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

July 11, 2018

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

Notice of Exempt Modification
1214 Farmington Ave., Bristol, CT 06010
41 41 43.7 N
-72 54 5.97 W
Sprint #: CT52XC042 _DOMU

Dear Ms. Bachman:

Sprint currently maintains antennas at the 140-foot of the existing 150-foot Monopole Tower at 1214 Farmington Avenue, Bristol, CT. The tower is owned by SBA Steel II, LLC. The property is owned by Route 6 Developers, LLC. Sprint now intends to replace (3) existing cell antennas with (6) newer technology cell antennas at the 140-foot level of the tower. Sprint's proposed full scope of work is as follows:

Remove:

- (3) Samsung RRUs
- (3) Side Arms/Sector Frame
- (3) 5/8: lines
- (3) ½" lines

Remove and Replace:

- Remove:
  - (3) LLPX310R Panel Antennas
- Replace with:
  - (3) NNVV-65B-R4 Panel Antennas

At ground level (no change to compound size – work w/in existing leased area on existing pad)

- Remove:
  - (1) Clearwire Equipment cabinet
- Replace with:
  - (1) Equipment cabinet
- Remove:
  - (1) GPS
- Replace with:
  - (1) GPS

Install:

- (3) AAHC Panel Antennas
- (3) ALU 1900 Mhz RRUs
- (6) ALU 800 Mhz RRUS
- Low Profile Platform with Hand Rail (RMQP-4096-HK)
- (3) 1-1/4" fiber
- (1) 1.689" fiber

At ground level (no change to compound size – work w/in existing leased area on existing pad)

- (1) PPC cabinet on H-Frame
- Ice Bridge Components

Existing Equipment to Remain (Including entitlements):

- (3) Dragonwave Dishes
- (3) ½" lines

This facility was approved prior to the Council's jurisdiction. The City of Bristol's Zoning Commission granted approval by Special Permit on August 9, 2000 for a 150 foot monopole. The only stipulation was that the facility be located in the southeast corner of the subject property. No further conditions were placed on the tower. The proposed modification is in full compliance.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the City of Bristol's Mayor, Ellen Zoppo-Sassu, and Zoning Enforcement Officer, Monica Holloway, as well as to the property owner. Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed modifications to the above-referenced telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581

508.251.0720 x3804 + T
508.366.2610 + F
203.446.7700 + C
kpelletier@sbasite.com

Attachments

cc: Ellen Zoppo-Sassu, Mayor / with attachments
City of Bristol, 111 North Main St., 2nd Floor, Bristol, CT 06010
Monica Holloway, Zoning Enforcement Officer / with attachments
City of Bristol, 111 North Main St., 2nd Floor, Bristol, CT 06010
Route 6 Developers, LLC / with attachments
1224 Mill Street. Building D, Suite 103, East Berlin, CT 06023

POWER DENSITY

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**140 feet**	Height (AGL):	**140 feet**	Height (AGL):	**140 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**1.82 %**	Antenna B1 MPE%	**1.82 %**	Antenna C1 MPE%	**1.82 %**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**140 feet**	Height (AGL):	**140 feet**	Height (AGL):	**140 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):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**1.02 %**	Antenna B2 MPE%	**1.02 %**	Antenna C2 MPE%	**1.02 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Dragonwave Dish	32.35 dBd	140	11 GHz	1	1	1717.90	**0.03**	A
Dragonwave Dish	32.35 dBd	140	11 GHz	1	1	1717.90	**0.03**	B
Dragonwave Dish	32.35 dBd	140	11 GHz	1	1	1717.90	**0.03**	C

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	**2.88 %**
Nextel	0.28 %
Clearwire	0.10 %
Site Total MPE %*:	**3.26 %**

SPRINT Sector A Total:	2.88 %
SPRINT Sector B Total:	2.88 %
SPRINT Sector C Total:	2.88 %
Site Total:*	3.26 %

SPRINT _ Frequency Band / Technology Max Power Values (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	140	0.75	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	941.82	140	3.77	850 MHz	567	0.67%
Sprint 1900 MHz (PCS) CDMA	5	511.82	140	5.12	1900 MHz (PCS)	1000	0.51%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	140	5.12	1900 MHz (PCS)	1000	0.51%
Sprint 2500 MHz (BRS) LTE	8	639.78	140	10.25	2500 MHz (BRS)	1000	1.02%
Sprint 11 GHz Microwave	1	1,717.90	140	0.34	11 GHz	1000	0.03%
						Total*:	**2.88%**

*NOTE: Totals may vary by 0.01% due to summing of remainders

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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
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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1214 FARMINGTON AVE

Location	1214 FARMINGTON AVE	**Mblu**	46/ / 72A-3/ /
Acct#	0054445	**Owner**	ROUTE 6 DEVELOPERS LLC
Assessment	$9,513,000	**Appraisal**	$13,590,000
PID	1763	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$11,125,500	$2,464,500	$13,590,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$7,787,850	$1,725,150	$9,513,000

Owner of Record

Owner	ROUTE 6 DEVELOPERS LLC
Co-Owner	
Address	1224 MILL ST, BLDG D, STE 103 EAST BERLIN, CT 06023-1159

Sale Price	$0
Certificate	1
Book & Page	1514/1092
Sale Date	09/08/2003
Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ROUTE 6 DEVELOPERS LLC	$0	1	1514/1092	00	09/08/2003
EISENBAUM WAYNE+ ALLAN+ MARLA	$0		1448/1117		10/31/2002
EISENBAUM WAYNE+ ALLAN+ MARLA	$0		1044/ 346		03/02/1992
EISENBAUM WAYNE + MARLA	$0		1023/ 480		06/10/1991
EISENBAUM ALAN+WAYNE+MARLA	$0		1023/ 478		06/07/1991

Building Information

Building 1 : Section 1

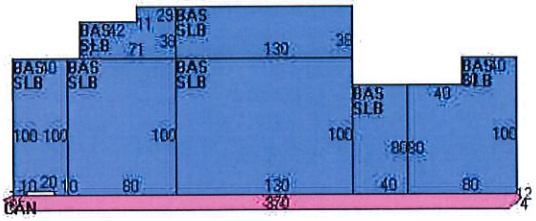
Year Built:	1964
Living Area:	42,516
Replacement Cost:	$4,602,769
Building Percent Good:	67
Replacement Cost Less Depreciation:	$3,083,900

Building Photo

Building Attributes	
Field	**Description**
STYLE	Shop Center
MODEL	Comm/Ind
Stories:	1
Occupancy	6
Exterior Wall 1	Stucco/Masonry
Exterior Wall 2	Concr/Cinder
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Shopping Ctr
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	18
% Comn Wall	

(http://images.vgsi.com/photos2/BristolCTPhotos//\00\02\23/74.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	42,516	42,516
CAN	Canopy	4,093	0
SLB	Slab	42,516	0
		89,125	42,516

Building 2 : Section 1

Year Built: 1964
Living Area: 70,720
Replacement Cost: $8,826,079
Building Percent Good: 57
Replacement Cost Less Depreciation: $5,030,900

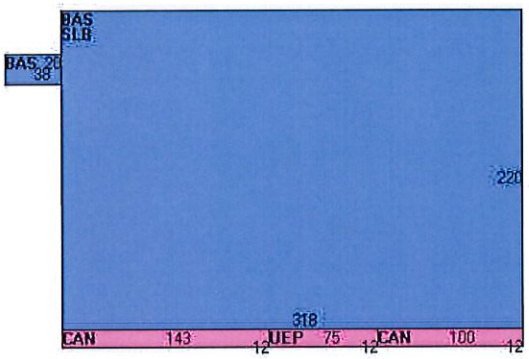
Building Photo

Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	Supermarket
MODEL	Comm/Ind
Stories:	1
Occupancy	2
Exterior Wall 1	Concr/Cinder

Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Shopping Ctr
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	20
% Comn Wall	

0054445 04/29/2016
(http://images.vgsi.com/photos2/BristolCTPhotos//\00\05\42/23.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	70,720	70,720
CAN	Canopy	2,916	0
SLB	Slab	69,960	0
UEP	Porch, Enclosed, Unfinished	900	0
		144,496	70,720

Building 3 : Section 1

Year Built: 2003
Living Area: 20,772
Replacement Cost: $2,573,520
Building Percent Good: 92
Replacement Cost Less Depreciation: $2,367,600

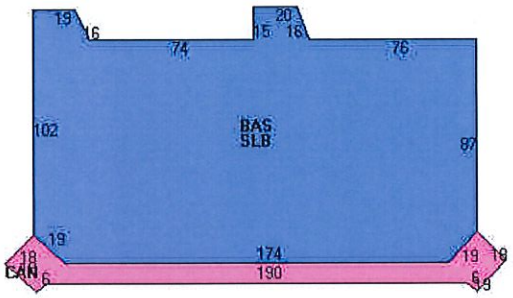
Building Photo

Building Attributes : Bldg 3 of 3	
Field	Description
STYLE	Shop Center
MODEL	Comm/Ind
Stories:	1
Occupancy	9

Exterior Wall 1	Stucco/Masonry
Exterior Wall 2	Concr/Cinder
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Ceram Clay Til
Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Shopping Ctr
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	18
% Comn Wall	

(http://images.vgsi.com/photos2/BristolCTPhotos//\00\02\23/76.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	20,772	20,772
CAN	Canopy	2,353	0
SLB	Slab	20,772	0
		43,897	20,772

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
CNP3	Bank Canopy	96 S.F	$2,200	1
SPR	Sprinklers	20772 S.F.	$49,700	3
OHD	Overhead Door	6 Units	$0	1
LDL1	Load Leveler	3 Units	$5,300	2
SPR	Sprinklers	42516 S.F.	$74,100	1
NDP	Night Dep Box	1 Units	$10,700	1
OHD	Overhead Door	4 Units	$0	2
SPR	Sprinklers	70720 S.F.	$112,900	2

Land

Land Use

Use Code	328
Description	Shopping Ctr
Zone	BG
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	10.4
Frontage	483
Depth	
Assessed Value	$1,725,150
Appraised Value	$2,464,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving Asph.			325000 S.F.	$341,300	1
CELL	Cell Tower/Site			1 UNITS	$0	1
CB3	PreCastConcCel			240 S.F.	$43,200	2
FN3	Fence 6'			250 L.F.	$1,900	2
PAV2	Paving Concrt			900 S.F.	$1,800	2

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$11,125,500	$2,464,500	$13,590,000
2016	$10,762,900	$2,604,900	$13,367,800
2015	$10,762,900	$2,604,900	$13,367,800

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$7,787,850	$1,725,150	$9,513,000
2016	$7,534,030	$1,823,430	$9,357,460
2015	$7,534,030	$1,823,430	$9,357,460

City of Bristol, CT

Property Listing Report

Map Block Lot 46-72A-3 | Account 0054445

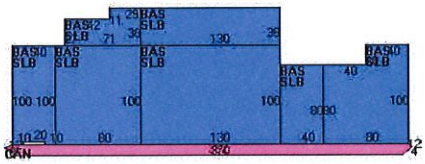
Property Information

Property Location	1214 FARMINGTON AVE
Owner	ROUTE 6 DEVELOPERS LLC
Co-Owner	
Mailing Address	1224 MILL ST, BLDG D, STE 103 EAST BERLIN CT 06023-1159
Land Use	328 Shopping Ctr
Land Class	C
Zoning Code	BG
Census Tract	04053

Neighborhood	
Acreage	10.4
Utilities	All Public
Lot Setting/Desc	Level
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1964
Stories	1
Building Style	Shop Center
Building Use	Comm/Ind
Building Condition	
Floors	Carpet
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Flat
Roof Cover	T+G/Rubber

Exterior Walls	Stucco/Masonry
Interior Walls	Drywall/Sheetr
Heating Type	Forced Air-Duc
Heating Fuel	Propane Gas
AC Type	Central
Gross Bldg Area	89125
Total Living Area	42516

Report Created On 4/12/2018

City of Bristol, CT

Property Listing Report | Map Block Lot 46-72A-3 | Account 0054445

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	10122600	7085820
Extras	269600	188720
Improvements	10762900	7534030
Outbuildings	370700	259490
Land	2604900	1823430
Total	13367800	9357460

Outbuilding and Extra Items

Type	Description
Bank Canopy	96 S.F.
Overhead Door	6 Units
Sprinklers	70720 S.F.
Paving Asph.	325000 S.F.
Overhead Door	4 Units
PreCastConcCel	240 S.F.
Fence 6'	250 L.F.
Paving Concrt	900 S.F.
Cell Tower/Site	1 UNITS
Night Dep Box	1 Units

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	42516	42516
Canopy	4093	0
Slab	42516	0
Total Area	89125	42516

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
ROUTE 6 DEVELOPERS LLC	1514/1092	9/8/2003	0
EISENBAUM WAYNE+ ALLAN+ MARLA	1448/1117	10/31/2002	
EISENBAUM WAYNE+ ALLAN+ MARLA	1044/ 346	3/2/1992	
EISENBAUM WAYNE + MARLA	1023/ 480	6/10/1991	
EISENBAUM ALAN+WAYNE+MARLA	1023/ 478	6/7/1991	
EISENBAUM IRVING	990/ 81	4/18/1990	

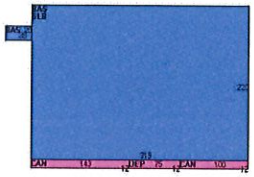
Report Created On 4/12/2018

City of Bristol, CT

Property Listing Report | Map Block Lot 46-72A-3 | Account 0054445

Photo

Sketch



Primary Construction Details

Year Built	1964
Stories	1
Building Style	Shop Center
Building Use	Comm/Ind
Building Condition	
Floors	Vinyl/Asphalt
Total Rooms	
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

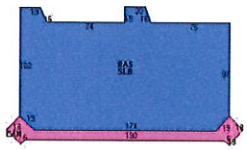
Kitchen Style	
Roof Style	Flat
Roof Cover	T+G/Rubber
Exterior Walls	Concr/Cinder
Interior Walls	Drywall/Sheetr
Heating Type	Forced Air-Duc
Heating Fuel	Oil
AC Type	Central
Gross Bldg Area	
Total Living Area	

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	70720	70720
Slab	69960	0
Canopy	2916	0
Porch, Enclosed	900	0
Total Area		

Photo

Sketch



Primary Construction Details

Year Built	2003
Stories	1
Building Style	Shop Center
Building Use	Comm/Ind
Building Condition	
Floors	Carpet
Total Rooms	
Bedrooms	
Bathrooms	
Bath Style	
Half Bath	

Kitchen Style	
Roof Style	Flat
Roof Cover	T+G/Rubber
Exterior Walls	Stucco/Masonry
Interior Walls	Drywall/Sheetr
Heating Type	Forced Air-Duc
Heating Fuel	Propane Gas
AC Type	Central
Gross Bldg Area	
Total Living Area	

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	20772	20772
Canopy	2353	0
Slab	20772	0
Total Area		

Report Created On 4/12/2018

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT52XC042

Farmington TowerCo
1214 Farmington Avenue
Bristol, CT 06010

June 27, 2018

EBI Project Number: 6218004707

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	3.26 %

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EBI Consulting
environmental | engineering | due diligence

June 27, 2018

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

Emissions Analysis for Site: **CT52XC042 – Farmington TowerCo**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1214 Farmington Avenue, Bristol, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS) and 11 GHz microwave 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 **1214 Farmington Avenue, Bristol, 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 for directional panel antennas and 20 dB for parabolic microwave dishes, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) 1 microwave channel (11 GHz) was considered for sector of the proposed facility. This channel has a transmit power of 1 Watt per channel.

7) 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.

8) 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 for directional panel antennas and 20 dB for parabolic microwave dishes, 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.

9) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** 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 for directional panel antennas and 20 dB for parabolic microwave dishes, 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.

10) The antenna mounting height centerlines of the proposed antennas are **140 feet** above ground level (AGL) for **Sector A**, **140 feet** above ground level (AGL) for **Sector B** and **140 feet** above ground level (AGL) for Sector C.

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

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**140 feet**	Height (AGL):	**140 feet**	Height (AGL):	**140 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**1.82 %**	Antenna B1 MPE%	**1.82 %**	Antenna C1 MPE%	**1.82 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**140 feet**	Height (AGL):	**140 feet**	Height (AGL):	**140 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):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**1.02 %**	Antenna B2 MPE%	**1.02 %**	Antenna C2 MPE%	**1.02 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Dragonwave Dish	32.35 dBd	140	11 GHz	1	1	1717.90	**0.03**	A
Dragonwave Dish	32.35 dBd	140	11 GHz	1	1	1717.90	**0.03**	B
Dragonwave Dish	32.35 dBd	140	11 GHz	1	1	1717.90	**0.03**	C

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.88 %**
Nextel	0.28 %
Clearwire	0.10 %
Site Total MPE %*:	**3.26 %**

SPRINT Sector A Total:	2.88 %
SPRINT Sector B Total:	2.88 %
SPRINT Sector C Total:	2.88 %
Site Total:*	3.26 %

SPRINT _ Frequency Band / Technology Max Power Values (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	140	0.75	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	941.82	140	3.77	850 MHz	567	0.67%
Sprint 1900 MHz (PCS) CDMA	5	511.82	140	5.12	1900 MHz (PCS)	1000	0.51%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	140	5.12	1900 MHz (PCS)	1000	0.51%
Sprint 2500 MHz (BRS) LTE	8	639.78	140	10.25	2500 MHz (BRS)	1000	1.02%
Sprint 11 GHz Microwave	1	1,717.90	140	0.34	11 GHz	1000	0.03%
						Total*:	**2.88%**

*NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.88 %
Sector B:	2.88 %
Sector C:	2.88 %
SPRINT Maximum Total (per sector):	2.88 %
Site Total:	3.26 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.26 %** 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.

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Structural Analysis Report

Client: Sprint Nextel

Client Site ID: CT52XC042
Client Site Name: Farmington TowerCo
AppID: 70703, v2

SBA Site Name: Bristol-east
SBA Site ID: CT46136-A
150 ft Monopole
1214 Farmington Ave.
Bristol, Connecticut 6010
Lat: 41.695472, Long: -72.901658

Project number: CT46136-SN-051718

Analysis Results

Tower	21.80%	Pass
Foundation	20.69%	Pass

Client Mount modification / replacement

Net change in tower stress due to mount Modification / replacement	1.60%

Twist and Sway with a 10 dB Degradation Limit

Elev (ft)	Model	Frequency (GHz)	Calculated Twist/Sway (°)	Allowable Twist/Sway (°)	Analysis Results
140.0	Dragonwave - Dish	*5.000	0.356	4.901	Sufficient

**assumed*
*** Client must review the operational limits of the Microwave dish*

Prepared by:

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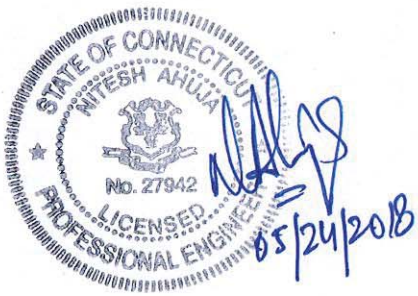


May 24, 2018

Prepared in compliance with:

- *ANSI/TIA/EIA 222-G Structural Standard for Antennas and Antenna Supporting Structures*
- *2012 International Building Code (IBC)*

Table of Contents

Executive Summary

The enclosed structural analysis was performed for Sprint Nextel on May 24, 2018 to verify the structural capacity of the 150 ft Monopole located at 1214 Farmington Ave., Bristol, Connecticut 6010 to support the proposed antenna, transmission lines and mounting equipment in addition to those currently installed. The following documents were used to determine the geotechnical characteristics, foundation data, tower geometry and member sizes/type:

Table 1 List of Documents Used

Item	Document
Tower design/drawings	PJF, Job#: 29200-1543. Summit job#: 11622. dated 10/16/2000.
Foundation drawings	PJF, Job#: 29200-1543. Summit job#: 11622. dated 10/16/2000.
Geotechnical report	Diversified Technology Consultants. Dated 09/14/2000.
Latest SA	TES Project Number: 41662Rev1, Dated 10/16/17

The analysis was performed in accordance with the following requirements:

Table 2 Code Related Data

Jurisdiction (State/County/City)	Connecticut/Hartford/Bristol
Governing Codes	ANSI/TIA/EIA 222-G, 2012 IBC
Base Wind Speed	94.0 mph (Ultimate Wind Speed: 121 mph 3-Sec. Gust)
Wind Speed with Ice	50 mph (3-Sec. Gust)
Ice Thickness	1.00”
Structural Class	II
Exposure Category	C
Topographic Category	1
Crest Height	0 ft

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

The SBA Communications Corporation verifies that the 150 ft Monopole located at 1214 Farmington Ave., Bristol, Connecticut 6010 is ***Sufficient*** to support the proposed loadings for Sprint Nextel in addition to those currently existing based on standards set forth in governing building codes and dependent on Sprint Nextel satisfying all Installation Requirements provided herein. The analysis performed assumes the site information provided is accurate and the tower/foundation has been properly designed, manufactured, installed and maintained. Additional details regarding the assumptions and limitations are provided within the Assumptions and Limitations section of this report.

Assumptions

This analysis was completed based on the following assumptions:

- Tower has been properly maintained
- Tower erection was in accordance to manufacturer drawings
- Leg flanges have been properly designed by manufacturer to not be a limiting reaction
- Welds have been properly designed and installed by manufacturer to not be a limiting reaction
- Foundation was constructed in accordance to manufacturer drawings
- Foundation does not have structural damage
- Bolts have been properly tightened according to manufacturer specifications
- Appurtenance, mount and transmission line sizes and weights are best estimates using the TES database and manufacturer information

Limitations

The computer generated analysis performed by the TES software is limited to theoretical capacities of the towers structural members and does not account for any missing or damaged members or connections. The tower and foundation are assumed to have been properly designed, fabricated, installed and maintained, barring any conflicting findings from the most recent inspection. All leg flanges, welds and bolts are assumed to be designed by the manufacturer in such a way that these are not limiting reactions.
SBA Communications Corporation has used its due diligence to verify the information provided to perform this analysis. It is unreasonable to perform a more detailed inspection of a tower and its components. This report is not a condition assessment of the tower or foundation.

