



Filed by:

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

October 17, 2018

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

Notice of Exempt Modification
67 Fairchild Road, Middletown, CT 06457
41 32 42.04 / -72 37 14.76
Sprint #: CT52XC112_DO Macro Upgrade

Dear Ms. Bachman:

Sprint currently maintains three (3) panel antennas and two (2) dish antennas at the 90-foot level of the existing 130-foot Monopole Tower at 67 Fairchild Rd in Middletown, CT. The tower is owned by SBA Infrastructure, LLC. The property is owned by Stephen and Barbara Borrelli. Sprint intends to replace three (3) existing antennas and install (3) additional antennas at the 90-foot level of the tower. Sprint's full scope of proposed work is as follows:

Remove:

- (1) 1'4"x6.5"x6" Surge Protector (at 94')
- (3) 5/16" lines
- (3) 5/8" lines
- (3) ¼" lines

Remove and Replace:

- Remove: (3) Kathrein - 840 10054 – Panel Antennas
 - Replace with: (3) Nokia - AAHC - MIMO – Panel Antennas
- Remove: (3) Samsung - RASSPI-2213-RRHs
 - Replace with: (3) ALU - 1900 Mhz – RRUs
- Remove: (1) direct mount with (3) t-arms
 - Replace with: (1) Platform w/handrails (SitePro F3P-10W w/HRK10)

At Ground Level (within existing leased space of compound)

- Remove: (1) equipment cabinet
 - Replace with: (1) equipment cabinet (on existing pad)
- Remove: (1) GPS
 - Replace with (1) GPS

Install:

- (3) Commscope – NNVV-65B-R4 Panel Antennas
 - (6) ALU 800 MHz RRUs
 - (1) 1.689" fiber
 - (3) 1-1/4" fiber
- At Ground Level (within existing leased space of compound)*
- (1) PPC cabinet on H-Frame (on existing pad)

Existing Equipment to Remain (including entitlements):

- (2) Andrew - VHLP800-11 – Dishes
- (2) ½" fiber
- (3) ¼" lines



This facility was originally approved by the Council in Docket 316 on November 14, 2006. The original approval included the condition that all antennas be flush-mounted. Docket 316 was reopened, and the Decision rescinded, on August 25, 2011 with the Council reissuing a Certificate of Environmental Compatibility and Public Need eliminating the requirement that all antennas be flush-mounted. (Docket 316A). This modification complies with the conditions of the aforementioned Docket 316A.

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 Middletown's Mayor, Daniel T. Drew, Director of Planning, Joseph Samolis, and the property owners, Stephen and Barbara Borrelli. (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@sbsite.com

Attachments

cc: Daniel T. Drew, Mayor -- w/ attachments

The City of Middletown, City Hall, 245 deKoven Drive, Middletown, CT 06457

Joseph Samolis, Director of Planning, Conservation and Development -- w/ attachments

The City of Middletown, City Hall, 245 deKoven Drive, Suite 202, Middletown, CT 06457

Stephen G. & Barbara L. Borrelli – w/attachments

67 Fairchild Road, Middletown, CT 06457



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):	90 feet	Height (AGL):	90 feet	Height (AGL):	90 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%	4.64 %	Antenna B1 MPE%	4.64 %	Antenna C1 MPE%	4.64 %
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):	90 feet	Height (AGL):	90 feet	Height (AGL):	90 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%	2.61 %	Antenna B2 MPE%	2.61 %	Antenna C2 MPE%	2.61 %

Microwave Backhaul Data								
Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Commscope VHLP800-11	35.25 dBd	90	11 GHz	1	1	3,349.65	0.17	A
Commscope VHLP2-11	32.35 dBd	90	11 GHz	1	1	1,717.91	0.08	C

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max (Sector A)	7.42 %
Nextel	0.49 %
AT&T	5.86 %
Clearwire	0.26 %
T-Mobile	4.55 %
Verizon Wireless	4.24 %
Site Total MPE %:	22.82 %

SPRINT Sector A Total:	7.42 %
SPRINT Sector B Total:	7.25 %
SPRINT Sector C Total:	7.33 %
Site Total:	22.82 %

ORIGIN ID:BBFA (508) 251-0720
KRI BELLETER
SEA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 17OCT18
ACTWGT: 1.00 LB
CAD: 105843304#NET4040

BILL SENDER

TO DANIEL T DREW - MAYOR
THE CITY OF MIDDLETOWN - CITY HALL
245 DEKOVEN DRIVE

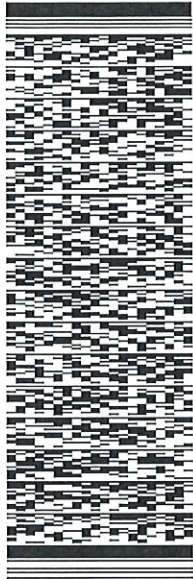
MIDDLETOWN CT 06457

(508) 251-0720 X 3804

REF: 10:56:92009:6089

PO:

DEPT:



J182118081591uv

TRK# 0201 7734 9574 6018

THU - 18 OCT 10:30A
PRIORITY OVERNIGHT

EB BDLA

06457
BDL
CT-US



552J1188FB/DCA5

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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.

ORIGIN ID:BBFA (508) 251-0720
KRI BELLETTER
S&A COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 17OCT18
ACTWGT: 1.00 LB
CAD: 105843304#NET4040

BILL SENDER

TO
JOSEPH SAMOLIS - DIR OF PLANNING
THE CITY OF MIDDLETOWN - CITY HALL
245 DEKOVEN DRIVE, SUITE 202

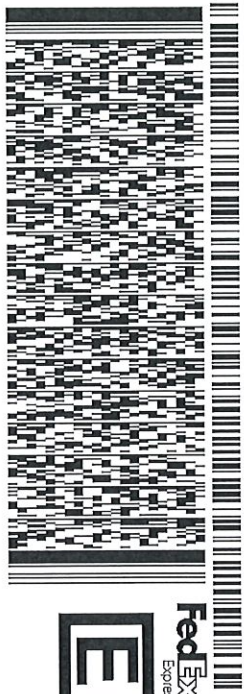
MIDDLETOWN CT 06457

(508) 251-0720 X 3804

REF: 10:56:92009-6089

PO:

DEPT:



J182118081501uv

TRK# 7734 9576 4635
0201

THU - 18 OCT 10:30A
PRIORITY OVERNIGHT

EB BDLA

06457
BDL
CT-US



552J1/88FB/DCA5

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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.

ORIGIN ID: 98BEA (508) 251-0720
KRI BELLETER
SEA COMMUNICATIONS CORPORATION
934 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 17OCT18
ACTWGT: 1.00 LB
CAD: 105843304INNET4040

BILL SENDER

TO **STEPHEN G & BARBARA L BORELLI**
67 FAIRCHILD ROAD

MIDDLETOWN CT 06457

(508) 251-0720 X 3804 REF: 10:56:92009:6089
PO: DEPT:



J182118081601uv

TRK# 7734 9577 8013
THU - 18 OCT 10:30A
PRIORITY OVERNIGHT

EB BDLA
CT-US **BDL**
06457



552J1188FBIDCA5

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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.

67 FAIRCHILD RD

Location 67 FAIRCHILD RD

Map-Lot 42/ / 0118/ /

Acct# R15245

Owner BORRELLI STEPHEN G &
BARBARA L

Municipality

Assessment \$495,450

Appraisal \$707,780

PID 15236

Building Count 2

Assessing Distr...

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$394,130	\$313,650	\$707,780
Assessment			
Valuation Year	Improvements	Land	Total
2017	\$275,890	\$219,560	\$495,450

Parcel Addresses

Additional Addresses		
Address	City, State Zip	Type
67 FAIRCHILD RD	MIDDLETOWN, CT 06457	Primary

Owner of Record

Owner	BORRELLI STEPHEN G & BARBARA L	Sale Price	\$0
Co-Owner		Certificate	
Address	67 FAIRCHILD RD MIDDLETOWN, CT 06457	Book & Page	1091/ 136
		Sale Date	02/28/1996
		Instrument	29

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
BORRELLI STEPHEN G & BARBARA L	\$0		1091/ 136	29	02/28/1996

Building Information

Building 1 : Section 1

Year Built: 2012

Living Area: 2,134
Replacement Cost: \$292,538
Building Percent Good: 95
Replacement Cost Less Depreciation: \$277,910

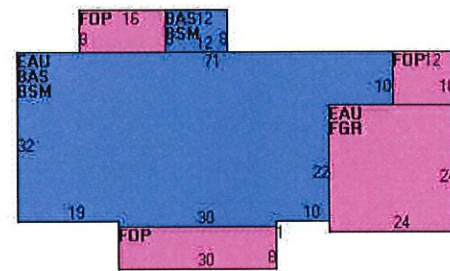
Building Attributes	
Field	Description
Style	Cape Cod
Model	Residential
Grade	B-
Stories	1.25
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heat Fuel	Propane
Heat Type	Forced Air
Bedrooms	3
Full Baths	2
Half Baths	0
Extra Fixtures	2
Total Rooms	5
Bath Remodel	Not Updated
Kitchen Remodel	Not Updated
Extra Kitchens	
Fireplaces	0
Extra Openings	
Gas Fireplace	1
Int vs Ext	Same
A/C Type	Central
A/C %	100
Fin Bsmt Area	
Bsmt Garage	

Building Photo



(<http://images.vgsi.com/photos/MiddletownCTPhotos//\00\02\11\39.jpg>)

Building Layout



Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	2,134	2,134
BSM	Basement	2,134	0
EAU	Expansion Attic Unfinished	2,614	0
FGR	Garage	576	0
FOP	Framed Open Porch	488	0
		7,946	2,134

Building 2 : Section 1

Year Built: 2000
Living Area: 3,192
Replacement Cost: \$67,875
Building Percent Good: 86

Building Photo

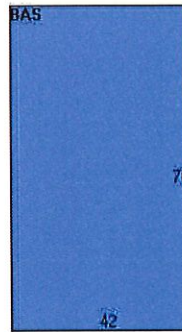
Replacement Cost
Less Depreciation: \$58,370

Building Attributes : Bldg 2 of 2	
Field	Description
STYLE	Equip Garage
MODEL	Commercial
Grade	D
Stories	1
Occupancy	1
Exterior Wall 1	Pre-finish Metl
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Metal/Tin
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Type	None
Bldg Use	Res / Comm MDL 94
Cov Parking	
Uncov Parking	
Percent Fin	
1st Floor Use	
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Walls	None
Rooms/Prtns	None
Wall Height	14



(http://images.vgsi.com/photos/MiddletownCTPhotos//\00\03\06\29.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	3,192	3,192
		3,192	3,192

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 101
Description Single Family
Zone R-30
Neighborhood 13
Alt Land Appr No

Land Line Valuation

Size (Acres) 18.89
Assessed Value \$219,560
Appraised Value \$313,650

Category

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CSHD	Cell Shed			240 UNITS	\$15,000	2
CSHD	Cell Shed			240 UNITS	\$15,000	2
SHD1	Shed	MS	Masonry	143 UNITS	\$1,430	1
CSHD	Cell Shed			360 UNITS	\$22,500	2
FN4	Fence-8' Chain			280 UNITS	\$3,920	2

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$305,899	\$366,330	\$672,229
2015	\$305,899	\$366,330	\$672,229
2014	\$305,899	\$366,330	\$672,229

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$214,130	\$256,430	\$470,560
2015	\$214,130	\$256,430	\$470,560
2014	\$214,130	\$256,430	\$470,560

(c) 2016 Vision Government Solutions, Inc. All rights reserved.



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

SPRINT Existing Facility

Site ID: CT52XC112

SBA Fairchild Lane
67 Fairchild Road
Middletown, CT 06457

October 9, 2018

EBI Project Number: 6218006467

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	22.82 %



October 9, 2018

SPRINT

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

Emissions Analysis for Site: **CT52XC112 – SBA Fairchild Lane**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **67 Fairchild Road, Middletown, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS) and 11 GHz microwave bands is $1000 \mu\text{W}/\text{cm}^2$. 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 **67 Fairchild Road, Middletown, 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 highly focused 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 sectors A & C of the proposed installation. These channels have a transmit power of 1 Watt each.



- 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 highly focused 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 as well as the **Commscope VHLP800-11 and Commscope VHLP2-11** for microwave transmissions in the 11 GHz band. 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 highly focused 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 panel antennas and microwave dishes are **90 feet** above ground level (AGL) for **Sector A**, **90 feet** above ground level (AGL) for **Sector B** and **90 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):	90 feet	Height (AGL):	90 feet	Height (AGL):	90 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%	4.64 %	Antenna B1 MPE%	4.64 %	Antenna C1 MPE%	4.64 %
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):	90 feet	Height (AGL):	90 feet	Height (AGL):	90 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%	2.61 %	Antenna B2 MPE%	2.61 %	Antenna C2 MPE%	2.61 %

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Commscope VHLP800-11	35.25 dBd	90	11 GHz	1	1	3,349.65	0.17	A
Commscope VHLP2-11	32.35 dBd	90	11 GHz	1	1	1,717.91	0.08	C

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max (Sector A)	7.42 %
Nextel	0.49 %
AT&T	5.86 %
Clearwire	0.26 %
T-Mobile	4.55 %
Verizon Wireless	4.24 %
Site Total MPE %:	22.82 %

SPRINT Sector A Total:	7.42 %
SPRINT Sector B Total:	7.25 %
SPRINT Sector C Total:	7.33 %
Site Total:	22.82 %



Sprint Maximum MPE Power Values (Sector A)

SPRINT _ Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	90	1.92	850 MHz	567	0.35%
Sprint 850 MHz LTE	2	941.82	90	9.60	850 MHz	567	1.69%
Sprint 1900 MHz (PCS) CDMA	5	511.82	90	13.04	1900 MHz (PCS)	1000	1.30%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	90	13.04	1900 MHz (PCS)	1000	1.30%
Sprint 2500 MHz (BRS) LTE	8	639.78	90	26.08	2500 MHz (BRS)	1000	2.61%
Sprint 11 GHz Microwave	1	3,349.65	90	1.71	11 GHz	1000	0.17%
						Total:	7.42%



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:	7.42 %
Sector B:	7.25 %
Sector C:	7.33 %
SPRINT Maximum MPE % (Sector A):	7.42 %
Site Total:	22.82 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **22.82 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Post-Mod Structural Analysis Report

Existing 130 ft. Rohn Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13064-A

Customer Site Name: Middletown 2, CT

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT52XC112 / SBA Fairchild Lane

Site Location: 67 Fairchild Road

Middletown, Connecticut

Middlesex County

Latitude: 41.545011

Longitude: -72.620766

Analysis Result:

Max Structural Usage: 97.1% [Pass]

Max Foundation Usage: 98% [Pass]

Report Prepared By : Stacey Hesselbein



8/23/18

Introduction

The purpose of this report is to summarize the analysis results on the 130 ft. Rohn Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

Sources of Information

Tower Drawings	Drawings by Radian Communication Services, File # 060-3494,57886EH Dated 12/15/2006
Foundation Drawing	Drawings by Radian Communication Services, File # 060-3494,57886EH Dated 12/15/2006
Geotechnical Report	Geotechnical Report by Gemini Geotechnical Associates Inc., Sire # 999-0049 Dated 11/30/2006
Existing Modification	Modification & 10' Extension Drawings by FDH Engineering, Project # 11-01248E S1 dated 09/21/2001 Modification Drawings by FDH Engineering, Inc., Job # 12-08192E S2 dated 11/14/2012 Modification Drawings by FDH Velocitel, Project # 15BVXK1400 dated 08/06/2015 Modification Drawings prepared by TES, Project # 13064 dated 11/05/2015
Proposed Modification	TES Job # 56931

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 130$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 101.0$ mph (3-Sec. Gust)
Basic Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	SS = 0.18, S1 = 0.063

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	130.0	3	Powerwave - P65-16-XLH-RR - Panel	(1) Platform w/ Hand Rail (Commscope P/N MTC3607R)	(12) 1 5/8" (4) 3/4" DC And (2) 1/2" Fiber inside (3) 2" Conduit	AT&T
2		3	CCI - OPA-65R-LCUU-H6 - Panel			
3		3	Quintel - QS66512-2 - Panel			
4		3	CCI - DTMABP7819VG12A - TMA			
5		3	Ericsson - RRUS 11 - RRU			
6		3	Ericsson - RRUS-32 - RRU			
7		3	Ericsson - RRUS 32 B2 - RRU			
8		3	Ericsson - RRUS 32 b66 - RRU			
9		2	Raycap - DC6-48-60-18-8F - SP			
10	111.0	3	Andrew - CBC721-DF - Panel	(3) T-Arms	(12) 1 5/8" (2) 1 5/8" Hybrid	Verizon
11	110.0	6	Andrew - SBNHH-1D65B - Panel			
12		3	Alcatel - RRH2X60-1900A-4R			
13		3	Alcatel - B13 RRH4X30-4R			
14		3	Alcatel - B4 RRH2X60-4R			
15	2	RFS - DB-T1-6Z-8AB-0Z				
16	109.0	3	Andrew - CBC721-DF - Panel	(3) T-Arms (Site Pro P/N RMV12-3xx)	(6) 1 5/8" (1) 1 5/8" Hybrid	T-Mobile
17	100.0	3	Ericsson - AIR 21 B2A/B4P - Panel			
18		3	Ericsson - AIR 21 B4A/B2P - Panel			
19		3	Commscope - LNX-6515DS-A1M - Panel			
20	3	Kathrein - 782 11056 - TMA				
-	94.0	1	1'4"x6.5"x6" Surge Protector	Direct Mount (3) T-Arms	(3) 5/16" (2) 1/2" (3) 5/8" (3) 1/4"	Clearwire
-	91.0	3	Kathrein - 840 10054 - Panel			
-		3	Samsung - RASSPI-2213-RRH			
-	90.8	1	Andrew - VHLP2-18-1WH - Dish			
-	90.7	1	Andrew - VHLP800-11 - Dish			

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

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
22	90.0	3	Nokia - AAHC - MIMO - Panel	(1) Platform w/ Handrails (Site Pro F3P-10W w/HRK10)	(3) 1-1/4" Fiber (1) 1.689" Fiber (2) 1/2" Fiber	Sprint Nextel
23		3	Commscope - NNVV-65B-R4 - Panel			
24		3	ALU - 1900 Mhz - RRU			
25		6	ALU - 800 Mhz - RRU			
26		2	Andrew - VHLP2-11 - Dish			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	97.1%	59.6%	61.9%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3017.8	31.1	34.8

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

Operational Condition (Rigidity):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft.)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
90.0	Andrew - VHLP2-11 - Dish	Sprint Nextel	0.000	1.125

It is recommended that the carriers review the twist and sway values of the microwave dishes.

Conclusions

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the design ANSI/TIA/EIA 222-G standards under a basic wind speed of 101 mph no ice and 50 mph with 3/4" radial ice after the following proposed modification is successfully completed.

- Proposed modification design drawing by **TES** Job # 56931

Pre-Mod Installation Determination

We have also checked this tower to determine if the proposed Sprint Nextel equipment loading can be installed prior to the completion of the required modifications. We ran a reduced wind loading case as required by TIA-322 considering a construction period of no more than 6 months.

The tower and foundations passed, so the Carrier can proceed and install their proposed loading prior to the mods completion. Please be aware that this approval is being provided and is based on the method outlined in TIA-322. This approval is not a blanket approval and there is still a risk that the tower will experience a wind event that cannot be predicted by TIA-322 or our Engineers. In the event of an unforeseen wind event, Tower Engineering Solutions will not be liable nor responsible for damage to the tower or the Carriers equipment. Additionally, the tower cannot go beyond the 6 month construction period without the modifications being completed. If the modifications cannot be completed within 6 months from the completed installation of the Carrier's proposed equipment, TES must be notified immediately for further review.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 73.84% at 27.5ft

Structure: CT13064-A-SBA
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G
Exposure: C
Gh: 1.1

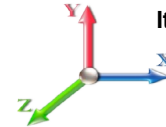
8/23/2018



Page: 1

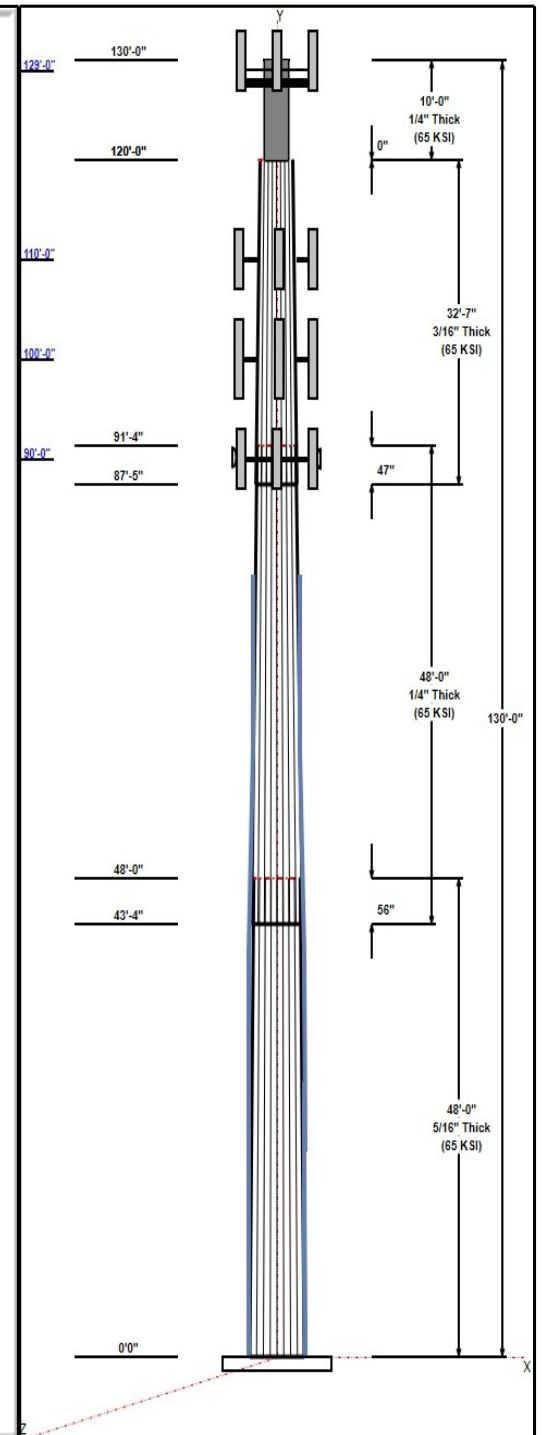
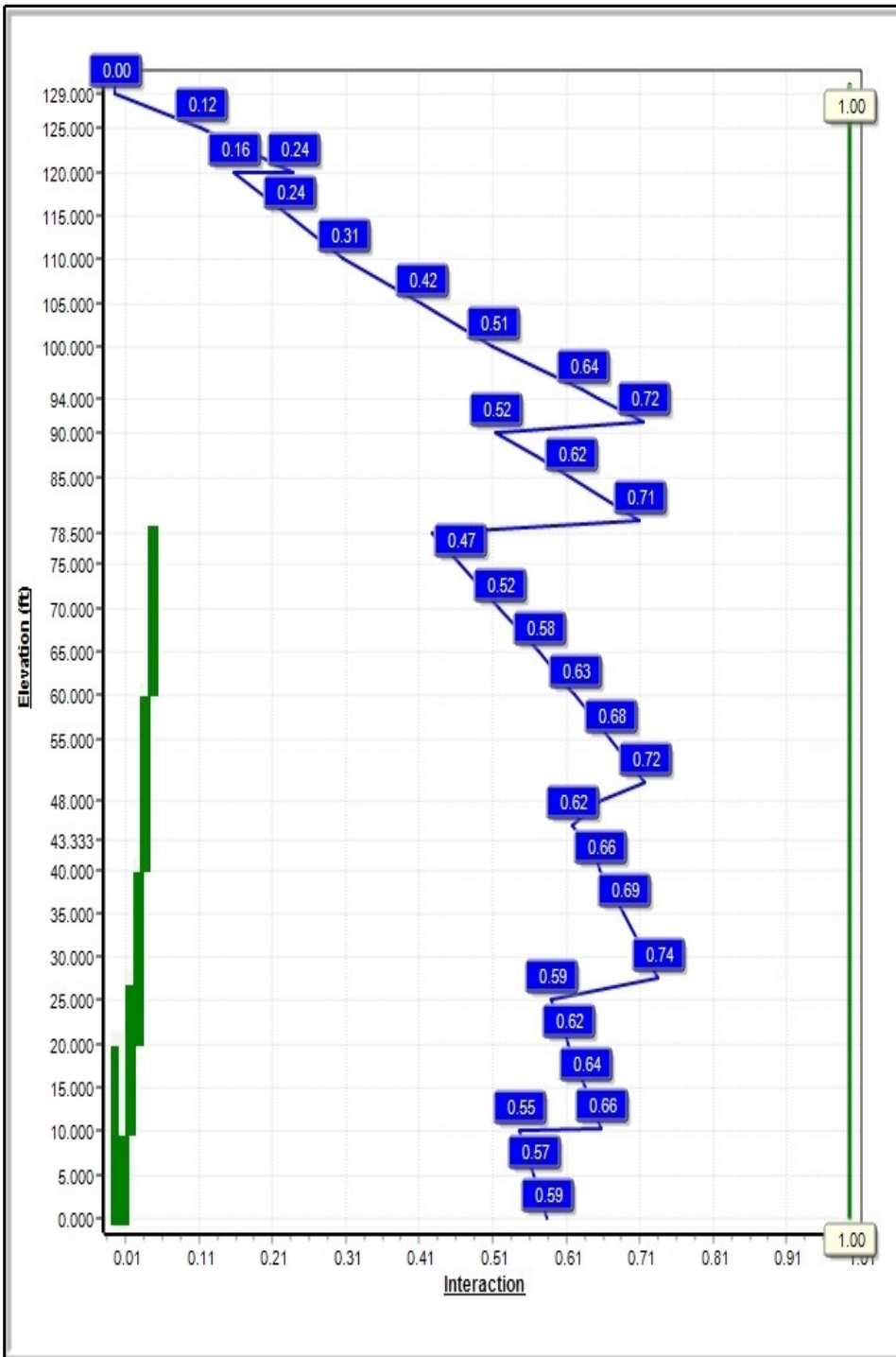
Dead Load Factor: 1.20
 Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 10 8 101 mph Wind



Iterations: 23

Copyright © 2018 by Tower Engineering Solutions, LLC. All rights reserved.



Structure: CT13064-A-SBA

Type: Custom
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

8/23/2018

Page: 2



Shaft Properties

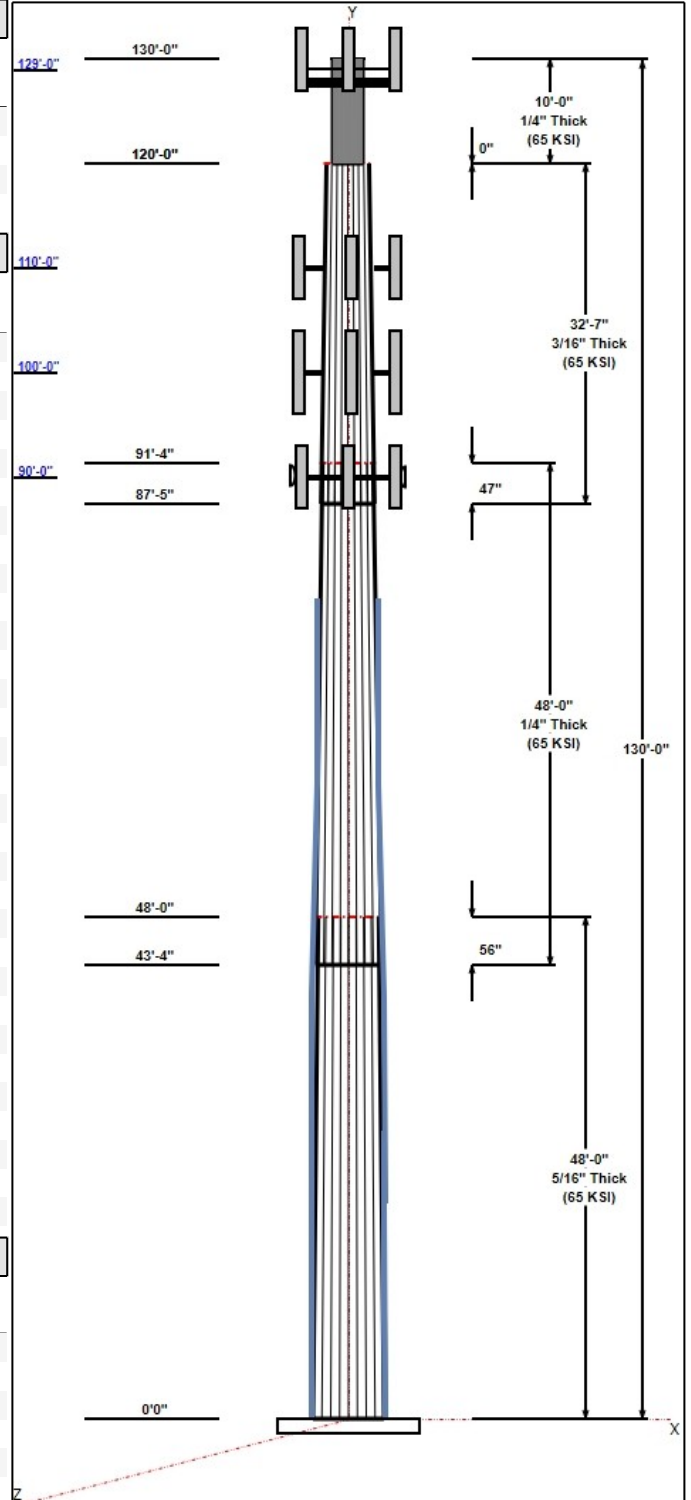
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	35.05	42.50	0.313		0.15529	65
2	48.00	28.82	36.27	0.250	Slip	0.15529	65
3	32.58	24.74	29.80	0.188	Slip	0.15529	65
4	10.00	18.00	18.00	0.250	Butt	0.00000	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
130.00	130.00	1	6' Lightning rod	T-Mobile
129.00	130.00	3	OPA-65R-LCUU-H6	AT&T
129.00	130.00	3	RRUS 32 B2	AT&T
129.00	130.00	3	QS66512-2	AT&T
129.00	130.00	3	RRUS-32	AT&T
129.00	130.00	3	RRUS 11	AT&T
129.00	130.00	2	DC6-48-60-18-8F	AT&T
129.00	130.00	3	P65-16-XLH-RR	AT&T
129.00	130.00	3	DTMABP7819VG12A	AT&T
129.00	129.00	1	MTC3607 Platform + HR &	AT&T
129.00	130.00	3	RRUS 32 b66	AT&T
110.00	111.00	3	CBC721-DF	Verizon
110.00	109.00	3	CBC721-DF	Verizon
110.00	110.00	6	SBNHH-1D65B	Verizon
110.00	110.00	3	RRH2X60-1900A-4R	Verizon
110.00	110.00	3	B13 RRH4X30-4R	Verizon
110.00	110.00	3	B4 RRH2X60-4R	Verizon
110.00	110.00	2	DB-T1-6Z-8AB-OZ	Verizon
110.00	110.00	3	T-Arm (Round)	Verizon
100.00	100.00	3	AIR 21, 1.3M, B2A B4P	T-Mobile
100.00	100.00	3	AIR 21, 1.3M, B4A B2P	T-Mobile
100.00	100.00	3	LNx-6515DS-A1M	T-Mobile
100.00	100.00	3	782 11056	T-Mobile
100.00	100.00	3	T-Arm (Round)	T-Mobile
94.00	94.00	1	1'4"x6.5"x6" Surge	Clearwire
90.00	90.00	3	AAHC	Sprint Nextel
90.00	90.00	3	NNVV-65B-R4	Sprint Nextel
90.00	90.00	1	F3P-10W	Sprint Nextel
90.00	90.00	2	Andrew - VHLP2-11	Sprint Nextel
90.00	90.00	3	ALU - 1900MHz - RRU	Sprint Nextel
90.00	90.00	6	ALU - 800 MHz - RRU	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	129.00	Inside	1 5/8" Coax	AT&T
0.00	129.00	Inside	1/2" Fiber	T-Mobile
0.00	129.00	Outside	2" Conduit	AT&T
0.00	129.00	Inside	3/4" DC	T-Mobile
0.00	110.00	Inside	1 5/8" Coax	Verizon
0.00	110.00	Inside	1 5/8" Hybrid	Verizon
0.00	100.00	Inside	1 5/8" Coax	T-Mobile
0.00	100.00	Inside	1 5/8" Hybrid	T-Mobile
0.00	90.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	90.00	Inside	1.689" Hybrid	Sprint Nextel
0.00	90.00	Inside	1/2" Fiber	Sprint Nextel



Structure: CT13064-A-SBA

Type: Custom
Site Name: Middletown 2, CT
Height: 130.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

8/23/2018

Page: 3



0.00 81.00 Outside 1" Reinforcing plate

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
14	1.5" F1554 105	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	51.8	50.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 10 8 101 mph Wind	3017.8	31.1	34.8
0.9D + 1.6W 8 101 mph Wind	2988.4	31.1	26.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	768.3	8.0	57.4
1.2D + 1.0E	159.7	1.4	34.9
0.9D + 1.0E	158.0	1.4	26.1
1.0D + 1.0W 60 mph Wind	662.2	6.9	29.0

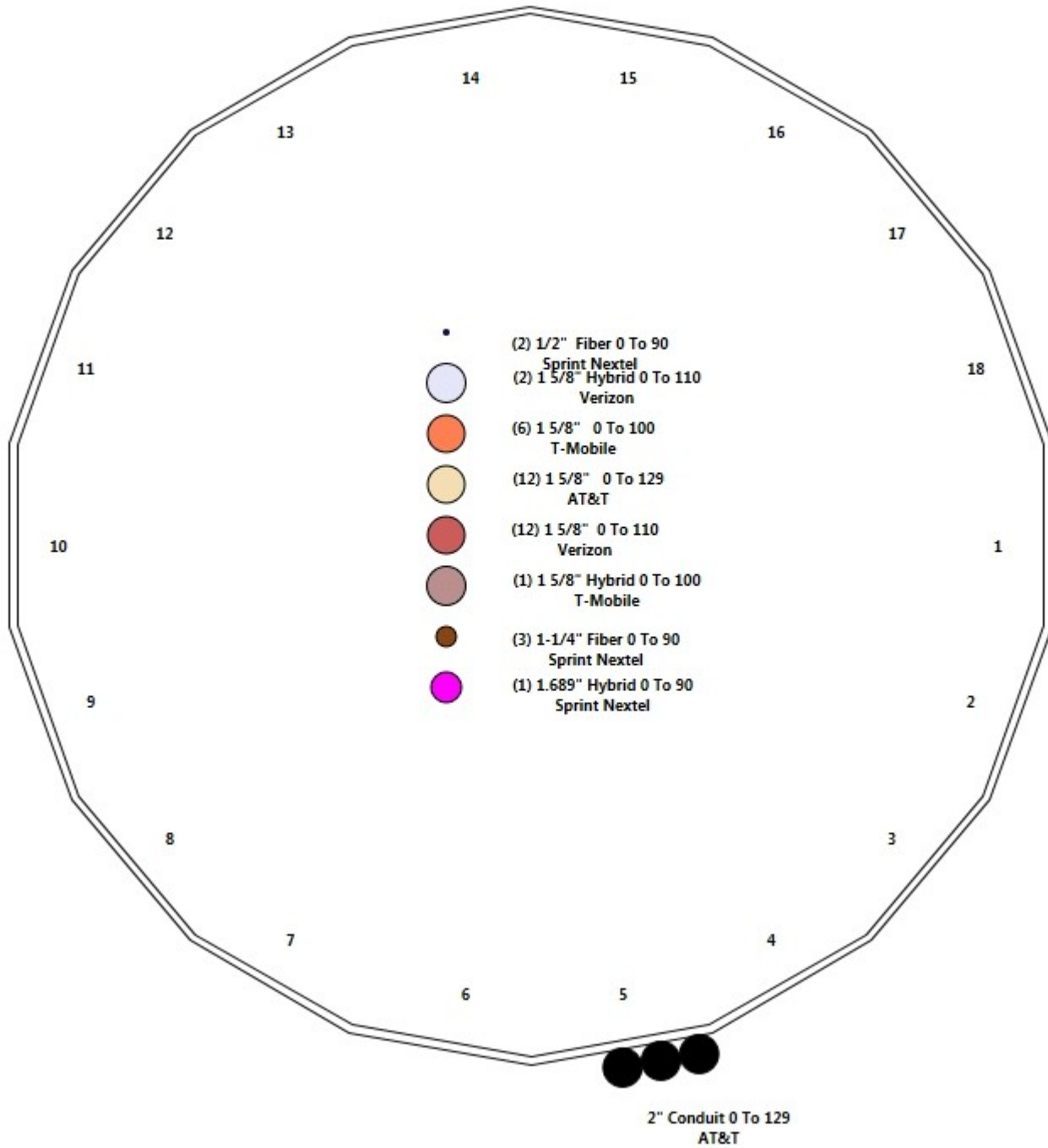
Structure: CT13064-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Middletown 2, CT
Height: 130.00 (ft)

8/23/2018



Page: 4



Shaft Properties

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (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

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.3125	65		0.00	6,231
2	18	48.000	0.2500	65	Slip	56.00	4,185
3	18	32.583	0.1875	65	Slip	47.00	1,787
4	R	10.000	0.2500	65	Flange	0.00	474
Total Shaft Weight:							12,677

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	42.50	0.00	41.84	9409.05	22.57	136.00	35.05	48.00	34.45	5250.98	18.36	112.1	0.155292
2	36.27	43.33	28.58	4685.33	24.17	145.08	28.82	91.33	22.67	2337.03	18.91	115.2	0.155292
3	29.80	87.42	17.62	1952.39	26.61	158.93	24.74	120.00	14.61	1112.84	21.86	131.9	0.155292
4	18.00	120.0	13.94	549.45	0.00	72.00	18.00	130.00	13.94	549.45	0.00	72.00	0.000000

