82	2.57	-0.604	0.000	0.154
40.75	-23.13	-3.92	0.00	-224.94	0.00	224.94	2356.93	1178.46	3139.82	1572.24	2.66	-0.616	0.000	0.153
45.00	-21.74	-3.82	0.00	-208.28	0.00	208.28	1757.80	878.90	2340.38	1171.93	3.24	-0.677	0.000	0.190
50.00	-20.77	-3.70	0.00	-189.19	0.00	189.19	1730.99	865.49	2250.57	1126.96	3.98	-0.747	0.000	0.180
55.00	-19.81	-3.59	0.00	-170.67	0.00	170.67	1703.50	851.75	2161.57	1082.39	4.81	-0.827	0.000	0.169
60.00	-18.87	-3.47	0.00	-152.74	0.00	152.74	1675.34	837.67	2073.46	1038.27	5.72	-0.905	0.000	0.158
65.00	-17.95	-3.34	0.00	-135.41	0.00	135.41	1646.50	823.25	1986.29	994.62	6.71	-0.980	0.000	0.147
70.00	-17.04	-3.22	0.00	-118.70	0.00	118.70	1616.99	808.49	1900.13	951.48	7.77	-1.051	0.000	0.135
75.00	-16.16	-3.09	0.00	-102.60	0.00	102.60	1586.80	793.40	1815.05	908.87	8.91	-1.118	0.000	0.123
77.25	-15.77	-3.03	0.00	-95.66	0.00	95.66	1573.00	786.50	1777.13	889.88	9.44	-1.147	0.000	0.118
80.00	-15.10	-2.95	0.00	-87.32	0.00	87.32	1555.94	777.97	1731.10	866.84	10.11	-1.181	0.000	0.110
80.75	-14.92	-2.94	0.00	-85.11	0.00	85.11	1065.47	532.73	1202.43	602.11	10.30	-1.190	0.000	0.155
85.00	-14.28	-2.83	0.00	-72.62	0.00	72.62	1050.73	525.37	1157.88	579.80	11.38	-1.239	0.000	0.139
90.00	-13.55	-2.70	0.00	-58.47	0.00	58.47	1032.77	516.39	1105.80	553.72	12.71	-1.303	0.000	0.119
95.00	-12.83	-2.57	0.00	-44.95	0.00	44.95	1014.14	507.07	1054.14	527.85	14.11	-1.359	0.000	0.098
100.00	-12.12	-2.44	0.00	-32.08	0.00	32.08	994.83	497.42	1002.97	502.23	15.56	-1.404	0.000	0.076
105.00	-11.44	-2.31	0.00	-19.87	0.00	19.87	974.85	487.42	952.34	476.88	17.05	-1.437	0.000	0.053
108.00	-7.66	-1.70	0.00	-12.93	0.00	12.93	962.53	481.27	922.25	461.81	17.95	-1.451	0.000	0.036
110.00	-7.42	-1.65	0.00	-9.53	0.00	9.53	954.18	477.09	902.32	451.83	18.56	-1.458	0.000	0.029
114.00	-3.83	-0.99	0.00	-2.94	0.00	2.94	937.17	468.59	862.79	432.04	19.79	-1.465	0.000	0.011
115.00	-3.71	-0.96	0.00	-1.95	0.00	1.95	932.85	466.42	852.98	427.13	20.09	-1.466	0.000	0.009
117.00	-0.10	-0.03	0.00	-0.03	0.00	0.03	924.13	462.06	833.45	417.34	20.71	-1.467	0.000	0.000
118.00	0.00	-0.02	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	21.02	-1.467	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.17	**Iterations**	23
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.16
Wind Load Factor	0.00	**Structure Frequency**	0.41	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		645.52	0.00	0.04	0.02	10.96	
10.00		632.78	0.01	0.06	0.03	15.09	
15.00		620.04	0.03	0.07	0.04	16.64	
20.00		607.30	0.05	0.07	0.04	17.19	
25.00		594.56	0.08	0.07	0.04	17.44	
30.00		581.82	0.12	0.07	0.03	17.61	
35.00		569.08	0.17	0.07	0.03	17.63	
40.00		556.34	0.22	0.06	0.02	17.20	
40.75	Bot - Section 2	82.35	0.23	0.06	0.02	2.54	
45.00	Top - Section 1	836.69	0.27	0.05	0.01	24.46	
50.00		432.28	0.34	0.04	0.01	10.74	
55.00		422.09	0.41	0.01	0.01	7.14	
60.00		411.89	0.49	-0.01	0.01	2.30	
65.00		401.70	0.57	-0.04	0.01	-2.97	
70.00		391.51	0.67	-0.08	0.02	-7.36	
75.00		381.32	0.76	-0.10	0.04	-9.74	
77.25	Bot - Section 3	168.27	0.81	-0.11	0.06	-4.46	
80.00		357.43	0.87	-0.12	0.08	-9.20	
80.75	Top - Section 2	96.55	0.89	-0.12	0.08	-2.43	
85.00		233.37	0.98	-0.11	0.12	-4.36	
90.00		267.48	1.10	-0.07	0.19	-1.11	
95.00		259.84	1.23	0.03	0.27	4.63	
100.00		252.19	1.36	0.21	0.39	11.92	
105.00		244.55	1.50	0.49	0.54	20.63	
108.00	Appurtenance(s)	1735.4	1.58	0.73	0.65	191.41	
110.00		93.84	1.64	0.92	0.73	12.12	
114.00	Appurtenance(s)	1809.4	1.76	1.38	0.92	308.93	
115.00		45.24	1.80	1.52	0.97	8.23	
117.00	Appurtenance(s)	1629.8	1.86	1.82	1.08	334.64	
118.00		44.32	1.89	1.98	1.14	9.64	
	Totals:	**15,405.1**				**1,037.5**	**Total Wind:** **18,370.2**

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

Calculated Forces

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.17			**Iterations**	23
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.16
Wind Load Factor	0.00	**Structure Frequency**	0.41	**SA**	0.04			**S1**	0.06
								Seismic Importance Factor	1.00

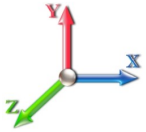
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-20.82	-1.08	0.00	-112.57	0.00	112.57	2662.66	1331.33	4225.57	2115.93		0.00	0.00	0.061
5.00	-19.94	-1.08	0.00	-107.16	0.00	107.16	2627.56	1313.78	4087.72	2046.90		0.01	-0.02	0.060
10.00	-19.07	-1.07	0.00	-101.77	0.00	101.77	2591.79	1295.89	3951.04	1978.45		0.05	-0.04	0.059
15.00	-18.22	-1.06	0.00	-96.41	0.00	96.41	2555.34	1277.67	3815.58	1910.62		0.10	-0.07	0.058
20.00	-17.39	-1.05	0.00	-91.11	0.00	91.11	2518.21	1259.11	3681.41	1843.44		0.18	-0.09	0.056
25.00	-16.57	-1.04	0.00	-85.87	0.00	85.87	2480.41	1240.21	3548.60	1776.94		0.29	-0.11	0.055
30.00	-15.76	-1.02	0.00	-80.69	0.00	80.69	2441.94	1220.97	3417.21	1711.15		0.41	-0.13	0.054
35.00	-14.97	-1.01	0.00	-75.57	0.00	75.57	2402.79	1201.39	3287.30	1646.09		0.56	-0.15	0.052
40.00	-14.20	-0.99	0.00	-70.52	0.00	70.52	2362.96	1181.48	3158.94	1581.82		0.74	-0.18	0.051
40.75	-14.09	-0.99	0.00	-69.78	0.00	69.78	2356.93	1178.46	3139.82	1572.24		0.77	-0.18	0.050
45.00	-12.99	-0.97	0.00	-65.56	0.00	65.56	1757.80	878.90	2340.38	1171.93		0.94	-0.20	0.063
50.00	-12.37	-0.96	0.00	-60.71	0.00	60.71	1730.99	865.49	2250.57	1126.96		1.16	-0.22	0.061
55.00	-11.75	-0.96	0.00	-55.90	0.00	55.90	1703.50	851.75	2161.57	1082.39		1.40	-0.25	0.059
60.00	-11.15	-0.96	0.00	-51.12	0.00	51.12	1675.34	837.67	2073.46	1038.27		1.68	-0.27	0.056
65.00	-10.56	-0.96	0.00	-46.33	0.00	46.33	1646.50	823.25	1986.29	994.62		1.98	-0.30	0.053
70.00	-9.99	-0.96	0.00	-41.53	0.00	41.53	1616.99	808.49	1900.13	951.48		2.30	-0.32	0.050
75.00	-9.42	-0.96	0.00	-36.73	0.00	36.73	1586.80	793.40	1815.05	908.87		2.65	-0.35	0.046
77.25	-9.17	-0.96	0.00	-34.57	0.00	34.57	1573.00	786.50	1777.13	889.88		2.82	-0.36	0.045
80.00	-8.69	-0.96	0.00	-31.93	0.00	31.93	1555.94	777.97	1731.10	866.84		3.03	-0.37	0.042
80.75	-8.55	-0.96	0.00	-31.21	0.00	31.21	1065.47	532.73	1202.43	602.11		3.09	-0.37	0.060
85.00	-8.18	-0.96	0.00	-27.14	0.00	27.14	1050.73	525.37	1157.88	579.80		3.43	-0.39	0.055
90.00	-7.76	-0.96	0.00	-22.34	0.00	22.34	1032.77	516.39	1105.80	553.72		3.85	-0.42	0.048
95.00	-7.34	-0.95	0.00	-17.54	0.00	17.54	1014.14	507.07	1054.14	527.85		4.30	-0.44	0.040
100.00	-6.93	-0.94	0.00	-12.77	0.00	12.77	994.83	497.42	1002.97	502.23		4.77	-0.45	0.032
105.00	-6.53	-0.92	0.00	-8.06	0.00	8.06	974.85	487.42	952.34	476.88		5.25	-0.47	0.024
108.00	-4.39	-0.71	0.00	-5.31	0.00	5.31	962.53	481.27	922.25	461.81		5.55	-0.47	0.016
110.00	-4.26	-0.70	0.00	-3.89	0.00	3.89	954.18	477.09	902.32	451.83		5.74	-0.48	0.013
114.00	-2.08	-0.37	0.00	-1.10	0.00	1.10	937.17	468.59	862.79	432.04		6.15	-0.48	0.005
115.00	-2.02	-0.36	0.00	-0.73	0.00	0.73	932.85	466.42	852.98	427.13		6.25	-0.48	0.004
117.00	-0.05	-0.01	0.00	-0.01	0.00	0.01	924.13	462.06	833.45	417.34		6.45	-0.48	0.000
118.00	0.00	-0.01	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48		6.55	-0.48	0.000

Seismic Segment Forces (Factored)