Installation Requirements

This analysis was performed under the assumption that Sprint Nextel will place the proposed equipment and feed lines at a height of 140 ft and in accordance with the coax layout shown. RRUs are to be installed on existing mounts behind tenant's antennas unless otherwise noted. No equipment is to be installed directly in the climbing path. All equipment is to be installed per mount manufacturer specifications. In case site conditions do not allow for the required installation parameters to be met Sprint Nextel must notify SBA Communications Corporation engineers for approval of an alternative placement.

Appurtenance Loading

Existing Loading:

The existing antenna and feed line information was obtained from the Site Summary and/or previous Structural Analysis. SBA Communications Corporation uses due diligence to ensure reasonably accurate information has been recorded. The existing loadings are shown in Table 3.

Table 3 Existing Appurtenances

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	140.0	3	LLPX310R - Panel	(3) Side Arms	(3) 5/8" (6) 1/2"	Sprint Nextel
2		3	Samsung RRUs			
7		3	Dragonwave - Dish			

Sprint-Nextel is terminated and their Equipment is to be removed at 150'.

Proposed Loading:

Information pertaining to proposed antennas and transmission lines were based upon the APP ID 70703, v2 from Sprint Nextel and is listed in Table 4.

Table 4 Proposed Appurtenances

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
3	140.0	3	NNVV-65B-R4 - Panel	Platform w/ Hand Rail (RMQR-4096-HK)	(3) 1-1/4 Fiber (1) 1.689" Fiber (3) 1/2"	Sprint Nextel
4		3	AAHC - Panel			
5		3	ALU 1900 Mhz RRUs			
6		6	ALU 800 Mhz RRUs			
7		3	Dragonwave - Dish			

Results

Tower

The results of the structural analysis performed with the TES software are shown below. Table 5 shows the most critical member elements and the percentage of the force in the member with respect to the member capacity. Capacities of up to 105% are considered acceptable. The foundation reactions obtained from TES are shown in Table 6. Table 7 displays the twist and sway at service wind speeds. These reactions are used for the analysis of the foundation systems. Additional information for the tower analysis is provided within the Appendix.

Table 5 Tower Analysis Summary

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	21.0%	21.7%	21.8%
Pass/Fail	Pass	Pass	Pass

Table 6 Tower Base Reactions

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	1834.0	20.3	45.4

Table 7 Twist and Sway with a 10 dB Degradation Limit (for dishes only)

Elev (ft)	Model	Frequency (GHz)	Calculated Twist/Sway (°)	Allowable Twist/Sway (°)	Analysis Results
140.0	Dragonwave - Dish	*5.000	0.356	4.901	Sufficient

**assumed*
*** Client must review the operational limits of the Microwave dish*

Table 8 Client mount modification / replacement

Tower stress with mount Modification / replacement	Tower stress without mount Modification / replacement	Difference
21.80%	20.20%	1.60%

Foundation System

The results of the foundation based on the geotechnical report and foundation mapping or design drawings are shown below in Table 9. Additional information for the foundation analysis is provided within the Appendix.

Table 9 Foundation Analysis Summary

Structural Component	% capacity	Analysis Result
Foundation	20.69%	Pass

Appendix

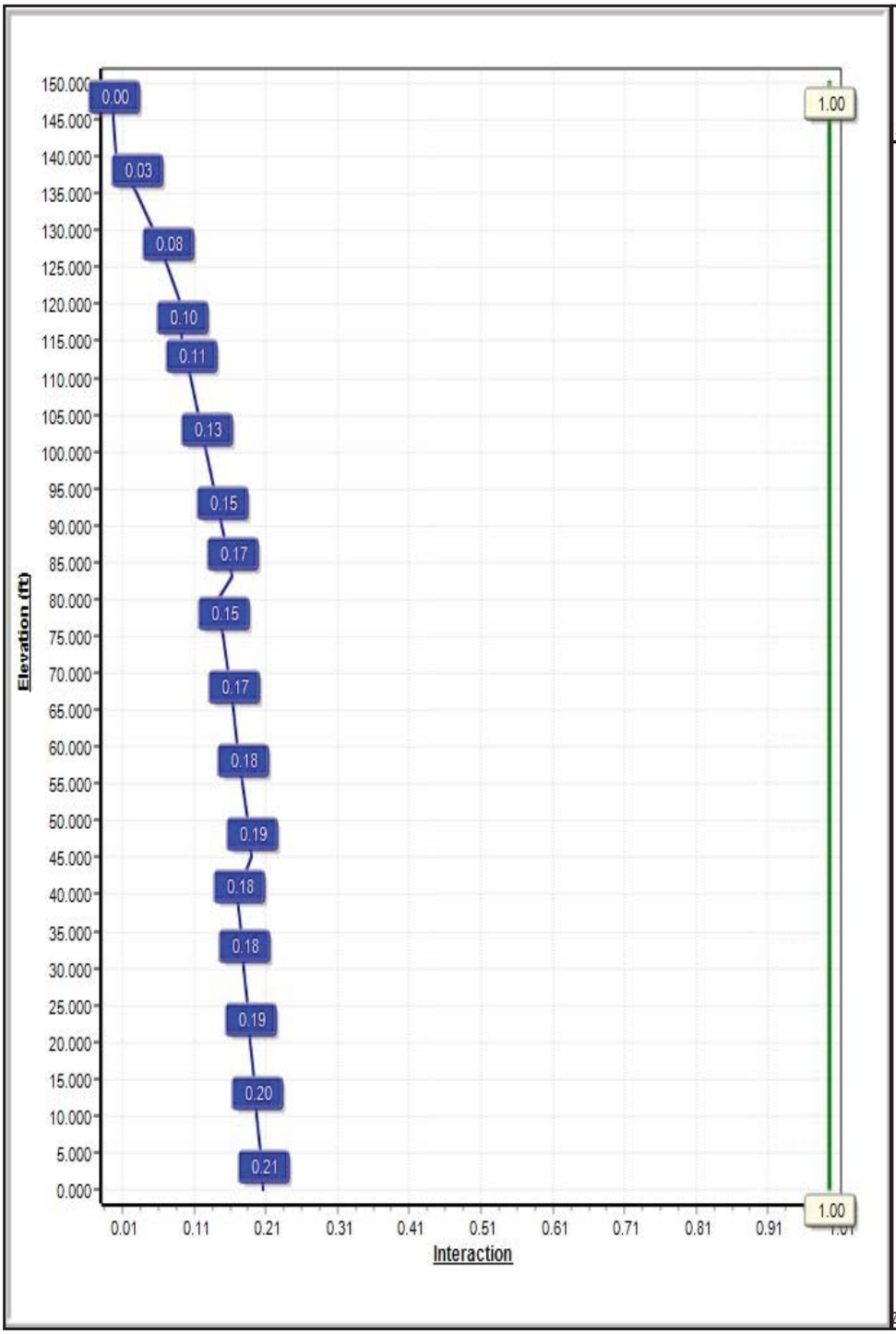
Usage Diagram - Max Ratio 21.01% at 0.0ft

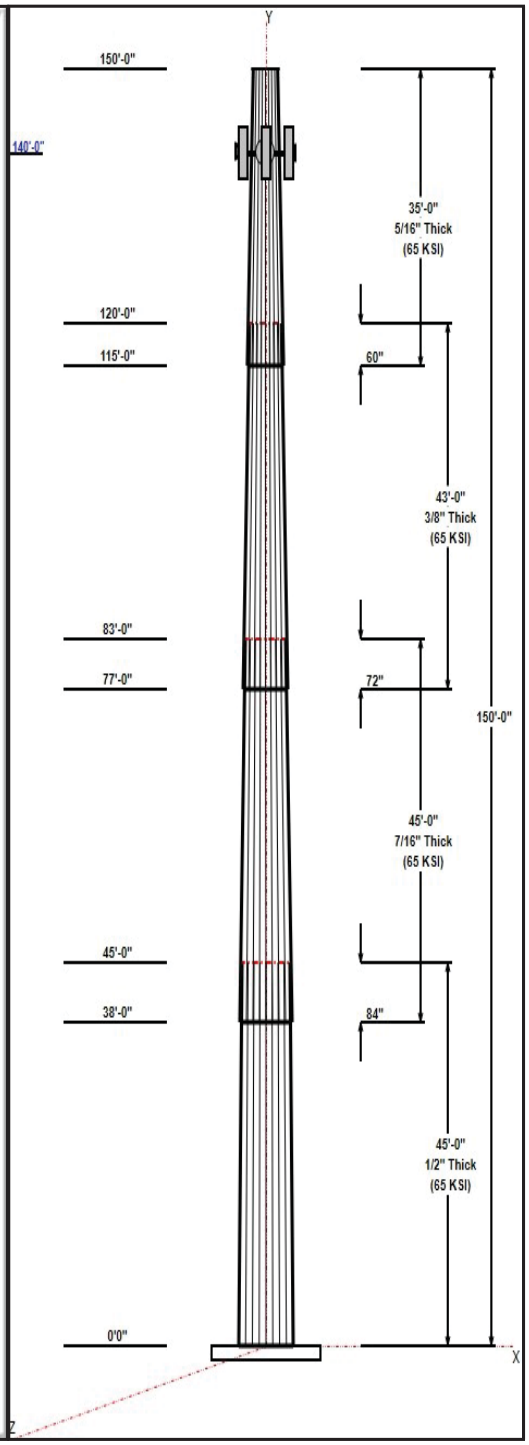
Structure:	CT46136-A	**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east	**Exposure:**	C	
Height:	150.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 94 mph Wind

Iterations: 19





Structure: CT46136-A

Type: Tapered
Site Name: Bristol-east
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.28013

5/24/2018

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	51.16	63.77	0.500		0.28013	65
2	45.00	41.39	54.00	0.438	Slip	0.28013	65
3	43.00	31.78	43.82	0.375	Slip	0.28013	65
4	35.00	24.00	33.80	0.313	Slip	0.28013	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
140.00	140.00	3	AAHC	Sprint Nextel
140.00	140.00	3	ALU 1900 Mhz RRUs	Sprint Nextel
140.00	140.00	6	ALU 800 Mhz RRUs	Sprint Nextel
140.00	140.00	3	Dragonwave	Sprint Nextel
140.00	140.00	3	NNVV-65B-R4	Sprint Nextel
140.00	140.00	1	Platform w/ Hand Rail	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	140.00	Inside	1-1/4 fiber	Sprint Nextel
0.00	140.00	Inside	1.689" Hybrid	Sprint Nextel
0.00	140.00	Inside	1/2" Coax	Sprint Nextel

Anchor Bolts

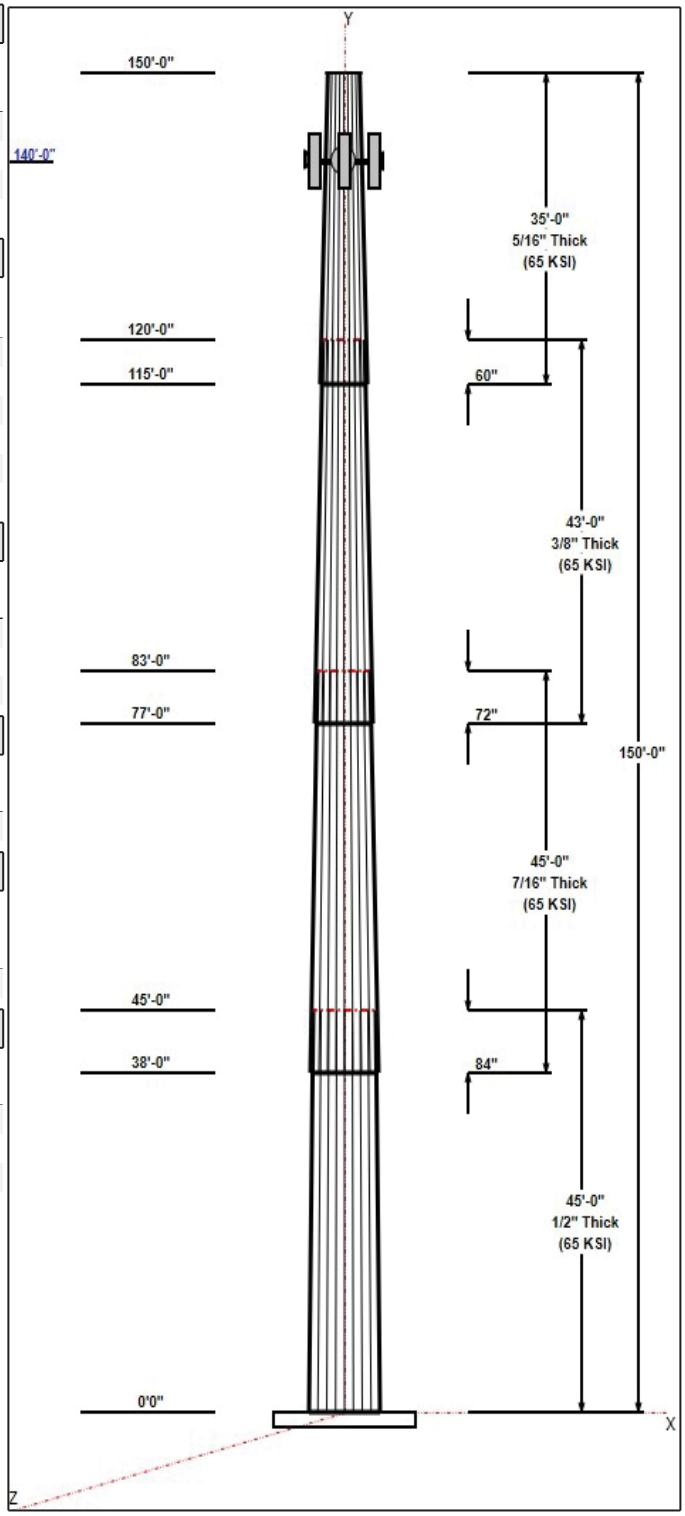
Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	71.0	55.0	Clipped

Reactions

Load Case	Moment	Shear	Axial
1.2D + 1.6W 94 mph Wind	1834.0	20.3	45.4
0.9D + 1.6W 94 mph Wind	1826.9	20.3	34.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	622.7	6.9	70.5
1.0D + 1.0W 60 mph Wind	465.8	5.2	37.9



Structure: CT46136-A - Coax Line Placement

Type: Monopole
Site Name: Bristol-east
Height: 150.00 (ft)

5/24/2018

Shaft Properties

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 4

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.5000	65		0.00	13,843
2	18	45.000	0.4375	65	Slip	84.00	10,049
3	18	43.000	0.3750	65	Slip	72.00	6,518
4	18	35.000	0.3125	65	Slip	60.00	3,377
					Total Shaft Weight:		**33,787**

	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	63.77	0.00	100.4	50781.78	21.08	127.54	51.16	45.00	80.40	26074.3	16.63	102.3	0.280133
2	54.00	38.00	74.38	26958.97	20.35	123.43	41.39	83.00	56.87	12052.8	15.27	94.61	0.280133
3	43.82	77.00	51.71	12334.94	19.20	116.87	31.78	120.00	37.38	4657.26	13.53	84.74	0.280133
4	33.80	115.0	33.22	4707.87	17.66	108.17	24.00	150.00	23.49	1665.53	12.13	76.80	0.280133

Load Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

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	140.0	AAHC	3	103.70	4.20	0.82	285.58	5.324	0.82	0.00	0.00
2	140.0	ALU 1900 Mhz RRUs	3	60.00	2.77	0.67	170.48	4.450	0.67	0.00	0.00
3	140.0	ALU 800 Mhz RRUs	6	53.00	2.49	0.67	150.94	4.005	0.67	0.00	0.00
4	140.0	Dragonwave	3	27.10	4.68	1.00	156.69	6.367	1.00	0.00	0.00
5	140.0	NNVV-65B-R4	3	84.70	12.27	0.75	475.11	14.25	0.75	0.00	0.00
6	140.0	Platform w/ Hand Rail (round)	1	2448.72	34.54	1.00	6704.20	74.45	1.00	0.00	0.00
		Totals:	**19**	**3,093.22**			**10,873.39**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	140.0	(3) 1-1/4 fiber	0.00	Inside
0.00	140.0	(1) 1.689" Hybrid	0.00	Inside
0.00	140.0	(3) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 6

Increment Length: □ **(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		0.5000	63.770	100.406	50781.8	21.08	127.54	76.6	1568.	0.0
5.00		0.5000	62.369	98.183	47483.3	20.58	124.74	77.2	1499.	1689.4
10.00		0.5000	60.969	95.960	44330.8	20.09	121.94	77.8	1432.	1651.6
15.00		0.5000	59.568	93.738	41321.0	19.60	119.14	78.4	1366.	1613.7
20.00		0.5000	58.167	91.515	38450.7	19.10	116.33	78.9	1302.	1575.9
25.00		0.5000	56.767	89.292	35716.4	18.61	113.53	79.5	1239.	1538.1
30.00		0.5000	55.366	87.069	33115.0	18.11	110.73	80.1	1178.	1500.3
35.00		0.5000	53.965	84.846	30643.0	17.62	107.93	80.7	1118.	1462.5
38.00	Bot - Section 2	0.5000	53.125	83.513	29220.6	17.32	106.25	81.0	1083.	859.3
40.00		0.5000	52.565	82.624	28297.2	17.13	105.13	81.3	1060.	1068.8
45.00	Top - Section 1	0.4375	52.039	71.653	24105.1	19.56	118.95	0.0	0.0	2622.5
50.00		0.4375	50.638	69.708	22195.0	19.00	115.74	79.1	863.3	1202.5
55.00		0.4375	49.238	67.763	20388.6	18.43	112.54	79.7	815.6	1169.5
60.00		0.4375	47.837	65.818	18682.9	17.87	109.34	80.4	769.2	1136.4
65.00		0.4375	46.436	63.873	17075.1	17.30	106.14	81.0	724.2	1103.3
70.00		0.4375	45.036	61.928	15562.3	16.74	102.94	81.7	680.6	1070.2
75.00		0.4375	43.635	59.983	14141.6	16.18	99.74	82.4	638.3	1037.1
77.00	Bot - Section 3	0.4375	43.075	59.205	13598.5	15.95	98.46	82.5	621.8	405.6
80.00		0.4375	42.234	58.038	12810.1	15.61	96.54	82.5	597.4	1121.2
83.00	Top - Section 2	0.3750	42.144	49.714	10958.1	18.41	112.38	0.0	0.0	1099.1
85.00		0.3750	41.584	49.047	10523.0	18.14	110.89	80.1	498.4	336.1
90.00		0.3750	40.183	47.380	9486.1	17.48	107.15	80.8	465.0	820.3
95.00		0.3750	38.782	45.713	8519.6	16.83	103.42	81.6	432.7	791.9
100.00		0.3750	37.382	44.046	7621.1	16.17	99.68	82.4	401.5	763.6
105.00		0.3750	35.981	42.379	6788.1	15.51	95.95	82.5	371.6	735.2
110.00		0.3750	34.580	40.711	6018.1	14.85	92.21	82.5	342.8	706.8
115.00	Bot - Section 4	0.3750	33.180	39.044	5308.6	14.19	88.48	82.5	315.1	678.5
120.00	Top - Section 3	0.3125	32.404	31.830	4141.6	16.87	103.69	0.0	0.0	1203.5
125.00		0.3125	31.003	30.440	3622.6	16.08	99.21	82.5	230.1	529.7
130.00		0.3125	29.603	29.051	3148.9	15.29	94.73	82.5	209.5	506.1
135.00		0.3125	28.202	27.662	2718.4	14.50	90.25	82.5	189.9	482.5
140.00		0.3125	26.801	26.273	2329.1	13.71	85.76	82.5	171.2	458.8
145.00		0.3125	25.401	24.883	1978.8	12.92	81.28	82.5	153.4	435.2
150.00		0.3125	24.000	23.494	1665.5	12.13	76.80	82.5	136.7	411.5
										33786.7

Wind Loading - Shaft

Structure:	CT46136-A	**Code:**	EIA/TIA-222-G	5/24/2018	
Site Name:	Bristol-east	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Load Case: 1.2D + 1.6W 94 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60

Iterations 19

Elev (ft)	Description	□□t	□□	q□ (psf)	q□Gh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force □ (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	18.266	20.09	467.65	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	18.266	20.09	457.38	0.650	0.000	5.00	26.684	17.34	557.6	0.0	2027.3
10.00		1.00	0.85	18.266	20.09	447.11	0.650	0.000	5.00	26.092	16.96	545.2	0.0	1981.9
15.00		1.00	0.85	18.266	20.09	436.84	0.650	0.000	5.00	25.499	16.57	532.8	0.0	1936.5
20.00		1.00	0.90	19.381	21.32	439.39	0.650	0.000	5.00	24.907	16.19	552.2	0.0	1891.1
25.00		1.00	0.95	20.313	22.34	439.00	0.650	0.000	5.00	24.314	15.80	565.0	0.0	1845.7
30.00		1.00	0.98	21.108	23.22	436.47	0.650	0.000	5.00	23.721	15.42	572.8	0.0	1800.4
35.00		1.00	1.01	21.804	23.98	432.38	0.650	0.000	5.00	23.129	15.03	576.9	0.0	1755.0
38.00	Bot - Section 2	1.00	1.03	22.185	24.40	429.35	0.650	0.000	3.00	13.593	8.84	345.0	0.0	1031.2
40.00		1.00	1.04	22.426	24.67	427.12	0.650	0.000	2.00	9.091	5.91	233.2	0.0	1282.6
45.00	Top - Section 1	1.00	1.07	22.989	25.29	420.93	0.650	0.000	5.00	22.314	14.50	586.8	0.0	3147.0
50.00		1.00	1.09	23.504	25.85	421.25	0.650	0.000	5.00	21.721	14.12	584.1	0.0	1443.1
55.00		1.00	1.12	23.981	26.38	413.73	0.650	0.000	5.00	21.128	13.73	579.6	0.0	1403.3
60.00		1.00	1.14	24.424	26.87	405.66	0.650	0.000	5.00	20.536	13.35	573.8	0.0	1363.6
65.00		1.00	1.16	24.839	27.32	397.11	0.650	0.000	5.00	19.943	12.96	566.7	0.0	1323.9
70.00		1.00	1.17	25.230	27.75	388.15	0.650	0.000	5.00	19.351	12.58	558.5	0.0	1284.2
75.00		1.00	1.19	25.599	28.16	378.82	0.650	0.000	5.00	18.758	12.19	549.3	0.0	1244.5
77.00	Bot - Section 3	1.00	1.20	25.741	28.32	374.99	0.650	0.000	2.00	7.337	4.77	216.1	0.0	486.7
80.00		1.00	1.21	25.949	28.54	369.16	0.650	0.000	3.00	11.019	7.16	327.1	0.0	1345.5
83.00	Top - Section 2	1.00	1.22	26.151	28.77	363.22	0.650	0.000	3.00	10.805	7.02	323.3	0.0	1318.9
85.00		1.00	1.22	26.282	28.91	365.80	0.650	0.000	2.00	7.085	4.61	213.0	0.0	403.3
90.00		1.00	1.24	26.600	29.26	355.61	0.650	0.000	5.00	17.298	11.24	526.4	0.0	984.4
95.00		1.00	1.25	26.905	29.60	345.17	0.650	0.000	5.00	16.705	10.86	514.2	0.0	950.3
100.00		1.00	1.27	27.197	29.92	334.51	0.650	0.000	5.00	16.112	10.47	501.3	0.0	916.3
105.00		1.00	1.28	27.478	30.23	323.63	0.650	0.000	5.00	15.520	10.09	487.9	0.0	882.2
110.00		1.00	1.29	27.748	30.52	312.56	0.650	0.000	5.00	14.927	9.70	473.8	0.0	848.2
115.00	Bot - Section 4	1.00	1.30	28.009	30.81	301.31	0.650	0.000	5.00	14.334	9.32	459.3	0.0	814.2
120.00	Top - Section 3	1.00	1.32	28.261	31.09	289.88	0.650	0.000	5.00	14.006	9.10	452.8	0.0	1444.2
125.00		1.00	1.33	28.505	31.36	284.02	0.650	0.000	5.00	13.414	8.72	437.4	0.0	635.7
130.00		1.00	1.34	28.742	31.62	272.31	0.650	0.000	5.00	12.821	8.33	421.6	0.0	607.3
135.00		1.00	1.35	28.971	31.87	260.46	0.650	0.000	5.00	12.228	7.95	405.3	0.0	578.9
140.00	Appurtenance(s)	1.00	1.36	29.193	32.11	248.48	0.650	0.000	5.00	11.636	7.56	388.6	0.0	550.6
145.00		1.00	1.37	29.410	32.35	236.36	0.650	0.000	5.00	11.043	7.18	371.5	0.0	522.2
150.00		1.00	1.38	29.621	32.58	224.13	0.650	0.000	5.00	10.451	6.79	354.1	0.0	493.9
								Totals:	**1□0.00**			**1□,3□3.4**		**40,□44.0**