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors		Termination Connectors			
							Spacing (in)	Description	Spacing (in)	Lower Qty	Upper Qty	
0.00	20.50	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8
0.00	10.25	4	PLT 5.5"x1 1/4" (1.25" hol	65	80	0.00	AJM20&sleeve	18.00	AJM20&sleeve	3.00	9	9
10.25	27.50	2	LNP LP6X100-G-20CT	65	80	0.00	5/8" Hollo Bolt	24.00	AJM20&sleeve	3.00	9	8
20.50	40.50	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8
40.50	60.75	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8
60.75	78.50	4	PLT 6"x1" (1.25" Hole)	65	80	0.00	AJM20&sleeve	16.00	AJM20&sleeve	3.00	8	8

Load Summary

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (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

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	130.00	6' Lightning rod	1	6.50	0.38	1.00	42.28	1.452	1.00	0.00	0.00
2	129.00	OPA-65R-LCUU-H6	3	80.00	9.66	0.77	307.71	11.005	0.77	0.00	1.00
3	129.00	RRUS 32 B2	3	77.00	3.87	0.67	124.53	2.220	0.67	0.00	1.00
4	129.00	QS66512-2	3	111.00	7.13	0.74	334.29	9.409	0.75	0.00	1.00
5	129.00	RRUS-32	3	77.00	3.87	0.70	124.53	2.220	0.71	0.00	1.00
6	129.00	RRUS 11	3	50.70	2.52	0.76	138.26	3.161	0.77	0.00	1.00
7	129.00	DC6-48-60-18-8F	2	2.77	1.47	1.00	8.07	2.159	1.00	0.00	1.00
8	129.00	P65-16-XLH-RR	3	53.00	8.16	0.78	215.58	10.921	0.78	0.00	1.00
9	129.00	DTMABP7819VG12A	3	19.20	1.14	0.60	44.34	1.898	0.62	0.00	1.00
10	129.00	MTC3607 Platform + HR & Kicker	1	2246.00	51.70	1.00	5334.86	89.384	1.00	0.00	0.00
11	129.00	RRUS 32 b66	3	77.00	3.87	0.67	124.53	2.220	0.67	0.00	1.00
12	110.00	CBC721-DF	3	4.40	0.45	0.63	13.66	0.934	0.67	0.00	1.00
13	110.00	CBC721-DF	3	4.40	0.45	0.63	13.66	0.934	0.67	0.00	-1.00
14	110.00	SBNHH-1D65B	6	40.00	8.16	0.79	235.78	9.418	0.82	0.00	0.00
15	110.00	RRH2X60-1900A-4R	3	46.00	1.88	0.67	112.46	2.446	0.68	0.00	0.00
16	110.00	B13 RRH4X30-4R	3	57.20	2.16	0.67	117.59	2.752	0.68	0.00	0.00
17	110.00	B4 RRH2X60-4R	3	55.00	3.36	0.67	138.75	4.115	0.68	0.00	0.00
18	110.00	DB-T1-6Z-8AB-0Z	2	18.90	4.80	1.00	157.48	5.645	1.00	0.00	0.00
19	110.00	T-Arm (Round)	3	350.00	8.00	0.75	586.87	14.768	0.75	0.00	0.00
20	100.00	AIR 21, 1.3M, B2A B4P	3	91.50	6.09	0.80	252.43	7.141	0.83	0.00	0.00
21	100.00	AIR 21, 1.3M, B4A B2P	3	90.40	6.09	0.80	251.33	7.141	0.83	0.00	0.00
22	100.00	LNx-6515DS-A1M	3	50.30	11.47	0.80	272.94	14.607	0.84	0.00	0.00
23	100.00	782 11056	3	1.80	0.13	0.78	4.18	0.410	0.82	0.00	0.00
24	100.00	T-Arm (Round)	3	350.00	8.00	0.75	584.62	14.704	0.75	0.00	0.00
25	94.00	1'4"x6.5"x6" Surge Protector	1	53.00	2.14	1.00	146.00	3.112	1.00	0.00	0.00
26	90.00	AAHC	3	104.00	4.20	0.75	225.70	4.987	0.75	0.00	0.00
27	90.00	NNVV-65B-R4	3	77.40	12.27	0.74	348.74	13.654	0.74	0.00	0.00
28	90.00	F3P-10W	1	2122.00	51.77	1.00	4092.60	13.582	1.00	0.00	0.00
29	90.00	Andrew - VHLP2-11	2	27.00	4.68	1.00	119.99	5.891	1.00	0.00	0.00
30	90.00	ALU - 1900MHz - RRU	3	44.00	3.80	0.67	147.73	5.121	0.69	0.00	0.00
31	90.00	ALU - 800 MHz - RRU	6	53.00	2.49	0.67	123.28	3.577	0.69	0.00	0.00
Totals:			88	10,696.74			25,794.42				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	129.00	(12) 1 5/8" Coax	0.00	Inside
0.00	129.00	(2) 1/2" Fiber	0.00	Inside
0.00	129.00	(3) 2" Conduit	2.00	Outside
0.00	129.00	(4) 3/4" DC	0.00	Inside
0.00	110.00	(12) 1 5/8" Coax	0.00	Inside
0.00	110.00	(2) 1 5/8" Hybrid	0.00	Inside
0.00	100.00	(6) 1 5/8" Coax	0.00	Inside
0.00	100.00	(1) 1 5/8" Hybrid	0.00	Inside
0.00	90.00	(3) 1-1/4" Fiber	0.00	Inside
0.00	90.00	(1) 1.689" Hybrid	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
0.00	90.00	(2) 1/2" Fiber		0.00							
0.00	81.00	(4) 1" Reinforcing plate		1.00							

Shaft Section Properties

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (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

Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00	RB1 RB2	0.3125	42.500	41.843	9409.0	22.57	136.00	65	75	0.0	51.50	14167.5	10491.3	
5.00		0.3125	41.724	41.073	8899.0	22.13	133.52	65	75	705.4	51.50	13669.8	10124.4	876.2
10.00		0.3125	40.947	40.303	8407.8	21.69	131.03	65	76	692.3	51.50	13181.0	9764.1	876.2
10.25	RT2 RB3	0.3125	40.908	40.264	8383.7	21.67	130.91	65	76	34.3	36.00	8558.5	6615.8	30.6
15.00		0.3125	40.171	39.533	7935.0	21.26	128.55	65	76	644.9	36.00	8257.2	6386.8	581.9
20.00		0.3125	39.394	38.763	7480.2	20.82	126.06	65	77	666.1	36.00	7946.0	6150.1	612.5
20.50	RT1 RB4	0.3125	39.317	38.686	7435.7	20.77	125.81	65	77	65.9	36.00	7915.2	6126.6	61.3
25.00		0.3125	38.618	37.993	7043.2	20.38	123.58	65	77	587.1	36.00	7641.0	5917.9	551.3
27.50	RT3	0.3125	38.229	37.608	6831.2	20.16	122.33	65	78	321.6	24.00	6163.9	3100.1	204.2
30.00		0.3125	37.841	37.222	6623.5	19.94	121.09	65	78	318.3	24.00	6043.0	3039.9	204.2
35.00		0.3125	37.065	36.452	6220.8	19.50	118.61	65	78	626.7	24.00	5804.7	2921.2	408.3
40.00		0.3125	36.288	35.682	5834.8	19.06	116.12	65	79	613.6	24.00	5571.2	2804.9	408.3
40.50	RT4 RB5	0.3125	36.211	35.605	5797.1	19.02	115.87	65	79	60.6	24.00	5548.1	2793.4	40.8
43.33	Bot - Section 2	0.3125	35.771	35.169	5586.6	18.77	114.47	65	79	341.2	24.00	5418.2	2728.7	231.4
45.00		0.3125	35.512	34.912	5465.1	18.63	113.64	65	79	360.2	24.00	5489.1	2763.9	136.1
48.00	Top - Section 1	0.2500	35.546	28.006	4408.2	23.66	142.18	65	74	641.8	24.00	5352.4	2695.8	245.0
50.00		0.2500	35.235	27.760	4292.8	23.44	140.94	65	74	189.8	24.00	5261.0	2648.8	163.3
55.00		0.2500	34.459	27.144	4013.3	22.89	137.84	65	74	467.1	24.00	5038.9	2538.3	408.3
60.00		0.2500	33.682	26.528	3746.2	22.35	134.73	65	75	456.6	24.00	4821.6	2430.2	408.3
60.75	RT5 RB6	0.2500	33.566	26.435	3707.2	22.26	134.26	65	75	67.6	24.00	4789.5	2414.2	61.3
65.00		0.2500	32.906	25.912	3491.2	21.80	131.62	65	76	378.5	24.00	4609.2	2324.5	347.1
70.00		0.2500	32.130	25.296	3248.0	21.25	128.52	65	76	435.6	24.00	4401.6	2221.3	408.3
75.00		0.2500	31.353	24.679	3016.5	20.70	125.41	65	77	425.1	24.00	4198.8	2120.4	408.3
78.50	RT6	0.2500	30.810	24.248	2861.1	20.32	123.24	65	78	291.4	24.00	4059.7	2051.2	285.8
80.00		0.2500	30.577	24.063	2796.1	20.16	122.31	65	78	123.3				
85.00		0.2500	29.800	23.447	2586.8	19.61	119.20	65	78	404.2				
87.42	Bot - Section 3	0.2500	29.425	23.149	2489.5	19.34	117.70	65	79	191.6				
90.00		0.2500	29.024	22.831	2388.2	19.06	116.09	65	79	356.0				
91.33	Top - Section 2	0.1875	29.192	17.260	1834.5	26.04	155.69	65	71	181.8				
94.00		0.1875	28.778	17.014	1757.1	25.65	153.48	65	71	155.5				
95.00		0.1875	28.622	16.922	1728.6	25.51	152.65	65	71	57.7				
100.00		0.1875	27.846	16.460	1590.8	24.78	148.51	65	72	284.0				
105.00		0.1875	27.069	15.997	1460.6	24.05	144.37	65	73	276.1				
110.00		0.1875	26.293	15.535	1337.6	23.32	140.23	65	74	268.2				
115.00		0.1875	25.516	15.073	1221.8	22.59	136.09	65	75	260.4				
120.00	Top - Section 3	0.1875	24.740	14.611	1112.8	21.86	131.95	65	76	252.5				
120.00	Bot - Section 4	0.2500	18.000	13.941	549.4	16.39	98.96	65	59					
125.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	237.2				
129.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	189.8				
130.00		0.2500	18.000	13.941	549.4	0.00	72.00	65	59	47.4				
Total Weight										12677.2	7959.1			

Wind Loading - Shaft

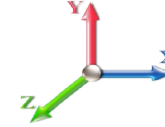
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 9

Load Case: 1.2D + 1.6W 10 8 101 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)	
0.00	RB1 RB2	1.00	0.85	21.088	23.20	334.88	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0	
5.00		1.00	0.85	21.088	23.20	328.76	0.650	0.000	5.00	17.817	11.58	429.8	0.0	846.4	
10.00		1.00	0.85	21.088	23.20	322.64	0.650	0.000	5.00	17.489	11.37	421.9	0.0	830.7	
10.25	RT2 RB3	1.00	0.85	21.088	23.20	322.34	0.650	0.000	0.25	0.866	0.56	20.9	0.0	41.1	
15.00		1.00	0.85	21.088	23.20	316.52	0.650	0.000	4.75	16.294	10.59	393.1	0.0	773.9	
20.00		1.00	0.90	22.375	24.61	319.74	0.650	0.000	5.00	16.832	10.94	430.8	0.0	799.3	
20.50	RT1 RB4	1.00	0.91	22.491	24.74	319.94	0.650	0.000	0.50	1.665	1.08	42.8	0.0	79.1	
25.00		1.00	0.95	23.451	25.80	320.89	0.650	0.000	4.50	14.838	9.64	398.1	0.0	704.5	
27.50	RT3	1.00	0.96	23.926	26.32	320.86	0.650	0.000	2.50	8.128	5.28	222.5	0.0	385.9	
30.00		1.00	0.98	24.369	26.81	320.53	0.650	0.000	2.50	8.046	5.23	224.3	0.0	381.9	
35.00		1.00	1.01	25.172	27.69	319.09	0.650	0.000	5.00	15.846	10.30	456.3	0.0	752.1	
40.00		1.00	1.04	25.890	28.48	316.82	0.650	0.000	5.00	15.518	10.09	459.6	0.0	736.4	
40.50	RT4 RB5	1.00	1.05	25.958	28.55	316.56	0.650	0.000	0.50	1.534	1.00	45.5	0.0	72.8	
43.33	Bot - Section 2	1.00	1.06	26.330	28.96	314.95	0.650	0.000	2.83	8.629	5.61	259.9	0.0	409.4	
45.00		1.00	1.07	26.540	29.19	313.91	0.650	0.000	1.67	5.097	3.31	154.8	0.0	432.3	
48.00	Top - Section 1	1.00	1.08	26.903	29.59	311.91	0.650	0.000	3.00	9.083	5.90	279.5	0.0	770.2	
50.00		1.00	1.09	27.135	29.85	314.94	0.650	0.000	2.00	5.989	3.89	185.9	0.0	227.7	
55.00		1.00	1.12	27.685	30.45	311.11	0.650	0.000	5.00	14.744	9.58	467.0	0.0	560.5	
60.00		1.00	1.14	28.197	31.02	306.90	0.650	0.000	5.00	14.415	9.37	465.0	0.0	547.9	
60.75	RT5 RB6	1.00	1.14	28.271	31.10	306.24	0.650	0.000	0.75	2.134	1.39	69.0	0.0	81.1	
65.00		1.00	1.16	28.676	31.54	302.36	0.650	0.000	4.25	11.953	7.77	392.1	0.0	454.2	
70.00		1.00	1.17	29.127	32.04	297.54	0.650	0.000	5.00	13.758	8.94	458.4	0.0	522.7	
75.00		1.00	1.19	29.553	32.51	292.46	0.650	0.000	5.00	13.430	8.73	454.0	0.0	510.2	
78.50	RT6	1.00	1.20	29.838	32.82	288.78	0.650	0.000	3.50	9.205	5.98	314.2	0.0	349.6	
80.00		1.00	1.21	29.958	32.95	287.16	0.650	0.000	1.50	3.896	2.53	133.5	0.0	148.0	
85.00		1.00	1.22	30.342	33.38	281.66	0.650	0.000	5.00	12.773	8.30	443.4	0.0	485.0	
87.42	Bot - Section 3	1.00	1.23	30.522	33.57	278.94	0.650	0.000	2.42	6.056	3.94	211.4	0.0	229.9	
90.00	Appurtenance(s)	1.00	1.24	30.710	33.78	275.98	0.650	0.000	2.58	6.470	4.21	227.3	0.0	427.1	
91.33	Top - Section 2	1.00	1.24	30.805	33.89	274.44	0.650	0.000	1.33	3.305	2.15	116.5	0.0	218.2	
94.00	Appurtenance(s)	1.00	1.25	30.992	34.09	274.89	0.650	0.000	2.67	6.540	4.25	231.9	0.0	186.6	
95.00		1.00	1.25	31.061	34.17	273.72	0.650	0.000	1.00	2.429	1.58	86.3	0.0	69.3	
100.00	Appurtenance(s)	1.00	1.27	31.399	34.54	267.73	0.650	0.000	5.00	11.946	7.76	429.1	0.0	340.8	
105.00		1.00	1.28	31.723	34.89	261.61	0.650	0.000	5.00	11.617	7.55	421.6	0.0	331.3	
110.00	Appurtenance(s)	1.00	1.29	32.035	35.24	255.35	0.650	0.000	5.00	11.289	7.34	413.7	0.0	321.9	
115.00		1.00	1.30	32.336	35.57	248.97	0.650	0.000	5.00	10.960	7.12	405.4	0.0	312.5	
120.00	Top - Section 3	1.00	1.32	32.627	35.89	242.48	0.650	0.000	5.00	10.632	6.91	396.8	0.0	303.0	
125.00		1.00	1.33	32.909	36.20	174.49	0.620 *	0.000	5.00	7.500	4.65	269.3	0.0	284.6	
129.00	Appurtenance(s)	1.00	1.34	33.128	36.44	175.07	0.620 *	0.000	4.00	6.000	3.72	216.9	0.0	227.7	
130.00	Appurtenance(s)	1.00	1.34	33.182	36.50	175.21	0.600	0.000	1.00	1.500	0.90	52.6	0.0	56.9	
Totals:									130.00			11,101.4			15,212.6

* Cf Adjusted by Linear Load Ra Effect

Discrete Appurtenance Forces

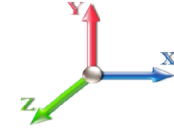
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 10

Load Case: 1.2D + 1.6W 10 8 101 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	6' Lightning rod	1	33.182	36.500	1.00	1.00	0.38	7.80	0.000	0.000	22.19	0.00	0.00
2	129.00	RRUS 11	3	33.182	36.500	0.61	0.80	4.60	182.52	0.000	1.000	268.43	0.00	268.43
3	129.00	OPA-65R-LCUU-H6	3	33.182	36.500	0.62	0.80	17.85	288.00	0.000	1.000	1042.53	0.00	1042.53
4	129.00	RRUS 32 B2	3	33.182	36.500	0.54	0.80	6.22	277.20	0.000	1.000	363.42	0.00	363.42
5	129.00	QS66512-2	3	33.182	36.500	0.59	0.80	12.66	399.60	0.000	1.000	739.51	0.00	739.51
6	129.00	RRUS-32	3	33.182	36.500	0.56	0.80	6.50	277.20	0.000	1.000	379.69	0.00	379.69
7	129.00	DC6-48-60-18-8F	2	33.182	36.500	1.00	1.00	2.94	6.65	0.000	1.000	171.69	0.00	171.69
8	129.00	P65-16-XLH-RR	3	33.182	36.500	0.62	0.80	15.28	190.80	0.000	1.000	892.08	0.00	892.08
9	129.00	DTMABP7819VG12A	3	33.182	36.500	0.48	0.80	1.64	69.12	0.000	1.000	95.87	0.00	95.87
10	129.00	MTC3607 Platform + HR &	1	33.128	36.440	1.00	1.00	51.70	2695.20	0.000	0.000	3014.36	0.00	0.00
11	129.00	RRUS 32 b66	3	33.182	36.500	0.54	0.80	6.22	277.20	0.000	1.000	363.42	0.00	363.42
12	110.00	T-Arm (Round)	3	32.035	35.238	0.56	0.75	13.50	1260.00	0.000	0.000	761.15	0.00	0.00
13	110.00	DB-T1-6Z-8AB-OZ	2	32.035	35.238	0.80	0.80	7.68	45.36	0.000	0.000	433.01	0.00	0.00
14	110.00	B4 RRH2X60-4R	3	32.035	35.238	0.54	0.80	5.40	198.00	0.000	0.000	304.62	0.00	0.00
15	110.00	B13 RRH4X30-4R	3	32.035	35.238	0.54	0.80	3.47	205.92	0.000	0.000	195.83	0.00	0.00
16	110.00	RRH2X60-1900A-4R	3	32.035	35.238	0.54	0.80	3.02	165.60	0.000	0.000	170.44	0.00	0.00
17	110.00	CBC721-DF	3	31.973	35.171	0.50	0.80	0.68	15.84	0.000	-1.000	38.29	0.00	-38.29
18	110.00	CBC721-DF	3	32.096	35.306	0.50	0.80	0.68	15.84	0.000	1.000	38.44	0.00	38.44
19	110.00	SBNHH-1D65B	6	32.035	35.238	0.63	0.80	30.94	288.00	0.000	0.000	1744.59	0.00	0.00
20	100.00	LNx-6515DS-A1M	3	31.399	34.538	0.64	0.80	22.02	181.08	0.000	0.000	1216.99	0.00	0.00
21	100.00	AIR 21, 1.3M, B4A B2P	3	31.399	34.538	0.64	0.80	11.69	325.44	0.000	0.000	646.16	0.00	0.00
22	100.00	AIR 21, 1.3M, B2A B4P	3	31.399	34.538	0.64	0.80	11.69	329.40	0.000	0.000	646.16	0.00	0.00
23	100.00	782 11056	3	31.399	34.538	0.62	0.80	0.24	6.48	0.000	0.000	13.45	0.00	0.00
24	100.00	T-Arm (Round)	3	31.399	34.538	0.56	0.75	13.50	1260.00	0.000	0.000	746.03	0.00	0.00
25	94.00	1'4"x6.5"x6" Surge	1	30.992	34.091	0.80	0.80	1.71	63.60	0.000	0.000	93.38	0.00	0.00
26	90.00	ALU - 800 MHz - RRU	6	30.710	33.781	0.50	0.75	7.51	381.60	0.000	0.000	405.77	0.00	0.00
27	90.00	ALU - 1900MHz - RRU	3	30.710	33.781	0.50	0.75	5.73	158.40	0.000	0.000	309.62	0.00	0.00
28	90.00	Andrew - VHLP2-11	2	30.710	33.781	1.00	1.00	9.36	64.80	0.000	0.000	505.90	0.00	0.00
29	90.00	F3P-10W	1	30.710	33.781	1.00	1.00	51.77	2546.40	0.000	0.000	2798.12	0.00	0.00
30	90.00	NNVV-65B-R4	3	30.710	33.781	0.55	0.75	20.43	278.64	0.000	0.000	1104.20	0.00	0.00
31	90.00	AAHC	3	30.710	33.781	0.56	0.75	7.09	374.40	0.000	0.000	383.07	0.00	0.00

Totals: 12,836.09

19,908.42

Total Applied Force Summary

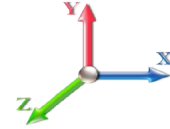
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 11

Load Case: 1.2D + 1.6W 10 8 101 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		429.83	1154.07	0.00	0.00
10.00		421.90	1138.35	0.00	0.00
10.25		20.89	56.50	0.00	0.00
15.00		393.09	1066.12	0.00	0.00
20.00		430.84	1106.90	0.00	0.00
20.50		42.84	109.83	0.00	0.00
25.00		398.07	981.35	0.00	0.00
27.50		222.49	539.69	0.00	0.00
30.00		224.31	535.76	0.00	0.00
35.00		456.32	1059.73	0.00	0.00
40.00		459.60	1044.01	0.00	0.00
40.50		45.54	103.54	0.00	0.00
43.33		259.92	583.73	0.00	0.00
45.00		154.76	534.83	0.00	0.00
48.00		279.54	954.76	0.00	0.00
50.00		185.93	350.77	0.00	0.00
55.00		466.96	868.11	0.00	0.00
60.00		465.00	855.53	0.00	0.00
60.75		69.02	127.24	0.00	0.00
65.00		392.12	715.71	0.00	0.00
70.00		458.44	830.37	0.00	0.00
75.00		454.04	817.79	0.00	0.00
78.50		314.22	564.97	0.00	0.00
80.00		133.52	240.24	0.00	0.00
85.00		443.36	763.84	0.00	0.00
87.42		211.45	361.20	0.00	0.00
90.00	(18) attachments	5734.00	4371.73	0.00	0.00
91.33		116.48	283.91	0.00	0.00
94.00	(1) attachments	325.27	381.69	0.00	0.00
95.00		86.30	118.59	0.00	0.00
100.00	(15) attachments	3697.87	2689.71	0.00	0.00
105.00		421.60	533.83	0.00	0.00
110.00	(26) attachments	4100.08	2718.96	0.00	0.15
115.00		405.44	426.88	0.00	0.00
120.00		396.83	417.45	0.00	0.00
125.00		269.33	399.05	0.00	0.00
129.00	(27) attachments	7547.90	4982.72	0.00	4316.65
130.00	(1) attachments	74.75	64.73	0.00	0.00
Totals:		31,009.82	34,854.19	0.00	4,316.79

Linear Appurtenance Segment Forces (Factored)

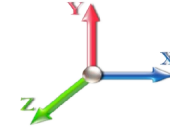
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 12

Load Case: 1.2D + 1.6W 10 8 101 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.070	0.000	21.088	0.00	28.98
5.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.070	0.000	21.088	0.00	36.00
10.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.071	0.000	21.088	0.00	28.98
10.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.071	0.000	21.088	0.00	36.00
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.072	0.000	21.088	0.00	1.45
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.072	0.000	21.088	0.00	1.80
15.00	2" Conduit	Yes	4.75	0.000	2.00	0.79	0.00	0.073	0.000	21.088	0.00	27.53
15.00	1" Reinforcing plate	Yes	4.75	0.000	1.00	0.40	0.00	0.073	0.000	21.088	0.00	34.20
20.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	22.375	0.00	28.98
20.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.074	0.000	22.375	0.00	36.00
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.075	0.000	22.491	0.00	2.90
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.075	0.000	22.491	0.00	3.60
25.00	2" Conduit	Yes	4.50	0.000	2.00	0.75	0.00	0.076	0.000	23.451	0.00	26.08
25.00	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.076	0.000	23.451	0.00	32.40
27.50	2" Conduit	Yes	2.50	0.000	2.00	0.42	0.00	0.077	0.000	23.926	0.00	14.49
27.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.077	0.000	23.926	0.00	18.00
30.00	2" Conduit	Yes	2.50	0.000	2.00	0.42	0.00	0.078	0.000	24.369	0.00	14.49
30.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.078	0.000	24.369	0.00	18.00
35.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.079	0.000	25.172	0.00	28.98
35.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.079	0.000	25.172	0.00	36.00
40.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.081	0.000	25.890	0.00	28.98
40.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.081	0.000	25.890	0.00	36.00
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.082	0.000	25.958	0.00	2.90
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.082	0.000	25.958	0.00	3.60
43.33	2" Conduit	Yes	2.83	0.000	2.00	0.47	0.00	0.082	0.000	26.330	0.00	16.42
43.33	1" Reinforcing plate	Yes	2.83	0.000	1.00	0.24	0.00	0.082	0.000	26.330	0.00	20.40
45.00	2" Conduit	Yes	1.67	0.000	2.00	0.28	0.00	0.083	0.000	26.540	0.00	9.66
45.00	1" Reinforcing plate	Yes	1.67	0.000	1.00	0.14	0.00	0.083	0.000	26.540	0.00	12.00
48.00	2" Conduit	Yes	3.00	0.000	2.00	0.50	0.00	0.084	0.000	26.903	0.00	17.39
48.00	1" Reinforcing plate	Yes	3.00	0.000	1.00	0.25	0.00	0.084	0.000	26.903	0.00	21.60
50.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.083	0.000	27.135	0.00	11.59
50.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.083	0.000	27.135	0.00	14.40
55.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.085	0.000	27.685	0.00	28.98
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.085	0.000	27.685	0.00	36.00
60.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.087	0.000	28.197	0.00	28.98
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.087	0.000	28.197	0.00	36.00
60.75	2" Conduit	Yes	0.75	0.000	2.00	0.13	0.00	0.088	0.000	28.271	0.00	4.35
60.75	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.088	0.000	28.271	0.00	5.40
65.00	2" Conduit	Yes	4.25	0.000	2.00	0.71	0.00	0.089	0.000	28.676	0.00	24.63
65.00	1" Reinforcing plate	Yes	4.25	0.000	1.00	0.35	0.00	0.089	0.000	28.676	0.00	30.60
70.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.091	0.000	29.127	0.00	28.98
70.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.091	0.000	29.127	0.00	36.00
75.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.093	0.000	29.553	0.00	28.98
75.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.093	0.000	29.553	0.00	36.00
78.50	2" Conduit	Yes	3.50	0.000	2.00	0.58	0.00	0.095	0.000	29.838	0.00	20.29
78.50	1" Reinforcing plate	Yes	3.50	0.000	1.00	0.29	0.00	0.095	0.000	29.838	0.00	25.20
80.00	2" Conduit	Yes	1.50	0.000	2.00	0.25	0.00	0.096	0.000	29.958	0.00	8.69

Linear Appurtenance Segment Forces (Factored)

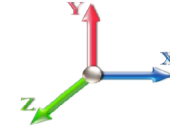
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 13

Load Case: 1.2D + 1.6W 10 8 101 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
80.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.096	0.000	29.958	0.00	10.80
85.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.072	0.000	30.342	0.00	28.98
85.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.072	0.000	30.342	0.00	7.20
87.42	2" Conduit	Yes	2.42	0.000	2.00	0.40	0.00	0.067	0.000	30.522	0.00	14.01
90.00	2" Conduit	Yes	2.58	0.000	2.00	0.43	0.00	0.067	0.000	30.710	0.00	14.97
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.068	0.000	30.805	0.00	7.73
94.00	2" Conduit	Yes	2.67	0.000	2.00	0.44	0.00	0.068	0.000	30.992	0.00	15.46
95.00	2" Conduit	Yes	1.00	0.000	2.00	0.17	0.00	0.069	0.000	31.061	0.00	5.80
100.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.070	0.000	31.399	0.00	28.98
105.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.072	0.000	31.723	0.00	28.98
110.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	32.035	0.00	28.98
115.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.076	0.000	32.336	0.00	28.98
120.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.078	0.000	32.627	0.00	28.98
125.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.111	1.033	32.909	0.00	28.98
129.00	2" Conduit	Yes	4.00	0.000	2.00	0.67	0.00	0.111	1.033	33.128	0.00	23.18
Totals:											0.0	1,330.9

Calculated Forces

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

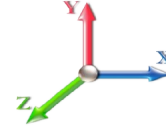


Page: 14

Load Case: 1.2D + 1.6W 10 8 101 mph Wind

Iterations 23

Dead Load Factor 1.20
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.80	-31.07	0.00	-3017.7	0.00	3017.77	2818.94	1409.47	4888.80	2448.04	0.00	0.000	0.000	0.589
5.00	-33.53	-30.77	0.00	-2862.4	0.00	2862.40	2786.10	1393.05	4742.28	2374.66	0.11	-0.210	0.000	0.570
10.00	-32.34	-30.40	0.00	-2708.5	0.00	2708.58	2752.56	1376.28	4596.67	2301.75	0.44	-0.418	0.000	0.550
10.25	-32.21	-30.45	0.00	-2700.9	0.00	2700.98	2750.86	1375.43	4589.41	2298.12	0.47	-0.429	0.000	0.663
15.00	-31.03	-30.18	0.00	-2556.3	0.00	2556.36	2718.29	1359.15	4452.05	2229.33	1.01	-0.666	0.000	0.641
20.00	-29.85	-29.80	0.00	-2405.4	0.00	2405.48	2683.32	1341.66	4308.48	2157.44	1.84	-0.912	0.000	0.617
20.50	-29.68	-29.82	0.00	-2390.5	0.00	2390.58	2679.78	1339.89	4294.19	2150.28	1.94	-0.937	0.000	0.615
25.00	-28.62	-29.49	0.00	-2256.4	0.00	2256.40	2647.62	1323.81	4166.04	2086.12	2.93	-1.156	0.000	0.593
27.50	-28.02	-29.32	0.00	-2182.6	0.00	2182.68	2629.51	1314.76	4095.27	2050.68	3.57	-1.277	0.000	0.738
30.00	-27.37	-29.19	0.00	-2109.3	0.00	2109.38	2611.22	1305.61	4024.80	2015.39	4.28	-1.431	0.000	0.723
35.00	-26.17	-28.84	0.00	-1963.4	0.00	1963.42	2574.10	1287.05	3884.82	1945.30	5.93	-1.730	0.000	0.693
40.00	-25.07	-28.42	0.00	-1819.2	0.00	1819.21	2536.26	1268.13	3746.17	1875.87	7.90	-2.024	0.000	0.661
40.50	-24.92	-28.41	0.00	-1805.0	0.00	1805.00	2532.44	1266.22	3732.38	1868.96	8.12	-2.054	0.000	0.657
43.33	-24.28	-28.19	0.00	-1724.4	0.00	1724.49	2510.64	1255.32	3654.51	1829.97	9.39	-2.219	0.000	0.639
45.00	-23.68	-28.07	0.00	-1677.5	0.00	1677.51	2497.71	1248.86	3608.92	1807.14	10.18	-2.316	0.000	0.622
48.00	-22.67	-27.80	0.00	-1593.3	0.00	1593.31	1854.44	927.22	2691.60	1347.80	11.69	-2.486	0.000	0.662
50.00	-22.23	-27.68	0.00	-1537.7	0.00	1537.71	1844.56	922.28	2653.53	1328.74	12.75	-2.598	0.000	0.722
55.00	-21.25	-27.28	0.00	-1399.2	0.00	1399.29	1819.35	909.68	2558.78	1281.29	15.63	-2.898	0.000	0.675
60.00	-20.34	-26.83	0.00	-1262.8	0.00	1262.87	1793.44	896.72	2464.66	1234.16	18.82	-3.187	0.000	0.627
60.75	-20.15	-26.81	0.00	-1242.7	0.00	1242.75	1789.49	894.74	2450.61	1227.12	19.33	-3.230	0.000	0.619
65.00	-19.35	-26.46	0.00	-1128.8	0.00	1128.82	1766.81	883.40	2371.26	1187.39	22.31	-3.464	0.000	0.576
70.00	-18.43	-26.03	0.00	-996.54	0.00	996.54	1739.46	869.73	2278.63	1141.01	26.08	-3.724	0.000	0.524
75.00	-17.56	-25.58	0.00	-866.40	0.00	866.40	1711.40	855.70	2186.84	1095.05	30.10	-3.965	0.000	0.470
78.50	-16.97	-25.26	0.00	-776.87	0.00	776.87	1691.33	845.67	2123.13	1063.14	33.07	-4.125	0.000	0.431
78.50	-16.97	-25.26	0.00	-776.87	0.00	776.87	1691.33	845.67	2123.13	1063.14	33.07	-4.125	0.000	0.431
80.00	-16.64	-25.17	0.00	-738.97	0.00	738.97	1682.63	841.31	2095.97	1049.54	34.37	-4.190	0.000	0.715
85.00	-15.81	-24.74	0.00	-613.12	0.00	613.12	1653.14	826.57	2006.08	1004.53	38.95	-4.534	0.000	0.621
87.42	-15.40	-24.54	0.00	-553.33	0.00	553.33	1638.63	819.32	1963.01	982.97	41.28	-4.689	0.000	0.573
90.00	-11.49	-18.49	0.00	-489.93	0.00	489.93	1622.94	811.47	1917.25	960.05	43.86	-4.843	0.000	0.518
91.33	-11.18	-18.37	0.00	-465.28	0.00	465.28	1099.39	549.70	1312.06	657.00	45.22	-4.919	0.000	0.719
94.00	-10.79	-18.03	0.00	-416.30	0.00	416.30	1090.71	545.35	1282.99	642.45	48.01	-5.062	0.000	0.659
95.00	-10.62	-17.97	0.00	-398.27	0.00	398.27	1087.40	543.70	1272.11	637.00	49.08	-5.128	0.000	0.636
100.00	-8.22	-14.08	0.00	-308.43	0.00	308.43	1070.43	535.22	1217.83	609.82	54.60	-5.419	0.000	0.514
105.00	-7.68	-13.64	0.00	-238.05	0.00	238.05	1052.74	526.37	1163.86	582.80	60.40	-5.663	0.000	0.416
110.00	-5.36	-9.30	0.00	-169.87	0.00	169.87	1034.34	517.17	1110.26	555.96	66.44	-5.862	0.000	0.311
115.00	-4.95	-8.86	0.00	-123.38	0.00	123.38	1015.23	507.62	1057.10	529.34	72.65	-6.018	0.000	0.238
120.00	-4.57	-8.43	0.00	-79.06	0.00	79.06	995.40	497.70	1004.45	502.97	79.01	-6.136	0.000	0.162
120.00	-4.57	-8.43	0.00	-79.06	0.00	79.06	735.22	367.61	535.89	335.79	79.01	-6.136	0.000	0.242
125.00	-4.19	-8.13	0.00	-36.90	0.00	36.90	735.22	367.61	535.89	335.79	85.47	-6.210	0.000	0.116
129.00	-0.06	-0.08	0.00	-0.08	0.00	0.08	735.22	367.61	535.89	335.79	90.69	-6.253	0.000	0.000
130.00	0.00	-0.07	0.00	0.00	0.00	0.00	735.22	367.61	535.89	335.79	91.99	-6.253	0.000	0.000

Wind Loading - Shaft

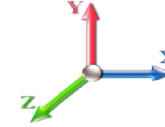
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 15