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.17	**Iterations**	23
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.16
Wind Load Factor	0.00	**Structure Frequency**	0.41	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		645.52	0.00	0.04	0.02	10.96	
10.00		632.78	0.01	0.06	0.03	15.09	
15.00		620.04	0.03	0.07	0.04	16.64	
20.00		607.30	0.05	0.07	0.04	17.19	
25.00		594.56	0.08	0.07	0.04	17.44	
30.00		581.82	0.12	0.07	0.03	17.61	
35.00		569.08	0.17	0.07	0.03	17.63	
40.00		556.34	0.22	0.06	0.02	17.20	
40.75	Bot - Section 2	82.35	0.23	0.06	0.02	2.54	
45.00	Top - Section 1	836.69	0.27	0.05	0.01	24.46	
50.00		432.28	0.34	0.04	0.01	10.74	
55.00		422.09	0.41	0.01	0.01	7.14	
60.00		411.89	0.49	-0.01	0.01	2.30	
65.00		401.70	0.57	-0.04	0.01	-2.97	
70.00		391.51	0.67	-0.08	0.02	-7.36	
75.00		381.32	0.76	-0.10	0.04	-9.74	
77.25	Bot - Section 3	168.27	0.81	-0.11	0.06	-4.46	
80.00		357.43	0.87	-0.12	0.08	-9.20	
80.75	Top - Section 2	96.55	0.89	-0.12	0.08	-2.43	
85.00		233.37	0.98	-0.11	0.12	-4.36	
90.00		267.48	1.10	-0.07	0.19	-1.11	
95.00		259.84	1.23	0.03	0.27	4.63	
100.00		252.19	1.36	0.21	0.39	11.92	
105.00		244.55	1.50	0.49	0.54	20.63	
108.00	Appurtenance(s)	1735.4	1.58	0.73	0.65	191.41	
110.00		93.84	1.64	0.92	0.73	12.12	
114.00	Appurtenance(s)	1809.4	1.76	1.38	0.92	308.93	
115.00		45.24	1.80	1.52	0.97	8.23	
117.00	Appurtenance(s)	1629.8	1.86	1.82	1.08	334.64	
118.00		44.32	1.89	1.98	1.14	9.64	
	Totals:	**15,405.1**				**1,037.5**	**Total Wind:** **18,370.2**

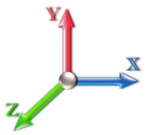
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.17	**Iterations**	23		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.16		
Wind Load Factor	0.00	**Structure Frequency**	0.41	**SA**	0.04	**S1**	0.06	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-15.61	-1.08	0.00	-111.27	0.00	111.27	2662.66	1331.33	4225.57	2115.93		0.00	0.00	0.058
5.00	-14.95	-1.08	0.00	-105.86	0.00	105.86	2627.56	1313.78	4087.72	2046.90		0.01	-0.02	0.057
10.00	-14.30	-1.07	0.00	-100.48	0.00	100.48	2591.79	1295.89	3951.04	1978.45		0.05	-0.04	0.056
15.00	-13.67	-1.05	0.00	-95.15	0.00	95.15	2555.34	1277.67	3815.58	1910.62		0.10	-0.06	0.055
20.00	-13.04	-1.04	0.00	-89.88	0.00	89.88	2518.21	1259.11	3681.41	1843.44		0.18	-0.09	0.054
25.00	-12.43	-1.03	0.00	-84.68	0.00	84.68	2480.41	1240.21	3548.60	1776.94		0.28	-0.11	0.053
30.00	-11.82	-1.01	0.00	-79.54	0.00	79.54	2441.94	1220.97	3417.21	1711.15		0.41	-0.13	0.051
35.00	-11.23	-1.00	0.00	-74.48	0.00	74.48	2402.79	1201.39	3287.30	1646.09		0.56	-0.15	0.050
40.00	-10.65	-0.98	0.00	-69.49	0.00	69.49	2362.96	1181.48	3158.94	1581.82		0.73	-0.17	0.048
40.75	-10.56	-0.98	0.00	-68.75	0.00	68.75	2356.93	1178.46	3139.82	1572.24		0.76	-0.18	0.048
45.00	-9.74	-0.96	0.00	-64.58	0.00	64.58	1757.80	878.90	2340.38	1171.93		0.92	-0.20	0.061
50.00	-9.27	-0.95	0.00	-59.79	0.00	59.79	1730.99	865.49	2250.57	1126.96		1.14	-0.22	0.058
55.00	-8.81	-0.94	0.00	-55.05	0.00	55.05	1703.50	851.75	2161.57	1082.39		1.38	-0.24	0.056
60.00	-8.36	-0.94	0.00	-50.33	0.00	50.33	1675.34	837.67	2073.46	1038.27		1.65	-0.27	0.053
65.00	-7.92	-0.94	0.00	-45.62	0.00	45.62	1646.50	823.25	1986.29	994.62		1.95	-0.29	0.051
70.00	-7.49	-0.94	0.00	-40.90	0.00	40.90	1616.99	808.49	1900.13	951.48		2.27	-0.32	0.048
75.00	-7.07	-0.94	0.00	-36.17	0.00	36.17	1586.80	793.40	1815.05	908.87		2.62	-0.34	0.044
77.25	-6.88	-0.94	0.00	-34.05	0.00	34.05	1573.00	786.50	1777.13	889.88		2.78	-0.35	0.043
80.00	-6.51	-0.94	0.00	-31.45	0.00	31.45	1555.94	777.97	1731.10	866.84		2.99	-0.36	0.040
80.75	-6.41	-0.94	0.00	-30.74	0.00	30.74	1065.47	532.73	1202.43	602.11		3.04	-0.37	0.057
85.00	-6.14	-0.94	0.00	-26.73	0.00	26.73	1050.73	525.37	1157.88	579.80		3.38	-0.39	0.052
90.00	-5.82	-0.94	0.00	-22.01	0.00	22.01	1032.77	516.39	1105.80	553.72		3.80	-0.41	0.045
95.00	-5.50	-0.94	0.00	-17.28	0.00	17.28	1014.14	507.07	1054.14	527.85		4.24	-0.43	0.038
100.00	-5.20	-0.93	0.00	-12.59	0.00	12.59	994.83	497.42	1002.97	502.23		4.70	-0.45	0.030
105.00	-4.90	-0.90	0.00	-7.95	0.00	7.95	974.85	487.42	952.34	476.88		5.18	-0.46	0.022
108.00	-3.29	-0.70	0.00	-5.24	0.00	5.24	962.53	481.27	922.25	461.81		5.47	-0.47	0.015
110.00	-3.20	-0.69	0.00	-3.84	0.00	3.84	954.18	477.09	902.32	451.83		5.66	-0.47	0.012
114.00	-1.56	-0.37	0.00	-1.09	0.00	1.09	937.17	468.59	862.79	432.04		6.06	-0.47	0.004
115.00	-1.51	-0.36	0.00	-0.72	0.00	0.72	932.85	466.42	852.98	427.13		6.16	-0.47	0.003
117.00	-0.04	-0.01	0.00	-0.01	0.00	0.01	924.13	462.06	833.45	417.34		6.36	-0.47	0.000
118.00	0.00	-0.01	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48		6.46	-0.47	0.000

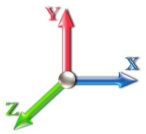
Wind Loading - Shaft

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

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	0.85	7.442	8.19	182.29	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	178.75	0.650	0.000	5.00	16.317	10.61	86.8	0.0	645.5
10.00		1.00	0.85	7.442	8.19	175.22	0.650	0.000	5.00	15.997	10.40	85.1	0.0	632.8
15.00		1.00	0.85	7.442	8.19	171.69	0.650	0.000	5.00	15.678	10.19	83.4	0.0	620.0
20.00		1.00	0.90	7.896	8.69	173.21	0.650	0.000	5.00	15.359	9.98	86.7	0.0	607.3
25.00		1.00	0.95	8.276	9.10	173.60	0.650	0.000	5.00	15.039	9.78	89.0	0.0	594.6
30.00		1.00	0.98	8.600	9.46	173.16	0.650	0.000	5.00	14.720	9.57	90.5	0.0	581.8
35.00		1.00	1.01	8.883	9.77	172.13	0.650	0.000	5.00	14.400	9.36	91.5	0.0	569.1
40.00		1.00	1.04	9.137	10.05	170.65	0.650	0.000	5.00	14.081	9.15	92.0	0.0	556.3
40.75	Bot - Section 2	1.00	1.05	9.173	10.09	170.40	0.650	0.000	0.75	2.085	1.35	13.7	0.0	82.4
45.00	Top - Section 1	1.00	1.07	9.366	10.30	168.82	0.650	0.000	4.25	11.857	7.71	79.4	0.0	836.7
50.00		1.00	1.09	9.576	10.53	169.35	0.650	0.000	5.00	13.653	8.87	93.5	0.0	432.3
55.00		1.00	1.12	9.770	10.75	167.01	0.650	0.000	5.00	13.334	8.67	93.1	0.0	422.1
60.00		1.00	1.14	9.951	10.95	164.46	0.650	0.000	5.00	13.015	8.46	92.6	0.0	411.9
65.00		1.00	1.16	10.120	11.13	161.73	0.650	0.000	5.00	12.695	8.25	91.9	0.0	401.7
70.00		1.00	1.17	10.279	11.31	158.84	0.650	0.000	5.00	12.376	8.04	91.0	0.0	391.5
75.00		1.00	1.19	10.430	11.47	155.81	0.650	0.000	5.00	12.056	7.84	89.9	0.0	381.3
77.25	Bot - Section 3	1.00	1.20	10.495	11.54	154.41	0.650	0.000	2.25	5.321	3.46	39.9	0.0	168.3
80.00		1.00	1.21	10.572	11.63	152.66	0.650	0.000	2.75	6.503	4.23	49.2	0.0	357.4
80.75	Top - Section 2	1.00	1.21	10.593	11.65	152.18	0.650	0.000	0.75	1.757	1.14	13.3	0.0	96.5
85.00		1.00	1.22	10.708	11.78	151.51	0.650	0.000	4.25	9.819	6.38	75.2	0.0	233.4
90.00		1.00	1.24	10.838	11.92	148.16	0.650	0.000	5.00	11.257	7.32	87.2	0.0	267.5
95.00		1.00	1.25	10.962	12.06	144.71	0.650	0.000	5.00	10.937	7.11	85.7	0.0	259.8
100.00		1.00	1.27	11.081	12.19	141.18	0.650	0.000	5.00	10.618	6.90	84.1	0.0	252.2
105.00		1.00	1.28	11.195	12.31	137.58	0.650	0.000	5.00	10.298	6.69	82.4	0.0	244.5
108.00	Appurtenance(s)	1.00	1.29	11.262	12.39	135.38	0.650	0.000	3.00	6.026	3.92	48.5	0.0	143.1
110.00		1.00	1.29	11.305	12.44	133.90	0.650	0.000	2.00	3.953	2.57	32.0	0.0	93.8
114.00	Appurtenance(s)	1.00	1.30	11.391	12.53	130.90	0.650	0.000	4.00	7.753	5.04	63.1	0.0	184.0
115.00		1.00	1.30	11.412	12.55	130.15	0.650	0.000	1.00	1.906	1.24	15.6	0.0	45.2
117.00	Appurtenance(s)	1.00	1.31	11.453	12.60	128.63	0.650	0.000	2.00	3.774	2.45	30.9	0.0	89.6
118.00		1.00	1.31	11.474	12.62	127.87	0.650	0.000	1.00	1.868	1.21	15.3	0.0	44.3
								Totals:	**118.00**			**2,072.5**		**10,647.0**

