



July 8<sup>th</sup>, 2019

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 790 Willis Street, Bristol, CONNECTICUT – CT52XC047 (lat. 41° 38' 56.7" N, long. -72° 56' 52.8" W)**

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (90-foot level) on an existing (127-foot Monopole Tower) at the above-referenced address. The property and the tower are owned by AMERICAN TOWER CORPORATION.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas, add an additional three (3) antennas, and add nine (9) 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 Ellen Zoppo-Sassu, MAYOR and Robert Flanagan, City Planner of the City of Bristol. A copy of this letter is also being sent to JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the tower and Connecticut Light & Power 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.
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) 871-3707 or email me to [aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)

Kind Regards,



Art Perkowski  
Airosmith Development Inc.  
32 Clinton Street  
Saratoga Springs, NY 12866  
518-350-4222 fax  
518-871-3707 cell  
[APerkowski@airosmithdevelopment.com](mailto:APerkowski@airosmithdevelopment.com)

Attachment

CC: Ellen Zoppo-Sassu (MAYOR, Bristol, CT)  
Justine Paul (American Tower Corporation)  
Robert Flanagan (City Planner, Bristol, CT)  
Connecticut Light & Power (Land Owner)

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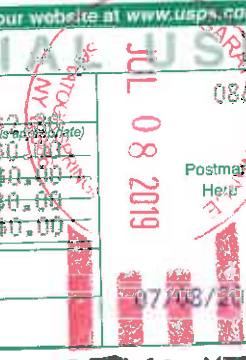
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 Street and Apt. No., or PO Box No.  
**11 N Main St 3rd floor**  
 City, State, ZIP+4®  
**Bristol CT 06010**

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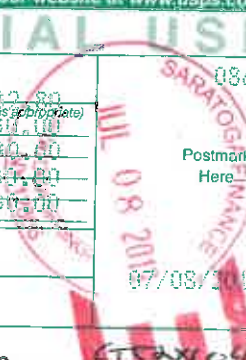
Certified Mail Fee	\$3.50
Extra Services & Fees (check box, add fee as appropriate)	\$2.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.55

Total Postage and Fees \$6.85

Sent To: **Robert Flannagan** CT5AXC047  
 Street and Apt. No., or PO Box No.  
**11 N Main St**  
 City, State, ZIP+4®  
**Bristol CT 06010**

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



# 790 WILLIS ST

**Location** 790 WILLIS ST

**Mblu** 06/ / 8A/ /

**Acct#** 0034800

**Owner** CONN LIGHT + POWER CO

**Assessment** \$449,190

**Appraisal** \$641,700

**PID** 5681

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$392,100	\$249,600	\$641,700

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$274,470	\$174,720	\$449,190

## Owner of Record

**Owner** CONN LIGHT + POWER CO  
**Co-Owner**  
**Address** 107 SELDEN ST  
BERLIN, CT 06037

**Sale Price** \$0  
**Certificate** 1  
**Book & Page** 277/ 293  
**Sale Date** 01/25/1952

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
CONN LIGHT + POWER CO	\$0	1	277/ 293	01/25/1952

## Building Information

### Building 1 : Section 1

**Year Built:** 1950  
**Living Area:** 900  
**Replacement Cost:** \$40,248  
**Building Percent** 65  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$26,200

Building Attributes	
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm

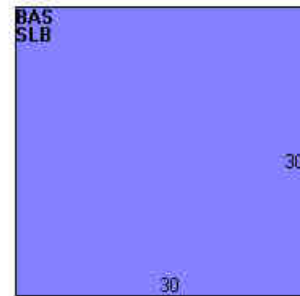
Stories:	1
Occupancy	1
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	Unit/AC
Bldg Use	Public Utility
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Light
Ceiling/Wall	None
Rooms/Prtns	Light
Wall Height	8
% Comn Wall	

## Building Photo



(<http://images.vgsi.com/photos2/BristolCTPhotos/\00\05\61\14>)

## Building Layout



Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	900	900
SLB	Slab	900	0
		1,800	900

## Extra Features

Extra Features		<u>Legend</u>
No Data for Extra Features		

## Land

### Land Use

<b>Use Code</b>	436
<b>Description</b>	Public Utility
<b>Zone</b>	R-25
<b>Neighborhood</b>	50
<b>Alt Land Appr</b>	No

### Land Line Valuation

<b>Size (Acres)</b>	6.9
<b>Frontage</b>	300
<b>Depth</b>	
<b>Assessed Value</b>	\$174,720
<b>Appraised Value</b>	\$249,600

**Category****Outbuildings**

<b>Outbuildings</b>						<b>Legend</b>
<b>Code</b>	<b>Description</b>	<b>Sub Code</b>	<b>Sub Description</b>	<b>Size</b>	<b>Value</b>	<b>Bldg #</b>
CELL	Cell Tower/Site			2 UNITS	\$210,000	1
CB3	PreCastConcCel			300 S.F.	\$54,000	1
CB3	PreCastConcCel			300 S.F.	\$54,000	1
FCP	Carpport			900 S.F.	\$5,600	1
GAR1	Garage	FR	Frame	420 S.F.	\$6,300	1
CB3	PreCastConcCel			200 S.F.	\$36,000	1

**Valuation History**



<b>Appraisal</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2018	\$392,100	\$249,600	\$641,700
2017	\$392,100	\$249,600	\$641,700
2016	\$377,000	\$256,400	\$633,400

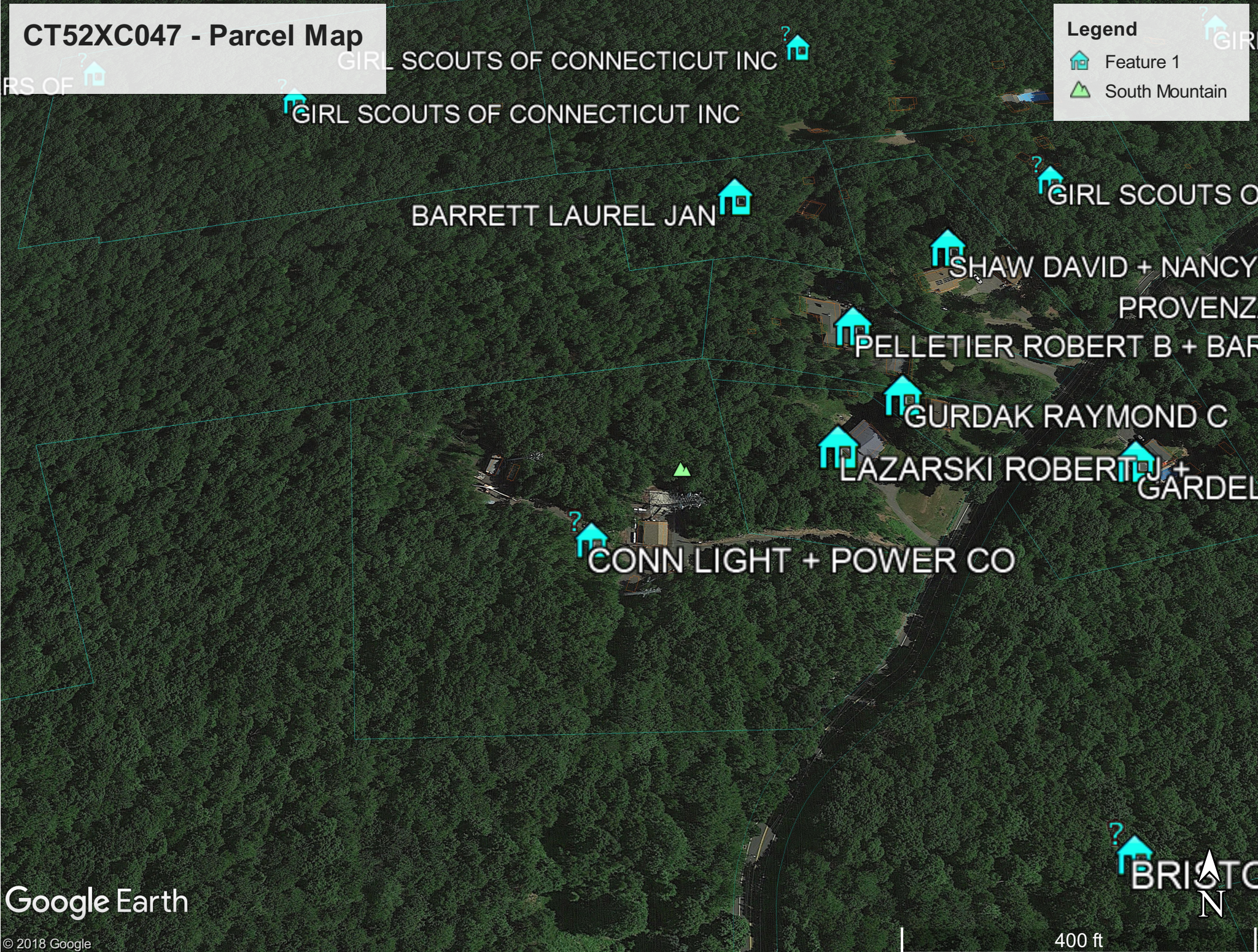
<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2018	\$274,470	\$174,720	\$449,190
2017	\$274,470	\$174,720	\$449,190
2016	\$263,900	\$179,480	\$443,380