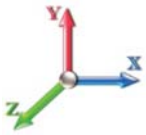
Discrete Appurtenance Forces

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 8

Load Case: 1.2D + 1.6W 94 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 19

No.	Elev (ft)	Description	□ty	q□ (psf)	q□Gh (psf)	CaAa x □a	□a	Total CaAa (sf)	Dead Load (lb)	Hori□ Ecc (ft)	□ert Ecc (ft)	Wind F□ (lb)	Mom □ (lb-ft)	Mom □ (lb-ft)
1	140.00	AAHC	3	29.193	32.113	0.74	0.90	9.30	373.32	0.000	0.000	477.78	0.00	0.00
2	140.00	ALU 1900 Mhz RRUs	3	29.193	32.113	0.60	0.90	5.01	216.00	0.000	0.000	257.46	0.00	0.00
3	140.00	ALU 800 Mhz RRUs	6	29.193	32.113	0.60	0.90	9.01	381.60	0.000	0.000	462.88	0.00	0.00
4	140.00	Dragonwave	3	29.193	32.113	1.00	1.00	14.04	97.56	0.000	0.000	721.38	0.00	0.00
5	140.00	NNVV-65B-R4	3	29.193	32.113	0.68	0.90	24.85	304.92	0.000	0.000	1276.64	0.00	0.00
6	140.00	Platform w/ Hand Rail	1	29.193	32.113	1.00	1.00	34.54	2938.46	0.000	0.000	1774.68	0.00	0.00
							Totals:		**4,311.86**			**4,970.83**		

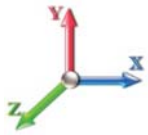
Total Applied Force Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 9

Load Case: 1.2D + 1.6W 94 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 19

Elev (ft)	Description	Lateral F□ (-) (lb)	Axial F□ (-) (lb)	Torsion M□ (lb-ft)	Moment M□ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		557.60	2048.02	0.00	0.00
10.00		545.22	2002.64	0.00	0.00
15.00		532.83	1957.26	0.00	0.00
20.00		552.22	1911.88	0.00	0.00
25.00		565.01	1866.50	0.00	0.00
30.00		572.81	1821.11	0.00	0.00
35.00		576.92	1775.73	0.00	0.00
38.00		344.98	1043.66	0.00	0.00
40.00		233.24	1290.92	0.00	0.00
45.00		586.83	3167.73	0.00	0.00
50.00		584.06	1463.81	0.00	0.00
55.00		579.64	1424.10	0.00	0.00
60.00		573.79	1384.39	0.00	0.00
65.00		566.71	1344.68	0.00	0.00
70.00		558.51	1304.98	0.00	0.00
75.00		549.33	1265.27	0.00	0.00
77.00		216.07	494.99	0.00	0.00
80.00		327.09	1357.94	0.00	0.00
83.00		323.25	1331.39	0.00	0.00
85.00		213.02	411.58	0.00	0.00
90.00		526.38	1005.12	0.00	0.00
95.00		514.16	971.08	0.00	0.00
100.00		501.31	937.04	0.00	0.00
105.00		487.86	903.01	0.00	0.00
110.00		473.85	868.97	0.00	0.00
115.00		459.31	834.93	0.00	0.00
120.00		452.84	1464.93	0.00	0.00
125.00		437.42	656.43	0.00	0.00
130.00		421.56	628.07	0.00	0.00
135.00		405.28	599.71	0.00	0.00
140.00	(19) attachments	5359.43	4883.21	0.00	0.00
145.00		371.55	522.22	0.00	0.00
150.00		354.13	493.85	0.00	0.00
	Totals:	**20,324.18**	**4□,437.14**	**0.00**	**0.00**

Calculated Forces

Structure:	CT46136-A	**Code:**	EIA/TIA-222-G	5/24/2018	
Site Name:	Bristol-east	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 94 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60

Iterations 19

Seg Elev (ft)	Pu F□ (-) (kips)	□u F□ (-) (kips)	Tu M□ (-) (ft-kips)	Mu M□ (ft-kips)	Mu M□ (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi □n (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation S□ay (deg)	Rotation T□ist (deg)	Stress Ratio
0.00	-45.43	-20.34	0.00	-1833.9	0.00	1833.99	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.210
5.00	-43.36	-19.82	0.00	-1732.2	0.00	1732.27	6820.88	3410.44	17336.3	8681.07	0.03	-0.050	0.000	0.206
10.00	-41.34	-19.31	0.00	-1633.1	0.00	1633.16	6716.63	3358.32	16681.8	8353.32	0.11	-0.100	0.000	0.202
15.00	-39.37	-18.81	0.00	-1536.6	0.00	1536.60	6610.06	3305.03	16033.7	8028.80	0.24	-0.151	0.000	0.197
20.00	-37.44	-18.29	0.00	-1442.5	0.00	1442.55	6501.17	3250.58	15392.5	7707.71	0.43	-0.202	0.000	0.193
25.00	-35.56	-17.75	0.00	-1351.1	0.00	1351.12	6389.95	3194.98	14758.5	7390.26	0.67	-0.254	0.000	0.188
30.00	-33.73	-17.19	0.00	-1262.3	0.00	1262.39	6276.41	3138.20	14132.3	7076.65	0.96	-0.306	0.000	0.184
35.00	-31.95	-16.63	0.00	-1176.4	0.00	1176.42	6160.54	3080.27	13514.0	6767.09	1.31	-0.359	0.000	0.179
38.00	-30.90	-16.29	0.00	-1126.5	0.00	1126.53	6089.91	3044.95	13147.2	6583.38	1.55	-0.391	0.000	0.176
40.00	-29.60	-16.07	0.00	-1093.9	0.00	1093.94	6042.35	3021.18	12904.3	6461.77	1.71	-0.412	0.000	0.174
45.00	-26.42	-15.48	0.00	-1013.5	0.00	1013.59	5055.24	2527.62	10712.1	5364.02	2.18	-0.465	0.000	0.194
50.00	-24.95	-14.91	0.00	-936.17	0.00	936.17	4959.67	2479.84	10221.9	5118.57	2.69	-0.518	0.000	0.188
55.00	-23.51	-14.34	0.00	-861.61	0.00	861.61	4861.79	2430.89	9738.21	4876.34	3.27	-0.576	0.000	0.182
60.00	-22.12	-13.78	0.00	-789.90	0.00	789.90	4761.57	2380.79	9261.30	4637.54	3.90	-0.634	0.000	0.175
65.00	-20.77	-13.21	0.00	-721.02	0.00	721.02	4659.03	2329.52	8791.64	4402.35	4.60	-0.691	0.000	0.168
70.00	-19.46	-12.66	0.00	-654.95	0.00	654.95	4554.17	2277.09	8329.62	4171.00	5.35	-0.749	0.000	0.161
75.00	-18.19	-12.11	0.00	-591.66	0.00	591.66	4446.98	2223.49	7875.64	3943.68	6.17	-0.805	0.000	0.154
77.00	-17.70	-11.89	0.00	-567.45	0.00	567.45	4398.64	2199.32	7687.97	3849.70	6.51	-0.829	0.000	0.151
80.00	-16.34	-11.55	0.00	-531.78	0.00	531.78	4311.94	2155.97	7386.38	3698.68	7.04	-0.863	0.000	0.148
83.00	-15.00	-11.22	0.00	-497.12	0.00	497.12	3568.30	1784.15	6117.46	3063.28	7.59	-0.898	0.000	0.167
85.00	-14.59	-11.01	0.00	-474.68	0.00	474.68	3534.11	1767.06	5976.86	2992.87	7.98	-0.921	0.000	0.163
90.00	-13.58	-10.48	0.00	-419.64	0.00	419.64	3447.02	1723.51	5629.64	2819.00	8.97	-0.981	0.000	0.153
95.00	-12.61	-9.96	0.00	-367.24	0.00	367.24	3357.60	1678.80	5288.86	2648.36	10.03	-1.040	0.000	0.142
100.00	-11.67	-9.45	0.00	-317.43	0.00	317.43	3265.86	1632.93	4954.93	2481.15	11.15	-1.097	0.000	0.132
105.00	-10.77	-8.96	0.00	-270.16	0.00	270.16	3148.51	1574.26	4594.27	2300.55	12.33	-1.152	0.000	0.121
110.00	-9.90	-8.48	0.00	-225.37	0.00	225.37	3024.66	1512.33	4238.11	2122.21	13.57	-1.204	0.000	0.110
115.00	-9.07	-8.01	0.00	-182.99	0.00	182.99	2900.80	1450.40	3896.33	1951.06	14.85	-1.252	0.000	0.097
120.00	-7.61	-7.53	0.00	-142.96	0.00	142.96	2336.27	1168.13	3074.98	1539.77	16.19	-1.296	0.000	0.096
125.00	-6.96	-7.08	0.00	-105.33	0.00	105.33	2259.76	1129.88	2843.22	1423.72	17.57	-1.334	0.000	0.077
130.00	-6.34	-6.65	0.00	-69.94	0.00	69.94	2158.35	1079.18	2590.44	1297.15	18.99	-1.368	0.000	0.057
135.00	-5.75	-6.23	0.00	-36.72	0.00	36.72	2055.14	1027.57	2347.37	1175.43	20.43	-1.392	0.000	0.034
140.00	-1.00	-0.75	0.00	-5.58	0.00	5.58	1951.93	975.96	2116.27	1059.71	21.90	-1.403	0.000	0.006
145.00	-0.49	-0.37	0.00	-1.83	0.00	1.83	1848.71	924.36	1897.15	949.98	23.37	-1.406	0.000	0.002
150.00	0.00	-0.35	0.00	0.00	0.00	0.00	1745.50	872.75	1690.00	846.25	24.84	-1.406	0.000	0.000

Wind Loading - Shaft

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

Load Case: 0.9D + 1.6W 94 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60

Iterations 19

Elev (ft)	Description	□□t	□□	q□ (psf)	q□Gh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force □ (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	18.266	20.09	467.65	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	18.266	20.09	457.38	0.650	0.000	5.00	26.684	17.34	557.6	0.0	1520.4
10.00		1.00	0.85	18.266	20.09	447.11	0.650	0.000	5.00	26.092	16.96	545.2	0.0	1486.4
15.00		1.00	0.85	18.266	20.09	436.84	0.650	0.000	5.00	25.499	16.57	532.8	0.0	1452.4
20.00		1.00	0.90	19.381	21.32	439.39	0.650	0.000	5.00	24.907	16.19	552.2	0.0	1418.3
25.00		1.00	0.95	20.313	22.34	439.00	0.650	0.000	5.00	24.314	15.80	565.0	0.0	1384.3
30.00		1.00	0.98	21.108	23.22	436.47	0.650	0.000	5.00	23.721	15.42	572.8	0.0	1350.3
35.00		1.00	1.01	21.804	23.98	432.38	0.650	0.000	5.00	23.129	15.03	576.9	0.0	1316.2
38.00	Bot - Section 2	1.00	1.03	22.185	24.40	429.35	0.650	0.000	3.00	13.593	8.84	345.0	0.0	773.4
40.00		1.00	1.04	22.426	24.67	427.12	0.650	0.000	2.00	9.091	5.91	233.2	0.0	962.0
45.00	Top - Section 1	1.00	1.07	22.989	25.29	420.93	0.650	0.000	5.00	22.314	14.50	586.8	0.0	2360.2
50.00		1.00	1.09	23.504	25.85	421.25	0.650	0.000	5.00	21.721	14.12	584.1	0.0	1082.3
55.00		1.00	1.12	23.981	26.38	413.73	0.650	0.000	5.00	21.128	13.73	579.6	0.0	1052.5
60.00		1.00	1.14	24.424	26.87	405.66	0.650	0.000	5.00	20.536	13.35	573.8	0.0	1022.7
65.00		1.00	1.16	24.839	27.32	397.11	0.650	0.000	5.00	19.943	12.96	566.7	0.0	992.9
70.00		1.00	1.17	25.230	27.75	388.15	0.650	0.000	5.00	19.351	12.58	558.5	0.0	963.2
75.00		1.00	1.19	25.599	28.16	378.82	0.650	0.000	5.00	18.758	12.19	549.3	0.0	933.4
77.00	Bot - Section 3	1.00	1.20	25.741	28.32	374.99	0.650	0.000	2.00	7.337	4.77	216.1	0.0	365.0
80.00		1.00	1.21	25.949	28.54	369.16	0.650	0.000	3.00	11.019	7.16	327.1	0.0	1009.1
83.00	Top - Section 2	1.00	1.22	26.151	28.77	363.22	0.650	0.000	3.00	10.805	7.02	323.3	0.0	989.2
85.00		1.00	1.22	26.282	28.91	365.80	0.650	0.000	2.00	7.085	4.61	213.0	0.0	302.5
90.00		1.00	1.24	26.600	29.26	355.61	0.650	0.000	5.00	17.298	11.24	526.4	0.0	738.3
95.00		1.00	1.25	26.905	29.60	345.17	0.650	0.000	5.00	16.705	10.86	514.2	0.0	712.7
100.00		1.00	1.27	27.197	29.92	334.51	0.650	0.000	5.00	16.112	10.47	501.3	0.0	687.2
105.00		1.00	1.28	27.478	30.23	323.63	0.650	0.000	5.00	15.520	10.09	487.9	0.0	661.7
110.00		1.00	1.29	27.748	30.52	312.56	0.650	0.000	5.00	14.927	9.70	473.8	0.0	636.2
115.00	Bot - Section 4	1.00	1.30	28.009	30.81	301.31	0.650	0.000	5.00	14.334	9.32	459.3	0.0	610.6
120.00	Top - Section 3	1.00	1.32	28.261	31.09	289.88	0.650	0.000	5.00	14.006	9.10	452.8	0.0	1083.1
125.00		1.00	1.33	28.505	31.36	284.02	0.650	0.000	5.00	13.414	8.72	437.4	0.0	476.8
130.00		1.00	1.34	28.742	31.62	272.31	0.650	0.000	5.00	12.821	8.33	421.6	0.0	455.5
135.00		1.00	1.35	28.971	31.87	260.46	0.650	0.000	5.00	12.228	7.95	405.3	0.0	434.2
140.00	Appurtenance(s)	1.00	1.36	29.193	32.11	248.48	0.650	0.000	5.00	11.636	7.56	388.6	0.0	412.9
145.00		1.00	1.37	29.410	32.35	236.36	0.650	0.000	5.00	11.043	7.18	371.5	0.0	391.7
150.00		1.00	1.38	29.621	32.58	224.13	0.650	0.000	5.00	10.451	6.79	354.1	0.0	370.4
								Totals:	**1□0.00**			**1□,3□3.4**		**30,408.0**

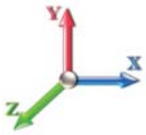
Discrete Appurtenance Forces

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 12

Load Case: 0.9D + 1.6W 94 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 19

No.	Elev (ft)	Description	□ty	q□ (psf)	q□Gh (psf)	CaAa x □a	□a	Total CaAa (sf)	Dead Load (lb)	Hori□ Ecc (ft)	□ert Ecc (ft)	Wind F□ (lb)	Mom □ (lb-ft)	Mom □ (lb-ft)
1	140.00	AAHC	3	29.193	32.113	0.74	0.90	9.30	279.99	0.000	0.000	477.78	0.00	0.00
2	140.00	ALU 1900 Mhz RRUs	3	29.193	32.113	0.60	0.90	5.01	162.00	0.000	0.000	257.46	0.00	0.00
3	140.00	ALU 800 Mhz RRUs	6	29.193	32.113	0.60	0.90	9.01	286.20	0.000	0.000	462.88	0.00	0.00
4	140.00	Dragonwave	3	29.193	32.113	1.00	1.00	14.04	73.17	0.000	0.000	721.38	0.00	0.00
5	140.00	NNVV-65B-R4	3	29.193	32.113	0.68	0.90	24.85	228.69	0.000	0.000	1276.64	0.00	0.00
6	140.00	Platform w/ Hand Rail	1	29.193	32.113	1.00	1.00	34.54	2203.85	0.000	0.000	1774.68	0.00	0.00
							Totals:		**3,233.90**			**4,970.83**		

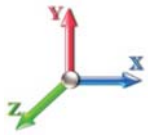
Total Applied Force Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Load Case: 0.9D + 1.6W 94 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 19

Elev (ft)	Description	Lateral F□ (-) (lb)	Axial F□ (-) (lb)	Torsion M□ (lb-ft)	Moment M□ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		557.60	1536.02	0.00	0.00
10.00		545.22	1501.98	0.00	0.00
15.00		532.83	1467.94	0.00	0.00
20.00		552.22	1433.91	0.00	0.00
25.00		565.01	1399.87	0.00	0.00
30.00		572.81	1365.84	0.00	0.00
35.00		576.92	1331.80	0.00	0.00
38.00		344.98	782.74	0.00	0.00
40.00		233.24	968.19	0.00	0.00
45.00		586.83	2375.80	0.00	0.00
50.00		584.06	1097.86	0.00	0.00
55.00		579.64	1068.08	0.00	0.00
60.00		573.79	1038.30	0.00	0.00
65.00		566.71	1008.51	0.00	0.00
70.00		558.51	978.73	0.00	0.00
75.00		549.33	948.95	0.00	0.00
77.00		216.07	371.24	0.00	0.00
80.00		327.09	1018.46	0.00	0.00
83.00		323.25	998.55	0.00	0.00
85.00		213.02	308.68	0.00	0.00
90.00		526.38	753.84	0.00	0.00
95.00		514.16	728.31	0.00	0.00
100.00		501.31	702.78	0.00	0.00
105.00		487.86	677.25	0.00	0.00
110.00		473.85	651.73	0.00	0.00
115.00		459.31	626.20	0.00	0.00
120.00		452.84	1098.70	0.00	0.00
125.00		437.42	492.32	0.00	0.00
130.00		421.56	471.05	0.00	0.00
135.00		405.28	449.78	0.00	0.00
140.00	(19) attachments	5359.43	3662.40	0.00	0.00
145.00		371.55	391.66	0.00	0.00
150.00		354.13	370.39	0.00	0.00
	Totals:	**20,324.18**	**34,077.86**	**0.00**	**0.00**

Calculated Forces

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Load Case: 0.9D + 1.6W 94 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60