Load Case: 0.9D + 1.6W 8 101 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	21.088	23.20	334.88	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	328.76	0.650	0.000	5.00	17.817	11.58	429.8	0.0	634.8
10.00		1.00	0.85	21.088	23.20	322.64	0.650	0.000	5.00	17.489	11.37	421.9	0.0	623.0
10.25	RT2 RB3	1.00	0.85	21.088	23.20	322.34	0.650	0.000	0.25	0.866	0.56	20.9	0.0	30.8
15.00		1.00	0.85	21.088	23.20	316.52	0.650	0.000	4.75	16.294	10.59	393.1	0.0	580.4
20.00		1.00	0.90	22.375	24.61	319.74	0.650	0.000	5.00	16.832	10.94	430.8	0.0	599.5
20.50	RT1 RB4	1.00	0.91	22.491	24.74	319.94	0.650	0.000	0.50	1.665	1.08	42.8	0.0	59.3
25.00		1.00	0.95	23.451	25.80	320.89	0.650	0.000	4.50	14.838	9.64	398.1	0.0	528.4
27.50	RT3	1.00	0.96	23.926	26.32	320.86	0.650	0.000	2.50	8.128	5.28	222.5	0.0	289.4
30.00		1.00	0.98	24.369	26.81	320.53	0.650	0.000	2.50	8.046	5.23	224.3	0.0	286.5
35.00		1.00	1.01	25.172	27.69	319.09	0.650	0.000	5.00	15.846	10.30	456.3	0.0	564.1
40.00		1.00	1.04	25.890	28.48	316.82	0.650	0.000	5.00	15.518	10.09	459.6	0.0	552.3
40.50	RT4 RB5	1.00	1.05	25.958	28.55	316.56	0.650	0.000	0.50	1.534	1.00	45.5	0.0	54.6
43.33	Bot - Section 2	1.00	1.06	26.330	28.96	314.95	0.650	0.000	2.83	8.629	5.61	259.9	0.0	307.1
45.00		1.00	1.07	26.540	29.19	313.91	0.650	0.000	1.67	5.097	3.31	154.8	0.0	324.2
48.00	Top - Section 1	1.00	1.08	26.903	29.59	311.91	0.650	0.000	3.00	9.083	5.90	279.5	0.0	577.6
50.00		1.00	1.09	27.135	29.85	314.94	0.650	0.000	2.00	5.989	3.89	185.9	0.0	170.8
55.00		1.00	1.12	27.685	30.45	311.11	0.650	0.000	5.00	14.744	9.58	467.0	0.0	420.4
60.00		1.00	1.14	28.197	31.02	306.90	0.650	0.000	5.00	14.415	9.37	465.0	0.0	410.9
60.75	RT5 RB6	1.00	1.14	28.271	31.10	306.24	0.650	0.000	0.75	2.134	1.39	69.0	0.0	60.8
65.00		1.00	1.16	28.676	31.54	302.36	0.650	0.000	4.25	11.953	7.77	392.1	0.0	340.7
70.00		1.00	1.17	29.127	32.04	297.54	0.650	0.000	5.00	13.758	8.94	458.4	0.0	392.1
75.00		1.00	1.19	29.553	32.51	292.46	0.650	0.000	5.00	13.430	8.73	454.0	0.0	382.6
78.50	RT6	1.00	1.20	29.838	32.82	288.78	0.650	0.000	3.50	9.205	5.98	314.2	0.0	262.2
80.00		1.00	1.21	29.958	32.95	287.16	0.650	0.000	1.50	3.896	2.53	133.5	0.0	111.0
85.00		1.00	1.22	30.342	33.38	281.66	0.650	0.000	5.00	12.773	8.30	443.4	0.0	363.8
87.42	Bot - Section 3	1.00	1.23	30.522	33.57	278.94	0.650	0.000	2.42	6.056	3.94	211.4	0.0	172.4
90.00	Appurtenance(s)	1.00	1.24	30.710	33.78	275.98	0.650	0.000	2.58	6.470	4.21	227.3	0.0	320.4
91.33	Top - Section 2	1.00	1.24	30.805	33.89	274.44	0.650	0.000	1.33	3.305	2.15	116.5	0.0	163.6
94.00	Appurtenance(s)	1.00	1.25	30.992	34.09	274.89	0.650	0.000	2.67	6.540	4.25	231.9	0.0	140.0
95.00		1.00	1.25	31.061	34.17	273.72	0.650	0.000	1.00	2.429	1.58	86.3	0.0	52.0
100.00	Appurtenance(s)	1.00	1.27	31.399	34.54	267.73	0.650	0.000	5.00	11.946	7.76	429.1	0.0	255.6
105.00		1.00	1.28	31.723	34.89	261.61	0.650	0.000	5.00	11.617	7.55	421.6	0.0	248.5
110.00	Appurtenance(s)	1.00	1.29	32.035	35.24	255.35	0.650	0.000	5.00	11.289	7.34	413.7	0.0	241.4
115.00		1.00	1.30	32.336	35.57	248.97	0.650	0.000	5.00	10.960	7.12	405.4	0.0	234.3
120.00	Top - Section 3	1.00	1.32	32.627	35.89	242.48	0.650	0.000	5.00	10.632	6.91	396.8	0.0	227.3
125.00		1.00	1.33	32.909	36.20	174.49	0.620 *	0.000	5.00	7.500	4.65	269.3	0.0	213.5
129.00	Appurtenance(s)	1.00	1.34	33.128	36.44	175.07	0.620 *	0.000	4.00	6.000	3.72	216.9	0.0	170.8
130.00	Appurtenance(s)	1.00	1.34	33.182	36.50	175.21	0.600	0.000	1.00	1.500	0.90	52.6	0.0	42.7
Totals:									130.00			11,101.4		11,409.5

* Cf Adjusted by Linear Load Ra Effect

Discrete Appurtenance Forces

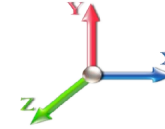
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 16

Load Case: 0.9D + 1.6W 8 101 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	6' Lightning rod	1	33.182	36.500	1.00	1.00	0.38	5.85	0.000	0.000	22.19	0.00	0.00
2	129.00	RRUS 11	3	33.182	36.500	0.61	0.80	4.60	136.89	0.000	1.000	268.43	0.00	268.43
3	129.00	OPA-65R-LCUU-H6	3	33.182	36.500	0.62	0.80	17.85	216.00	0.000	1.000	1042.53	0.00	1042.53
4	129.00	RRUS 32 B2	3	33.182	36.500	0.54	0.80	6.22	207.90	0.000	1.000	363.42	0.00	363.42
5	129.00	QS66512-2	3	33.182	36.500	0.59	0.80	12.66	299.70	0.000	1.000	739.51	0.00	739.51
6	129.00	RRUS-32	3	33.182	36.500	0.56	0.80	6.50	207.90	0.000	1.000	379.69	0.00	379.69
7	129.00	DC6-48-60-18-8F	2	33.182	36.500	1.00	1.00	2.94	4.99	0.000	1.000	171.69	0.00	171.69
8	129.00	P65-16-XLH-RR	3	33.182	36.500	0.62	0.80	15.28	143.10	0.000	1.000	892.08	0.00	892.08
9	129.00	DTMABP7819VG12A	3	33.182	36.500	0.48	0.80	1.64	51.84	0.000	1.000	95.87	0.00	95.87
10	129.00	MTC3607 Platform + HR &	1	33.128	36.440	1.00	1.00	51.70	2021.40	0.000	0.000	3014.36	0.00	0.00
11	129.00	RRUS 32 b66	3	33.182	36.500	0.54	0.80	6.22	207.90	0.000	1.000	363.42	0.00	363.42
12	110.00	T-Arm (Round)	3	32.035	35.238	0.56	0.75	13.50	945.00	0.000	0.000	761.15	0.00	0.00
13	110.00	DB-T1-6Z-8AB-OZ	2	32.035	35.238	0.80	0.80	7.68	34.02	0.000	0.000	433.01	0.00	0.00
14	110.00	B4 RRH2X60-4R	3	32.035	35.238	0.54	0.80	5.40	148.50	0.000	0.000	304.62	0.00	0.00
15	110.00	B13 RRH4X30-4R	3	32.035	35.238	0.54	0.80	3.47	154.44	0.000	0.000	195.83	0.00	0.00
16	110.00	RRH2X60-1900A-4R	3	32.035	35.238	0.54	0.80	3.02	124.20	0.000	0.000	170.44	0.00	0.00
17	110.00	CBC721-DF	3	31.973	35.171	0.50	0.80	0.68	11.88	0.000	-1.000	38.29	0.00	-38.29
18	110.00	CBC721-DF	3	32.096	35.306	0.50	0.80	0.68	11.88	0.000	1.000	38.44	0.00	38.44
19	110.00	SBNHH-1D65B	6	32.035	35.238	0.63	0.80	30.94	216.00	0.000	0.000	1744.59	0.00	0.00
20	100.00	LNx-6515DS-A1M	3	31.399	34.538	0.64	0.80	22.02	135.81	0.000	0.000	1216.99	0.00	0.00
21	100.00	AIR 21, 1.3M, B4A B2P	3	31.399	34.538	0.64	0.80	11.69	244.08	0.000	0.000	646.16	0.00	0.00
22	100.00	AIR 21, 1.3M, B2A B4P	3	31.399	34.538	0.64	0.80	11.69	247.05	0.000	0.000	646.16	0.00	0.00
23	100.00	782 11056	3	31.399	34.538	0.62	0.80	0.24	4.86	0.000	0.000	13.45	0.00	0.00
24	100.00	T-Arm (Round)	3	31.399	34.538	0.56	0.75	13.50	945.00	0.000	0.000	746.03	0.00	0.00
25	94.00	1'4"x6.5"x6" Surge	1	30.992	34.091	0.80	0.80	1.71	47.70	0.000	0.000	93.38	0.00	0.00
26	90.00	ALU - 800 MHz - RRU	6	30.710	33.781	0.50	0.75	7.51	286.20	0.000	0.000	405.77	0.00	0.00
27	90.00	ALU - 1900MHz - RRU	3	30.710	33.781	0.50	0.75	5.73	118.80	0.000	0.000	309.62	0.00	0.00
28	90.00	Andrew - VHLP2-11	2	30.710	33.781	1.00	1.00	9.36	48.60	0.000	0.000	505.90	0.00	0.00
29	90.00	F3P-10W	1	30.710	33.781	1.00	1.00	51.77	1909.80	0.000	0.000	2798.12	0.00	0.00
30	90.00	NNVV-65B-R4	3	30.710	33.781	0.55	0.75	20.43	208.98	0.000	0.000	1104.20	0.00	0.00
31	90.00	AAHC	3	30.710	33.781	0.56	0.75	7.09	280.80	0.000	0.000	383.07	0.00	0.00

Totals: 9,627.07 19,908.42

Total Applied Force Summary

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

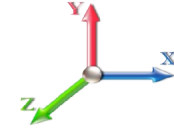


Page: 17

Load Case: 0.9D + 1.6W 8 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		429.83	865.55	0.00	0.00
10.00		421.90	853.76	0.00	0.00
10.25		20.89	42.38	0.00	0.00
15.00		393.09	799.59	0.00	0.00
20.00		430.84	830.17	0.00	0.00
20.50		42.84	82.37	0.00	0.00
25.00		398.07	736.01	0.00	0.00
27.50		222.49	404.77	0.00	0.00
30.00		224.31	401.82	0.00	0.00
35.00		456.32	794.80	0.00	0.00
40.00		459.60	783.00	0.00	0.00
40.50		45.54	77.65	0.00	0.00
43.33		259.92	437.80	0.00	0.00
45.00		154.76	401.12	0.00	0.00
48.00		279.54	716.07	0.00	0.00
50.00		185.93	263.07	0.00	0.00
55.00		466.96	651.08	0.00	0.00
60.00		465.00	641.65	0.00	0.00
60.75		69.02	95.43	0.00	0.00
65.00		392.12	536.78	0.00	0.00
70.00		458.44	622.78	0.00	0.00
75.00		454.04	613.34	0.00	0.00
78.50		314.22	423.73	0.00	0.00
80.00		133.52	180.18	0.00	0.00
85.00		443.36	572.88	0.00	0.00
87.42		211.45	270.90	0.00	0.00
90.00	(18) attachments	5734.00	3278.80	0.00	0.00
91.33		116.48	212.93	0.00	0.00
94.00	(1) attachments	325.27	286.27	0.00	0.00
95.00		86.30	88.95	0.00	0.00
100.00	(15) attachments	3697.87	2017.28	0.00	0.00
105.00		421.60	400.37	0.00	0.00
110.00	(26) attachments	4100.08	2039.22	0.00	0.15
115.00		405.44	320.16	0.00	0.00
120.00		396.83	313.09	0.00	0.00
125.00		269.33	299.28	0.00	0.00
129.00	(27) attachments	7547.90	3737.04	0.00	4316.65
130.00	(1) attachments	74.75	48.54	0.00	0.00
Totals:		31,009.82	26,140.64	0.00	4,316.79

Linear Appurtenance Segment Forces (Factored)

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (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: 0.9D + 1.6W 8 101 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.070	0.000	21.088	0.00	21.74
5.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.070	0.000	21.088	0.00	27.00
10.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.071	0.000	21.088	0.00	21.74
10.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.071	0.000	21.088	0.00	27.00
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.072	0.000	21.088	0.00	1.09
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.072	0.000	21.088	0.00	1.35
15.00	2" Conduit	Yes	4.75	0.000	2.00	0.79	0.00	0.073	0.000	21.088	0.00	20.65
15.00	1" Reinforcing plate	Yes	4.75	0.000	1.00	0.40	0.00	0.073	0.000	21.088	0.00	25.65
20.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	22.375	0.00	21.74
20.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.074	0.000	22.375	0.00	27.00
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.075	0.000	22.491	0.00	2.17
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.075	0.000	22.491	0.00	2.70
25.00	2" Conduit	Yes	4.50	0.000	2.00	0.75	0.00	0.076	0.000	23.451	0.00	19.56
25.00	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.076	0.000	23.451	0.00	24.30
27.50	2" Conduit	Yes	2.50	0.000	2.00	0.42	0.00	0.077	0.000	23.926	0.00	10.87
27.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.077	0.000	23.926	0.00	13.50
30.00	2" Conduit	Yes	2.50	0.000	2.00	0.42	0.00	0.078	0.000	24.369	0.00	10.87
30.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.078	0.000	24.369	0.00	13.50
35.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.079	0.000	25.172	0.00	21.74
35.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.079	0.000	25.172	0.00	27.00
40.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.081	0.000	25.890	0.00	21.74
40.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.081	0.000	25.890	0.00	27.00
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.082	0.000	25.958	0.00	2.17
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.082	0.000	25.958	0.00	2.70
43.33	2" Conduit	Yes	2.83	0.000	2.00	0.47	0.00	0.082	0.000	26.330	0.00	12.32
43.33	1" Reinforcing plate	Yes	2.83	0.000	1.00	0.24	0.00	0.082	0.000	26.330	0.00	15.30
45.00	2" Conduit	Yes	1.67	0.000	2.00	0.28	0.00	0.083	0.000	26.540	0.00	7.25
45.00	1" Reinforcing plate	Yes	1.67	0.000	1.00	0.14	0.00	0.083	0.000	26.540	0.00	9.00
48.00	2" Conduit	Yes	3.00	0.000	2.00	0.50	0.00	0.084	0.000	26.903	0.00	13.04
48.00	1" Reinforcing plate	Yes	3.00	0.000	1.00	0.25	0.00	0.084	0.000	26.903	0.00	16.20
50.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.083	0.000	27.135	0.00	8.69
50.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.083	0.000	27.135	0.00	10.80
55.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.085	0.000	27.685	0.00	21.74
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.085	0.000	27.685	0.00	27.00
60.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.087	0.000	28.197	0.00	21.74
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.087	0.000	28.197	0.00	27.00
60.75	2" Conduit	Yes	0.75	0.000	2.00	0.13	0.00	0.088	0.000	28.271	0.00	3.26
60.75	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.088	0.000	28.271	0.00	4.05
65.00	2" Conduit	Yes	4.25	0.000	2.00	0.71	0.00	0.089	0.000	28.676	0.00	18.47
65.00	1" Reinforcing plate	Yes	4.25	0.000	1.00	0.35	0.00	0.089	0.000	28.676	0.00	22.95
70.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.091	0.000	29.127	0.00	21.74
70.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.091	0.000	29.127	0.00	27.00
75.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.093	0.000	29.553	0.00	21.74
75.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.093	0.000	29.553	0.00	27.00
78.50	2" Conduit	Yes	3.50	0.000	2.00	0.58	0.00	0.095	0.000	29.838	0.00	15.21
78.50	1" Reinforcing plate	Yes	3.50	0.000	1.00	0.29	0.00	0.095	0.000	29.838	0.00	18.90
80.00	2" Conduit	Yes	1.50	0.000	2.00	0.25	0.00	0.096	0.000	29.958	0.00	6.52

Linear Appurtenance Segment Forces (Factored)

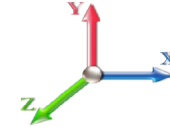
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 19

Load Case: 0.9D + 1.6W 8 101 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
80.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.096	0.000	29.958	0.00	8.10
85.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.072	0.000	30.342	0.00	21.74
85.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.072	0.000	30.342	0.00	5.40
87.42	2" Conduit	Yes	2.42	0.000	2.00	0.40	0.00	0.067	0.000	30.522	0.00	10.51
90.00	2" Conduit	Yes	2.58	0.000	2.00	0.43	0.00	0.067	0.000	30.710	0.00	11.23
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.068	0.000	30.805	0.00	5.80
94.00	2" Conduit	Yes	2.67	0.000	2.00	0.44	0.00	0.068	0.000	30.992	0.00	11.59
95.00	2" Conduit	Yes	1.00	0.000	2.00	0.17	0.00	0.069	0.000	31.061	0.00	4.35
100.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.070	0.000	31.399	0.00	21.74
105.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.072	0.000	31.723	0.00	21.74
110.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	32.035	0.00	21.74
115.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.076	0.000	32.336	0.00	21.74
120.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.078	0.000	32.627	0.00	21.74
125.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.111	1.033	32.909	0.00	21.74
129.00	2" Conduit	Yes	4.00	0.000	2.00	0.67	0.00	0.111	1.033	33.128	0.00	17.39
Totals:											0.0	998.2

Calculated Forces

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

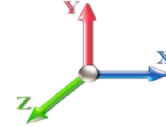


Page: 20

Load Case: 0.9D + 1.6W 8 101 mph Wind

Iterations 23

Dead Load Factor 0.90
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-26.08	-31.06	0.00	-2988.4	0.00	2988.41	2818.94	1409.47	4888.80	2448.04	0.00	0.000	0.000	0.582
5.00	-25.11	-30.72	0.00	-2833.1	0.00	2833.13	2786.10	1393.05	4742.28	2374.66	0.11	-0.208	0.000	0.563
10.00	-24.20	-30.34	0.00	-2679.5	0.00	2679.54	2752.56	1376.28	4596.67	2301.75	0.44	-0.414	0.000	0.543
10.25	-24.09	-30.37	0.00	-2671.9	0.00	2671.96	2750.86	1375.43	4589.41	2298.12	0.46	-0.425	0.000	0.654
15.00	-23.17	-30.06	0.00	-2527.7	0.00	2527.71	2718.29	1359.15	4452.05	2229.33	1.00	-0.659	0.000	0.632
20.00	-22.28	-29.67	0.00	-2377.4	0.00	2377.40	2683.32	1341.66	4308.48	2157.44	1.82	-0.902	0.000	0.609
20.50	-22.13	-29.68	0.00	-2362.5	0.00	2362.56	2679.78	1339.89	4294.19	2150.28	1.92	-0.927	0.000	0.606
25.00	-21.32	-29.33	0.00	-2229.0	0.00	2229.02	2647.62	1323.81	4166.04	2086.12	2.90	-1.143	0.000	0.584
27.50	-20.85	-29.15	0.00	-2155.7	0.00	2155.71	2629.51	1314.76	4095.27	2050.68	3.53	-1.263	0.000	0.728
30.00	-20.34	-28.99	0.00	-2082.8	0.00	2082.85	2611.22	1305.61	4024.80	2015.39	4.23	-1.415	0.000	0.713
35.00	-19.41	-28.61	0.00	-1937.8	0.00	1937.89	2574.10	1287.05	3884.82	1945.30	5.87	-1.710	0.000	0.682
40.00	-18.57	-28.18	0.00	-1794.8	0.00	1794.82	2536.26	1268.13	3746.17	1875.87	7.82	-2.000	0.000	0.650
40.50	-18.44	-28.16	0.00	-1780.7	0.00	1780.73	2532.44	1266.22	3732.38	1868.96	8.03	-2.030	0.000	0.647
43.33	-17.95	-27.93	0.00	-1700.9	0.00	1700.93	2510.64	1255.32	3654.51	1829.97	9.28	-2.193	0.000	0.629
45.00	-17.49	-27.80	0.00	-1654.3	0.00	1654.39	2497.71	1248.86	3608.92	1807.14	10.06	-2.289	0.000	0.612
48.00	-16.72	-27.53	0.00	-1571.0	0.00	1571.00	1854.44	927.22	2691.60	1347.80	11.56	-2.456	0.000	0.651
50.00	-16.37	-27.39	0.00	-1515.9	0.00	1515.94	1844.56	922.28	2653.53	1328.74	12.61	-2.566	0.000	0.710
55.00	-15.61	-26.97	0.00	-1378.9	0.00	1378.99	1819.35	909.68	2558.78	1281.29	15.45	-2.862	0.000	0.664
60.00	-14.91	-26.52	0.00	-1244.1	0.00	1244.12	1793.44	896.72	2464.66	1234.16	18.60	-3.147	0.000	0.616
60.75	-14.76	-26.48	0.00	-1224.2	0.00	1224.23	1789.49	894.74	2450.61	1227.12	19.10	-3.189	0.000	0.609
65.00	-14.13	-26.12	0.00	-1111.7	0.00	1111.70	1766.81	883.40	2371.26	1187.39	22.04	-3.420	0.000	0.566
70.00	-13.43	-25.68	0.00	-981.12	0.00	981.12	1739.46	869.73	2278.63	1141.01	25.76	-3.675	0.000	0.515
75.00	-12.76	-25.23	0.00	-852.73	0.00	852.73	1711.40	855.70	2186.84	1095.05	29.74	-3.913	0.000	0.461
78.50	-12.31	-24.91	0.00	-764.43	0.00	764.43	1691.33	845.67	2123.13	1063.14	32.66	-4.070	0.000	0.423
78.50	-12.31	-24.91	0.00	-764.43	0.00	764.43	1691.33	845.67	2123.13	1063.14	32.66	-4.070	0.000	0.423
80.00	-12.05	-24.81	0.00	-727.07	0.00	727.07	1682.63	841.31	2095.97	1049.54	33.95	-4.135	0.000	0.701
85.00	-11.41	-24.37	0.00	-603.03	0.00	603.03	1653.14	826.57	2006.08	1004.53	38.46	-4.473	0.000	0.608
87.42	-11.10	-24.17	0.00	-544.14	0.00	544.14	1638.63	819.32	1963.01	982.97	40.77	-4.625	0.000	0.561
90.00	-8.26	-18.20	0.00	-481.71	0.00	481.71	1622.94	811.47	1917.25	960.05	43.31	-4.777	0.000	0.507
91.33	-8.03	-18.08	0.00	-457.44	0.00	457.44	1099.39	549.70	1312.06	657.00	44.65	-4.851	0.000	0.705
94.00	-7.74	-17.75	0.00	-409.22	0.00	409.22	1090.71	545.35	1282.99	642.45	47.40	-4.992	0.000	0.645
95.00	-7.60	-17.68	0.00	-391.48	0.00	391.48	1087.40	543.70	1272.11	637.00	48.45	-5.057	0.000	0.623
100.00	-5.87	-13.84	0.00	-303.09	0.00	303.09	1070.43	535.22	1217.83	609.82	53.90	-5.343	0.000	0.503
105.00	-5.46	-13.40	0.00	-233.91	0.00	233.91	1052.74	526.37	1163.86	582.80	59.62	-5.583	0.000	0.407
110.00	-3.81	-9.13	0.00	-166.90	0.00	166.90	1034.34	517.17	1110.26	555.96	65.57	-5.778	0.000	0.304
115.00	-3.51	-8.70	0.00	-121.25	0.00	121.25	1015.23	507.62	1057.10	529.34	71.70	-5.931	0.000	0.233
120.00	-3.22	-8.28	0.00	-77.74	0.00	77.74	995.40	497.70	1004.45	502.97	77.96	-6.047	0.000	0.158
120.00	-3.22	-8.28	0.00	-77.74	0.00	77.74	735.22	367.61	535.89	335.79	77.96	-6.047	0.000	0.236
125.00	-2.95	-7.98	0.00	-36.33	0.00	36.33	735.22	367.61	535.89	335.79	84.33	-6.120	0.000	0.113
129.00	-0.04	-0.08	0.00	-0.08	0.00	0.08	735.22	367.61	535.89	335.79	89.47	-6.162	0.000	0.000
130.00	0.00	-0.07	0.00	0.00	0.00	0.00	735.22	367.61	535.89	335.79	90.76	-6.162	0.000	0.000

Wind Loading - Shaft

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (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: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	18.852	22.62	128.6	330.9	1177.3
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	18.598	22.32	126.9	348.9	1179.6
10.25	RT2 RB3	1.00	0.85	5.168	5.68	0.00	1.200	1.334	0.25	0.921	1.11	6.3	17.5	58.6
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	4.75	17.392	20.87	118.6	339.3	1113.2
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	18.021	21.62	130.4	361.1	1160.3
20.50	RT1 RB4	1.00	0.91	5.512	6.06	0.00	1.200	1.430	0.50	1.784	2.14	13.0	36.1	115.2
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	4.50	15.932	19.12	120.9	326.2	1030.7
27.50	RT3	1.00	0.96	5.864	6.45	0.00	1.200	1.473	2.50	8.742	10.49	67.7	181.3	567.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	2.50	8.665	10.40	68.3	181.1	563.1
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	17.104	20.52	139.3	360.8	1112.9
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	16.792	20.15	140.6	358.5	1094.9
40.50	RT4 RB5	1.00	1.05	6.362	7.00	0.00	1.200	1.531	0.50	1.661	1.99	14.0	35.8	108.6
43.33	Bot - Section 2	1.00	1.06	6.453	7.10	0.00	1.200	1.541	2.83	9.357	11.23	79.7	202.0	611.4
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	1.67	5.527	6.63	47.5	120.1	552.4
48.00	Top - Section 1	1.00	1.08	6.593	7.25	0.00	1.200	1.557	3.00	9.861	11.83	85.8	214.9	985.1
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.00	6.511	7.81	57.2	142.7	370.4
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	16.059	19.27	143.8	352.6	913.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	15.742	18.89	143.6	348.2	896.1
60.75	RT5 RB6	1.00	1.14	6.928	7.62	0.00	1.200	1.594	0.75	2.333	2.80	21.3	52.1	133.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	4.25	13.090	15.71	121.4	291.9	746.1
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	15.106	18.13	142.3	338.3	861.0
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	14.787	17.74	141.4	332.9	843.0
78.50	RT6	1.00	1.20	7.313	8.04	0.00	1.200	1.636	3.50	10.159	12.19	98.1	230.3	579.9
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	1.50	4.306	5.17	41.7	98.2	246.1
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	14.147	16.98	138.9	321.4	806.4
87.42	Bot - Section 3	1.00	1.23	7.480	8.23	0.00	1.200	1.653	2.42	6.722	8.07	66.4	153.9	383.8
90.00	Appurtenance(s)	1.00	1.24	7.526	8.28	0.00	1.200	1.658	2.58	7.184	8.62	71.4	164.9	592.1
91.33	Top - Section 2	1.00	1.24	7.549	8.30	0.00	1.200	1.661	1.33	3.674	4.41	36.6	84.7	302.8
94.00	Appurtenance(s)	1.00	1.25	7.595	8.35	0.00	1.200	1.666	2.67	7.281	8.74	73.0	167.6	354.2
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	1.00	2.706	3.25	27.2	62.6	131.9
100.00	Appurtenance(s)	1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	13.342	16.01	135.5	306.6	647.4
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	13.021	15.62	133.6	300.1	631.4
110.00	Appurtenance(s)	1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	12.699	15.24	131.6	293.4	615.3
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	12.376	14.85	129.5	286.6	599.1
120.00	Top - Section 3	1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	12.054	14.46	127.2	279.7	582.7
125.00		1.00	1.33	8.065	8.87	0.00	1.240 *	1.714	5.00	8.928	11.07	98.2	206.4	491.0
129.00	Appurtenance(s)	1.00	1.34	8.119	8.93	0.00	1.240 *	1.719	4.00	7.146	8.86	79.1	165.7	393.4
130.00	Appurtenance(s)	1.00	1.34	8.132	8.95	0.00	1.200	1.720	1.00	1.787	2.14	19.2	41.5	98.4
Totals:									130.00			3,465.7	23,649.3	

* Cf Adjusted by Linear Load Ra Effect

Discrete Appurtenance Forces

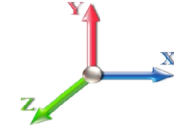
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 22

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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	6' Lightning rod	1	8.132	8.945	1.00	1.00	1.45	38.28	0.000	0.000	12.99	0.00	0.00
2	129.00	RRUS 11	3	8.132	8.945	0.62	0.80	5.84	445.21	0.000	1.000	52.25	0.00	52.25
3	129.00	OPA-65R-LCUU-H6	3	8.132	8.945	0.62	0.80	20.34	971.12	0.000	1.000	181.91	0.00	181.91
4	129.00	RRUS 32 B2	3	8.132	8.945	0.54	0.80	3.57	419.78	0.000	1.000	31.93	0.00	31.93
5	129.00	QS66512-2	3	8.132	8.945	0.60	0.80	16.94	1069.48	0.000	1.000	151.49	0.00	151.49
6	129.00	RRUS-32	3	8.132	8.945	0.57	0.80	3.78	419.78	0.000	1.000	33.84	0.00	33.84
7	129.00	DC6-48-60-18-8F	2	8.132	8.945	1.00	1.00	4.32	-76.20	0.000	1.000	38.63	0.00	38.63
8	129.00	P65-16-XLH-RR	3	8.132	8.945	0.62	0.80	20.44	536.94	0.000	1.000	182.87	0.00	182.87
9	129.00	DTMABP7819VG12A	3	8.132	8.945	0.50	0.80	2.82	122.63	0.000	1.000	25.26	0.00	25.26
10	129.00	MTC3607 Platform + HR &	1	8.119	8.931	1.00	1.00	89.38	4780.06	0.000	0.000	798.25	0.00	0.00
11	129.00	RRUS 32 b66	3	8.132	8.945	0.54	0.80	3.57	419.78	0.000	1.000	31.93	0.00	31.93
12	110.00	T-Arm (Round)	3	7.851	8.636	0.56	0.75	24.92	1760.61	0.000	0.000	215.21	0.00	0.00
13	110.00	DB-T1-6Z-8AB-OZ	2	7.851	8.636	0.80	0.80	9.03	322.52	0.000	0.000	78.00	0.00	0.00
14	110.00	B4 RRH2X60-4R	3	7.851	8.636	0.54	0.80	6.72	388.05	0.000	0.000	58.00	0.00	0.00
15	110.00	B13 RRH4X30-4R	3	7.851	8.636	0.54	0.80	4.49	341.19	0.000	0.000	38.79	0.00	0.00
16	110.00	RRH2X60-1900A-4R	3	7.851	8.636	0.54	0.80	3.99	364.99	0.000	0.000	34.48	0.00	0.00
17	110.00	CBC721-DF	3	7.836	8.619	0.54	0.80	1.50	35.51	0.000	-1.000	12.95	0.00	-12.95
18	110.00	CBC721-DF	3	7.866	8.652	0.54	0.80	1.50	35.51	0.000	1.000	13.00	0.00	13.00
19	110.00	SBNHH-1D65B	6	7.851	8.636	0.66	0.80	37.07	1462.67	0.000	0.000	320.12	0.00	0.00
20	100.00	LNx-6515DS-A1M	3	7.695	8.464	0.67	0.80	29.45	653.11	0.000	0.000	249.26	0.00	0.00
21	100.00	AIR 21, 1.3M, B4A B2P	3	7.695	8.464	0.66	0.80	14.22	808.22	0.000	0.000	120.40	0.00	0.00
22	100.00	AIR 21, 1.3M, B2A B4P	3	7.695	8.464	0.66	0.80	14.22	812.18	0.000	0.000	120.40	0.00	0.00
23	100.00	782 11056	3	7.695	8.464	0.66	0.80	0.81	7.02	0.000	0.000	6.84	0.00	0.00
24	100.00	T-Arm (Round)	3	7.695	8.464	0.56	0.75	24.81	1753.86	0.000	0.000	210.02	0.00	0.00
25	94.00	1'4"x6.5"x6" Surge	1	7.595	8.355	0.80	0.80	2.49	143.60	0.000	0.000	20.80	0.00	0.00
26	90.00	ALU - 800 MHz - RRU	6	7.526	8.279	0.52	0.75	11.11	676.66	0.000	0.000	91.94	0.00	0.00
27	90.00	ALU - 1900MHz - RRU	3	7.526	8.279	0.52	0.75	7.95	375.98	0.000	0.000	65.82	0.00	0.00
28	90.00	Andrew - VHLP2-11	2	7.526	8.279	1.00	1.00	11.78	194.77	0.000	0.000	97.54	0.00	0.00
29	90.00	F3P-10W	1	7.526	8.279	1.00	1.00	113.58	3917.00	0.000	0.000	940.32	0.00	0.00
30	90.00	NNVV-65B-R4	3	7.526	8.279	0.55	0.75	22.73	895.25	0.000	0.000	188.20	0.00	0.00
31	90.00	AAHC	3	7.526	8.279	0.56	0.75	8.41	739.50	0.000	0.000	69.66	0.00	0.00

Totals: 24,835.11

4,493.13

Total Applied Force Summary

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (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

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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		128.61	1558.77	0.00	0.00
10.00		126.87	1567.37	0.00	0.00
10.25		6.29	78.00	0.00	0.00
15.00		118.64	1485.29	0.00	0.00
20.00		130.44	1555.00	0.00	0.00
20.50		12.98	154.68	0.00	0.00
25.00		120.87	1388.05	0.00	0.00
27.50		67.66	766.18	0.00	0.00
30.00		68.31	762.59	0.00	0.00
35.00		139.28	1513.70	0.00	0.00
40.00		140.64	1497.20	0.00	0.00
40.50		13.95	148.84	0.00	0.00
43.33		79.70	839.97	0.00	0.00
45.00		47.45	686.94	0.00	0.00
48.00		85.82	1227.79	0.00	0.00
50.00		57.15	532.38	0.00	0.00
55.00		143.83	1319.26	0.00	0.00
60.00		143.59	1303.30	0.00	0.00
60.75		21.34	194.33	0.00	0.00
65.00		121.43	1093.08	0.00	0.00
70.00		142.33	1270.15	0.00	0.00
75.00		141.37	1253.07	0.00	0.00
78.50		98.07	867.33	0.00	0.00
80.00		41.73	369.38	0.00	0.00
85.00		138.86	1154.10	0.00	0.00
87.42		66.37	544.28	0.00	0.00
90.00	(18) attachments	1524.86	7562.84	0.00	0.00
91.33		36.62	384.75	0.00	0.00
94.00	(1) attachments	93.80	661.73	0.00	0.00
95.00		27.19	193.37	0.00	0.00
100.00	(15) attachments	842.45	4989.60	0.00	0.00
105.00		133.62	895.55	0.00	0.00
110.00	(26) attachments	902.15	5590.85	0.00	0.05
115.00		129.46	775.81	0.00	0.00
120.00		127.23	759.78	0.00	0.00
125.00		98.22	668.35	0.00	0.00
129.00	(27) attachments	1607.51	9644.03	0.00	730.13
130.00	(1) attachments	32.17	136.66	0.00	0.00
Totals:		7,958.84	57,394.36	0.00	730.18

Linear Appurtenance Segment Forces (Factored)

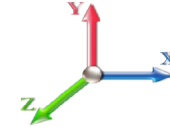
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 24

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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	2" Conduit	Yes	5.00	0.000	2.00	1.87	0.00	0.070	0.000	5.168	0.00	72.39
5.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.45	0.00	0.070	0.000	5.168	0.00	66.41
10.00	2" Conduit	Yes	5.00	0.000	2.00	1.94	0.00	0.071	0.000	5.168	0.00	75.87
10.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.53	0.00	0.071	0.000	5.168	0.00	69.20
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.10	0.00	0.072	0.000	5.168	0.00	3.80
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.08	0.00	0.072	0.000	5.168	0.00	3.47
15.00	2" Conduit	Yes	4.75	0.000	2.00	1.89	0.00	0.073	0.000	5.168	0.00	74.17
15.00	1" Reinforcing plate	Yes	4.75	0.000	1.00	1.49	0.00	0.073	0.000	5.168	0.00	67.42
20.00	2" Conduit	Yes	5.00	0.000	2.00	2.02	0.00	0.074	0.000	5.483	0.00	79.71
20.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.61	0.00	0.074	0.000	5.483	0.00	72.30
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.20	0.00	0.075	0.000	5.512	0.00	7.99
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.16	0.00	0.075	0.000	5.512	0.00	7.24
25.00	2" Conduit	Yes	4.50	0.000	2.00	1.84	0.00	0.076	0.000	5.747	0.00	72.93
25.00	1" Reinforcing plate	Yes	4.50	0.000	1.00	1.47	0.00	0.076	0.000	5.747	0.00	66.03
27.50	2" Conduit	Yes	2.50	0.000	2.00	1.03	0.00	0.077	0.000	5.864	0.00	40.80
27.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.82	0.00	0.077	0.000	5.864	0.00	36.92
30.00	2" Conduit	Yes	2.50	0.000	2.00	1.04	0.00	0.078	0.000	5.972	0.00	41.07
30.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.83	0.00	0.078	0.000	5.972	0.00	37.13
35.00	2" Conduit	Yes	5.00	0.000	2.00	2.09	0.00	0.079	0.000	6.169	0.00	83.10
35.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.67	0.00	0.079	0.000	6.169	0.00	75.05
40.00	2" Conduit	Yes	5.00	0.000	2.00	2.11	0.00	0.081	0.000	6.345	0.00	83.95
40.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.69	0.00	0.081	0.000	6.345	0.00	75.74
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.21	0.00	0.082	0.000	6.362	0.00	8.40
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.17	0.00	0.082	0.000	6.362	0.00	7.58
43.33	2" Conduit	Yes	2.83	0.000	2.00	1.20	0.00	0.082	0.000	6.453	0.00	47.87
43.33	1" Reinforcing plate	Yes	2.83	0.000	1.00	0.96	0.00	0.082	0.000	6.453	0.00	43.16
45.00	2" Conduit	Yes	1.67	0.000	2.00	0.71	0.00	0.083	0.000	6.504	0.00	28.24
45.00	1" Reinforcing plate	Yes	1.67	0.000	1.00	0.57	0.00	0.083	0.000	6.504	0.00	25.45
48.00	2" Conduit	Yes	3.00	0.000	2.00	1.28	0.00	0.084	0.000	6.593	0.00	51.08
48.00	1" Reinforcing plate	Yes	3.00	0.000	1.00	1.03	0.00	0.084	0.000	6.593	0.00	46.02
50.00	2" Conduit	Yes	2.00	0.000	2.00	0.85	0.00	0.083	0.000	6.650	0.00	34.16
50.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.69	0.00	0.083	0.000	6.650	0.00	30.77
55.00	2" Conduit	Yes	5.00	0.000	2.00	2.15	0.00	0.085	0.000	6.785	0.00	86.04
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.73	0.00	0.085	0.000	6.785	0.00	77.45
60.00	2" Conduit	Yes	5.00	0.000	2.00	2.16	0.00	0.087	0.000	6.910	0.00	86.63
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.74	0.00	0.087	0.000	6.910	0.00	77.93
60.75	2" Conduit	Yes	0.75	0.000	2.00	0.32	0.00	0.088	0.000	6.928	0.00	13.01
60.75	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.26	0.00	0.088	0.000	6.928	0.00	11.70
65.00	2" Conduit	Yes	4.25	0.000	2.00	1.85	0.00	0.089	0.000	7.028	0.00	74.10
65.00	1" Reinforcing plate	Yes	4.25	0.000	1.00	1.49	0.00	0.089	0.000	7.028	0.00	66.62
70.00	2" Conduit	Yes	5.00	0.000	2.00	2.18	0.00	0.091	0.000	7.138	0.00	87.70
70.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.76	0.00	0.091	0.000	7.138	0.00	78.80
75.00	2" Conduit	Yes	5.00	0.000	2.00	2.19	0.00	0.093	0.000	7.243	0.00	88.18
75.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.77	0.00	0.093	0.000	7.243	0.00	79.20
78.50	2" Conduit	Yes	3.50	0.000	2.00	1.54	0.00	0.095	0.000	7.313	0.00	61.95
78.50	1" Reinforcing plate	Yes	3.50	0.000	1.00	1.25	0.00	0.095	0.000	7.313	0.00	55.62
80.00	2" Conduit	Yes	1.50	0.000	2.00	0.66	0.00	0.096	0.000	7.342	0.00	26.59