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# CT52XC047 - Parcel Map

**Legend**

-  Feature 1
-  South Mountain



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

**Sprint Existing Facility**

**Site ID: CT52XC047**

**BRST - Bristol Connecticut  
790 Willis Street  
Bristol, Connecticut 06010**

**July 3, 2019**

**EBI Project Number: 6219002921**

<b>Site Compliance Summary</b>	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>14.46%</b>



July 3, 2019

Sprint

Attn: RF Engineering Manager

1 International Boulevard, Suite 800

Mahwah, New Jersey 07495

Emissions Analysis for Site: CT52XC047 - BRST - Bristol Connecticut

EBI Consulting was directed to analyze the proposed Sprint facility located at **790 Willis Street in Bristol, Connecticut** for the purpose of determining whether the emissions from the Proposed Sprint Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed Sprint Wireless antenna facility located at 790 Willis Street in Bristol, Connecticut 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 4 CDMA channels (800 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.
- 2) 4 PCS channels (1900 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 45 Watts per Channel.
- 3) 3 BRS channels (2500 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) 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.

- 5) 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antennas used in this modeling are the Nokia AAHC for the 2500 MHz channel(s), the Commscope NNVV-65B-R4 for the 800 MHz / 1900 MHz channel(s) in Sector A, the Nokia AAHC for the 2500 MHz channel(s), the Commscope NNVV-65B-R4 for the 800 MHz / 1900 MHz channel(s) in Sector B, the Nokia AAHC for the 2500 MHz channel(s), the Commscope NNVV-65B-R4 for the 800 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 90 feet above ground level (AGL).
- 8) 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.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.

## Sprint Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Frequency Bands:	2500 MHz	Frequency Bands:	2500 MHz	Frequency Bands:	2500 MHz
Gain:	13.05 dBd	Gain:	13.05 dBd	Gain:	13.05 dBd
Height (AGL):	90 feet	Height (AGL):	90 feet	Height (AGL):	90 feet
Channel Count:	3	Channel Count:	3	Channel Count:	3
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	2,422.04	ERP (W):	2,422.04	ERP (W):	2,422.04
Antenna A1 MPE %:	<b>1.08%</b>	Antenna B1 MPE %:	<b>1.08%</b>	Antenna C1 MPE %:	<b>1.08%</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Frequency Bands:	800 MHz / 1900 MHz	Frequency Bands:	800 MHz / 1900 MHz	Frequency Bands:	800 MHz / 1900 MHz
Gain:	12.35 dBd / 15.05 dBd	Gain:	12.35 dBd / 15.05 dBd	Gain:	12.35 dBd / 15.05 dBd
Height (AGL):	90 feet	Height (AGL):	90 feet	Height (AGL):	90 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	9,193.83	ERP (W):	9,193.83	ERP (W):	9,193.83
Antenna A2 MPE %:	<b>5.42%</b>	Antenna B2 MPE %:	<b>5.42%</b>	Antenna C2 MPE %:	<b>5.42%</b>

Site Composite MPE %	
Carrier	MPE %
Sprint (Max at Sector A):	6.49%
AT&T	5.69%
Clearwire	0.37%
Metro PCS	1.38%
Nextel	0.53%
<b>Site Total MPE % :</b>	<b>14.46%</b>

Sprint MPE % Per Sector	
Sprint Sector A Total:	6.49%
Sprint Sector B Total:	6.49%
Sprint Sector C Total:	6.49%
<b>Site Total MPE % :</b>	
	<b>14.46%</b>

Sprint Maximum MPE Power Values (Sector A)							
Sprint Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 2500 MHz BRS	3	807.35	90.0	10.75	2500 MHz BRS	1000	1.08%
Sprint 800 MHz CDMA	4	858.95	90.0	15.25	800 MHz CDMA	533	2.86%
Sprint 1900 MHz PCS	4	1439.50	90.0	25.56	1900 MHz PCS	1000	2.56%
						<b>Total:</b>	<b>6.49%</b>

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

## 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:	6.49%
Sector B:	6.49%
Sector C:	6.49%
Sprint Maximum MPE % (Sector A):	6.49%
Site Total:	14.46%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **14.46%** 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.



**AMERICAN TOWER®**  
CORPORATION

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## Post Modification Structural Analysis Report

**Structure** : 120 ft Monopole  
**ATC Site Name** : Brst - Bristol, CT  
**ATC Site Number** : 302500  
**Engineering Number** : OAA718326\_C4\_09  
**Proposed Carrier** : CLEARWIRE CORPORATION  
**Carrier Site Name** : BRST - BRISTOL  
**Carrier Site Number** : CT52XC047  
**Site Location** : 790 Willis Street  
Bristol, CT 06010-7269  
41.649100,-72.948000  
**County** : Hartford  
**Date** : May 21, 2019  
**Max Usage** : 101%  
**Result** : Pass \*

Prepared By:  
Garret D. Heath  
Structural Engineer I

Reviewed By:

**COA: PEC.0001553**



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**Introduction**

The purpose of this report is to summarize results of a post modification structural analysis performed on the 120 ft monopole to reflect the change in loading by CLEARWIRE CORPORATION.

**Supporting Documents**

<b>Tower Drawings</b>	Valmont Drawing #DC1671Z, dated December 29, 1993
<b>Foundation Drawing</b>	FDH Project #01-0612, dated June 23, 2001
<b>Geotechnical Report</b>	Johnson Soils Job #15220-B, dated May 21, 2002
<b>Modifications</b>	Spectrasite Site #CT-0036, dated June 12, 2002 ATC Project #64490338, dated May 5, 2016 ATC Job #OAA718326_C6_08, dated April 11, 2019 (Pending)**

**Analysis**

The tower was analyzed using American Tower Corporation’s tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	117 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 1
<b>Topographic Category:</b>	3
<b>Crest Height (H):</b>	198 ft
<b>Spectral Response:</b>	$S_s = 0.19, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

**Conclusion**

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report. If the pending modifications cited in the Supporting Documents table are not completed, the results of this analysis are no longer valid, and CLEARWIRE CORPORATION should contact American Tower’s Site Manager for further direction on how to proceed.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

