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August 13th, 2018

Melanie Bachman, Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 231 KETTLETOWN ROAD, SOUTHBURY, CONNECTICUT – CT03XC016 (lat. 41° 28' 16.3" N, long. - 73° 12' 20.0" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (165-foot level) on an existing (190-foot Monopole Tower) at the above-referenced address. The property is owned by The Town of Southbury, and the tower is owned by Phoenix Tower International.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace six (6) antennas, and add twelve (12) new RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to JEFF MANVILLE, FIRST SELECTMAN and DeLORIS CURTIS, LAND USE ADMINISTRATOR of the Town of Southbury. A copy of this letter is also being sent to Judy Vega the manager for Phoenix Tower International who manages the tower and a letter is already being sent to the Town of Southbury, First Selectman Jeff Manville who owns the land.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b).

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The antennas work is a one-for-one replacement of facility components.

32 Clinton Street, Saratoga Springs, NY 12866
Office 518-306-1733 – Fax 518-306-1711
www.airosmithdevelopment.com

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3. The proposed modifications will include the addition of ground base equipment as depicted on the attached drawings; however, the proposed equipment will not require an extension of the site boundaries.

4. The proposed modifications will not increase noise levels at the facility by six decibels or more.

5. The additional ground based equipment will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard.

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

If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 350-4222 or email me to aperkowski@airosmithdevelopment.com

Kind Regards,

Arthur Perkowski
Airosmith Development Inc.
32 Clinton Street
Saratoga Springs, NY 12866
518-306-1711 desk & fax
518-871-3707 cell
aperkowski@airosmithdevelopment.com

Attachment

CC: JEFF MANVILLE (FIRST SELECTMAN, Southbury, CT)
Judy Vega (Phoenix Tower International)
DeLORIS CURTIS (LAND USE ADMINISTRATOR, Southbury, CT)

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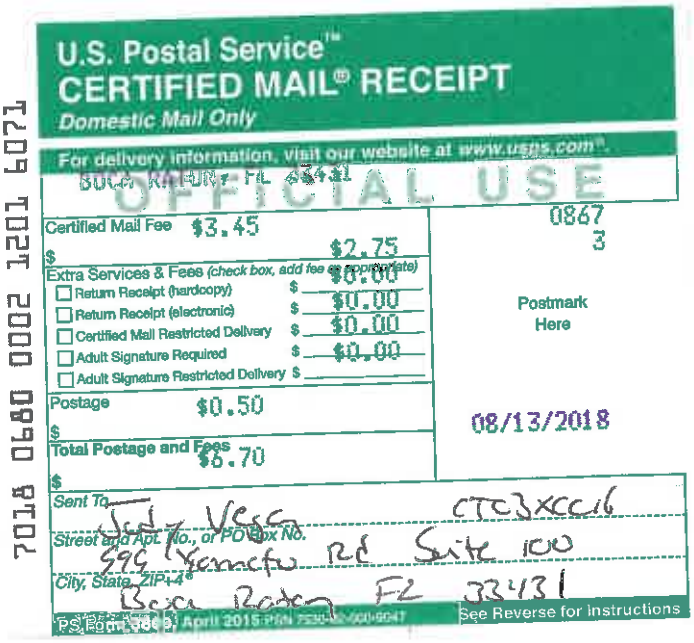
City, State, ZIP+4® Southbury CT 06488

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7018 0680 0002 1201 6088



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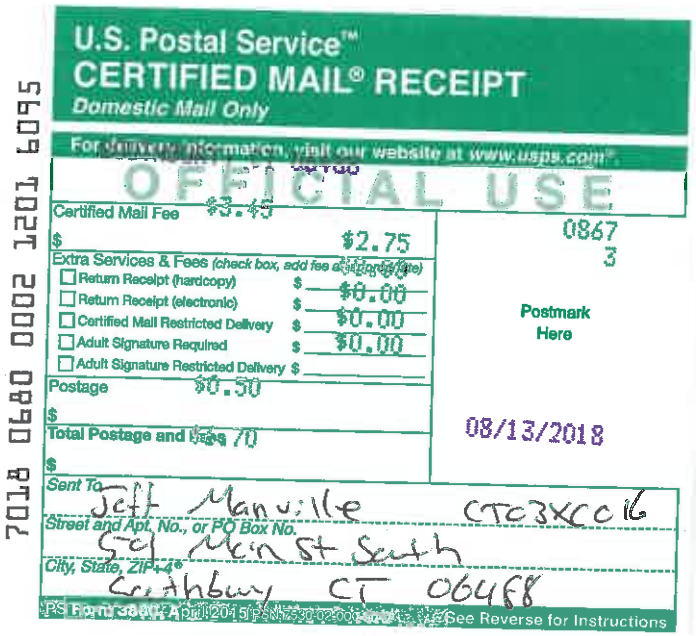
Sent To Jeff Vesa CTC3XCC16
Street and Apt. No., or PO Box No. 596 Yamato Rd Suite 100
City, State, ZIP+4® Boca Raton FL 33431

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7018 0680 0002 1201 6071



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08/13/2018

Sent To Jeff Manville CTC3XCC16
Street and Apt. No., or PO Box No. 501 Main St South
City, State, ZIP+4® Southbury CT 06488

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7018 0680 0002 1201 6095

231 KETTLETOWN ROAD

Location	231 KETTLETOWN ROAD	**Mblu**	35/ 43/ 23/ /
Acct#	00369500	**Owner**	SOUTHBURY TOWN OF
Assessment	$264,210	**Appraisal**	$377,430
PID	4358	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$85,880	$291,550	$377,430
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$60,120	$204,090	$264,210

Owner of Record

Owner	SOUTHBURY TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	501 MAIN ST SO SOUTHBURY, CT 06488	**Book & Page**	112/ 334
		Sale Date	03/15/1973
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
SOUTHBURY TOWN OF	$0		112/ 334	25	03/15/1973

Building Information

Building 1 : Section 1

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

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	

Building Photo

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

Building Layout

Building Layout
(http://images.vgsi.com/photos/SouthburyCTPhotos//Sketches/4

Building Sub-Areas (sq ft)	Legend

Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Pln FPL:	
Det FPL:	
Gas Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
Fin Bsmt Qual	

No Data for Building Sub-Areas

Bsmt Access	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	929
Description	Exempt Comm Vac OB
Zone	R-60
Neighborhood	C200
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.95
Frontage	0
Depth	0
Assessed Value	$204,090
Appraised Value	$291,550

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed	FR	Frame	180 S.F.	$1,350	1
SHD1	Shed	FR	Frame	128 S.F.	$960	1
SHD1	Shed	FR	Frame	208 S.F.	$1,560	1
SHD1	Shed	FR	Frame	168 S.F.	$1,260	1
PAV1	Paving	AS	Asphalt	64600 S.F.	$80,750	1

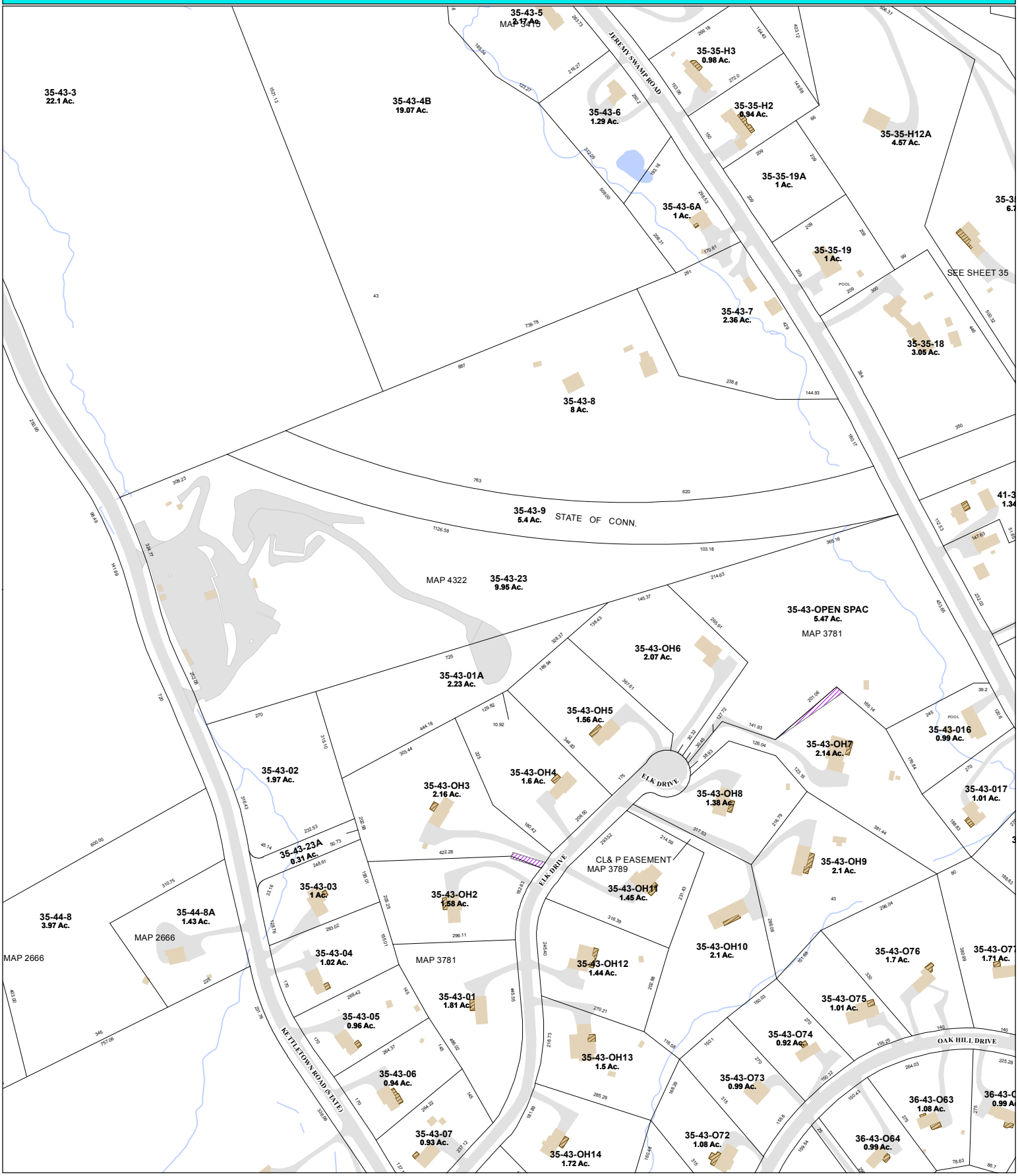
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$85,880	$291,550	$377,430
2016	$85,880	$291,550	$377,430
2012	$85,880	$291,550	$377,430

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$60,120	$204,090	$264,210
2016	$60,120	$204,090	$264,210
2012	$60,120	$204,090	$264,210

Town of Southbury Connecticut - Assessment Parcel Map

Parcel: 35-43-23 **Location:** 231 KETTLETOWN ROAD



N

Approximate Scale: 1 inch = 300 feet

0 80 160 240 320 Feet

Map Produced April 2018

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT03XC016

Southbury- Temp Site
231 Kettletown Road
Southbury, CT 06488

August 1, 2018

EBI Project Number: 6218005247

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.36 %

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

EBI Consulting
environmental | engineering | due diligence

August 1, 2018

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

Emissions Analysis for Site: **CT03XC016 – Southbury- Temp Site**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **231 Kettletown Road, Southbury, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **231 Kettletown Road, Southbury, 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, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed panel antennas are **165 feet** above ground level (AGL) for **Sector A**, **165 feet** above ground level (AGL) for **Sector B** and **165 feet** above ground level (AGL) for Sector C.

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

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**165 feet**	Height (AGL):	**165 feet**	Height (AGL):	**165 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**1.29 %**	Antenna B1 MPE%	**1.29 %**	Antenna C1 MPE%	**1.29 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**165 feet**	Height (AGL):	**165 feet**	Height (AGL):	**165 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**0.89 %**	Antenna B2 MPE%	**0.89 %**	Antenna C2 MPE%	**0.89 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**2.18 %**
AT&T	2.03 %
MetroPCS	0.24 %
Verizon Wireless	1.46 %
T-Mobile	0.45 %
Site Total MPE %:	**6.36 %**

SPRINT Sector A Total:	2.18 %
SPRINT Sector B Total:	2.18 %
SPRINT Sector C Total:	2.18 %
Site Total:	6.36 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	165	0.54	850 MHz	567	0.09%
Sprint 850 MHz LTE	2	941.82	165	2.68	850 MHz	567	0.48%
Sprint 1900 MHz (PCS) CDMA	5	511.82	165	3.64	1900 MHz (PCS)	1000	0.36%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	165	3.64	1900 MHz (PCS)	1000	0.36%
Sprint 2500 MHz (BRS) LTE	8	778.09	165	8.85	2500 MHz (BRS)	1000	0.89%
						Total:	**2.18%**

Summary

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

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

SPRINT Sector	Power Density Value (%)
Sector A:	2.18 %
Sector B:	2.18 %
Sector C:	2.18 %
SPRINT Maximum MPE % (per sector):	2.18 %
Site Total:	6.36 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.36 %** 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.

Phoenix Tower International
1001 Yamato Road, Suite 105
Boca Raton, FL. 33431
(561) 843-8416

GPD Engineering and Architecture
Professional Corporation

Todd Rasey
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-2198
trasey@gpdgroup.com

GPD# 2018791.CT1002.04
May 18, 2018

RIGOROUS STRUCTURAL ANALYSIS REPORT

SITE DESIGNATION:	**PTI Site #:**	**US-CT-1002**
	PTI Site Name:	**Kettleton**
	Sprint Site #:	**CT03XC016**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-G, 2012 IBC & 2016 CSBC** **120-mph Ultimate (3-second gust) with 0" ice** **93-mph Nominal (3-second gust) with 0" ice** **50-mph Nominal (3-second gust) with 3/4" ice**
SITE DATA:		**231 Kettleton Road, Southbury, CT 6488, New Haven County** **Latitude 41° 28' 16.580" N, Longitude 73° 12' 18.352" W** **196' Modified PiROD Monopole**

Mr. David Rodriguez,

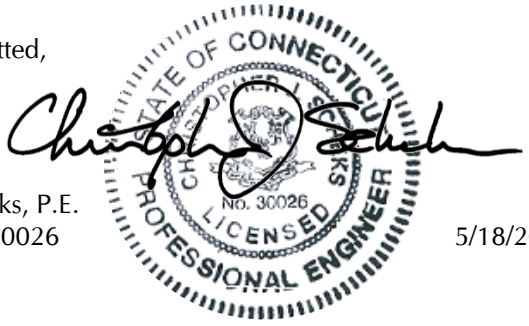
GPD is pleased to submit this Rigorous Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	82.1%	Pass
Foundation Ratio with Proposed Equipment:	65.5%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Phoenix Tower International. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

5/18/2018

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by Sprint to Phoenix Tower International. This report was commissioned by Mr. David Rodriguez of Phoenix Tower International.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

Note: In order for the analysis results to be valid for the proposed, existing, and reserved loading in Appendix A, the modifications referenced in the design drawings by GPD (Project #: 2010293.91, dated 9/14/10 and Project #: 2013792.15 Rev. A, dated 3/11/14) must be installed. Modifications consisted of reinforcing the pole from 0'-139', adding stiffener plates across the flanges from 20'-120', adding additional anchor rods, and installing a foundation collar with piles to the existing foundation.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	77.3%	Pass
Flange Connections	82.1%	Pass
Base Plate	67.2%	Pass
Anchor Rods	64.4%	Pass
Foundation	65.5%	Pass

ANALYSIS METHOD

tnxTower (Version 7.0.7.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendices B & F. The following table details the information provided to complete this structural analysis. This analysis is based solely on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Collocation Application	PTI Collocation Application, dated 3/12/2018	PTI
Tower Design	PiROD, File #: A-115080, dated 3/26/1999	GPD
Foundation Design	PiROD, File #: A-115080, dated 3/26/1999	GPD
Geotechnical Report	Dr. Clarence Welti, dated 10/7/1998	GPD
Previous Structural Analysis	GPD Project #: 2016791.1002.01, dated 9/16/2016	GPD
Modification Drawings	GPD Project #: 2010293.91, dated 9/14/2010	GPD
Modification Drawings	GPD Project #: 2013792.15 Rev. A, dated 3/11/2014	GPD

ASSUMPTIONS

This rigorous structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. All existing loading was obtained from the provided collocation application, the previous structural analysis by GPD (Project #: 2017791.CT1002.02, dated 9/15/2017) and site photos and is assumed to be accurate.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Rigorous Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	Kettleton
Site Number	US-CT-1002
Proposed Carrier	Sprint
Date of Analysis	May 18, 2018
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	196'	
Tower Manufacturer	PiROD	
Tower Model	n/a	
Tower Design	PiROD, File #: A-115080	3/26/1999
Foundation Design	PiROD, File #: A-115080	3/26/1999
Geotech Report	Dr. Clarence Welti	10/7/1998
Previous Structural Analysis	GPD Project #: 2017791.CT1002.02	9/15/2017
Modification Drawings	GPD Project #: 2010293.91	9/14/2010
Modification Drawings	GPD Project #: 2013792.15 Rev. A	3/11/2014
Foundation Mapping	n/a	

Design Parameters

Design Code Used	TIA-222-G 2012 IBC & 2016 CSBC
Location of Tower (County, State)	New Haven, CT
Nominal Wind Speed (mph)	93 Nominal (3-sec gust)
Ice Thickness (in)	0.75
Risk Category (I, II, III)	II
Exposure Category (B, C, D)	B
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	82.1%
Tower Base (%)	67.2%
Foundation (%)	65.5%
Foundation Adequate?	Yes

T-Mobile Future Loading Information	
Existing/Proposed Area (in^2)	11,692
Future Area (in^2)	10,308
Total Wind Area (in^2)	22,000
Does T-Mobile's Loading Exceed 22,000 in^2?	No
If yes, by how much? (in^2)	n/a

Steel Yield Strength (ksi)

Monopole Shaft	65
Base Plate	50
Anchor Rods	75

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	195	195	3	Panel	Andrew	RR90-17-02DP	110/230/350	1	Unknown	LP Platform	12	Unknown	1-5/8"	Internal
T-Mobile	195	195	3	Panel	Commscope	LNX-6515DS-VTM	110/230/350			on the same mount	1	Hybrid Cables	1-5/8"	Internal
T-Mobile	195	195	3	Panel	Ericsson	AIR 33	110/230/350			on the same mount				
T-Mobile	195	195	3	TMA	Ericsson	KRY 112 71				on the same mount				
T-Mobile	195	195	1	Surge	Raycap	DC4-48-60-8-20F				on the same mount				
AT&T	185	185	3	Panel	Powerwave	7770	23/143/263	1	Unknown	LP Platform	12	Unknown	1-1/4"	Internal
AT&T	185	185	2	Panel	KMW	AM-X-CD-16-65-00T RET	23/143			on the same mount	4	DC Power	3/4"	Internal
AT&T	185	185	2	Panel	Quintel	QS66512-3	23/143			on the same mount	2	Fiber Cable	1.496"	Internal
AT&T	185	185	1	Panel	Powerwave	P65-17-XLH-RR	263			on the same mount				
AT&T	185	185	1	Panel	CCI	TPA-65R-LCUUUU-H8	263			on the same mount				
AT&T	185	185	3	TMA	Powerwave	TT19-08B9111-001				on the same mount				
AT&T	185	185	6	Diplexer	CCI	TPX070821				on the same mount				
AT&T	185	185	3	RRU	Ericsson	RRUS 11				on the same mount				
AT&T	185	185	3	RRU	Ericsson	RRUS 12				on the same mount				
AT&T	185	185	3	RRU	Ericsson	RRUS 32				on the same mount				
AT&T	185	185	2	Surge	Raycap	DC6-48-60-18-8F				on the same mount				
Pocket	175	175	3	Panel	RFS	APXV18-206517S-C	110/230/350			Flush mounted	6	Unknown	1-5/8"	External
Sprint	165	165	3	Panel	RFS	APXVSPP18-C-A20	340/70/260	1	Unknown	LP Platform	3	Hybriflex	Unknown	External
Sprint	165	165	3	RRH	Alcatel Lucent	RRH 1900 4x45 65 MHz				on the same mount				
Sprint	165	165	3	RRH	Alcatel Lucent	800 MHz RRH				on the same mount				
Verizon Wireless	155	155	3	Panel	Amphenol	BXA-70063/4CF	60/180/300	1	Unknown	LP Platform	6	Unknown	1-5/8"	External
Verizon Wireless	155	155	6	Panel	Commscope	JAHH-65B-R3B	60/180/300	3	Commscope	BSAMNT SBS-2-2	2	Hybriflex	1-5/8"	External
Verizon Wireless	155	155	1	OVP	RFS	DB-C1-12C-24-AB-0Z				on the same mounts				
Verizon Wireless	155	155	3	RRU	Alcatel Lucent	B66A RRH 4x45				on the same mounts				
Verizon Wireless	155	155	3	RRU	Alcatel Lucent	B25 RRH4x30				on the same mounts				
Verizon Wireless	155	155	3	RRU	Alcatel Lucent	B13 RRH 4x30				on the same mounts				
T-Mobile	91	91	1	Dish	Unknown	2' MW Dish	240			Collar mount	1	Unknown	1-5/8"	Internal
T-Mobile	75	75	1	Panel	Pctel	TMG-HR-26N GPS	240			Pipe mounted	1	Unknown	7/8"	External

Note: (3) APXVSPP18-C-A20 antennas at 165' are to be removed prior to installation of the proposed loading and were not considered in the analysis. All other loading shall remain as shown.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
Sprint	165	165	3	Panel	RFS	APXVTM14-ALU-I20	340/70/260			on the existing mount	1	Hybriflex	1-1/4"	External
Sprint	165	165	3	Panel	Commscope	NNVV-65B-R4	340/70/260			on the existing mount				
Sprint	165	165	3	RRH	Alcatel Lucent	TD-RRH8x20-25 w/ Solar Shield				on the existing mount				
Sprint	165	165	3	RRH	Alcatel Lucent	RRH2x50-08 (800 MHz)				on the existing mount				

Note: The proposed equipment shall be installed in addition to the remaining existing/reserved loading at the same elevation.