Linear Appurtenance Segment Forces (Factored)

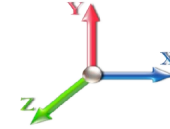
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 25

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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 22

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
80.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.53	0.00	0.096	0.000	7.342	0.00	23.87
85.00	2" Conduit	Yes	5.00	0.000	2.00	2.21	0.00	0.072	0.000	7.436	0.00	89.07
85.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.36	0.00	0.072	0.000	7.436	0.00	15.99
87.42	2" Conduit	Yes	2.42	0.000	2.00	1.07	0.00	0.067	0.000	7.480	0.00	43.15
90.00	2" Conduit	Yes	2.58	0.000	2.00	1.14	0.00	0.067	0.000	7.526	0.00	46.23
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.59	0.00	0.068	0.000	7.549	0.00	23.89
94.00	2" Conduit	Yes	2.67	0.000	2.00	1.18	0.00	0.068	0.000	7.595	0.00	47.89
95.00	2" Conduit	Yes	1.00	0.000	2.00	0.44	0.00	0.069	0.000	7.612	0.00	17.97
100.00	2" Conduit	Yes	5.00	0.000	2.00	2.23	0.00	0.070	0.000	7.695	0.00	90.25
105.00	2" Conduit	Yes	5.00	0.000	2.00	2.24	0.00	0.072	0.000	7.774	0.00	90.61
110.00	2" Conduit	Yes	5.00	0.000	2.00	2.24	0.00	0.074	0.000	7.851	0.00	90.95
115.00	2" Conduit	Yes	5.00	0.000	2.00	2.25	0.00	0.076	0.000	7.925	0.00	91.28
120.00	2" Conduit	Yes	5.00	0.000	2.00	2.26	0.00	0.078	0.000	7.996	0.00	91.60
125.00	2" Conduit	Yes	5.00	0.000	2.00	2.26	0.00	0.111	1.033	8.065	0.00	91.91
129.00	2" Conduit	Yes	4.00	0.000	2.00	1.81	0.00	0.111	1.033	8.119	0.00	73.72
Totals:											0.0	3,435.3

Calculated Forces

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

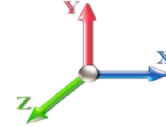


Page: 26

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

Iterations 22

Dead Load Factor 1.20
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-57.39	-7.99	0.00	-768.26	0.00	768.26	2818.94	1409.47	4888.80	2448.04	0.00	0.000	0.000	0.158
5.00	-55.82	-7.91	0.00	-728.33	0.00	728.33	2786.10	1393.05	4742.28	2374.66	0.03	-0.053	0.000	0.152
10.00	-54.25	-7.81	0.00	-688.79	0.00	688.79	2752.56	1376.28	4596.67	2301.75	0.11	-0.106	0.000	0.147
10.25	-54.17	-7.83	0.00	-686.84	0.00	686.84	2750.86	1375.43	4589.41	2298.12	0.12	-0.109	0.000	0.177
15.00	-52.68	-7.76	0.00	-649.66	0.00	649.66	2718.29	1359.15	4452.05	2229.33	0.26	-0.169	0.000	0.171
20.00	-51.12	-7.66	0.00	-610.84	0.00	610.84	2683.32	1341.66	4308.48	2157.44	0.47	-0.232	0.000	0.165
20.50	-50.96	-7.67	0.00	-607.01	0.00	607.01	2679.78	1339.89	4294.19	2150.28	0.49	-0.238	0.000	0.164
25.00	-49.57	-7.58	0.00	-572.49	0.00	572.49	2647.62	1323.81	4166.04	2086.12	0.74	-0.294	0.000	0.159
27.50	-48.80	-7.54	0.00	-553.54	0.00	553.54	2629.51	1314.76	4095.27	2050.68	0.91	-0.325	0.000	0.197
30.00	-48.03	-7.52	0.00	-534.69	0.00	534.69	2611.22	1305.61	4024.80	2015.39	1.09	-0.364	0.000	0.193
35.00	-46.50	-7.43	0.00	-497.11	0.00	497.11	2574.10	1287.05	3884.82	1945.30	1.51	-0.439	0.000	0.185
40.00	-45.00	-7.31	0.00	-459.98	0.00	459.98	2536.26	1268.13	3746.17	1875.87	2.01	-0.514	0.000	0.176
40.50	-44.85	-7.31	0.00	-456.33	0.00	456.33	2532.44	1266.22	3732.38	1868.96	2.06	-0.521	0.000	0.175
43.33	-44.01	-7.25	0.00	-435.62	0.00	435.62	2510.64	1255.32	3654.51	1829.97	2.38	-0.563	0.000	0.170
45.00	-43.32	-7.22	0.00	-423.54	0.00	423.54	2497.71	1248.86	3608.92	1807.14	2.59	-0.588	0.000	0.166
48.00	-42.09	-7.15	0.00	-401.89	0.00	401.89	1854.44	927.22	2691.60	1347.80	2.97	-0.630	0.000	0.176
50.00	-41.55	-7.12	0.00	-387.60	0.00	387.60	1844.56	922.28	2653.53	1328.74	3.24	-0.659	0.000	0.192
55.00	-40.22	-7.01	0.00	-352.00	0.00	352.00	1819.35	909.68	2558.78	1281.29	3.97	-0.734	0.000	0.180
60.00	-38.92	-6.88	0.00	-316.94	0.00	316.94	1793.44	896.72	2464.66	1234.16	4.78	-0.807	0.000	0.167
60.75	-38.72	-6.88	0.00	-311.78	0.00	311.78	1789.49	894.74	2450.61	1227.12	4.91	-0.818	0.000	0.165
65.00	-37.62	-6.78	0.00	-282.55	0.00	282.55	1766.81	883.40	2371.26	1187.39	5.66	-0.876	0.000	0.154
70.00	-36.34	-6.66	0.00	-248.64	0.00	248.64	1739.46	869.73	2278.63	1141.01	6.61	-0.941	0.000	0.140
75.00	-35.09	-6.53	0.00	-215.34	0.00	215.34	1711.40	855.70	2186.84	1095.05	7.63	-1.001	0.000	0.126
78.50	-34.22	-6.43	0.00	-192.50	0.00	192.50	1691.33	845.67	2123.13	1063.14	8.38	-1.041	0.000	0.116
78.50	-34.22	-6.43	0.00	-192.50	0.00	192.50	1691.33	845.67	2123.13	1063.14	8.38	-1.041	0.000	0.116
80.00	-33.84	-6.41	0.00	-182.86	0.00	182.86	1682.63	841.31	2095.97	1049.54	8.71	-1.057	0.000	0.194
85.00	-32.69	-6.29	0.00	-150.80	0.00	150.80	1653.14	826.57	2006.08	1004.53	9.86	-1.142	0.000	0.170
87.42	-32.14	-6.23	0.00	-135.61	0.00	135.61	1638.63	819.32	1963.01	982.97	10.45	-1.180	0.000	0.158
90.00	-24.61	-4.56	0.00	-119.52	0.00	119.52	1622.94	811.47	1917.25	960.05	11.10	-1.218	0.000	0.140
91.33	-24.22	-4.53	0.00	-113.44	0.00	113.44	1099.39	549.70	1312.06	657.00	11.44	-1.236	0.000	0.195
94.00	-23.56	-4.43	0.00	-101.37	0.00	101.37	1090.71	545.35	1282.99	642.45	12.14	-1.271	0.000	0.179
95.00	-23.36	-4.41	0.00	-96.94	0.00	96.94	1087.40	543.70	1272.11	637.00	12.41	-1.287	0.000	0.174
100.00	-18.39	-3.48	0.00	-74.88	0.00	74.88	1070.43	535.22	1217.83	609.82	13.80	-1.358	0.000	0.140
105.00	-17.50	-3.34	0.00	-57.49	0.00	57.49	1052.74	526.37	1163.86	582.80	15.26	-1.417	0.000	0.115
110.00	-11.93	-2.30	0.00	-40.80	0.00	40.80	1034.34	517.17	1110.26	555.96	16.77	-1.465	0.000	0.085
115.00	-11.16	-2.16	0.00	-29.28	0.00	29.28	1015.23	507.62	1057.10	529.34	18.32	-1.502	0.000	0.066
120.00	-10.40	-2.02	0.00	-18.47	0.00	18.47	995.40	497.70	1004.45	502.97	19.91	-1.530	0.000	0.047
120.00	-10.40	-2.02	0.00	-18.47	0.00	18.47	735.22	367.61	535.89	335.79	19.91	-1.530	0.000	0.069
125.00	-9.73	-1.90	0.00	-8.38	0.00	8.38	735.22	367.61	535.89	335.79	21.52	-1.547	0.000	0.038
129.00	-0.14	-0.04	0.00	-0.04	0.00	0.04	735.22	367.61	535.89	335.79	22.82	-1.557	0.000	0.000
130.00	0.00	-0.03	0.00	0.00	0.00	0.00	735.22	367.61	535.89	335.79	23.15	-1.557	0.000	0.000

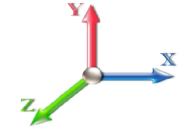
Seismic Segment Forces (Factored)

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 27

Load Case: 1.2D + 1.0E				Iterations 20
Gust Response Factor	1.10	Sds	0.19	Ss 0.18
Dead Load Factor	1.20	Seismic Load Factor	1.00	S1 0.06
Wind Load Factor	0.00	Structure Frequency	0.28	SA 0.03
				Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		705.36	0.00	0.04	0.02	15.93	
10.00		692.26	0.01	0.06	0.03	21.41	
10.25	RT2 RB3	34.27	0.01	0.06	0.03	1.07	
15.00		644.89	0.03	0.07	0.04	22.27	
20.00		666.06	0.04	0.07	0.04	24.15	
20.50	RT1 RB4	65.88	0.05	0.07	0.04	2.40	
25.00		587.07	0.07	0.07	0.04	21.94	
27.50	RT3	321.56	0.08	0.07	0.04	12.18	
30.00		318.29	0.10	0.07	0.04	12.23	
35.00		626.75	0.14	0.07	0.03	24.76	
40.00		613.65	0.18	0.07	0.03	24.71	
40.50	RT4 RB5	60.64	0.18	0.06	0.03	2.44	
43.33	Bot - Section 2	341.17	0.21	0.06	0.02	13.74	
45.00		360.24	0.23	0.06	0.02	14.41	
48.00	Top - Section 1	641.82	0.26	0.05	0.02	24.95	
50.00		189.76	0.28	0.05	0.01	7.12	
55.00		467.06	0.34	0.04	0.01	14.60	
60.00		456.58	0.40	0.02	0.01	9.05	
60.75	RT5 RB6	67.58	0.41	0.01	0.01	1.19	
65.00		378.52	0.47	-0.01	0.01	1.23	
70.00		435.62	0.55	-0.03	0.01	-6.71	
75.00		425.13	0.63	-0.06	0.02	-13.33	
78.50	RT6	291.36	0.69	-0.08	0.03	-11.35	
80.00		123.30	0.72	-0.09	0.03	-5.07	
85.00		404.17	0.81	-0.11	0.06	-17.60	
87.42	Bot - Section 3	191.59	0.85	-0.12	0.07	-8.07	
90.00	Appurtenance(s)	3526.1	0.91	-0.12	0.09	-136.86	
91.33	Top - Section 2	181.80	0.93	-0.12	0.10	-6.62	
94.00	Appurtenance(s)	208.50	0.99	-0.11	0.13	-6.28	
95.00		57.74	1.01	-0.11	0.14	-1.58	
100.00	Appurtenance(s)	2035.9	1.12	-0.06	0.20	-18.88	
105.00		276.11	1.23	0.04	0.28	4.22	
110.00	Appurtenance(s)	2097.0	1.35	0.20	0.39	97.27	
115.00		260.39	1.48	0.45	0.52	21.93	
120.00	Top - Section 3	252.53	1.61	0.81	0.68	32.57	
125.00		237.19	1.75	1.31	0.89	42.90	
129.00	Appurtenance(s)	4075.9	1.86	1.83	1.09	927.90	
130.00	Appurtenance(s)	53.94	1.89	1.98	1.14	12.95	
Totals:		23,373.9				1,179.2	Total Wind: 31,009.8

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

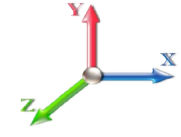
Calculated Forces

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 28

Load Case: 1.2D + 1.0E						Iterations 20
Gust Response Factor	1.10		Sds	0.19		Ss 0.18
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.10	S1 0.06
Wind Load Factor	0.00	Structure Frequency	0.28	SA	0.03	Seismic Importance Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.85	-1.41	0.00	-159.73	0.00	159.73	2818.94	1409.47	4888.80	2448.04	0.00	0.00	0.00	0.036
5.00	-33.70	-1.40	0.00	-152.66	0.00	152.66	2786.10	1393.05	4742.28	2374.66	0.01	-0.01	0.035	
10.00	-32.56	-1.39	0.00	-145.64	0.00	145.64	2752.56	1376.28	4596.67	2301.75	0.02	-0.02	0.034	
10.25	-32.50	-1.39	0.00	-145.29	0.00	145.29	2750.86	1375.43	4589.41	2298.12	0.02	-0.02	0.042	
15.00	-31.44	-1.37	0.00	-138.69	0.00	138.69	2718.29	1359.15	4452.05	2229.33	0.05	-0.04	0.040	
20.00	-30.33	-1.35	0.00	-131.83	0.00	131.83	2683.32	1341.66	4308.48	2157.44	0.10	-0.05	0.039	
20.50	-30.22	-1.35	0.00	-131.15	0.00	131.15	2679.78	1339.89	4294.19	2150.28	0.10	-0.05	0.039	
25.00	-29.24	-1.33	0.00	-125.07	0.00	125.07	2647.62	1323.81	4166.04	2086.12	0.16	-0.06	0.038	
27.50	-28.70	-1.33	0.00	-121.73	0.00	121.73	2629.51	1314.76	4095.27	2050.68	0.19	-0.07	0.047	
30.00	-28.16	-1.32	0.00	-118.41	0.00	118.41	2611.22	1305.61	4024.80	2015.39	0.23	-0.08	0.047	
35.00	-27.10	-1.30	0.00	-111.82	0.00	111.82	2574.10	1287.05	3884.82	1945.30	0.32	-0.09	0.045	
40.00	-26.06	-1.28	0.00	-105.31	0.00	105.31	2536.26	1268.13	3746.17	1875.87	0.43	-0.11	0.044	
40.50	-25.96	-1.28	0.00	-104.67	0.00	104.67	2532.44	1266.22	3732.38	1868.96	0.44	-0.11	0.044	
43.33	-25.37	-1.27	0.00	-101.05	0.00	101.05	2510.64	1255.32	3654.51	1829.97	0.51	-0.12	0.043	
45.00	-24.84	-1.25	0.00	-98.94	0.00	98.94	2497.71	1248.86	3608.92	1807.14	0.56	-0.13	0.042	
48.00	-23.88	-1.23	0.00	-95.17	0.00	95.17	1854.44	927.22	2691.60	1347.80	0.64	-0.14	0.045	
50.00	-23.53	-1.23	0.00	-92.71	0.00	92.71	1844.56	922.28	2653.53	1328.74	0.70	-0.15	0.050	
55.00	-22.66	-1.22	0.00	-86.57	0.00	86.57	1819.35	909.68	2558.78	1281.29	0.86	-0.16	0.048	
60.00	-21.81	-1.21	0.00	-80.48	0.00	80.48	1793.44	896.72	2464.66	1234.16	1.04	-0.18	0.046	
60.75	-21.68	-1.21	0.00	-79.57	0.00	79.57	1789.49	894.74	2450.61	1227.12	1.07	-0.18	0.046	
65.00	-20.96	-1.22	0.00	-74.42	0.00	74.42	1766.81	883.40	2371.26	1187.39	1.24	-0.20	0.044	
70.00	-20.13	-1.22	0.00	-68.34	0.00	68.34	1739.46	869.73	2278.63	1141.01	1.46	-0.22	0.041	
75.00	-19.31	-1.22	0.00	-62.25	0.00	62.25	1711.40	855.70	2186.84	1095.05	1.70	-0.23	0.039	
78.50	-18.75	-1.22	0.00	-57.98	0.00	57.98	1691.33	845.67	2123.13	1063.14	1.87	-0.25	0.037	
78.50	-18.75	-1.22	0.00	-57.98	0.00	57.98	1691.33	845.67	2123.13	1063.14	1.87	-0.25	0.037	
80.00	-18.51	-1.22	0.00	-56.15	0.00	56.15	1682.63	841.31	2095.97	1049.54	1.95	-0.25	0.065	
85.00	-17.74	-1.23	0.00	-50.03	0.00	50.03	1653.14	826.57	2006.08	1004.53	2.23	-0.28	0.061	
87.42	-17.38	-1.23	0.00	-47.06	0.00	47.06	1638.63	819.32	1963.01	982.97	2.37	-0.29	0.058	
90.00	-13.01	-1.21	0.00	-43.89	0.00	43.89	1622.94	811.47	1917.25	960.05	2.53	-0.30	0.054	
91.33	-12.73	-1.21	0.00	-42.27	0.00	42.27	1099.39	549.70	1312.06	657.00	2.62	-0.31	0.076	
94.00	-12.35	-1.21	0.00	-39.05	0.00	39.05	1090.71	545.35	1282.99	642.45	2.80	-0.32	0.072	
95.00	-12.23	-1.21	0.00	-37.84	0.00	37.84	1087.40	543.70	1272.11	637.00	2.87	-0.33	0.071	
100.00	-9.54	-1.20	0.00	-31.77	0.00	31.77	1070.43	535.22	1217.83	609.82	3.23	-0.36	0.061	
105.00	-9.00	-1.20	0.00	-25.77	0.00	25.77	1052.74	526.37	1163.86	582.80	3.62	-0.38	0.053	
110.00	-6.28	-1.08	0.00	-19.78	0.00	19.78	1034.34	517.17	1110.26	555.96	4.03	-0.41	0.042	
115.00	-5.86	-1.06	0.00	-14.36	0.00	14.36	1015.23	507.62	1057.10	529.34	4.47	-0.43	0.033	
120.00	-5.44	-1.03	0.00	-9.06	0.00	9.06	995.40	497.70	1004.45	502.97	4.92	-0.44	0.023	
120.00	-5.44	-1.03	0.00	-9.06	0.00	9.06	735.22	367.61	535.89	335.79	4.92	-0.44	0.034	
125.00	-5.04	-0.98	0.00	-3.93	0.00	3.93	735.22	367.61	535.89	335.79	5.39	-0.45	0.019	
129.00	-0.06	-0.01	0.00	-0.01	0.00	0.01	735.22	367.61	535.89	335.79	5.77	-0.45	0.000	
130.00	0.00	-0.01	0.00	0.00	0.00	0.00	735.22	367.61	535.89	335.79	5.86	-0.45	0.000	

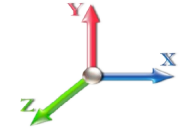
Seismic Segment Forces (Factored)

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 29

Load Case: 0.9D + 1.0E				Iterations 20
Gust Response Factor	1.10	Sds	0.19	Ss 0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00	S1 0.06
Wind Load Factor	0.00	Structure Frequency	0.28	SA 0.03
				Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		705.36	0.00	0.04	0.02	15.93	
10.00		692.26	0.01	0.06	0.03	21.41	
10.25	RT2 RB3	34.27	0.01	0.06	0.03	1.07	
15.00		644.89	0.03	0.07	0.04	22.27	
20.00		666.06	0.04	0.07	0.04	24.15	
20.50	RT1 RB4	65.88	0.05	0.07	0.04	2.40	
25.00		587.07	0.07	0.07	0.04	21.94	
27.50	RT3	321.56	0.08	0.07	0.04	12.18	
30.00		318.29	0.10	0.07	0.04	12.23	
35.00		626.75	0.14	0.07	0.03	24.76	
40.00		613.65	0.18	0.07	0.03	24.71	
40.50	RT4 RB5	60.64	0.18	0.06	0.03	2.44	
43.33	Bot - Section 2	341.17	0.21	0.06	0.02	13.74	
45.00		360.24	0.23	0.06	0.02	14.41	
48.00	Top - Section 1	641.82	0.26	0.05	0.02	24.95	
50.00		189.76	0.28	0.05	0.01	7.12	
55.00		467.06	0.34	0.04	0.01	14.60	
60.00		456.58	0.40	0.02	0.01	9.05	
60.75	RT5 RB6	67.58	0.41	0.01	0.01	1.19	
65.00		378.52	0.47	-0.01	0.01	1.23	
70.00		435.62	0.55	-0.03	0.01	-6.71	
75.00		425.13	0.63	-0.06	0.02	-13.33	
78.50	RT6	291.36	0.69	-0.08	0.03	-11.35	
80.00		123.30	0.72	-0.09	0.03	-5.07	
85.00		404.17	0.81	-0.11	0.06	-17.60	
87.42	Bot - Section 3	191.59	0.85	-0.12	0.07	-8.07	
90.00	Appurtenance(s)	3526.1	0.91	-0.12	0.09	-136.86	
91.33	Top - Section 2	181.80	0.93	-0.12	0.10	-6.62	
94.00	Appurtenance(s)	208.50	0.99	-0.11	0.13	-6.28	
95.00		57.74	1.01	-0.11	0.14	-1.58	
100.00	Appurtenance(s)	2035.9	1.12	-0.06	0.20	-18.88	
105.00		276.11	1.23	0.04	0.28	4.22	
110.00	Appurtenance(s)	2097.0	1.35	0.20	0.39	97.27	
115.00		260.39	1.48	0.45	0.52	21.93	
120.00	Top - Section 3	252.53	1.61	0.81	0.68	32.57	
125.00		237.19	1.75	1.31	0.89	42.90	
129.00	Appurtenance(s)	4075.9	1.86	1.83	1.09	927.90	
130.00	Appurtenance(s)	53.94	1.89	1.98	1.14	12.95	

Totals:	23,373.9	1,179.2	Total Wind:	31,009.8
----------------	-----------------	----------------	--------------------	-----------------

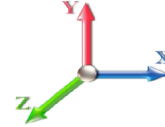
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.0E								Iterations 20
Gust Response Factor	1.10					Sds	0.19	Ss 0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.10			S1 0.06
Wind Load Factor	0.00	Structure Frequency	0.28	SA	0.03	Seismic Importance Factor	1.00	



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-26.14	-1.41	0.00	-157.95	0.00	157.95	2818.94	1409.47	4888.80	2448.04	0.00	0.00	0.00	0.035
5.00	-25.27	-1.40	0.00	-150.89	0.00	150.89	2786.10	1393.05	4742.28	2374.66	0.01	-0.01	0.034	
10.00	-24.42	-1.38	0.00	-143.88	0.00	143.88	2752.56	1376.28	4596.67	2301.75	0.02	-0.02	0.033	
10.25	-24.38	-1.38	0.00	-143.53	0.00	143.53	2750.86	1375.43	4589.41	2298.12	0.02	-0.02	0.040	
15.00	-23.58	-1.37	0.00	-136.96	0.00	136.96	2718.29	1359.15	4452.05	2229.33	0.05	-0.04	0.039	
20.00	-22.75	-1.35	0.00	-130.12	0.00	130.12	2683.32	1341.66	4308.48	2157.44	0.10	-0.05	0.037	
20.50	-22.67	-1.35	0.00	-129.45	0.00	129.45	2679.78	1339.89	4294.19	2150.28	0.10	-0.05	0.037	
25.00	-21.93	-1.33	0.00	-123.40	0.00	123.40	2647.62	1323.81	4166.04	2086.12	0.16	-0.06	0.036	
27.50	-21.52	-1.32	0.00	-120.08	0.00	120.08	2629.51	1314.76	4095.27	2050.68	0.19	-0.07	0.045	
30.00	-21.12	-1.31	0.00	-116.79	0.00	116.79	2611.22	1305.61	4024.80	2015.39	0.23	-0.08	0.045	
35.00	-20.33	-1.29	0.00	-110.25	0.00	110.25	2574.10	1287.05	3884.82	1945.30	0.32	-0.09	0.043	
40.00	-19.54	-1.27	0.00	-103.81	0.00	103.81	2536.26	1268.13	3746.17	1875.87	0.42	-0.11	0.042	
40.50	-19.47	-1.26	0.00	-103.17	0.00	103.17	2532.44	1266.22	3732.38	1868.96	0.44	-0.11	0.042	
43.33	-19.03	-1.25	0.00	-99.59	0.00	99.59	2510.64	1255.32	3654.51	1829.97	0.50	-0.12	0.041	
45.00	-18.63	-1.24	0.00	-97.50	0.00	97.50	2497.71	1248.86	3608.92	1807.14	0.55	-0.13	0.040	
48.00	-17.91	-1.22	0.00	-93.78	0.00	93.78	1854.44	927.22	2691.60	1347.80	0.63	-0.14	0.043	
50.00	-17.65	-1.21	0.00	-91.35	0.00	91.35	1844.56	922.28	2653.53	1328.74	0.69	-0.14	0.048	
55.00	-17.00	-1.20	0.00	-85.29	0.00	85.29	1819.35	909.68	2558.78	1281.29	0.85	-0.16	0.046	
60.00	-16.35	-1.19	0.00	-79.29	0.00	79.29	1793.44	896.72	2464.66	1234.16	1.03	-0.18	0.044	
60.75	-16.26	-1.19	0.00	-78.39	0.00	78.39	1789.49	894.74	2450.61	1227.12	1.06	-0.18	0.043	
65.00	-15.72	-1.20	0.00	-73.32	0.00	73.32	1766.81	883.40	2371.26	1187.39	1.23	-0.20	0.042	
70.00	-15.10	-1.20	0.00	-67.34	0.00	67.34	1739.46	869.73	2278.63	1141.01	1.44	-0.21	0.039	
75.00	-14.48	-1.20	0.00	-61.35	0.00	61.35	1711.40	855.70	2186.84	1095.05	1.68	-0.23	0.037	
78.50	-14.06	-1.20	0.00	-57.16	0.00	57.16	1691.33	845.67	2123.13	1063.14	1.85	-0.24	0.035	
78.50	-14.06	-1.20	0.00	-57.16	0.00	57.16	1691.33	845.67	2123.13	1063.14	1.85	-0.24	0.035	
80.00	-13.88	-1.20	0.00	-55.36	0.00	55.36	1682.63	841.31	2095.97	1049.54	1.93	-0.25	0.061	
85.00	-13.31	-1.20	0.00	-49.35	0.00	49.35	1653.14	826.57	2006.08	1004.53	2.20	-0.27	0.057	
87.42	-13.04	-1.21	0.00	-46.44	0.00	46.44	1638.63	819.32	1963.01	982.97	2.34	-0.29	0.055	
90.00	-9.76	-1.19	0.00	-43.32	0.00	43.32	1622.94	811.47	1917.25	960.05	2.50	-0.30	0.051	
91.33	-9.54	-1.19	0.00	-41.74	0.00	41.74	1099.39	549.70	1312.06	657.00	2.59	-0.31	0.072	
94.00	-9.26	-1.19	0.00	-38.56	0.00	38.56	1090.71	545.35	1282.99	642.45	2.76	-0.32	0.069	
95.00	-9.17	-1.19	0.00	-37.37	0.00	37.37	1087.40	543.70	1272.11	637.00	2.83	-0.33	0.067	
100.00	-7.15	-1.19	0.00	-31.40	0.00	31.40	1070.43	535.22	1217.83	609.82	3.19	-0.35	0.058	
105.00	-6.75	-1.18	0.00	-25.47	0.00	25.47	1052.74	526.37	1163.86	582.80	3.57	-0.38	0.050	
110.00	-4.71	-1.07	0.00	-19.57	0.00	19.57	1034.34	517.17	1110.26	555.96	3.98	-0.40	0.040	
115.00	-4.39	-1.05	0.00	-14.21	0.00	14.21	1015.23	507.62	1057.10	529.34	4.41	-0.42	0.031	
120.00	-4.08	-1.01	0.00	-8.97	0.00	8.97	995.40	497.70	1004.45	502.97	4.86	-0.43	0.022	
120.00	-4.08	-1.01	0.00	-8.97	0.00	8.97	735.22	367.61	535.89	335.79	4.86	-0.43	0.032	
125.00	-3.78	-0.97	0.00	-3.89	0.00	3.89	735.22	367.61	535.89	335.79	5.32	-0.44	0.017	
129.00	-0.05	-0.01	0.00	-0.01	0.00	0.01	735.22	367.61	535.89	335.79	5.69	-0.45	0.000	
130.00	0.00	-0.01	0.00	0.00	0.00	0.00	735.22	367.61	535.89	335.79	5.78	-0.45	0.000	

Wind Loading - Shaft

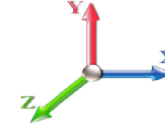
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 31

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	7.442	8.19	198.94	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	195.30	0.650	0.000	5.00	17.817	11.58	94.8	0.0	705.4
10.00		1.00	0.85	7.442	8.19	191.67	0.650	0.000	5.00	17.489	11.37	93.1	0.0	692.3
10.25	RT2 RB3	1.00	0.85	7.442	8.19	191.49	0.650	0.000	0.25	0.866	0.56	4.6	0.0	34.3
15.00		1.00	0.85	7.442	8.19	188.03	0.650	0.000	4.75	16.294	10.59	86.7	0.0	644.9
20.00		1.00	0.90	7.896	8.69	189.94	0.650	0.000	5.00	16.832	10.94	95.0	0.0	666.1
20.50	RT1 RB4	1.00	0.91	7.937	8.73	190.06	0.650	0.000	0.50	1.665	1.08	9.4	0.0	65.9
25.00		1.00	0.95	8.276	9.10	190.63	0.650	0.000	4.50	14.838	9.64	87.8	0.0	587.1
27.50	RT3	1.00	0.96	8.444	9.29	190.61	0.650	0.000	2.50	8.128	5.28	49.1	0.0	321.6
30.00		1.00	0.98	8.600	9.46	190.41	0.650	0.000	2.50	8.046	5.23	49.5	0.0	318.3
35.00		1.00	1.01	8.883	9.77	189.56	0.650	0.000	5.00	15.846	10.30	100.6	0.0	626.7
40.00		1.00	1.04	9.137	10.05	188.21	0.650	0.000	5.00	15.518	10.09	101.4	0.0	613.6
40.50	RT4 RB5	1.00	1.05	9.161	10.08	188.06	0.650	0.000	0.50	1.534	1.00	10.0	0.0	60.6
43.33	Bot - Section 2	1.00	1.06	9.292	10.22	187.10	0.650	0.000	2.83	8.629	5.61	57.3	0.0	341.2
45.00		1.00	1.07	9.366	10.30	186.48	0.650	0.000	1.67	5.097	3.31	34.1	0.0	360.2
48.00	Top - Section 1	1.00	1.08	9.494	10.44	185.29	0.650	0.000	3.00	9.083	5.90	61.7	0.0	641.8
50.00		1.00	1.09	9.576	10.53	187.09	0.650	0.000	2.00	5.989	3.89	41.0	0.0	189.8
55.00		1.00	1.12	9.770	10.75	184.82	0.650	0.000	5.00	14.744	9.58	103.0	0.0	467.1
60.00		1.00	1.14	9.951	10.95	182.31	0.650	0.000	5.00	14.415	9.37	102.6	0.0	456.6
60.75	RT5 RB6	1.00	1.14	9.977	10.97	181.92	0.650	0.000	0.75	2.134	1.39	15.2	0.0	67.6
65.00		1.00	1.16	10.120	11.13	179.62	0.650	0.000	4.25	11.953	7.77	86.5	0.0	378.5
70.00		1.00	1.17	10.279	11.31	176.75	0.650	0.000	5.00	13.758	8.94	101.1	0.0	435.6
75.00		1.00	1.19	10.430	11.47	173.74	0.650	0.000	5.00	13.430	8.73	100.1	0.0	425.1
78.50	RT6	1.00	1.20	10.530	11.58	171.55	0.650	0.000	3.50	9.205	5.98	69.3	0.0	291.4
80.00		1.00	1.21	10.572	11.63	170.59	0.650	0.000	1.50	3.896	2.53	29.4	0.0	123.3
85.00		1.00	1.22	10.708	11.78	167.32	0.650	0.000	5.00	12.773	8.30	97.8	0.0	404.2
87.42	Bot - Section 3	1.00	1.23	10.771	11.85	165.71	0.650	0.000	2.42	6.056	3.94	46.6	0.0	191.6
90.00	Appurtenance(s)	1.00	1.24	10.838	11.92	163.95	0.650	0.000	2.58	6.470	4.21	50.1	0.0	356.0
91.33	Top - Section 2	1.00	1.24	10.871	11.96	163.03	0.650	0.000	1.33	3.305	2.15	25.7	0.0	181.8
94.00	Appurtenance(s)	1.00	1.25	10.937	12.03	163.30	0.650	0.000	2.67	6.540	4.25	51.1	0.0	155.5
95.00		1.00	1.25	10.962	12.06	162.60	0.650	0.000	1.00	2.429	1.58	19.0	0.0	57.7
100.00	Appurtenance(s)	1.00	1.27	11.081	12.19	159.05	0.650	0.000	5.00	11.946	7.76	94.6	0.0	284.0
105.00		1.00	1.28	11.195	12.31	155.41	0.650	0.000	5.00	11.617	7.55	93.0	0.0	276.1
110.00	Appurtenance(s)	1.00	1.29	11.305	12.44	151.69	0.650	0.000	5.00	11.289	7.34	91.2	0.0	268.2
115.00		1.00	1.30	11.412	12.55	147.90	0.650	0.000	5.00	10.960	7.12	89.4	0.0	260.4
120.00	Top - Section 3	1.00	1.32	11.514	12.67	144.05	0.650	0.000	5.00	10.632	6.91	87.5	0.0	252.5
125.00		1.00	1.33	11.614	12.78	103.66	0.620 *	0.000	5.00	7.500	4.65	59.4	0.0	237.2
129.00	Appurtenance(s)	1.00	1.34	11.691	12.86	104.00	0.620 *	0.000	4.00	6.000	3.72	47.8	0.0	189.8
130.00	Appurtenance(s)	1.00	1.34	11.710	12.88	104.08	0.600	0.000	1.00	1.500	0.90	11.6	0.0	47.4
Totals:									130.00			2,448.6		12,677.2

* Cf Adjusted by Linear Load Ra Effect

Discrete Appurtenance Forces

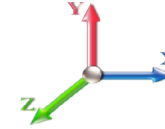
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 32

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	6' Lightning rod	1	11.710	12.881	1.00	1.00	0.38	6.50	0.000	0.000	4.89	0.00	0.00
2	129.00	RRUS 11	3	11.710	12.881	0.61	0.80	4.60	152.10	0.000	1.000	59.21	0.00	59.21
3	129.00	OPA-65R-LCUU-H6	3	11.710	12.881	0.62	0.80	17.85	240.00	0.000	1.000	229.95	0.00	229.95
4	129.00	RRUS 32 B2	3	11.710	12.881	0.54	0.80	6.22	231.00	0.000	1.000	80.16	0.00	80.16
5	129.00	QS66512-2	3	11.710	12.881	0.59	0.80	12.66	333.00	0.000	1.000	163.11	0.00	163.11
6	129.00	RRUS-32	3	11.710	12.881	0.56	0.80	6.50	231.00	0.000	1.000	83.75	0.00	83.75
7	129.00	DC6-48-60-18-8F	2	11.710	12.881	1.00	1.00	2.94	5.54	0.000	1.000	37.87	0.00	37.87
8	129.00	P65-16-XLH-RR	3	11.710	12.881	0.62	0.80	15.28	159.00	0.000	1.000	196.76	0.00	196.76
9	129.00	DTMABP7819VG12A	3	11.710	12.881	0.48	0.80	1.64	57.60	0.000	1.000	21.15	0.00	21.15
10	129.00	MTC3607 Platform + HR &	1	11.691	12.860	1.00	1.00	51.70	2246.00	0.000	0.000	664.87	0.00	0.00
11	129.00	RRUS 32 b66	3	11.710	12.881	0.54	0.80	6.22	231.00	0.000	1.000	80.16	0.00	80.16
12	110.00	T-Arm (Round)	3	11.305	12.436	0.56	0.75	13.50	1050.00	0.000	0.000	167.88	0.00	0.00
13	110.00	DB-T1-6Z-8AB-OZ	2	11.305	12.436	0.80	0.80	7.68	37.80	0.000	0.000	95.51	0.00	0.00
14	110.00	B4 RRH2X60-4R	3	11.305	12.436	0.54	0.80	5.40	165.00	0.000	0.000	67.19	0.00	0.00
15	110.00	B13 RRH4X30-4R	3	11.305	12.436	0.54	0.80	3.47	171.60	0.000	0.000	43.19	0.00	0.00
16	110.00	RRH2X60-1900A-4R	3	11.305	12.436	0.54	0.80	3.02	138.00	0.000	0.000	37.59	0.00	0.00
17	110.00	CBC721-DF	3	11.284	12.412	0.50	0.80	0.68	13.20	0.000	-1.000	8.45	0.00	-8.45
18	110.00	CBC721-DF	3	11.327	12.460	0.50	0.80	0.68	13.20	0.000	1.000	8.48	0.00	8.48
19	110.00	SBNHH-1D65B	6	11.305	12.436	0.63	0.80	30.94	240.00	0.000	0.000	384.80	0.00	0.00
20	100.00	LNx-6515DS-A1M	3	11.081	12.189	0.64	0.80	22.02	150.90	0.000	0.000	268.43	0.00	0.00
21	100.00	AIR 21, 1.3M, B4A B2P	3	11.081	12.189	0.64	0.80	11.69	271.20	0.000	0.000	142.52	0.00	0.00
22	100.00	AIR 21, 1.3M, B2A B4P	3	11.081	12.189	0.64	0.80	11.69	274.50	0.000	0.000	142.52	0.00	0.00
23	100.00	782 11056	3	11.081	12.189	0.62	0.80	0.24	5.40	0.000	0.000	2.97	0.00	0.00
24	100.00	T-Arm (Round)	3	11.081	12.189	0.56	0.75	13.50	1050.00	0.000	0.000	164.55	0.00	0.00
25	94.00	1'4"x6.5"x6" Surge	1	10.937	12.031	0.80	0.80	1.71	53.00	0.000	0.000	20.60	0.00	0.00
26	90.00	ALU - 800 MHz - RRU	6	10.838	11.921	0.50	0.75	7.51	318.00	0.000	0.000	89.50	0.00	0.00
27	90.00	ALU - 1900MHz - RRU	3	10.838	11.921	0.50	0.75	5.73	132.00	0.000	0.000	68.29	0.00	0.00
28	90.00	Andrew - VHLP2-11	2	10.838	11.921	1.00	1.00	9.36	54.00	0.000	0.000	111.58	0.00	0.00
29	90.00	F3P-10W	1	10.838	11.921	1.00	1.00	51.77	2122.00	0.000	0.000	617.17	0.00	0.00
30	90.00	NNVV-65B-R4	3	10.838	11.921	0.55	0.75	20.43	232.20	0.000	0.000	243.55	0.00	0.00
31	90.00	AAHC	3	10.838	11.921	0.56	0.75	7.09	312.00	0.000	0.000	84.49	0.00	0.00