**Existing and Reserved Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
126.0	-	-	-	(2) 3" conduit	AT&T Mobility



**Existing and Reserved Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
124.0	3	Powerwave Allgon 7770.00	Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (12) 1 1/4" Coax (1) 7/8" Coax	
	3	Kathrein Scala 80010966			
	2	CCI TPA-65R-LCUUUU-H8			
	2	Andrew SBNH-1D6565C (60.8 lbs)			
	1	Quintel QS66512-3 (112 lbs.)			
	1	KMW AM-X-CD-16-65-00T-RET			
	1	Generic 2' Std. Dish			
	6	CCI TPX-070821			
	6	Powerwave Allgon LGP21401			
	2	Raycap DC6-48-60-18-8F			
	3	Ericsson RRUS A2			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS-11 1900 MHz			
	3	Ericsson RRUS 32 (50.8 lbs)			
3	Ericsson RRUS 32 B2				
100.0	2	Kathrein Scala 742 213	Flush	(6) 1 5/8" Coax	Metro PCS Inc
	1	RFS APXV18-206517S-C			
90.0	1	DragonWave A-ANT-18G-2-C	Side Arms	(4) 1/2" Coax	Clearwire Corporation
	4	DragonWave Horizon Compact			
	3	DragonWave A-ANT-11G-2.5-C			

**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
90.0	3	NextNet BTS-2500	-	(6) 5/16" (0.31"- 7.9mm) Coax	Clearwire Corporation
	3	Argus LLPX310R			

**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Antenna	Mount Type	Lines	Carrier
90.0	3	Nokia 2.5G MAA - AAHC(64T64R)	Side Arms	(3) 1 5/8" (1.63"- 41.3mm) Fiber (2) 2" conduit	Clearwire Corporation
	3	Commscope NNVV-65B-R4			
	6	Alcatel-Lucent RRH2x50-08			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax outside the pole shaft in place of existing Clearwire Corporation coax. Stacking coax is not allowed.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	38%	Pass
Shaft	86%	Pass
Base Plate	19%	Pass
Reinforcement	101%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,154.6	88%
Axial (Kips)	30.3	21%
Shear (Kips)	27.5	15%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
124.0	Generic 2' Std. Dish	AT&T MOBILITY	8.699	8.31
90.0	Alcatel-Lucent RRH2x50-08	CLEARWIRE CORPORATIO	1.307	1.568
	Alcatel-Lucent 1900 MHz 4X45 RRH			
	Nokia 2.5G MAA - AAHC(64T64R)			
	DragonWave A-ANT-18G-2-C			
	DragonWave A-ANT-11G-2.5-C			
	Commscope NNVV-65B-R4			

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



## Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

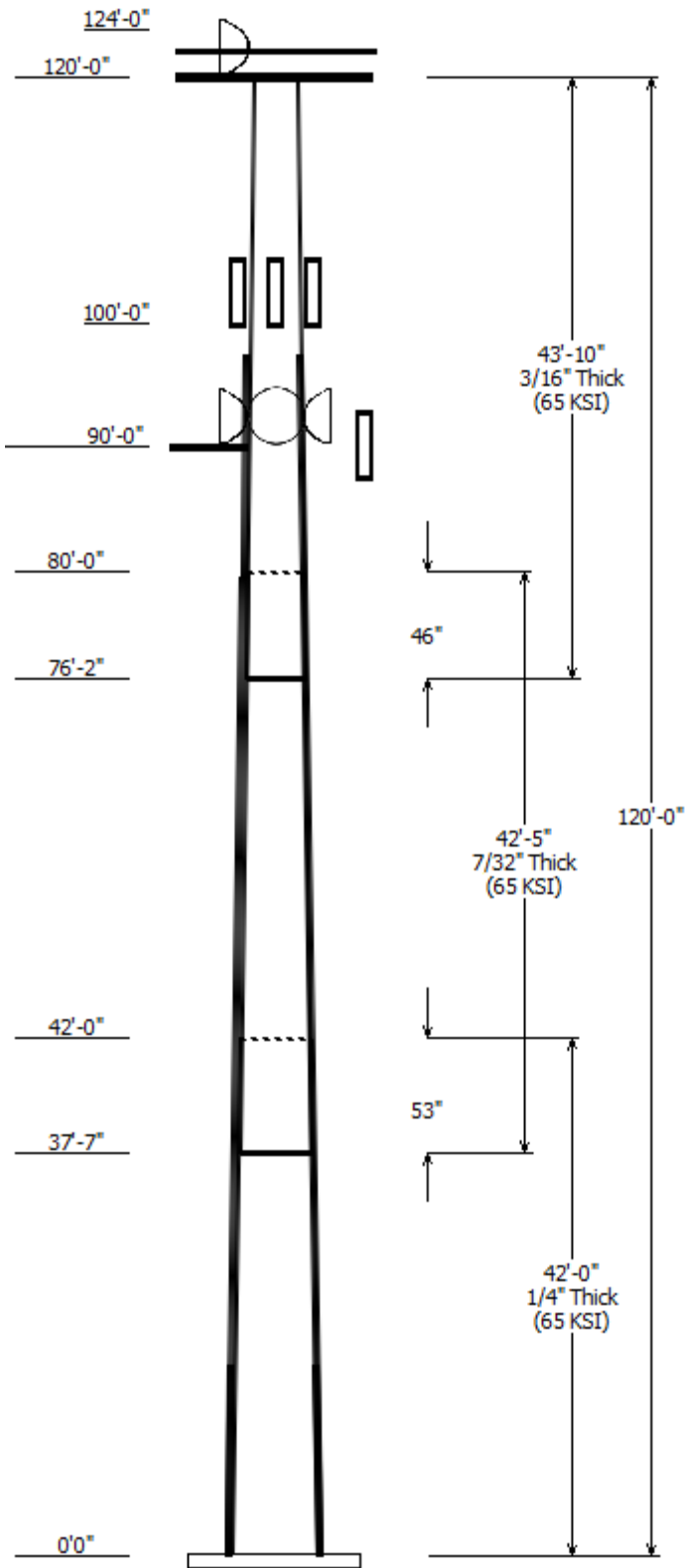
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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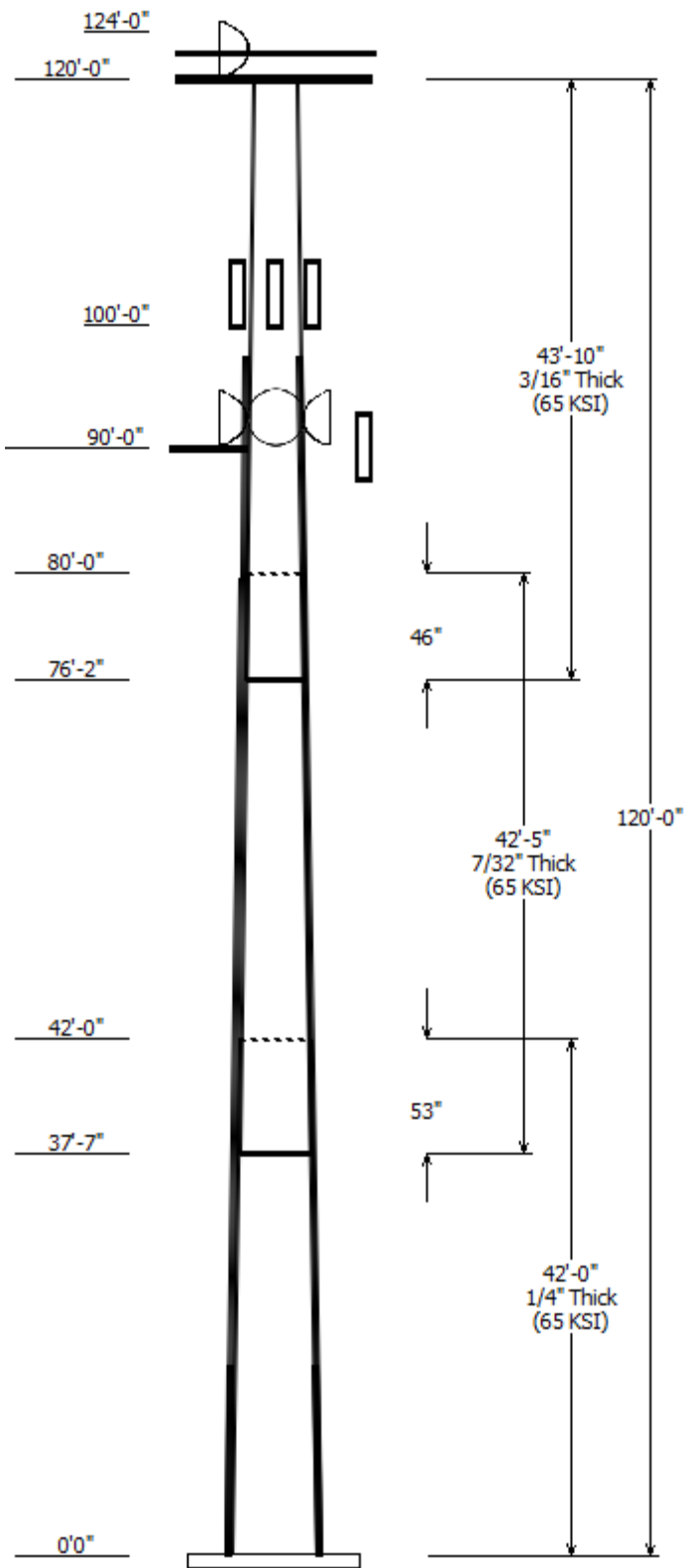