Iterations 19

Seg Elev (ft)	Pu F□ (-) (kips)	□u F□ (-) (kips)	Tu M□ (-) (ft-kips)	Mu M□ (ft-kips)	Mu M□ (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi □n (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation S□ay (deg)	Rotation T□ist (deg)	Stress Ratio
0.00	-34.07	-20.34	0.00	-1826.9	0.00	1826.94	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.208
5.00	-32.52	-19.81	0.00	-1725.2	0.00	1725.24	6820.88	3410.44	17336.3	8681.07	0.03	-0.050	0.000	0.204
10.00	-31.00	-19.29	0.00	-1626.2	0.00	1626.20	6716.63	3358.32	16681.8	8353.32	0.11	-0.100	0.000	0.199
15.00	-29.51	-18.78	0.00	-1529.7	0.00	1529.75	6610.06	3305.03	16033.7	8028.80	0.24	-0.151	0.000	0.195
20.00	-28.07	-18.25	0.00	-1435.8	0.00	1435.86	6501.17	3250.58	15392.5	7707.71	0.42	-0.202	0.000	0.191
25.00	-26.65	-17.70	0.00	-1344.6	0.00	1344.62	6389.95	3194.98	14758.5	7390.26	0.66	-0.253	0.000	0.186
30.00	-25.27	-17.14	0.00	-1256.1	0.00	1256.11	6276.41	3138.20	14132.3	7076.65	0.96	-0.305	0.000	0.182
35.00	-23.93	-16.58	0.00	-1170.3	0.00	1170.39	6160.54	3080.27	13514.0	6767.09	1.30	-0.357	0.000	0.177
38.00	-23.14	-16.24	0.00	-1120.6	0.00	1120.66	6089.91	3044.95	13147.2	6583.38	1.54	-0.389	0.000	0.174
40.00	-22.17	-16.01	0.00	-1088.1	0.00	1088.18	6042.35	3021.18	12904.3	6461.77	1.71	-0.410	0.000	0.172
45.00	-19.78	-15.43	0.00	-1008.1	0.00	1008.12	5055.24	2527.62	10712.1	5364.02	2.17	-0.463	0.000	0.192
50.00	-18.68	-14.85	0.00	-930.99	0.00	930.99	4959.67	2479.84	10221.9	5118.57	2.68	-0.516	0.000	0.186
55.00	-17.60	-14.28	0.00	-856.73	0.00	856.73	4861.79	2430.89	9738.21	4876.34	3.25	-0.573	0.000	0.179
60.00	-16.55	-13.71	0.00	-785.34	0.00	785.34	4761.57	2380.79	9261.30	4637.54	3.88	-0.631	0.000	0.173
65.00	-15.54	-13.15	0.00	-716.79	0.00	716.79	4659.03	2329.52	8791.64	4402.35	4.57	-0.688	0.000	0.166
70.00	-14.55	-12.59	0.00	-651.05	0.00	651.05	4554.17	2277.09	8329.62	4171.00	5.33	-0.745	0.000	0.159
75.00	-13.60	-12.04	0.00	-588.10	0.00	588.10	4446.98	2223.49	7875.64	3943.68	6.14	-0.801	0.000	0.152
77.00	-13.23	-11.82	0.00	-564.02	0.00	564.02	4398.64	2199.32	7687.97	3849.70	6.48	-0.825	0.000	0.150
80.00	-12.21	-11.49	0.00	-528.55	0.00	528.55	4311.94	2155.97	7386.38	3698.68	7.01	-0.859	0.000	0.146
83.00	-11.21	-11.16	0.00	-494.08	0.00	494.08	3568.30	1784.15	6117.46	3063.28	7.56	-0.893	0.000	0.164
85.00	-10.90	-10.95	0.00	-471.77	0.00	471.77	3534.11	1767.06	5976.86	2992.87	7.94	-0.916	0.000	0.161
90.00	-10.14	-10.42	0.00	-417.04	0.00	417.04	3447.02	1723.51	5629.64	2819.00	8.93	-0.976	0.000	0.151
95.00	-9.41	-9.90	0.00	-364.95	0.00	364.95	3357.60	1678.80	5288.86	2648.36	9.98	-1.034	0.000	0.141
100.00	-8.71	-9.39	0.00	-315.45	0.00	315.45	3265.86	1632.93	4954.93	2481.15	11.10	-1.091	0.000	0.130
105.00	-8.03	-8.90	0.00	-268.47	0.00	268.47	3148.51	1574.26	4594.27	2300.55	12.27	-1.146	0.000	0.119
110.00	-7.38	-8.42	0.00	-223.97	0.00	223.97	3024.66	1512.33	4238.11	2122.21	13.50	-1.197	0.000	0.108
115.00	-6.76	-7.95	0.00	-181.86	0.00	181.86	2900.80	1450.40	3896.33	1951.06	14.78	-1.245	0.000	0.096
120.00	-5.67	-7.48	0.00	-142.09	0.00	142.09	2336.27	1168.13	3074.98	1539.77	16.11	-1.289	0.000	0.095
125.00	-5.18	-7.04	0.00	-104.69	0.00	104.69	2259.76	1129.88	2843.22	1423.72	17.48	-1.326	0.000	0.076
130.00	-4.72	-6.61	0.00	-69.51	0.00	69.51	2158.35	1079.18	2590.44	1297.15	18.89	-1.361	0.000	0.056
135.00	-4.28	-6.19	0.00	-36.49	0.00	36.49	2055.14	1027.57	2347.37	1175.43	20.33	-1.384	0.000	0.033
140.00	-0.74	-0.74	0.00	-5.53	0.00	5.53	1951.93	975.96	2116.27	1059.71	21.78	-1.395	0.000	0.006
145.00	-0.36	-0.36	0.00	-1.82	0.00	1.82	1848.71	924.36	1897.15	949.98	23.25	-1.398	0.000	0.002
150.00	0.00	-0.35	0.00	0.00	0.00	0.00	1745.50	872.75	1690.00	846.25	24.71	-1.398	0.000	0.000

Wind Loading - Shaft

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 15

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

Dead Load Factor 1.20

Wind Load Factor 1.00

Iterations 18

Elev (ft)	Description	□□t	□□	q□ (psf)	q□Gh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force □ (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	1.656	5.00	28.064	33.68	191.4	664.2	2691.5
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.775	5.00	27.571	33.09	188.1	697.6	2679.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.848	5.00	27.039	32.45	184.5	711.1	2647.6
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.902	5.00	26.492	31.79	191.8	715.8	2606.9
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.945	5.00	25.935	31.12	196.8	715.3	2561.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.981	5.00	25.372	30.45	200.0	711.6	2511.9
35.00		1.00	1.01	6.169	6.79	0.00	1.200	2.012	5.00	24.805	29.77	202.0	705.3	2460.3
38.00	Bot - Section 2	1.00	1.03	6.277	6.90	0.00	1.200	2.028	3.00	14.607	17.53	121.0	420.4	1451.6
40.00		1.00	1.04	6.345	6.98	0.00	1.200	2.039	2.00	9.771	11.73	81.8	283.4	1566.0
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	2.063	5.00	24.033	28.84	206.3	699.0	3846.0
50.00		1.00	1.09	6.650	7.32	0.00	1.200	2.085	5.00	23.458	28.15	205.9	688.4	2131.5
55.00		1.00	1.12	6.785	7.46	0.00	1.200	2.105	5.00	22.883	27.46	204.9	676.8	2080.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	2.123	5.00	22.305	26.77	203.5	664.3	2027.9
65.00		1.00	1.16	7.028	7.73	0.00	1.200	2.140	5.00	21.727	26.07	201.6	651.1	1975.0
70.00		1.00	1.17	7.138	7.85	0.00	1.200	2.156	5.00	21.147	25.38	199.3	637.2	1921.4
75.00		1.00	1.19	7.243	7.97	0.00	1.200	2.171	5.00	20.567	24.68	196.6	622.8	1867.3
77.00	Bot - Section 3	1.00	1.20	7.283	8.01	0.00	1.200	2.177	2.00	8.063	9.68	77.5	246.7	733.4
80.00		1.00	1.21	7.342	8.08	0.00	1.200	2.185	3.00	12.111	14.53	117.4	370.9	1716.3
83.00	Top - Section 2	1.00	1.22	7.399	8.14	0.00	1.200	2.193	3.00	11.902	14.28	116.2	365.4	1684.3
85.00		1.00	1.22	7.436	8.18	0.00	1.200	2.198	2.00	7.818	9.38	76.7	241.1	644.4
90.00		1.00	1.24	7.526	8.28	0.00	1.200	2.211	5.00	19.140	22.97	190.1	586.9	1571.3
95.00		1.00	1.25	7.612	8.37	0.00	1.200	2.223	5.00	18.557	22.27	186.5	570.8	1521.1
100.00		1.00	1.27	7.695	8.46	0.00	1.200	2.234	5.00	17.974	21.57	182.6	554.3	1470.5
105.00		1.00	1.28	7.774	8.55	0.00	1.200	2.245	5.00	17.391	20.87	178.5	537.4	1419.7
110.00		1.00	1.29	7.851	8.64	0.00	1.200	2.256	5.00	16.807	20.17	174.2	520.3	1368.5
115.00	Bot - Section 4	1.00	1.30	7.925	8.72	0.00	1.200	2.266	5.00	16.223	19.47	169.7	502.8	1317.0
120.00	Top - Section 3	1.00	1.32	7.996	8.80	0.00	1.200	2.276	5.00	15.903	19.08	167.8	494.1	1938.2
125.00		1.00	1.33	8.065	8.87	0.00	1.200	2.285	5.00	15.318	18.38	163.1	476.1	1111.8
130.00		1.00	1.34	8.132	8.95	0.00	1.200	2.294	5.00	14.733	17.68	158.1	458.0	1065.3
135.00		1.00	1.35	8.197	9.02	0.00	1.200	2.303	5.00	14.147	16.98	153.1	439.7	1018.6
140.00	Appurtenance(s)	1.00	1.36	8.260	9.09	0.00	1.200	2.311	5.00	13.562	16.27	147.9	421.1	971.7
145.00		1.00	1.37	8.321	9.15	0.00	1.200	2.319	5.00	12.976	15.57	142.5	402.3	924.6
150.00		1.00	1.38	8.381	9.22	0.00	1.200	2.327	5.00	12.390	14.87	137.1	383.4	877.2
								Totals:	**1□0.00**			**□,□14.4**		**□8,379.□**

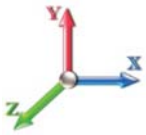
Discrete Appurtenance Forces

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 16

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 18

No.	Elev (ft)	Description	□ty	q□ (psf)	q□Gh (psf)	CaAa x □a	□a	Total CaAa (sf)	Dead Load (lb)	Hori□ Ecc (ft)	□ert Ecc (ft)	Wind F□ (lb)	Mom □ (lb-ft)	Mom □ (lb-ft)
1	140.00	AAHC	3	8.260	9.086	0.74	0.90	11.79	918.97	0.000	0.000	107.10	0.00	0.00
2	140.00	ALU 1900 Mhz RRUs	3	8.260	9.086	0.60	0.90	8.05	475.75	0.000	0.000	73.14	0.00	0.00
3	140.00	ALU 800 Mhz RRUs	6	8.260	9.086	0.60	0.90	14.49	842.61	0.000	0.000	131.64	0.00	0.00
4	140.00	Dragonwave	3	8.260	9.086	1.00	1.00	19.10	402.32	0.000	0.000	173.55	0.00	0.00
5	140.00	NNVV-65B-R4	3	8.260	9.086	0.68	0.90	28.87	1476.14	0.000	0.000	262.30	0.00	0.00
6	140.00	Platform w/ Hand Rail	1	8.260	9.086	1.00	1.00	74.45	7442.66	0.000	0.000	676.44	0.00	0.00
							Totals:		**11,□□8.4□**			**1,424.17**		

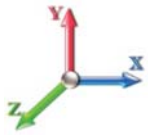
Total Applied Force Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 17

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 18

Elev (ft)	Description	Lateral F□ (-) (lb)	Axial F□ (-) (lb)	Torsion M□ (lb-ft)	Moment M□ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		191.45	2712.21	0.00	0.00
10.00		188.08	2700.22	0.00	0.00
15.00		184.46	2668.32	0.00	0.00
20.00		191.75	2627.63	0.00	0.00
25.00		196.75	2581.84	0.00	0.00
30.00		200.01	2532.67	0.00	0.00
35.00		201.99	2481.07	0.00	0.00
38.00		121.02	1464.07	0.00	0.00
40.00		81.84	1574.29	0.00	0.00
45.00		206.34	3866.76	0.00	0.00
50.00		205.92	2152.23	0.00	0.00
55.00		204.94	2100.90	0.00	0.00
60.00		203.46	2048.71	0.00	0.00
65.00		201.55	1995.78	0.00	0.00
70.00		199.26	1942.20	0.00	0.00
75.00		196.63	1888.04	0.00	0.00
77.00		77.51	741.73	0.00	0.00
80.00		117.37	1728.79	0.00	0.00
83.00		116.24	1696.75	0.00	0.00
85.00		76.74	652.67	0.00	0.00
90.00		190.15	1592.06	0.00	0.00
95.00		186.47	1541.86	0.00	0.00
100.00		182.57	1491.30	0.00	0.00
105.00		178.47	1440.42	0.00	0.00
110.00		174.17	1389.23	0.00	0.00
115.00		169.70	1337.77	0.00	0.00
120.00		167.85	1958.99	0.00	0.00
125.00		163.07	1132.58	0.00	0.00
130.00		158.14	1086.08	0.00	0.00
135.00		153.07	1039.36	0.00	0.00
140.00	(19) attachments	1572.03	12550.89	0.00	0.00
145.00		142.52	924.55	0.00	0.00
150.00		137.06	877.24	0.00	0.00
	Totals:	**6,938.61**	**70,□19.21**	**0.00**	**0.00**

Calculated Forces

Structure:	CT46136-A	**Code:**	EIA/TIA-222-G	5/24/2018	
Site Name:	Bristol-east	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

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

Dead Load Factor 1.20

Wind Load Factor 1.00

Iterations 18

Seg Elev (ft)	Pu F□ (-) (kips)	□u F□ (-) (kips)	Tu M□ (-) (ft-kips)	Mu M□ (ft-kips)	Mu M□ (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi □n (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation S□ay (deg)	Rotation T□ist (deg)	Stress Ratio
0.00	-70.52	-6.95	0.00	-622.65	0.00	622.65	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.079
5.00	-67.80	-6.78	0.00	-587.91	0.00	587.91	6820.88	3410.44	17336.3	8681.07	0.01	-0.017	0.000	0.078
10.00	-65.10	-6.61	0.00	-554.03	0.00	554.03	6716.63	3358.32	16681.8	8353.32	0.04	-0.034	0.000	0.076
15.00	-62.43	-6.44	0.00	-520.99	0.00	520.99	6610.06	3305.03	16033.7	8028.80	0.08	-0.051	0.000	0.074
20.00	-59.80	-6.26	0.00	-488.80	0.00	488.80	6501.17	3250.58	15392.5	7707.71	0.14	-0.069	0.000	0.073
25.00	-57.22	-6.08	0.00	-457.48	0.00	457.48	6389.95	3194.98	14758.5	7390.26	0.23	-0.086	0.000	0.071
30.00	-54.68	-5.89	0.00	-427.08	0.00	427.08	6276.41	3138.20	14132.3	7076.65	0.33	-0.104	0.000	0.069
35.00	-52.20	-5.70	0.00	-397.61	0.00	397.61	6160.54	3080.27	13514.0	6767.09	0.44	-0.122	0.000	0.067
38.00	-50.74	-5.58	0.00	-380.52	0.00	380.52	6089.91	3044.95	13147.2	6583.38	0.52	-0.132	0.000	0.066
40.00	-49.16	-5.51	0.00	-369.35	0.00	369.35	6042.35	3021.18	12904.3	6461.77	0.58	-0.140	0.000	0.065
45.00	-45.29	-5.31	0.00	-341.81	0.00	341.81	5055.24	2527.62	10712.1	5364.02	0.74	-0.158	0.000	0.073
50.00	-43.14	-5.11	0.00	-315.28	0.00	315.28	4959.67	2479.84	10221.9	5118.57	0.91	-0.175	0.000	0.070
55.00	-41.04	-4.91	0.00	-289.74	0.00	289.74	4861.79	2430.89	9738.21	4876.34	1.11	-0.195	0.000	0.068
60.00	-38.99	-4.71	0.00	-265.19	0.00	265.19	4761.57	2380.79	9261.30	4637.54	1.32	-0.214	0.000	0.065
65.00	-36.99	-4.52	0.00	-241.63	0.00	241.63	4659.03	2329.52	8791.64	4402.35	1.56	-0.234	0.000	0.063
70.00	-35.05	-4.32	0.00	-219.05	0.00	219.05	4554.17	2277.09	8329.62	4171.00	1.81	-0.253	0.000	0.060
75.00	-33.16	-4.12	0.00	-197.46	0.00	197.46	4446.98	2223.49	7875.64	3943.68	2.09	-0.272	0.000	0.058
77.00	-32.42	-4.05	0.00	-189.21	0.00	189.21	4398.64	2199.32	7687.97	3849.70	2.20	-0.280	0.000	0.057
80.00	-30.69	-3.93	0.00	-177.07	0.00	177.07	4311.94	2155.97	7386.38	3698.68	2.38	-0.291	0.000	0.055
83.00	-29.00	-3.81	0.00	-165.29	0.00	165.29	3568.30	1784.15	6117.46	3063.28	2.57	-0.302	0.000	0.062
85.00	-28.34	-3.73	0.00	-157.68	0.00	157.68	3534.11	1767.06	5976.86	2992.87	2.70	-0.310	0.000	0.061
90.00	-26.75	-3.54	0.00	-139.01	0.00	139.01	3447.02	1723.51	5629.64	2819.00	3.03	-0.330	0.000	0.057
95.00	-25.21	-3.36	0.00	-121.30	0.00	121.30	3357.60	1678.80	5288.86	2648.36	3.39	-0.350	0.000	0.053
100.00	-23.72	-3.17	0.00	-104.52	0.00	104.52	3265.86	1632.93	4954.93	2481.15	3.76	-0.368	0.000	0.049
105.00	-22.28	-2.99	0.00	-88.66	0.00	88.66	3148.51	1574.26	4594.27	2300.55	4.16	-0.386	0.000	0.046
110.00	-20.89	-2.81	0.00	-73.70	0.00	73.70	3024.66	1512.33	4238.11	2122.21	4.57	-0.403	0.000	0.042
115.00	-19.55	-2.64	0.00	-59.64	0.00	59.64	2900.80	1450.40	3896.33	1951.06	5.01	-0.419	0.000	0.037
120.00	-17.59	-2.46	0.00	-46.44	0.00	46.44	2336.27	1168.13	3074.98	1539.77	5.45	-0.433	0.000	0.038
125.00	-16.46	-2.29	0.00	-34.14	0.00	34.14	2259.76	1129.88	2843.22	1423.72	5.91	-0.446	0.000	0.031
130.00	-15.38	-2.13	0.00	-22.67	0.00	22.67	2158.35	1079.18	2590.44	1297.15	6.39	-0.457	0.000	0.025
135.00	-14.34	-1.97	0.00	-12.03	0.00	12.03	2055.14	1027.57	2347.37	1175.43	6.87	-0.465	0.000	0.017
140.00	-1.80	-0.29	0.00	-2.19	0.00	2.19	1951.93	975.96	2116.27	1059.71	7.36	-0.468	0.000	0.003
145.00	-0.88	-0.14	0.00	-0.72	0.00	0.72	1848.71	924.36	1897.15	949.98	7.85	-0.469	0.000	0.001
150.00	0.00	-0.14	0.00	0.00	0.00	0.00	1745.50	872.75	1690.00	846.25	8.34	-0.470	0.000	0.000

Wind Loading - Shaft

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 19

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations 18

Elev (ft)	Description	□□t	□□	q□ (psf)	q□Gh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force □ (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	298.50	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	291.94	0.650	0.000	5.00	26.684	17.34	142.0	0.0	1689.4
10.00		1.00	0.85	7.442	8.19	285.39	0.650	0.000	5.00	26.092	16.96	138.8	0.0	1651.6
15.00		1.00	0.85	7.442	8.19	278.83	0.650	0.000	5.00	25.499	16.57	135.7	0.0	1613.7
20.00		1.00	0.90	7.896	8.69	280.46	0.650	0.000	5.00	24.907	16.19	140.6	0.0	1575.9
25.00		1.00	0.95	8.276	9.10	280.21	0.650	0.000	5.00	24.314	15.80	143.9	0.0	1538.1
30.00		1.00	0.98	8.600	9.46	278.59	0.650	0.000	5.00	23.721	15.42	145.9	0.0	1500.3
35.00		1.00	1.01	8.883	9.77	275.99	0.650	0.000	5.00	23.129	15.03	146.9	0.0	1462.5
38.00	Bot - Section 2	1.00	1.03	9.039	9.94	274.05	0.650	0.000	3.00	13.593	8.84	87.8	0.0	859.3
40.00		1.00	1.04	9.137	10.05	272.63	0.650	0.000	2.00	9.091	5.91	59.4	0.0	1068.8
45.00	Top - Section 1	1.00	1.07	9.366	10.30	268.68	0.650	0.000	5.00	22.314	14.50	149.4	0.0	2622.5
50.00		1.00	1.09	9.576	10.53	268.88	0.650	0.000	5.00	21.721	14.12	148.7	0.0	1202.5
55.00		1.00	1.12	9.770	10.75	264.08	0.650	0.000	5.00	21.128	13.73	147.6	0.0	1169.5
60.00		1.00	1.14	9.951	10.95	258.93	0.650	0.000	5.00	20.536	13.35	146.1	0.0	1136.4
65.00		1.00	1.16	10.120	11.13	253.47	0.650	0.000	5.00	19.943	12.96	144.3	0.0	1103.3
70.00		1.00	1.17	10.279	11.31	247.75	0.650	0.000	5.00	19.351	12.58	142.2	0.0	1070.2
75.00		1.00	1.19	10.430	11.47	241.80	0.650	0.000	5.00	18.758	12.19	139.9	0.0	1037.1
77.00	Bot - Section 3	1.00	1.20	10.488	11.54	239.36	0.650	0.000	2.00	7.337	4.77	55.0	0.0	405.6
80.00		1.00	1.21	10.572	11.63	235.63	0.650	0.000	3.00	11.019	7.16	83.3	0.0	1121.2
83.00	Top - Section 2	1.00	1.22	10.654	11.72	231.84	0.650	0.000	3.00	10.805	7.02	82.3	0.0	1099.1
85.00		1.00	1.22	10.708	11.78	233.49	0.650	0.000	2.00	7.085	4.61	54.2	0.0	336.1
90.00		1.00	1.24	10.838	11.92	226.98	0.650	0.000	5.00	17.298	11.24	134.0	0.0	820.3
95.00		1.00	1.25	10.962	12.06	220.32	0.650	0.000	5.00	16.705	10.86	130.9	0.0	791.9
100.00		1.00	1.27	11.081	12.19	213.52	0.650	0.000	5.00	16.112	10.47	127.7	0.0	763.6
105.00		1.00	1.28	11.195	12.31	206.57	0.650	0.000	5.00	15.520	10.09	124.2	0.0	735.2
110.00		1.00	1.29	11.305	12.44	199.51	0.650	0.000	5.00	14.927	9.70	120.7	0.0	706.8
115.00	Bot - Section 4	1.00	1.30	11.412	12.55	192.32	0.650	0.000	5.00	14.334	9.32	117.0	0.0	678.5
120.00	Top - Section 3	1.00	1.32	11.514	12.67	185.03	0.650	0.000	5.00	14.006	9.10	115.3	0.0	1203.5
125.00		1.00	1.33	11.614	12.78	181.29	0.650	0.000	5.00	13.414	8.72	111.4	0.0	529.7
130.00		1.00	1.34	11.710	12.88	173.82	0.650	0.000	5.00	12.821	8.33	107.3	0.0	506.1
135.00		1.00	1.35	11.803	12.98	166.25	0.650	0.000	5.00	12.228	7.95	103.2	0.0	482.5
140.00	Appurtenance(s)	1.00	1.36	11.894	13.08	158.60	0.650	0.000	5.00	11.636	7.56	99.0	0.0	458.8
145.00		1.00	1.37	11.982	13.18	150.87	0.650	0.000	5.00	11.043	7.18	94.6	0.0	435.2
150.00		1.00	1.38	12.068	13.27	143.06	0.650	0.000	5.00	10.451	6.79	90.2	0.0	411.5
								Totals:	**1□0.00**			**3,909.6**		**33,786.7**