Totals: 10,696.74

4,391.13

Total Applied Force Summary

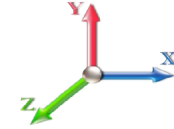
Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 33

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		94.81	961.72	0.00	0.00
10.00		93.06	948.62	0.00	0.00
10.25		4.61	47.09	0.00	0.00
15.00		86.70	888.43	0.00	0.00
20.00		95.03	922.42	0.00	0.00
20.50		9.45	91.52	0.00	0.00
25.00		87.80	817.79	0.00	0.00
27.50		49.07	449.74	0.00	0.00
30.00		49.48	446.47	0.00	0.00
35.00		100.65	883.11	0.00	0.00
40.00		101.37	870.01	0.00	0.00
40.50		10.05	86.28	0.00	0.00
43.33		57.33	486.44	0.00	0.00
45.00		34.13	445.69	0.00	0.00
48.00		61.66	795.64	0.00	0.00
50.00		41.01	292.30	0.00	0.00
55.00		103.00	723.42	0.00	0.00
60.00		102.56	712.94	0.00	0.00
60.75		15.22	106.04	0.00	0.00
65.00		86.49	596.42	0.00	0.00
70.00		101.12	691.98	0.00	0.00
75.00		100.15	681.49	0.00	0.00
78.50		69.31	470.81	0.00	0.00
80.00		29.45	200.20	0.00	0.00
85.00		97.79	636.53	0.00	0.00
87.42		46.64	301.00	0.00	0.00
90.00	(18) attachments	1264.73	3643.11	0.00	0.00
91.33		25.69	236.59	0.00	0.00
94.00	(1) attachments	71.74	318.08	0.00	0.00
95.00		19.03	98.83	0.00	0.00
100.00	(15) attachments	815.63	2241.42	0.00	0.00
105.00		92.99	444.86	0.00	0.00
110.00	(26) attachments	904.34	2265.80	0.00	0.03
115.00		89.43	355.74	0.00	0.00
120.00		87.53	347.88	0.00	0.00
125.00		59.40	332.54	0.00	0.00
129.00	(27) attachments	1664.81	4152.27	0.00	952.11
130.00	(1) attachments	16.49	53.94	0.00	0.00
	Totals:	6,839.73	29,045.15	0.00	952.14

Linear Appurtenance Segment Forces (Factored)

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 34

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.070	0.000	7.442	0.00	24.15
5.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.070	0.000	7.442	0.00	30.00
10.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.071	0.000	7.442	0.00	24.15
10.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.071	0.000	7.442	0.00	30.00
10.25	2" Conduit	Yes	0.25	0.000	2.00	0.04	0.00	0.072	0.000	7.442	0.00	1.21
10.25	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.072	0.000	7.442	0.00	1.50
15.00	2" Conduit	Yes	4.75	0.000	2.00	0.79	0.00	0.073	0.000	7.442	0.00	22.94
15.00	1" Reinforcing plate	Yes	4.75	0.000	1.00	0.40	0.00	0.073	0.000	7.442	0.00	28.50
20.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	7.896	0.00	24.15
20.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.074	0.000	7.896	0.00	30.00
20.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.075	0.000	7.937	0.00	2.42
20.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.075	0.000	7.937	0.00	3.00
25.00	2" Conduit	Yes	4.50	0.000	2.00	0.75	0.00	0.076	0.000	8.276	0.00	21.73
25.00	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.076	0.000	8.276	0.00	27.00
27.50	2" Conduit	Yes	2.50	0.000	2.00	0.42	0.00	0.077	0.000	8.444	0.00	12.07
27.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.077	0.000	8.444	0.00	15.00
30.00	2" Conduit	Yes	2.50	0.000	2.00	0.42	0.00	0.078	0.000	8.600	0.00	12.07
30.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.078	0.000	8.600	0.00	15.00
35.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.079	0.000	8.883	0.00	24.15
35.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.079	0.000	8.883	0.00	30.00
40.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.081	0.000	9.137	0.00	24.15
40.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.081	0.000	9.137	0.00	30.00
40.50	2" Conduit	Yes	0.50	0.000	2.00	0.08	0.00	0.082	0.000	9.161	0.00	2.42
40.50	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.082	0.000	9.161	0.00	3.00
43.33	2" Conduit	Yes	2.83	0.000	2.00	0.47	0.00	0.082	0.000	9.292	0.00	13.68
43.33	1" Reinforcing plate	Yes	2.83	0.000	1.00	0.24	0.00	0.082	0.000	9.292	0.00	17.00
45.00	2" Conduit	Yes	1.67	0.000	2.00	0.28	0.00	0.083	0.000	9.366	0.00	8.05
45.00	1" Reinforcing plate	Yes	1.67	0.000	1.00	0.14	0.00	0.083	0.000	9.366	0.00	10.00
48.00	2" Conduit	Yes	3.00	0.000	2.00	0.50	0.00	0.084	0.000	9.494	0.00	14.49
48.00	1" Reinforcing plate	Yes	3.00	0.000	1.00	0.25	0.00	0.084	0.000	9.494	0.00	18.00
50.00	2" Conduit	Yes	2.00	0.000	2.00	0.33	0.00	0.083	0.000	9.576	0.00	9.66
50.00	1" Reinforcing plate	Yes	2.00	0.000	1.00	0.17	0.00	0.083	0.000	9.576	0.00	12.00
55.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.085	0.000	9.770	0.00	24.15
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.085	0.000	9.770	0.00	30.00
60.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.087	0.000	9.951	0.00	24.15
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.087	0.000	9.951	0.00	30.00
60.75	2" Conduit	Yes	0.75	0.000	2.00	0.13	0.00	0.088	0.000	9.977	0.00	3.62
60.75	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.088	0.000	9.977	0.00	4.50
65.00	2" Conduit	Yes	4.25	0.000	2.00	0.71	0.00	0.089	0.000	10.120	0.00	20.53
65.00	1" Reinforcing plate	Yes	4.25	0.000	1.00	0.35	0.00	0.089	0.000	10.120	0.00	25.50
70.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.091	0.000	10.279	0.00	24.15
70.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.091	0.000	10.279	0.00	30.00
75.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.093	0.000	10.430	0.00	24.15
75.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.093	0.000	10.430	0.00	30.00
78.50	2" Conduit	Yes	3.50	0.000	2.00	0.58	0.00	0.095	0.000	10.530	0.00	16.91
78.50	1" Reinforcing plate	Yes	3.50	0.000	1.00	0.29	0.00	0.095	0.000	10.530	0.00	21.00
80.00	2" Conduit	Yes	1.50	0.000	2.00	0.25	0.00	0.096	0.000	10.572	0.00	7.25

Linear Appurtenance Segment Forces (Factored)

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 35

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 21

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
80.00	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.096	0.000	10.572	0.00	9.00
85.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.072	0.000	10.708	0.00	24.15
85.00	1" Reinforcing plate	Yes	1.00	0.000	1.00	0.08	0.00	0.072	0.000	10.708	0.00	6.00
87.42	2" Conduit	Yes	2.42	0.000	2.00	0.40	0.00	0.067	0.000	10.771	0.00	11.67
90.00	2" Conduit	Yes	2.58	0.000	2.00	0.43	0.00	0.067	0.000	10.838	0.00	12.48
91.33	2" Conduit	Yes	1.33	0.000	2.00	0.22	0.00	0.068	0.000	10.871	0.00	6.44
94.00	2" Conduit	Yes	2.67	0.000	2.00	0.44	0.00	0.068	0.000	10.937	0.00	12.88
95.00	2" Conduit	Yes	1.00	0.000	2.00	0.17	0.00	0.069	0.000	10.962	0.00	4.83
100.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.070	0.000	11.081	0.00	24.15
105.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.072	0.000	11.195	0.00	24.15
110.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	11.305	0.00	24.15
115.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.076	0.000	11.412	0.00	24.15
120.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.078	0.000	11.514	0.00	24.15
125.00	2" Conduit	Yes	5.00	0.000	2.00	0.83	0.00	0.111	1.033	11.614	0.00	24.15
129.00	2" Conduit	Yes	4.00	0.000	2.00	0.67	0.00	0.111	1.033	11.691	0.00	19.32
Totals:											0.0	1,109.1

Calculated Forces

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.0D + 1.0W 60 mph Wind	Iterations	21
Dead Load Factor 1.00		
Wind Load Factor 1.00		

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-29.04	-6.85	0.00	-662.22	0.00	662.22	2818.94	1409.47	4888.80	2448.04	0.00	0.000	0.000	0.133
5.00	-28.08	-6.78	0.00	-627.97	0.00	627.97	2786.10	1393.05	4742.28	2374.66	0.02	-0.046	0.000	0.128
10.00	-27.12	-6.69	0.00	-594.08	0.00	594.08	2752.56	1376.28	4596.67	2301.75	0.10	-0.092	0.000	0.124
10.25	-27.07	-6.70	0.00	-592.41	0.00	592.41	2750.86	1375.43	4589.41	2298.12	0.10	-0.094	0.000	0.149
15.00	-26.18	-6.64	0.00	-560.57	0.00	560.57	2718.29	1359.15	4452.05	2229.33	0.22	-0.146	0.000	0.144
20.00	-25.25	-6.55	0.00	-527.38	0.00	527.38	2683.32	1341.66	4308.48	2157.44	0.40	-0.200	0.000	0.139
20.50	-25.16	-6.56	0.00	-524.10	0.00	524.10	2679.78	1339.89	4294.19	2150.28	0.43	-0.205	0.000	0.138
25.00	-24.34	-6.48	0.00	-494.60	0.00	494.60	2647.62	1323.81	4166.04	2086.12	0.64	-0.253	0.000	0.133
27.50	-23.88	-6.44	0.00	-478.40	0.00	478.40	2629.51	1314.76	4095.27	2050.68	0.78	-0.280	0.000	0.166
30.00	-23.43	-6.41	0.00	-462.29	0.00	462.29	2611.22	1305.61	4024.80	2015.39	0.94	-0.314	0.000	0.163
35.00	-22.54	-6.33	0.00	-430.24	0.00	430.24	2574.10	1287.05	3884.82	1945.30	1.30	-0.379	0.000	0.156
40.00	-21.67	-6.24	0.00	-398.59	0.00	398.59	2536.26	1268.13	3746.17	1875.87	1.73	-0.444	0.000	0.148
40.50	-21.58	-6.23	0.00	-395.47	0.00	395.47	2532.44	1266.22	3732.38	1868.96	1.78	-0.450	0.000	0.148
43.33	-21.09	-6.18	0.00	-377.81	0.00	377.81	2510.64	1255.32	3654.51	1829.97	2.06	-0.487	0.000	0.144
45.00	-20.64	-6.16	0.00	-367.50	0.00	367.50	2497.71	1248.86	3608.92	1807.14	2.23	-0.508	0.000	0.140
48.00	-19.85	-6.10	0.00	-349.04	0.00	349.04	1854.44	927.22	2691.60	1347.80	2.56	-0.545	0.000	0.149
50.00	-19.55	-6.07	0.00	-336.84	0.00	336.84	1844.56	922.28	2653.53	1328.74	2.80	-0.569	0.000	0.162
55.00	-18.82	-5.98	0.00	-306.50	0.00	306.50	1819.35	909.68	2558.78	1281.29	3.43	-0.635	0.000	0.152
60.00	-18.10	-5.88	0.00	-276.60	0.00	276.60	1793.44	896.72	2464.66	1234.16	4.13	-0.698	0.000	0.141
60.75	-18.00	-5.87	0.00	-272.19	0.00	272.19	1789.49	894.74	2450.61	1227.12	4.24	-0.708	0.000	0.139
65.00	-17.39	-5.80	0.00	-247.23	0.00	247.23	1766.81	883.40	2371.26	1187.39	4.89	-0.759	0.000	0.130
70.00	-16.70	-5.70	0.00	-218.26	0.00	218.26	1739.46	869.73	2278.63	1141.01	5.72	-0.816	0.000	0.118
75.00	-16.01	-5.60	0.00	-189.76	0.00	189.76	1711.40	855.70	2186.84	1095.05	6.60	-0.869	0.000	0.106
78.50	-15.54	-5.53	0.00	-170.15	0.00	170.15	1691.33	845.67	2123.13	1063.14	7.25	-0.904	0.000	0.098
78.50	-15.54	-5.53	0.00	-170.15	0.00	170.15	1691.33	845.67	2123.13	1063.14	7.25	-0.904	0.000	0.098
80.00	-15.34	-5.51	0.00	-161.85	0.00	161.85	1682.63	841.31	2095.97	1049.54	7.54	-0.918	0.000	0.163
85.00	-14.70	-5.42	0.00	-134.29	0.00	134.29	1653.14	826.57	2006.08	1004.53	8.54	-0.994	0.000	0.143
87.42	-14.40	-5.37	0.00	-121.19	0.00	121.19	1638.63	819.32	1963.01	982.97	9.05	-1.028	0.000	0.132
90.00	-10.77	-4.05	0.00	-107.31	0.00	107.31	1622.94	811.47	1917.25	960.05	9.62	-1.061	0.000	0.118
91.33	-10.54	-4.02	0.00	-101.91	0.00	101.91	1099.39	549.70	1312.06	657.00	9.92	-1.078	0.000	0.165
94.00	-10.22	-3.95	0.00	-91.18	0.00	91.18	1090.71	545.35	1282.99	642.45	10.53	-1.109	0.000	0.151
95.00	-10.12	-3.94	0.00	-87.23	0.00	87.23	1087.40	543.70	1272.11	637.00	10.76	-1.124	0.000	0.146
100.00	-7.89	-3.08	0.00	-67.56	0.00	67.56	1070.43	535.22	1217.83	609.82	11.98	-1.187	0.000	0.118
105.00	-7.44	-2.99	0.00	-52.15	0.00	52.15	1052.74	526.37	1163.86	582.80	13.25	-1.241	0.000	0.097
110.00	-5.20	-2.04	0.00	-37.21	0.00	37.21	1034.34	517.17	1110.26	555.96	14.57	-1.284	0.000	0.072
115.00	-4.84	-1.94	0.00	-27.03	0.00	27.03	1015.23	507.62	1057.10	529.34	15.94	-1.319	0.000	0.056
120.00	-4.50	-1.85	0.00	-17.33	0.00	17.33	995.40	497.70	1004.45	502.97	17.33	-1.344	0.000	0.039
120.00	-4.50	-1.85	0.00	-17.33	0.00	17.33	735.22	367.61	535.89	335.79	17.33	-1.344	0.000	0.058
125.00	-4.16	-1.78	0.00	-8.09	0.00	8.09	735.22	367.61	535.89	335.79	18.75	-1.361	0.000	0.030
129.00	-0.05	-0.02	0.00	-0.02	0.00	0.02	735.22	367.61	535.89	335.79	19.90	-1.370	0.000	0.000
130.00	0.00	-0.02	0.00	0.00	0.00	0.00	735.22	367.61	535.89	335.79	20.18	-1.370	0.000	0.000

Final Analysis Summary

Structure: CT13064-A-SBA	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 37



Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 10 8 101 mph Wind	31.1	0.00	34.80	0.00	0.00	3017.77
0.9D + 1.6W 8 101 mph Wind	31.1	0.00	26.08	0.00	0.00	2988.41
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.0	0.00	57.39	0.00	0.00	768.26
1.2D + 1.0E	1.4	0.00	34.85	0.00	0.00	159.73
0.9D + 1.0E	1.4	0.00	26.14	0.00	0.00	157.95
1.0D + 1.0W 60 mph Wind	6.9	0.00	29.04	0.00	0.00	662.22

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 10 8 101 mph Wind	-28.02	-29.32	0.00	-2182.6	0.00	-2182.6	2629.51	1314.7	4095.27	2050.68	27.50	0.738
0.9D + 1.6W 8 101 mph Wind	-20.85	-29.15	0.00	-2155.7	0.00	-2155.7	2629.51	1314.7	4095.27	2050.68	27.50	0.728
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-48.80	-7.54	0.00	-553.54	0.00	-553.54	2629.51	1314.7	4095.27	2050.68	27.50	0.197
1.2D + 1.0E	-12.73	-1.21	0.00	-42.27	0.00	-42.27	1099.39	549.70	1312.06	657.00	91.33	0.076
0.9D + 1.0E	-9.54	-1.19	0.00	-41.74	0.00	-41.74	1099.39	549.70	1312.06	657.00	91.33	0.072
1.0D + 1.0W 60 mph Wind	-23.88	-6.44	0.00	-478.40	0.00	-478.40	2629.51	1314.7	4095.27	2050.68	27.50	0.166

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	20.5	(4) PLT-6"x1" (1.25" Hole)	-271.2	-4.34	37.1	223.5	37.1	7	8	260.9	37.1		8	276.82	326.3	285.00	0.971
0.0	10.3	(4) PLT-5.5"x1 1/4" (1.25" hol)	228.7	4.12	37.1	257.4	37.1	7	9	243.5	37.1	7	9	257.42	379.1	318.75	0.808
10.3	27.5	(2) LNP-LP6X100-G-20CT	244.3	5.86	37.1	243.7	37.1	7	9	218.2	37.1	6	8	243.72	297.8	292.50	0.833
20.5	40.5	(4) PLT-6"x1" (1.25" Hole)	-325.8	-5.21	37.1	260.9	37.1		8	248.4	37.1		8	274.94	326.3	285.00	0.965
40.5	60.8	(4) PLT-6"x1" (1.25" Hole)	-392.5	-6.28	37.1	248.4	37.1		8	218.4	37.1		8	250.63	326.3	285.00	0.879
60.8	78.5	(4) PLT-6"x1" (1.25" Hole)	-421.6	-6.75	37.1	218.4	37.1		8	155.6	37.1	5	8	218.36	326.3	285.00	0.766

Base Plate Summary

Structure: CT13064-A-SB	Code: EIA/TIA-222-G	8/23/2018
Site Name: Middletown 2, CT	Exposure: C	
Height: 130.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 38

Reactions	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 50.00	Bolt Circle: 47.25
Moment (kip-ft): 1864.44	Width (in): 51.75	Number Bolts: 14.00
Axial (kip): 38.20	Style: Round	Bolt Type: 1.5" F1554 105
Shear (kip): 20.10	Polygon Sides: 0.00	Bolt Diameter (in): 1.50
Analysis	Clip Length (in): 0.00	Yield (ksi): 105.00
Moment (kip-ft): 3017.77	Effective Len (in): 12.18	Ultimate (ksi): 125.00
Axial (kip): 57.39	Moment (kip-in): 190.73	Arrangement: Radial
Shear (kip): 31.07	Allow Stress (ksi): 67.50	Cluster Dist (in): 0.00
	Applied Stress (ksi): 0.00	Start Angle (deg): 0.00
Moment Design %: 161.86	Stress Ratio: 0.62	Compression
		Force (kip): 79.61
		Allowable (kip): 141.00
		Ratio: 0.60
		Tension
		Force (kip): 71.41
		Allowable (kip): 141.00
		Ratio: 0.54



Monopole Mat Foundation Design

Date

8/22/2018

Customer Name:	Sprint Nextel	EIA/TIA Standard:	EIA-222-G
Site Name:	Middletown	Structure Height (Ft.):	130
Site Number:	CT13064-A-SBA	Engineer Name:	S. Hesselbeir
Engr. Number:	56931	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations

Structure Type:

Monopole

Analysis or Design?

Analysis

Base Reactions (Factored):

Axial Load (Kips):	34.8	Shear Force (Kips):	31.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3017.8

Allowable overstress %: 5.0%

Foundation Geometries:

		Mods required -Yes/No ?:	Yes
Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	20	Width of Pad (ft.):	20
Add Concrete Width & Length (ft.)	14	Add Concrete Thick. (ft)	1
Final Length of pad (ft)	20.0	Final width of pad (ft):	20.0
Control Value for Cell D18:	14	Control Value for Cell F18:	1

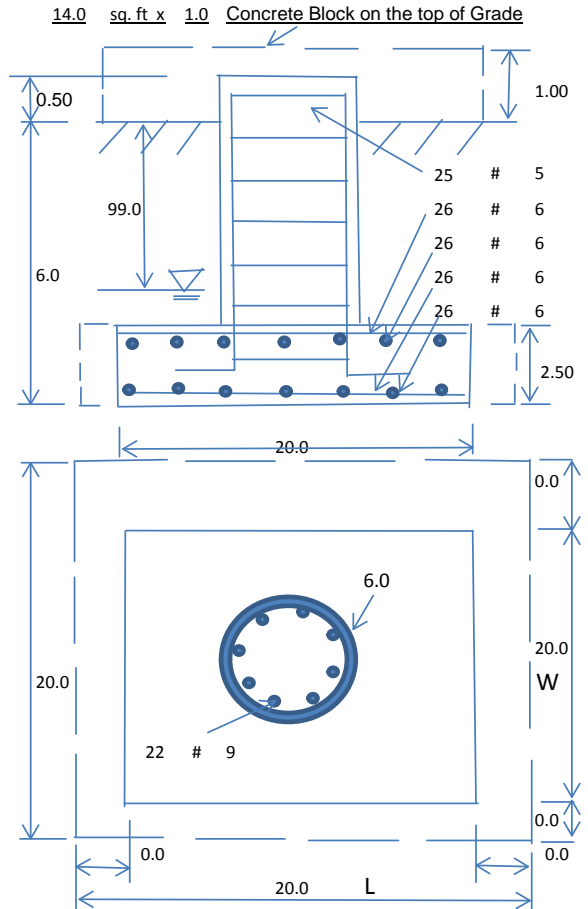
Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	22	Tie Spacing (in):	3.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	6	
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):	26	Qty. of Rebar in Pad (W):	26	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	26	Qty. of Rebar in Pad (W):	26	

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

Soil Unit Weight (pcf):	130.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	



Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1301.04	Total Dry Soil Weight (Kips):	169.14
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	169.14	Weight from the Concrete Block at Top (K):	27.28
Total Dry Concrete Volume (cu. Ft.):	1294.96	Total Dry Concrete Weight (Kips):	194.24
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	194.24	Total Vertical Load on Base (Kips):	398.18

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	4784	<	Allowable Factored Soil Bearing (psf):	6000	0.80	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3618.4	>	Design Factored Momont (kips-ft):	3104	0.86	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.17					OK!

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

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

Load/
Capacity
Ratio

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	1.00	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	3190.2	> Design Factored Moment (Mu, Kips-Ft):	3142.2	0.98	OK!
Calculated Shear Capacity (Kips):	1100.5	> Design Factored Shear (Kips):	31.1	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	1188.0	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7159.5	> Design Factored Axial Load (Pu Kips):	34.8	0.00	OK!
Moment & Axial Strength Combination:	0.98	OK! Check Tie Spacing (Design/Required):		0.25	OK!
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	606.2	> One-Way Factored Shear (L-D. Kips):	224.8	0.37	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	606.2	> One-Way Factored Shear (W-D., Kips)	224.8	0.37	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	540.9	> One-Way Factored Shear (C-C, Kips):	226.6	0.42	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0018		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	1349.0	> Moment at Bottom (L-Dir. K-Ft):	913.4	0.68	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	1349.0	> Moment at Bottom (W-Dir. K-Ft):	913.4	0.68	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	1899.5	> Moment at Bottom (C-C Dir. K-Ft):	1291.8	0.68	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0018		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	1349.0	> Moment at the top (L-Dir K-Ft):	418.7	0.31	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	1349.0	> Moment at the top (W-Dir K-Ft):	418.7	0.31	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	1899.5	> Moment at the top (C-C Dir. K-Ft):	394.0	0.21	OK!

(3).Check Punching Shear Capacity due to Moment in the Pier:

Moment transferred by punching shear:	1207.1	k-ft.	Max. factored shear stress $v_{u,CD}$:	6.3	Psi
Max. factored shear stress $v_{u,AB}$:	12.9	Psi	Factored shear Strength ϕv_n :	189.7	Psi
Max. factored shear stress v_u :	12.9	Psi	Check Usage of Punching Shear Capacity:	0.07	OK!

MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 130' ROHN MONOPOLE TOWER

PROPOSED CARRIER: SPRINT NEXTEL

SITE: CT13064-A-SBA / MIDDLETOWN 2, CT
COORDINATES (LATITUDE: 41.545011°, LONGITUDE: -72.620766°)

CONSTRUCTION CLASS

TES HAS DETERMINED THIS AS A
CLASS IV CONSTRUCTION PROJECT
PER ANSI/ASSE A10.48

COMPLETE FABRICATION DRAWINGS FOR ALL MATERIALS REQUIRED FOR
THIS PROJECT ARE AVAILABLE FROM TOWER ENGINEERING SOLUTIONS
(TES). PLEASE CONTACT TES FOR MORE INFORMATION.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	0
A-2	REINFORCEMENT ASSEMBLY	0
A-3	REINFORCEMENT ASSEMBLY	0
A-4	SPLICE CONNECTION PLATE INSTALLATION DETAILS	0

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE
TES PROJECT NO. 56275, DATED 07/16/18.



Tower Engineering Solutions
1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
56931

CUSTOMER SITE NO:
CT13064-A-SBA
CUSTOMER SITE NAME:
MIDDLETOWN 2, CT
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457



DRAWN BY: DCR CHECKED BY: SH/HA

REV.	DESCRIPTION	BY	DATE
△	FIRST ISSUE	DCR	08/24/18
△			
△			
△			

SHEET TITLE:

TITLE SHEET

This drawing/document is the property of
Tower Engineering Solutions, LLC. Information
contained herein is considered confidential in
nature and is to be used only for the
specific site that it was intended for.
Reproduction, transmission, publication or
disclosure by any method is prohibited
except by express written permission from
Tower Engineering Solutions, LLC. Without
exception, the information on this
drawing/document remains the property of
Tower Engineering Solutions, LLC.

SHEET NUMBER: T-1 REV #: 0

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSE A10.48, 2016 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER TIA-1019-A, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.

FABRICATION

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2012 SECTION 1705 - TABLE 1705.2.2 FOR STEEL CONSTRUCTION AND TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

POST INSTALLED EPOXY INJECTED ANCHOR BOLTS:

1. CONCRETE MUST BE A MINIMUM OF 28 DAYS OLD.
2. FOLLOW MANUFACTURER'S REQUIREMENTS FOR CURE TIME VS. AMBIENT TEMPERATURE.
3. DRILL HOLE TO REQUIRED DIAMETER AND DEPTH. ALL WATER, DIRT, OIL, DEBRIS, GREASE OR DUST MUST BE REMOVED FROM EACH CORE HOLE. FOLLOW MANUFACTURER'S RECOMMENDATION FOR CORRECT TYPE OF CORE BIT. AVOID DAMAGING EXISTING REINFORCING STEEL OR OTHER EMBEDDED ITEMS. NOTIFY TES ENGINEERING IF VOIDS IN THE CONCRETE, REINFORCING STEEL OR OTHER EMBEDDED ITEMS ARE ENCOUNTERED. STOP CORING IMMEDIATELY IF THIS OCCURS.
4. A HOLE ROUGHENING DEVICE FROM EITHER HILTI OR ALLFASTENERS SHALL BE USED WITH ALL HOLES. FOLLOW ALL MANUFACTURER'S RECOMMENDED CORING AND INSTALLATION INSTRUCTIONS.
5. AFTER CORING AND ROUGHENING, FLUSH EACH HOLE WITH RUNNING WATER TO REMOVE ANY SLURRY OR DEBRIS. REMOVE ALL WATER FROM THE HOLE BY MECHANICAL PUMPING.
6. BRUSH EACH HOLE WITH AN APPROPRIATE SIZED NYLON BRUSH AND FLUSH WITH RUNNING WATER A SECOND TIME. REMOVE ALL WATER FROM THE HOLE.
7. AFTER THE SECOND WATER FLUSH BRUSH THE HOLE AGAIN WITH THE APPROPRIATE SIZED NYLON BRUSH.
8. BLOW EACH HOLE WITH COMPRESSED AIR TWO TIMES MINIMUM.
9. CONFIRM THAT EACH HOLE IS PROPERLY ROUGHED AND DRY.
10. NO EPOXY INJECTION SHALL TAKE PLACE IN RAINY CONDITIONS.
11. EPOXY SHOULD BE VISIBLE AT THE TOP OF THE CORE HOLE AFTER INSTALLATION.
12. CONTRACTOR TO SUPPLY ONE PHOTO OF EACH ROUGHED AND CLEANED HOLE IN CLOSEOUT PHOTO PACKAGE.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING^{a,b}

BOLT LENGTH ^f	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 ^d	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS ^d
NOT MORE THAN 4d _b	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN 4d _b BUT NOT MORE THAN 8d _b	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN 8d _b BUT NOT MORE THAN 12d _b	2/3 TURN	5/6 TURN	1 TURN

^a NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

^b APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

^c WHEN THE BOLT LENGTH EXCEEDS 12d_b, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

^d BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.



Tower Engineering Solutions

1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
56931

CUSTOMER SITE NO:
CT13064-A-SBA
CUSTOMER SITE NAME:
MIDDLETOWN 2, CT
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

DRAWN BY: DCR CHECKED BY: SH/HA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	DCR	08/24/18

SHEET TITLE:

GENERAL NOTES

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER: REV #:

GN-1 0

NOTES:

1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE MONOPOLE AND ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
2. TEMPORARY RELOCATION OF EXISTING EQUIPMENT AROUND THE FOUNDATION MAY BE REQUIRED DURING CONSTRUCTION.

SCOPE OF WORK

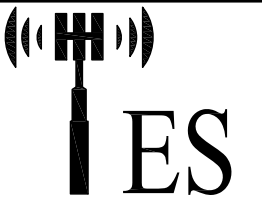
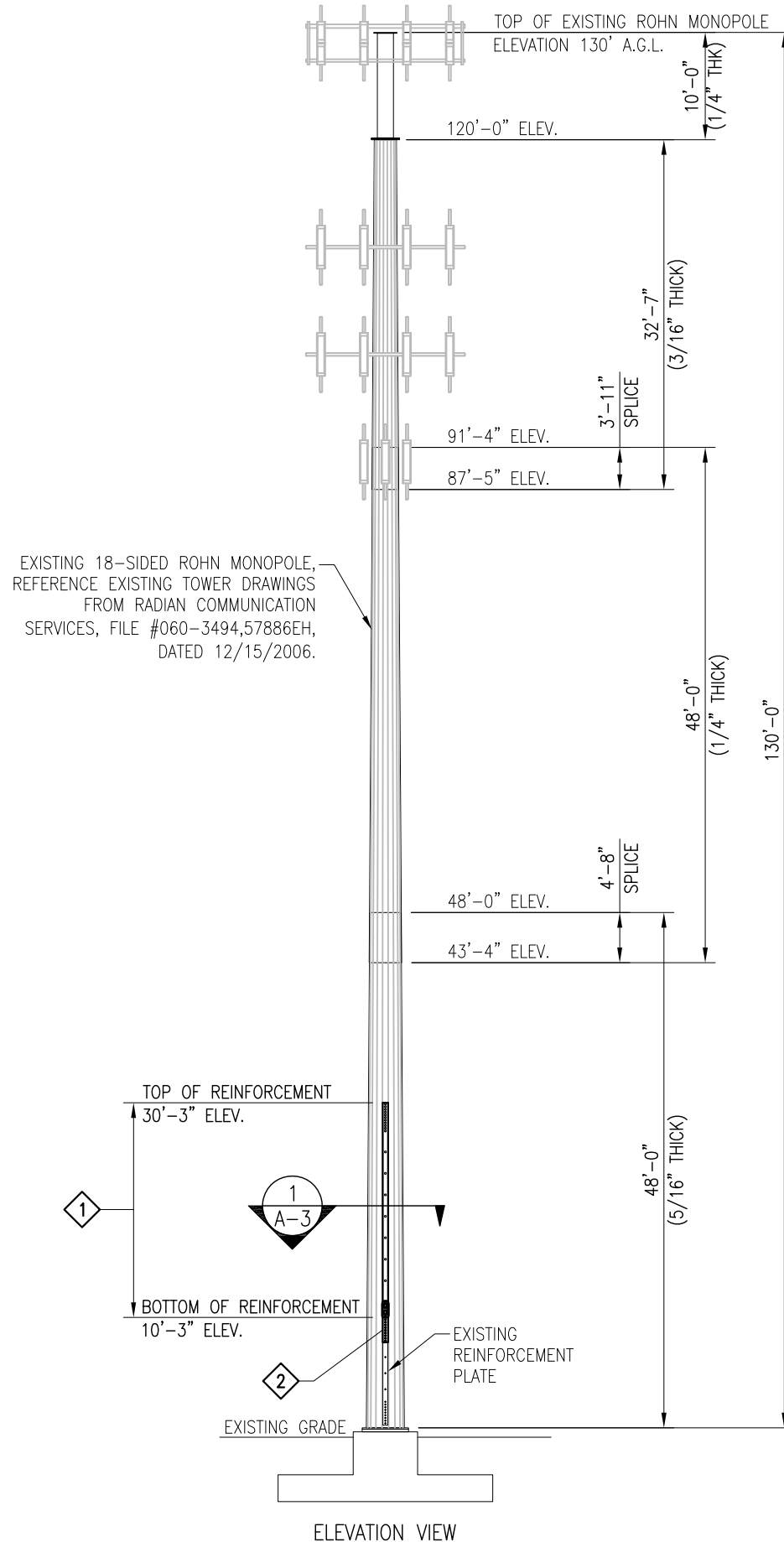
1. INSTALL (1) LP6X100-G-20TC AND (1) LP6X100-S-20TC FLAT BAR REINFORCEMENTS. SEE SHEET A-3 FOR DETAILS.
2. INSTALL (1) SPCPL-CC09AJ AND (1) SPCPL-S-CC09WAJ SPLICE CONNECTION PLATES. SEE SHEETS A-2 AND A-4 FOR DETAILS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.



PHOTO 1
FOUNDATION

FOUNDATION COATING NOTES:

1. THE COATING MATERIALS SHALL BE LANCO WHITE ACRYLIC ELASTOMERIC COATING AND SEALER, OR HYDRO ARMOR COATING.
2. THE COATING CAN BE PLACED AT LEAST (2) DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR FOUNDATION REINFORCEMENT, AND MINIMUM (4) DAYS FOR NEW FOUNDATION CONSTRUCTION.
3. THE CONCRETE SURFACE SHALL BE CLEAN AND DRY PRIOR TO THE APPLICATION OF THE COATING.
4. THE COATING SHALL BE APPLIED TO ALL THE SURFACES OF THE CONCRETE ABOVE THE GROUND AND 6" BELOW THE GRADE SURFACE IF APPLICABLE.
5. MINIMUM 30 MILS COATING IS REQUIRED.
6. APPLY COLD GALVANIZE AT LEAST 2'-3' ABOVE FOUNDATION.