Job Information	
Pole : 302500	Code: ANSI/TIA-222-H
Location : Brst - Bristol, CT	
Description : 120' Valmont Monopole	
Client : CLEARWIRE CORPORATION	Risk Category : II
Shape : 12 Sides	Exposure : B
Height : 120.00 (ft)	Topo Method : Method 1
Base Elev (ft): 0.00	Topographic Category : 3
Taper: 0.14502(in/ft)	

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade
		Accross Top	Flats Bottom			
1	42.000	24.90	31.00	0.250	0.000	12 Sides 65
2	42.417	19.83	25.98	0.219	53.000	12 Sides 65
3	43.833	14.41	20.76	0.188	46.000	12 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
124.000	126.000	3	Kathrein Scala 80010966
124.000	126.000	2	CCI TPA-65R-LCUUUU-H8
124.000	126.000	2	Andrew SBNH-1D6565C (60.8
124.000	126.000	1	Quintel QS66512-3 (112 lbs.)
124.000	126.000	1	KMW AM-X-CD-16-65-00T-RET
124.000	126.000	3	Powerwave Allgon 7770.00
124.000	126.000	3	Ericsson RRUS 32 B2
124.000	126.000	3	Ericsson RRUS 32 (50.8 lbs)
124.000	126.000	3	Ericsson RRUS-11 1900 MHz
124.000	126.000	3	Ericsson RRUS 4478 B14
124.000	124.000	3	Ericsson RRUS A2
124.000	126.000	2	Raycap DC6-48-60-18-8F
124.000	126.000	6	Powerwave Allgon LGP21401
124.000	126.000	6	CCI TPX-070821
120.000	126.000	1	Generic 2' Std. Dish
120.000	120.000	1	Platform w/ Handrails
100.000	101.000	1	RFS APXV18-206517S-C
100.000	101.000	2	Kathrein Scala 742 213
90.000	90.000	3	Alcatel-Lucent 1900 MHz 4X45
90.000	90.000	6	Alcatel-Lucent RRH2x50-08
90.000	92.000	4	DragonWave Horizon Compact
90.000	90.000	1	Side Arm
90.000	90.000	3	Commscope NNVV-65B-R4
90.000	92.000	3	DragonWave A-ANT-11G-2.5-C
90.000	92.000	1	DragonWave A-ANT-18G-2-C
90.000	90.000	3	Nokia 2.5G MAA -

Linear Appurtenance			
Elev (ft)			
From	To	Description	Exposed To Wind
92.000	102.0	#20	Yes
92.000	102.0	#20	Yes
92.000	102.0	#20	Yes
92.000	102.0	#20	Yes
22.500	92.000	#20	Yes
22.500	92.000	#20	Yes
22.500	92.000	#20	Yes
22.500	92.000	#20	Yes
7.000	100.0	1 5/8" Coax	Yes
7.000	90.000	1/2" Coax	Yes
7.000	120.0	1 1/4" Coax	No



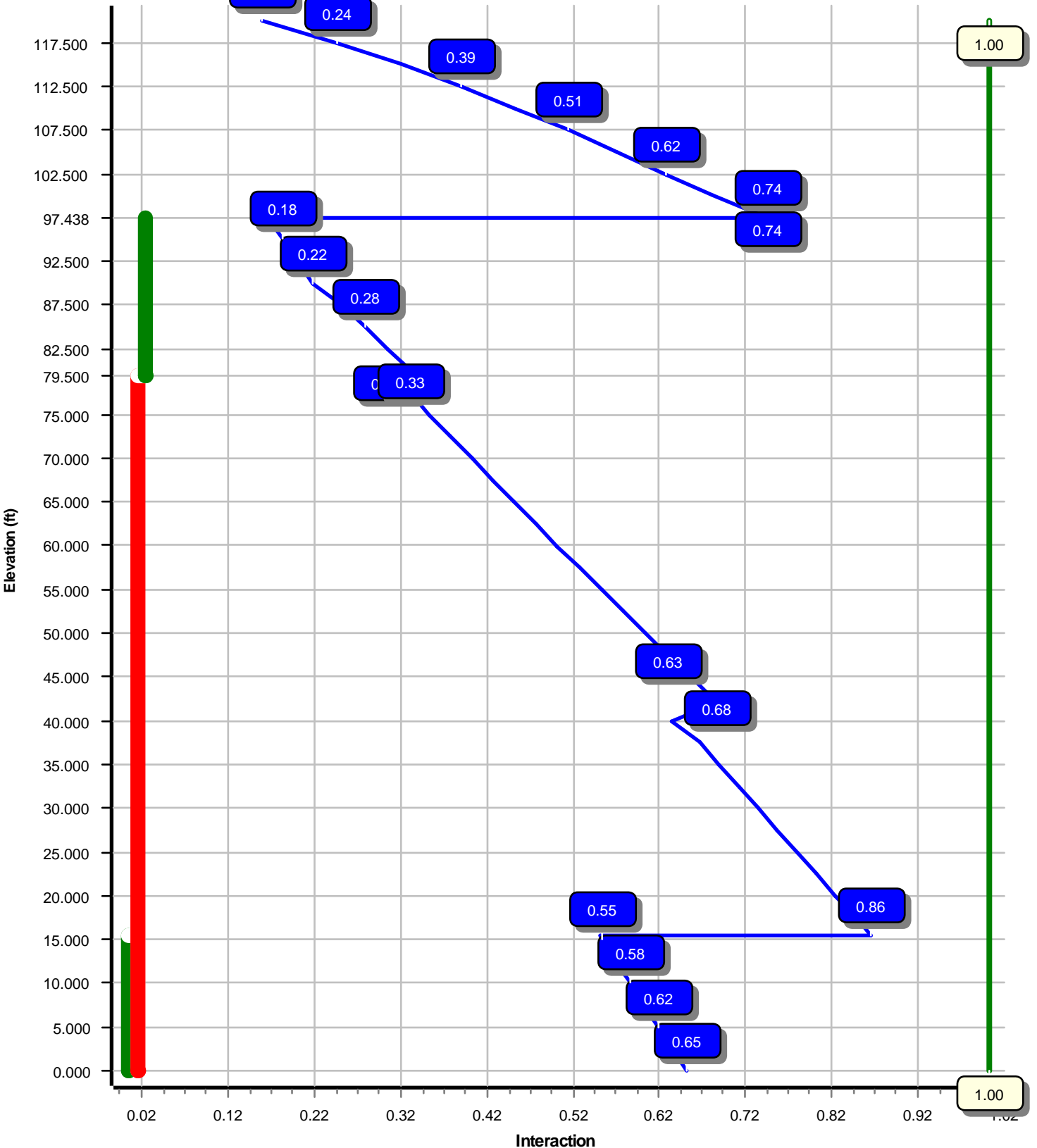
7.000	124.0	0.39" (10mm)	No
7.000	124.0	0.78" (19.7mm) 8	No
7.000	124.0	1 1/4" Coax	No
7.000	124.0	3" conduit	No
7.000	124.0	7/8" Coax	No
7.000	126.0	3" conduit	No
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	22.500	#20	Yes
0.000	90.000	1 5/8" (1.63")-	Yes
0.000	90.000	2" conduit	Yes