Reserved Loading

Antenna						Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	195	195	1	10,308 in^2 Remaining Reserved Loading				on the existing mounts				

Note: T-Mobile's final loading configuration uses 11,692 in^2 of their MLA reserved loading.

APPENDIX B

tnxTower Output

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Sector*	*Component Type*	*Placement* *ft*	*Total Number*	*Number Per Row*	*Start/End Position*	*Width or Diameter* *in*	*Perimeter* *in*	*Weight* *klf*
PiROD Climbing Rungs	C	Surface Ar (CaAa)	196.00 - 8.00	1	1	0.000 0.000	0.6250		0.00
LDF7-50A (1-5/8 FOAM)	A	Surface Ar (CaAa)	175.00 - 8.00	1	1	0.000 0.000	1.9800		0.00
LDF7-50A (1-5/8 FOAM)	A	Surface Ar (CaAa)	175.00 - 8.00	5	5	0.000 0.000	0.0000		0.00
Hybriflex	A	Surface Ar (CaAa)	165.00 - 8.00	4	4	0.000 0.000	1.2500		0.00
LDF7-50A (1-5/8 FOAM)	B	Surface Ar (CaAa)	155.00 - 8.00	6	6	0.000 0.000	1.9800		0.00
1-5/8" Hybrid Cable	B	Surface Ar (CaAa)	155.00 - 8.00	2	2	0.000 0.000	1.9800		0.00
LDF5-50A (7/8 FOAM)	C	Surface Ar (CaAa)	75.00 - 8.00	1	1	0.000 0.000	1.0900		0.00
4" x 1-1/4" Mod Plate	A	Surface Af (CaAa)	22.00 - 18.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	B	Surface Af (CaAa)	22.00 - 18.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	C	Surface Af (CaAa)	22.00 - 18.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	A	Surface Af (CaAa)	42.00 - 38.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	B	Surface Af (CaAa)	42.00 - 38.00	2	2	0.000 0.000	1.2500	10.5000	0.02
4" x 1-1/4" Mod Plate	C	Surface Af (CaAa)	42.00 - 38.00	2	2	0.000 0.000	1.2500	10.5000	0.02

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
6" x 1-1/2" Mod Plate	A	Surface Af (CaAa)	24.00 - 16.00	2	2	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	B	Surface Af (CaAa)	24.00 - 16.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	C	Surface Af (CaAa)	24.00 - 16.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	A	Surface Af (CaAa)	44.00 - 36.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	B	Surface Af (CaAa)	44.00 - 36.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	C	Surface Af (CaAa)	44.00 - 36.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	A	Surface Af (CaAa)	64.00 - 56.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	B	Surface Af (CaAa)	64.00 - 56.00	2	1	0.000 0.000	0.0000	0.0000	0.03
6" x 1-1/2" Mod Plate	C	Surface Af (CaAa)	64.00 - 56.00	2	1	0.000 0.000	0.0000	0.0000	0.03

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
Safety Line 3/8	C	No	CaAa (Out Of Face)	196.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.04 0.14 0.24	0.00 0.00 0.00
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	195.00 - 8.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1-5/8" Hybrid Cable	C	No	Inside Pole	195.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
LDF6-50A (1-1/4 FOAM)	A	No	Inside Pole	185.00 - 8.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1.496" Fiber Cable	A	No	Inside Pole	185.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
3/4" DC Power Line	A	No	Inside Pole	185.00 - 8.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	91.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pirod 16.5' LP Platform	C	None		0.0000	195.00	No Ice 1/2" Ice	20.80 28.10	20.80 28.10	1.80 2.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice	35.40	35.40	2.33
AIR 33 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	6.63	6.31	0.14
							1/2" Ice	7.35	7.48	0.20
							1" Ice	8.01	8.50	0.27
AIR 33 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	6.63	6.31	0.14
							1/2" Ice	7.35	7.48	0.20
							1" Ice	8.01	8.50	0.27
AIR 33 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	6.63	6.31	0.14
							1/2" Ice	7.35	7.48	0.20
							1" Ice	8.01	8.50	0.27
RR90-17-02DP w/ Mount Pipe	A	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	4.59	3.34	0.00
							1/2" Ice	5.09	4.11	0.00
							1" Ice	5.58	4.81	0.00
RR90-17-02DP w/ Mount Pipe	B	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	4.59	3.34	0.00
							1/2" Ice	5.09	4.11	0.00
							1" Ice	5.58	4.81	0.00
RR90-17-02DP w/ Mount Pipe	C	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	4.59	3.34	0.00
							1/2" Ice	5.09	4.11	0.00
							1" Ice	5.58	4.81	0.00
LNX-6515DS-VTM w/ mount pipe	A	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	11.43	9.35	0.08
							1/2" Ice	12.05	10.67	0.16
							1" Ice	12.67	11.70	0.25
LNX-6515DS-VTM w/ mount pipe	B	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	11.43	9.35	0.08
							1/2" Ice	12.05	10.67	0.16
							1" Ice	12.67	11.70	0.25
LNX-6515DS-VTM w/ mount pipe	C	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	11.43	9.35	0.08
							1/2" Ice	12.05	10.67	0.16
							1" Ice	12.67	11.70	0.25
KRY 112 71	A	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	0.58	0.40	0.01
							1/2" Ice	0.69	0.49	0.02
							1" Ice	0.80	0.59	0.03
KRY 112 71	B	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	0.58	0.40	0.01
							1/2" Ice	0.69	0.49	0.02
							1" Ice	0.80	0.59	0.03
KRY 112 71	C	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	0.58	0.40	0.01
							1/2" Ice	0.69	0.49	0.02
							1" Ice	0.80	0.59	0.03
DC4-48-60-8-20F	A	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	1.43	0.59	0.01
							1/2" Ice	1.58	0.70	0.02
							1" Ice	1.74	0.81	0.03
T-Mobile Reserved Loading	A	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	47.72	24.42	0.44
							1/2" Ice	50.18	26.92	0.62
							1" Ice	52.51	29.44	0.83
T-Mobile Reserved Loading	B	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	47.72	24.42	0.44
							1/2" Ice	50.18	26.92	0.62
							1" Ice	52.51	29.44	0.83
T-Mobile Reserved Loading	C	From Centroid-Leg	4.00	0.00	-10.0000	195.00	No Ice	47.72	24.42	0.44
							1/2" Ice	50.18	26.92	0.62
							1" Ice	52.51	29.44	0.83
PiROD 13' Low Profile Platform (Monopole)	C	None			0.0000	185.00	No Ice	15.70	15.70	1.30
							1/2" Ice	20.10	20.10	1.76
							1" Ice	24.50	24.50	2.23
7770.00 w/Mount Pipe	A	From Centroid-Leg	4.00	0.00	23.0000	185.00	No Ice	5.51	4.10	0.06
							1/2" Ice	5.87	4.73	0.11
							1" Ice	6.23	5.37	0.16
7770.00 w/Mount Pipe	B	From Centroid-Leg	4.00	0.00	23.0000	185.00	No Ice	5.51	4.10	0.06
							1/2" Ice	5.87	4.73	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		g	0.00			1" Ice	6.23	5.37	0.16
7770.00 w/Mount Pipe	C	From	4.00	23.0000	185.00	No Ice	5.51	4.10	0.06
		Centroid-Le	0.00			1/2" Ice	5.87	4.73	0.11
		g	0.00			1" Ice	6.23	5.37	0.16
AM-X-CD-16-65-00T-RET w/ 2" x 54" mount pipe	A	From	4.00	23.0000	185.00	No Ice	8.02	5.67	0.06
		Centroid-Le	0.00			1/2" Ice	8.48	6.39	0.12
		g	0.00			1" Ice	8.94	7.12	0.19
AM-X-CD-16-65-00T-RET w/ 2" x 54" mount pipe	B	From	4.00	23.0000	185.00	No Ice	8.02	5.67	0.06
		Centroid-Le	0.00			1/2" Ice	8.48	6.39	0.12
		g	0.00			1" Ice	8.94	7.12	0.19
QS66512-3 w/ Mount Pipe	A	From	4.00	23.0000	185.00	No Ice	8.13	8.17	0.13
		Centroid-Le	0.00			1/2" Ice	8.59	9.13	0.20
		g	0.00			1" Ice	9.05	9.96	0.28
QS66512-3 w/ Mount Pipe	B	From	4.00	23.0000	185.00	No Ice	8.13	8.17	0.13
		Centroid-Le	0.00			1/2" Ice	8.59	9.13	0.20
		g	0.00			1" Ice	9.05	9.96	0.28
P65-17-XLH-RR w/ Mount Pipe	C	From	4.00	23.0000	185.00	No Ice	11.47	8.70	0.09
		Centroid-Le	0.00			1/2" Ice	12.08	10.11	0.17
		g	0.00			1" Ice	12.71	11.38	0.26
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From	4.00	23.0000	185.00	No Ice	13.54	10.96	0.11
		Centroid-Le	0.00			1/2" Ice	14.24	12.49	0.22
		g	0.00			1" Ice	14.95	14.04	0.33
TT19-08BP111-001	A	From	4.00	23.0000	185.00	No Ice	0.55	0.45	0.02
		Centroid-Le	0.00			1/2" Ice	0.65	0.53	0.02
		g	0.00			1" Ice	0.75	0.63	0.03
TT19-08BP111-001	B	From	4.00	23.0000	185.00	No Ice	0.55	0.45	0.02
		Centroid-Le	0.00			1/2" Ice	0.65	0.53	0.02
		g	0.00			1" Ice	0.75	0.63	0.03
TT19-08BP111-001	C	From	4.00	23.0000	185.00	No Ice	0.55	0.45	0.02
		Centroid-Le	0.00			1/2" Ice	0.65	0.53	0.02
		g	0.00			1" Ice	0.75	0.63	0.03
(2) TPX-070821	A	From	4.00	23.0000	185.00	No Ice	0.47	0.10	0.01
		Centroid-Le	0.00			1/2" Ice	0.56	0.15	0.01
		g	0.00			1" Ice	0.66	0.20	0.02
(2) TPX-070821	B	From	4.00	23.0000	185.00	No Ice	0.47	0.10	0.01
		Centroid-Le	0.00			1/2" Ice	0.56	0.15	0.01
		g	0.00			1" Ice	0.66	0.20	0.02
(2) TPX-070821	C	From	4.00	23.0000	185.00	No Ice	0.47	0.10	0.01
		Centroid-Le	0.00			1/2" Ice	0.56	0.15	0.01
		g	0.00			1" Ice	0.66	0.20	0.02
RRUS 11	A	From	4.00	23.0000	185.00	No Ice	2.78	1.19	0.05
		Centroid-Le	0.00			1/2" Ice	2.99	1.33	0.07
		g	0.00			1" Ice	3.21	1.49	0.10
RRUS 11	B	From	4.00	23.0000	185.00	No Ice	2.78	1.19	0.05
		Centroid-Le	0.00			1/2" Ice	2.99	1.33	0.07
		g	0.00			1" Ice	3.21	1.49	0.10
RRUS 11	C	From	4.00	23.0000	185.00	No Ice	2.78	1.19	0.05
		Centroid-Le	0.00			1/2" Ice	2.99	1.33	0.07
		g	0.00			1" Ice	3.21	1.49	0.10
RRUS 12	A	From	4.00	23.0000	185.00	No Ice	3.15	1.29	0.06
		Centroid-Le	0.00			1/2" Ice	3.36	1.44	0.08
		g	0.00			1" Ice	3.59	1.60	0.11
RRUS 12	B	From	4.00	23.0000	185.00	No Ice	3.15	1.29	0.06
		Centroid-Le	0.00			1/2" Ice	3.36	1.44	0.08
		g	0.00			1" Ice	3.59	1.60	0.11
RRUS 12	C	From	4.00	23.0000	185.00	No Ice	3.15	1.29	0.06
		Centroid-Le	0.00			1/2" Ice	3.36	1.44	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		g	0.00					1" Ice	3.59	1.60	0.11
RRUS 32	A	From	4.00			23.0000	185.00	No Ice	3.31	2.42	0.08
		Centroid-Le	0.00					1/2" Ice	3.56	2.64	0.10
		g	0.00					1" Ice	3.81	2.86	0.14
RRUS 32	B	From	4.00			23.0000	185.00	No Ice	3.31	2.42	0.08
		Centroid-Le	0.00					1/2" Ice	3.56	2.64	0.10
		g	0.00					1" Ice	3.81	2.86	0.14
RRUS 32	C	From	4.00			23.0000	185.00	No Ice	3.31	2.42	0.08
		Centroid-Le	0.00					1/2" Ice	3.56	2.64	0.10
		g	0.00					1" Ice	3.81	2.86	0.14
DC6-48-60-18-8F Surge	B	From	4.00			23.0000	185.00	No Ice	0.92	0.92	0.02
Suppression Unit		Centroid-Le	0.00					1/2" Ice	1.46	1.46	0.04
		g	0.00					1" Ice	1.64	1.64	0.06
DC6-48-60-18-8F Surge	C	From	4.00			23.0000	185.00	No Ice	0.92	0.92	0.02
Suppression Unit		Centroid-Le	0.00					1/2" Ice	1.46	1.46	0.04
		g	0.00					1" Ice	1.64	1.64	0.06
Valmont Light Duty	C	None				0.0000	175.00	No Ice	1.76	1.76	0.05
Tri-Bracket (1)								1/2" Ice	2.08	2.08	0.07
								1" Ice	2.40	2.40	0.09
APXV18-206517S-C w/	A	From Leg	0.50			-10.0000	175.00	No Ice	5.17	4.46	0.05
Mount Pipe			0.00					1/2" Ice	5.62	5.39	0.09
			0.00					1" Ice	6.08	6.20	0.14
APXV18-206517S-C w/	B	From Leg	0.50			-10.0000	175.00	No Ice	5.17	4.46	0.05
Mount Pipe			0.00					1/2" Ice	5.62	5.39	0.09
			0.00					1" Ice	6.08	6.20	0.14
APXV18-206517S-C w/	C	From Leg	0.50			-10.0000	175.00	No Ice	5.17	4.46	0.05
Mount Pipe			0.00					1/2" Ice	5.62	5.39	0.09
			0.00					1" Ice	6.08	6.20	0.14
MTS 12.5' LP Platform	C	None				0.0000	165.00	No Ice	14.66	14.66	1.25
								1/2" Ice	18.87	18.87	1.48
								1" Ice	23.08	23.08	1.71
APXVTM14-ALU-I20 w/	A	From	4.00			40.0000	165.00	No Ice	6.58	4.96	0.08
Mount Pipe		Centroid-Fa	0.00					1/2" Ice	7.03	5.75	0.13
		ce	0.00					1" Ice	7.47	6.47	0.19
APXVTM14-ALU-I20 w/	B	From	4.00			10.0000	165.00	No Ice	6.58	4.96	0.08
Mount Pipe		Centroid-Fa	0.00					1/2" Ice	7.03	5.75	0.13
		ce	0.00					1" Ice	7.47	6.47	0.19
APXVTM14-ALU-I20 w/	C	From	4.00			80.0000	165.00	No Ice	6.58	4.96	0.08
Mount Pipe		Centroid-Fa	0.00					1/2" Ice	7.03	5.75	0.13
		ce	0.00					1" Ice	7.47	6.47	0.19
NNVV-65B-R4 w/ Mount	A	From	4.00			40.0000	165.00	No Ice	12.27	7.17	0.10
Pipe		Centroid-Fa	0.00					1/2" Ice	12.77	8.13	0.19
		ce	0.00					1" Ice	13.27	8.97	0.28
NNVV-65B-R4 w/ Mount	B	From	4.00			10.0000	165.00	No Ice	12.27	7.17	0.10
Pipe		Centroid-Fa	0.00					1/2" Ice	12.77	8.13	0.19
		ce	0.00					1" Ice	13.27	8.97	0.28
NNVV-65B-R4 w/ Mount	C	From	4.00			80.0000	165.00	No Ice	12.27	7.17	0.10
Pipe		Centroid-Fa	0.00					1/2" Ice	12.77	8.13	0.19
		ce	0.00					1" Ice	13.27	8.97	0.28
RRH 1900 4x45 65 MHz	A	From	4.00			40.0000	165.00	No Ice	2.29	2.29	0.06
		Centroid-Fa	0.00					1/2" Ice	2.50	2.50	0.08
		ce	0.00					1" Ice	2.71	2.71	0.11
RRH 1900 4x45 65 MHz	B	From	4.00			10.0000	165.00	No Ice	2.29	2.29	0.06
		Centroid-Fa	0.00					1/2" Ice	2.50	2.50	0.08
		ce	0.00					1" Ice	2.71	2.71	0.11
RRH 1900 4x45 65 MHz	C	From	4.00			80.0000	165.00	No Ice	2.29	2.29	0.06
		Centroid-Fa	0.00					1/2" Ice	2.50	2.50	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		ce	0.00			1" Ice	2.71	2.71	0.11
800 MHz RRH	A	From	4.00	40.0000	165.00	No Ice	1.70	1.28	0.05
		Centroid-Fa	0.00			1/2" Ice	1.86	1.43	0.07
		ce	0.00			1" Ice	2.03	1.58	0.09
800 MHz RRH	B	From	4.00	10.0000	165.00	No Ice	1.70	1.28	0.05
		Centroid-Fa	0.00			1/2" Ice	1.86	1.43	0.07
		ce	0.00			1" Ice	2.03	1.58	0.09
800 MHz RRH	C	From	4.00	80.0000	165.00	No Ice	1.70	1.28	0.05
		Centroid-Fa	0.00			1/2" Ice	1.86	1.43	0.07
		ce	0.00			1" Ice	2.03	1.58	0.09
TD-RRH8x20-25 w/ Solar Shield	A	From	4.00	40.0000	165.00	No Ice	3.70	1.29	0.07
		Centroid-Fa	0.00			1/2" Ice	3.95	1.46	0.09
		ce	0.00			1" Ice	4.20	1.64	0.12
TD-RRH8x20-25 w/ Solar Shield	B	From	4.00	10.0000	165.00	No Ice	3.70	1.29	0.07
		Centroid-Fa	0.00			1/2" Ice	3.95	1.46	0.09
		ce	0.00			1" Ice	4.20	1.64	0.12
TD-RRH8x20-25 w/ Solar Shield	C	From	4.00	80.0000	165.00	No Ice	3.70	1.29	0.07
		Centroid-Fa	0.00			1/2" Ice	3.95	1.46	0.09
		ce	0.00			1" Ice	4.20	1.64	0.12
RRH2X50-08 (800 MHz)	A	From	4.00	40.0000	165.00	No Ice	1.70	1.28	0.05
		Centroid-Fa	0.00			1/2" Ice	1.86	1.43	0.07
		ce	0.00			1" Ice	2.03	1.58	0.09
RRH2X50-08 (800 MHz)	B	From	4.00	10.0000	165.00	No Ice	1.70	1.28	0.05
		Centroid-Fa	0.00			1/2" Ice	1.86	1.43	0.07
		ce	0.00			1" Ice	2.03	1.58	0.09
RRH2X50-08 (800 MHz)	C	From	4.00	80.0000	165.00	No Ice	1.70	1.28	0.05
		Centroid-Fa	0.00			1/2" Ice	1.86	1.43	0.07
		ce	0.00			1" Ice	2.03	1.58	0.09
PiROD 15' Low Profile Platform (Monopole)	C	None		0.0000	155.00	No Ice	17.30	17.30	1.50
						1/2" Ice	22.10	22.10	2.03
						1" Ice	26.90	26.90	2.56
(2) JAHH-65B-R3B w/ Mount Pipe	A	From	4.00	0.0000	155.00	No Ice	9.35	7.65	0.09
		Centroid-Fa	0.00			1/2" Ice	9.92	8.83	0.16
		ce	0.00			1" Ice	10.46	9.73	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	B	From	4.00	0.0000	155.00	No Ice	9.35	7.65	0.09
		Centroid-Fa	0.00			1/2" Ice	9.92	8.83	0.16
		ce	0.00			1" Ice	10.46	9.73	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	C	From	4.00	0.0000	155.00	No Ice	9.35	7.65	0.09
		Centroid-Fa	0.00			1/2" Ice	9.92	8.83	0.16
		ce	0.00			1" Ice	10.46	9.73	0.25
BXA-70063-4CF-EDIN-6 w/ Mount Pipe	A	From	4.00	0.0000	155.00	No Ice	4.95	3.69	0.03
		Centroid-Fa	0.00			1/2" Ice	5.32	4.29	0.07
		ce	0.00			1" Ice	5.71	4.91	0.12
BXA-70063-4CF-EDIN-6 w/ Mount Pipe	B	From	4.00	0.0000	155.00	No Ice	4.95	3.69	0.03
		Centroid-Fa	0.00			1/2" Ice	5.32	4.29	0.07
		ce	0.00			1" Ice	5.71	4.91	0.12
BXA-70063-4CF-EDIN-6 w/ Mount Pipe	C	From	4.00	0.0000	155.00	No Ice	4.95	3.69	0.03
		Centroid-Fa	0.00			1/2" Ice	5.32	4.29	0.07
		ce	0.00			1" Ice	5.71	4.91	0.12
DB-C1-12C-24AB-0Z	A	From	4.00	0.0000	155.00	No Ice	4.06	3.10	0.03
		Centroid-Fa	0.00			1/2" Ice	4.32	3.34	0.07
		ce	0.00			1" Ice	4.58	3.58	0.11
B66A RRH4X45	A	From	4.00	0.0000	155.00	No Ice	2.54	1.61	0.06
		Centroid-Fa	0.00			1/2" Ice	2.75	1.79	0.08
		ce	0.00			1" Ice	2.97	1.98	0.10
B66A RRH4X45	B	From	4.00	0.0000	155.00	No Ice	2.54	1.61	0.06
		Centroid-Fa	0.00			1/2" Ice	2.75	1.79	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		ce	0.00			1" Ice	2.97	1.98	0.10
B66A RRH4X45	C	From	4.00	0.0000	155.00	No Ice	2.54	1.61	0.06
		Centroid-Fa	0.00			1/2" Ice	2.75	1.79	0.08
		ce	0.00			1" Ice	2.97	1.98	0.10
B25 RRH4X30	A	From	4.00	0.0000	155.00	No Ice	2.20	1.74	0.06
		Centroid-Fa	0.00			1/2" Ice	2.39	1.92	0.08
		ce	0.00			1" Ice	2.59	2.11	0.10
B25 RRH4X30	B	From	4.00	0.0000	155.00	No Ice	2.20	1.74	0.06
		Centroid-Fa	0.00			1/2" Ice	2.39	1.92	0.08
		ce	0.00			1" Ice	2.59	2.11	0.10
B25 RRH4X30	C	From	4.00	0.0000	155.00	No Ice	2.20	1.74	0.06
		Centroid-Fa	0.00			1/2" Ice	2.39	1.92	0.08
		ce	0.00			1" Ice	2.59	2.11	0.10
B13 RRH 4X30	A	From	4.00	0.0000	155.00	No Ice	2.06	1.32	0.06
		Centroid-Fa	0.00			1/2" Ice	2.24	1.48	0.07
		ce	0.00			1" Ice	2.43	1.64	0.09
B13 RRH 4X30	B	From	4.00	0.0000	155.00	No Ice	2.06	1.32	0.06
		Centroid-Fa	0.00			1/2" Ice	2.24	1.48	0.07
		ce	0.00			1" Ice	2.43	1.64	0.09
B13 RRH 4X30	C	From	4.00	0.0000	155.00	No Ice	2.06	1.32	0.06
		Centroid-Fa	0.00			1/2" Ice	2.24	1.48	0.07
		ce	0.00			1" Ice	2.43	1.64	0.09
BSAMNT SBS-2-2	A	From	4.00	0.0000	155.00	No Ice	0.00	1.43	0.03
		Centroid-Fa	0.00			1/2" Ice	0.00	1.92	0.04
		ce	0.00			1" Ice	0.00	2.29	0.05
BSAMNT SBS-2-2	B	From	4.00	0.0000	155.00	No Ice	0.00	1.43	0.03
		Centroid-Fa	0.00			1/2" Ice	0.00	1.92	0.04
		ce	0.00			1" Ice	0.00	2.29	0.05
BSAMNT SBS-2-2	C	From	4.00	0.0000	155.00	No Ice	0.00	1.43	0.03
		Centroid-Fa	0.00			1/2" Ice	0.00	1.92	0.04
		ce	0.00			1" Ice	0.00	2.29	0.05
Pipe Mount 3'x4.5"	C	From Leg	0.50	0.0000	91.00	No Ice	0.90	0.90	0.03
			0.00			1/2" Ice	1.12	1.12	0.04
			0.00			1" Ice	1.33	1.33	0.05
GPS-TMG-HR-26N	C	From Leg	0.50	0.0000	75.00	No Ice	0.13	0.13	0.00
			0.00			1/2" Ice	0.18	0.18	0.00
			0.00			1" Ice	0.24	0.24	0.01
Pipe Mount 3'x4.5"	C	From Leg	0.50	0.0000	75.00	No Ice	0.91	0.91	0.03
			0.00			1/2" Ice	1.12	1.12	0.04
			0.00			1" Ice	1.33	1.33	0.05
Bridge Stiffener (3.25 sq ft)	A	From Leg	0.50	0.0000	120.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	B	From Leg	0.50	0.0000	120.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	C	From Leg	0.50	0.0000	120.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	A	From Leg	0.50	0.0000	100.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	B	From Leg	0.50	0.0000	100.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	C	From Leg	0.50	0.0000	100.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	A	From Leg	0.50	0.0000	80.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	B	From Leg	0.50	0.0000	80.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00
Bridge Stiffener (3.25 sq ft)	C	From Leg	0.50	0.0000	80.00	No Ice	3.25	0.74	0.00
			0.00			1/2" Ice	3.60	1.25	0.00
			0.00			1" Ice	3.94	1.73	0.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
2' MW	C	Paraboloid w/Radome	From Leg	1.00	0.0000		91.00	2.00	No Ice	3.14	0.04
				0.00					1/2" Ice	3.41	0.07
				0.00					1" Ice	3.68	0.10