Discrete Appurtenance Forces

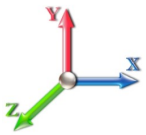
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 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	117.00	56.3"x12.6"x6.3" Panel	3	11.453	12.598	0.78	1.00	14.84	165.30	0.000	0.000	186.91	0.00	0.00
2	117.00	ACU-A20-N	4	11.453	12.598	0.79	1.00	0.44	4.00	0.000	0.000	5.57	0.00	0.00
3	117.00	APXVSPP18-C-A20	3	11.453	12.598	0.83	1.00	19.97	171.00	0.000	0.000	251.59	0.00	0.00
4	117.00	Low Profile Platform-flat	1	11.453	12.598	1.00	1.00	25.00	1200.00	0.000	0.000	314.96	0.00	0.00
5	114.00	800 MHz RRH	3	11.391	12.530	0.75	1.00	5.60	159.00	0.000	0.000	70.20	0.00	0.00
6	114.00	800 Filter	3	11.391	12.530	0.67	1.00	1.35	26.40	0.000	0.000	16.87	0.00	0.00
7	114.00	1900MHz RRH	3	11.391	12.530	0.75	1.00	6.23	180.00	0.000	0.000	78.09	0.00	0.00
8	114.00	26.1"x18.6"x6.7" RRU	3	11.391	12.530	0.68	1.00	8.26	210.00	0.000	0.000	103.52	0.00	0.00
9	114.00	Flush Mount	3	11.391	12.530	1.00	1.00	15.00	1050.00	0.000	0.000	187.95	0.00	0.00
10	108.00	T-Arm (Round)	3	11.262	12.388	0.50	0.75	12.06	1050.00	0.000	0.000	149.40	0.00	0.00
11	108.00	AIR 21 B2A B4P	3	11.262	12.388	0.69	0.80	12.57	271.20	0.000	0.000	155.71	0.00	0.00
12	108.00	AIR 21 B4A B2P	3	11.262	12.388	0.69	0.80	12.57	271.20	0.000	0.000	155.71	0.00	0.00
							Totals:		**4,758.10**			**1,676.48**		

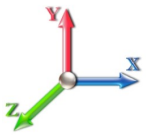
Total Applied Force Summary

Structure:	CT46142-A-SBA		**Code:**	EIA/TIA-222-G	7/31/2017
Site Name:	South Ledyard- Town Dump		**Exposure:**	C	
Height:	118.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 28

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		86.82	733.87	0.00	0.00
10.00		85.12	721.13	0.00	0.00
15.00		83.42	708.38	0.00	0.00
20.00		86.71	695.64	0.00	0.00
25.00		88.99	682.90	0.00	0.00
30.00		90.51	670.16	0.00	0.00
35.00		91.47	657.42	0.00	0.00
40.00		91.99	644.68	0.00	0.00
40.75		13.67	95.60	0.00	0.00
45.00		79.40	911.79	0.00	0.00
50.00		93.49	520.62	0.00	0.00
55.00		93.15	510.43	0.00	0.00
60.00		92.60	500.24	0.00	0.00
65.00		91.86	490.05	0.00	0.00
70.00		90.96	479.85	0.00	0.00
75.00		89.91	469.66	0.00	0.00
77.25		39.93	208.02	0.00	0.00
80.00		49.16	406.02	0.00	0.00
80.75		13.31	109.80	0.00	0.00
85.00		75.18	308.46	0.00	0.00
90.00		87.23	355.83	0.00	0.00
95.00		85.72	348.18	0.00	0.00
100.00		84.12	340.54	0.00	0.00
105.00		82.43	332.89	0.00	0.00
108.00	(9) attachments	509.34	1788.47	0.00	0.00
110.00		31.96	102.02	0.00	0.00
114.00	(15) attachments	519.77	1825.78	0.00	0.00
115.00		15.55	49.33	0.00	0.00
117.00	(11) attachments	789.94	1638.04	0.00	0.00
118.00		15.32	44.32	0.00	0.00
	Totals:	**3,749.02**	**17,350.14**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

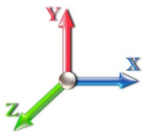
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	7.442	0.00	1.37
10.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	7.442	0.00	1.37
15.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	7.442	0.00	1.37
20.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.010	0.000	7.896	0.00	1.37
25.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	8.276	0.00	1.37
30.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	8.600	0.00	1.37
35.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	8.883	0.00	1.37
40.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.011	0.000	9.137	0.00	1.37
40.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.011	0.000	9.173	0.00	0.20
45.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.012	0.000	9.366	0.00	1.16
50.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	9.576	0.00	1.37
55.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	9.770	0.00	1.37
60.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	9.951	0.00	1.37
65.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.012	0.000	10.120	0.00	1.37
70.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	10.279	0.00	1.37
75.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.013	0.000	10.430	0.00	1.37
77.25	Safety Cable	Yes	2.25	0.000	0.38	0.07	0.00	0.013	0.000	10.495	0.00	0.61
80.00	Safety Cable	Yes	2.75	0.000	0.38	0.09	0.00	0.014	0.000	10.572	0.00	0.75
80.75	Safety Cable	Yes	0.75	0.000	0.38	0.02	0.00	0.014	0.000	10.593	0.00	0.20
85.00	Safety Cable	Yes	4.25	0.000	0.38	0.13	0.00	0.014	0.000	10.708	0.00	1.16
90.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	10.838	0.00	1.37
95.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.014	0.000	10.962	0.00	1.37
100.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	11.081	0.00	1.37
105.00	Safety Cable	Yes	5.00	0.000	0.38	0.16	0.00	0.015	0.000	11.195	0.00	1.37
108.00	Safety Cable	Yes	3.00	0.000	0.38	0.10	0.00	0.016	0.000	11.262	0.00	0.82
110.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.016	0.000	11.305	0.00	0.55
114.00	Safety Cable	Yes	4.00	0.000	0.38	0.13	0.00	0.016	0.000	11.391	0.00	1.09
115.00	Safety Cable	Yes	1.00	0.000	0.38	0.03	0.00	0.017	0.000	11.412	0.00	0.27
117.00	Safety Cable	Yes	2.00	0.000	0.38	0.06	0.00	0.017	0.000	11.453	0.00	0.55
										Totals:	**0.0**	**31.9**

Calculated Forces

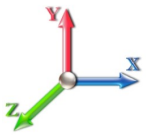
Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 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	-17.35	-3.76	0.00	-327.15	0.00	327.15	2662.66	1331.33	4225.57	2115.93	0.00	0.000	0.000	0.161
5.00	-16.61	-3.69	0.00	-308.36	0.00	308.36	2627.56	1313.78	4087.72	2046.90	0.03	-0.063	0.000	0.157
10.00	-15.89	-3.62	0.00	-289.92	0.00	289.92	2591.79	1295.89	3951.04	1978.45	0.13	-0.125	0.000	0.153
15.00	-15.17	-3.55	0.00	-271.82	0.00	271.82	2555.34	1277.67	3815.58	1910.62	0.30	-0.187	0.000	0.148
20.00	-14.47	-3.48	0.00	-254.06	0.00	254.06	2518.21	1259.11	3681.41	1843.44	0.53	-0.249	0.000	0.144
25.00	-13.79	-3.40	0.00	-236.67	0.00	236.67	2480.41	1240.21	3548.60	1776.94	0.82	-0.311	0.000	0.139
30.00	-13.11	-3.32	0.00	-219.67	0.00	219.67	2441.94	1220.97	3417.21	1711.15	1.18	-0.372	0.000	0.134
35.00	-12.45	-3.24	0.00	-203.08	0.00	203.08	2402.79	1201.39	3287.30	1646.09	1.60	-0.433	0.000	0.129
40.00	-11.81	-3.15	0.00	-186.89	0.00	186.89	2362.96	1181.48	3158.94	1581.82	2.09	-0.493	0.000	0.123
40.75	-11.71	-3.14	0.00	-184.53	0.00	184.53	2356.93	1178.46	3139.82	1572.24	2.17	-0.502	0.000	0.122
45.00	-10.80	-3.06	0.00	-171.20	0.00	171.20	1757.80	878.90	2340.38	1171.93	2.63	-0.552	0.000	0.152
50.00	-10.28	-2.97	0.00	-155.90	0.00	155.90	1730.99	865.49	2250.57	1126.96	3.24	-0.609	0.000	0.144
55.00	-9.76	-2.88	0.00	-141.03	0.00	141.03	1703.50	851.75	2161.57	1082.39	3.92	-0.676	0.000	0.136
60.00	-9.26	-2.80	0.00	-126.61	0.00	126.61	1675.34	837.67	2073.46	1038.27	4.66	-0.740	0.000	0.127
65.00	-8.77	-2.71	0.00	-112.63	0.00	112.63	1646.50	823.25	1986.29	994.62	5.47	-0.802	0.000	0.119
70.00	-8.29	-2.62	0.00	-99.09	0.00	99.09	1616.99	808.49	1900.13	951.48	6.34	-0.862	0.000	0.109
75.00	-7.82	-2.53	0.00	-86.00	0.00	86.00	1586.80	793.40	1815.05	908.87	7.27	-0.918	0.000	0.100
77.25	-7.61	-2.49	0.00	-80.32	0.00	80.32	1573.00	786.50	1777.13	889.88	7.71	-0.942	0.000	0.095
80.00	-7.20	-2.43	0.00	-73.48	0.00	73.48	1555.94	777.97	1731.10	866.84	8.26	-0.971	0.000	0.089
80.75	-7.09	-2.42	0.00	-71.66	0.00	71.66	1065.47	532.73	1202.43	602.11	8.42	-0.979	0.000	0.126
85.00	-6.78	-2.35	0.00	-61.37	0.00	61.37	1050.73	525.37	1157.88	579.80	9.31	-1.019	0.000	0.112
90.00	-6.43	-2.26	0.00	-49.65	0.00	49.65	1032.77	516.39	1105.80	553.72	10.40	-1.074	0.000	0.096
95.00	-6.08	-2.17	0.00	-38.36	0.00	38.36	1014.14	507.07	1054.14	527.85	11.55	-1.121	0.000	0.079
100.00	-5.74	-2.08	0.00	-27.51	0.00	27.51	994.83	497.42	1002.97	502.23	12.75	-1.160	0.000	0.061
105.00	-5.41	-1.99	0.00	-17.10	0.00	17.10	974.85	487.42	952.34	476.88	13.98	-1.188	0.000	0.041
108.00	-3.63	-1.45	0.00	-11.11	0.00	11.11	962.53	481.27	922.25	461.81	14.73	-1.200	0.000	0.028
110.00	-3.53	-1.42	0.00	-8.22	0.00	8.22	954.18	477.09	902.32	451.83	15.24	-1.206	0.000	0.022
114.00	-1.71	-0.86	0.00	-2.55	0.00	2.55	937.17	468.59	862.79	432.04	16.25	-1.213	0.000	0.008
115.00	-1.66	-0.84	0.00	-1.70	0.00	1.70	932.85	466.42	852.98	427.13	16.50	-1.213	0.000	0.006
117.00	-0.04	-0.02	0.00	-0.02	0.00	0.02	924.13	462.06	833.45	417.34	17.01	-1.214	0.000	0.000
118.00	0.00	-0.02	0.00	0.00	0.00	0.00	919.72	459.86	823.73	412.48	17.27	-1.214	0.000	0.000