Load Cases	
1.2D + 1.0W	117 mph with No Ice
0.9D + 1.0W	117 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	2154.60	27.54	30.31
0.9D + 1.0W	2128.13	27.53	22.72
1.2D + 1.0Di + 1.0Wi	547.62	6.25	51.08
1.2D + 1.0Ev + 1.0Eh	75.53	0.80	28.50
0.9D - 1.0Ev + 1.0Eh	74.59	0.80	19.76
1.0D + 1.0W	570.05	7.37	25.28

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	90.00	15.760	1.576
1.0D + 1.0W	90.00	15.760	1.576
1.0D + 1.0W	120.00	27.517	2.183

Load Case : 1.2D + 1.0W  
Max Ratio 86.29% at 15.5 ft



Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	120
Code :	ANSI/TIA-222-H	Base Diameter (in) :	31.00
Shape :	12 Sides	Top Diameter (in) :	14.41
Pole Type :	Taper	Taper (in/ft) :	0.145
Pole Manufacturer :	Valmont	Rotation (deg) :	0.00
Kd :	0.95	Ke :	0.96

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	117 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	3	Design Ice Thickness:	1.00 in
Crest Height:	198 ft	HMSL:	1027.07 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.22		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.189	S <sub>1</sub> :	0.054
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.202	S <sub>d1</sub> :	0.086
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		C <sub>s</sub> Min:	0.030

Load Cases

1.2D + 1.0W	117 mph with No Ice
0.9D + 1.0W	117 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph



Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	42.000	0.2500	65		0.00	3,187	31.00	0.00	24.75	2987.6	30.55	124.00	24.90	42.00	19.85	1540.7	24.02	99.64	0.145021
2-12	42.417	0.2188	65	Slip	53.00	2,307	25.98	37.58	18.15	1538.3	29.15	118.80	19.83	80.00	13.82	678.7	21.62	90.68	0.145021
3-12	43.833	0.1875	65	Slip	46.00	1,567	20.76	76.17	12.42	671.6	27.00	110.76	14.41	120.00	8.59	221.7	17.91	76.85	0.145021
Shaft Weight						7,061													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
124.00	CCI TPX-070821	6	0.75	2.000	7.50	0.470	0.50	16.19	0.814	0.50
124.00	Powerwave Allgon LGP21401	6	0.75	2.000	14.10	1.100	0.50	31.98	1.610	0.50
124.00	Raycap DC6-48-60-18-8F	2	0.75	2.000	20.00	1.260	1.00	57.74	1.732	1.00
124.00	Ericsson RRUS A2	3	0.75	0.000	15.00	1.600	0.50	41.02	2.199	0.50
124.00	Ericsson RRUS 4478 B14	3	0.75	2.000	59.90	1.840	0.50	99.53	2.482	0.50
124.00	Ericsson RRUS-11 1900 MHz	3	0.75	2.000	44.00	2.520	0.67	92.23	3.265	0.67
124.00	Ericsson RRUS 32 (50.8 lbs)	3	0.75	2.000	50.80	2.690	0.67	102.06	3.517	0.67
124.00	Ericsson RRUS 32 B2	3	0.75	2.000	53.00	2.740	0.67	105.72	3.577	0.67
124.00	Powerwave Allgon 7770.00	3	0.75	2.000	35.00	5.510	0.65	125.50	6.248	0.65
124.00	KMW AM-X-CD-16-65-00T-RET	1	0.75	2.000	48.50	8.020	1.00	164.57	10.018	1.00
124.00	Quintel QS66512-3 (112 lbs.)	1	0.75	2.000	112.00	8.130	1.00	254.83	10.127	1.00
124.00	Andrew SBNH-1D6565C (60.8 lbs)	2	0.75	2.000	60.80	11.440	0.77	225.26	13.759	0.77
124.00	CCI TPA-65R-LCUUUU-H8	2	0.75	2.000	81.60	13.300	0.77	279.99	15.976	0.77
124.00	Kathrein Scala 80010966	3	0.75	2.000	114.60	17.360	0.63	344.75	20.004	0.63
120.00	Generic 2' Std. Dish	1	1.00	6.000	14.00	5.230	1.00	53.71	6.340	1.00
120.00	Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	2,928.75	44.720	1.00
100.00	Kathrein Scala 742 213	2	1.00	1.000	22.00	5.140	0.75	95.63	6.026	0.75
100.00	RFS APXV18-206517S-C	1	1.00	1.000	26.40	5.160	1.00	92.88	6.857	1.00
90.00	DragonWave Horizon Compact	4	1.00	2.000	10.60	0.720	0.50	26.74	1.128	0.50
90.00	Alcatel-Lucent RRH2x50-08	6	1.00	0.000	52.90	1.700	0.50	95.43	2.319	0.50
90.00	Alcatel-Lucent 1900 MHz 4X45	3	1.00	0.000	60.00	2.320	0.67	117.84	3.095	0.67
90.00	Nokia 2.5G MAA - AAHC(64T64R)	3	1.00	0.000	103.60	4.200	0.64	184.51	5.162	0.64
90.00	DragonWave A-ANT-18G-2-C	1	1.00	2.000	27.10	4.690	1.00	97.14	5.605	1.00
90.00	Side Arm	1	1.00	0.000	560.00	8.500	1.00	896.00	13.600	1.00
90.00	DragonWave A-ANT-11G-2.5-C	3	1.00	2.000	47.60	8.670	1.00	174.76	9.910	1.00
90.00	Commscope NNVV-65B-R4	3	1.00	0.000	77.40	12.270	0.64	257.74	14.282	0.64
Totals	Num Loadings:26	70			5,628.90			11,710.70		

**Linear Appurtenance Properties**

Load Case Azimuth (deg) : 90

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat Row	Dist Between Rows (in)	Dist Between Cols (in)	Dist Azimuth (deg)	Dist From Face (in)	Dist To Wind Carrier	Exposed
7.00	126.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N AT&T MOBILITY
7.00	124.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N AT&T MOBILITY
7.00	124.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N AT&T MOBILITY
7.00	124.00	12	1 1/4" Coax	1.55	0.63	N	0	0.00	0.00	0	0.00	N AT&T MOBILITY
7.00	124.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N AT&T MOBILITY
7.00	124.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N AT&T MOBILITY
7.00	120.00	8	1 1/4" Coax	1.55	0.63	N	0	0.00	0.00	0	0.00	N SPRINT NEXTEL
92.00	102.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	0	0.00	Y --
92.00	102.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	90	0.00	Y --
92.00	102.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	180	0.00	Y --

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

92.00	102.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	270	0.00	Y	--
7.00	100.00	6	1 5/8" Coax	1.98	0.82	N	3	1.00	1.00	160	0.00	Y	METRO PCS INC
22.50	92.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	0	0.00	Y	--
22.50	92.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	90	0.00	Y	--
22.50	92.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	180	0.00	Y	--
22.50	92.00	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	270	0.00	Y	--
0.00	90.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	3	1.00	0.00	60	0.00	Y	CLEARWIRE
0.00	90.00	2	2" conduit	2.38	3.65	N	2	1.00	0.00	60	0.00	Y	CLEARWIRE
7.00	90.00	4	1/2" Coax	0.63	0.15	N	4	1.00	0.00	60	0.00	Y	CLEARWIRE
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	0	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	45	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	90	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	135	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	180	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	225	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	270	0.00	Y	--
0.00	22.50	1	#20 Reinforcement	4.00	0.00	N	1	0.00	0.00	315	0.00	Y	--

### Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Intermediate Connections		Connectors	Continuation?	
					Description	Spacing (in)	Len (in)			
0.00	15.48	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No
0.00	79.50	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes
79.50	97.44	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes

Segment Properties (Max Len : 2.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)	Additional Reinforcing		
												Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	Weight (lb)
0.00		0.2500	31.000	24.754	2,987.6	30.55	124.00	71.4	186.2	0.0	0.0	39.28	7,139	0.0
2.50		0.2500	30.637	24.462	2,883.1	30.16	122.55	71.8	181.8	0.0	209.3	39.28	7,001	334.0
5.00		0.2500	30.275	24.170	2,781.2	29.77	121.10	72.2	177.5	0.0	206.9	39.28	6,865	334.0
7.50		0.2500	29.912	23.878	2,681.6	29.38	119.65	72.7	173.2	0.0	204.4	39.28	6,731	334.0
10.00		0.2500	29.550	23.586	2,584.5	28.99	118.20	73.1	169.0	0.0	201.9	39.28	6,597	334.0
12.50		0.2500	29.187	23.294	2,489.7	28.60	116.75	73.5	164.8	0.0	199.4	39.28	6,465	334.0
15.00		0.2500	28.825	23.003	2,397.3	28.21	115.30	73.9	160.7	0.0	196.9	39.28	6,335	334.0
15.48	Reinf. Top	0.2500	28.755	22.947	2,379.9	28.14	115.02	74.0	159.9	0.0	37.5	39.28	6,310	64.0
17.50		0.2500	28.462	22.711	2,307.2	27.83	113.85	74.4	156.6	0.0	157.0	19.64	3,073	135.0
20.00		0.2500	28.100	22.419	2,219.4	27.44	112.40	74.8	152.6	0.0	192.0	19.64	3,010	167.0
22.50		0.2500	27.737	22.127	2,133.9	27.05	110.95	75.2	148.6	0.0	189.5	19.64	2,948	167.0
25.00		0.2500	27.374	21.835	2,050.5	26.66	109.50	75.6	144.7	0.0	187.0	19.64	2,887	167.0
27.50		0.2500	27.012	21.543	1,969.4	26.27	108.05	76.1	140.8	0.0	184.5	19.64	2,827	167.0
30.00		0.2500	26.649	21.251	1,890.4	25.88	106.60	76.5	137.0	0.0	182.0	19.64	2,767	167.0
32.50		0.2500	26.287	20.960	1,813.6	25.49	105.15	76.9	133.3	0.0	179.5	19.64	2,707	167.0
35.00		0.2500	25.924	20.668	1,738.9	25.11	103.70	77.3	129.6	0.0	177.1	19.64	2,648	167.0
37.50		0.2500	25.562	20.376	1,666.3	24.72	102.25	77.8	125.9	0.0	174.6	19.64	2,590	167.0
37.58	Bot - Section 2	0.2500	25.550	20.366	1,663.9	24.70	102.20	77.8	125.8	0.0	5.8	19.64	2,588	5.6
40.00		0.2500	25.199	20.084	1,595.7	24.33	100.80	78.2	122.3	0.0	314.6	19.64	2,602	161.4
42.00	Top - Section 1	0.2188	25.347	17.699	1,426.5	28.37	115.87	73.8	108.7	0.0	257.0	19.64	2,556	133.6
42.50		0.2188	25.274	17.648	1,414.1	28.28	115.54	73.9	108.1	0.0	30.1	19.64	2,545	33.4
45.00		0.2188	24.912	17.393	1,353.6	27.83	113.88	74.4	105.0	0.0	149.0	19.64	2,488	167.0
47.50		0.2188	24.549	17.138	1,294.9	27.39	112.22	74.8	101.9	0.0	146.9	19.64	2,432	167.0
50.00		0.2188	24.186	16.882	1,237.9	26.95	110.57	75.3	98.9	0.0	144.7	19.64	2,376	167.0
52.50		0.2188	23.824	16.627	1,182.5	26.50	108.91	75.8	95.9	0.0	142.5	19.64	2,321	167.0
55.00		0.2188	23.461	16.372	1,128.9	26.06	107.25	76.3	93.0	0.0	140.4	19.64	2,267	167.0
57.50		0.2188	23.099	16.116	1,076.9	25.61	105.59	76.8	90.1	0.0	138.2	19.64	2,213	167.0
60.00		0.2188	22.736	15.861	1,026.5	25.17	103.94	77.3	87.2	0.0	136.0	19.64	2,160	167.0
62.50		0.2188	22.374	15.605	977.7	24.73	102.28	77.7	84.4	0.0	133.8	19.64	2,108	167.0
65.00		0.2188	22.011	15.350	930.5	24.28	100.62	78.2	81.7	0.0	131.7	19.64	2,056	167.0
67.50		0.2188	21.649	15.095	884.8	23.84	98.97	78.7	79.0	0.0	129.5	19.64	2,005	167.0
70.00		0.2188	21.286	14.839	840.7	23.39	97.31	79.2	76.3	0.0	127.3	19.64	1,954	167.0
72.50		0.2188	20.923	14.584	798.0	22.95	95.65	79.7	73.7	0.0	125.2	19.64	1,904	167.0
75.00		0.2188	20.561	14.329	756.8	22.51	93.99	80.2	71.1	0.0	123.0	19.64	1,855	167.0
76.17	Bot - Section 3	0.2188	20.392	14.209	738.1	22.30	93.22	80.4	69.9	0.0	56.6	19.64	1,833	77.9
77.50		0.2188	20.198	14.073	717.1	22.06	92.34	80.7	68.6	0.0	120.3	19.64	1,857	89.1
79.50	Reinf. Top Reinf	0.2188	19.908	13.869	686.3	21.71	91.01	81.0	66.6	0.0	178.2	19.64	1,818	133.6
80.00	Top - Section 2	0.1875	20.211	12.089	618.7	26.20	107.79	76.1	59.1	0.0	44.2	19.64	1,808	33.4
82.50		0.1875	19.848	11.870	585.7	25.68	105.86	76.7	57.0	0.0	101.9	19.64	1,761	167.0
85.00		0.1875	19.486	11.651	553.9	25.17	103.92	77.3	54.9	0.0	100.0	19.64	1,713	167.0
87.50		0.1875	19.123	11.432	523.2	24.65	101.99	77.8	52.9	0.0	98.2	19.64	1,667	167.0
90.00		0.1875	18.761	11.214	493.7	24.13	100.06	78.4	50.8	0.0	96.3	19.64	1,621	167.0
92.50		0.1875	18.398	10.995	465.4	23.61	98.12	79.0	48.9	0.0	94.5	19.64	1,575	167.0
95.00		0.1875	18.036	10.776	438.1	23.09	96.19	79.5	46.9	0.0	92.6	19.64	1,531	167.0
97.44	Reinf. Top	0.1875	17.682	10.562	412.6	22.59	94.30	80.1	45.1	0.0	88.5	19.64	1,488	162.8
97.50		0.1875	17.673	10.557	412.0	22.58	94.26	80.1	45.0	0.0	2.2			
100.0		0.1875	17.310	10.338	386.9	22.06	92.32	80.7	43.2	0.0	88.9			
102.5		0.1875	16.948	10.119	362.8	21.54	90.39	81.2	41.4	0.0	87.0			
105.0		0.1875	16.585	9.900	339.8	21.02	88.46	81.8	39.6	0.0	85.2			
107.5		0.1875	16.223	9.681	317.7	20.50	86.52	81.9	37.8	0.0	83.3			
110.0		0.1875	15.860	9.462	296.7	19.99	84.59	81.9	36.1	0.0	81.4			
112.5		0.1875	15.498	9.244	276.6	19.47	82.65	81.9	34.5	0.0	79.6			
115.0		0.1875	15.135	9.025	257.4	18.95	80.72	81.9	32.9	0.0	77.7			
117.5		0.1875	14.773	8.806	239.1	18.43	78.79	81.9	31.3	0.0	75.8			
120.0		0.1875	14.410	8.587	221.7	17.91	76.85	81.9	29.7	0.0	74.0			
											7,061.4	7,542.8		