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Pirod 16.5' LP Platform	48	18.244	0.8932	0.0022	50186
185.00	PiROD 13' Low Profile Platform (Monopole)	48	16.383	0.8787	0.0023	18658
175.00	Valmont Light Duty Tri-Bracket (1)	48	14.582	0.8423	0.0020	14997
165.00	MTS 12.5' LP Platform	48	12.866	0.7916	0.0018	8941
155.00	PiROD 15' Low Profile Platform (Monopole)	48	11.277	0.7305	0.0013	10309
120.00	Bridge Stiffener (3.25 sq ft)	48	6.739	0.5258	0.0006	12851
100.00	Bridge Stiffener (3.25 sq ft)	48	4.712	0.4375	0.0005	12842
91.00	2' MW	48	3.921	0.4008	0.0004	13241
80.00	Bridge Stiffener (3.25 sq ft)	48	3.055	0.3497	0.0003	13275
75.00	GPS-TMG-HR-26N	48	2.699	0.3307	0.0003	14642

CCIpole

per TIA-222- G

Site BU: _____

Work Order: _____

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	196	1		0	18	18	0.375	n/a	A53-B-42
2	195	15		0	24.00	24	0.375	n/a	A53-B-42
3	180	20		0	30.00	30	0.375	n/a	A53-B-42
4	160	20		0	36.00	36	0.375	n/a	A53-B-42
5	140	20		0	42.00	42	0.375	n/a	A53-B-42
6	120	20		0	48.00	48	0.375	n/a	A53-B-42
7	100	20		0	54.00	54	0.375	n/a	A53-B-42
8	80	20		0	60.00	60	0.375	n/a	A53-B-42
9	60	20		0	60.00	60	0.5	n/a	A53-B-42
10	40	40		0	60.00	60	0.625	n/a	A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	20	plate	6-1/2"x1-1/2" FP	3	0						120						240					
2	20	40	plate	6-1/2"x1-1/2" FP	3	0						120						240					
3	40	60	plate	6-1/2"x1-1/2" FP	3	0						120						240					
4	60	80	plate	6-1/2"x1-1/2" FP	3	0						120						240					
5	80	100	plate	6-1/2"x1-1/2" FP	3	0						120						240					
6	100	120	plate	6-1/2"x1-1/2" FP	3	0						120						240					
7	120	136	plate	6-1/2"x1-1/2" FP	3	0						120						240					
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50
2	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50
3	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50
4	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50
5	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50
6	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50
7	6.5	1.5	9.75	0.75	33.000	33.000	18.000	7.875	1.1875	A572-50

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
196 - 195	Pole	TP18x18x0.375	Pole	0.0%	Pass
195 - 190	Pole	TP24x24x0.375	Pole	7.3%	Pass
190 - 185	Pole	TP24x24x0.375	Pole	14.5%	Pass
185 - 180	Pole	TP24x24x0.375	Pole	25.5%	Pass
180 - 175	Pole	TP30x30x0.375	Pole	24.2%	Pass
175 - 170	Pole	TP30x30x0.375	Pole	32.0%	Pass
170 - 165	Pole	TP30x30x0.375	Pole	40.0%	Pass
165 - 160	Pole	TP30x30x0.375	Pole	50.2%	Pass
160 - 155	Pole	TP36x36x0.375	Pole	42.9%	Pass
155 - 150	Pole	TP36x36x0.375	Pole	51.9%	Pass
150 - 145	Pole	TP36x36x0.375	Pole	60.8%	Pass
145 - 140	Pole	TP36x36x0.375	Pole	69.9%	Pass
140 - 136	Pole	TP42x42x0.375	Pole	57.8%	Pass
136 - 135.75	Pole + Reinf.	TP42x42x0.6375	Reinf. 7 Tension Rupture	39.2%	Pass
135.75 - 130.75	Pole + Reinf.	TP42x42x0.6375	Reinf. 7 Tension Rupture	43.9%	Pass
130.75 - 125.75	Pole + Reinf.	TP42x42x0.6375	Reinf. 7 Tension Rupture	48.7%	Pass
125.75 - 120.75	Pole + Reinf.	TP42x42x0.6375	Reinf. 7 Tension Rupture	53.6%	Pass
120.75 - 120	Pole + Reinf.	TP42x42x0.6375	Reinf. 7 Tension Rupture	54.4%	Pass
120 - 119.75	Pole + Reinf.	TP48x48x0.6	Reinf. 6 Tension Rupture	44.0%	Pass
119.75 - 114.75	Pole + Reinf.	TP48x48x0.6	Reinf. 6 Tension Rupture	48.1%	Pass
114.75 - 109.75	Pole + Reinf.	TP48x48x0.6	Reinf. 6 Tension Rupture	52.3%	Pass
109.75 - 104.75	Pole + Reinf.	TP48x48x0.6	Reinf. 6 Tension Rupture	56.5%	Pass
104.75 - 100	Pole + Reinf.	TP48x48x0.6	Reinf. 6 Tension Rupture	60.5%	Pass
100 - 99.75	Pole + Reinf.	TP54x54x0.5625	Reinf. 5 Tension Rupture	50.1%	Pass
99.75 - 94.75	Pole + Reinf.	TP54x54x0.5625	Reinf. 5 Tension Rupture	53.7%	Pass
94.75 - 89.75	Pole + Reinf.	TP54x54x0.5625	Reinf. 5 Tension Rupture	57.4%	Pass
89.75 - 84.75	Pole + Reinf.	TP54x54x0.5625	Reinf. 5 Tension Rupture	61.1%	Pass
84.75 - 80	Pole + Reinf.	TP54x54x0.5625	Reinf. 5 Tension Rupture	64.7%	Pass
80 - 79.75	Pole + Reinf.	TP60x60x0.55	Reinf. 4 Tension Rupture	54.4%	Pass
79.75 - 74.75	Pole + Reinf.	TP60x60x0.55	Reinf. 4 Tension Rupture	57.7%	Pass
74.75 - 69.75	Pole + Reinf.	TP60x60x0.55	Reinf. 4 Tension Rupture	61.0%	Pass
69.75 - 64.75	Pole + Reinf.	TP60x60x0.55	Reinf. 4 Tension Rupture	64.4%	Pass
64.75 - 60	Pole + Reinf.	TP60x60x0.55	Reinf. 4 Tension Rupture	67.7%	Pass
60 - 59.75	Pole + Reinf.	TP60x60x0.675	Reinf. 3 Tension Rupture	55.3%	Pass
59.75 - 54.75	Pole + Reinf.	TP60x60x0.675	Reinf. 3 Tension Rupture	58.2%	Pass
54.75 - 49.75	Pole + Reinf.	TP60x60x0.675	Reinf. 3 Tension Rupture	61.1%	Pass
49.75 - 44.75	Pole + Reinf.	TP60x60x0.675	Reinf. 3 Tension Rupture	64.0%	Pass
44.75 - 40	Pole + Reinf.	TP60x60x0.675	Reinf. 3 Tension Rupture	66.8%	Pass
40 - 39.75	Pole + Reinf.	TP60x60x0.8	Reinf. 2 Tension Rupture	56.6%	Pass
39.75 - 34.75	Pole + Reinf.	TP60x60x0.8	Reinf. 2 Tension Rupture	59.2%	Pass
34.75 - 29.75	Pole + Reinf.	TP60x60x0.8	Reinf. 2 Tension Rupture	61.7%	Pass
29.75 - 24.75	Pole + Reinf.	TP60x60x0.8	Reinf. 2 Tension Rupture	64.3%	Pass
24.75 - 20	Pole + Reinf.	TP60x60x0.8	Reinf. 2 Tension Rupture	66.8%	Pass
20 - 19.75	Pole + Reinf.	TP60x60x0.8	Reinf. 1 Tension Rupture	66.9%	Pass
19.75 - 14.75	Pole + Reinf.	TP60x60x0.8	Reinf. 1 Tension Rupture	69.5%	Pass
14.75 - 9.75	Pole + Reinf.	TP60x60x0.8	Reinf. 1 Tension Rupture	72.2%	Pass
9.75 - 4.75	Pole + Reinf.	TP60x60x0.8	Reinf. 1 Tension Rupture	74.8%	Pass
4.75 - 0	Pole + Reinf.	TP60x60x0.8	Reinf. 1 Tension Rupture	77.3%	Pass
				Summary	
			Pole	69.9%	Pass
			Reinforcement	77.3%	Pass
			Overall	77.3%	Pass

Additional Calculations

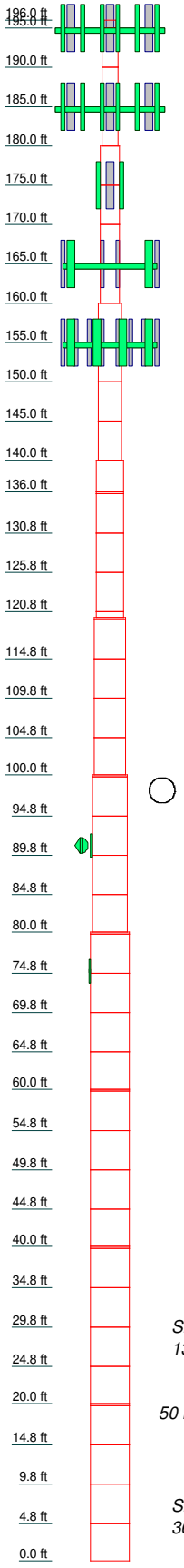
Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7
196 - 195	807	n/a	807	20.76	n/a	20.76	0.0%							
195 - 190	1942	n/a	1942	27.83	n/a	27.83	7.3%							
190 - 185	1942	n/a	1942	27.83	n/a	27.83	14.5%							
185 - 180	1942	n/a	1942	27.83	n/a	27.83	25.5%							
180 - 175	3829	n/a	3829	34.90	n/a	34.90	24.2%							
175 - 170	3829	n/a	3829	34.90	n/a	34.90	32.0%							
170 - 165	3829	n/a	3829	34.90	n/a	34.90	40.0%							
165 - 160	3829	n/a	3829	34.90	n/a	34.90	50.2%							
160 - 155	6659	n/a	6659	41.97	n/a	41.97	42.9%							
155 - 150	6659	n/a	6659	41.97	n/a	41.97	51.9%							
150 - 145	6659	n/a	6659	41.97	n/a	41.97	60.8%							
145 - 140	6659	n/a	6659	41.97	n/a	41.97	69.9%							
140 - 136	10622	n/a	10622	49.04	n/a	49.04	57.8%							
136 - 135.75	10622	6973	17594	49.04	29.25	78.29	35.0%							39.2%
135.75 - 130.75	10622	6973	17594	49.04	29.25	78.29	39.3%							43.9%
130.75 - 125.75	10622	6973	17594	49.04	29.25	78.29	43.6%							48.7%
125.75 - 120.75	10622	6973	17594	49.04	29.25	78.29	48.0%							53.6%
120.75 - 120	10622	6973	17594	49.04	29.25	78.29	48.6%							54.4%
120 - 119.75	15908	9013	24921	56.11	29.25	85.36	40.1%						44.0%	
119.75 - 114.75	15908	9013	24921	56.11	29.25	85.36	43.8%						48.1%	
114.75 - 109.75	15908	9013	24921	56.11	29.25	85.36	47.6%						52.3%	
109.75 - 104.75	15908	9013	24921	56.11	29.25	85.36	51.4%						56.5%	
104.75 - 100	15908	9013	24921	56.11	29.25	85.36	55.1%						60.5%	
100 - 99.75	22710	11316	34026	63.18	29.25	92.43	46.2%					50.1%		
99.75 - 94.75	22710	11316	34026	63.18	29.25	92.43	49.6%					53.7%		
94.75 - 89.75	22710	11316	34026	63.18	29.25	92.43	53.0%					57.4%		
89.75 - 84.75	22710	11316	34026	63.18	29.25	92.43	56.5%					61.1%		
84.75 - 80	22710	11316	34026	63.18	29.25	92.43	59.8%					64.7%		
80 - 79.75	31217	13883	45100	70.24	29.25	99.49	50.9%				54.4%			
79.75 - 74.75	31217	13883	45100	70.24	29.25	99.49	53.9%				57.7%			
74.75 - 69.75	31217	13883	45100	70.24	29.25	99.49	57.1%				61.0%			
69.75 - 64.75	31217	13883	45100	70.24	29.25	99.49	60.2%				64.4%			
64.75 - 60	31217	13883	45100	70.24	29.25	99.49	63.3%				67.7%			
60 - 59.75	41363	13883	55246	93.46	29.25	122.71	50.4%			55.3%				
59.75 - 54.75	41363	13883	55246	93.46	29.25	122.71	53.0%			58.2%				
54.75 - 49.75	41363	13883	55246	93.46	29.25	122.71	55.6%			61.1%				
49.75 - 44.75	41363	13883	55246	93.46	29.25	122.71	58.3%			64.0%				
44.75 - 40	41363	13883	55246	93.46	29.25	122.71	60.8%			66.8%				
40 - 39.75	51381	13883	65264	116.58	29.25	145.83	50.2%		56.6%					
39.75 - 34.75	51381	13883	65264	116.58	29.25	145.83	52.5%		59.2%					
34.75 - 29.75	51381	13883	65264	116.58	29.25	145.83	54.8%		61.7%					
29.75 - 24.75	51381	13883	65264	116.58	29.25	145.83	57.0%		64.3%					
24.75 - 20	51381	13883	65264	116.58	29.25	145.83	59.3%		66.8%					
20 - 19.75	51381	13883	65264	116.58	29.25	145.83	59.4%	66.9%						
19.75 - 14.75	51381	13883	65264	116.58	29.25	145.83	61.7%	69.5%						
14.75 - 9.75	51381	13883	65264	116.58	29.25	145.83	64.0%	72.2%						
9.75 - 4.75	51381	13883	65264	116.58	29.25	145.83	66.4%	74.8%						
4.75 - 0	51381	13883	65264	116.58	29.25	145.83	68.6%	77.3%						

Note: Section capacity checked in 5 degree increments.