Final Analysis Summary

Structure:	CT46142-A-SBA	**Code:**	EIA/TIA-222-G	7/31/2017	
Site Name:	South Ledyard- Town Dump	**Exposure:**	C		
Height:	118.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	18.4	0.00	20.77	0.00	0.00	1611.83
0.9D + 1.6W 105 mph Wind	18.4	0.00	15.57	0.00	0.00	1594.65
1.2D + 1.0Di + 1.0Wi 50 mph Wind	4.7	0.00	32.70	0.00	0.00	403.13
1.2D + 1.0E	1.1	0.00	20.82	0.00	0.00	112.57
0.9D + 1.0E	1.1	0.00	15.61	0.00	0.00	111.27
1.0D + 1.0W 60 mph Wind	3.8	0.00	17.35	0.00	0.00	327.15

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 105 mph Wind	-20.77	-18.43	0.00	-1611.8	0.00	-1611.8	2662.66	1331.3	4225.57	2115.93	0.00	0.770
0.9D + 1.6W 105 mph Wind	-15.57	-18.41	0.00	-1594.6	0.00	-1594.6	2662.66	1331.3	4225.57	2115.93	0.00	0.760
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-32.70	-4.68	0.00	-403.13	0.00	-403.13	2662.66	1331.3	4225.57	2115.93	0.00	0.203
1.2D + 1.0E	-12.99	-0.97	0.00	-65.56	0.00	-65.56	1757.80	878.90	2340.38	1171.93	45.00	0.063
0.9D + 1.0E	-9.74	-0.96	0.00	-64.58	0.00	-64.58	1757.80	878.90	2340.38	1171.93	45.00	0.061
1.0D + 1.0W 60 mph Wind	-17.35	-3.76	0.00	-327.15	0.00	-327.15	2662.66	1331.3	4225.57	2115.93	0.00	0.161

Monopole Mat Foundation Design

			Date: 7/31/2017
Customer Name:	Sprint Nextel	**EIA/TIA Standard:**	EIA-222-G
Site Name:	South Ledyard-Town Dump	**Structure Height (Ft.):**	118
Site Number:	CT46142-A-SBA	**Engineer Name:**	F. Arinyedokia
Engr. Number:	36645	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

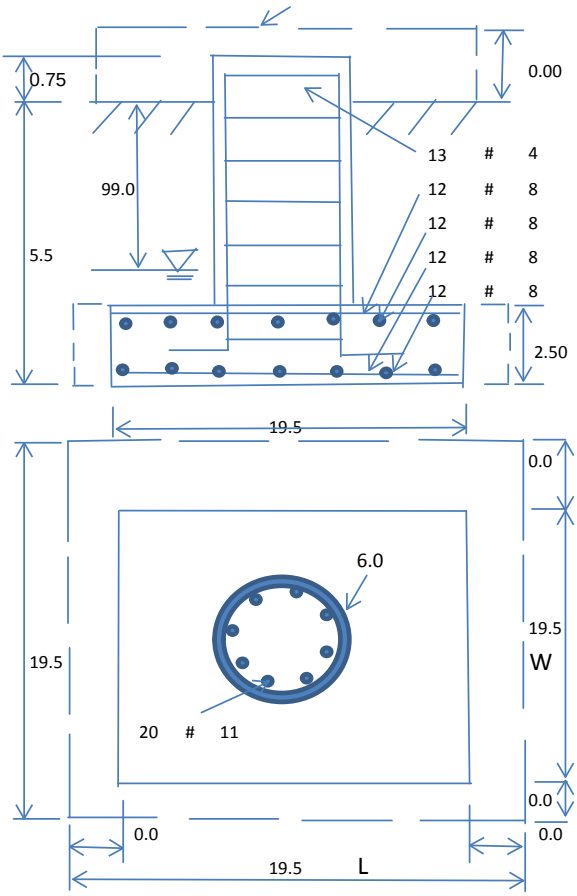
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	20.8	Shear Force (Kips):	18.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1611.8
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	0.75	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	19.5	Width of Pad (ft.):	19.5
Final Length of pad (ft)	19.5	Final width of pad (ft):	19.5
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):	40	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	20	Tie Spacing (in):	6.0	
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):	12	Qty. of Rebar in Pad (W):	12	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	12	Qty. of Rebar in Pad (W):	12	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	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:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	1055.93	Total Dry Soil Weight (Kips):	105.59
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	105.59	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1056.65	Total Dry Concrete Weight (Kips):	158.50
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	158.50	Total Vertical Load on Base (Kips):	284.89

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2646	<	Allowable Factored Soil Bearing (psf): 9000	0.29	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	2520.2	>	Design Factored Momont (kips-ft): 1727	0.69	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.46	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			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	4355.8	>	Design Factored Moment (Mu, Kips-Ft	1680.8	0.39	OK!
Calculated Shear Capacity (Kips):	488.1	>	Design Factored Shear (Kips):	18.4	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1684.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	5357.4	>	Design Factored Axial Load (Pu Kips):	20.8	0.00	OK!
Moment & Axial Strength Combination:	0.39	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI				
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	509.5	>	One-Way Factored Shear (L-D. Kips):	129.7	0.25	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	509.5	>	One-Way Factored Shear (W-D., Kips)	129.7	0.25	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	563.7	>	One-Way Factored Shear (C-C, Kips):	125.6	0.22	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0015	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0015		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	1110.2	>	Moment at Bottom (L-Direct. K-Ft):	294.6	0.27	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1110.2	>	Moment at Bottom (W-Direct. K-Ft):	294.6	0.27	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	1562.0	>	Moment at Bottom (C-C Dir. K-Ft):	416.6	0.27	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0015	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0015		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	1110.2	>	Moment at the top (L-Dir Kips-Ft):	88.2	0.08	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	1110.2	>	Moment at the top (W-Dir Kips-Ft):	88.2	0.08	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	1562.0	>	Moment at the top (C-C Direc. K-Ft):	193.6	0.12	OK!

SPECIAL CONSTRUCTION NOTE:
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.
* SBA COMMUNICATIONS CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

Sprint

NOTE:

OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

NOTE:

THESE PLANS ARE BASED ON INFORMATION OBTAINED IN 2014. THEY HAVE NOT BEEN FIELD VERIFIED. THE SPRINT CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL ITEMS AND NOTIFYING THE ENGINEER OF RECORD OF ANY DISCREPANCIES.

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	SOUTH LEDYARD - TOWN DUMP
SITE CASCADE:	CT33XC585-C
MARKET:	NORTHERN CONNECTICUT
SBA SITE ID:	CT46142-A/SOUTH LEDYARD - TOWN DUMP
SITE ADDRESS:	130 WELLES RD GROTON, CT 06340
SITE TYPE:	118' MONOPOLE

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

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

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28053
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

PROPERTY OWNER:
TOWN OF GROTON
45 FORT HILL RD
GROTON, CT 06340
PHONE: 561-226-9523

TOWER OWNER:
SBA 2012 TC ASSETS, LLC
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487-2797
PHONE: 561-226-9523

SBA REGIONAL SITE MANAGER:
KENNY UHLL
PHONE: 631-236-2108
KUhll@sbasite.com

LATITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
41° 23' 34.14" N
41.392817°

LONGITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
-71° 58' 11.76" W
-71.969933°

COUNTY:
NEW LONDON

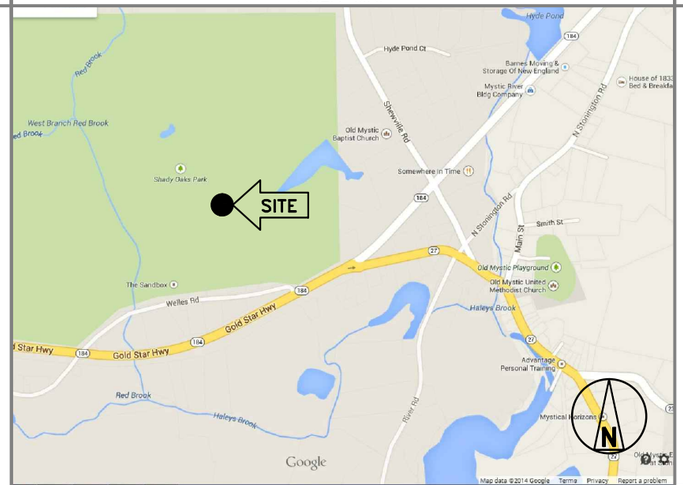
POWER COMPANY:
CONNECTICUT LIGHT & POWER

AAV PROVIDER:
AT&T

SPRINT CONSTRUCTION MANAGER:
MICHAEL DELIA
PHONE: 781-316-6348
michael.delia@sprint.com

EQUIPMENT SUPPLIER:
ALCATEL-LUCENT
600 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974

AREA MAP



LOCATION MAP GOOGLE EARTH 2-C CONFIRMATION

PROJECT DESCRIPTION

SPRINT EQUIPMENT MODIFICATIONS REQUIRED TO SUPPORT MODERNIZATION OF AN EXISTING WIRELESS COMMUNICATIONS FACILITY AND UTILIZATION OF FCC BROADBAND SPECTRUM LICENSE FOR 2.5GHz FREQUENCY, INCLUDING INSTALLATION OF:

GROUND-LEVEL RAN EQUIPMENT, CONSISTING OF:
* RETROFIT EXISTING MMBTS CABINET WITH (1) RECTIFIER SHELF, (3) RECTIFIERS, 2.5 RADIO ACCESS NETWORK (RAN) EQUIPMENT & BBU KIT
* INSTALL (1) ADDITIONAL BATTERY STRING INSIDE EXISTING BATTERY BACKUP (BBU) CABINET

TOWER-TOP EQUIPMENT, INCLUDING INSTALLATION OF:
* (3) PANEL ANTENNAS
* (3) REMOTE RADIO HEADS (RRH)
* (1) HYBRID CABLE (AND ASSOCIATED FIBER, DC POWER, COAXIAL CABLE JUMPERS AND ANTENNA REMOTE ELECTRICAL-TILT (RET) CABLE

SPECIAL ZONING NOTE:
BASED ON INFORMATION PROVIDE BY SPRINT REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AND 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, ADMINISTRATIVE REVIEW).

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.
3. NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.