Tower Engineering Solutions

1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
56931

CUSTOMER SITE NO:
CT13064-A-SBA
CUSTOMER SITE NAME:
MIDDLETOWN 2, CT
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

DRAWN BY: DCR | CHECKED BY: SH/HA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	DCR	08/24/18

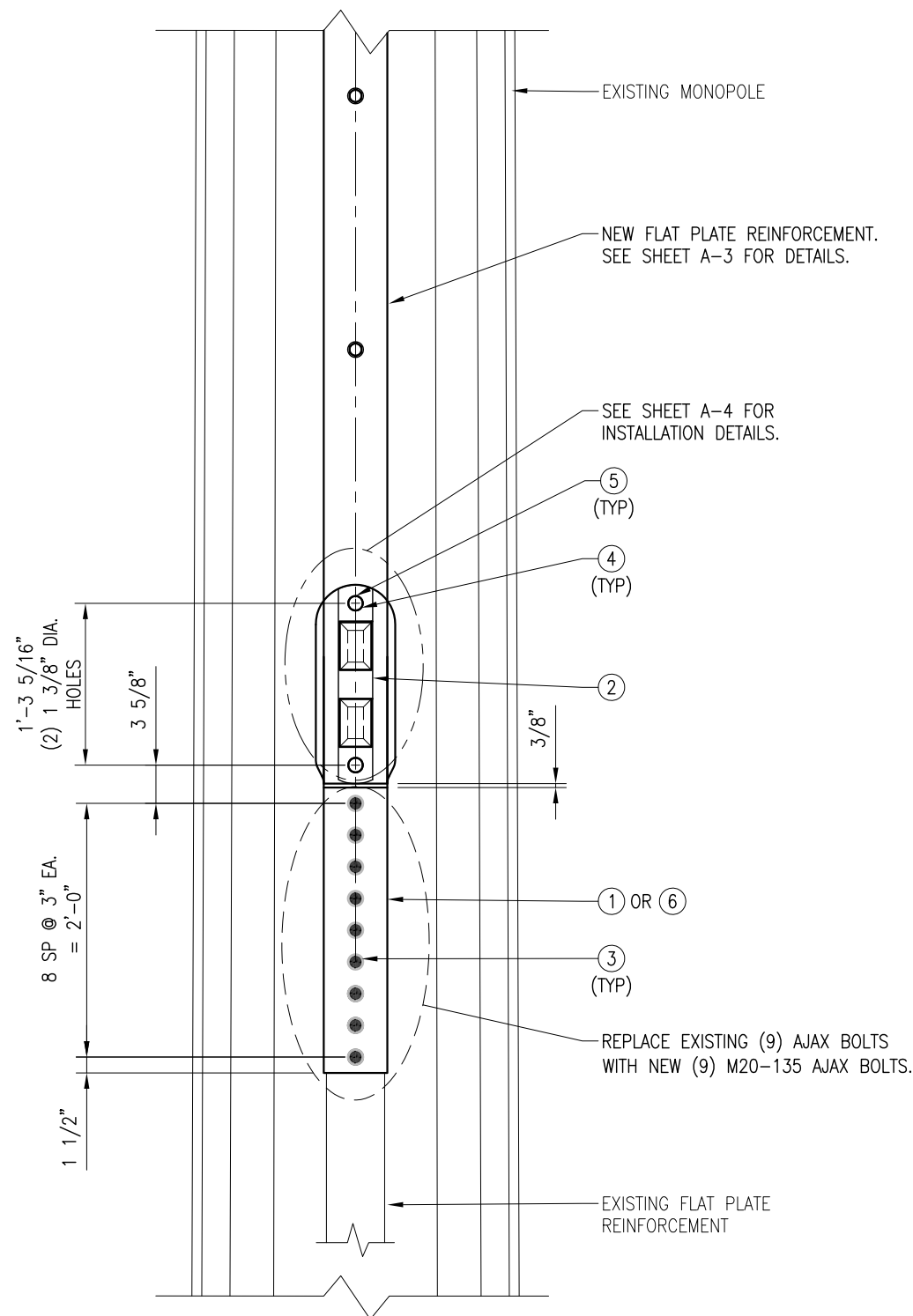
SHEET TITLE:

TOWER PROFILE

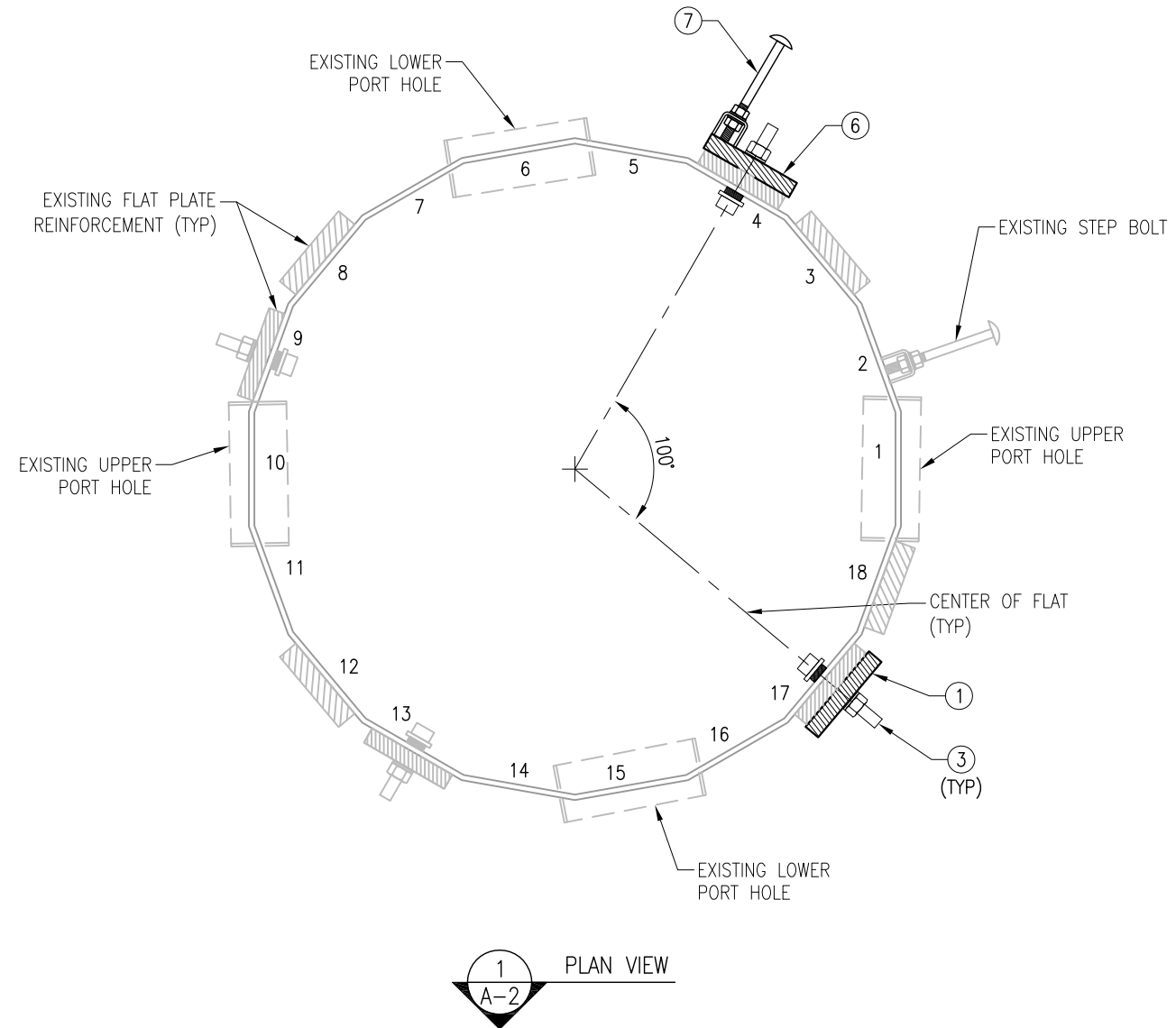
This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER: A-1 | REV #: 0

US PATENT 9,546,497 B2



ELEVATION VIEW (AT ±10'-3" ELEV.)
REFER TO PLAN VIEW



NOTES:

1. REFER TO SHEET A-2 FOR FLAT BAR ORIENTATION.
2. INSTALLATION TORQUE FOR HOLLO/AJAX-BOLTS: SEE SHEET GN-1.
3. REMOVE EXISTING STEP BOLTS THAT INTERFERE WITH NEW REINFORCEMENT PLATES PRIOR TO INSTALLATION.
4. WHEN INSTALLING AJAX BOLTS ONCE THE SPLINED END HAS BEEN SHEARED OFF, THE EXPOSED STEEL MUST BE COLD GALVANIZED BRUSH COATED. SEE ATTACHED AJAX SHEET FOR FULL INSTALLATION INSTRUCTIONS.

ITEM NO.	QTY.	PART NO.	DESCRIPTION (PER SECTION)
1	1	SPCPL-CC09AJ	PL 1 1/4" X 7 1/2" X 3'-10 11/16" A572 GRADE 65
2	2	CPL-C	SPLICE CONNECTION COVER PLATE
3	18	M20X135	AJAX ONESIDE BOLT W/ 2 3/4" SLEEVE
4	4	HB20-3	LINDAPTER TYPE HB HOLLO-BOLT (HDG)
5	4	SHIM-M20-1	PL 1/4" X 3" X 3" A36
6	1	SPCPL-S-CC09WAJ	PL 1 1/4" X 7 1/2" X 3'-10 11/16" A572 GRADE 65 WELDMENT
7	2	STEP BOLTS	STEP BOLT 5/8" X 8 1/4" W/ (2) NUT-LKW EA.



Tower Engineering Solutions

1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
56931

CUSTOMER SITE NO:
CT13064-A-SBA
CUSTOMER SITE NAME:
MIDDLETOWN 2, CT
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

DRAWN BY: DCR | CHECKED BY: SH/HA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	DCR	08/24/18

SHEET TITLE:

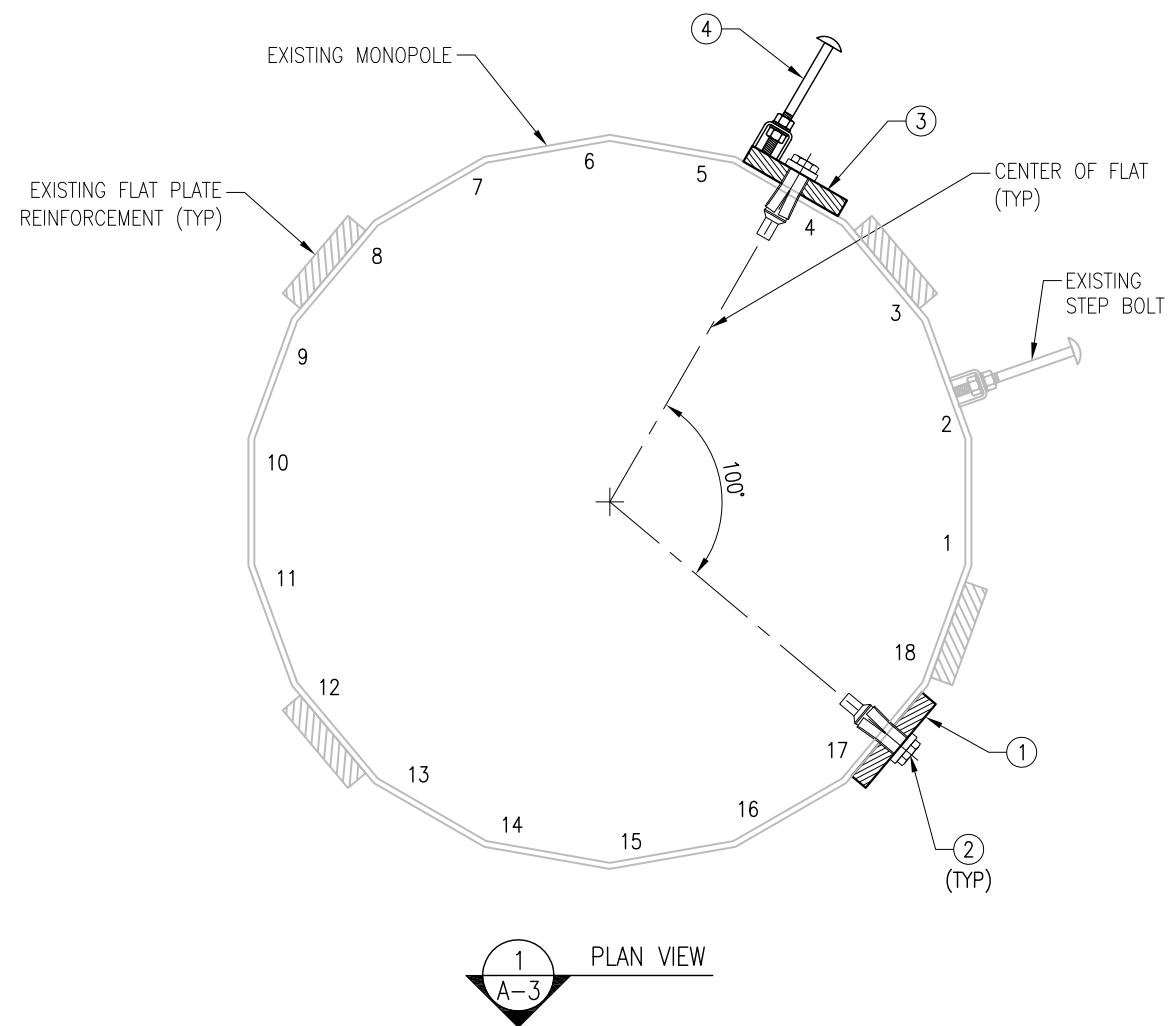
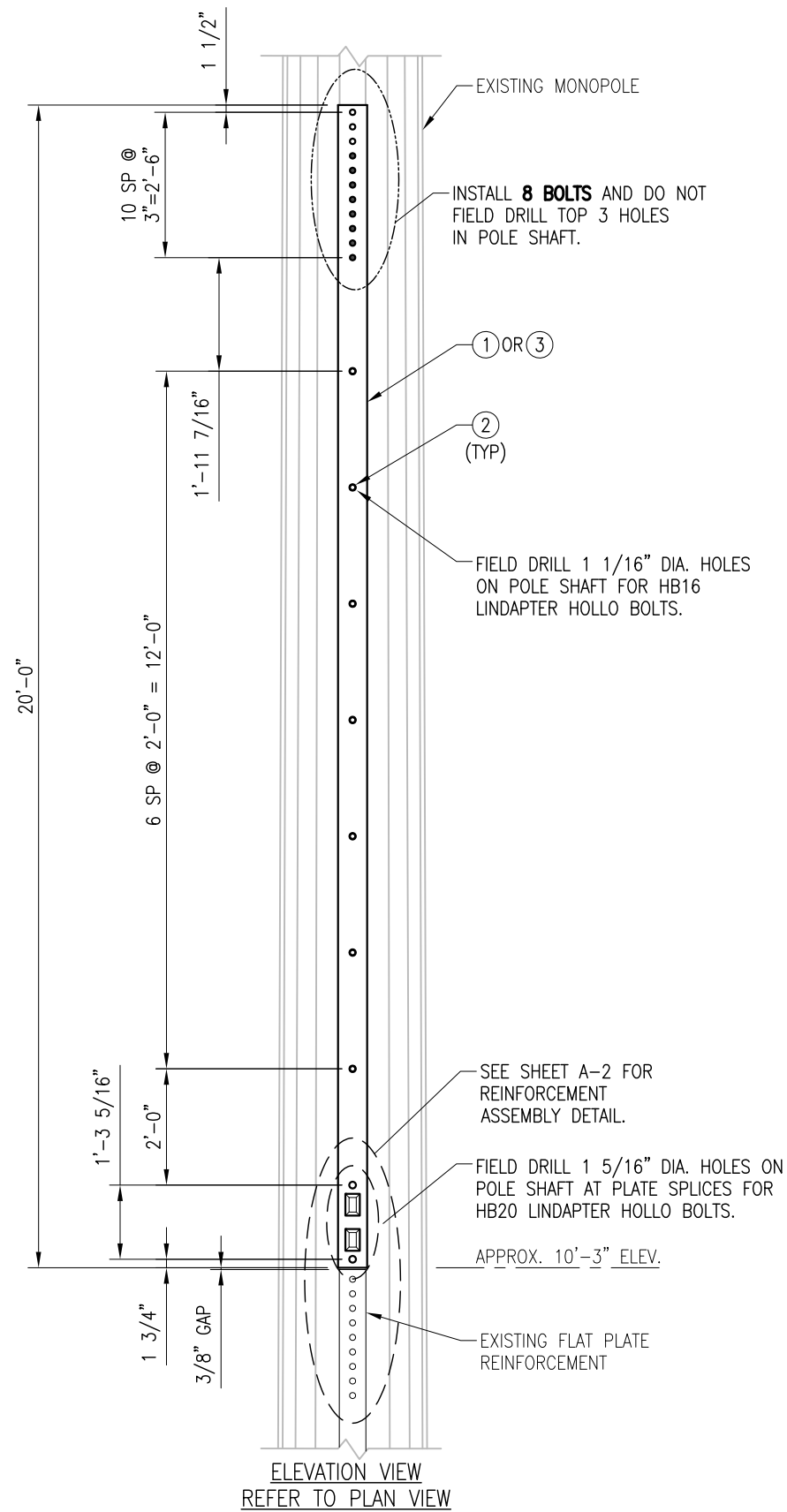
REINFORCEMENT
ASSEMBLY

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER: | REV #:

A-2 | 0

US PATENT 9,546,497 B2



- NOTES:**
- REFER TO SHEET A-2 FOR FLAT BAR ORIENTATION.
 - INSTALLATION TORQUE FOR HOLLO/AJAX-BOLTS: SEE SHEET GN-1.
 - REMOVE EXISTING STEP BOLTS THAT INTERFERE WITH NEW REINFORCEMENT PLATES PRIOR TO INSTALLATION.

ITEM NO.	QTY.	PART NO.	DESCRIPTION (PER SECTION)
1	1	LP6X100-G-20TC	PL 1" X 6" X 20'-0" A572-65 WELDMENT
2	30	HB16-2	LINDAPTER 5/8" TYPE HB HOLLO-BOLT (HCF)
3	1	LP6X100-S-20TC	PL 1" X 6" X 20'-0" A572-65 WELDMENT WITH STEP BOLT
4	16	STEP BOLTS	STEP BOLT 5/8" X 8 1/4" W/ (2) NUT-LKW EA.



Tower Engineering Solutions
 1320 GREENWAY DRIVE, SUITE 600
 IRVING, TX 75038
 PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
 BOCA RATON, FL 33487
 (800)-487-SITE

TES JOB NO:
 56931

CUSTOMER SITE NO:
 CT13064-A-SBA
 CUSTOMER SITE NAME:
 MIDDLETOWN 2, CT
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

DRAWN BY: DCR | CHECKED BY: SH/HA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	DCR	08/24/18

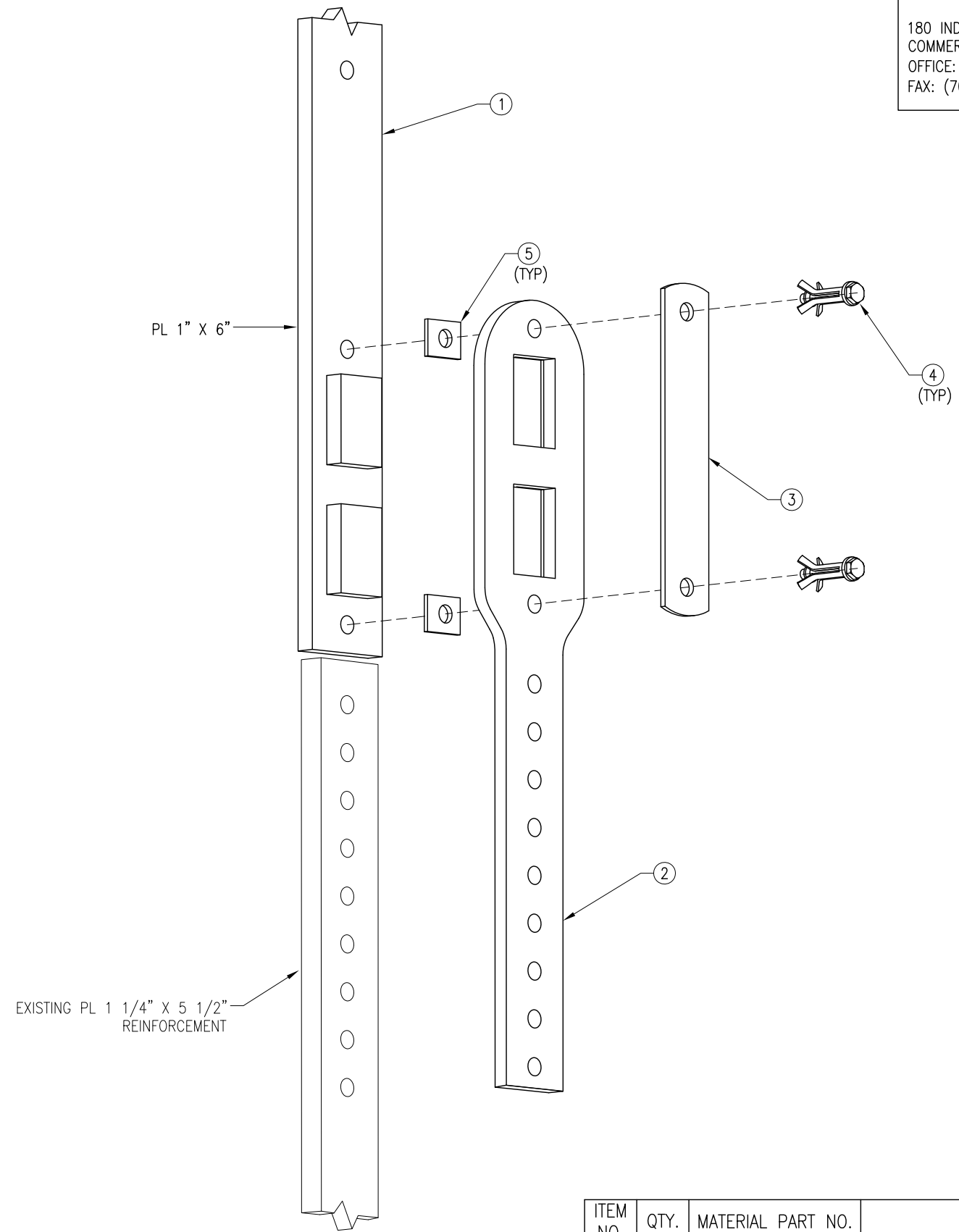
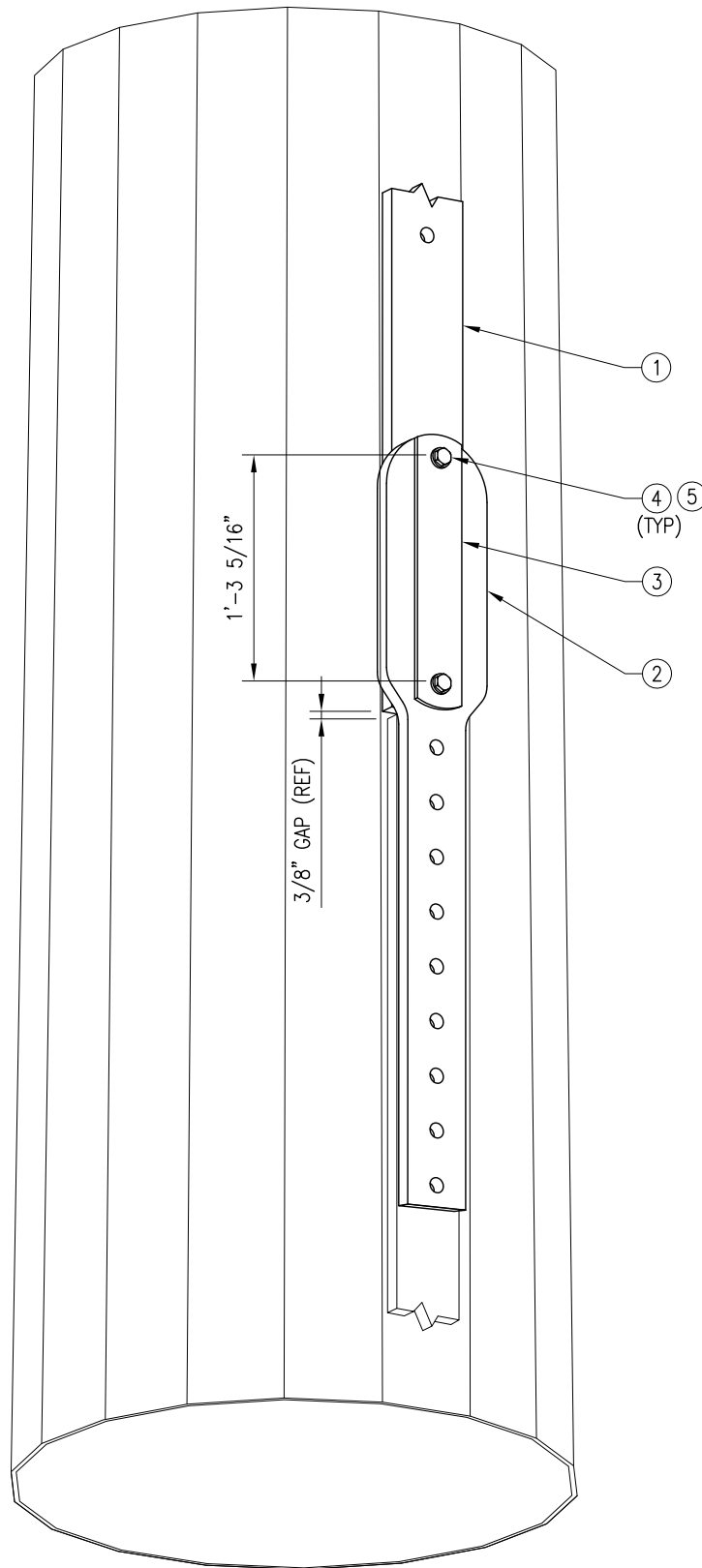
SHEET TITLE:

REINFORCEMENT ASSEMBLY

This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

SHEET NUMBER: **A-3** | REV #: **0**

US PATENT 9,546,497 B2



ALL LPXXXX PARTS ARE PATENT PENDING AND ARE AVAILABLE FROM METROSITE, LLC
 180 IND PARK BLVD
 COMMERCE, GA 30529
 OFFICE: (706) 335-7045
 FAX: (706) 335-7056



Tower Engineering Solutions
 1320 GREENWAY DRIVE, SUITE 600
 IRVING, TX 75038
 PHONE: (972) 483-0607



5900 BROKEN SOUND PARKWAY, NW
 BOCA RATON, FL 33487
 (800)-487-SITE

TES JOB NO:
 56931
 CUSTOMER SITE NO:
 CT13064-A-SBA
 CUSTOMER SITE NAME:
 MIDDLETOWN 2, CT
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

DRAWN BY: DCR		CHECKED BY: SH/HA	
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	DCR	08/24/18

SHEET TITLE:
**SPLICE CONNECTION
 PLATE INSTALLATION
 DETAILS**

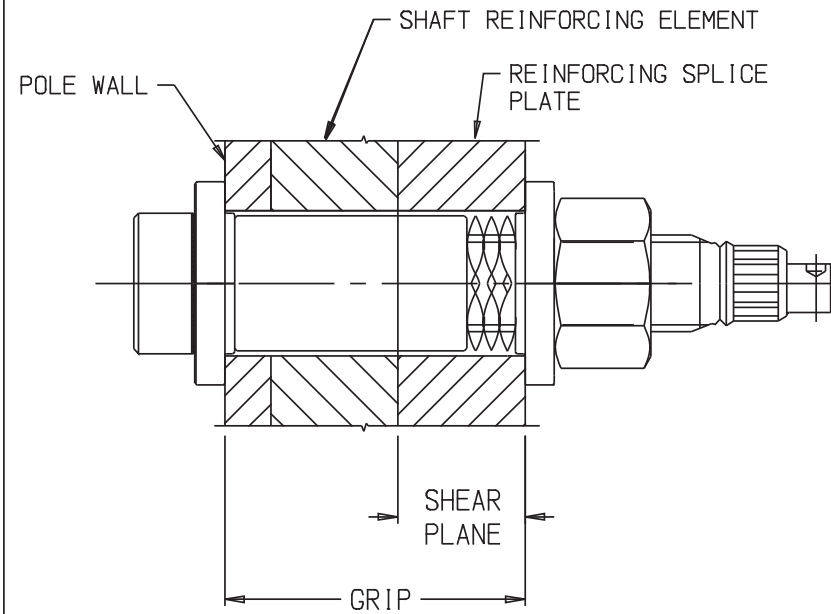
This drawing/document is the property of Tower Engineering Solutions, LLC. Information contained herein is considered confidential in nature and is to be used only for the specific site that it was intended for. Reproduction, transmission, publication or disclosure by any method is prohibited except by express written permission from Tower Engineering Solutions, LLC. Without exception, the information on this drawing/document remains the property of Tower Engineering Solutions, LLC.

ITEM NO.	QTY.	MATERIAL PART NO.	DESCRIPTION
1	1	LP6X100-X-XXX	PL 1" X 6" PLATE WELDMENT
2	1	SPCPL-CC09AJ	PL 1 1/4" X 7 1/2" X 3'-10 3/16" A572-65
3	1	CPL-C	KEY PLATE COVER PLATE
4	2	HB20-3	LINDAPTER TYPE HB HOLLO-BOLT (HDG)
5	2	SHIM-M20-1	PL 1/4" X 3" X 3" A36

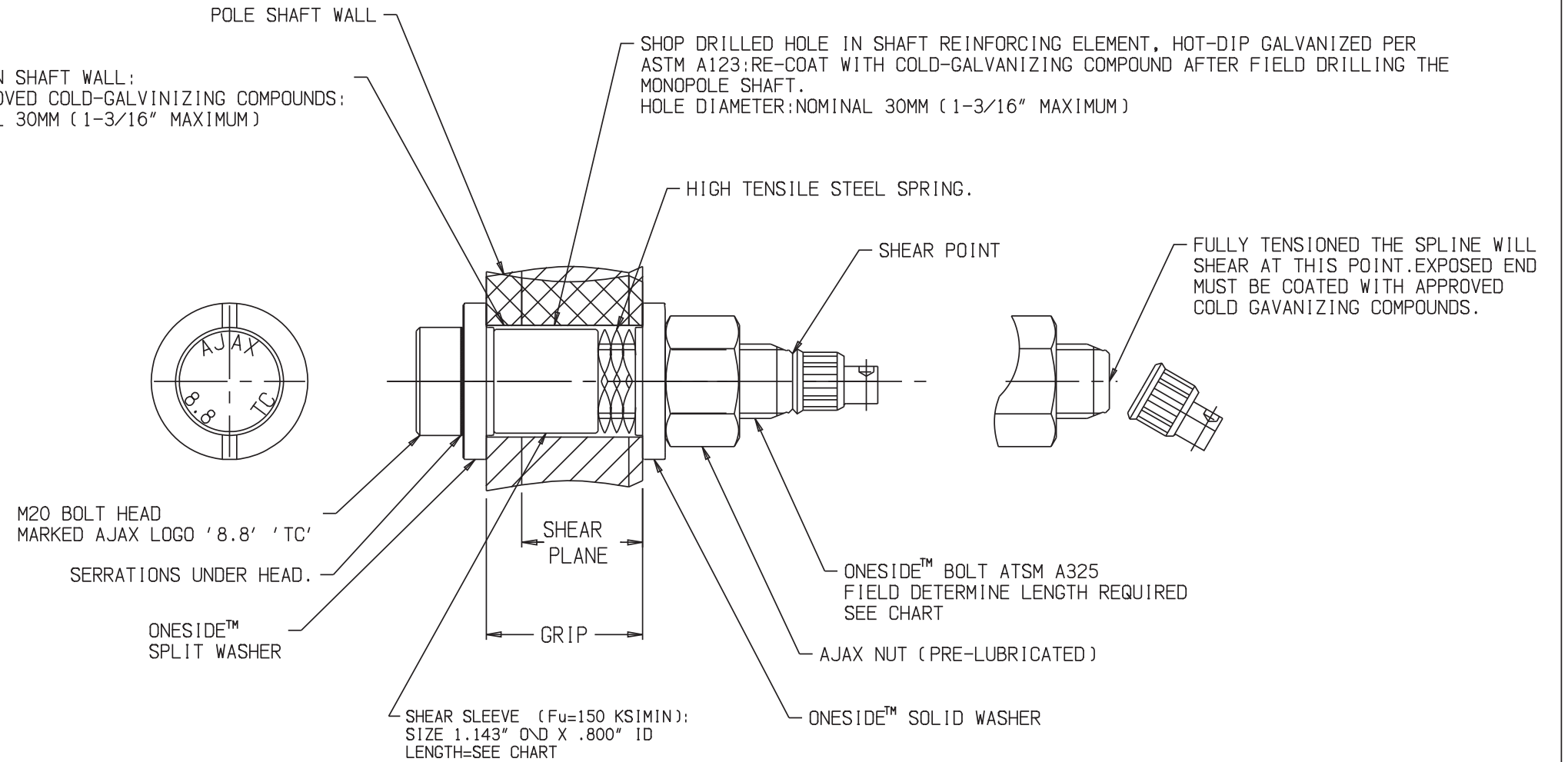
SHEET NUMBER:
A-4
 REV #:
0

ONESIDE™
PATENT US 7,373,709B2

FIELD DRILLED HOLE IN SHAFT WALL:
COAT WITH CROWN APPROVED COLD-GALVANIZING COMPOUNDS:
HOLE DIAMETER: NOMINAL 30MM (1-3/16" MAXIMUM)



NOTE:
SPLICE CONNECTIONS REQUIRE
ADDITIONAL CONSIDERATION WHEN
SELECTING PART ASSEMBLIES.



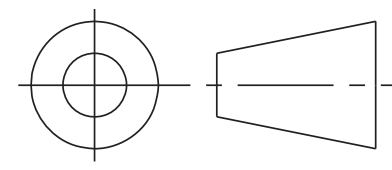
NO ALTERATIONS TO PART WITHOUT REFERRING TO DRAWING OFFICE

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR
IRA SVENDSGAARD AND ASSOCIATES
PETER SVENDSGAARD -PETERS@IRASVENS.COM
JOHN KILLAM -JOHN@IRASVENS.COM
PHONE (530) 647-8225
FAX (530) 647-8229

CODE	SIZE	COLOUR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBATC20.65-6	M20 X 65	GREEN	6.0 (0.236")	12.5/25.0	0.500"/1.000"
OSBATC20.95-18	M20 X 95	BLACK	18.0 (0.706")	23.5/36.0	0.925"/1.417"
OSBATC20.95-30	M20 X 95	YELLOW	30.0 (1.181")	36.0/47.0	1.417"/1.850"
OSBATC20.95-39	M20 X 95	BLUE	39.0 (1.535")	47.0/57.0	1.850"/2.245"
OSBATC20.135-48	M20 X 135	BROWN	48.0 (1.889")	57.0/73.0	2.245"/2.874"
OSBATC20.135-57	M20 X 135	PURPLE	57.0 (2.245")	73.0/94.0	2.874"/3.700"
OSBATC20.165-76	M20 X 165	RED	76.0 (3.000")	94.0/125.0	3.700"/4.921"
OSBATC20.250	M20 X 250	SILVER	MTO	121.0/211.0	4.763"/8.310"

5		SHEAR DETAIL ADDED.	31/08/16	SR					
4		CODES CHANGED	20/06/16	SR					
3		COLOUR CHANGES	18/05/16	SR					
2		TC HEAD MARK ADDED	20/04/16	SR					
1		ORIGINAL	15/02/16	SR					
SYM	CH.No.	CHANGE	DATE	DRN	CHK	DIMENSIONS IN MILLIMETERS	SCALE: NTS	FAMILY : XXXX	F 050.012A

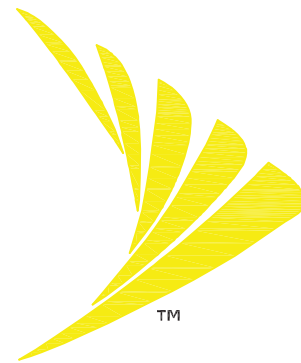


PLANNED BY: XX
DATE: XX
DO NOT SCALE



A4
1:1

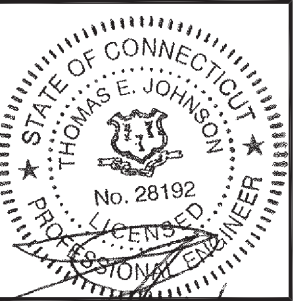
SPECIAL CONSTRUCTION SCHEDULE NOTE
(SBA DESIGN-BUILD TOWER MODS REQUIRED):
 UNLESS A PRE-MOD CONDITIONAL OR TEMPORARY
 INSTALLATION IS SPECIFICALLY RECOMMENDED BY SBA
 TOWER STRUCTURAL ENGINEER AND INCLUDED IN SBA
 NOTICE-TO-PROCEED, SPRINT TOWER TOP EQUIPMENT
 INSTALLATION IS CONTINGENT UPON COMPLETION OF SBA
 DESIGN-BUILD FOR ALL REQUIRED TOWER/FOUNDATION
 STRUCTURAL MODIFICATIONS, ENGINEERING CONSTRUCTION
 CONTROL INSPECTIONS, AND FINAL ENGINEERING AFFIDAVIT
 (ALL PREVIOUS ITEMS TO BE DESIGN-BUILD PERFORMED
 BY SBA UNDER A SEPARATE BUILDING PERMIT).



SITE NAME: SBA FAIRCHILD LANE
SITE NUMBER: CT52XC112
AUGMENT ID: CT-HFD0140Q17.1
SITE ADDRESS: 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457
JURISDICTION: CITY OF MIDDLETOWN / CT SITING
 COUNCIL
SITE TYPE: EXISTING 130' MONOPOLE
PROGRAM: DO MACRO UPGRADE EQUIPMENT
 DEPLOYMENT



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



CHECKED BY: *G. J. J. / TEJ*

APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
 SITE NAME:
SBA FAIRCHILD LANE
 SITE ADDRESS:
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

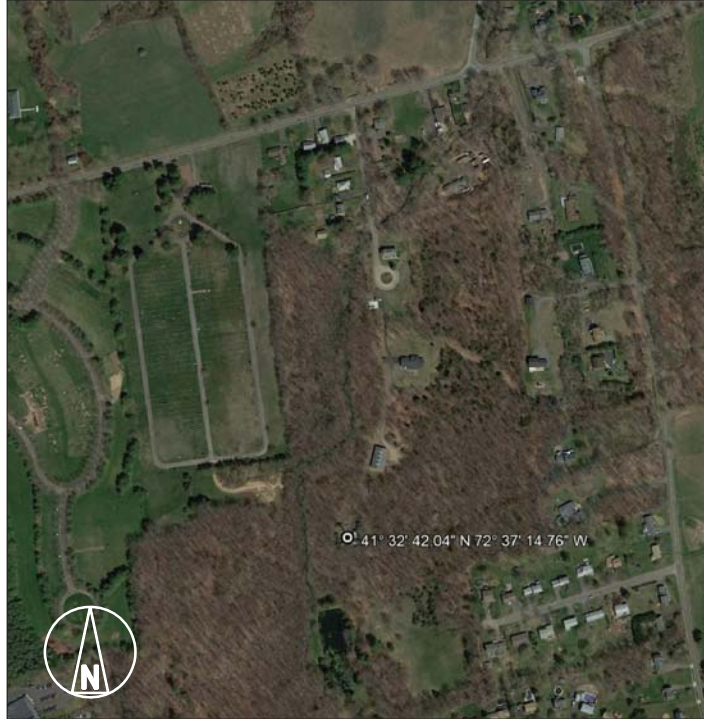
SHEET TITLE
 TITLE SHEET

SHEET NUMBER
 T-1

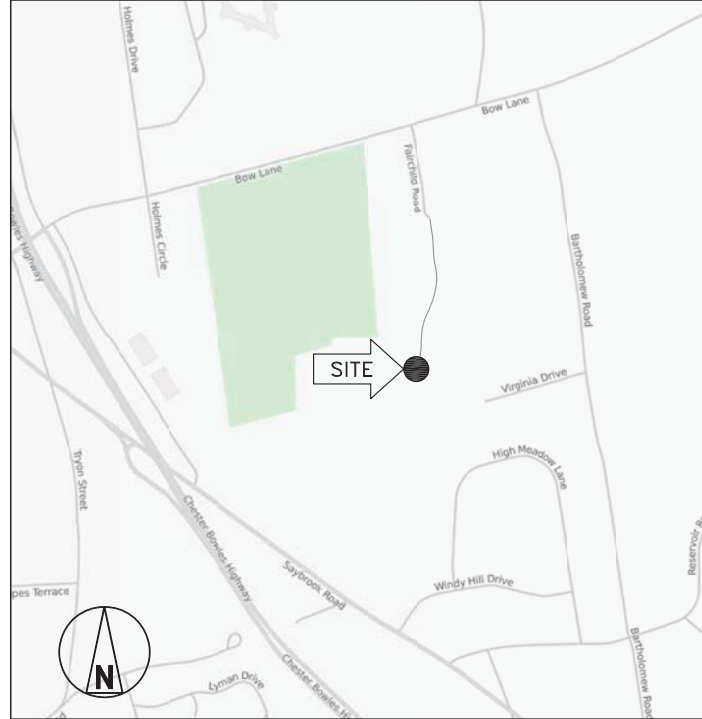
PROJECT INFORMATION

SITE INFORMATION
 LATITUDE: 41° 32' 42.04" N (41.5450°)
 LONGITUDE: 72° 37' 14.76" W (-72.6208°)
 GROUND ELEVATION: 188'± AMSL (PER GOOGLE EARTH)
 STRUCTURE HEIGHT: 130'± AGL (FROM RECORD STRUCTURAL)
 STRUCTURE TYPE: MONOPOLE
 ZONING JURISDICTION: CITY OF MIDDLETOWN / CT SITING COUNCIL
 ZONING DISTRICT/OCCUPANCY: R-30 (RESIDENTIAL)
 COUNTY: MIDDLESEX
APPLICANT
 SPRINT
 1 INTERNATIONAL BLVD. SUITE 800
 MAHWAH, NJ 07495
PROPERTY OWNER:
 N/F STEPHEN G. & BARBARA L. BORRELLI
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457
TOWER OWNER:
 SBA INFRASTRUCTURE, LLC
 8051 CONGRESS AVENUE
 BOCA RATON, FL 33487
 (561) 995-7670
 SBA SITE ID: CT13064-A
 SBA SITE NAME: MIDDLETOWN 2, CT
SBA CONTACT:
 STEPHEN ROTH
 (860) 539-4920
 SROth@sbasite.com

LOCATION MAP N.T.S.