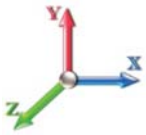
Discrete Appurtenance Forces

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 18

No.	Elev (ft)	Description	□ty	q□ (psf)	q□Gh (psf)	CaAa x □a	□a	Total CaAa (sf)	Dead Load (lb)	Hori□ Ecc (ft)	□ert Ecc (ft)	Wind F□ (lb)	Mom □ (lb-ft)	Mom □ (lb-ft)
1	140.00	AAHC	3	11.894	13.084	0.74	0.90	9.30	311.10	0.000	0.000	121.66	0.00	0.00
2	140.00	ALU 1900 Mhz RRUs	3	11.894	13.084	0.60	0.90	5.01	180.00	0.000	0.000	65.56	0.00	0.00
3	140.00	ALU 800 Mhz RRUs	6	11.894	13.084	0.60	0.90	9.01	318.00	0.000	0.000	117.87	0.00	0.00
4	140.00	Dragonwave	3	11.894	13.084	1.00	1.00	14.04	81.30	0.000	0.000	183.69	0.00	0.00
5	140.00	NNVV-65B-R4	3	11.894	13.084	0.68	0.90	24.85	254.10	0.000	0.000	325.08	0.00	0.00
6	140.00	Platform w/ Hand Rail	1	11.894	13.084	1.00	1.00	34.54	2448.72	0.000	0.000	451.91	0.00	0.00
							Totals:		**3,□93.22**			**1,26□.77**		

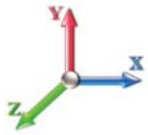
Total Applied Force Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 18

Elev (ft)	Description	Lateral F□ (-) (lb)	Axial F□ (-) (lb)	Torsion M□ (lb-ft)	Moment M□ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		141.99	1706.69	0.00	0.00
10.00		138.83	1668.87	0.00	0.00
15.00		135.68	1631.05	0.00	0.00
20.00		140.62	1593.23	0.00	0.00
25.00		143.87	1555.41	0.00	0.00
30.00		145.86	1517.59	0.00	0.00
35.00		146.91	1479.78	0.00	0.00
38.00		87.84	869.71	0.00	0.00
40.00		59.39	1075.76	0.00	0.00
45.00		149.43	2639.77	0.00	0.00
50.00		148.72	1219.84	0.00	0.00
55.00		147.60	1186.75	0.00	0.00
60.00		146.11	1153.66	0.00	0.00
65.00		144.31	1120.57	0.00	0.00
70.00		142.22	1087.48	0.00	0.00
75.00		139.88	1054.39	0.00	0.00
77.00		55.02	412.49	0.00	0.00
80.00		83.29	1131.62	0.00	0.00
83.00		82.31	1109.49	0.00	0.00
85.00		54.24	342.98	0.00	0.00
90.00		134.04	837.60	0.00	0.00
95.00		130.93	809.23	0.00	0.00
100.00		127.65	780.87	0.00	0.00
105.00		124.23	752.51	0.00	0.00
110.00		120.66	724.14	0.00	0.00
115.00		116.96	695.78	0.00	0.00
120.00		115.31	1220.78	0.00	0.00
125.00		111.38	547.03	0.00	0.00
130.00		107.35	523.39	0.00	0.00
135.00		103.20	499.75	0.00	0.00
140.00	(19) attachments	1364.73	4069.34	0.00	0.00
145.00		94.61	435.18	0.00	0.00
150.00		90.18	411.55	0.00	0.00
	Totals:	**□,17□.3□**	**37,864.29**	**0.00**	**0.00**

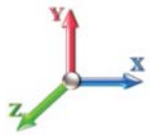
Calculated Forces

Structure:	CT46136-A	**Code:**	EIA/TIA-222-G	5/24/2018	
Site Name:	Bristol-east	**Exposure:**	C		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 18

Seg Elev (ft)	Pu F□ (-) (kips)	□u F□ (-) (kips)	Tu M□ (-) (ft-kips)	Mu M□ (ft-kips)	Mu M□ (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi □n (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation S□ay (deg)	Rotation T□ist (deg)	Stress Ratio
0.00	-37.86	-5.18	0.00	-465.79	0.00	465.79	6922.80	3461.40	17996.9	9011.85	0.00	0.000	0.000	0.057
5.00	-36.16	-5.05	0.00	-439.90	0.00	439.90	6820.88	3410.44	17336.3	8681.07	0.01	-0.013	0.000	0.056
10.00	-34.49	-4.91	0.00	-414.67	0.00	414.67	6716.63	3358.32	16681.8	8353.32	0.03	-0.025	0.000	0.055
15.00	-32.85	-4.78	0.00	-390.11	0.00	390.11	6610.06	3305.03	16033.7	8028.80	0.06	-0.038	0.000	0.054
20.00	-31.26	-4.65	0.00	-366.19	0.00	366.19	6501.17	3250.58	15392.5	7707.71	0.11	-0.051	0.000	0.052
25.00	-29.70	-4.51	0.00	-342.94	0.00	342.94	6389.95	3194.98	14758.5	7390.26	0.17	-0.065	0.000	0.051
30.00	-28.19	-4.37	0.00	-320.39	0.00	320.39	6276.41	3138.20	14132.3	7076.65	0.24	-0.078	0.000	0.050
35.00	-26.70	-4.23	0.00	-298.54	0.00	298.54	6160.54	3080.27	13514.0	6767.09	0.33	-0.091	0.000	0.048
38.00	-25.83	-4.14	0.00	-285.86	0.00	285.86	6089.91	3044.95	13147.2	6583.38	0.39	-0.099	0.000	0.048
40.00	-24.76	-4.08	0.00	-277.58	0.00	277.58	6042.35	3021.18	12904.3	6461.77	0.44	-0.105	0.000	0.047
45.00	-22.12	-3.93	0.00	-257.17	0.00	257.17	5055.24	2527.62	10712.1	5364.02	0.55	-0.118	0.000	0.052
50.00	-20.90	-3.79	0.00	-237.51	0.00	237.51	4959.67	2479.84	10221.9	5118.57	0.68	-0.132	0.000	0.051
55.00	-19.71	-3.64	0.00	-218.58	0.00	218.58	4861.79	2430.89	9738.21	4876.34	0.83	-0.146	0.000	0.049
60.00	-18.56	-3.50	0.00	-200.37	0.00	200.37	4761.57	2380.79	9261.30	4637.54	0.99	-0.161	0.000	0.047
65.00	-17.43	-3.35	0.00	-182.89	0.00	182.89	4659.03	2329.52	8791.64	4402.35	1.17	-0.175	0.000	0.045
70.00	-16.35	-3.21	0.00	-166.12	0.00	166.12	4554.17	2277.09	8329.62	4171.00	1.36	-0.190	0.000	0.043
75.00	-15.29	-3.07	0.00	-150.06	0.00	150.06	4446.98	2223.49	7875.64	3943.68	1.57	-0.204	0.000	0.041
77.00	-14.88	-3.02	0.00	-143.92	0.00	143.92	4398.64	2199.32	7687.97	3849.70	1.65	-0.210	0.000	0.041
80.00	-13.75	-2.93	0.00	-134.87	0.00	134.87	4311.94	2155.97	7386.38	3698.68	1.79	-0.219	0.000	0.040
83.00	-12.64	-2.85	0.00	-126.08	0.00	126.08	3568.30	1784.15	6117.46	3063.28	1.93	-0.228	0.000	0.045
85.00	-12.30	-2.79	0.00	-120.39	0.00	120.39	3534.11	1767.06	5976.86	2992.87	2.02	-0.234	0.000	0.044
90.00	-11.46	-2.66	0.00	-106.43	0.00	106.43	3447.02	1723.51	5629.64	2819.00	2.28	-0.249	0.000	0.041
95.00	-10.65	-2.53	0.00	-93.13	0.00	93.13	3357.60	1678.80	5288.86	2648.36	2.55	-0.264	0.000	0.038
100.00	-9.87	-2.40	0.00	-80.50	0.00	80.50	3265.86	1632.93	4954.93	2481.15	2.83	-0.278	0.000	0.035
105.00	-9.12	-2.27	0.00	-68.52	0.00	68.52	3148.51	1574.26	4594.27	2300.55	3.13	-0.292	0.000	0.033
110.00	-8.39	-2.15	0.00	-57.16	0.00	57.16	3024.66	1512.33	4238.11	2122.21	3.44	-0.305	0.000	0.030
115.00	-7.70	-2.03	0.00	-46.41	0.00	46.41	2900.80	1450.40	3896.33	1951.06	3.77	-0.318	0.000	0.026
120.00	-6.48	-1.91	0.00	-36.26	0.00	36.26	2336.27	1168.13	3074.98	1539.77	4.11	-0.329	0.000	0.026
125.00	-5.93	-1.80	0.00	-26.72	0.00	26.72	2259.76	1129.88	2843.22	1423.72	4.46	-0.338	0.000	0.021
130.00	-5.41	-1.69	0.00	-17.74	0.00	17.74	2158.35	1079.18	2590.44	1297.15	4.82	-0.347	0.000	0.016
135.00	-4.91	-1.58	0.00	-9.31	0.00	9.31	2055.14	1027.57	2347.37	1175.43	5.19	-0.353	0.000	0.010
140.00	-0.85	-0.19	0.00	-1.41	0.00	1.41	1951.93	975.96	2116.27	1059.71	5.56	-0.356	0.000	0.002
145.00	-0.41	-0.09	0.00	-0.46	0.00	0.46	1848.71	924.36	1897.15	949.98	5.93	-0.357	0.000	0.001
150.00	0.00	-0.09	0.00	0.00	0.00	0.00	1745.50	872.75	1690.00	846.25	6.30	-0.357	0.000	0.000

Final Analysis Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 23

Reactions

Load Case	Shear F□ (kips)	Shear F□ (kips)	Axial F□ (kips)	Moment M□ (ft-kips)	Moment M□ (ft-kips)	Moment M□ (ft-kips)
1.2D + 1.6W 94 mph Wind	20.3	0.00	45.43	0.00	0.00	1833.99
0.9D + 1.6W 94 mph Wind	20.3	0.00	34.07	0.00	0.00	1826.94
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.9	0.00	70.52	0.00	0.00	622.65
1.0D + 1.0W 60 mph Wind	5.2	0.00	37.86	0.00	0.00	465.79

Max Stresses

Load Case	Pu F□ (-) (kips)	□u F□ (-) (kips)	Tu M□ (-) (ft-kips)	Mu M□ (ft-kips)	Mu M□ (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi □n (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 94 mph Wind	-45.43	-20.34	0.00	-1833.9	0.00	-1833.9	6922.80	3461.4	17996.9	9011.85	0.00	0.210
0.9D + 1.6W 94 mph Wind	-34.07	-20.34	0.00	-1826.9	0.00	-1826.9	6922.80	3461.4	17996.9	9011.85	0.00	0.208
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-70.52	-6.95	0.00	-622.65	0.00	-622.65	6922.80	3461.4	17996.9	9011.85	0.00	0.079
1.0D + 1.0W 60 mph Wind	-37.86	-5.18	0.00	-465.79	0.00	-465.79	6922.80	3461.4	17996.9	9011.85	0.00	0.057

Base Plate Summary

Structure:	CT46136-A		**Code:**	EIA/TIA-222-G	5/24/2018
Site Name:	Bristol-east		**Exposure:**	C	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 24

Reactions

Original Design

Moment (kip-ft):	6300.00
Axial (kip):	52.00
Shear (kip):	48.00

Analysis

Moment (kip-ft):	1833.99
Axial (kip):	70.52
Shear (kip):	20.34
Moment Design %:	29.11

Base Plate

□ield (ksi):	55.00
Width (in):	71.00
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	6.00
Effective Len (in):	8.14
Moment (kip-in):	197.38
Allo□ Stress (ksi):	74.25
Applied Stress (ksi):	0.00
Stress Ratio:	0.22

Anchor Bolts

Bolt Circle:	71.00
Number Bolts:	24.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
□ield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00

Compression

Force (kip):	54.60
Allo□able (kip):	260.00
Ratio:	0.22

Tension

Force (kip):	48.72
Allo□able (kip):	260.00
Ratio:	0.19

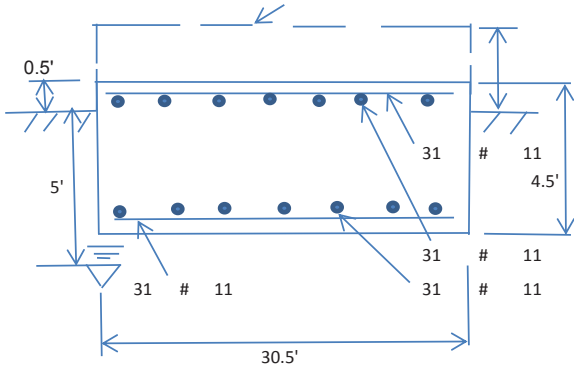
Monopole Mat Foundation Design

			Date: 10/31/2017
Customer Name:	SBA Communcations Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Farmington TowerCo	**Structure Height (Ft.):**	150
Site Number:	CT46136-A	**Engineer Name:**	S. Berthomieu
Engr. Number:		**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

Analysis or Design? Analysis

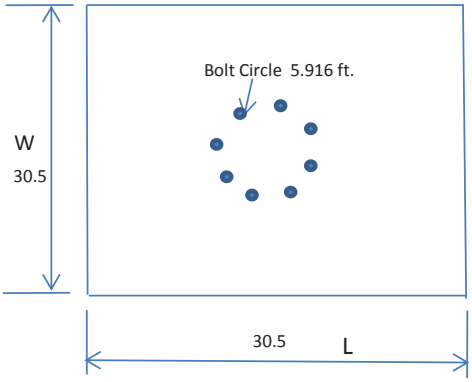


Base Reactions (Factored):

Axial Load (Kips):	45.4	Shear Force (Kips):	20.3
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1834.0
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Anchor Bolt Circle (ft.):	5.92	Depth of Base BG (ft.):	4.00
Thickness of Pad (ft):	4.50		
Length of Pad (ft.):	30.5	Width of Pad (ft.):	30.5
Final Length of pad (ft)	30.5	Final width of pad (ft):	30.5



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	11			
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):	31	Qty. of Rebar in Pad (W):	31

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	31	Qty. of Rebar in Pad (W):	31
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Water Table B.G.S. (ft):	5.0	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.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4186.13	Total Dry Concrete Weight (Kips):	627.92
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	627.92	Total Vertical Load on Base (Kips):	673.35

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1280	<	Allowable Factored Soil Bearing (psf): 9000	0.14	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9311.0	>	Design Factored Momont (kips-ft): 1926	0.21	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	4.83	OK!			

Check the capacities of Reinforceing Concrete:

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

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1512.9	>	One-Way Factored Shear (L-D. Kips):	229.4	0.15	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1512.9	>	One-Way Factored Shear (W-D., Kips)	229.4	0.15	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1821.3	>	One-Way Factored Shear (C-C, Kips):	344.3	0.19	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0026	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0026		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	10610.7	>	Moment at Bottom (L-Direct. K-Ft):	900.5	0.08	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	10610.7	>	Moment at Bottom (W-Direct. K-Ft):	900.5	0.08	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	14922.2	>	Moment at Bottom (C-C Dir. K-Ft):	1273.5	0.09	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0026	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0026		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	10610.7	>	Moment at the top (L-Dir Kips-Ft):	212.3	0.02	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	10610.7	>	Moment at the top (W-Dir Kips-Ft):	212.3	0.02	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	14922.2	>	Moment at the top (C-C Direc. K-Ft):	288.1	0.02	OK!

SPECIAL CONSTRUCTION NOTE:
SPRINT WORK IS CONTINGENT UPON ALL SPECIAL WORK NOTES ON SHEET A-2

Sprint®

SITE NAME:	FARMINGTON TOWERCO
SITE NUMBER:	CT52XC042
AUGMENT ID:	CT-HFD0098Q17.1
SITE ADDRESS:	1214 FARMINGTON AVENUE BRISTOL, CT 06010
JURISDICTION:	CITY OF BRISTOL / CT SITING COUNCIL
SITE TYPE:	EXISTING 150' MONOPOLE
PROGRAM:	DO MACRO UPGRADE EQUIPMENT DEPLOYMENT

PROJECT INFORMATION

SITE INFORMATION

LATTITUDE: (PER SBA RECORD)	41° 41' 43.58" N (41.69547°)
LONGITUDE: (PER SBA RECORD)	72° 54' 05.48" W (-72.90165°)
GROUND ELEVATION:	281'± AMSL (PER GOOGLE EARTH)
STRUCTURE HEIGHT:	150'± AGL (FROM RECORD STRUCTURAL)
STRUCTURE TYPE:	MONOPOLE
ZONING JURISDICTION	CITY OF BRISTOL / CT SITING COUNCIL
ZONING DISTRICT/ OCCUPANCY:	BG (GENERAL BUSINESS ZONE)
COUNTY:	HARTFORD

APPLICANT

SPRINT
1 INTERNATIONAL BLVD. SUITE 800
MAHWAH, NJ 07495

PROPERTY OWNER:

N/F ROUTE 6 DEVELOPERS LLC
1224 MILL ST, BLDG D, SUITE 103
EAST BERLIN, CT 06023

TOWER OWNER:

SBA STEEL II, LLC
8051 CONGRESS AVENUE
BOCA RATON, FL 33487
(561) 995-7670

SBA SITE ID:	CT46136-A
SBA SITE NAME:	BRISTOL-EAST

SBA CONTACT:

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

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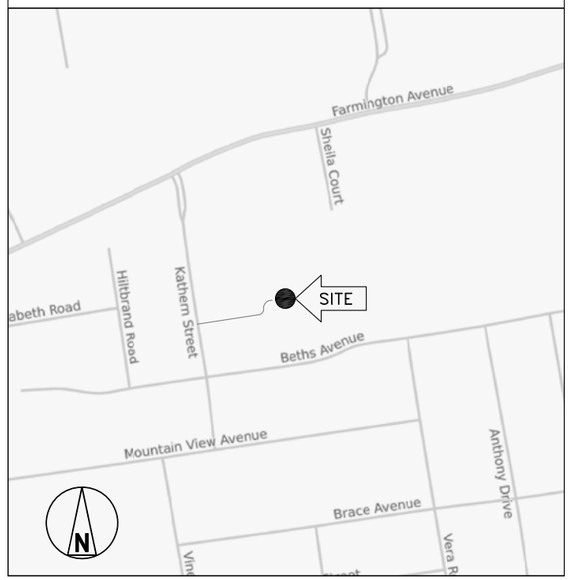
LOCATION MAP N.T.S.

AREA MAP N.T.S.



SCOPE OF WORK

1. REMOVE (1) EXISTING SPRINT (CLEARWIRE) TOWER TOP JUNCTION BOX.
2. REMOVE EXISTING CABLING AND REPLACE WITH (4) HYBRID CABLES.
3. REMOVE EXISTING SPRINT (CLEARWIRE) ANTENNA SUPPORT ASSEMBLY AND REPLACE WITH NEW ANTENNA SUPPORT ASSEMBLY.
4. REMOVE (3) EXISTING SPRINT (CLEARWIRE) PANEL ANTENNAS AND REPLACE WITH (3) NEW SPRINT PANEL ANTENNAS.
5. INSTALL (3) NEW SPRINT MIMO ANTENNAS.
6. REMOVE (3) EXISTING SPRINT (CLEARWIRE) RRHS.
7. INSTALL (6) NEW SPRINT 800 MHZ RRHS.
8. INSTALL (3) NEW SPRINT 1900 MHZ RRHS.
9. REMOVE EXISTING SPRINT (CLEARWIRE) EQUIPMENT CABINET AND REPLACE WITH NEW SPRINT EQUIPMENT CABINET WITH CABLING CABINET.
10. REMOVE EXISTING SPRINT (CLEARWIRE) GPS ANTENNA AND REPLACE WITH NEW SPRINT GPS ANTENNA.
11. INSTALL NEW SPRINT PPC MOUNTED TO A NEW H-FRAME.