BUILDING CODE: IBC 2012 WITH 2016 CT STATE BUILDING CODE AMENDMENTS
ELECTRICAL CODE: 2014 NATIONAL ELECTRICAL CODE
STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

811
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DRAWING INDEX

SHEET NO:	SHEET TITLE	REV	CHK	BY
T-1	TITLE SHEET	2	BB	AN
SP-1	OUTLINE SPECIFICATIONS	2	BB	AN
SP-2	OUTLINE SPECIFICATIONS	2	BB	AN
SP-3	OUTLINE SPECIFICATIONS	2	BB	AN
A-1	COMPOUND PLAN	2	BB	AN
A-2	ELEVATION AND ANTENNA PLANS	2	BB	AN
A-3	RF DATA SHEET	2	BB	AN
A-4	RAN WIRING DIAGRAM	2	BB	AN
A-5	EQUIPMENT DETAILS	2	BB	AN
A-6	EQUIPMENT DETAILS	2	BB	AN
S-1	STRUCTURAL DETAILS	2	BB	AN
E-1	ONE LINE DIAGRAM	2	BB	AN
E-2	GROUNDING DETAILS AND NOTES	2	BB	AN

APPROVALS

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

SPRINT: _____ DATE: _____

CONSTRUCTION MANAGER: _____ DATE: _____

LEASING/ SITE ACQUISITION: _____ DATE: _____

RF ENGINEER: _____ DATE: _____

LANDLORD/ TOWER OWNER: _____ DATE: _____

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	09/11/17	REVISED-CODE UPDATE	AN
1	05/21/14	ISSUED FOR REVIEW	SF
0	05/12/14	ISSUED FOR REVIEW	SF

SITE NUMBER:
CT33XC585-C

SITE NAME:
SOUTH LEDYARD - TOWN DUMP
SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

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. SPRINT TS–0200 (CURRENT VERSION) – 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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Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	09/11/17	REVISED–CODE UPDATE	AN
1	05/21/14	ISSUED FOR REVIEW	SF
0	05/12/14	ISSUED FOR REVIEW	SF

SITE NUMBER:
CT33XC585–C

SITE NAME:
SOUTH LEDYARD – TOWN DUMP
SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

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 RD, SUITE 125
WESTBOROUGH, MA 01581 TEL: (508) 251-0720

Hudson Design Group LLC
1600 OSGOOD STREET
N. ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	09/11/17	REVISED–CODE UPDATE	AN
1	05/21/14	ISSUED FOR REVIEW	SF
0	05/12/14	ISSUED FOR REVIEW	SF

SITE NUMBER:
CT33XC585–C

SITE NAME:
SOUTH LEDYARD – TOWN DUMP
SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

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 IN TS 0200 REV 4.
   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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Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090 TEL: (978) 557-5553
N. ANDOVER, MA 01845 FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29067
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

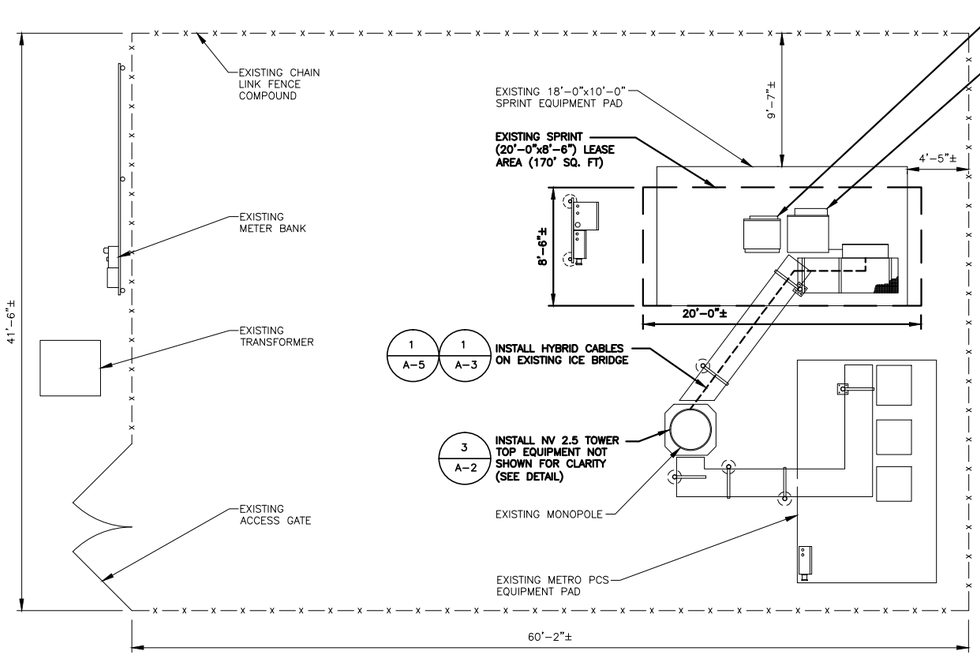
REV.	DATE	DESCRIPTION	BY
2	09/11/17	REVISED-CODE UPDATE	AN
1	05/21/14	ISSUED FOR REVIEW	SF
0	05/12/14	ISSUED FOR REVIEW	SF

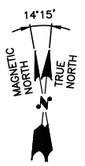
SITE NUMBER:
CT33XC585-C

SITE NAME:
SOUTH LEDYARD - TOWN DUMP
SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

SHEET TITLE
OUTLINE SPECIFICATIONS

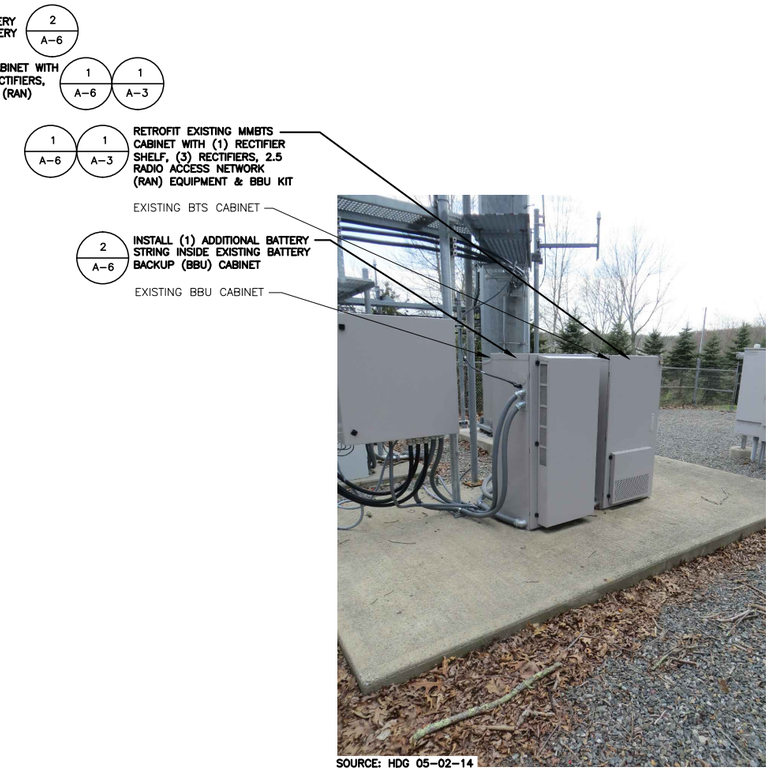
SHEET NUMBER
SP-3





COMPOUND PLAN
SCALE: 3/16"=1'-0" (1 / A-1)

GRAPHIC SCALE
0 2'-8" 5'-4" 10'-8" 16'-0"



SOURCE: HDG 05-02-14

RAN EQUIPMENT PHOTO DETAIL
SCALE: N.T.S. (2 / A-1)

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 23053
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

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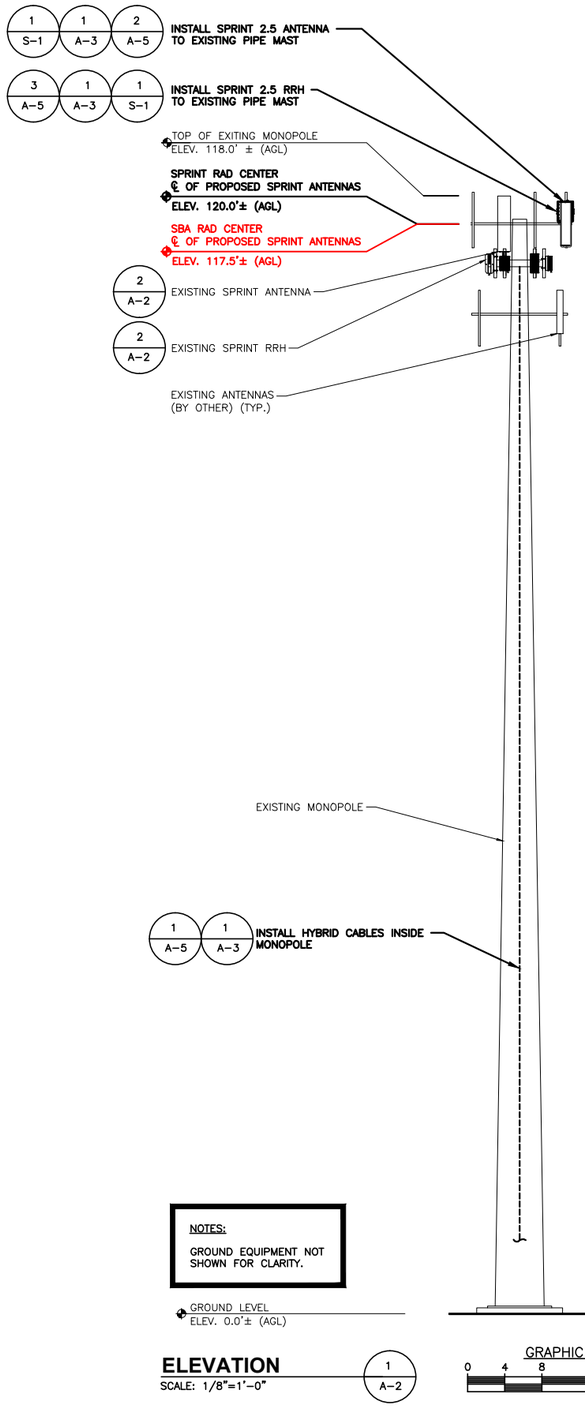
130 WELLES ROAD,
GROTON, CT 06340

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



NOTES:

GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION

1 / A-2

SCALE: 1/8"=1'-0"

SOURCE: HDG 05-02-14

EXISTING PARTIAL ELEVATION PHOTO DETAIL

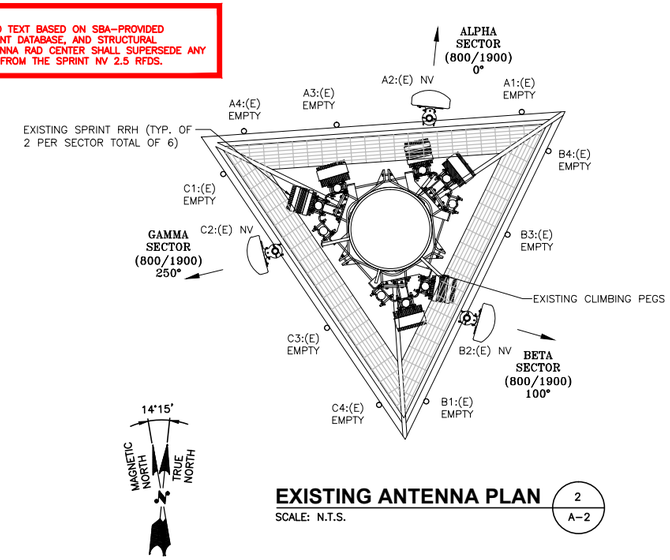
SCALE: N.T.S.