AREA MAP N.T.S.



SCOPE OF WORK

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

GENERAL NOTES

- 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.
- 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	3
SP-1	OUTLINE SPECIFICATIONS	3
SP-2	OUTLINE SPECIFICATIONS	3
SP-3	OUTLINE SPECIFICATIONS	3
A-1	COMPOUND PLAN	3
A-2	ELEVATION AND ANTENNA PLANS	3
A-3	TOWER EQUIPMENT DETAILS	3
S-1	ANTENNA AND RRH MOUNTING DETAILS	3
S-2	GROUND EQUIPMENT DETAILS	3
E-1	ELECTRICAL AND GROUNDING DETAILS	3
E-1	GROUNDING DETAILS	3
RF-1	RF DATA SHEET	3
RF-2	PLUMBING DIAGRAM AND RAN WIRING	3

CODE COMPLIANCE

- 2016 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS. (IBC 2012 BASED)
- 2014 NATIONAL ELECTRICAL CODE WITH AMENDMENTS
- 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.

CALL CONNECTICUT ONE CALL
 (800) 922-4455
 CALL 3 WORKING DAYS
 BEFORE YOU DIG!

Know what's below.
 Call before you dig.
 www.call811.com

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 ANTENNA 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.



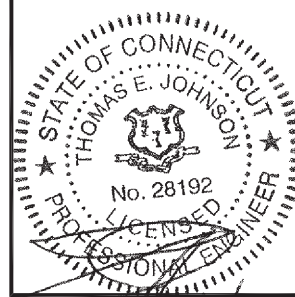
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641



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



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



CHECKED BY: *G. J. TEJ* / TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE

SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

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



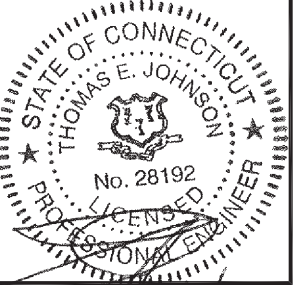
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641



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



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



CHECKED BY: *G/19/18* /TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE

SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

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:

- INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
- COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
- 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.
- CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

- GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
- FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- 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.
 - FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.
 - 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 1/2" 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.
 - FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
 - 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 MANUFACTURERS RECOMMENDED MAXIMUM BEND RADIUS.

- GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
- HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED PER SPRINT TS 0200 CURRENT VERSION.
- 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.

- 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.
- 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.
- 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
- 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:
 - ALLIED TUBE AND CONDUIT
 - B-LINE SYSTEM
 - UNISTRUT DIVERSIFIED PRODUCTS
 - THOMAS & BETTS
- B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
 - EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
 - POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
 - FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
 - TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
 - CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
 - MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
 - EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
 - DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
 - 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
 - CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL.
 - 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.



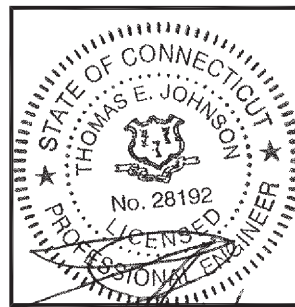
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641



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



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



CHECKED BY: *G. J. J. / TEJ*

APPROVED BY: JMM/TEJ

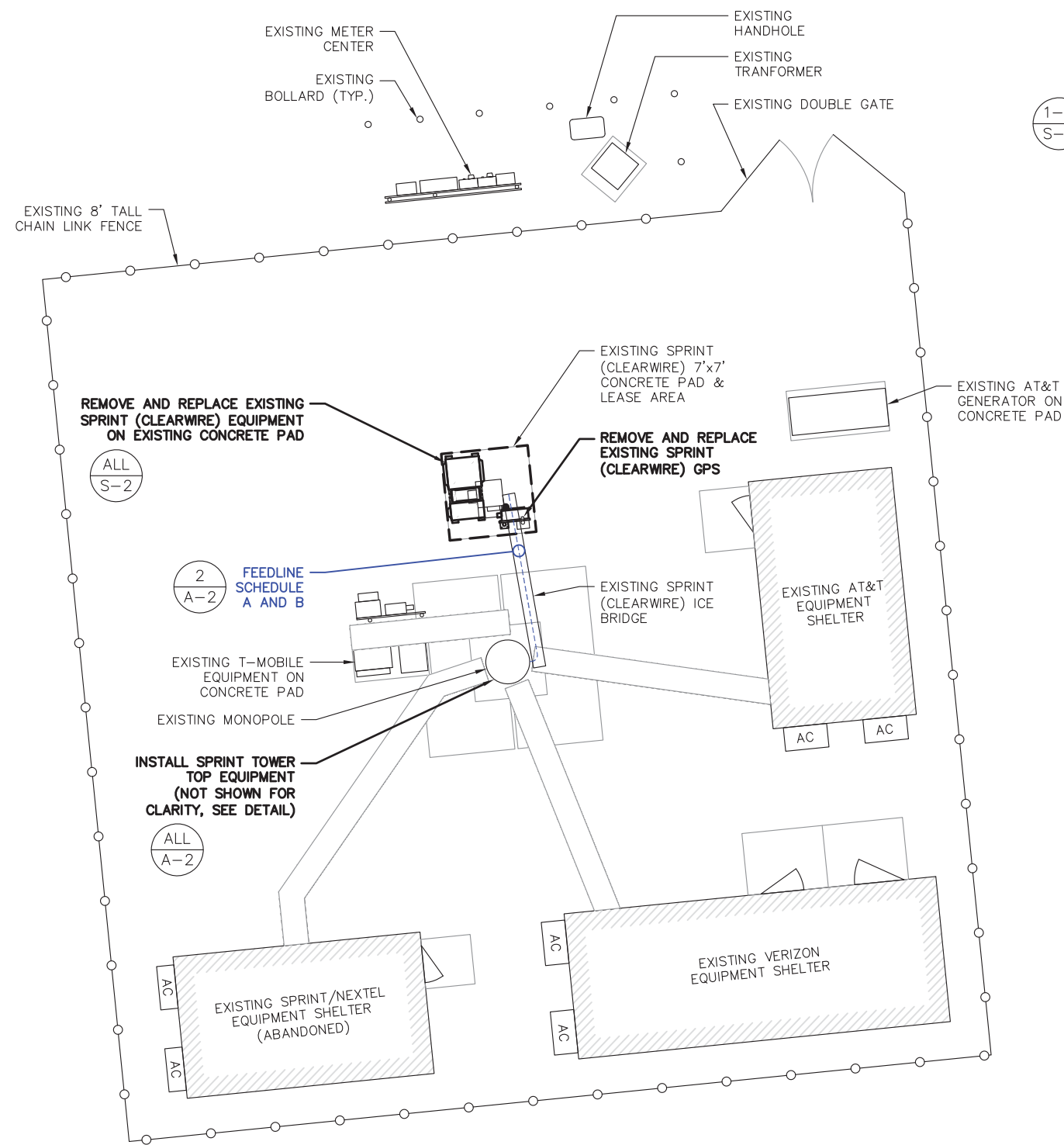
SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE

SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-3



COMPOUND PLAN
 SCALE: 1"=12' (11"x17")
 1"=6' (22"x34")

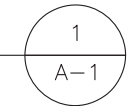


IMAGE SOURCE: PROTERRA 10/21/2017 (VIEW FROM WEST)

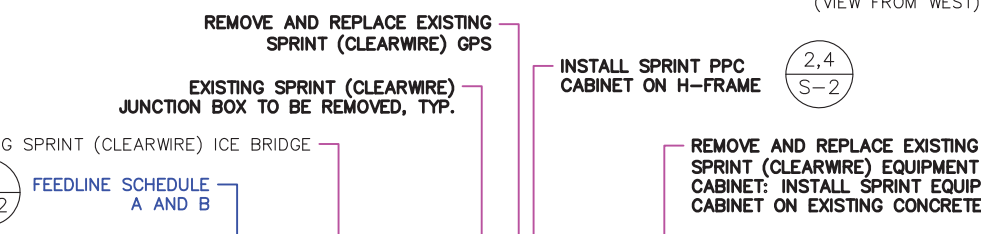
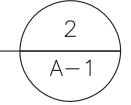


IMAGE SOURCE: PROTERRA 10/21/2017 (VIEW FROM EAST)

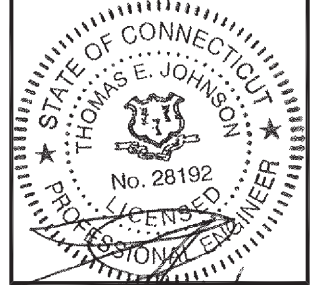
EQUIPMENT PLAN PHOTO DETAIL
 SCALE: N.T.S.



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



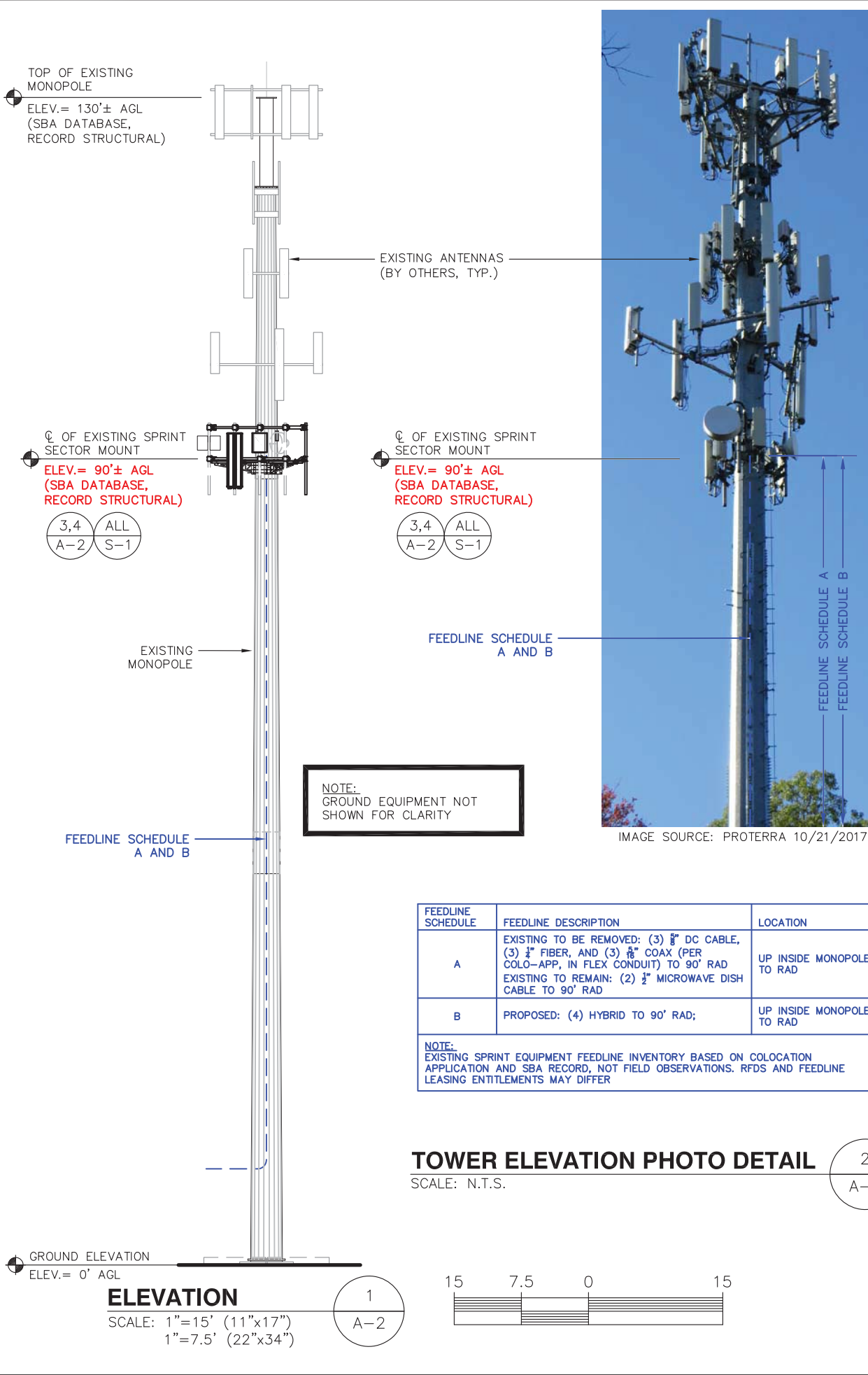
CHECKED BY: *[Signature]* /TEJ
 APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
 SITE NAME:
SBA FAIRCHILD LANE
 SITE ADDRESS:
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (3) 3/8" DC CABLE, (3) 1/2" FIBER, AND (3) 3/4" COAX (PER COLO-APP, IN FLEX CONDUIT) TO 90' RAD EXISTING TO REMAIN: (2) 1/2" MICROWAVE DISH CABLE TO 90' RAD	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 90' 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

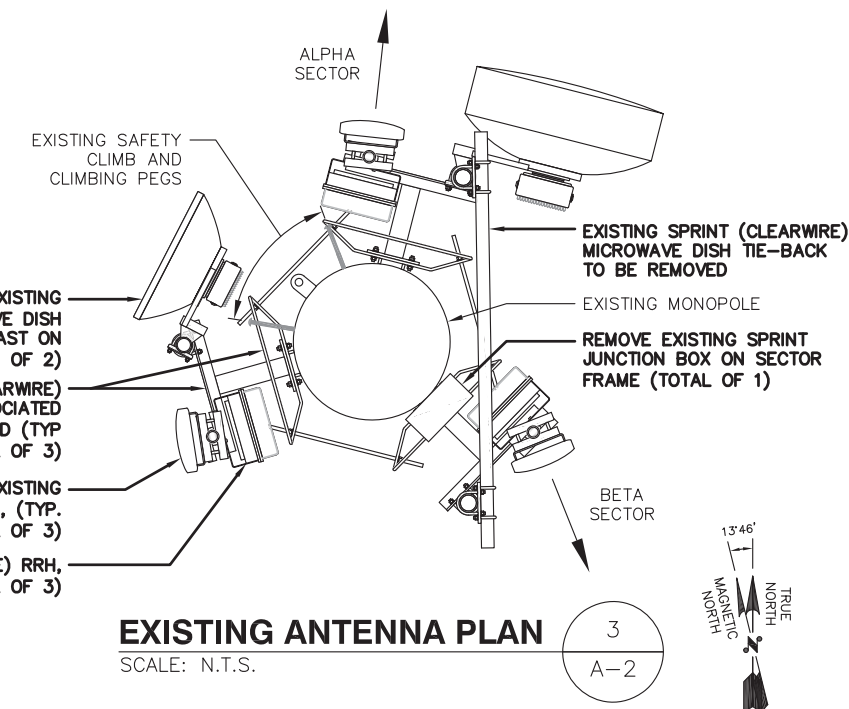
TOWER ELEVATION PHOTO DETAIL
SCALE: N.T.S.



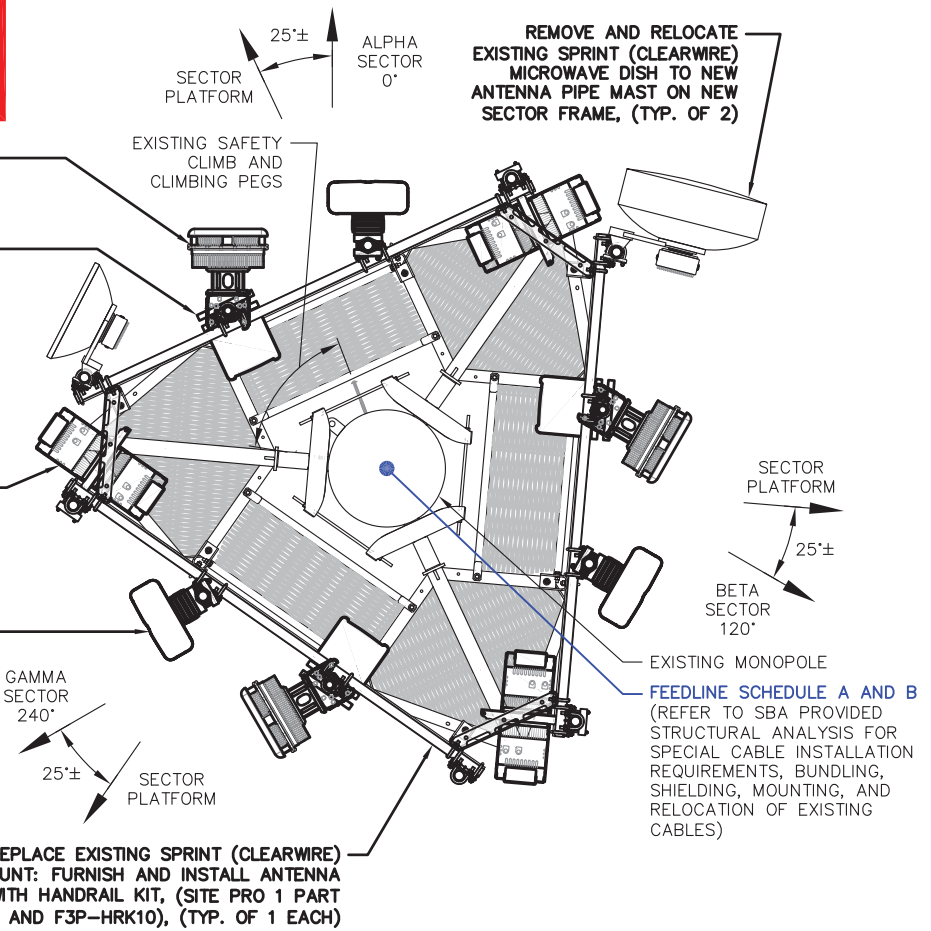
SPECIAL CONSTRUCTION SCHEDULE NOTE
(SBA DESIGN-BUILD TOWER MODS REQUIRED):
UNLESS A PRE-MOD CONDITIONAL OR TEMPORARY INSTALLATION IS SPECIFICALLY RECOMMENDED BY SBA TOWER STRUCTURAL ENGINEER AND INCLUDED IN SBA NOTICE-TO-PROCEED, SPRINT TOWER TOP EQUIPMENT INSTALLATION IS CONTINGENT UPON COMPLETION OF SBA DESIGN-BUILD FOR ALL REQUIRED TOWER/FOUNDATION STRUCTURAL MODIFICATIONS, ENGINEERING CONSTRUCTION CONTROL INSPECTIONS, AND FINAL ENGINEERING AFFIDAVIT (ALL PREVIOUS ITEMS TO BE DESIGN-BUILD PERFORMED BY SBA UNDER A SEPARATE BUILDING PERMIT).

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.

- 1 ALL S-1
A-3
 - 4 ALL S-1
A-3
 - 3,5 ALL S-1
A-3
 - 2 ALL S-1
A-3
 - 7 ALL S-1
A-3
- INSTALL SPRINT MIMO ANTENNA [AAHC (64T64R)], (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO ANTENNA MOUNTING PIPE
- INSTALL SPRINT RRH (1900 4X45 65MHZ) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO BACK OF ANTENNA MOUNTING PIPE
- INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6) MOUNTED TO BACK OF ANTENNA MOUNTING PIPE ON DUAL SWIVEL MOUNT
- REMOVE AND REPLACE EXISTING SPRINT ANTENNA: INSTALL SPRINT ANTENNA (NNVV-65BR4), (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO ANTENNA MOUNTING PIPE
- REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL ANTENNA PLATFORM WITH HANDRAIL KIT, (SITE PRO 1 PART #F3P-10W AND F3P-HRK10), (TYP. OF 1 EACH)



EXISTING ANTENNA PLAN
SCALE: N.T.S.



PROPOSED ANTENNA PLAN
SCALE: N.T.S.

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

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

Sprint

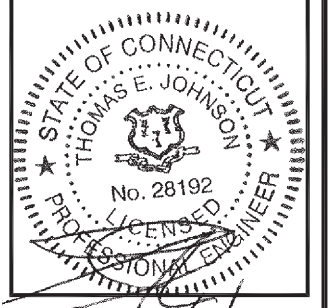
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

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



CHECKED BY: *G. J. J. / TEJ*
APPROVED BY: JMM/TEJ

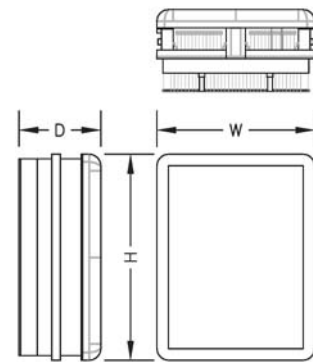
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE
SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2



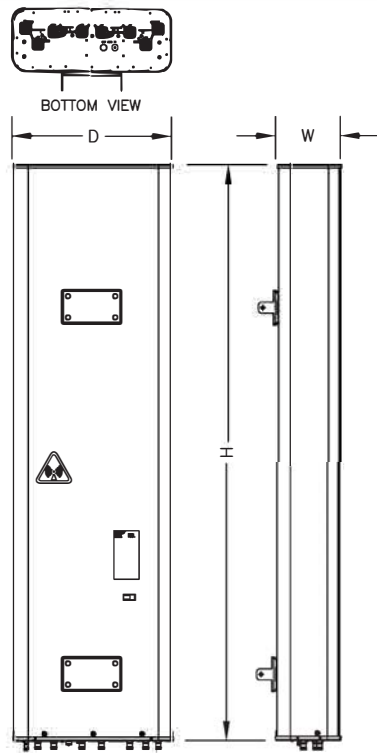
MIMO ANTENNA SPECIFICATIONS

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



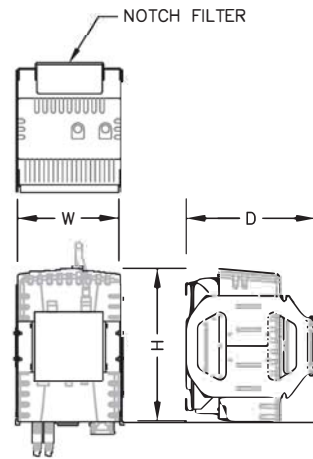
ANTENNA SPECIFICATIONS

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



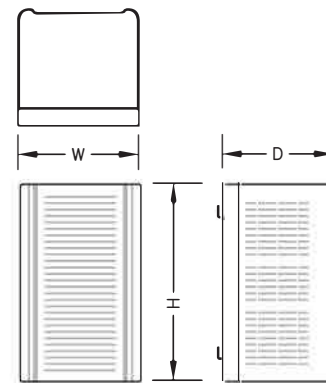
800 MHZ RRH SPECIFICATIONS

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



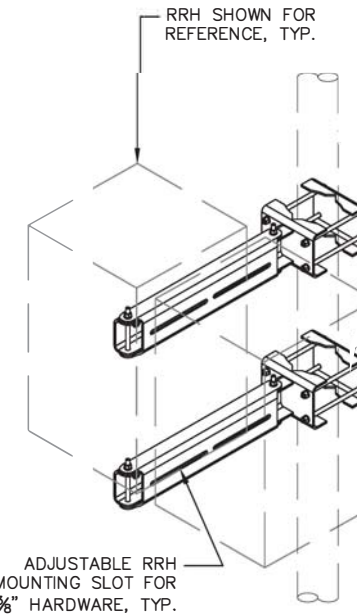
1900 MHZ RRH SPECIFICATIONS

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



RRH DUAL SWIVEL MOUNT

SCALE: N.T.S.

5
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	PROVIDE D 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 @ 160'± FROM FIBER CABINET	LINEAR FEET LISTED [INCLUDES (2) 10' COILS]	1-1/4" HYBRIFLEX	SPRINT
FIBER (MIMO)	1 @ 160'± 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

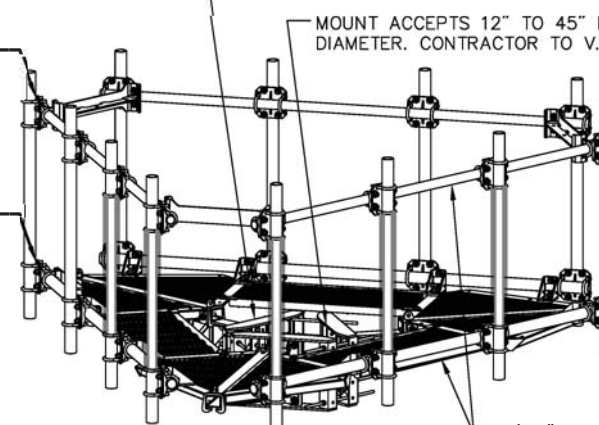
SPRINT-PROVIDED EQUIPMENT SCHEDULE

SCALE: N.T.S.

6
A-3

PROPOSED CROSSOVER CLAMPS INCLUDED WITH HANDRAIL KIT,

PROPOSED CROSSOVER CLAMPS INCLUDED WITH HANDRAIL KIT.



FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION. DO NOT OVER TORQUE (60-100 FT-LBS MAX ON COLLAR BOLTS), CONTRACTOR TO TAKE SPECIAL CARE AND ERECT IN PIECES OR PREPARE AN ENGINEERED LIFT PLAN FOR ERECTION.

MOUNT ACCEPTS 12" TO 45" POLE DIAMETER. CONTRACTOR TO V.I.F.

10'-6" FORTRESS TRI-PLATFORM MOUNT (SITEPRO1 P/N F3P-10W) WITH HANDRAIL KIT (SITEPRO1 P/N F3P-HRK10)

PLATFORM DETAIL

SCALE: N.T.S.

7
A-3

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

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

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
PROFESSIONAL ENGINEER

CHECKED BY: *GJM/TEJ*

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE
SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

SHEET TITLE
TOWER EQUIPMENT DETAILS

SHEET NUMBER
A-3

SPECIAL CONSTRUCTION SCHEDULE NOTE (SBA DESIGN-BUILD TOWER MODS REQUIRED):
UNLESS A PRE-MOD CONDITIONAL OR TEMPORARY INSTALLATION IS SPECIFICALLY RECOMMENDED BY SBA TOWER STRUCTURAL ENGINEER AND INCLUDED IN SBA NOTICE-TO-PROCEED, SPRINT TOWER TOP EQUIPMENT INSTALLATION IS CONTINGENT UPON COMPLETION OF SBA DESIGN-BUILD FOR ALL REQUIRED TOWER/FOUNDATION STRUCTURAL MODIFICATIONS, ENGINEERING CONSTRUCTION CONTROL INSPECTIONS, AND FINAL ENGINEERING AFFIDAVIT (ALL PREVIOUS ITEMS TO BE DESIGN-BUILD PERFORMED BY SBA UNDER A SEPARATE BUILDING PERMIT).

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.

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

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

7
A-3
FURNISH AND INSTALL HANDRAIL KIT (SITE PRO 1 PART # F3P-HRK10)

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

3,5
A-3
INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6)

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

7
A-3
REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL TRI-PLATFORM MOUNT (SITE PRO 1 PART # F3P-10W)

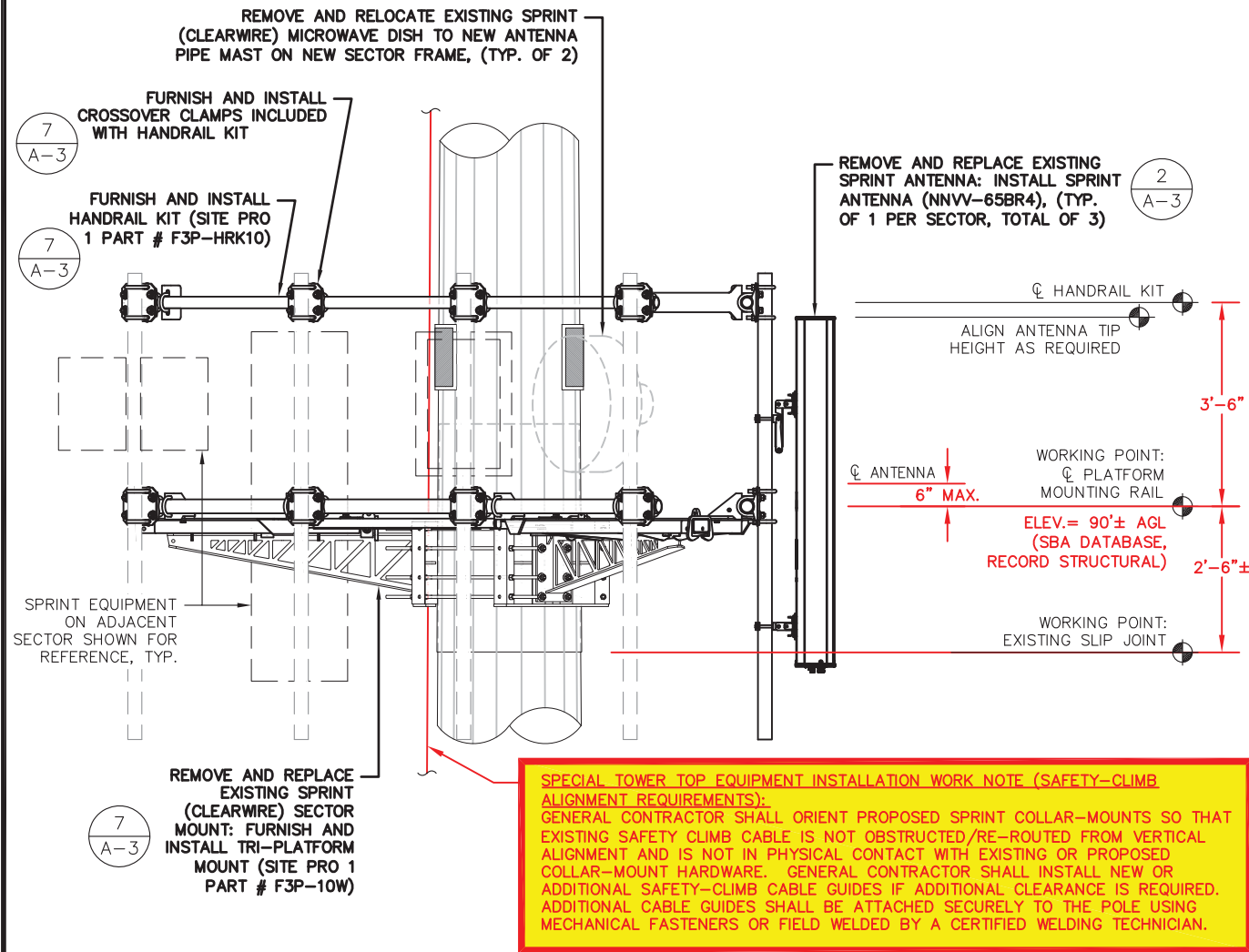


IMAGE SOURCE: PROTERRA 10/21/2017

ANTENNA AND RRH MOUNT PHOTO DETAIL

SCALE: N.T.S.

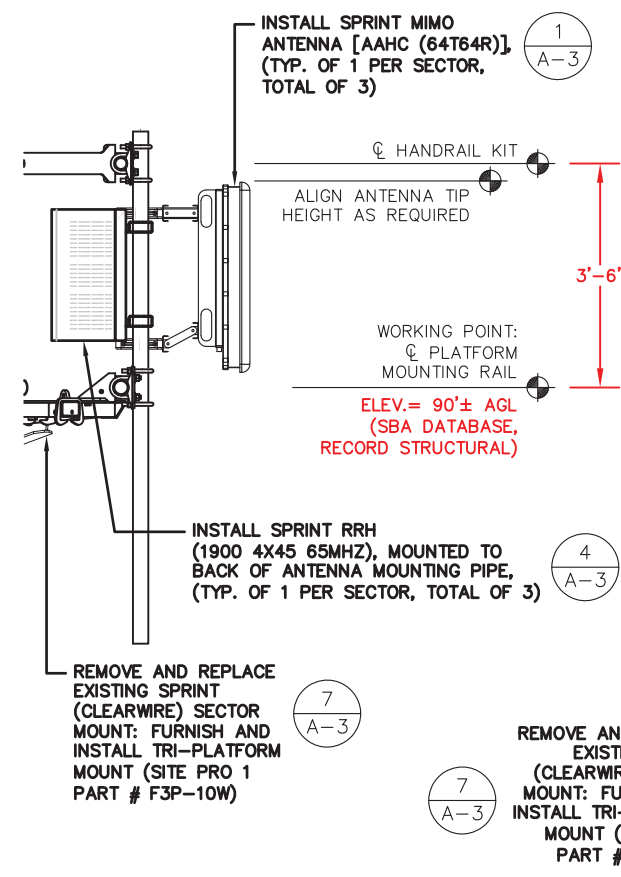
4
S-1



800 MHz/1900 MHz ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

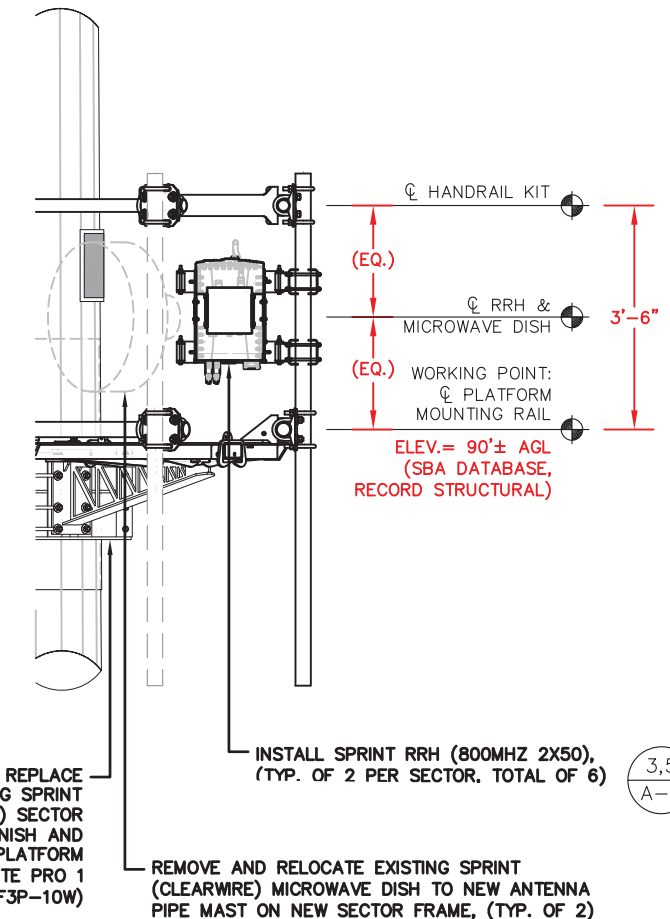
1
S-1



2.5 GHz ANTENNA AND 1900 MHz RRH MOUNTING DETAIL

SCALE: N.T.S.

2
S-1



800 MHz RRH MOUNTING DETAIL

SCALE: N.T.S.