APPENDIX C

Tower Elevation Drawing & Feedline Plan

Section	Size	Length (ft)	Grade	Weight (K)
1	P60x0.375	5.00	A53-B-42	0.1
2	P60x0.375	5.00		0.5
3	P60x0.375	5.00		0.5
4	P60x0.375	5.00		0.5
5	P60x0.375	5.00		0.6
6	P60x0.375	5.00		0.6
7	P60x0.375	5.00		0.6
8	P60x0.375	5.00		0.6
9	P60x0.375	5.00		0.7
10	P60x0.375	5.00		0.7
11	P60x0.375	5.00		0.7
12	P60x0.375	5.00		0.7
13	P60x0.375	5.00		10.7
14	P60x0.375	5.00		1.3
15	P60x0.375	5.00		1.3
16	P60x0.375	5.00		1.3
17	P60x0.375	5.00		1.3
18	P60x0.375	5.00		1.5
20	P60x0.375	5.00		1.5
21	P60x0.375	5.00		1.5
22	P60x0.375	5.00		1.5
23	P60x0.375	5.00		11.4
24	P60x0.375	5.00		1.6
25	P60x0.375	5.00		1.6
26	P60x0.375	5.00		1.6
27	P60x0.375	5.00		1.6
28	P60x0.375	5.00		11.5
29	P60x0.375	5.00		1.7
30	P60x0.375	5.00		1.7
31	P60x0.375	5.00		1.7
32	P60x0.375	5.00		1.7
33	P60x0.375	5.00		11.6
34	P60x0.375	5.00		2.1
35	P60x0.375	5.00		2.1
36	P60x0.375	5.00		2.1
37	P60x0.375	5.00		2.1
38	P60x0.375	5.00		12.0
39	P60x0.375	5.00		2.5
40	P60x0.375	5.00		2.5
41	P60x0.375	5.00		2.5
42	P60x0.375	5.00		2.5
43	P60x0.375	5.00		12.4
44	P60x0.375	5.00		2.5
45	P60x0.375	5.00		2.5
46	P60x0.375	5.00		2.5
47	P60x0.375	5.00		2.5
48	P60x0.375	4.75		2.4
				58.7



ALL REACTIONS ARE FACTORED

AXIAL
149 K

SHEAR *13 K*

MOMENT *1764 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL
100 K

SHEAR *36 K*

MOMENT *5255 kip-ft*

TORQUE 3 kip-ft
REACTIONS - 93 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

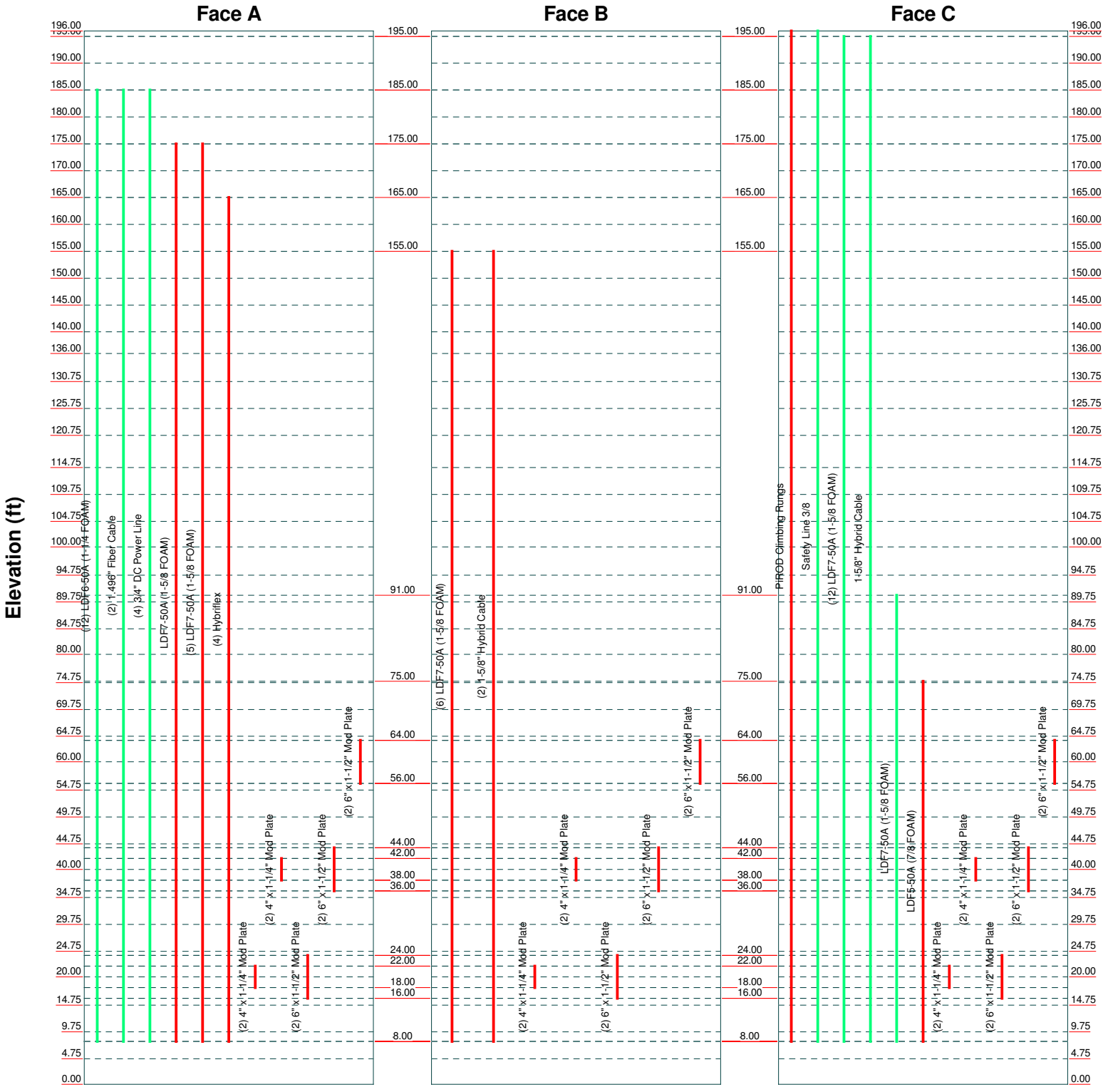
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 77.3%

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (555) 555-1234
FAX: (555) 555-1235

Job: ***US-CT-1002 Kettleton***		
Project: ***2018791.CT1002.04***		
Client: PTI	Drawn by: mrisley	App'd:
Code: TIA-222-G	Date: 05/18/18	Scale: NTS
Path: T:\PTI\US-CT-1002 (CT1112EF)\04 2018791.CT1002.04 PTI Sprint SA Rerun\SA Rev0\mr\US-CT-1002 Modified.eri		Dwg No. E-1

Feed Line Distribution Chart
0' - 196'

Round | Flat | App In Face | App Out Face | Truss Leg



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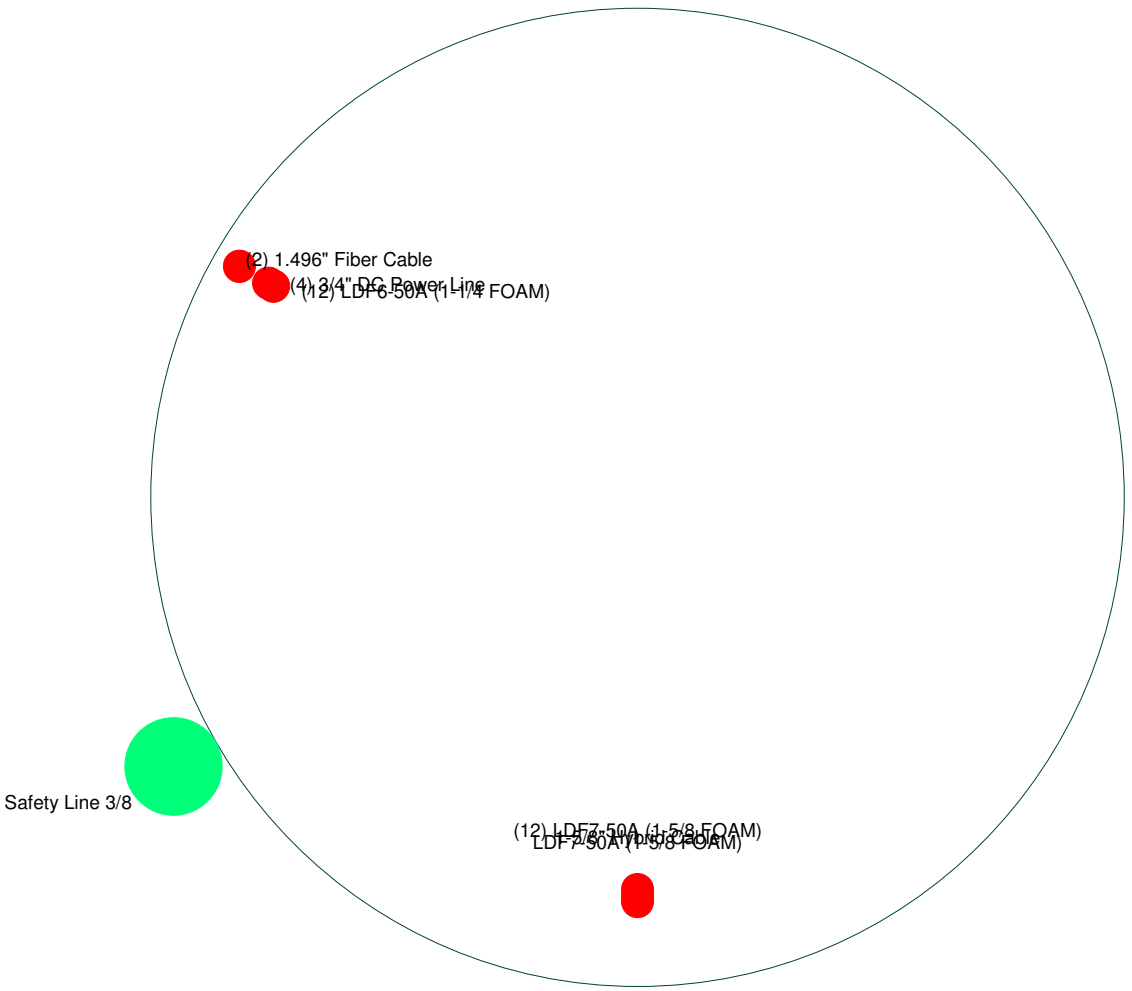
Project: ***2018791.CT1002.04***			
Client: PTI	Drawn by: mrisley	App'd:	
Code: TIA-222-G	Date: 05/18/18	Scale: NTS	
Path: T:\PTI\US-CT-1002 (CT1112EF)\04 2018791.CT1002.04 PTI Sprint SA Rerun\SA Rev0\mx\US-CT-1002 Modified.ell		Dwg No. E-7	

Feed Line Plan

Round Flat App In Face App Out Face



GPD
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Phone: (555) 555-1234
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Job: ***US-CT-1002 Kettleton***		
Project: ***2018791.CT1002.04***		
Client: PTI	Drawn by: mrisley	App'd:
Code: TIA-222-G	Date: 05/18/18	Scale: NTS
Path: T:\PTI\US-CT-1002 (CT1126F)\04 2018791.CT1002.04 PTI Sprint SA Rerun\SA Rev0\mx\US-CT-1002 Modified.ep		Dwg No. E-7

APPENDIX D

Flange Bolt & Flange Plate Analysis

GPD GROUP

Existing Flange Connection @ 180'
US-CT-1002, Kettleton
2018791.CT1002.04

O.T. Moment =	153.13	k*ft
Axial =	9.17	kips
Shear =	13.44	kips

Acceptable Stress Ratio =	105.0%

Flange Bolts		
# Bolts =	20	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	27	in
ϕ_t =	0.75	
ϕ_v =	0.75	
Tension & Shear (TIA-222-G-1, Section 4.9.6)		
F_{ub} =	120	ksi
A_b =	0.785398	in^2
A_n =	0.606	in^2
ϕR_{nv} =	31.81	kips
ϕR_{nt} =	54.54	kips
ϕR_{nt} (adjusted)=	54.53	kips
V_{ub} =	0.67	kips
T_{ub} =	13.14	kips
Prying Action Check		
N/A, top flange thickness > tc		
Max Comp. on Bolt =	14.06	kips
Shear Capacity =	2.1%	
Tensile Capacity =	24.1%	
Interaction Capacity =	24.1%	
Bolt Capacity =	**24.1% OK**	

Pole Information		
Shaft Diam. (Upper) =	24	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	30	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	30.375	in
ϕ_f =	0.9	
wcalc =	12.37	in
wmax =	20.84	in
w =	12.37	in
Z =	4.83	in^3
M_u =	43.57	k-in
ϕM_n =	156.5492	k-in
UP Capacity =	**27.8% OK**	

Lower Flange Plate		
Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	24.25	in
Pole Inner Diameter =	29.25	in
e =	1.13	in
w =	4.59	in
Z =	1.79	in^3
M_u =	15.82	k-in
ϕM_n =	58.15014	k-in
LP Capacity =	**27.2% OK**	

UpperStiffeners		
Configuration =	Every Other	
Thickness =	0.625	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

Lower Stiffeners		
Configuration =	Every Other	
Thickness =	0.625	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

GPD GROUP

Existing Flange Connection @ 160'
US-CT-1002, Kettleton
2018791.CT1002.04

O.T. Moment =	463.23	k*ft
Axial =	15.76	kips
Shear =	18.84	kips

Acceptable Stress Ratio =	105.0%

Flange Bolts		
# Bolts =	24	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	33	in
ϕ_t =	0.75	
ϕ_v =	0.75	
Tension & Shear (TIA-222-G-1, Section 4.9.6)		
F_{ub} =	120	ksi
A_b =	0.785398	in^2
A_n =	0.606	in^2
ϕR_{nv} =	31.81	kips
ϕR_{nt} =	54.54	kips
ϕR_{nt} (adjusted)=	54.52	kips
V_{ub} =	0.79	kips
T_{ub} =	27.40	kips
Prying Action Check		
N/A, top flange thickness > tc		
Max Comp. on Bolt =	28.72	kips
Shear Capacity =	2.5%	
Tensile Capacity =	50.2%	
Interaction Capacity =	50.3%	
Bolt Capacity =	**50.3%**	**OK**

Pole Information		
Shaft Diam. (Upper) =	30	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	36	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	36.375	in
ϕ_f =	0.9	
wcalc =	13.75	in
wmax =	21.04	in
w =	13.75	in
Z =	5.37	in^3
M_u =	95.15	k-in
ϕM_n =	173.9947	k-in
UP Capacity =	**54.7%**	**OK**

Lower Flange Plate		
Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	27.375	in
Pole Inner Diameter =	35.25	in
e =	1.13	in
w =	4.61	in
Z =	1.80	in^3
M_u =	32.31	k-in
ϕM_n =	58.39865	k-in
LP Capacity =	**55.3%**	**OK**

UpperStiffeners		
Configuration =	Every Other	
Thickness =	0.625	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

Lower Stiffeners		
Configuration =	Every Other	
Thickness =	0.625	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

GPD GROUP

Existing Flange Connection @ 140'
US-CT-1002, Kettleton
2018791.CT1002.04

O.T. Moment =	913.08	k*ft
Axial =	23.4	kips
Shear =	24.18	kips

Acceptable Stress Ratio =	105.0%

Flange Bolts		
# Bolts =	28	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	39	in
ϕ_t =	0.75	
ϕ_v =	0.75	
Tension & Shear (TIA-222-G-1, Section 4.9.6)		
F_{ub} =	120	ksi
A_b =	0.785398	in^2
A_n =	0.606	in^2
ϕR_{nv} =	31.81	kips
ϕR_{nt} =	54.54	kips
ϕR_{nt} (adjusted)=	54.52	kips
V_{ub} =	0.86	kips
T_{ub} =	39.29	kips
Prying Action Check		
N/A, top flange thickness > tc		
Max Comp. on Bolt =	40.96	kips
Shear Capacity =	2.7%	
Tensile Capacity =	72.0%	
Interaction Capacity =	72.1%	
Bolt Capacity =	**72.1% OK**	

Pole Information		
Shaft Diam. (Upper) =	36	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	42	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	42.375	in
ϕ_f =	0.9	
wcalc =	15.00	in
wmax =	25.38	in
w =	15.00	in
Z =	5.86	in^3
M_u =	143.54	k-in
ϕM_n =	189.8438	k-in
UP Capacity =	**75.6% OK**	

Lower Flange Plate		
Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	33.375	in
Pole Inner Diameter =	41.25	in
e =	1.13	in
w =	4.63	in
Z =	1.81	in^3
M_u =	46.08	k-in
ϕM_n =	58.57615	k-in
LP Capacity =	**78.7% OK**	

UpperStiffeners		
Configuration =	Every Other	
Thickness =	0.5	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

Lower Stiffeners		
Configuration =	Every Other	
Thickness =	0.5	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

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BOLT AND BRIDGE STIFFENER CALCULATIONS @ 120'

Moment from TNX (M) =	1414.50	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	30.41	kip					
Inner Bolt Diameter =	1	in					
Inner Bolt Area (A_{inner}) =	0.79	in^2	Inner Bolt Circle (BC_{inner}) =	45	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.05	in^4	Total Area ($A_{tot.in}$) =	25.13	in^2		
Number Inner Bolts (N_{inner}) =	32		Percent Total Area (η_{in}) =	48.2%		Axial, Inner Bolts ($P*\eta_{in}$) =	14.66 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	0	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$)	9	in2		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	51	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	27.00	in^2		
Number Bridge Stiffeners (N_{pl})	3		Percent Total Area (η_{pl}) =	51.8%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	15.75 kips

I_{inner} =	6363.30	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{pl} =	8859.38	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	15222.67	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	19.2	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.pl}$ =	250.7	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	261.2	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	61.85	kips	
Bolt Rating =	31.1%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	23.556	
F_e =	515.82	ksi
F_{cr} =	48.01	ksi
$ØP_{nc}$ =	388.90	kips
$ØP_{nt}$ =	438.75	kips
Bridge Stiffener Rating =	67.2%	OK

GPD GROUP

Existing Flange Connection @ 120'
US-CT-1002, Kettleton
2018791.CT1002.04

*O.T. Moment =	681.79	k*ft
Axial =	30.41	kips
Shear =	25.96	kips

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Acceptable Stress Ratio	
=	105.0%

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	45	in
ϕ_t =	0.75	
ϕ_v =	0.75	

Tension & Shear (TIA-222-G-1, Section 4.9.6)

F_{ub} =	120	ksi
A_b =	0.785398	in^2
A_n =	0.606	in^2
ϕR_{nv} =	31.81	kips
ϕR_{nt} =	54.54	kips
ϕR_{nt} (adjusted)=	54.52	kips
V_{ub} =	0.81	kips
T_{ub} =	21.77	kips

Prying Action Check

N/A, top flange thickness > tc

Max Comp. on Bolt =	23.67	kips
Shear Capacity =	2.6%	
Tensile Capacity =	39.9%	
Interaction Capacity =	39.9%	
Bolt Capacity =	**39.9% OK**	