SPECIAL CONSTRUCTION NOTE:
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:

- COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
- COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
- GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.
- SBA COMMUNICATIONS CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

NOTE:
EXISTING AZIMUTHS FROM SPRINT SITE AUDIT DATED 12/02/13

NOTE:
SPRINT RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE SPRINT NV 2.5 RFDS.



EXISTING ANTENNA PLAN

2 / A-2

SCALE: N.T.S.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

(E) – EXISTING

(P) – INSTALL

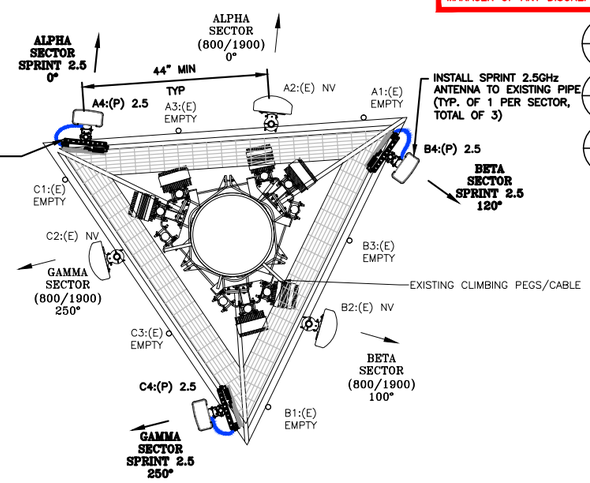
NV – SPRINT ANTENNA MODEL APXVSPP18-C-A20

2.5 – SPRINT ANTENNA

SPECIAL WORK NOTE:
JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY.

1 / A-3 | 3 / A-5 | 1 / S-1 — INSTALL SPRINT 2.5 RRH MOUNTED TO EXISTING PIPE (TYP. OF 1 PER SECTOR, TOTAL OF 3)

2 / A-5 | 1 / S-1 | 1 / A-3 — INSTALL SPRINT 2.5GHz ANTENNA TO EXISTING PIPE (TYP. OF 1 PER SECTOR, TOTAL OF 3)



PROPOSED ANTENNA PLAN

3 / A-2

SCALE: N.T.S.

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 23
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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CT33XC585-C

SITE NAME:
SOUTH LEDYARD – TOWN DUMP

SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

SHEET TITLE

ELEVATION AND ANTENNA PLANS

SHEET NUMBER

A-2

Sprint

RFDS Sheet

(by SBA Network Services 4/8/14. NOTE: General Contractor/Tower Crew shall verify that the latest RFDS is used for equipment installation.)

General Site Information

Site ID	CT33XC585	Equipment Vendor	ALU
Market	Northern Connecticut	Latitude	41.392500
Region	East	Longitude	-71.969722
MLA	SBA	LL SITE ID	CT46142-A
Structure Type	MONOPOLE		
BTS Type	Outdoor Macro		
Solution ID	Not Available	Siterra SR Equipment Type	Outdoor Macro
		Equipment Vendor	ALU

Incremental Power Draw Needed by Added Equipment:

Base Equipment

BBU Kit	ALU BBU Kit	Top Hat	None
BBU Kit Qty	1	Top Hat Qty	N/A
		Top Hat Dimensions (Inches)	N/A
Growth Cabinet	None	Top Hat Weight (Lbs.)	N/A
Growth Cabinet Qty	N/A		
Growth Cabinet Dimensions (Inches)	N/A		
Growth Cabinet Weight (Lbs.)	N/A		

RF Path Information

RRH	TD-RRH8x20-25	
RRH Qty	3	
RRH Dimensions (Inches)	26.1" x 18.6" x 6.7"	
RRH Weight (Lbs.)	70.0	
RRH Mount Weight (Lbs.)	10	
Power and Fiber Cable	ALU Fiber only	
Cable Qty	1	
Weight per Foot (Lbs.)	0.242	
Diameter (Inches)	0.730	
Hybrid Cable Length (Feet) (** A&E 175')	144	(Estimated by Sprint as Antenna CL plus 20%: DO NOT BOM using this length.)
Coax Jumper	Coax Jumper. Mfg TBD.	
Coax Jumper Qty	27	
Coax Jumper Length (Feet) (** A&E 5')	8	
Coax Jumper Weight (Lbs.)	1.7	
Coax Jumper Diameter (Inches)	0.5	
AISG Cable	Commscope ATCB-B01-006	
AISG Cable Qty	3	
AISG Diameter (Inches)	0.315	
AISG Cable Length (Feet) (** A&E 5')	8	
Weight of Entire AISG Cable (Lbs.)	1.3	

Antenna Sector Information

	Sector 1	Sector 2	Sector 3
Antenna Make/Model	RFS APXV9TM14-ALU-I20	RFS APXV9TM14-ALU-I20	RFS APXV9TM14-ALU-I20
Antenna Qty	1	1	1
Antenna Dimensions (Inches)	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3
Antenna Weight (Lbs.)	55.1	55.1	55.1
Antenna Mounting Kit Weight (Lbs.)	11.5	11.5	11.5
CL Height (Feet) (*SBA 117.5')	120.0	120.0	120.0
Antenna Azimuth (Degrees)	0	120	250
Antenna Mechanical Downtilt (Degrees)	0	0	0
Antenna Etilt (Degrees)	-2	-2	-2
RF Filter Make/Model	N/A	N/A	N/A

Comments

RFDS generated 4/8/14 by SBA Network Services from Sprint Plan of Record dated 4/2/14.

Comments in Red Text provided by A&E Vendor.

IMPORTANT CONSTRUCTION NOTE: General Contractor/Tower Crew shall verify that the latest RFDS is used for equipment installation.

*** Note: Antenna Rad Center based on SBA-Provided Collocation Application, Equipment Database, and Structural Analysis. The SBA-Provided Antenna Rad Center shall supersede any conflicting information derived from the Sprint NV 2.5 Database.**

**** Note: Sprint CM shall confirm Hybrid Cable Length, Coax Jumper Length and AISG Cable Length before preparing BOM. A&E Recommended Hybrid Cable Length based on NV 2.5 Equipment Audit plus 20 Feet for (2) 10-foot coils at each end of the fiber trunk.**

RF DATA SHEET 1 / A-3

SCALE: N.T.S.

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 2.5G ANTENNA AT SAME CL HEIGHT AS 1.9G ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS–BUILD DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900 MHZ AND 800 MHZ 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. IN ADDITION, 2.5G ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON–SPRINT ANTENNAS.
- 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/.

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25053
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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0	05/12/14	ISSUED FOR REVIEW	SF

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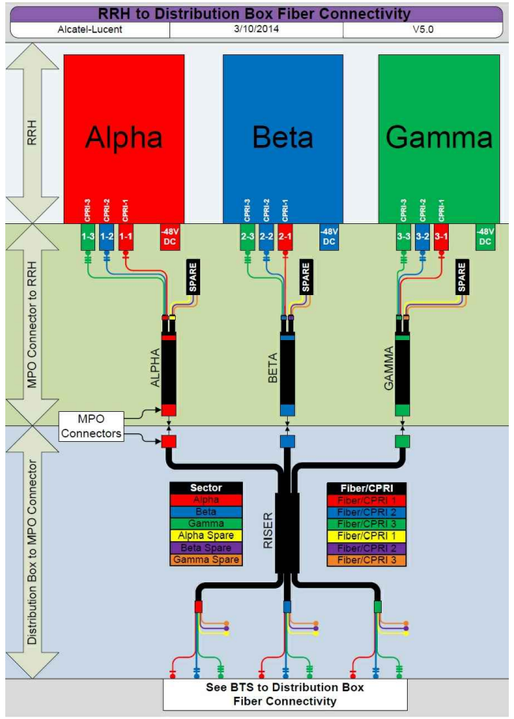
CT33XC585–C

SITE NAME:
SOUTH LEDYARD – TOWN DUMP

SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

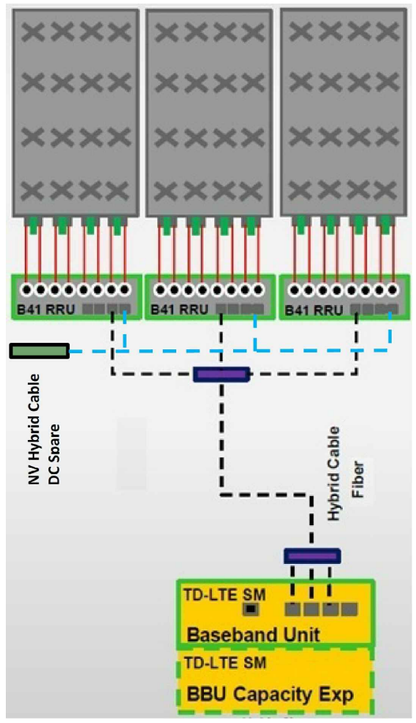
SHEET TITLE
RF DATA SHEET

SHEET NUMBER
A–3



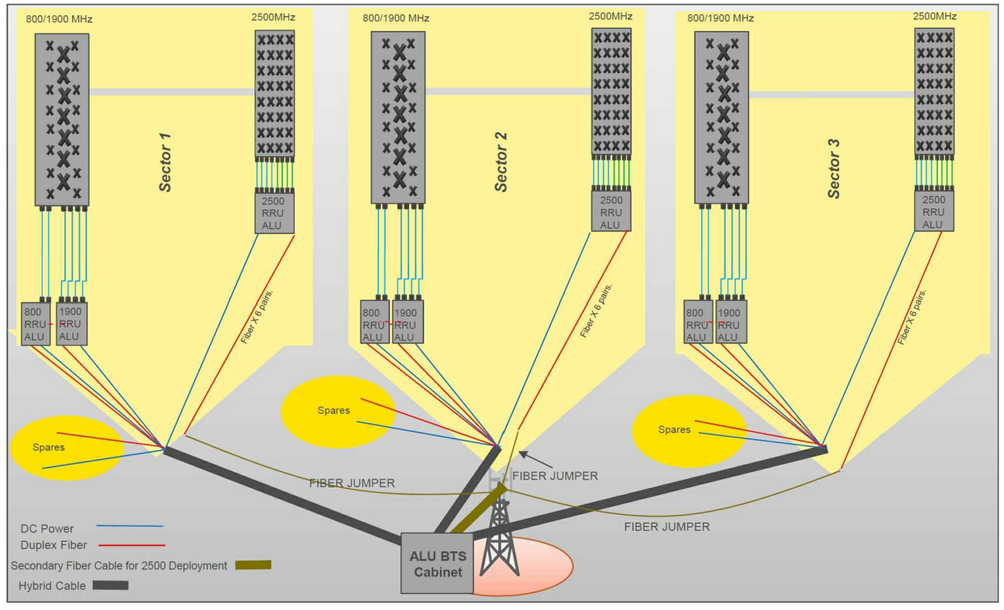
CABLE COLOR CODING DIAGRAM

SCALE: N.T.S.