3
S-1



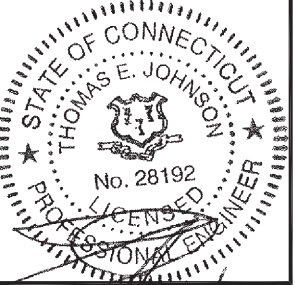
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641



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



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



CHECKED BY: *[Signature]* / TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

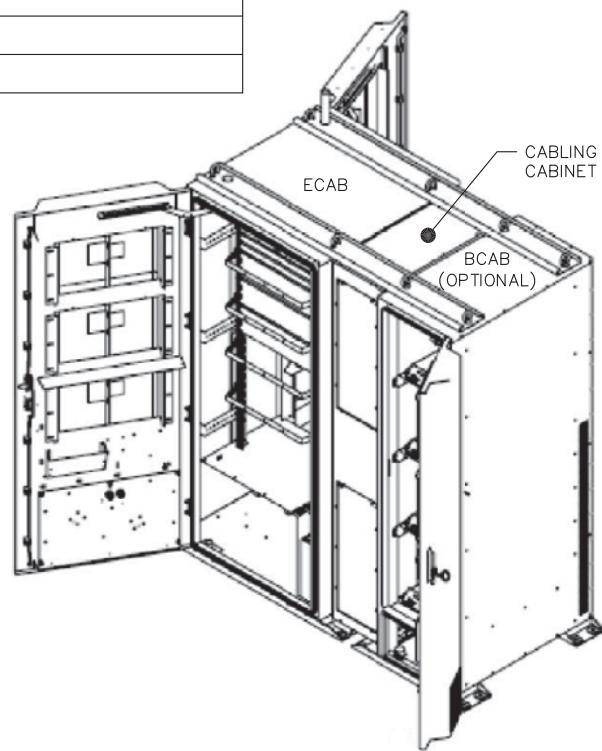
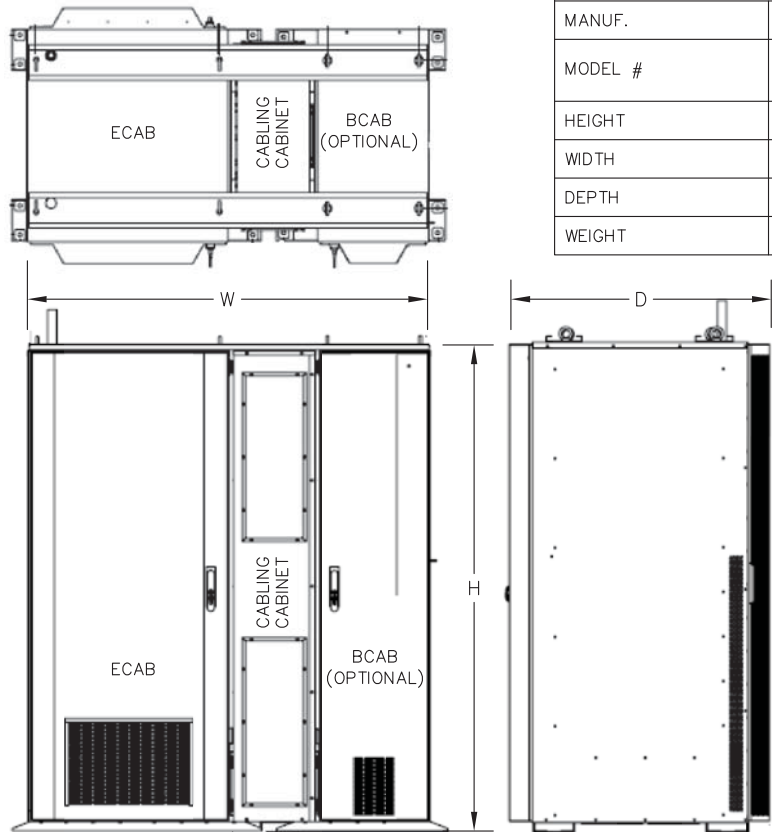
SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE
SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

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



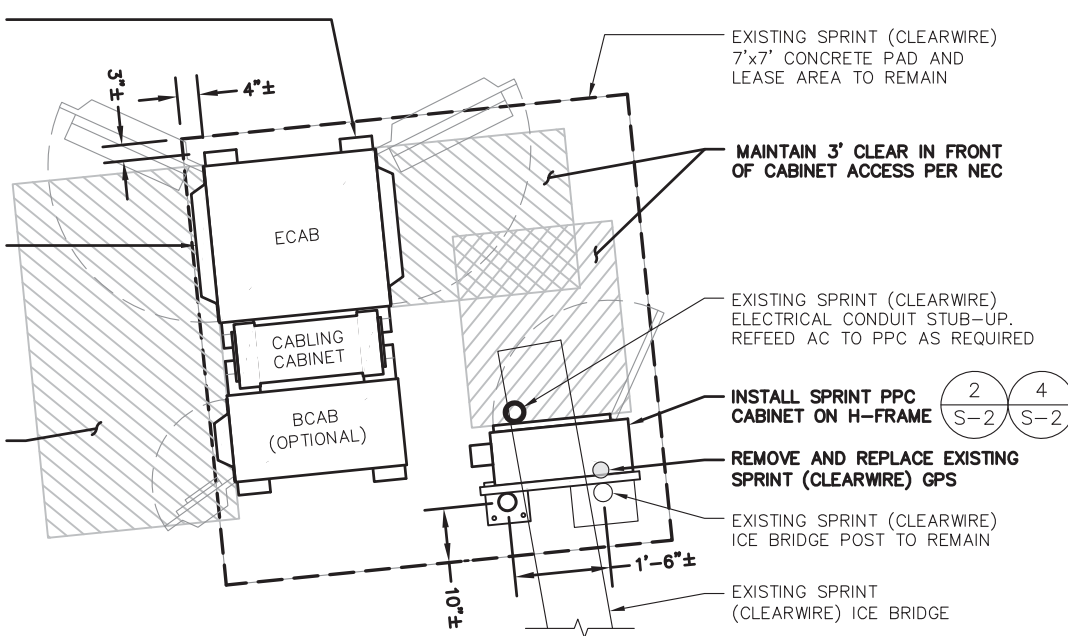
ANCHOR PER MANUFACTURER SPECIFICATIONS OR MINIMUM OF 1/2" Ø HDG HILTI KWIK BOLT SS 304 2 3/4" LONG WITH 2 1/4" NOMINAL EMBEDMENT PER CABINET, (TYP OF 4 ANCHORS PER SKID, TOTAL OF 16)

ELTEK EQUIPMENT CABINET DETAIL

SCALE: N.T.S.

1
S-2

ANCHOR PER MANUFACTURER SPECIFICATIONS OR MINIMUM OF 1/2" Ø HDG HILTI KWIK BOLT SS 304 2 3/4" LONG WITH 2 1/4" NOMINAL EMBEDMENT PER CABINET, (TYP OF 4 ANCHORS PER SKID, TOTAL OF 16)



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

MAINTAIN 3' CLEAR IN FRONT OF EQUIPMENT CABINET ACCESS PER NEC

EXISTING SPRINT (CLEARWIRE) 7'x7' CONCRETE PAD AND LEASE AREA TO REMAIN

MAINTAIN 3' CLEAR IN FRONT OF CABINET ACCESS PER NEC

EXISTING SPRINT (CLEARWIRE) ELECTRICAL CONDUIT STUB-UP. REFEED AC TO PPC AS REQUIRED

INSTALL SPRINT PPC CABINET ON H-FRAME

REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) GPS

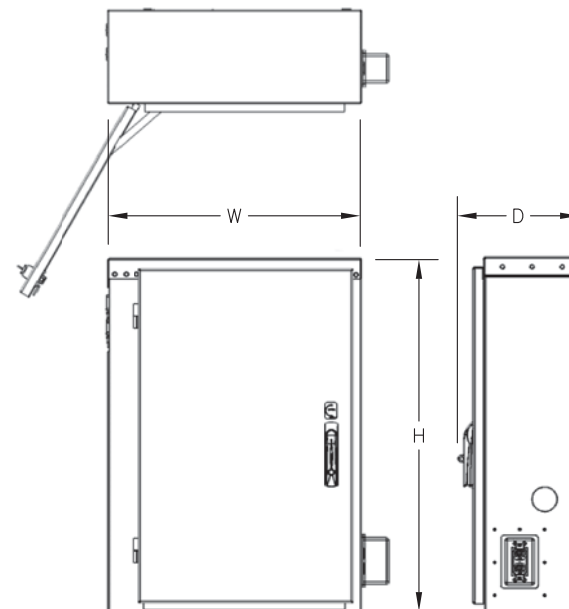
EXISTING SPRINT (CLEARWIRE) ICE BRIDGE POST TO REMAIN

EXISTING SPRINT (CLEARWIRE) ICE BRIDGE

GROUND LEVEL EQUIPMENT PLAN

SCALE: N.T.S.

3
S-2



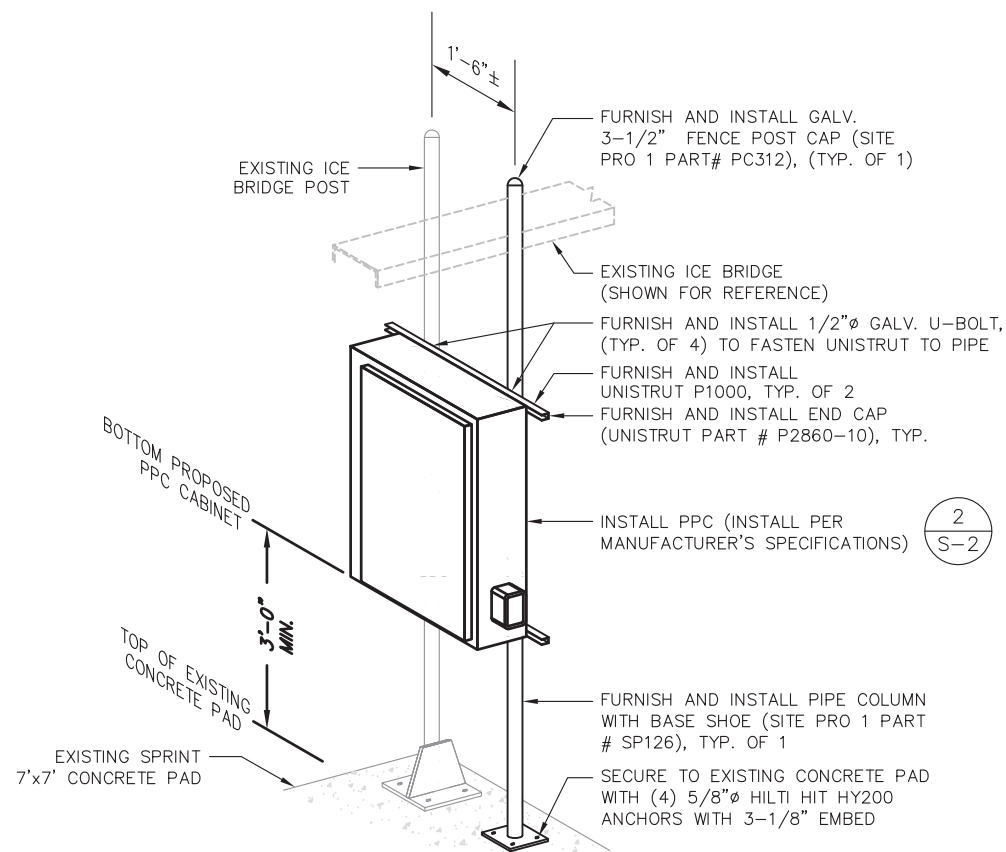
PPC CABINET

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

PPC DETAIL

SCALE: N.T.S.

2
S-2



FURNISH AND INSTALL GALV. 3-1/2" FENCE POST CAP (SITE PRO 1 PART# PC312), (TYP. OF 1)

EXISTING ICE BRIDGE POST

EXISTING ICE BRIDGE (SHOWN FOR REFERENCE)

FURNISH AND INSTALL 1/2" Ø GALV. U-BOLT, (TYP. OF 4) TO FASTEN UNISTRUT TO PIPE

FURNISH AND INSTALL UNISTRUT P1000, TYP. OF 2

FURNISH AND INSTALL END CAP (UNISTRUT PART # P2860-10), TYP.

INSTALL PPC (INSTALL PER MANUFACTURER'S SPECIFICATIONS)

FURNISH AND INSTALL PIPE COLUMN WITH BASE SHOE (SITE PRO 1 PART # SP126), TYP. OF 1

SECURE TO EXISTING CONCRETE PAD WITH (4) 5/8" Ø HILTI HIT HY200 ANCHORS WITH 3-1/8" EMBED

PPC H-FRAME MOUNTING DETAIL

SCALE: N.T.S.

4
S-2



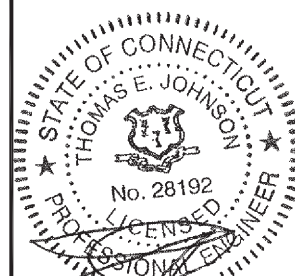
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641



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



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



CHECKED BY: G. J. / TEJ

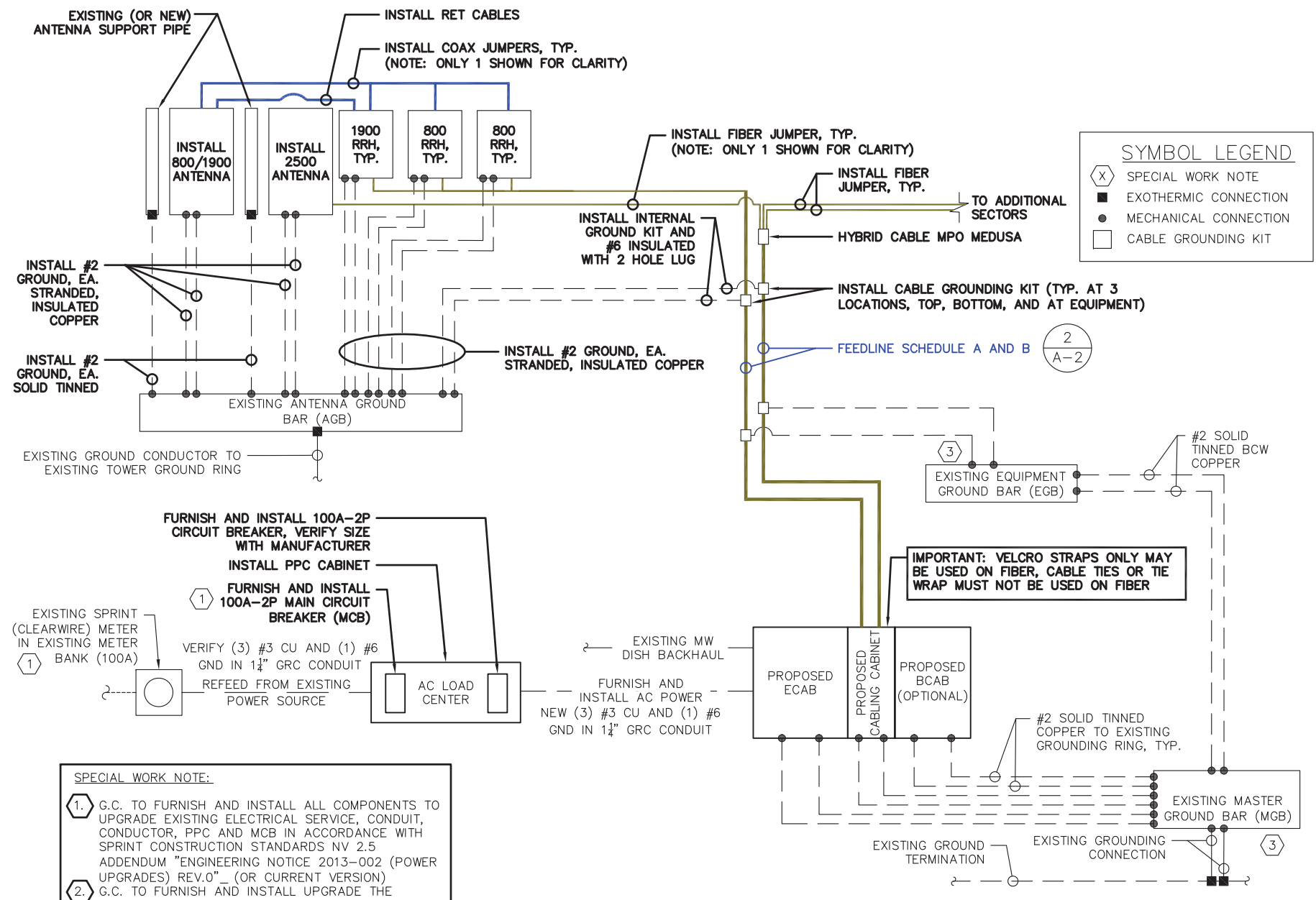
APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE
SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

SHEET TITLE
GROUND EQUIPMENT DETAILS

SHEET NUMBER
S-2



SYMBOL LEGEND

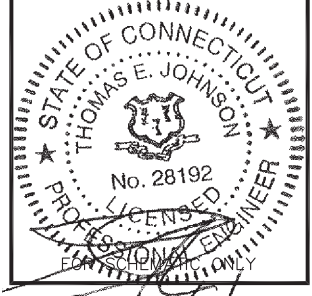
(X)	SPECIAL WORK NOTE
■	EXOTHERMIC CONNECTION
●	MECHANICAL CONNECTION
□	CABLE GROUNDING KIT

- 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.

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.



CHECKED BY: *G. J. [Signature]* / TEJ
 APPROVED BY: JMM/TEJ

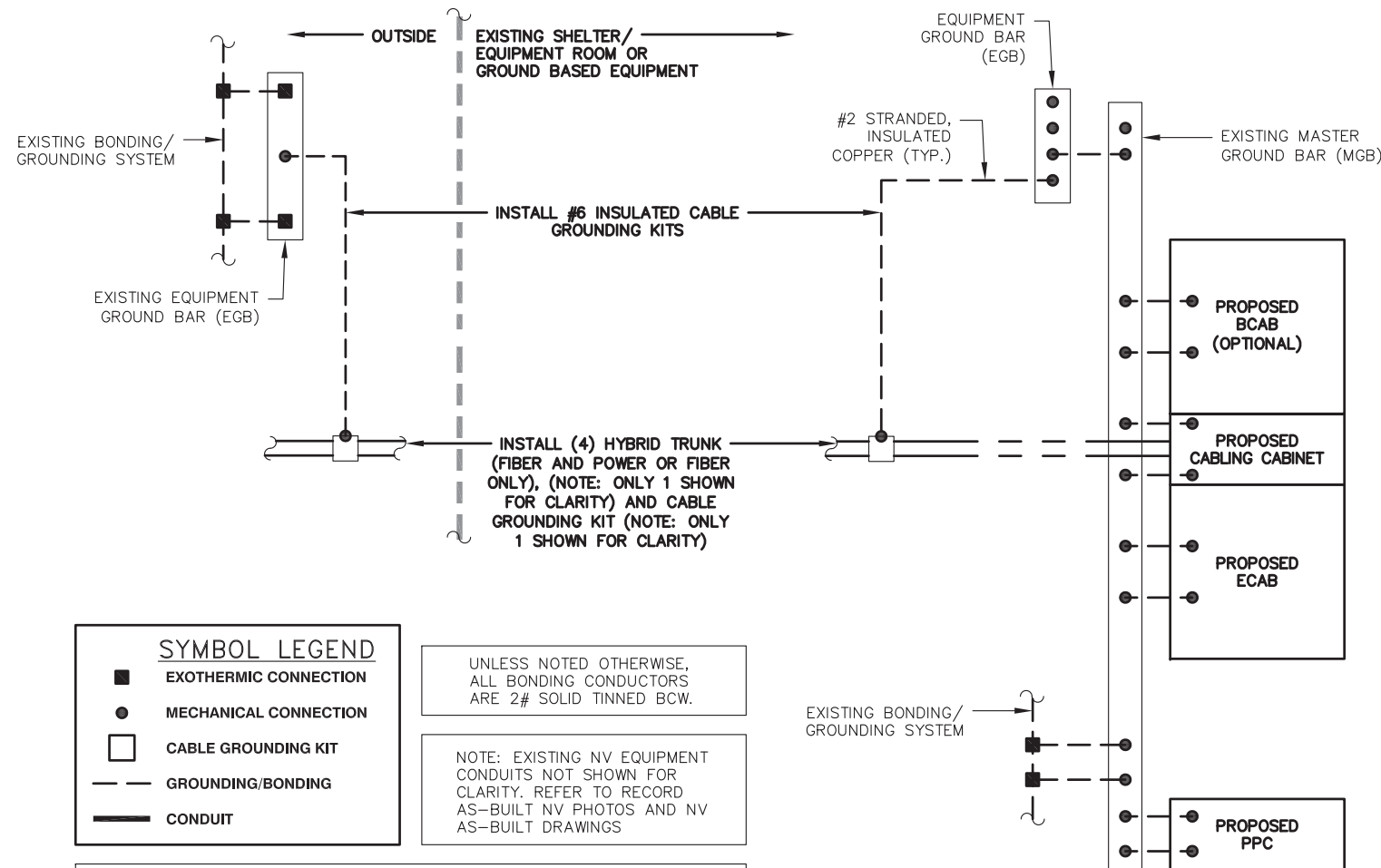
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
 SITE NAME:
SBA FAIRCHILD LANE
 SITE ADDRESS:
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

SHEET TITLE
ELECTRICAL AND GROUNDING DETAILS

SHEET NUMBER
E-1



SYMBOL LEGEND

■	EXOTHERMIC CONNECTION
●	MECHANICAL CONNECTION
□	CABLE GROUNDING KIT
---	GROUNDING/BONDING
—	CONDUIT

UNLESS NOTED OTHERWISE, ALL BONDING CONDUCTORS ARE #2 SOLID TINNED BCW.

NOTE: EXISTING NV EQUIPMENT CONDUITS NOT SHOWN FOR CLARITY. REFER TO RECORD AS-BUILT NV PHOTOS AND NV AS-BUILT DRAWINGS

NOTE: HYBRIFLEX (FIBER & POWER) AND HYBRIFLEX (FIBER-ONLY) SHOWN. REFER TO RAN EQUIPMENT RFDS FOR SITE-SPECIFIC SCENARIO.

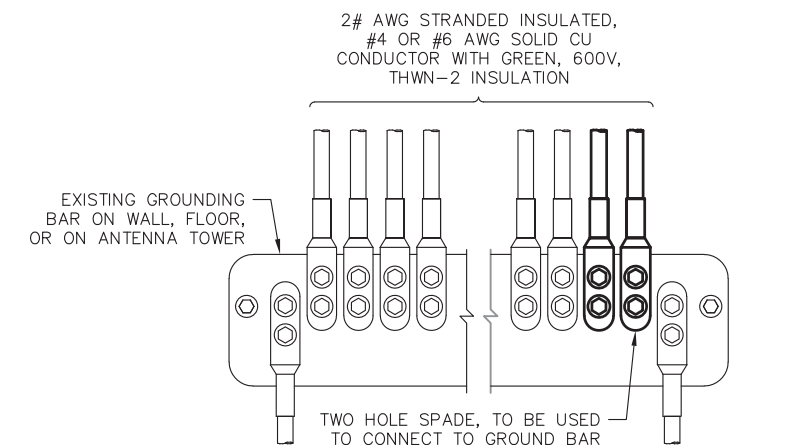
RAN EQUIPMENT GROUNDING SCHEMATIC

SCALE: N.T.S.

1
E-2

PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

- GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
- 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".
- PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
- 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.
- 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.
- 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.
- ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
- PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
- 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.
- EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
- 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'.
- THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
- 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.
- 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.
- 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.
- ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
- 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.
- 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)

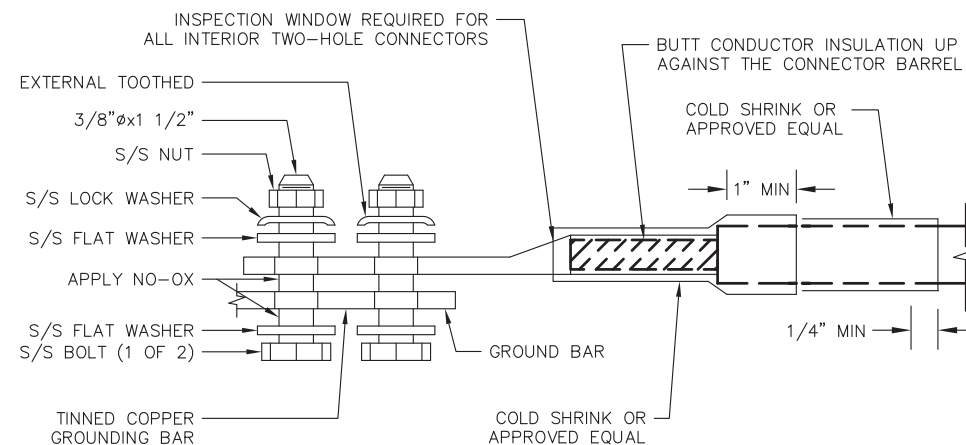


- APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
- IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

SCALE: N.T.S.

2
E-2



TWO HOLE LUG

SCALE: N.T.S.

3
E-2

Sprint

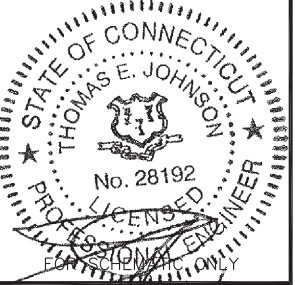
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

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



CHECKED BY: *G/19/18*/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
SITE NAME:
SBA FAIRCHILD LANE

SITE ADDRESS:
67 FAIRCHILD ROAD
MIDDLETOWN, CT 06457

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Site Identification	
Cascade	CT4FD0149
SMS Schedule ID	1523482
SMS Schedule Name	DO Marm Upgrade
PID	DOHU_CT52XC112
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	2018-03-29 14:04:14 C
RFDS Revision Date	4
RFDS Revision	

Contact Information	
Engineer Email	B.H.Hastings@sprint.com
Sprint Badged RF Engineer	B.Hastings
RF Engineer Email	B.H.Hastings@sprint.com
RF Engineer Phone	978-560-0700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.H.Hull@sprint.com
RF Manager Phone	617-333-7220

Location Details	
Latitude	41.5450308
Longitude	-72.6207486
Market	Northern Connecticut
Region	Northeast
City	Middletown
State	CT
Zip Code	06461
County	Middlesex

Carrier Count	
2500 LTE	3
1900 LTE	1
1900 EVDO	2
1900 Voice	1
800 LTE	1
800 Voice	1

2500MHz	3
1900MHz	2
800MHz	2

UE Relay Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
UE Relay Azimuth	
Manufacturer	
UE Relay CL Height (meters)	

GPS Antenna Model	
Model Number	GPS-GBR-28NMS
Weight (lbs.)	1.2
Dimensions (in.)	5 x 3.2
Manufacturer	
GPS Antenna needed at site	1

ALU Top Hat Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	
Junction Boxes needed at site	

Repeater Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	

Power Protection Cabinet Model	
Model Number	PPC-w/ATC cabinet
Weight (lbs.)	175
Dimensions (in.)	64.30 x 30.18 x 12.28
Manufacturer	
Power Protection Cabinet	1

Growth Cabinet Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	

BTS #1 Model	
Model Number	Escal Elitek
Weight (lbs.)	500
Dimensions (in.)	73.5 x 30 x 38
Manufacturer	Elitek
Number of BTS #1	1

Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	

Battery Backup Cabinet Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	

Junction Box Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	
Junction Boxes needed at site	

BTS #2 Model	
Model Number	
Weight (lbs.)	
Dimensions (in.)	
Manufacturer	
Needed at site	1

A&E Drawing Requirements
 03/14/2018 (SP): RFDS revised to include MIMO. 02/13/2018 (SP): RFDS revised to change to Dual Antennas due to KMW backorder. 12/14/2017 (WR): RFDS revised to change ACL from 120' to 90' as advised by RSD.
 Provide Carrier Count information

Additional RF Notes Special Construction Requirements
 03/14/2018 (SP): RFDS revised to include MIMO. 02/13/2018 (SP): RFDS revised to change to Dual Antennas due to KMW backorder. 12/14/2017 (WR): RFDS revised to change ACL from 120' to 90' as advised by RSD.
 Provide Carrier Count information

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna 1						
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
Ant 1 Top Jumper Make/Model/Cty	N/A	N/A	N/A	N/A	N/A	N/A
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)	90	90	90	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
Antenna 1						
Model Number	NNV-65B-R4	NNV-65B-R4	NNV-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
Ant 1 Top Jumper Make/Model/Cty	800/1900 Jumper	800/1900 Jumper	800/1900 Jumper	N/A	N/A	N/A
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)	90	90	90	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
Antenna 1						
Model Number	Antenna assigned on a different card	Antenna assigned on a different card	Antenna assigned on a different card			
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
Ant 1 Top Jumper Make/Model/Cty	800/1900 Jumper	800/1900 Jumper	800/1900 Jumper	N/A	N/A	N/A
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)	90	90	90	N/A	N/A	N/A
Antenna 1 Electrical DT	5	5	5	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: RFDS PROVIDED BY SPRINT DATED 03/29/2018. EXCERPTS TAKEN DEPICT RELEVANT RF DESIGN INFORMATION. A&E VENDOR SCOPE OF WORK LIMITED TO DESIGN OF MECHANICAL/STRUCTURAL EQUIPMENT ATTACHMENTS.

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

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						

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

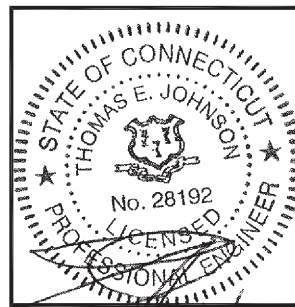
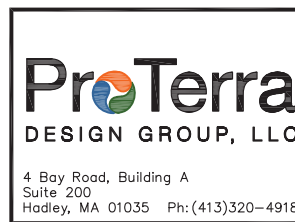
Trunk Cable 1						
Model Number	1900 Hybrid_ALU	1900 Hybrid_ALU	1900 Hybrid_ALU	N/A	N/A	N/A
Weight (lbs.)	1.1	1.1	1.1	N/A	N/A	N/A
Dimensions (in.)	1.25	1.25	1.25	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Trunk Cable 1 Qty						

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

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 DEGREE. 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/](http://www.3ztelecom.com/antenna-alignment-tool/)

NOTE: VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION



CHECKED BY: *G. J. J. / TEJ*
 APPROVED BY: JMM/TEJ

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
 CT52XC112
 SITE NAME:
 SBA FAIRCHILD LANE

SITE ADDRESS:
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

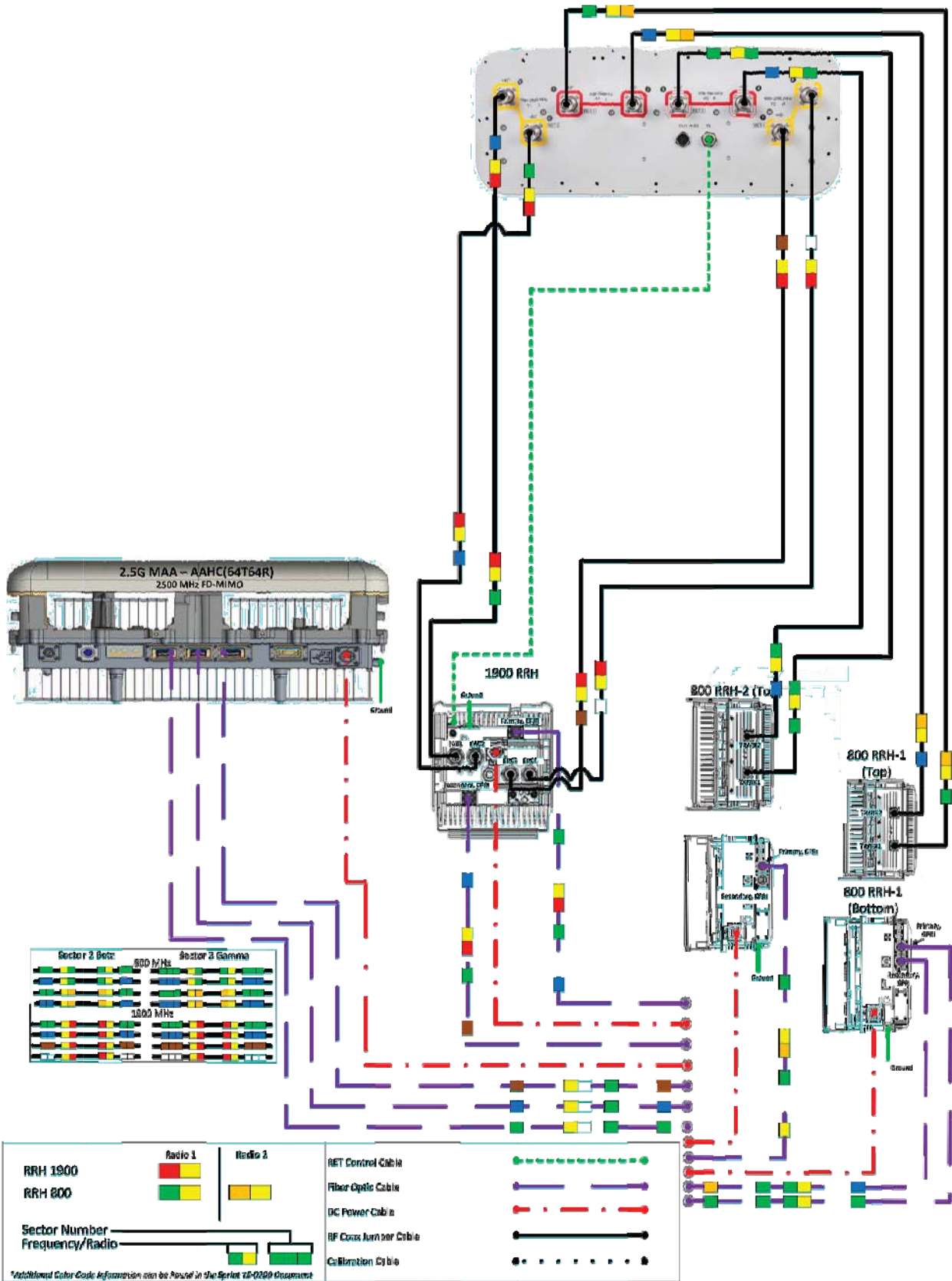
SHEET TITLE
 RF DATA SHEET

SHEET NUMBER
 RF-1

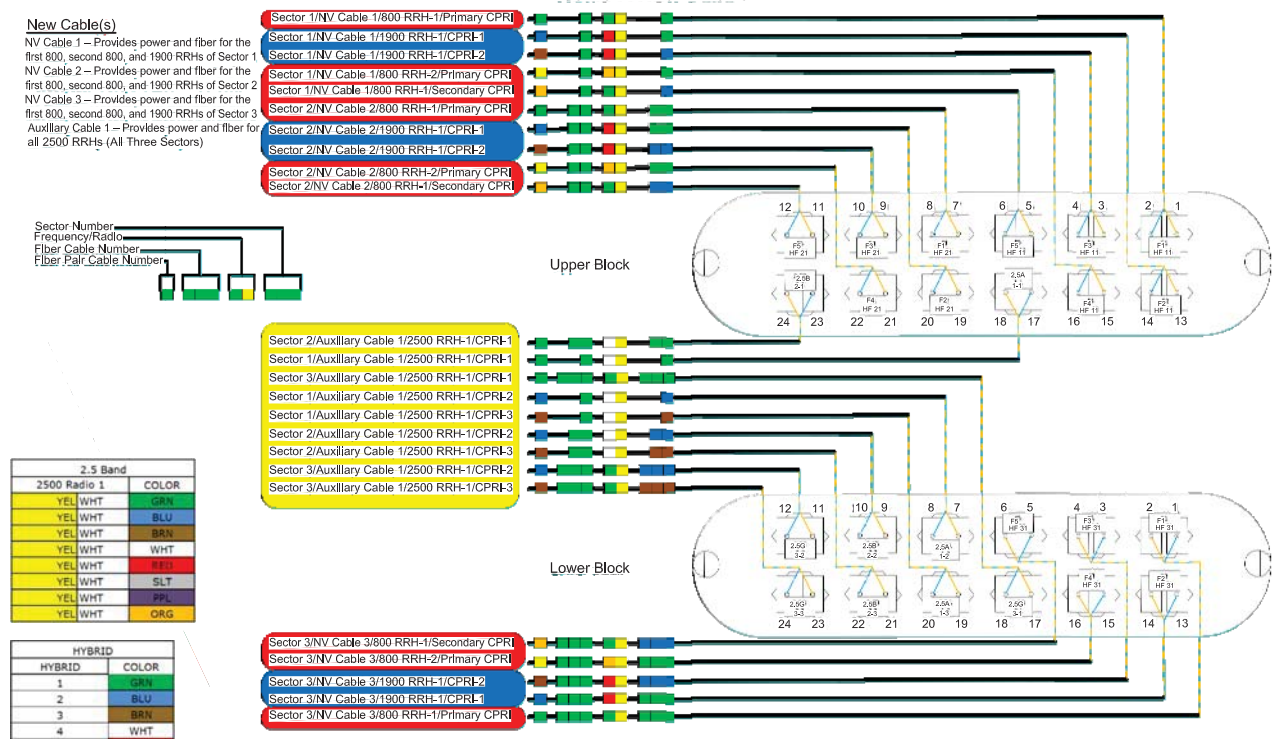
Prepared By: Mark Elliott
 Approved By: RAN Hardware & Antenna Teams
 Revision Date: March 13, 2018
 Revision Number: R1
 Approval Date: Final-Macro Generated



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



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



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	WHT
2500	YEL PPL	NV-8	ORG

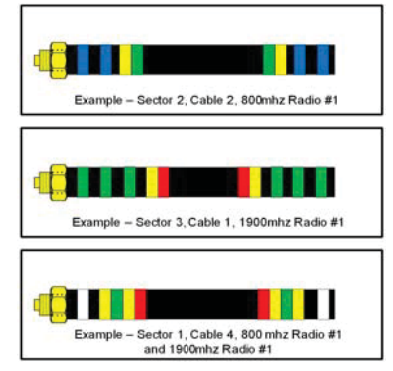
- NOTES:**
- ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH 2" COLORED TAPE, STENCIL TAG COLORED TAPE, OR COLORED HEAT SHRINK TUBING
 - COLORED TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRONIC. UV STABILIZED TAPE OR HEAT SHRINK ARE PREFERRED.
 - THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE, AND THERE SHALL BE A 1" SPACE BETWEEN EACH RING.
 - THE CABLE COLOR CODE SHALL BE APPLIED IN ACCORDANCE TO TABLE 19-1.
 - 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.
 - 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.
 - 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE.
 - THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
 - 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.
 - 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	2.5 FREQUENCY	INDICATOR	ID
800-1	YEL	GRN	2500-1	YEL	GRN
1900-1	YEL	RED	2500-2	YEL	RED
1900-2	YEL	BRN	2500-3	YEL	BRN
1900-3	YEL	BLU	2500-4	YEL	BLU
1900-4	YEL	SLT	2500-5	YEL	SLT
800-1	YEL	ORG	2500-6	YEL	ORG
RESERVED	YEL	WHT	2500-7	YEL	WHT
RESERVED	YEL	PPL	2500-8	YEL	PPL



Sprint

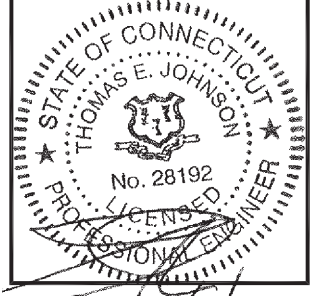
1 INTERNATIONAL BLVD, SUITE 800
 MAHWAH, NJ 07495
 TEL: (800) 357-7641

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



CHECKED BY: G/19/18/TEJ
 APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	06/18/18	CONSTRUCTION REVISED	PN
2	05/17/18	CONSTRUCTION REVISED	PN
1	01/22/18	ISSUED FOR CONSTRUCTION	PN
0	12/13/17	ISSUED FOR CONSTRUCTION	JEB/EN

SITE NUMBER:
CT52XC112
 SITE NAME:
SBA FAIRCHILD LANE

SITE ADDRESS:
 67 FAIRCHILD ROAD
 MIDDLETOWN, CT 06457

SHEET TITLE:
PLUMBING DIAGRAM AND RAN WIRING

SHEET NUMBER:
RF-2

Not to Scale