<b>Load Case: 1.2D + 1.0W</b>	<b>117 mph with No Ice</b>	<b>26 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.20		
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		213.1	0.0					0.0	0.0	213.1	0.0	0.0	0.0
2.50		420.4	251.2					88.5	437.2	508.9	688.4	0.0	0.0
5.00		408.9	248.2					87.8	437.2	496.7	685.4	0.0	0.0
7.50		397.7	245.2					94.6	458.8	492.3	704.1	0.0	0.0
10.00		386.9	242.3					94.0	545.5	480.9	787.7	0.0	0.0
12.50		376.4	239.3					93.3	545.5	469.7	784.7	0.0	0.0
15.00		220.6	236.3					92.7	545.5	313.3	781.8	0.0	0.0
15.48	Reinf. Top	180.6	45.0					17.7	104.6	198.3	149.5	0.0	0.0
17.50		321.4	188.4					74.3	278.9	395.8	467.3	0.0	0.0
20.00		346.9	230.3					91.4	345.1	438.3	575.4	0.0	0.0
22.50		337.6	227.4					90.8	345.1	428.4	572.4	0.0	0.0
25.00		328.6	224.4					90.3	345.1	418.9	569.4	0.0	0.0
27.50		319.9	221.4					89.7	345.1	409.6	566.5	0.0	0.0
30.00		313.4	218.4					89.1	345.1	402.5	563.5	0.0	0.0
32.50		310.4	215.5					89.2	345.1	399.6	560.5	0.0	0.0
35.00		308.7	212.5					89.7	345.1	398.4	557.5	0.0	0.0
37.50		159.0	209.5					90.2	345.1	249.2	554.6	0.0	0.0
37.58	Bot - Section 2	155.2	6.9					3.0	11.5	158.3	18.4	0.0	0.0
40.00		273.5	377.5					87.6	333.6	361.1	711.0	0.0	0.0
42.00	Top - Section 1	154.0	308.4					72.8	276.0	226.8	584.5	0.0	0.0
42.50		183.3	36.1					18.2	69.0	201.5	105.1	0.0	0.0
45.00		303.5	178.9					91.2	345.1	394.8	523.9	0.0	0.0
47.50		300.3	176.3					91.6	345.1	391.8	521.3	0.0	0.0
50.00		296.8	173.6					91.8	345.1	388.6	518.7	0.0	0.0
52.50		293.2	171.0					92.1	345.1	385.2	516.1	0.0	0.0
55.00		289.4	168.4					92.3	345.1	381.7	513.5	0.0	0.0
57.50		285.4	165.8					92.5	345.1	378.0	510.9	0.0	0.0
60.00		281.4	163.2					92.7	345.1	374.1	508.3	0.0	0.0
62.50		277.3	160.6					92.9	345.1	370.2	505.7	0.0	0.0
65.00		273.1	158.0					93.0	345.1	366.1	503.1	0.0	0.0
67.50		268.8	155.4					93.2	345.1	362.0	500.5	0.0	0.0
70.00		264.5	152.8					93.3	345.1	357.8	497.8	0.0	0.0
72.50		260.1	150.2					93.4	345.1	353.6	495.2	0.0	0.0
75.00		188.4	147.6					93.5	345.1	281.9	492.6	0.0	0.0
76.17	Bot - Section 3	128.0	68.0					43.7	161.0	171.7	229.0	0.0	0.0
77.50		170.2	144.3					50.0	184.0	220.2	328.4	0.0	0.0
79.50	Reinf. Top Reinf	126.8	213.9					75.0	276.0	201.8	489.9	0.0	0.0
80.00	Top - Section 2	149.8	53.0					18.8	69.0	168.5	122.0	0.0	0.0
82.50		246.9	122.3					93.7	345.1	340.7	467.4	0.0	0.0
85.00		242.4	120.1					93.8	345.1	336.2	465.1	0.0	0.0
87.50		237.9	117.8					93.9	345.1	331.8	462.9	0.0	0.0
90.00	Appurtenance(s)	233.3	115.6	3,941.4	0.0	3,088.3	2,175.2	94.0	345.1	4,268.7	2,635.9	0.0	0.0
92.50		228.8	113.4					94.1	306.9	322.8	420.2	0.0	0.0
95.00		221.5	111.1					94.1	306.9	315.6	418.0	0.0	0.0
97.44	Reinf. Top	111.0	106.2					91.8	299.2	202.8	405.4	0.0	0.0
97.50		111.4	2.7					2.4	2.7	113.8	5.4	0.0	0.0
100.00	Appurtenance(s)	215.1	106.7	617.7	0.0	617.7	84.5	94.3	106.5	927.0	297.6	0.0	0.0
102.50		188.8	104.4					83.8	91.7	272.6	196.1	0.0	0.0

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:16 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0W

117 mph with No Ice

26 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

105.00	163.0	102.2					0.0	91.7	163.0	193.9	0.0	0.0	
107.50	159.4	99.9					0.0	91.7	159.4	191.7	0.0	0.0	
110.00	155.8	97.7					0.0	91.7	155.8	189.4	0.0	0.0	
112.50	152.1	95.5					0.0	91.7	152.1	187.2	0.0	0.0	
115.00	148.5	93.2					0.0	91.7	148.5	185.0	0.0	0.0	
117.50	144.9	91.0					0.0	91.7	144.9	182.7	0.0	0.0	
120.00	Appurtenance(s)	71.6	88.8	1,552.1	0.0	1,500.9	2,416.8	0.0	91.7	1,623.6	2,597.3	0.0	0.0
								Totals:	23,189.0	28,265.7	0.00	0.00	