Pole Information

Shaft Diam. (Upper) =	42	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	48	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	48.375	in
ϕ_f =	0.9	
wcalc =	16.16	in
wmax =	25.56	in
w =	16.16	in
Z =	6.31	in^3
M_u =	89.69	k-in
ϕM_n =	204.468	k-in
UP Capacity =	**43.9% OK**	

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	39.375	in
Pole Inner Diameter =	47.25	in
e =	1.13	in
w =	4.64	in
Z =	1.81	in^3
M_u =	26.63	k-in
ϕM_n =	58.70928	k-in
LP Capacity =	**45.4% OK**	

UpperStiffeners

Configuration =	Every Other	
Thickness =	0.625	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

Lower Stiffeners

Configuration =	Every Other	
Thickness =	0.625	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

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BOLT AND BRIDGE STIFFENER CALCULATIONS @ 100'

Moment from TNX (M) =	1957.68	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	38.46	kip					
Inner Bolt Diameter =	1	in					
Inner Bolt Area (A_{inner}) =	0.79	in^2	Inner Bolt Circle (BC_{inner}) =	51	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.05	in^4	Total Area ($A_{tot.in}$) =	25.92	in^2		
Number Inner Bolts (N_{inner}) =	33		Percent Total Area (η_{in}) =	49.0%		Axial, Inner Bolts ($P*\eta_{in}$) =	18.84 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	0	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$)	9	in2		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	57	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	27.00	in^2		
Number Bridge Stiffeners (N_{pl})	3		Percent Total Area (η_{pl}) =	51.0%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	19.62 kips

I_{inner} =	8428.25	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{pl} =	11046.38	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	19474.63	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	23.6	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.pl}$ =	302.9	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	316.0	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	61.85	kips	
Bolt Rating =	38.1%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	23.556	
F_e =	515.82	ksi
F_{cr} =	48.01	ksi
$ØP_{nc}$ =	388.90	kips
$ØP_{nt}$ =	438.75	kips
Bridge Stiffener Rating =	81.2%	OK

Existing Flange Connection @ 100'
US-CT-1002, Kettleton
2018791.CT1002.04

*O.T. Moment =	959.2632	k*ft
Axial =	38.46	kips
Shear =	28.09	kips

Acceptable Stress Ratio =	105.0%

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts		
# Bolts =	36	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	51	in
ϕ_t =	0.75	
ϕ_v =	0.75	
Tension & Shear (TIA-222-G-1, Section 4.9.6)		
F_{ub} =	120	ksi
A_b =	0.785398	in^2
A_n =	0.606	in^2
ϕR_{nv} =	31.81	kips
ϕR_{nt} =	54.54	kips
ϕR_{nt} (adjusted)=	54.52	kips
V_{ub} =	0.78	kips
T_{ub} =	24.01	kips
Prying Action Check		
N/A, top flange thickness > tc		
Max Comp. on Bolt =	26.14	kips
Shear Capacity =	2.5%	
Tensile Capacity =	44.0%	
Interaction Capacity =	44.0%	
Bolt Capacity =	**44.0% OK**	

Pole Information		
Shaft Diam. (Upper) =	48	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	54	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	54.375	in
ϕ_f =	0.9	
wcalc =	17.23	in
wmax =	25.70	in
w =	17.23	in
Z =	6.73	in^3
M_u =	105.00	k-in
ϕM_n =	218.1139	k-in
UP Capacity =	**48.1% OK**	

Lower Flange Plate		
Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	45.375	in
Pole Inner Diameter =	53.25	in
e =	1.13	in
w =	4.65	in
Z =	1.82	in^3
M_u =	29.41	k-in
ϕM_n =	58.81282	k-in
LP Capacity =	**50.0% OK**	

UpperStiffeners		
Configuration =	Every Other	
Thickness =	0.625	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

Lower Stiffeners		
Configuration =	Every Other	
Thickness =	0.625	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi

Stiffeners ineffective - check plate unstiffened

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BOLT AND BRIDGE STIFFENER CALCULATIONS @ 80'

Moment from TNX (M) =	2544.68 kip-ft	ASIF =	1.00				
Axial from TNX (P) =	47.21 kip						
Inner Bolt Diameter =	1 in						
Inner Bolt Area (A_{inner}) =	0.79 in^2	Inner Bolt Circle (BC_{inner}) =	57 in				
Inner Bolt MOI ($I_{o.inner}$) =	0.05 in^4	Total Area ($A_{tot.in}$) =	37.70 in^2				
Number Inner Bolts (N_{inner}) =	48	Percent Total Area (η_{in}) =	58.3%	Axial, Inner Bolts ($P*\eta_{in}$) =	27.51 kips		
Bridge Stiffener Width =	6.00 in						
Bridge Stiffener Thickness =	1.50 in	Connection Bolt Hole Size =	0 in				
Bridge Stiffener Unbraced Length =	12.00 in	Net Bridge Stiffener Area ($A_{e.pl}$)	9 in				
Bridge Stiffener Area (A_{pl}) =	9.00 in^2	Bridge Stiffener Circle (BC_{pl}) =	63 in				
Bridge Stiffener MOI (I_o) =	27.00 in^4	Total Area ($A_{tot.pl}$) =	27.00 in^2				
Number Bridge Stiffeners (N_{pl})	3	Percent Total Area (η_{pl}) =	41.7%	Axial, Bridge Stiffener ($P*\eta_{pl}$) =	19.70 kips		

I_{inner} =	15312.91 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$	
I_{pl} =	13476.38 $in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$	
I_{tot} =	28789.28 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$	
$P_{u.t.inner}$ =	23.2 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$	
$P_{u.t.pl}$ =	294.1 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$	
$P_{u.c.pl}$ =	307.3 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$	
$ØP_{nt.bolt}$ =	61.85 kips		
Bolt Rating =	37.5% OK		

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	23.556	
F_e =	515.82	ksi
F_{cr} =	48.01	ksi
$ØP_{nc}$ =	388.90	kips
$ØP_{nt}$ =	438.75	kips
Bridge Stiffener Rating =	79.0%	OK

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Existing Flange Connection @ 80'
US-CT-1002, Kettleton
2018791.CT1002.04

*O.T. Moment =	1483.55	k*ft
Axial =	47.21	kips
Shear =	30.32	kips

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Acceptable Stress Ratio	
=	105.0%

Flange Bolts

# Bolts =	48	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	57	in
ϕ_t =	0.75	
ϕ_v =	0.75	

Tension & Shear (TIA-222-G-1, Section 4.9.6)

F_{ub} =	120	ksi
A_b =	0.785398	in^2
A_n =	0.606	in^2
ϕR_{nv} =	31.81	kips
ϕR_{nt} =	54.54	kips
ϕR_{nt} (adjusted)=	54.53	kips
V_{ub} =	0.63	kips
T_{ub} =	25.04	kips

Prying Action Check

N/A, top flange thickness > tc

Max Comp. on Bolt =	27.01	kips
Shear Capacity =	2.0%	
Tensile Capacity =	45.9%	
Interaction Capacity =	45.9%	
Bolt Capacity =	**45.9%**	**OK**

Pole Information

Shaft Diam. (Upper) =	54	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.375	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Outer Diameter =	60.375	in
ϕ_f =	0.9	
b =	3.11	in
Le =	3.00	in
Z =	2.34	in^3
M_u =	34.43	k-in
ϕM_n =	75.9375	k-in
UP Capacity =	**45.3%**	**OK**

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	51.375	in
b =	3.11	in
Le =	2.00	in
Z =	2.34	in^3
M_u =	41.11	k-in
ϕM_n =	75.9375	k-in
LP Capacity =	**54.1%**	**OK**

UpperStiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	3	in
Notch =	0.5	in
Height =	5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	15.42	kips
Vert. Weld Capacity =	33.9%	kips
Horiz. Weld Capacity =	48.3%	kips
Stiffener Capacity =	53.6%	kips
Controlling Capacity =	**53.6%**	**OK**

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	2	in
Notch =	0.5	in
Height =	3.5	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	9.98	kips
Vert. Weld Capacity =	32.5%	kips
Horiz. Weld Capacity =	52.2%	kips
Stiffener Capacity =	49.2%	kips
Controlling Capacity =	**52.2%**	**OK**

- Welds Control

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Project #: 2018791.CT1002.04

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 60'

Moment from TNX (M) =	3175.27 kip-ft	ASIF =	1.00				
Axial from TNX (P) =	57.40 kip						
Inner Bolt Diameter =	1.25 in						
Inner Bolt Area (A_{inner}) =	1.23 in^2	Inner Bolt Circle (BC_{inner}) =	47 in				
Inner Bolt MOI ($I_{o.inner}$) =	0.12 in^4	Total Area ($A_{tot.in}$) =	39.27 in^2				
Number Inner Bolts (N_{inner}) =	32	Percent Total Area (η_{in}) =	29.6%	Axial, Inner Bolts ($P*\eta_{in}$) =	17.01 kips		
Outer Bolt Diameter =	1.25 in						
Outer Bolt Area (A_{outer}) =	1.23 in^2	Outer Bolt Circle (BC_{outer}) =	53 in				
Outer Bolt MOI ($I_{o.outer}$) =	0.12 in^4	Total Area ($A_{tot.out}$) =	39.27 in^2				
Number Outer Bolts (N_{outer}) =	32	Percent Total Area (η_{out}) =	29.6%	Axial, Outer Bolts ($P*\eta_{out}$) =	17.01 kips		
Bridge Stiffener Width =	6.00 in						
Bridge Stiffener Thickness =	1.50 in	Connection Bolt Hole Size =	1.21875 in				
Bridge Stiffener Unbraced Length =	30.00 in	Net Bridge Stiffener Area ($A_{e.pl}$)	7.17188 in				
Bridge Stiffener Area (A_{pl}) =	9.00 in^2	Bridge Stiffener Circle (BC_{pl}) =	63 in				
Bridge Stiffener MOI (I_o) =	27.00 in^4	Total Area ($A_{tot.pl}$) =	54.00 in^2				
Number Bridge Stiffeners (N_{pl})	6	Percent Total Area (η_{pl}) =	40.7%	Axial, Bridge Stiffener ($P*\eta_{pl}$) =	23.39 kips		

I_{inner} =	10847.24 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$	
I_{outer} =	13792.48 $in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8 + N_{outer}*I_{o.outer})$	
I_{pl} =	26952.75 $in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$	
I_{tot} =	51592.47 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$	
$P_{u.t.inner}$ =	20.8 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$	
$P_{u.t.outer}$ =	23.5 kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} - P*\eta_{out}/N_{outer})$	
$P_{u.t.pl}$ =	205.5 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$	
$P_{u.c.pl}$ =	213.3 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$	
$ØP_{nt.bolt}$ =	96.64 kips		
Bolt Rating =	24.3% OK		

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	58.890	
F_e =	82.53	ksi
F_{cr} =	38.80	ksi
$ØP_{nc}$ =	314.29	kips
$ØP_{nt}$ =	349.63	kips
Bridge Stiffener Rating =	67.9%	OK

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Existing Flange Connection @ 60'
US-CT-1002, Kettleton
2018791.CT1002.04

*O.T. Moment =	939.88	k*ft
Axial =	57.4	kips
Shear =	32.47	kips

Acceptable Stress Ratio =	105.0%

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1.75	in
Bolt Circle =	44	in
ϕ_t =	0.75	
ϕ_v =	0.75	

Tension & Shear (TIA-222-G-1, Section 4.9.6)

F_{ub} =	105	ksi
A_b =	2.405282	in^2
A_n =	1.9	in^2
ϕR_{nv} =	85.24	kips
ϕR_{nt} =	149.63	kips
ϕR_{nt} (adjusted)=	149.61	kips
V_{ub} =	1.01	kips
T_{ub} =	30.22	kips

Prying Action Check

N/A for stiffened flange

Max Comp. on Bolt =	33.81	kips
Shear Capacity =	1.2%	
Tensile Capacity =	20.2%	
Interaction Capacity =	20.2%	
Bolt Capacity =	**20.2%**	**OK**

Pole Information

Shaft Diam. (Upper) =	60	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.5	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
ϕ_f =	0.9	
b =	3.69	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.25	k-in
ϕM_n =	75.9375	k-in
UP Capacity =	**26.7%**	**OK**

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
b =	3.69	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.25	k-in
ϕM_n =	75.9375	k-in
LP Capacity =	**26.7%**	**OK**

UpperStiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	16.98	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	31.0%	kips
Controlling Capacity =	**31.0%**	**OK**

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	14.98	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	27.3%	kips
Controlling Capacity =	**27.3%**	**OK**

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Project #: 2018791.CT1002.04

BOLT AND BRIDGE STIFFENER CALCULATIONS @ 40'

Moment from TNX (M) =	3841.71 kip-ft	ASIF =	1.00				
Axial from TNX (P) =	70.61 kip						
Inner Bolt Diameter =	1.25 in						
Inner Bolt Area (A_{inner}) =	1.23 in^2	Inner Bolt Circle (BC_{inner}) =	47 in				
Inner Bolt MOI ($I_{o.inner}$) =	0.12 in^4	Total Area ($A_{tot.in}$) =	39.27 in^2				
Number Inner Bolts (N_{inner}) =	32	Percent Total Area (η_{in}) =	29.6%	Axial, Inner Bolts ($P*\eta_{in}$) =	20.92 kips		
Outer Bolt Diameter =	1.25 in						
Outer Bolt Area (A_{outer}) =	1.23 in^2	Outer Bolt Circle (BC_{outer}) =	53 in				
Outer Bolt MOI ($I_{o.outer}$) =	0.12 in^4	Total Area ($A_{tot.out}$) =	39.27 in^2				
Number Outer Bolts (N_{outer}) =	32	Percent Total Area (η_{out}) =	29.6%	Axial, Outer Bolts ($P*\eta_{out}$) =	20.92 kips		
Bridge Stiffener Width =	6.00 in						
Bridge Stiffener Thickness =	1.50 in	Connection Bolt Hole Size =	1.18 in				
Bridge Stiffener Unbraced Length =	30.00 in	Net Bridge Stiffener Area ($A_{e.pl}$)	7.23 in				
Bridge Stiffener Area (A_{pl}) =	9.00 in^2	Bridge Stiffener Circle (BC_{pl}) =	63 in				
Bridge Stiffener MOI (I_o) =	27.00 in^4	Total Area ($A_{tot.pl}$) =	54.00 in^2				
Number Bridge Stiffeners (N_{pl})	6	Percent Total Area (η_{pl}) =	40.7%	Axial, Bridge Stiffener ($P*\eta_{pl}$) =	28.77 kips		

I_{inner} =	10847.24 $in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$	
I_{outer} =	13792.48 $in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8 + N_{outer}*I_{o.outer})$	
I_{pl} =	26952.75 $in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$	
I_{tot} =	51592.47 $in.^4$	$(I_{inner} + I_{outer} + I_{pl})$	
$P_{u.t.inner}$ =	25.1 kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$	
$P_{u.t.outer}$ =	28.4 kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} - P*\eta_{out}/N_{outer})$	
$P_{u.t.pl}$ =	248.5 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$	
$P_{u.c.pl}$ =	258.1 kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$	
$ØP_{nt.bolt}$ =	96.64 kips		
Bolt Rating =	29.4% OK		

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	58.890	
F_e =	82.53	ksi
F_{cr} =	38.80	ksi
$ØP_{nc}$ =	314.29	kips
$ØP_{nt}$ =	352.46	kips
Bridge Stiffener Rating =	82.1%	OK

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Existing Flange Connection @ 40'
US-CT-1002, Kettleton
2018791.CT1002.04

*O.T. Moment =	1137.15	k*ft
Axial =	70.61	kips
Shear =	34.11	kips

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Acceptable Stress Ratio	
=	105.0%

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1.75	in
Bolt Circle =	50	in
ϕ_t =	0.75	
ϕ_v =	0.75	

Tension & Shear (TIA-222-G-1, Section 4.9.6)

F_{ub} =	105	ksi
A_b =	2.405282	in^2
A_n =	1.9	in^2
ϕR_{nv} =	85.24	kips
ϕR_{nt} =	149.63	kips
ϕR_{nt} (adjusted)=	149.61	kips
V_{ub} =	1.07	kips
T_{ub} =	31.89	kips

Prying Action Check
N/A for stiffened flange

Max Comp. on Bolt =	36.30	kips
Shear Capacity =	1.3%	
Tensile Capacity =	21.3%	
Interaction Capacity =	21.3%	
Bolt Capacity =	**21.3%**	**OK**

Pole Information

Shaft Diam. (Upper) =	60	in
Thickness (Upper)=	0.5	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.625	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
ϕ_f =	0.9	
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	23.28	k-in
ϕM_n =	75.9375	k-in
UP Capacity =	**30.7%**	**OK**

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	20.25	k-in
ϕM_n =	75.9375	k-in
LP Capacity =	**30.7%**	**OK**

UpperStiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	18.14	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	33.1%	kips
Controlling Capacity =	**33.1%**	**OK**

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	16.23	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	29.6%	kips
Controlling Capacity =	**29.6%**	**OK**

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BOLT AND BRIDGE STIFFENER CALCULATIONS @ 20'

Moment from TNX (M) =	4537.26	kip-ft	ASIF =	1.00			
Axial from TNX (P) =	85.99	kip					
Inner Bolt Diameter =	1.25	in					
Inner Bolt Area (A_{inner}) =	1.23	in^2	Inner Bolt Circle (BC_{inner}) =	47	in		
Inner Bolt MOI ($I_{o.inner}$) =	0.12	in^4	Total Area ($A_{tot.in}$) =	39.27	in^2		
Number Inner Bolts (N_{inner}) =	32		Percent Total Area (η_{in}) =	24.2%		Axial, Inner Bolts ($P*\eta_{in}$) =	20.78 kips
Outer Bolt Diameter =	1.25	in					
Outer Bolt Area (A_{outer}) =	1.23	in^2	Outer Bolt Circle (BC_{outer}) =	53	in		
Outer Bolt MOI ($I_{o.outer}$) =	0.12	in^4	Total Area ($A_{tot.out}$) =	39.27	in^2		
Number Outer Bolts (N_{outer}) =	32		Percent Total Area (η_{out}) =	24.2%		Axial, Outer Bolts ($P*\eta_{out}$) =	20.78 kips
Bridge Stiffener Width =	6.00	in					
Bridge Stiffener Thickness =	1.50	in	Connection Bolt Hole Size =	1.21875	in		
Bridge Stiffener Unbraced Length =	30.00	in	Net Bridge Stiffener Area ($A_{e.pl}$) =	7.17188	in		
Bridge Stiffener Area (A_{pl}) =	9.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	60.75	in		
Bridge Stiffener MOI (I_o) =	27.00	in^4	Total Area ($A_{tot.pl}$) =	54.00	in^2		
Number Bridge Stiffeners (N_{pl})	6		Percent Total Area (η_{pl}) =	33.2%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	28.57 kips
Bridge Stiffener Width =	4.00	in					
Bridge Stiffener Thickness =	1.25	in	Connection Bolt Hole Size =	1.21875	in		
Bridge Stiffener Unbraced Length =	12.00	in	Net Bridge Stiffener Area ($A_{e.pl}$) =	3.47656	in		
Bridge Stiffener Area (A_{pl}) =	5.00	in^2	Bridge Stiffener Circle (BC_{pl}) =	60.625	in		
Bridge Stiffener MOI (I_o) =	6.67	in^4	Total Area ($A_{tot.pl}$) =	30.00	in^2		
Number Bridge Stiffeners (N_{pl})	6		Percent Total Area (η_{pl}) =	18.5%		Axial, Bridge Stiffener ($P*\eta_{pl}$) =	15.87 kips

I_{inner} =	10847.24	$in.^4$	$(N_{inner}*A_{inner}*BC_{inner}^2/8 + N_{inner}*I_{o.inner})$
I_{outer} =	13792.48	$in.^4$	$(N_{outer}*A_{outer}*BC_{outer}^2/8 + N_{outer}*I_{o.outer})$
I_{pl} =	25073.30	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{pl} =	13822.71	$in.^4$	$(N_{pl}*A_{pl}*BC_{pl}^2/8 + N_{pl}*I_{o.pl})$
I_{tot} =	63535.73	$in.^4$	$(I_{inner} + I_{outer} + I_{pl})$
$P_{u.t.inner}$ =	24.1	kips	$(M*(BC_{inner}/2)*A_{inner})/I_{total} - P*\eta_{in}/N_{inner})$
$P_{u.t.outer}$ =	27.2	kips	$(M*(BC_{outer}/2)*A_{outer})/I_{total} - P*\eta_{out}/N_{outer})$
$P_{u.t.pl}$ =	229.5	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	239.0	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$P_{u.t.pl}$ =	127.2	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} - P*\eta_{pl}/N_{pl})$
$P_{u.c.pl}$ =	132.5	kips	$(M*(BC_{pl}/2)*A_{pl})/I_{total} + P*\eta_{pl}/N_{pl})$
$ØP_{nt.bolt}$ =	96.64	kips	
Bolt Rating =	28.2%	OK	