ALU 2.5 ALU SCENARIO 1

SCALE: N.T.S.

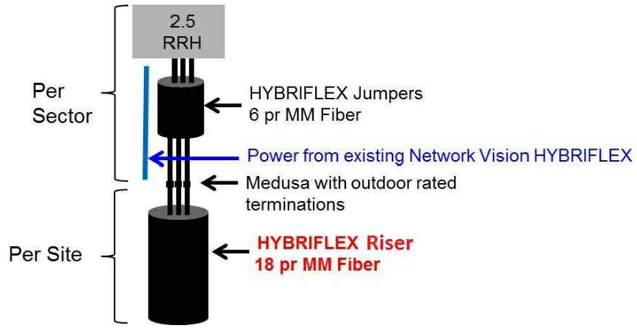


RAN WIRING DIAGRAM: ALU EQUIPMENT

SCALE: N.T.S.

NOTE:

GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RF DATA SHEET IS USED FOR EQUIPMENT INSTALLATION.



RFS 2.5 ALU SCENARIO 1

SCALE: N.T.S.

DC POWER INSTALLATION NOTE (FIBER-ONLY SCENARIO):

USE SPACE 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.

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STATE OF CONNECTICUT
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GROTON, CT 06340

SHEET TITLE
RAN WIRING DIAGRAM

SHEET NUMBER
A-4

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF: RFS			
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
(*) FIBER ONLY	VARIES	USE NV HYBRIFLEX	5/8"
HYBRIFLEX	<200'	8 AWG	1-1/4"
HYBRIFLEX	225-300'	6 AWG	1-1/4"
HYBRIFLEX	325-375'	4 AWG	1-1/4"

RFS HYBRIFLEX RISER CABLE SCHEDULE

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

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

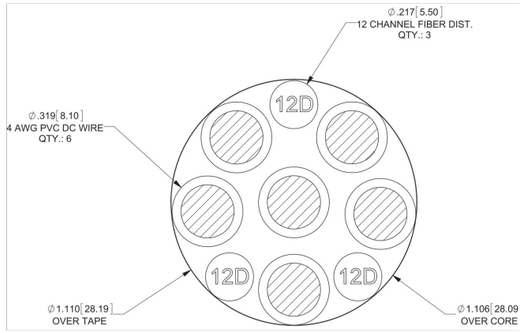
Fiber Only	(*) **Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	
6 AWG Power	**Hybrid Jumper cable** MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	
4 AWG Power	**Hybrid Jumper cable** MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	

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

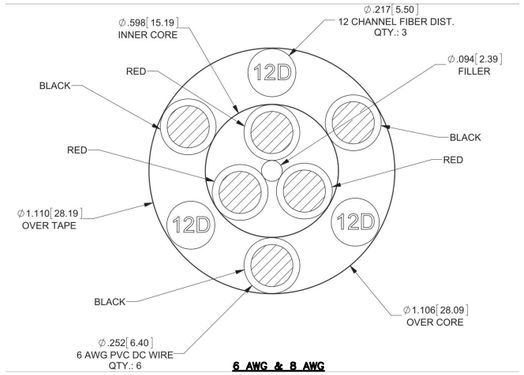
2.5 HYBRID CABLE X-SECTION AND DATA

1 A-5

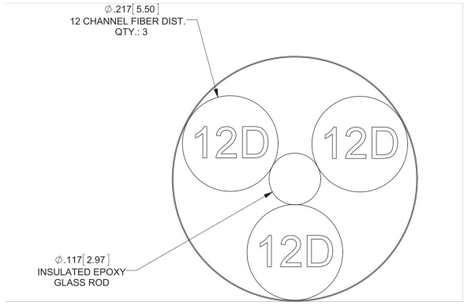
SCALE: N.T.S.



4 AWG

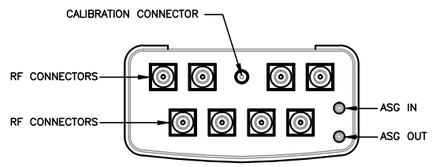


6 AWG & 8 AWG

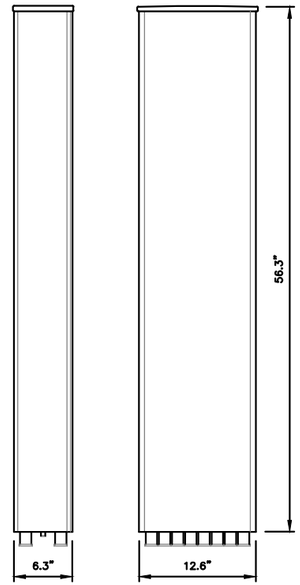


FIBER ONLY

MANUF:	RFS
MODEL:	APXV9TM14-ALU-I20
LENGTH:	56.3
WIDTH:	12.6
DEPTH:	6.3
WEIGHT:	55.1 LBS
AREA:	4.9 SF



PLAN VIEW

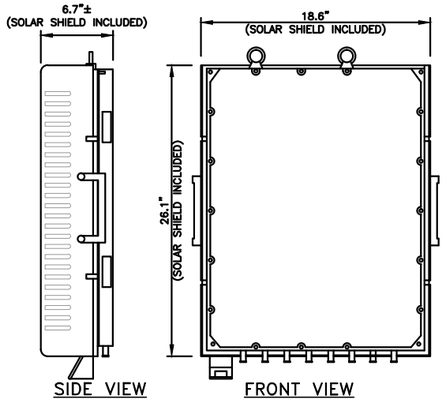


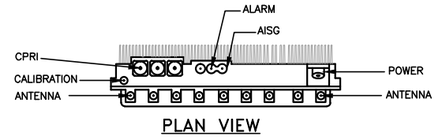
2.5 ANTENNA SPECIFICATIONS

2 A-5

SCALE: N.T.S.

MANUF:	ALCATEL-LUCENT
MODEL:	TD-RRH8x20-25
LENGTH:	26.1
WIDTH:	18.6
DEPTH:	6.7
WEIGHT:	70 LBS
AREA:	3.5 SF





PLAN VIEW

2.5 RRH'S

3 A-5

SCALE: N.T.S.

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 28053
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS

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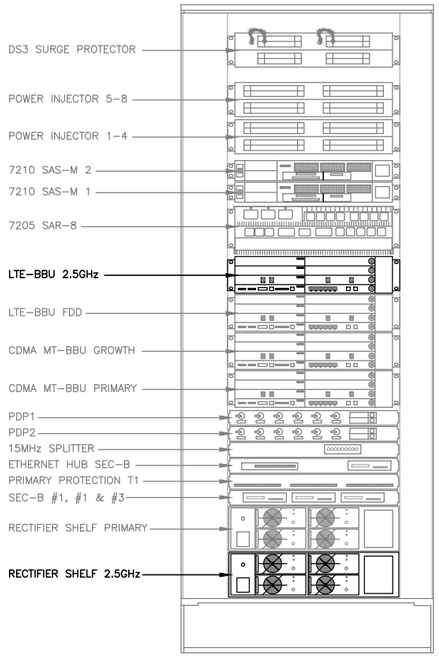
2	09/11/17	REVISED-CODE UPDATE	AN
1	05/21/14	ISSUED FOR REVIEW	SF
0	05/12/14	ISSUED FOR REVIEW	SF

SITE NUMBER:
CT33XC585-C

SITE NAME:
SOUTH LEDYARD - TOWN DUMP
SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5



FRONT VIEW

EXISTING MMBTS OUTDOOR CABINET WITH 2.5 EQUIPMENT (1 / A–6)

SCALE: N.T.S.

SOURCE: SPRINT SITE AUDIT 12–02–13

FRONT VIEW

EXISTING 2.5 POWER BBU CABINET (2 / A–6)

SCALE: N.T.S.

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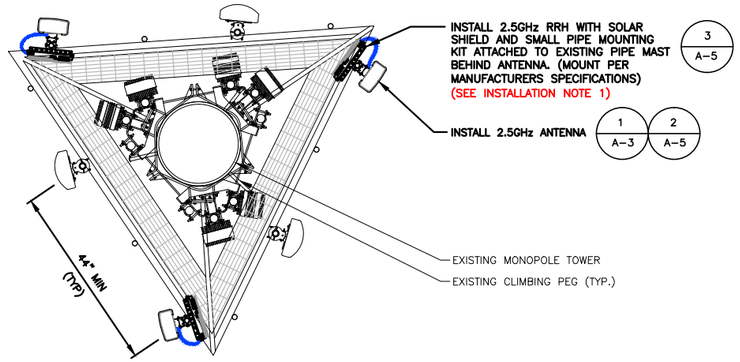
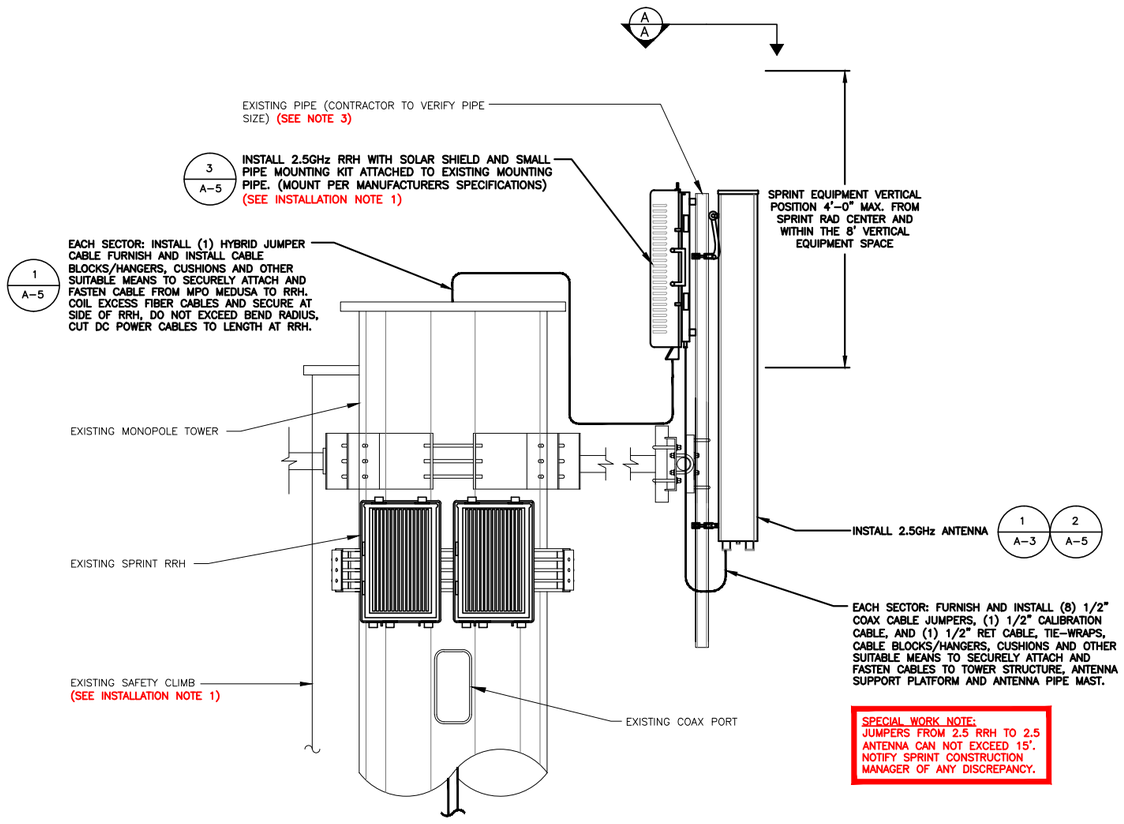
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A–6



NOTE: ONE SECTOR SHOWN FOR CLARITY

SECTION A-A



SPECIAL WORK NOTE:
JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY.