GENERAL NOTES

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

DRAWING INDEX

SHEET NO.	SHEET DESCRIPTION	REV. NO.
T-1	TITLE SHEET	2
SP-1	OUTLINE SPECIFICATIONS	2
SP-2	OUTLINE SPECIFICATIONS	2
SP-3	OUTLINE SPECIFICATIONS	2
A-1	COMPOUND PLAN	2
A-2	ELEVATION AND ANTENNA PLANS	2
A-3	TOWER EQUIPMENT DETAILS	2
A-4	EQUIPMENT DETAILS	2
S-1	ANTENNA AND RRH MOUNTING SCHEMATIC	2
S-2	GROUND EQUIPMENT DETAILS	2
E-1	ONE LINE DIAGRAM	2
E-2	GROUNDING DETAILS AND NOTES	2
RF-1	RF DATA SHEET	2
RF-2	PLUMBING DIAGRAM AND RAN WIRING	2

CODE COMPLIANCE

1. 2016 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS. (IBC 2012 BASED)
2. 2014 NATIONAL ELECTRICAL CODE WITH AMENDMENTS
3. TIA-EIA-222-G

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

APPROVALS

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

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

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

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

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

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

SECTION 01 100 - SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

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

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

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

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

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS–BUILT" DRAWINGS.
B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
C . DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 - COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY–FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF–LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

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

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

SECTION 01 300 - CELL SITE CONSTRUCTION

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED:

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

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE–GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H–FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND–OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

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

CONTINUE SHEET SP-2

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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

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

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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-2

CONTINUED FROM SP-2:

MATERIALS:

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

PAINT SCHEDULE:

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

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

PAINTING APPLICATION:

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

TOUCHUP PAINTING:

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

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

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

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

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

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

REMOTE ELECTRICAL TILT (RET) CABLES:

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

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

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

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

HYBRID CABLES INSTALLATION:

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

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

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

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

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

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

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

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

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

SUMMARY:

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

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

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

DC CIRCUIT BREAKER LABELING

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

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

SUMMARY:

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

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

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

SUPPORTING DEVICES:

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

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

SUPPORTING DEVICES:

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

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

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

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

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

ELECTRICAL IDENTIFICATION:

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

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

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

CONDUIT:

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

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

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

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

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

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

HUBS AND BOXES:

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

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

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

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

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

SUPPLEMENTAL GROUNDING SYSTEM

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

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

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

EXISTING STRUCTURE:

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

CONDUIT AND CONDUCTOR INSTALLATION:

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

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

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

SBA
SBA COMMUNICATIONS CORP.
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WESTBOROUGH, MA 01581 TEL: (508) 251-0720

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

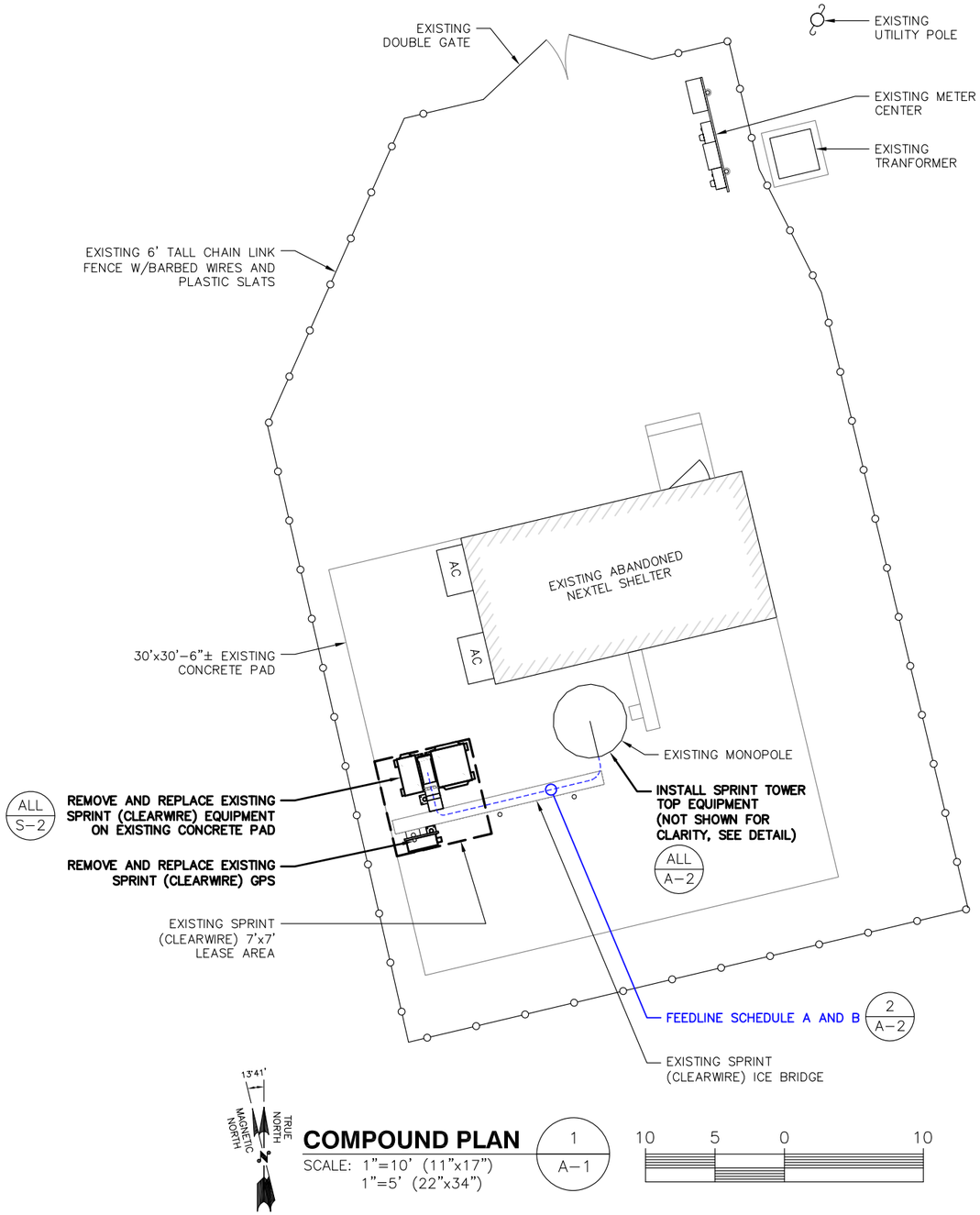
REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO

SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-3



COMPOUND PLAN

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

1 / A-1

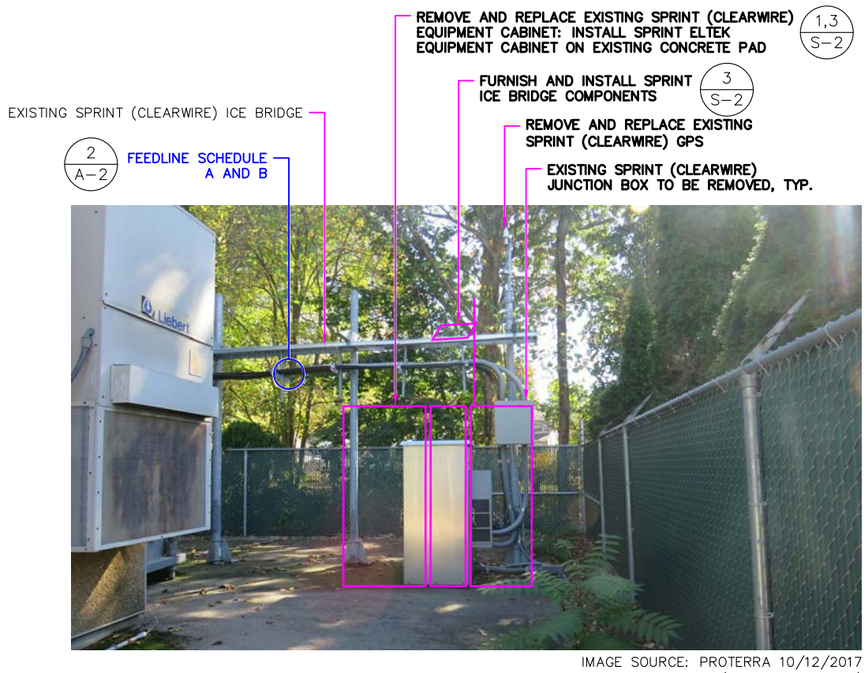


IMAGE SOURCE: PROTERRA 10/12/2017
(VIEW FROM NORTH)

IMAGE SOURCE: PROTERRA 10/12/2017
(VIEW FROM SOUTHEAST)

EQUIPMENT PLAN PHOTO DETAIL

SCALE: N.T.S.

2 / A-1

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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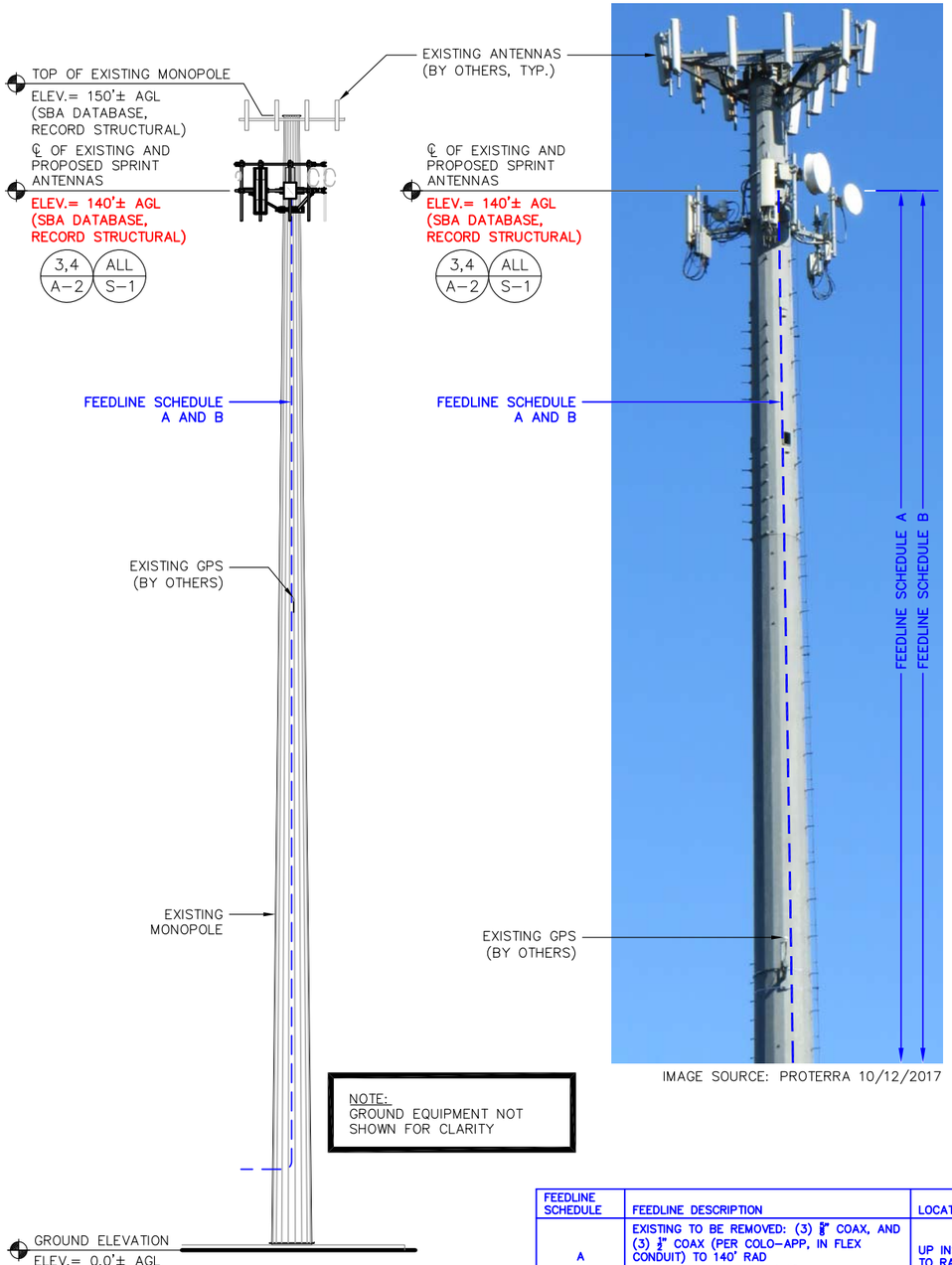
SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



ELEVATION

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

1 / A-2

20 10 0 20

NOTE:
GROUND EQUIPMENT NOT
SHOWN FOR CLARITY

IMAGE SOURCE: PROTERRA 10/12/2017

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (3) ⅞" COAX, AND (3) ½" COAX (PER COLO-APP, IN FLEX CONDUIT) TO 140' RAD EXISTING TO REMAIN: (4) ½" MICROWAVE DISH CABLE TO 140' RAD	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 140' RAD;	UP INSIDE MONOPOLE TO RAD

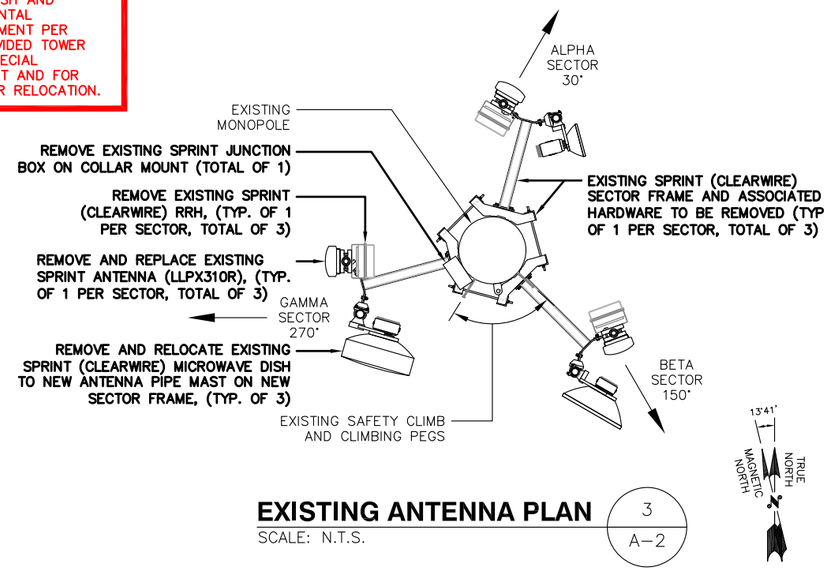
NOTE:
EXISTING SPRINT EQUIPMENT FEEDLINE INVENTORY BASED ON COLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER

TOWER ELEVATION PHOTO DETAIL

SCALE: N.T.S.

2 / A-2

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

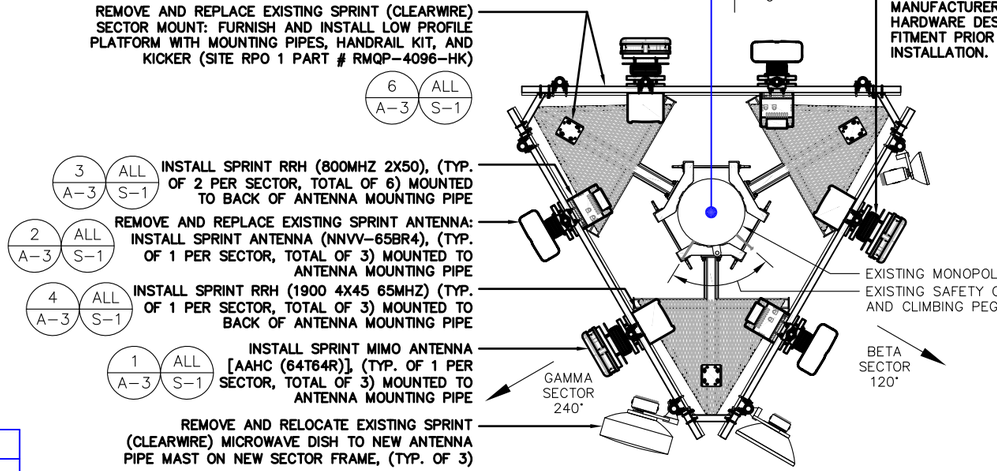


EXISTING ANTENNA PLAN

SCALE: N.T.S.

3 / A-2

FEEDLINE SCHEDULE A AND B
(REFER TO SBA PROVIDED STRUCTURAL ANALYSIS FOR SPECIAL CABLE INSTALLATION REQUIREMENTS, BUNDLING, SHIELDING, MOUNTING, AND RELOCATION OF EXISTING CABLES)



PROPOSED ANTENNA PLAN

SCALE: N.T.S.

4 / A-2

NOTE: ANTENNA MOUNTING HARDWARE SHOWN FOR REFERENCE. VERIFY WITH MANUFACTURER MOUNTING HARDWARE DESIGN AND FITMENT PRIOR TO INSTALLATION.

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

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

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1 INTERNATIONAL BLVD, SUITE 800
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STATE OF CONNECTICUT
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5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

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CT52XC042
SITE NAME:
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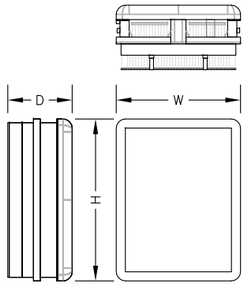
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2

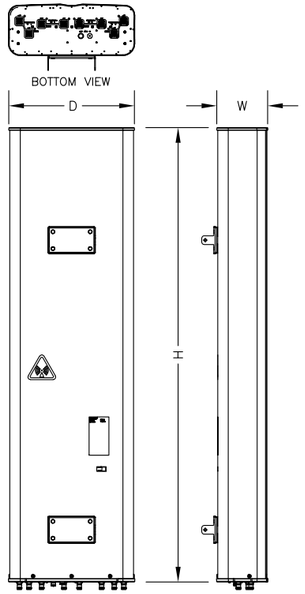


MIMO ANTENNA SPECIFICATIONS	
MANUF.	NOKIA
MODEL #	2.5G MAA-AAHC(64T64R)
HEIGHT	25.6"
WIDTH	19.7"
DEPTH	9.6"
WEIGHT	103.7± LBS. (MOUNT BRACKETS NOT INCLUDED)

MIMO ANTENNA DETAIL

SCALE: N.T.S.

1 / A-3

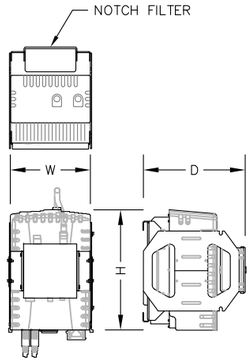


ANTENNA SPECIFICATIONS	
MANUF.	COMMSCOPE
MODEL #	NNVV-65B-R4
HEIGHT	72.0"
WIDTH	19.6"
DEPTH	7.8"
WEIGHT	77.4± LBS. (MOUNT BRACKETS NOT INCLUDED)

800 MHZ/1900 MHZ ANTENNA DETAIL

SCALE: N.T.S.

2 / A-3

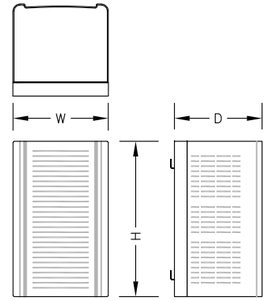


800 MHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	800MHZ 2X50W
HEIGHT	16"
WIDTH	13"
DEPTH	13.7" (INCLUDING FILTER)
WEIGHT	69.1± LBS (INCLUDING FILTER)

800 MHz RRH DETAIL

SCALE: N.T.S.

3 / A-3



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

EXISTING 1900 MHz RRH DETAIL

SCALE: N.T.S.

4 / A-3

MAJOR RF EQUIPMENT LIST

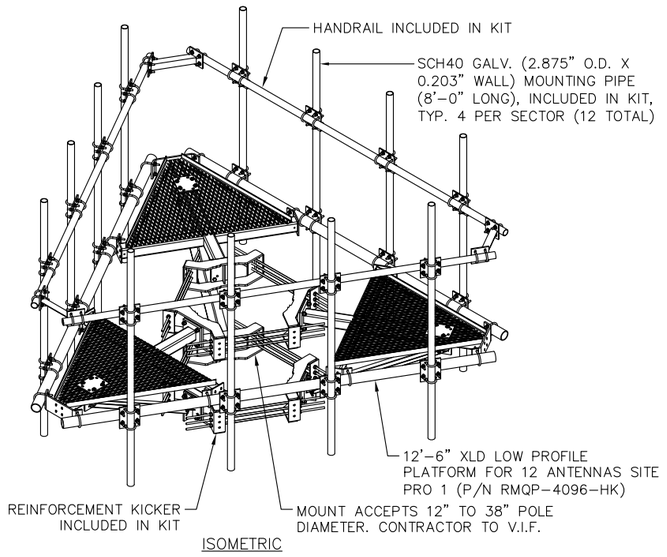
(GC SHALL FURNISH AND INSTALL ALL OTHER MATERIALS AND EQUIPMENT NOT SUPPLIED BY SPRINT)

DESCRIPTION	QUANTITY	UNITS	MAKE/MODEL/MATERIAL	PROVIDED BY
ANTENNA	3	EA	2.5G MAA-AAHC(64T64R)	SPRINT
ANTENNA	3	EA	COMMSCOPE NNVV-65B-R4	SPRINT
1900 RRH	3	EA	NOKIA (ALU) 1900 4X45 65MHZ	SPRINT
800 RRH	6	EA	NOKIA (ALU) 800MHz 2x50W	SPRINT
FIBER (800/1900 MHz)	3 @ 225'± FROM FIBER CABINET	LINEAR FEET LISTED [INCLUDES (2) 10' COILS]	1-1/4" HYBRIFLEX	SPRINT
FIBER (MIMO)	1 @ 225'± FROM FIBER CABINET	LINEAR FEET LISTED [INCLUDES (2) 10' COILS]	NOKIA HYBRID	SPRINT
ELTEK EQUIPMENT CABINET	1	EA	ELTEK DO EXTERNAL ECAB & BCAB ASSEMBLY WITH CABLING CABINET	SPRINT
PPC/TELCO CABINET	1	EA	PURCELL SYSTEMS, INC. (VERIFY MODEL WITH SPRINT)	SPRINT

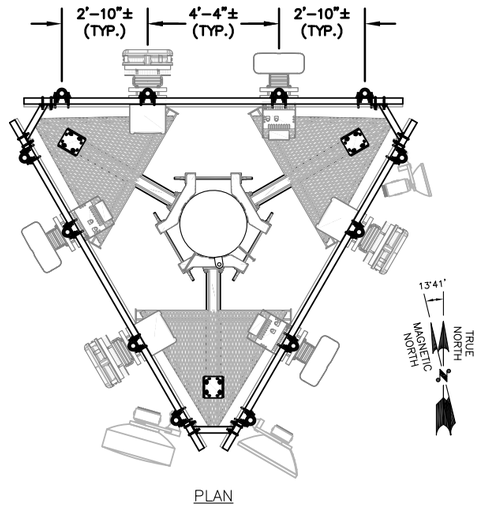
SPRINT-PROVIDED EQUIPMENT SCHEDULE

SCALE: N.T.S.

5 / A-3



ISOMETRIC



PLAN

PLATFORM DETAIL

SCALE: N.T.S.

6 / A-3

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph:(413)320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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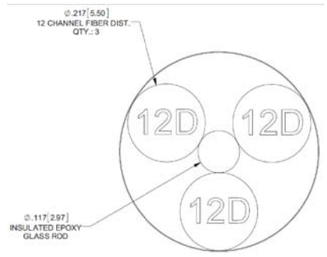
0	11/16/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO

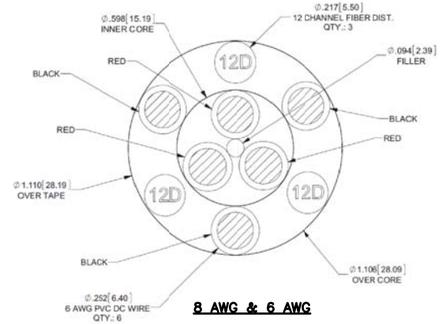
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
TOWER EQUIPMENT DETAILS

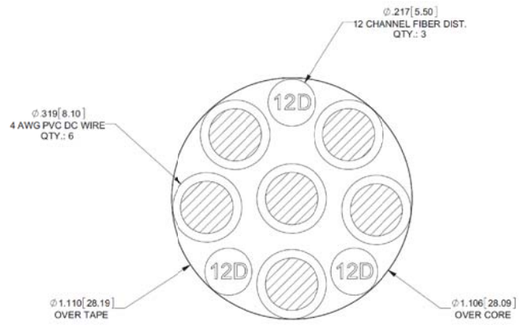
SHEET NUMBER
A-3



FIBER ONLY



8 AWG & 6 AWG



4 AWG

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE			
MANUF: RFS			
CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
FIBER ONLY	VARIES	USE NV HYBRIFLEX	7/8"
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**	

800/1900 MHz HYBRID CABLE X-SECTION AND DATA

SCALE: N.T.S.