Bridge Stiffener Check

f_y =	50	ksi
f_u =	65	ksi
E =	29000	ksi
K =	0.85	
KL/r =	58.890	
F_e =	82.53	ksi
F_{cr} =	38.80	ksi
$ØP_{nc}$ =	314.29	kips
$ØP_{nt}$ =	349.63	kips
Bridge Stiffener Rating =	76.1%	OK

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Existing Flange Connection @ 20'
US-CT-1002, Kettleton
2018791.CT1002.04

*O.T. Moment =	1098.02	k*ft
Axial =	85.99	kips
Shear =	35.39	kips

Acceptable Stress Ratio =	105.0%

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

Flange Bolts

# Bolts =	32	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1.75	in
Bolt Circle =	50	in
ϕ_t =	0.75	
ϕ_v =	0.75	

Tension & Shear (TIA-222-G-1, Section 4.9.6)

F_{ub} =	105	ksi
A_b =	2.405282	in^2
A_n =	1.9	in^2
ϕR_{nv} =	85.24	kips
ϕR_{nt} =	149.63	kips
ϕR_{nt} (adjusted)=	149.61	kips
V_{ub} =	1.11	kips
T_{ub} =	30.23	kips

Prying Action Check

N/A for stiffened flange

Max Comp. on Bolt =	35.61	kips
Shear Capacity =	1.3%	
Tensile Capacity =	20.2%	
Interaction Capacity =	20.2%	
Bolt Capacity =	**20.2%**	**OK**

Pole Information

Shaft Diam. (Upper) =	60	in
Thickness (Upper)=	0.625	in
# of Sides (Upper) =	Round	
F_y (Upper) =	42	ksi
Shaft Diam. (Lower) =	60	in
Thickness (Lower)=	0.625	in
# of Sides (Lower) =	Round	
F_y (Lower) =	42	ksi

Upper Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Tensile (F_u) =	58	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
ϕ_f =	0.9	
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	22.86	k-in
ϕM_n =	75.9375	k-in
UP Capacity =	**30.1%**	**OK**

Lower Flange Plate

Location =	Internal	
Plate Strength (F_y) =	36	ksi
Plate Thickness =	1.25	in
Hole Diameter =	43	in
b =	4.28	in
Le =	7.00	in
Z =	2.34	in^3
M_u =	22.86	k-in
ϕM_n =	75.9375	k-in
LP Capacity =	**30.1%**	**OK**

UpperStiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	15.97	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	29.1%	kips
Controlling Capacity =	**29.1%**	**OK**

Lower Stiffeners

Configuration =	Every Bolt	
Thickness =	0.625	in
Width =	7	in
Notch =	0.5	in
Height =	10	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	No	
Stiffener Vertical Force =	15.97	kips
Vert. Weld Capacity =	*Not Verified*	kips
Horiz. Weld Capacity =	*Not Verified*	kips
Stiffener Capacity =	29.1%	kips
Controlling Capacity =	**29.1%**	**OK**

APPENDIX E

Anchor Rod & Base Plate Analysis

Anchor Rod Interaction, TIA-222-G
US-CT-1002, Kettleton
2018791.CT1002.04

tnx Reactions		
Overturning Moment=	5254.63	k*ft
Axial Force =	99.90	k
Shear Force =	36.33	k

Existing Anchor Rods		
Number of Rods =	52	
Rod Circle =	67	in
Rod Diameter =	1.25	in
Est. Dist. b/w ea. Rod =		in
Plate Type =	Round	
Plate Diameter =	69.75	in

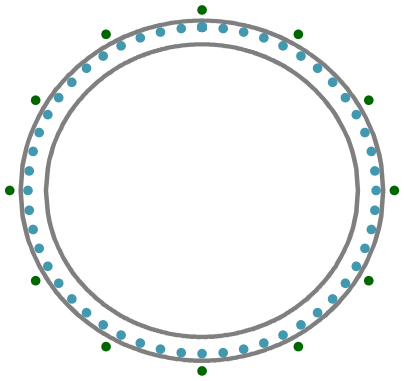
Pole		
Pole Diameter =	60	in
Number of Sides =	Round	
Thickness =	0.625	in

First Added Anchor Rods		
Number of Rods =	12	
Rod Circle =	74.00	in
Rod Diameter =	1.25	in
Anchor Rod Grade =	F1554 GR 105	

Rod Number	Initial Angle
1	0
2	30
3	60
4	90
5	120
6	150
7	180
8	210
9	240
10	270
11	300
12	330

First Added Anchor Rods		
Max Rod Compression =	62.38	k
ϕRnt =	96.90	k
Anchor Rod Capacity =	64.38%	**OK**

Reactions in Existing Rods		
Overturning Moment=	**4100.38**	k*ft
Axial Force =	**99.90**	k
Shear Force =	**36.33**	k
Centroid Offset =	**0.00**	in



Second Added Anchor Rods		
Number of Rods =		
Rod Circle =		in
Rod Diameter =		in
Anchor Rod Grade =		

Anchor Rod and Base Plate Stresses, TIA-222-G-1
US-CT-1002, Kettleton
2018791.CT1002.04

*Overturning Moment =	4100.38	k*ft
Axial Force =	99.90	k
Shear Force =	36.33	k
Centroid Offset =		in

Acceptable Stress Ratio =	105.0%

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of anchor rod forces used in the analysis below.

Anchor Rods *(Section 4.9.9, TIA-222-G-1)*		
Number of Rods =	52	
ϕ =	0.8	
Rod Ultimate Strength (F_u) =	150	ksi
Base Plate Detail Type* =	d	
Rod Circle =	67	in
Rod Diameter =	1.25	in
Net Tensile Area =	0.97	in^2
Max Tension on Rod =	54.56	kips
Max Compression on Rod =	58.40	kips
P_u =	58.40	kips
V_u =	0.70	kips
η =	0.50	
$P_u + V_u / η$=	59.80	
$φR_{nt}$ =	116.28	kips
Anchor Rod Capacity =	**51.4%**	**OK**

Base Plate		
Location =	External	
Plate Strength (Fy) =	36	ksi
ϕ =	0.9	
Outside Diameter =	69.75	in
Plate Thickness =	1.25	in
b =	3.42	in
Le =	4.50	in
Z =	2.34	in^3
M_u =	51.03	k-in
$φM_n$ =	75.94	k-in
BP Capacity =	**67.2%**	**OK**

Pole		
Pole Diameter =	60	in
Number of Sides =	Round	
Thickness =	0.625	in
Pole Yield Strength =	42	ksi

***This analysis assumes the clear distance from the top of the concrete to the bottom of the leveling nut is less than the diameter of the anchor rod. Notify GPD Group immediately if existing field conditions do not meet this assumption.**

Stiffeners		
Configuration =	Every Rod	
Thickness =	0.625	in
Width =	4.5	in
Notch =	0.5	in
Height =	8	in
Stiffener Strength (F_y) =	36	ksi
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.375	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.375	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	34.31	kips
Vert. Weld Capacity =	36.5%	kips
Horiz. Weld Capacity =	55.1%	kips
Stiffener Capacity =	73.8%	kips
Controlling Capacity =	**73.8%**	**OK**

APPENDIX F

Foundation Analysis

Pile Analysis

US-CT-1002, Kettleton

2018791.CT1002.04

M	5254.63	k-ft
P	99.90	k
V	36.33	k
M tot	5454.445	k-ft
M tot 45	3856.875	k-ft
d	5.5	ft
h	46	ft
Vconc	11638	ft^3
wconc	1745.7	k

Pile Ultimate Capacities

Existing

Compression	150	k
Tension	100	k

Modification

Compression	100	k
Tension	100	k

Wequip 75 k (weight of the equipment above the pad)

n existing	24
n mod	48

Total force on piles

				X			45	
	n	x (ft)	y (ft)	Pc (k)	Pt (k)	Mu (k-ft)	Pc (k)	Pt (k)
Existing	4	0	0	25.63	25.63	0.00	25.63	25.63
	10	6	6	27.68	23.58	830.51	28.53	22.73
	10	12	12	29.73	21.53	1784.05	31.43	19.83
	24							
Mod	2	0	0	25.63	25.63	0.00	25.63	25.63
	4	3.5	3.5	26.83	24.44	187.81	27.32	23.94
	4	7	7	28.03	23.24	392.36	29.02	22.25
	4	10.5	10.5	29.22	22.05	613.65	30.71	20.56
	4	14	14	30.42	20.85	851.69	32.40	18.87
	4	17.5	17.5	31.61	19.65	1106.48	34.09	17.18
	26	21	21	32.81	18.46	8957.07	35.78	15.48
	48							

Pile Capacities

Existing

Compression	39.6%
Tension	51.3%

Modification

Compression	65.6%
Tension	51.3%

Reinforcement Capacity

Mu	14723.62	k-ft
a	4.262575	in
d	60.885	in
Phi Mn	22473.3	k-ft

Capacity 65.5%

Sprint

PROJECT:	DO MACRO UPGRADE
SITE NAME:	SOUTHBURY- TEMP SITE
SITE CASCADE:	CT03XC016
SITE ADDRESS:	231 KETTLETOWN ROAD SOUTHBURY, CT 06488
SITE TYPE:	MONOPOLE
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
PHOENIX TOWER INTERNATIONAL
999 YAMATO ROAD, SUITE 100
BOCA RATON, FL

PTI SITE NAME:
KETTLETON

PTI SITE NUMBER:
US-CT-1002

LATITUDE (NAD83):
41° 28' 16.3" N
41.47120555

LONGITUDE (NAD83):
73° 12' 20.0" W
-73.20556111

COUNTY:
NEW HAVEN COUNTY

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

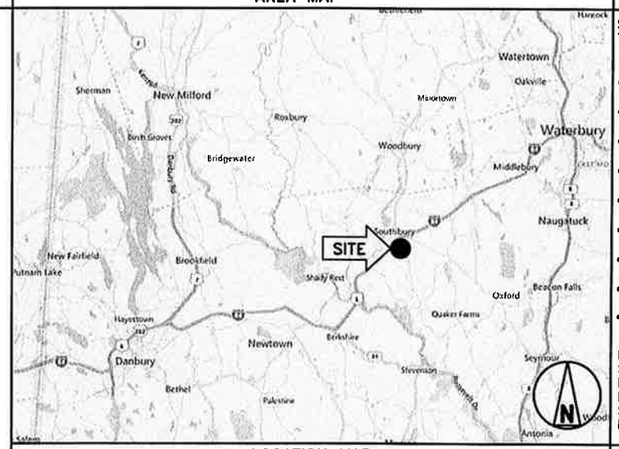
ZONING DISTRICT:
N/A

POWER COMPANY:
CL&P
PHONE: (800) 286-2000

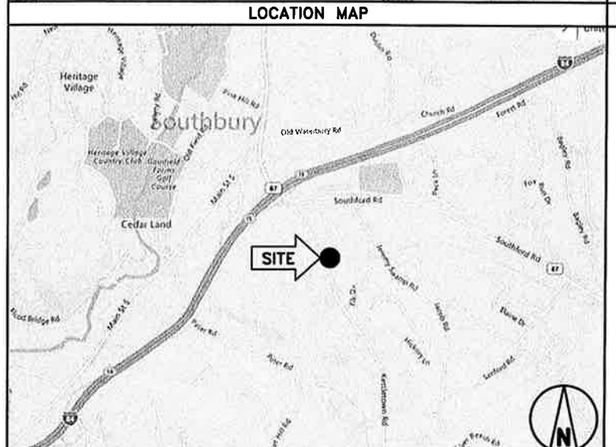
AAV PROVIDER:
N/A

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
TERRI BURKHOLDER
(315) 719-2928
TBURKHOLDER@AIROSMITHDEVELOPMENT.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE (6) PANEL ANTENNAS
- INSTALL (6) PANEL ANTENNAS
- RELOCATE (3) 1900 MHz RRH'S BEHIND PROPOSED ANTENNAS
- INSTALL (3) 800 MHz RRH'S BEHIND PROPOSED ANTENNAS
- INSTALL (3) 800 MHz RRH'S ON EXISTING PIPE MOUNT
- INSTALL (3) 2.5 GHz RRH'S BEHIND PROPOSED ANTENNAS
- INSTALL (48) JUMPER CABLES
- INSTALL (4) HYBRID CABLES
- INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET

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

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2015 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

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

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A-3	ANTENNA LAYOUT & MOUNTING DETAILS	1
A-4	EQUIPMENT & MOUNTING DETAILS	1
A-5	CIVIL DETAILS	1
A-6	PLUMBING DIAGRAM	1
E-1	ELECTRICAL & GROUNDING PLAN	1
E-2	ELECTRICAL & GROUNDING DETAILS	1

PLANS PREPARED FOR:
Sprint

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

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
REGISTERED
PROFESSIONAL ENGINEER
6.6.2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	07/18/18	ETC	1
ISSUED FOR REVIEW	06/26/18	MAP	0

SITE NAME:
SOUTHBURY- TEMP SITE

SITE NUMBER:
CT03XC016

SITE ADDRESS:
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

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

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

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

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

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

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

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

PROJECT MANAGER:

AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#: (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
JUL 26 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	07/18/18	ETC	1
ISSUED FOR REVIEW	06/26/18	MAP	0

SITE NAME:

SOUTHBURY- TEMP SITE

SITE NUMBER:

CT03XC016

SITE ADDRESS:

231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

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

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

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
2. PROJECT PROGRESS REPORTS.
3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 SUBMITTALS:

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

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

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

1.4 TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:
1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)

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JOB NUMBER 526-104

PROJECT MANAGER:
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ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
NO. 24105
LICENSED PROFESSIONAL ENGINEER
8.6.2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	07/18/18	ETC	1
ISSUED FOR REVIEW	06/26/18	MAP	0

SITE NAME:
SOUTHBURY- TEMP SITE

SITE NUMBER:
CT03XC016

SITE ADDRESS:
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-2

CONTINUE FROM SP-2

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

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

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

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

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

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

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

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

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.

2. STRUCTURAL BACKFILL COMPACTION REPORTS.

3. SITE RESISTANCE TO EARTH TEST.

4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION

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

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

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

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

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

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

4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;

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

7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

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

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

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

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

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

1. 1SHELTER AND TOWER OVERVIEW.

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

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

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

5. PHOTOS OF TOWER SECTION STACKING.

6. CONCRETE TESTING / SAMPLES.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

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

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

10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.

11. COAX CABLE ENTRY INTO SHELTER.

12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

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

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

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.

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

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

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

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

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

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

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

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

25. ALL BTS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.

29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.

32. DOGHOUSE/CABLE EXIT FROM ROOF.

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

34. MASTER BUS BAR.

35. TELCO BOARD AND NIU.

36. ELECTRICAL DISTRIBUTION WALL.

37. CABLE ENTRY WITH SURGE SUPPRESSION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING – WHERE APPLICABLE.

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

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JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
JULY 26 2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	07/18/18	ETC	1
ISSUED FOR REVIEW	06/26/18	MAP	0

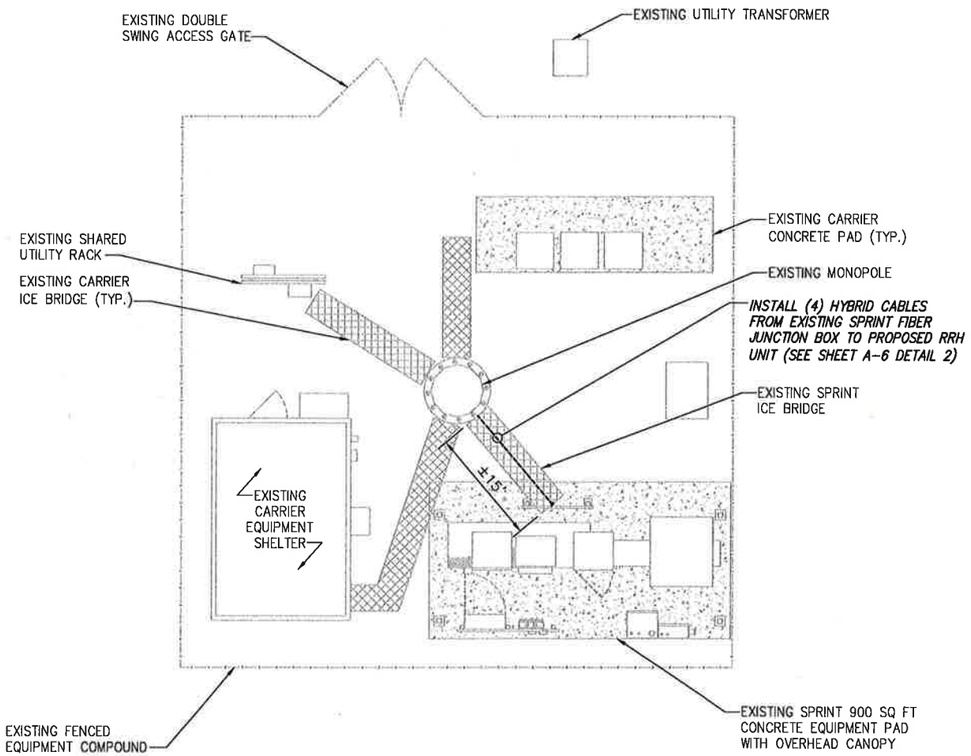
SITE NAME:
SOUTHBURY- TEMP SITE

SITE NUMBER:
CT03XC016

SITE ADDRESS:
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-3



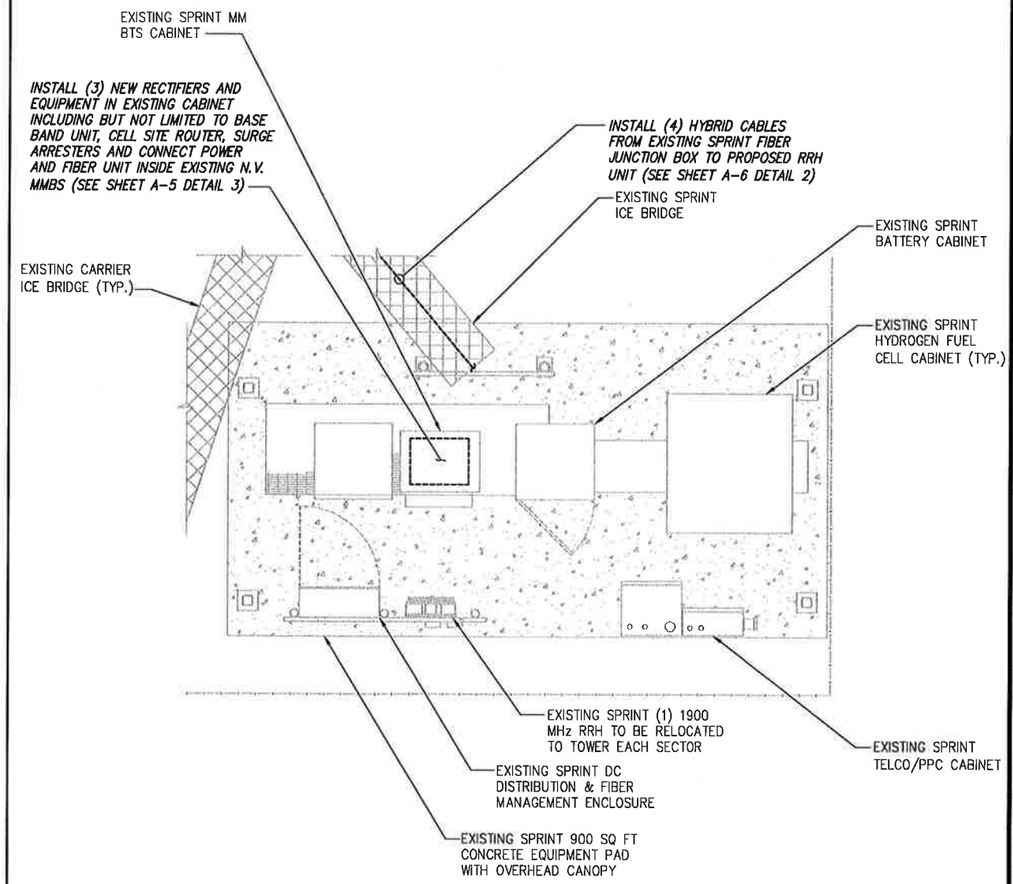
GRAPHIC SCALE:

20' 10' 0 10' 20'

SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

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

OVERALL SITE PLAN | SCALE: AS NOTED | 1



GRAPHIC SCALE:

10' 5' 0 5' 10'

SCALE (11x17): 1" = 10'-0"
SCALE (22x34): 1" = 5'-0"

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

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PLANS PREPARED BY:

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OFFICE#. (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24708
LICENSED PROFESSIONAL ENGINEER
6.26.2018

DRAWING NOTICE:

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SITE NAME:

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SITE NUMBER:

CT03XC016

SITE ADDRESS:

231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:

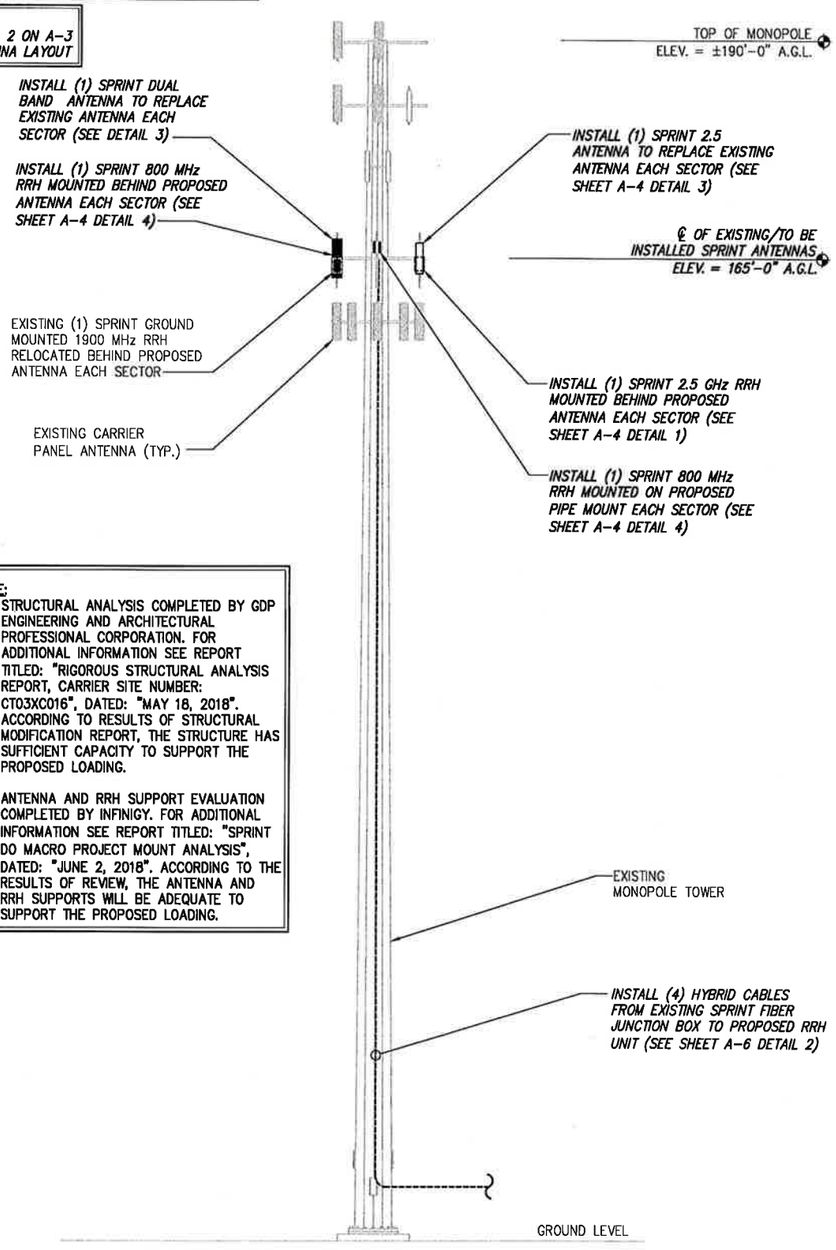
SITE PLAN

SHEET NUMBER:

A-1

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING STRUCTURE FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.

NOTE:
SEE DETAIL 2 ON A-3 FOR ANTENNA LAYOUT



NOTE:
- STRUCTURAL ANALYSIS COMPLETED BY GDP ENGINEERING AND ARCHITECTURAL PROFESSIONAL CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "RIGOROUS STRUCTURAL ANALYSIS REPORT, CARRIER SITE NUMBER: CT03XC016", DATED: "MAY 18, 2018". ACCORDING TO RESULTS OF STRUCTURAL MODIFICATION REPORT, THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT DO MACRO PROJECT MOUNT ANALYSIS", DATED: "JUNE 2, 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING.

TOWER ELEVATION | NO SCALE | 1

SITE LOADING CHART

SECTOR	EXISTING/ PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/ REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	APXVTM14-ALU-120	RFS	340°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1	±190'*	±165' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	340°	1	–	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	49000X	DAPA	340°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA	PROPOSED	APXVTM14-ALU-120	RFS	70°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		
	PROPOSED	NNVV-65B-R4	COMMSCOPE	70°	1	–	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	49000X	DAPA	70°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA	PROPOSED	APXVTM14-ALU-120	RFS	260°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		
	PROPOSED	NNVV-65B-R4	COMMSCOPE	260°	1	–	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	49000X	DAPA	260°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

PROJECT SCOPE:

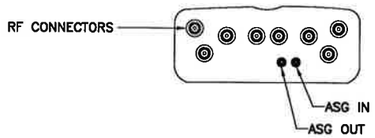
REMOVE: (6) PANEL ANTENNAS INSTALL: (6) PANEL ANTENNAS AND (9) RRH'S RELOCATE: (3) EXISTING RRH'S

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

SITE LOADING CHART | NO SCALE | 2

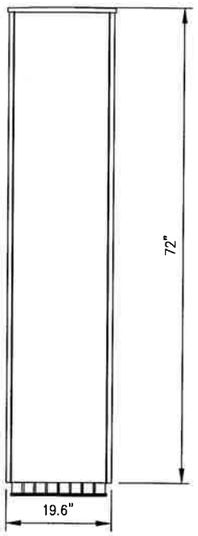
ANTENNA COMMSCOPE NNVV-65B-R4

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	72"x19.6"x7.8" (1829x498x198mm)
WEIGHT:	77.4 lbs
CONNECTORS:	(8) PIN DIN FEMALE (8) 8 PIN DIN MALE



PLAN VIEW

SIDE VIEW



FRONT VIEW

DUAL BAND ANTENNA DETAIL | NO SCALE | 3

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www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#: (518) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
10/26/2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	07/18/18	ETC	1
ISSUED FOR REVIEW	06/26/18	MAP	0

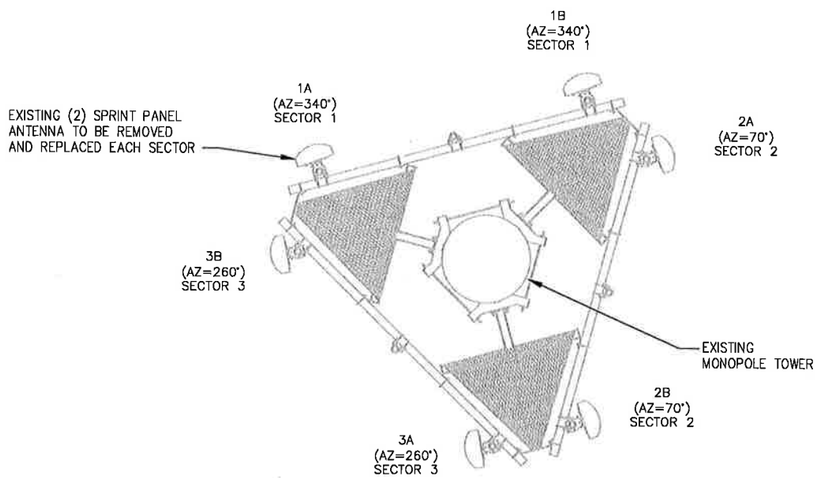
SITE NAME:
SOUTHBURY- TEMP SITE

SITE NUMBER:
CT03XC016

SITE ADDRESS:
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

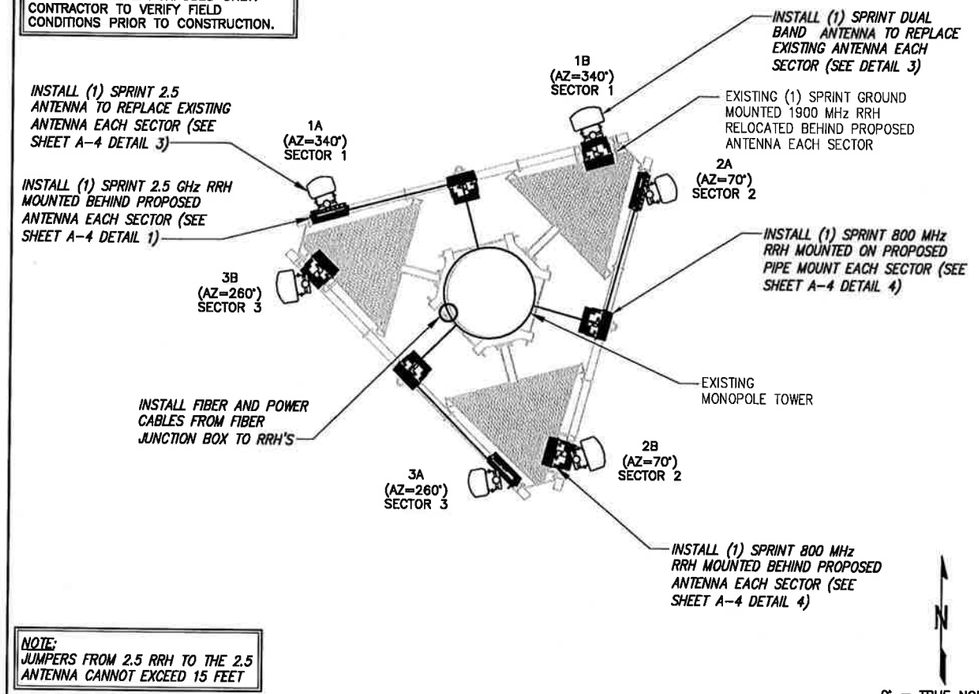
SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2



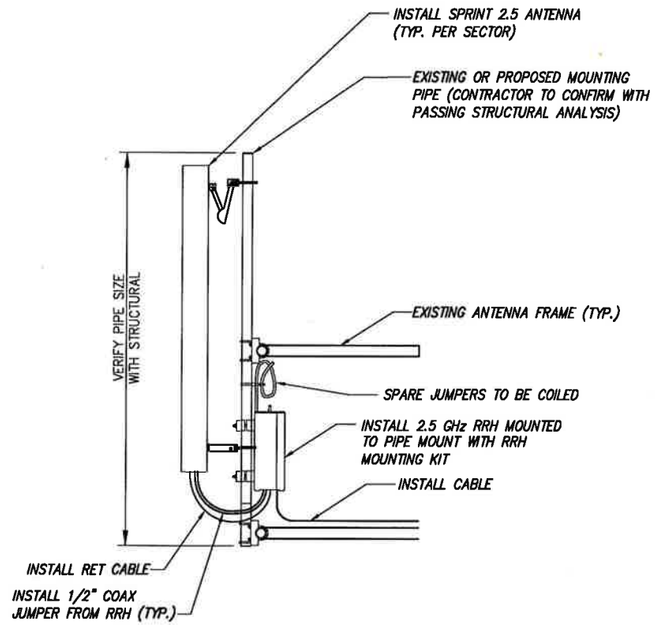
EXISTING ANTENNA LAYOUT | NO SCALE | 1

THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.



NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET

FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2



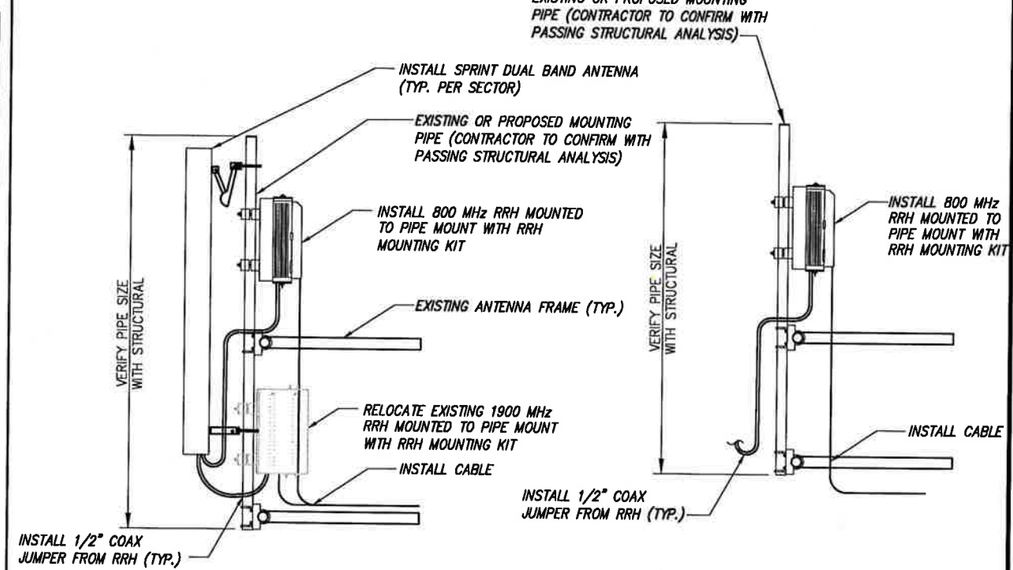
NOTE:
CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE:
THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
3. DO NO EXCEED BEND RADIUS.

TYPICAL 2.5 ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 3



NOTE:
CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

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NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.

TYPICAL DUAL BAND ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 4

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JUL 26 2018

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SOUTHBURY- TEMP SITE

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CT03XC016

SITE ADDRESS:

231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:

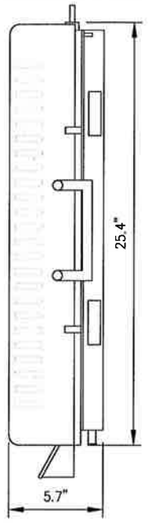
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

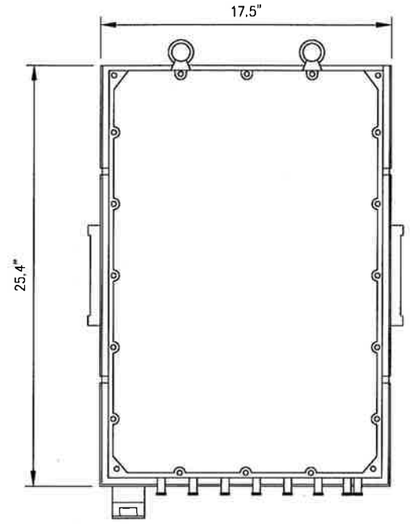
A-3

RRH: ALCATEL LUCENT TD-RRH8X20

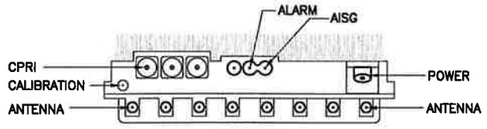
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

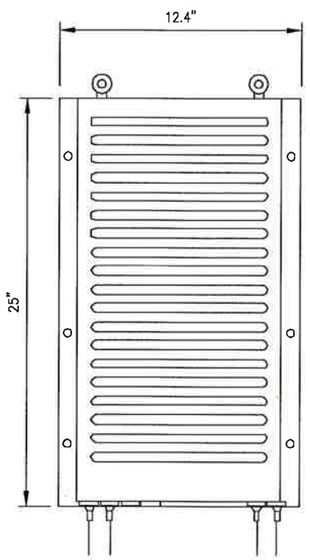
NOTES

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

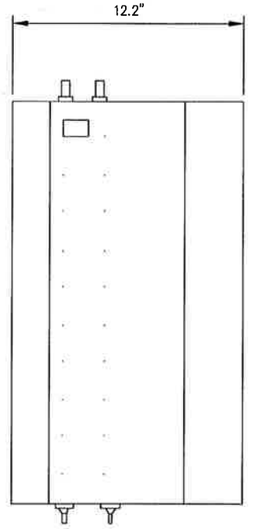
2.5 RRH'S	NO SCALE	1

RRH: ALCATEL LUCENT 1900 MHz

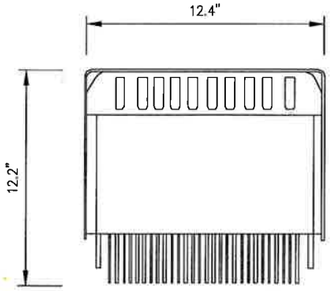
COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW



SIDE VIEW

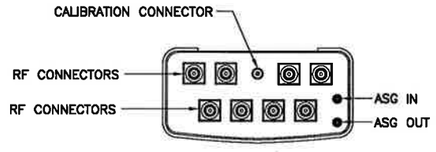


TOP VIEW

1900 MHz RRH	NO SCALE	2

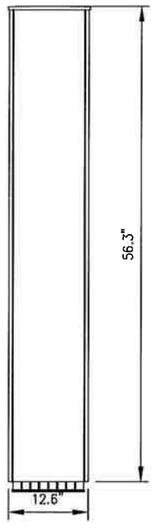
ANTENNA RFS APXVTM14-ALU-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	56.3"x12.6"x6.3" (1549x439x300mm)
WEIGHT:	56.2 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW

SIDE VIEW



FRONT VIEW

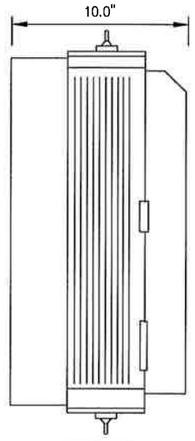
2.5 ANTENNA DETAIL	NO SCALE	3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

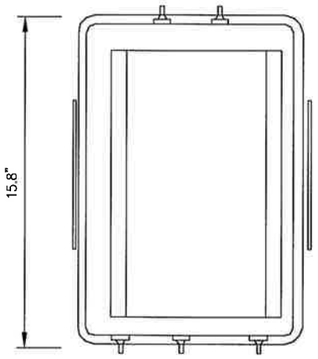
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

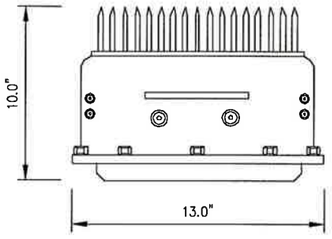
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.



SIDE VIEW



FRONT VIEW



PLAN VIEW

800 MHz RRH	NO SCALE	4

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231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

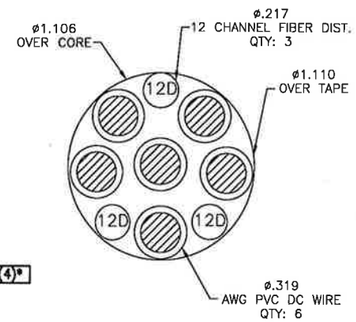
Fiber Only (Existing DC Power)	**Hybrid cable** MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F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

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

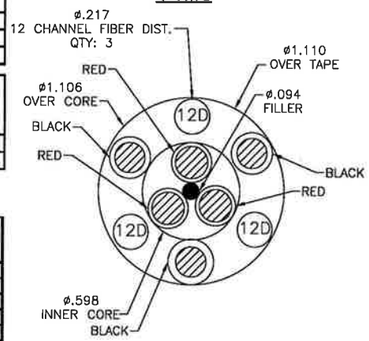
Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1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

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

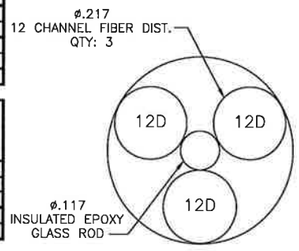
* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.