NOTE: ONE SECTOR SHOWN FOR CLARITY

2.5 ANTENNA AND RRH MOUNTING DETAIL 1/S-1

SCALE: N.T.S.

INSTALLATION NOTES:

1. CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER/PEGS, CABLE CLIMB, OR COAX PORTS. MONOPOLE: COLLAR-MOUNT RRH CLUSTER SHALL PROVIDE AN OPENING BETWEEN ADJACENT RRH AT LEAST 30" WIDE CENTERED ON THE EXISTING SAFETY-CLIMB AND 30" DEEP FROM THE FACE OF THE POLE. SELF-SUPPORT: RRH LEG-MOUNT OR FACE-MOUNT SHALL PROVIDE AN UNOBSTRUCTED VERTICAL CLIMBING PASSAGE AT LEAST 30" WIDE AND 30" DEEP CENTERED ON THE LEG WITH THE CLIMBING LADDER/PEGS.
2. CONTRACTOR TO VERIFY DIAMETER OF EXISTING MONOPOLE BEFORE ORDERING PARTS.
3. CONTRACTOR TO VERIFY IN FIELD SIZE OF EXISTING MOUNTING PIPE TO BE 2-1/2" STD (2.88 O.D.) PIPE MAST (6'-0" LONG).
4. VERIFY EXACT RRH AND ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
5. ROTATE EXISTING ANTENNA FRAME AS NEEDED TO ACCOMMODATE INSTALL ANTENNAS.
6. RRH PLACEMENT FOR REFERENCE ONLY. CONTRACTOR SHALL PLACE RRH IN CORRECT ORDER MATCHING INSTALL ANTENNA PLACEMENT AND ENSURE THAT THERE IS ENOUGH CLEARANCE FOR RRHS TO BE PLACED ON THE INSIDE ON THE ANTENNA FRAME.
7. INSTALL EQUIPMENT TO BE MOUNTED PER MANUFACTURERS SPECIFICATIONS.

SPECIAL CONSTRUCTION NOTE:
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:

* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.
* SBA COMMUNICATIONS CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

SOURCE: HDG 05-02-14

NOTE: ONE SECTOR SHOWN FOR CLARITY

2.5 ANTENNA AND RRH PHOTO DETAIL AND EQUIPMENT SCHEMATIC 2/S-1

SCALE: N.T.S.

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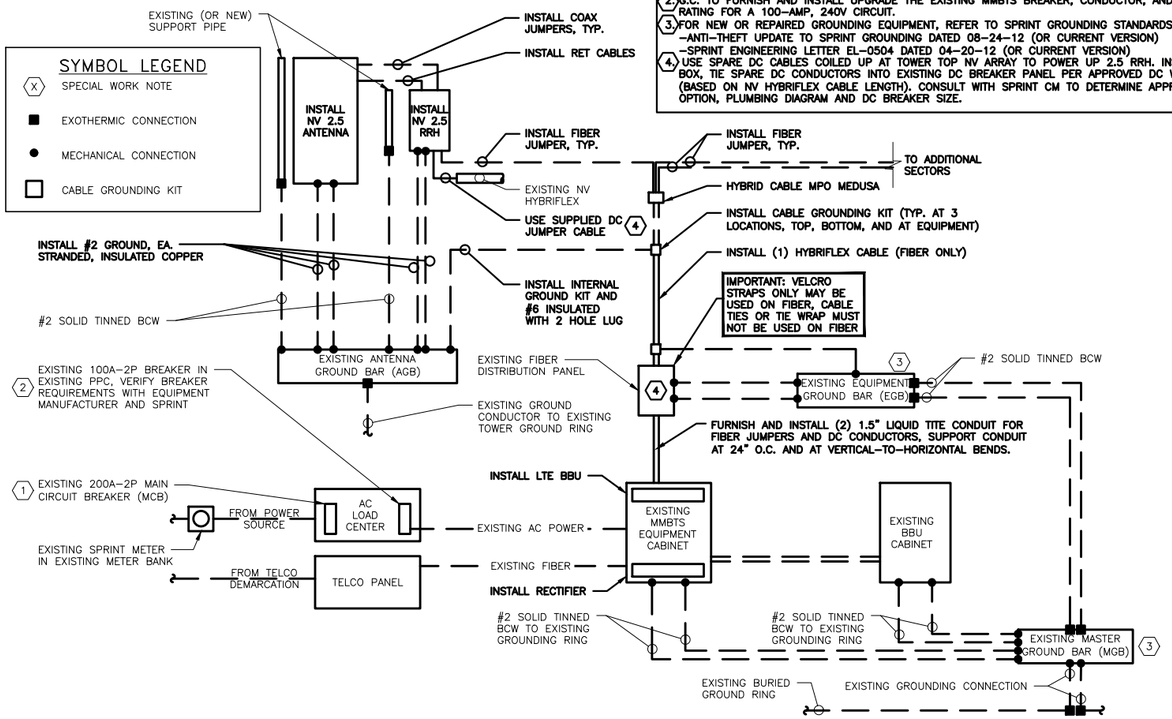
130 WELLES ROAD,
GROTON, CT 06340

SHEET TITLE
STRUCTURAL DETAILS

SHEET NUMBER
S-1

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 FOR A 100–AMP, 240V CIRCUIT.
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

SCALE: N.T.S.

1 / E–1

1 EXISTING 200A–2P MAIN CIRCUIT BREAKER (MCB)

SOURCE: HDG 05–02–14

2 EXISTING 100A–2P MMBTS CIRCUIT BREAKER

SOURCE: HDG 05–02–14

EXISTING PPC BREAKER PANEL

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.

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No. 25053
LICENSED
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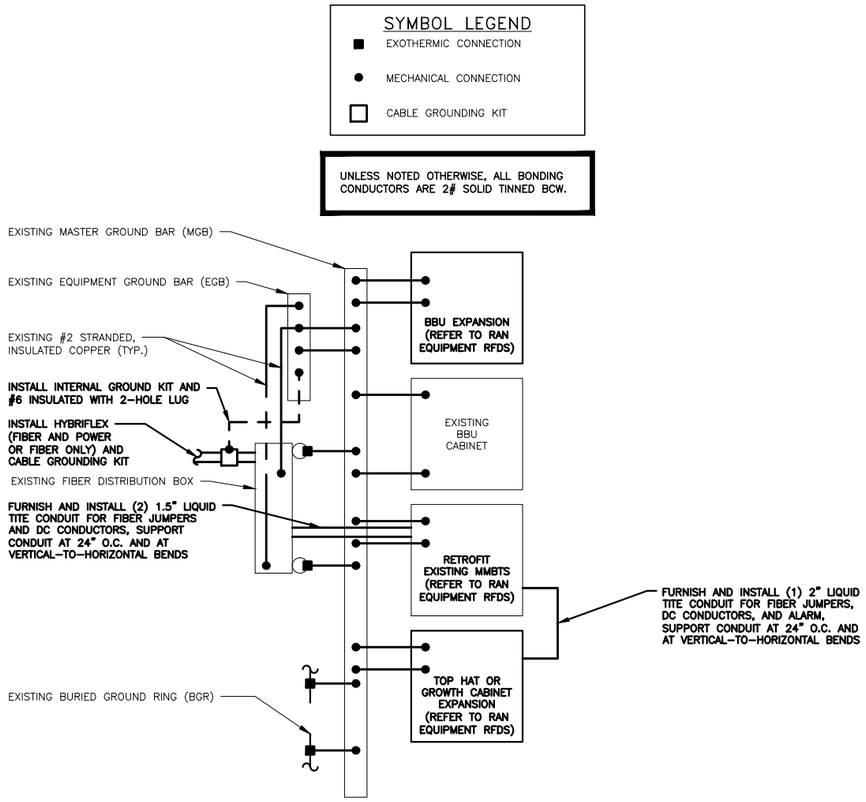
SITE NAME:
SOUTH LEDYARD – TOWN DUMP
SITE ADDRESS:
130 WELLES ROAD,
GROTON, CT 06340

SHEET TITLE
ONE LINE DIAGRAM

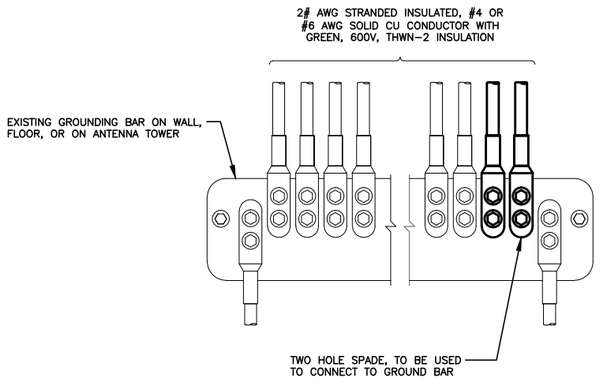
SHEET NUMBER
E–1



2.5 RAN EQUIPMENT GROUNDING SCHEMATIC

SCALE: N.T.S.

1 / E-2



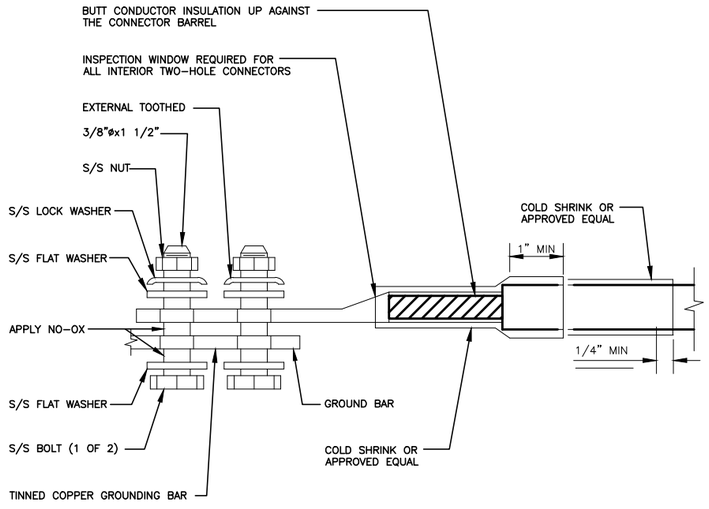
NOTES

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

SCALE: N.T.S.

2 / E-2



TWO HOLE LUG

SCALE: N.T.S.

3 / E-2

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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GROTON, CT 06340

SHEET TITLE
GROUNDING DETAILS AND NOTES

SHEET NUMBER
E-2