1
A-4

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

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

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
5-21-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

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BRISTOL, CT 06010

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

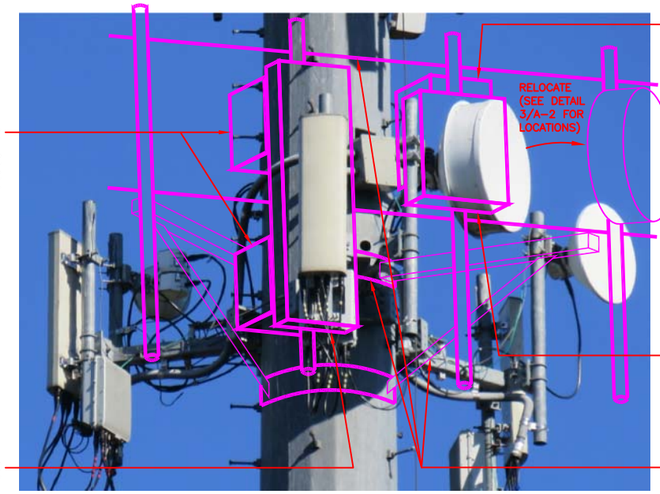


IMAGE SOURCE: PROTERRA 10/12/2017

INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6) MOUNTED TO BACK OF ANTENNA MOUNTING PIPE (3/A-3)

REMOVE AND REPLACE EXISTING SPRINT ANTENNA: INSTALL SPRINT ANTENNA (NNVV-65BR4), (TYP. OF 1 PER SECTOR, TOTAL OF 3) (2/A-3)

INSTALL SPRINT RRH (1900 4X45 65MHZ), MOUNTED TO BACK OF ANTENNA MOUNTING PIPE, (TYP. OF 1 PER SECTOR, TOTAL OF 3) (4/A-3)

REMOVE AND RELOCATE EXISTING SPRINT (CLEARWIRE) MICROWAVE DISH TO NEW ANTENNA PIPE MAST ON NEW SECTOR FRAME, (TYP. OF 3) (3/A-2)

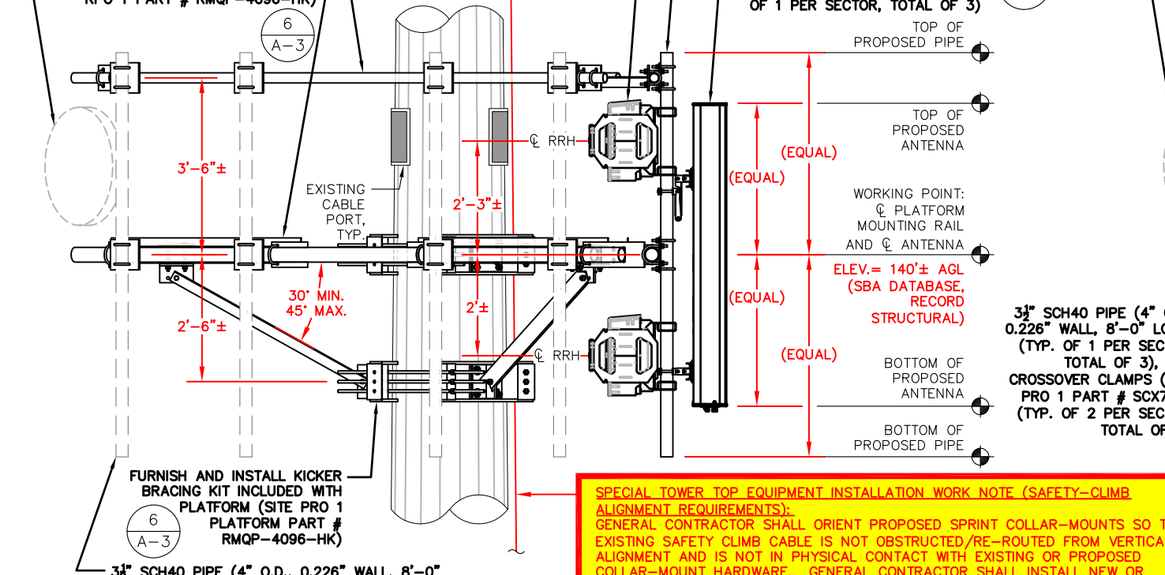
INSTALL SPRINT MIMO ANTENNA [AAHC (64T64R)], (TYP. OF 1 PER SECTOR, TOTAL OF 3) (1/A-3)

REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL LOW PROFILE PLATFORM WITH MOUNTING PIPES, HANDRAIL KIT, AND KICKER (SITE RPO 1 PART # RMQP-4096-HK) (6/A-3)

ANTENNA AND RRH MOUNT PHOTO DETAIL (3/S-1)

SCALE: N.T.S.

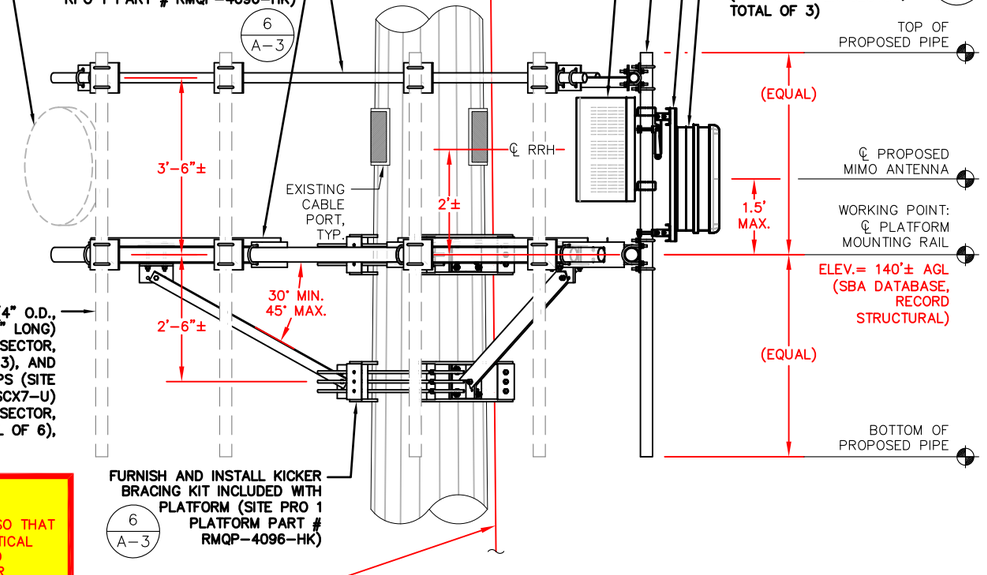
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY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



800 MHz/1900 MHz ANTENNA AND RRH MOUNTING DETAIL (1/S-1)

SCALE: N.T.S.

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



2.5 GHZ ANTENNA AND RRH MOUNTING DETAIL (2/S-1)

SCALE: N.T.S.

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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WESTBOROUGH, MA 01581 TEL: (508) 251-0720

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STATE OF CONNECTICUT
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LICENSED PROFESSIONAL ENGINEER
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CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

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CT52XC042
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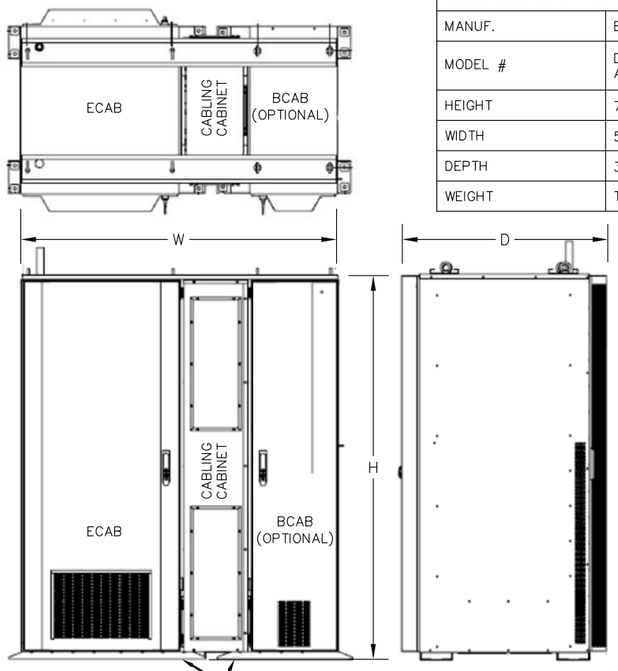
FARMINGTON TOWERCO
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
ANTENNA AND RRH MOUNTING DETAILS

SHEET NUMBER
S-1

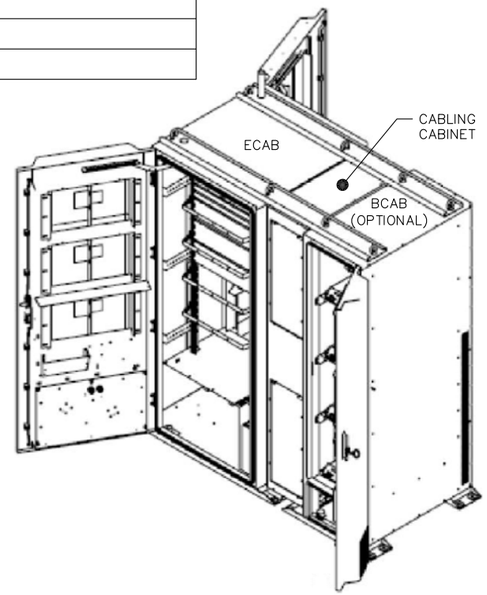
ELTEK EQUIPMENT CABINET	
MANUF.	ELTEK
MODEL #	DO EXTERNAL ECAB & BCAB ASSEMBLY
HEIGHT	72.3"
WIDTH	59.5"
DEPTH	38"
WEIGHT	TBD

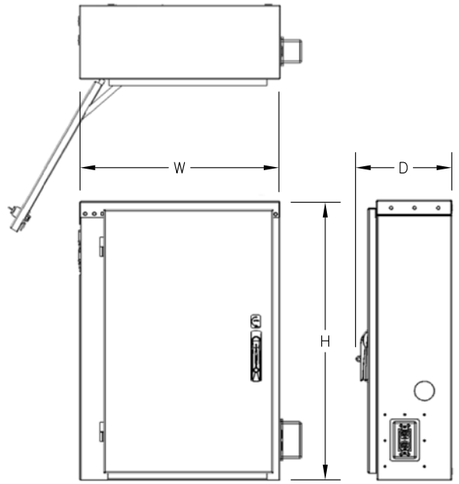


ELTEK EQUIPMENT CABINET DETAIL

SCALE: N.T.S.

1 / S-2





PPC CABINET	
MANUF.	PURCELL SYSTEMS, INC.
MODEL #	PPC (VERIFY MODEL WITH SPRINT)
HEIGHT	36"
WIDTH	26"
DEPTH	12.2"
WEIGHT	67± LBS

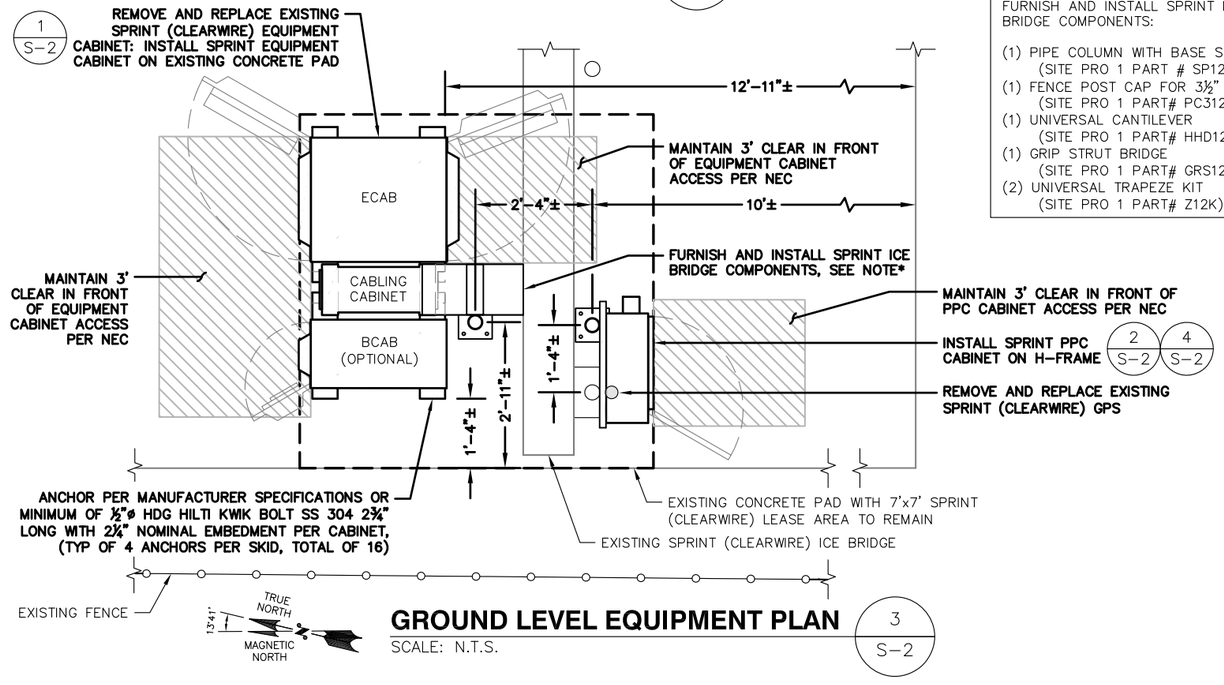
PPC DETAIL

SCALE: N.T.S.

2 / S-2

1 / S-2

REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) EQUIPMENT CABINET; INSTALL SPRINT EQUIPMENT CABINET ON EXISTING CONCRETE PAD



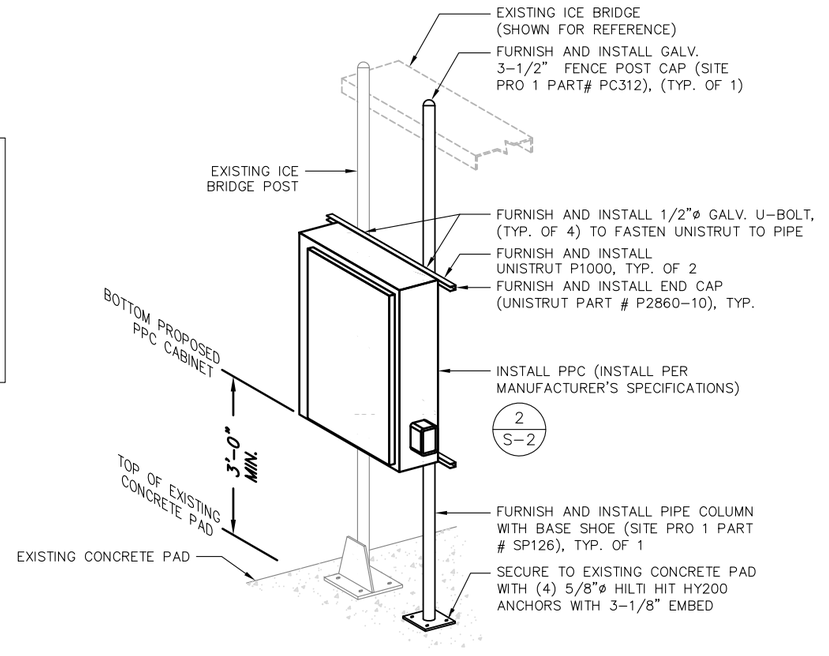
GROUND LEVEL EQUIPMENT PLAN

SCALE: N.T.S.

3 / S-2

NOTE*:
FURNISH AND INSTALL SPRINT ICE BRIDGE COMPONENTS:

(1) PIPE COLUMN WITH BASE SHOE (SITE PRO 1 PART # SP126)
(1) FENCE POST CAP FOR 3½" PIPE (SITE PRO 1 PART# PC312)
(1) UNIVERSAL CANTILEVER (SITE PRO 1 PART# HHD12-K)
(1) GRIP STRUT BRIDGE (SITE PRO 1 PART# GRS12-10)
(2) UNIVERSAL TRAPEZE KIT (SITE PRO 1 PART# Z12K)



PPC H-FRAME MOUNTING DETAIL

SCALE: N.T.S.

4 / S-2

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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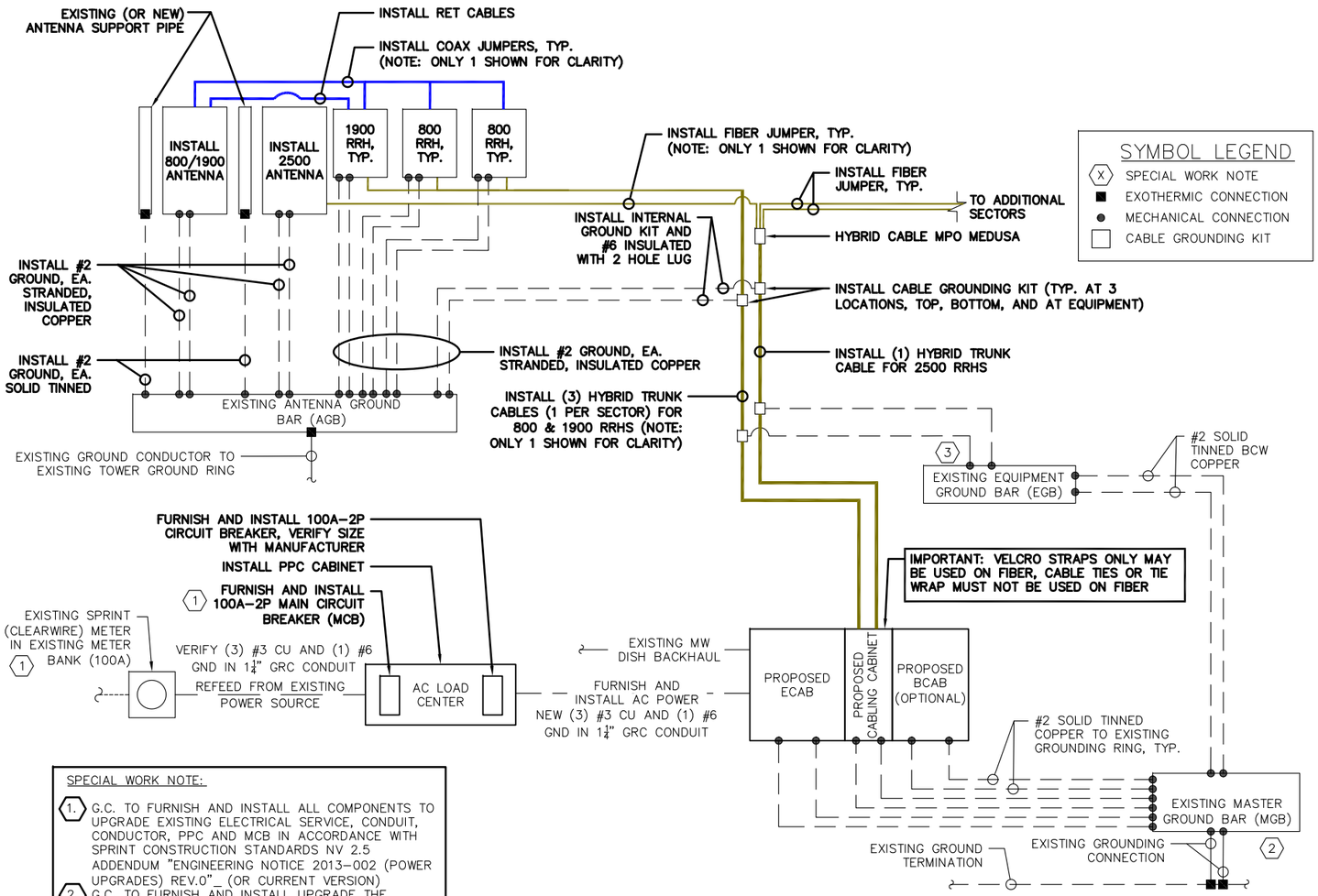
SHEET TITLE
GROUND EQUIPMENT DETAILS

SHEET NUMBER
S-2



SPECIAL WORK NOTE:

1. G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013-002 (POWER UPGRADES) REV.0"_ (OR CURRENT VERSION)
2. G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMBTS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING.
3. FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
   -ANTI-THEFT UPDATE TO SPRINT GROUNDING DATED 08-24-12 (OR CURRENT VERSION)
   -SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION).

TYPICAL POWER AND GROUNDING ONE LINE DIAGRAMS

SCALE: N.T.S.

1 / E-1

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.