4 AWG

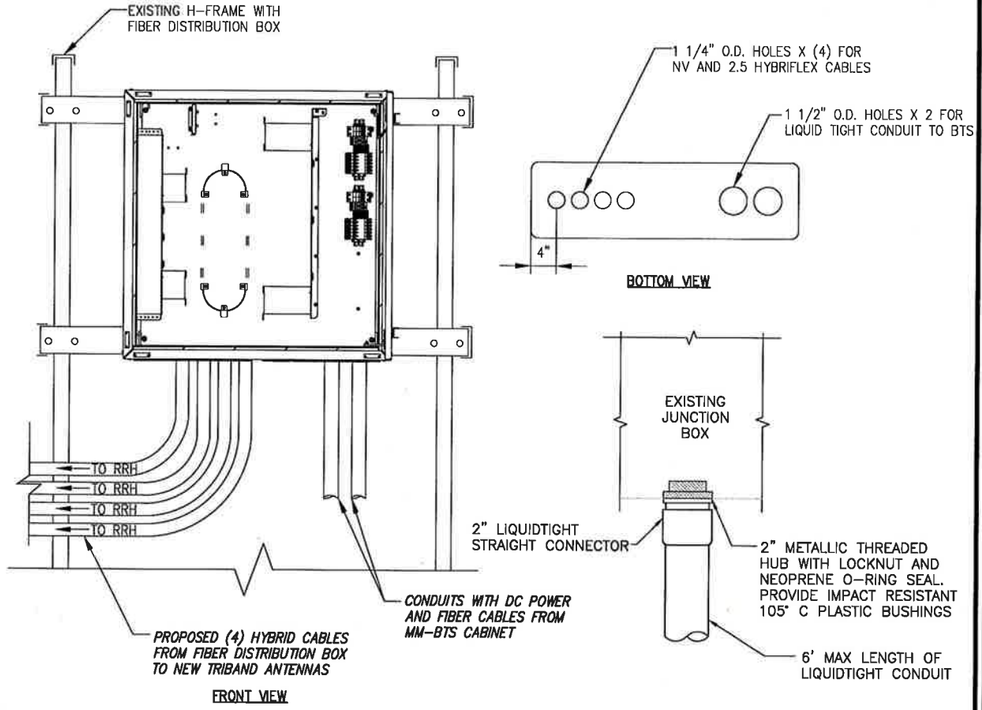


8 & 6 AWG

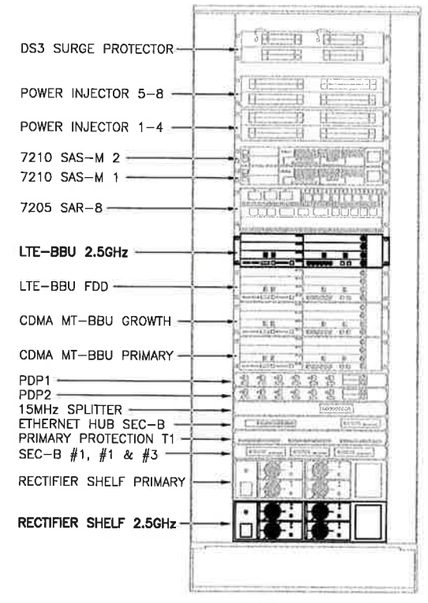


FIBER ONLY

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



FIBER JUNCTION BOX & PENETRATION | NO SCALE | 2



FRONT VIEW

NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 3

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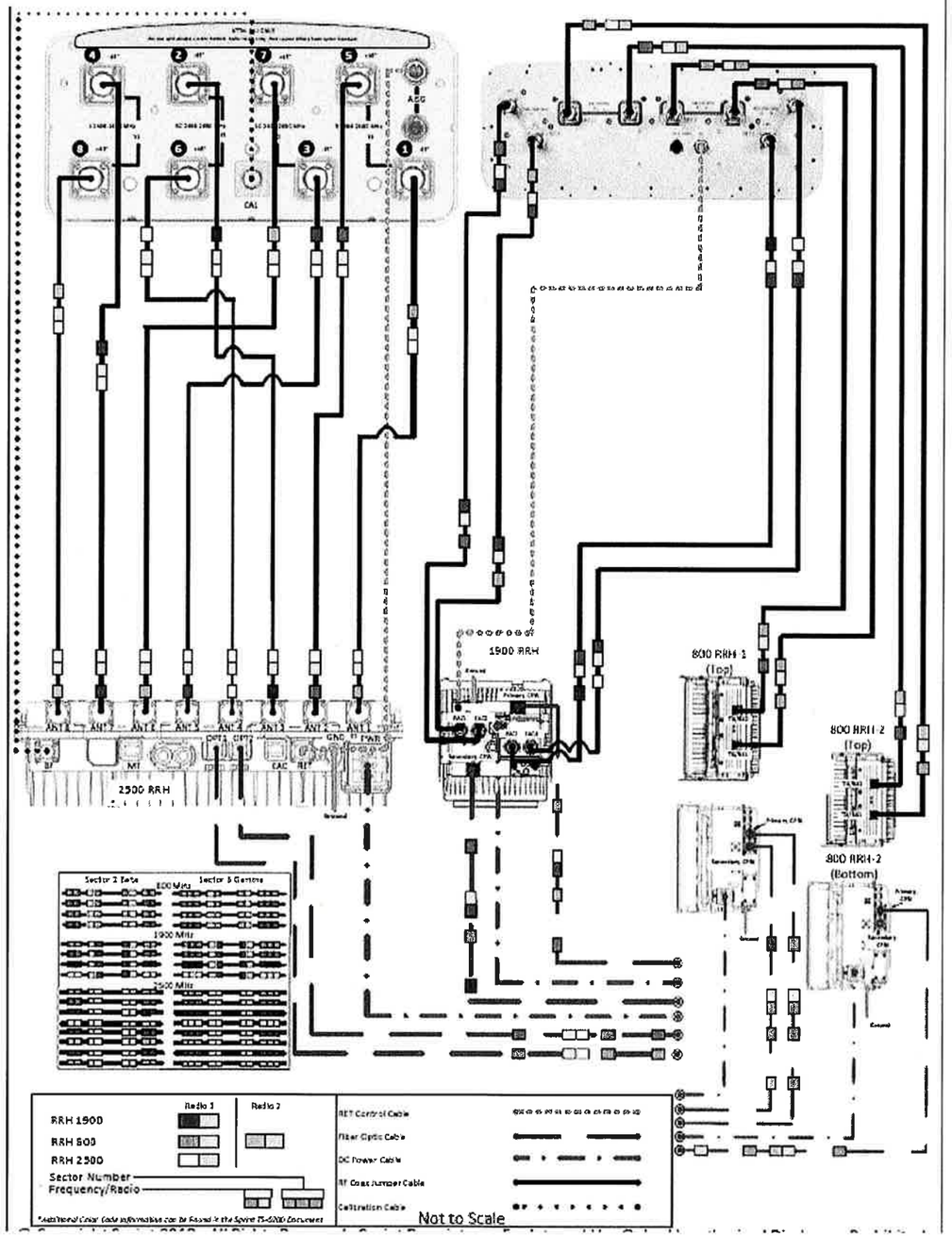
CIVIL DETAILS

SHEET NUMBER:
A-5

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



PLUMBING DIAGRAM | NO SCALE | 1

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JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JULY 26 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	07/18/18	ETC	1
ISSUED FOR REVIEW	06/26/18	MAP	0

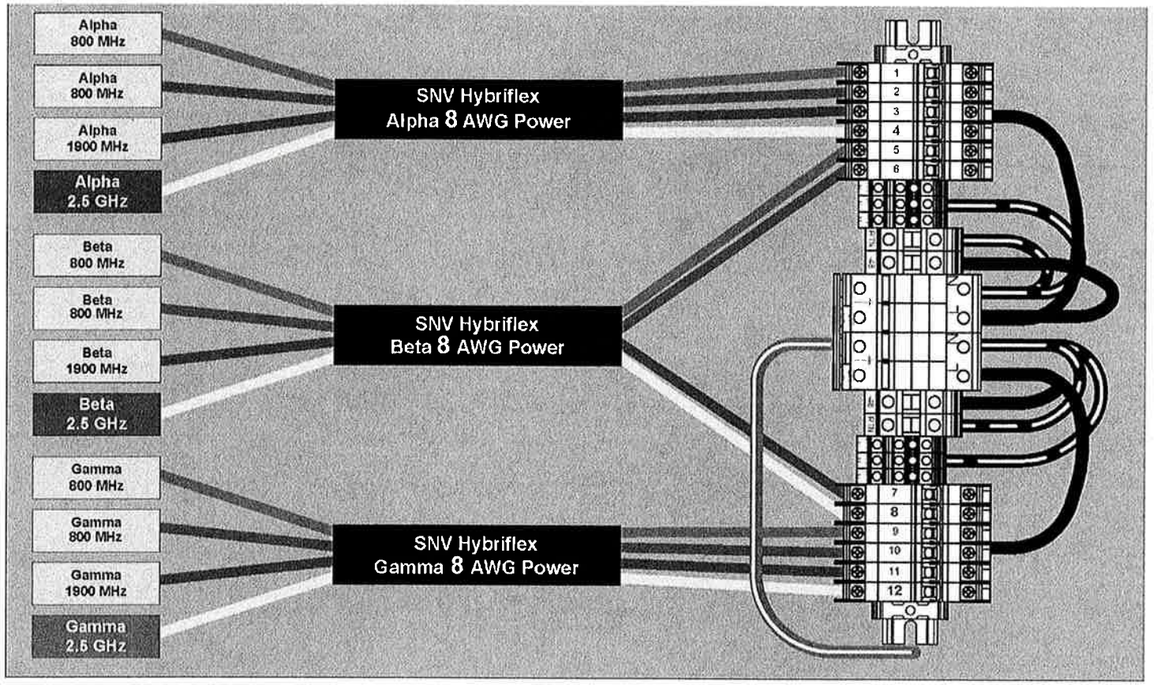
SITE NAME:
SOUTHBURY- TEMP SITE

SITE NUMBER:
CT03XC016

SITE ADDRESS:
231 KETTLETOWN ROAD
SOUTHBURY, CT 06488

SHEET DESCRIPTION:
PLUMBING DIAGRAM

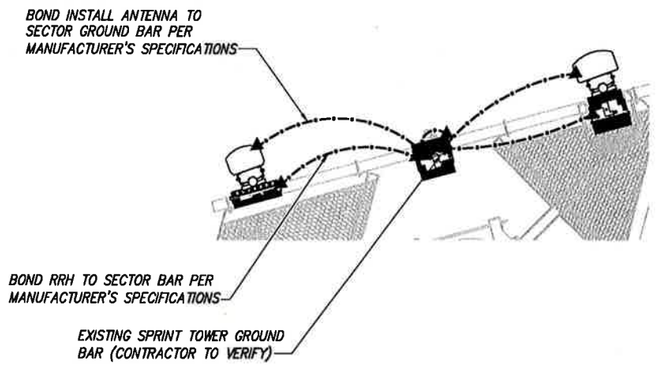
SHEET NUMBER:
A-6



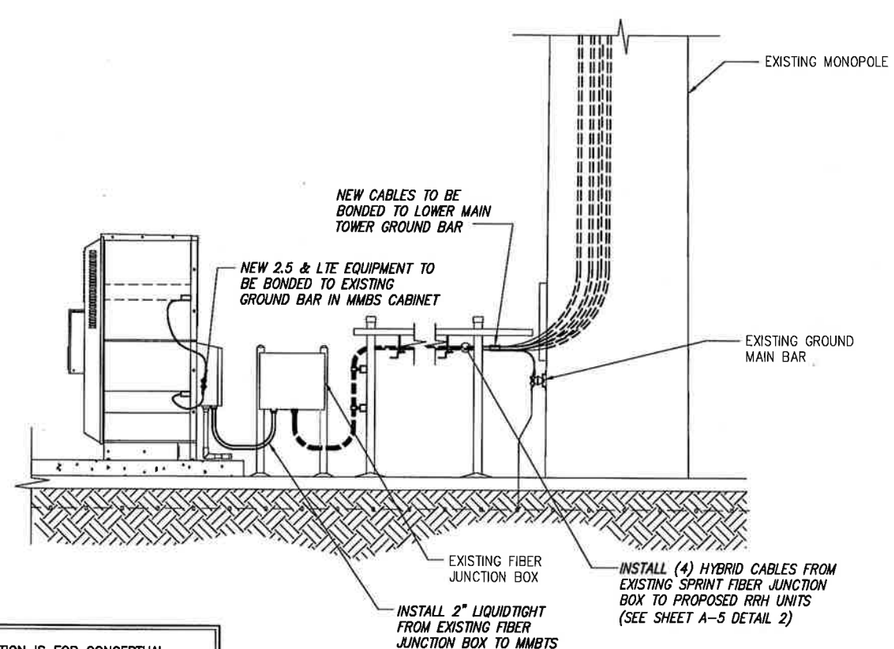
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY | NO SCALE | 1

LEGEND:

- EXISTING GROUND RING
- ■ CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- ● CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



NOTE:
DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) | NO SCALE | 3

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
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Phone: 518-690-0790 | Fax: 518-690-0793
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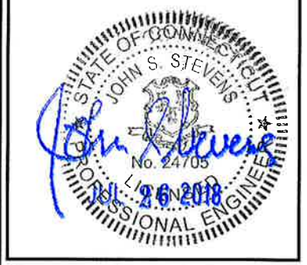

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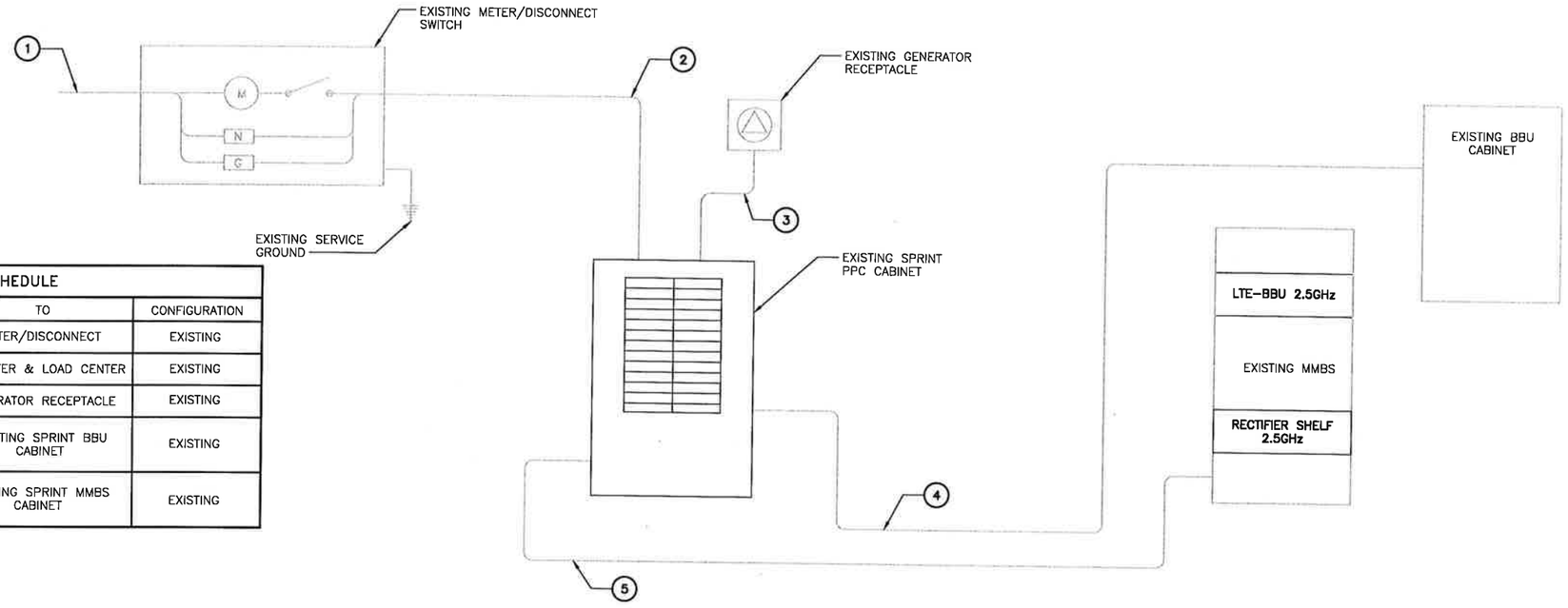
SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-1

NOTES

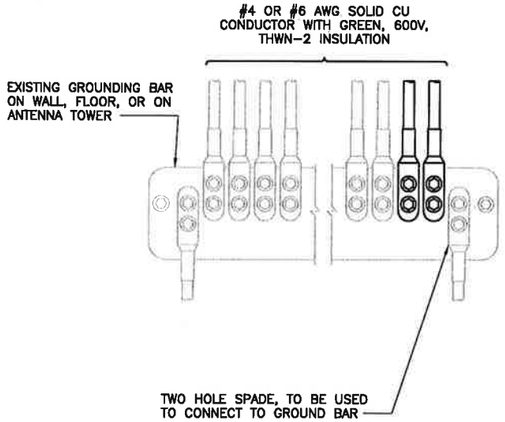
CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

ELECTRICAL ONE–LINE DIAGRAM

NO SCALE | 1

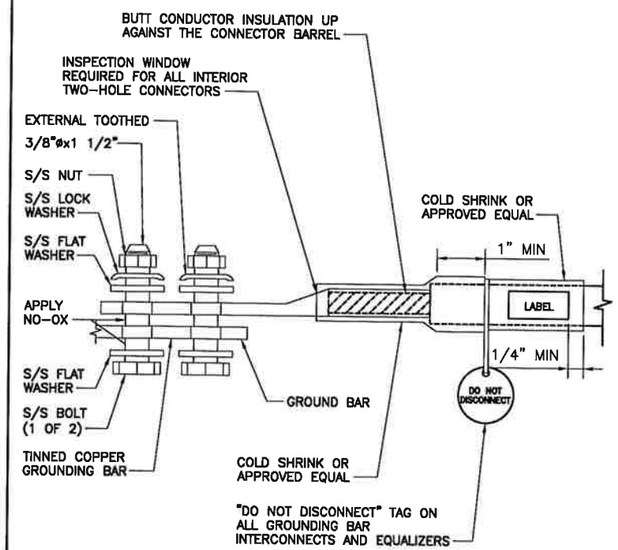


NOTES

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

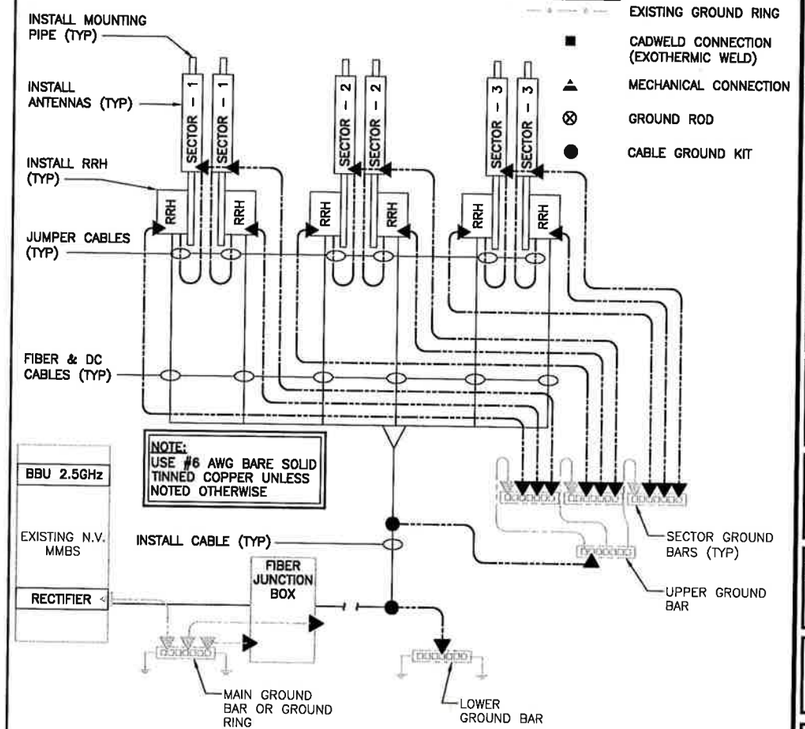
INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

NO SCALE | 2



TWO HOLE LUG

NO SCALE | 3



GROUNDING RISER DIAGRAM

NO SCALE | 4

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DATE: 7.6.2018

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ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-2