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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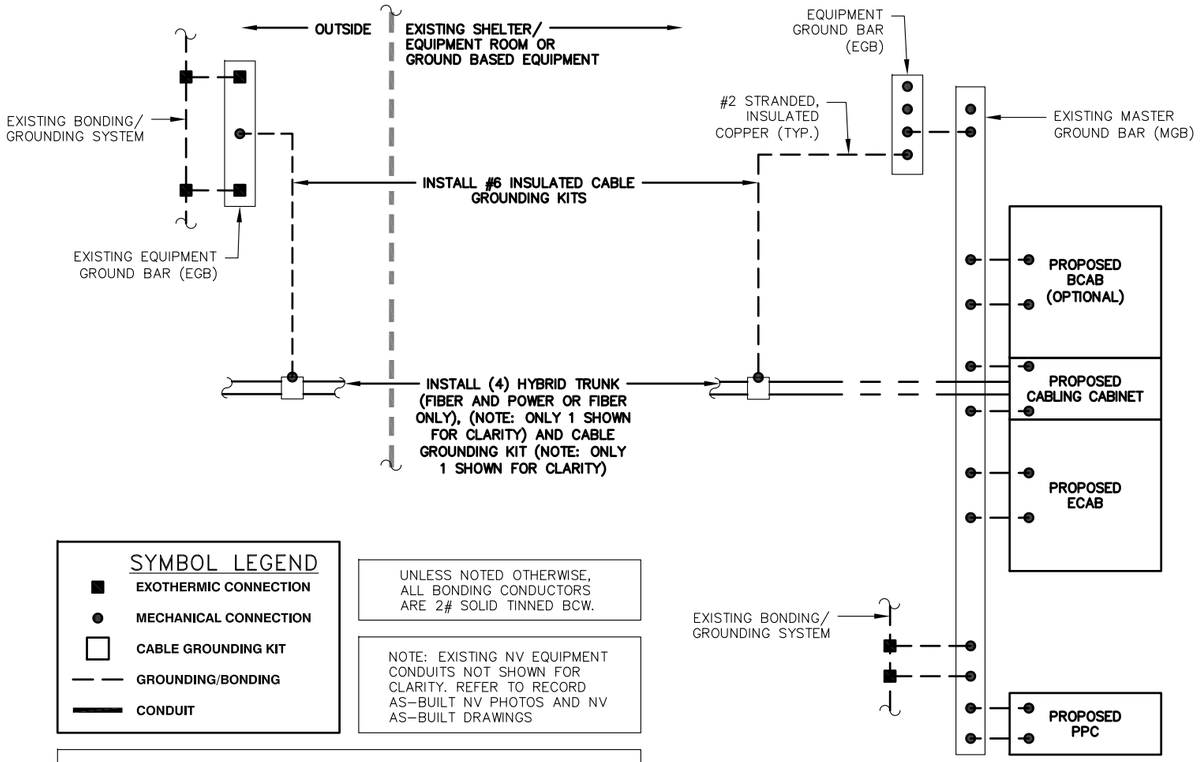
SHEET TITLE
ONE LINE DIAGRAM

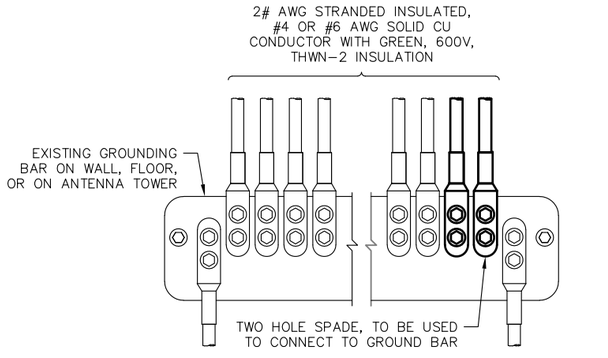
SHEET NUMBER
E-1



RAN EQUIPMENT GROUNDING SCHEMATIC

SCALE: N.T.S.

1 / E-2

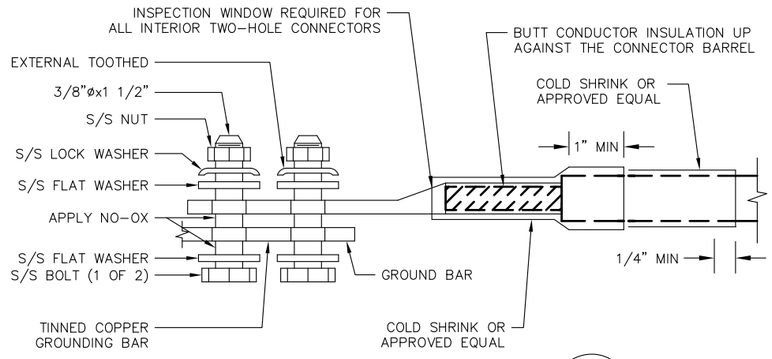


1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

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)

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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SBA
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134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581 TEL: (508) 251-0720

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
FOR SCHEMATIC ONLY
5/2/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
GROUNDING DETAILS AND NOTES

SHEET NUMBER
E-2

Augment ID: CT-HFD0098Q17.1
RFDS ID: 63867

SprintVision — **RF Design Sheet**

Site Identification	
Cascade	CTHFD0098
SMS Schedule ID	12323394
SMS Schedule Name	DO Macro Upgrade
PID	DOKU_CT52XC042
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	
RFDS Revision Date	2017-12-22 13:47:22.0
RFDS Revision	3

Filter Analysis Complete	YES
RFDS - Issue Date	
Design Status	Complete
Project Description	[illegible]

Contact Information	
Engineer Email	Bill.M.Hastings@sprint.com
Sprint Badged RF Engineer	Bill Hastings
RF Engineer Email	Bill.M.Hastings@sprint.com
RF Engineer Phone	978.590.9700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.B.Hull@Sprint.com
RF Manager Phone	617.233.2920

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

Location Details	
Latitude	41.6955
Longitude	-72.9017
Market	Northern Connecticut
Region	Northeast
City	Bristol
State	CT
Zip Code	CT/06010
County	Hartford

2500MHz	3
1900MHz	3
800MHz	3

Battery Backup Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

UE Relay Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
UE Relay Azimuth	
Manufacturer	
UE Relay CL Height (meters)	

GPS Antenna Model	
Model Number	GPS-QBW-26NMS
Weight (Lbs.)	1.2
Dimensions (In.)	5 x 3.2
Manufacturer	
GPS Antenna needed at site	1

Repeater Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

Junction Box Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Junction Boxes needed at site	

ALU Top Hat Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Top Hat Quantity	

Growth Cabinet Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	

BTS #2 Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Needed at site	1

Power Protection Cabinet Model	
Model Number	PPC w/ATS cabinet
Weight (Lbs.)	175
Dimensions (In.)	64.00 x 30.18 x 12.78
Manufacturer	
Power Protection Cabinet	1

BTS #1 Model	
Model Number	Ecab Eltek
Weight (Lbs.)	505
Dimensions (In.)	73.5 x 30 x 38
Manufacturer	Eltek
Number of BTS #1	1

A&E Drawing Requirements

Band: 2500	Alpha		Beta		Gamma		Delta		Epsilon		Zeta	
Antenna1												
Model Number	AAHC		AAHC		AAHC							
Weight (lbs)	103.7		103.7		103.7		N/A		N/A		N/A	
Dimensions	25.6 x 19.7 x 9.64		25.6 x 19.7 x 9.64		25.6 x 19.7 x 9.64		N/A		N/A		N/A	
Manufacturer	Nokia		Nokia		Nokia		N/A		N/A		N/A	
Ant1 Top Jumper Make/Mode/Qty	2.5 Jumper	8	2.5 Jumper	8	2.5 Jumper	8	N/A	0	N/A	0	N/A	0
Ant 1 RF requested Diameter	1/2"		1/2"		1/2"		N/A		N/A		N/A	
Ant 1 RF requested Top Jumper Length(ft)	8		8		8		N/A		N/A		N/A	
Antenna 1 Azimuth	0		120		240		N/A		N/A		N/A	
Antenna 1 Mechanical DT	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Center Line (ft)	140		140		140		N/A		N/A		N/A	
Antenna 1 Electrical DT	2		2		2		N/A		N/A		N/A	
Antenna 1 Electrical DT 2	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Electrical DT 3	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Twist	N/A		N/A		N/A		N/A		N/A		N/A	

Band: 1900	Alpha		Beta		Gamma		Delta		Epsilon		Zeta	
Antenna1												
Model Number	NNVV-65B-R4		NNVV-65B-R4		NNVV-65B-R4							
Weight (lbs)	84.7		84.7		84.7		N/A		N/A		N/A	
Dimensions	72 x 19.6 x 7.8		72 x 19.6 x 7.8		72 x 19.6 x 7.8		N/A		N/A		N/A	
Manufacturer	CommScope		CommScope		CommScope		N/A		N/A		N/A	
Ant1 Top Jumper Make/Mode/Qty	800/1900 Jumper	4	800/1900 Jumper	4	800/1900 Jumper	4	N/A	0	N/A	0	N/A	0
Ant 1 RF requested Diameter	1/2"		1/2"		1/2"		N/A		N/A		N/A	
Ant 1 RF requested Top Jumper Length(ft)	8		8		8		N/A		N/A		N/A	
Antenna 1 Azimuth	0		120		240		N/A		N/A		N/A	
Antenna 1 Mechanical DT	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Center Line (ft)	140		140		140		N/A		N/A		N/A	
Antenna 1 Electrical DT	3		3		3		N/A		N/A		N/A	
Antenna 1 Electrical DT 2	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Electrical DT 3	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Twist	N/A		N/A		N/A		N/A		N/A		N/A	

Band: 800	Alpha		Beta		Gamma		Delta		Epsilon		Zeta	
Antenna1												
Model Number	Antenna assigned on a different band		Antenna assigned on a different band		Antenna assigned on a different band							
Weight (lbs)	0		0		0		N/A		N/A		N/A	
Dimensions	0 x 0 x 0		0 x 0 x 0		0 x 0 x 0		N/A		N/A		N/A	
Manufacturer	-		-		-		N/A		N/A		N/A	
Ant1 Top Jumper Make/Mode/Qty	800/1900 Jumper	4	800/1900 Jumper	4	800/1900 Jumper	4	N/A	0	N/A	0	N/A	0
Ant 1 RF requested Diameter	1/2"		1/2"		1/2"		N/A		N/A		N/A	
Ant 1 RF requested Top Jumper Length(ft)	8		8		8		N/A		N/A		N/A	
Antenna 1 Azimuth	0		120		240		N/A		N/A		N/A	
Antenna 1 Mechanical DT	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Center Line (ft)	140		140		140		N/A		N/A		N/A	
Antenna 1 Electrical DT	5		5		5		N/A		N/A		N/A	
Antenna 1 Electrical DT 2	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Electrical DT 3	N/A		N/A		N/A		N/A		N/A		N/A	
Antenna 1 Twist	N/A		N/A		N/A		N/A		N/A		N/A	

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

SPRINT CONSTRUCTION STANDARDS:

GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS.

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

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	Nokia MIMO Integrated Radio/Antenna	Nokia MIMO Integrated Radio/Antenna	Nokia MIMO Integrated Radio/Antenna	N/A	N/A	N/A
Weight (lbs)	N/A	N/A	N/A	N/A	N/A	N/A
Dimensions	Refer to Antenna model for details	Refer to Antenna model for details	Refer to Antenna model for details	N/A	N/A	N/A
Manufacturer	Nokia	Nokia	Nokia	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Filter Model						
Trunk Cable 1						
Model Number	MIMO Upgrade Hybrid Nokia	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	2.307	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.689	N/A	N/A	N/A	N/A	N/A
Manufacturer	N/A	N/A	N/A	N/A	N/A	N/A
Trunk Cable 1 Qty						
Power Junction Cylinder Model						

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-4x45-1900	RRH-4x45-1900	RRH-4x45-1900	N/A	N/A	N/A
Weight (lbs)	69.5	69.5	69.5	N/A	N/A	N/A
Dimensions	25 x 12 x 12	25 x 12 x 12	25 x 12 x 12	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Trunk Cable 1						
Model Number	1900 Hybrid_ALU	1900 Hybrid_ALU	1900 Hybrid_ALU	N/A	N/A	N/A
Weight (Lbs.)	1.1	1.1	1.1	N/A	N/A	N/A
Dimensions (In.)	1.25	1.25	1.25	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Trunk Cable 1 Qty						

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

RF DATA SHEET
SCALE: N.T.S.

1
RF–1

NOTE: RFDS PROVIDED BY SPRINT DATED 12/22/2017. EXCERPTS TAKEN DEPICT RELEVANT RF DESIGN INFORMATION. A&E VENDOR SCOPE OF WORK LIMITED TO DESIGN OF MECHANICAL/STRUCUTRAL EQUIPMENT ATTACHMENTS.

Sprint
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MAHWAH, NJ 07495
TEL: (800) 357-7641

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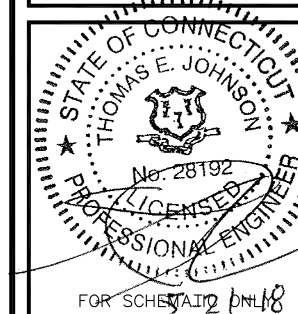
TEL: (508) 251-0720

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



FOR SCHEMATIC ONLY 5/21/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB/PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO

SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

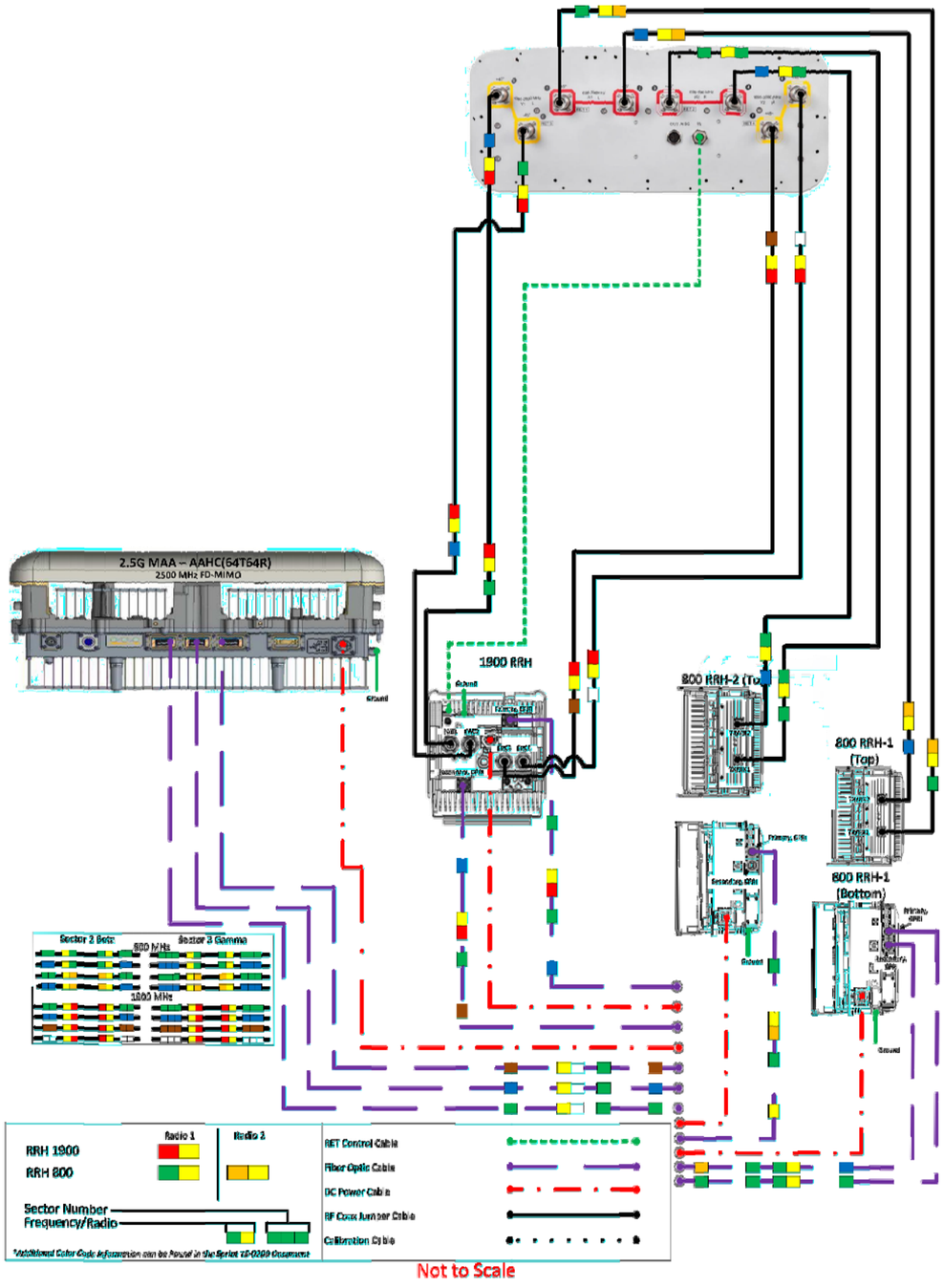
SHEET TITLE
RF DATA SHEET

SHEET NUMBER
RF–1

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

Sprint

ALU 21-MIMO NNVV-65B-R4 wo Filters



Not to Scale

Prepared By	Creation Date	Revision Number	
Mark Elliott	February 13, 2016		R-1
Approved By	Approval Date		
RAN Hardware & Antenna Teams	February 23, 2017		

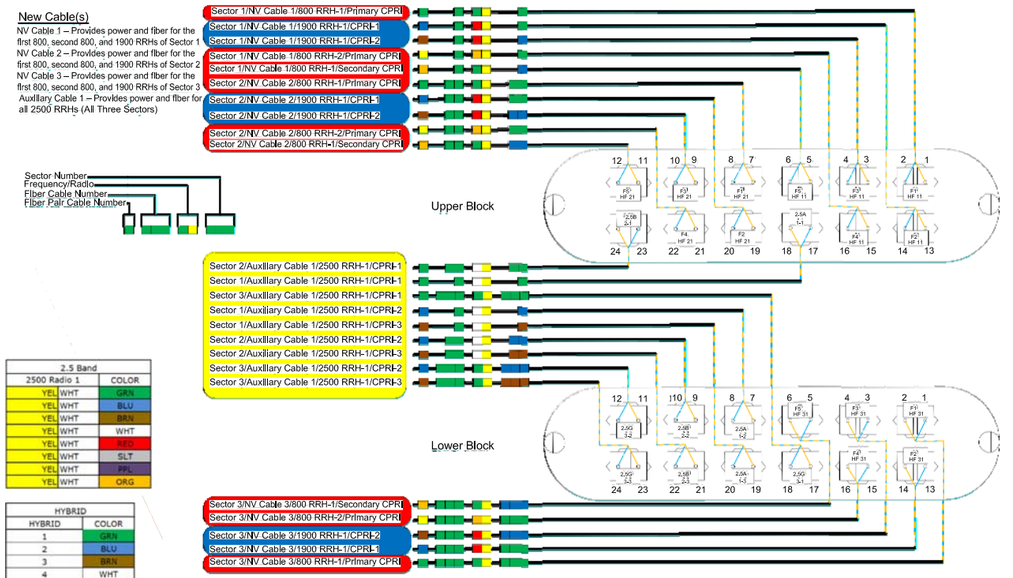
Nokia-A Tri-Band Fiber Connections
(Nokia-A Two-800, One-1900, & One-2500 RRH)

Sprint

Nokia-A New Build

New Cable(s)

NV Cable 1 – Provides power and fiber for the first 800, second 800, and 1900 RRHs of Sector 1
NV Cable 2 – Provides power and fiber for the first 800, second 800, and 1900 RRHs of Sector 2
NV Cable 3 – Provides power and fiber for the first 800, second 800, and 1900 RRHs of Sector 3
Auxiliary Cable 1 – Provides power and fiber for all 2500 RRHs (All Three Sectors)

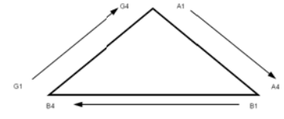


2.5 Band	
2500 Radio 1	COLOR
YEL WHT	GRN
YEL WHT	BLU
YEL WHT	BRN
YEL WHT	WHT
YEL WHT	RED
YEL WHT	SLT
YEL WHT	PPL
YEL WHT	ORG

HYBRID	
HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	SLT
7	PPL
8	ORG

NV CABLES			
BAND	INDICATOR	PORT	COLOR
800-1	YEL GRN	NV-1	GRN
1900-1	YEL RED	NV-2	BLU
1900-2	YEL BRN	NV-3	BRN
1900-3	YEL BLU	NV-4	WHT
1900-4	YEL SLT	NV-5	RED
800-2	YEL ORG	NV-6	SLT
SPARE	YEL WHT	NV-7	PPL
2500	YEL PPL	NV-8	ORG

Figure 1: Anterna Orientation



NOTES:

1. ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE, STENCIL TAG COLORED TAPE, OR COLORED HEAT SHRINK TUBING
2. COLORED TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRONIC. UV STABILIZED TAPE OR HEAT SHRINK ARE PREFERRED.
3. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE, AND THERE SHALL BE A 1" SPACE BETWEEN EACH RING.
4. THE CABLE COLOR CODE SHALL BE APPLIED IN ACCORDANCE TO TABLE 19–1.
   a. TABLE 19–1 ONLY SHOWS 3 SECTORS, BUT ADDITIONAL SECTORS ARE EASILY SUPPORTED BY ADDING THE APPROPRIATE NUMBER OF COLORED RINGS TO THE CABLE COLOR CODE.
5. AFTER THE CABLE COLOR CODE IS APPLIED, THE FREQUENCY COLOR CODE, TABLE 19–2, MUST BE APPLIED FOR THE SPECIFIC FREQUENCY BAND IN USE ON A GIVEN LINE.
   a. 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE.
   b. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
6. WRAP 2" COLORED TAPE A MINIMUM OF 3 TIMES AROUND THE COAX, AND KEEP THE TAPE IN THE SAME AREA AS MUCH AS POSSIBLE. THIS WILL ALLOW REMOVAL OF TAPE THAT FADES OR DISCOLORS DUE TO WEATHER.
7. EXAMPLES OF THE CABLE AND FREQUENCY COLOR CODES ARE SHOWN IN FIGURE 19-1 AND FIGURE 19–2.

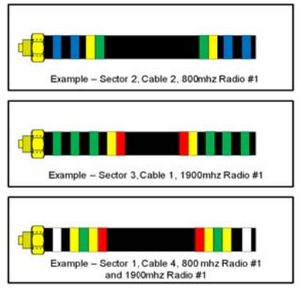
FIGURE 19–1

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

FIGURE 19–2

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

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



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SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
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ProTerra
DESIGN GROUP, LLC
4 Bay Road, Building A
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Hadley, MA 01035 Ph: (413)320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
FOR SCHEMATIC ONLY
5/21/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
2	05/21/18	ISSUED FOR CONSTRUCTION	PN
1	04/11/18	ISSUED FOR CONSTRUCTION	JEB
0	11/16/17	ISSUED FOR REVIEW	JEB PN

SITE NUMBER:
CT52XC042
SITE NAME:
FARMINGTON TOWERCO
SITE ADDRESS:
1214 FARMINGTON AVENUE
BRISTOL, CT 06010

SHEET TITLE
PLUMBING DIAGRAM AND RAN WIRING

SHEET NUMBER
RF–2