**Load Case: 1.2D + 1.0W**

117 mph with No Ice

26 Iterations

Gust Response Factor :1.10  
 Dead Load Factor :1.20  
 Wind Load Factor :1.00

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-30.31	-27.54	0.00	-2,154.60	0.00	2,154.60	1,590.66	434.43	1,260.13	996.98	0.00	0.00	0.649
2.50	-29.55	-27.11	0.00	-2,085.75	0.00	2,085.75	1,581.24	429.31	1,230.60	979.29	0.04	-0.15	0.632
5.00	-28.80	-26.68	0.00	-2,017.97	0.00	2,017.97	1,571.59	424.18	1,201.42	961.61	0.16	-0.30	0.616
7.50	-28.03	-26.26	0.00	-1,951.27	0.00	1,951.27	1,561.72	419.06	1,172.59	943.94	0.36	-0.44	0.600
10.00	-27.18	-25.84	0.00	-1,885.62	0.00	1,885.62	1,551.63	413.94	1,144.11	926.28	0.63	-0.59	0.583
12.50	-26.34	-25.43	0.00	-1,821.03	0.00	1,821.03	1,541.32	408.82	1,115.98	908.64	0.98	-0.73	0.567
15.00	-25.52	-25.14	0.00	-1,757.46	0.00	1,757.46	1,530.78	403.70	1,088.20	891.03	1.40	-0.87	0.552
15.48	-25.35	-24.97	0.00	-1,745.42	0.00	1,745.42	1,528.74	402.71	1,082.91	887.65	1.49	-0.90	0.548
15.48	-25.35	-24.97	0.00	-1,745.42	0.00	1,745.42	1,528.74	402.71	1,082.91	887.65	1.49	-0.90	0.863
17.50	-24.81	-24.64	0.00	-1,694.96	0.00	1,694.96	1,520.02	398.57	1,060.77	873.44	1.90	-1.01	0.845
20.00	-24.15	-24.28	0.00	-1,633.36	0.00	1,633.36	1,509.04	393.45	1,033.69	855.89	2.49	-1.23	0.822
22.50	-23.50	-23.93	0.00	-1,572.66	0.00	1,572.66	1,497.83	388.33	1,006.96	838.37	3.19	-1.45	0.800
25.00	-22.86	-23.58	0.00	-1,512.84	0.00	1,512.84	1,486.41	383.21	980.58	820.91	4.01	-1.67	0.777
27.50	-22.22	-23.24	0.00	-1,453.89	0.00	1,453.89	1,474.76	378.09	954.55	803.49	4.95	-1.88	0.755
30.00	-21.58	-22.89	0.00	-1,395.80	0.00	1,395.80	1,462.88	372.96	928.87	786.12	5.99	-2.09	0.732
32.50	-20.96	-22.55	0.00	-1,338.57	0.00	1,338.57	1,450.79	367.84	903.54	768.81	7.14	-2.30	0.710
35.00	-20.34	-22.20	0.00	-1,282.20	0.00	1,282.20	1,438.47	362.72	878.56	751.57	8.40	-2.51	0.687
37.50	-19.76	-21.96	0.00	-1,226.70	0.00	1,226.70	1,425.93	357.60	853.93	734.39	9.77	-2.71	0.665
37.58	-19.71	-21.84	0.00	-1,224.87	0.00	1,224.87	1,425.51	357.43	853.11	733.82	9.82	-2.72	0.664
40.00	-18.95	-21.50	0.00	-1,172.10	0.00	1,172.10	1,413.16	352.48	829.65	717.29	11.25	-2.91	0.632
42.00	-18.34	-21.27	0.00	-1,129.10	0.00	1,129.10	1,175.20	310.63	736.31	601.57	12.50	-3.07	0.684
42.50	-18.20	-21.10	0.00	-1,118.46	0.00	1,118.46	1,173.35	309.73	732.07	598.87	12.82	-3.11	0.679
45.00	-17.63	-20.74	0.00	-1,065.70	0.00	1,065.70	1,163.96	305.25	711.04	585.40	14.50	-3.30	0.653
47.50	-17.07	-20.38	0.00	-1,013.85	0.00	1,013.85	1,154.34	300.77	690.32	571.97	16.29	-3.50	0.627
50.00	-16.51	-20.01	0.00	-962.91	0.00	962.91	1,144.49	296.28	669.91	558.56	18.17	-3.68	0.602
52.50	-15.96	-19.64	0.00	-912.89	0.00	912.89	1,134.43	291.80	649.80	545.20	20.15	-3.87	0.576
55.00	-15.41	-19.27	0.00	-863.78	0.00	863.78	1,124.14	287.32	630.00	531.88	22.22	-4.05	0.551
57.50	-14.87	-18.90	0.00	-815.60	0.00	815.60	1,113.63	282.84	610.51	518.62	24.39	-4.23	0.525
60.00	-14.34	-18.54	0.00	-768.34	0.00	768.34	1,102.90	278.36	591.32	505.40	26.65	-4.40	0.500
62.50	-13.81	-18.17	0.00	-722.00	0.00	722.00	1,091.95	273.87	572.44	492.25	28.99	-4.56	0.475
65.00	-13.29	-17.80	0.00	-676.58	0.00	676.58	1,080.77	269.39	553.86	479.16	31.42	-4.72	0.450
67.50	-12.78	-17.43	0.00	-632.09	0.00	632.09	1,069.37	264.91	535.59	466.14	33.94	-4.88	0.425
70.00	-12.27	-17.06	0.00	-588.51	0.00	588.51	1,057.74	260.43	517.63	453.19	36.53	-5.03	0.400
72.50	-11.76	-16.69	0.00	-545.86	0.00	545.86	1,045.90	255.95	499.97	440.33	39.20	-5.17	0.375
75.00	-11.27	-16.39	0.00	-504.12	0.00	504.12	1,033.83	251.47	482.62	427.54	41.95	-5.31	0.350
76.17	-11.04	-16.21	0.00	-485.01	0.00	485.01	1,028.12	249.37	474.63	421.61	43.25	-5.38	0.339
77.50	-10.71	-15.97	0.00	-463.39	0.00	463.39	1,021.54	246.98	465.58	414.85	44.76	-5.45	0.320
79.50	-10.22	-15.74	0.00	-431.44	0.00	431.44	1,011.55	243.40	452.16	404.77	47.06	-5.54	0.300
79.50	-10.22	-15.74	0.00	-431.44	0.00	431.44	1,011.55	243.40	452.16	404.77	47.06	-5.54	0.300
80.00	-10.10	-15.57	0.00	-423.58	0.00	423.58	828.38	212.16	400.77	337.67	47.64	-5.57	0.330
82.50	-9.64	-15.21	0.00	-384.65	0.00	384.65	819.42	208.32	386.39	327.92	50.59	-5.68	0.303
85.00	-9.18	-14.84	0.00	-346.64	0.00	346.64	810.23	204.48	372.28	318.20	53.59	-5.79	0.276
87.50	-8.73	-14.48	0.00	-309.53	0.00	309.53	800.82	200.64	358.43	308.54	56.65	-5.90	0.249
90.00	-6.54	-9.97	0.00	-270.25	0.00	270.25	791.19	196.80	344.84	298.94	59.76	-5.99	0.217
92.50	-6.14	-9.61	0.00	-245.32	0.00	245.32	781.34	192.96	331.51	289.40	62.92	-6.08	0.199
95.00	-5.74	-9.26	0.00	-221.29	0.00	221.29	771.27	189.11	318.45	279.92	66.12	-6.16	0.181
97.44	-5.36	-9.02	0.00	-198.71	0.00	198.71	761.23	185.37	305.96	270.75	69.28	-6.23	0.164
97.44	-5.36	-9.02	0.00	-198.71	0.00	198.71	761.23	185.37	305.96	270.75	69.28	-6.23	0.743
97.50	-5.34	-8.92	0.00	-198.14	0.00	198.14	760.97	185.27	305.65	270.51	69.36	-6.24	0.742
100.00	-5.10	-8.00	0.00	-175.22	0.00	175.22	750.45	181.43	293.11	261.18	72.70	-6.56	0.680
102.50	-4.90	-7.73	0.00	-155.22	0.00	155.22	739.70	177.59	280.83	251.93	76.21	-6.86	0.625

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:16 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0W

117 mph with No Ice

26 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

105.00	-4.69	-7.57	0.00	-135.90	0.00	135.90	728.74	173.75	268.82	242.77	79.87	-7.15	0.568
107.50	-4.49	-7.40	0.00	-116.99	0.00	116.99	713.61	169.91	257.07	232.42	83.68	-7.41	0.512
110.00	-4.29	-7.24	0.00	-98.48	0.00	98.48	697.47	166.07	245.58	221.97	87.62	-7.65	0.452
112.50	-4.10	-7.08	0.00	-80.38	0.00	80.38	681.34	162.22	234.35	211.76	91.67	-7.87	0.387
115.00	-3.92	-6.92	0.00	-62.68	0.00	62.68	665.20	158.38	223.39	201.79	95.83	-8.05	0.318
117.50	-3.74	-6.76	0.00	-45.38	0.00	45.38	649.07	154.54	212.69	192.06	100.07	-8.20	0.244
120.00	0.00	-6.15	0.00	-28.49	0.00	28.49	632.94	150.70	202.25	182.57	104.39	-8.31	0.158

**Load Case:** 0.9D + 1.0W

117 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		213.1	0.0					0.0	0.0	213.1	0.0	0.0	0.0
2.50		420.4	188.4					88.5	327.9	508.9	516.3	0.0	0.0
5.00		408.9	186.2					87.8	327.9	496.7	514.1	0.0	0.0
7.50		397.7	183.9					94.6	344.1	492.3	528.1	0.0	0.0
10.00		386.9	181.7					94.0	409.1	480.9	590.8	0.0	0.0
12.50		376.4	179.5					93.3	409.1	469.7	588.6	0.0	0.0
15.00		220.6	177.2					92.7	409.1	313.3	586.3	0.0	0.0
15.48	Reinf. Top	180.6	33.7					17.7	78.4	198.3	112.1	0.0	0.0
17.50		321.4	141.3					74.3	209.2	395.8	350.5	0.0	0.0
20.00		346.9	172.8					91.4	258.8	438.3	431.6	0.0	0.0
22.50		337.6	170.5					90.8	258.8	428.4	429.3	0.0	0.0
25.00		328.6	168.3					90.3	258.8	418.9	427.1	0.0	0.0
27.50		319.9	166.1					89.7	258.8	409.6	424.9	0.0	0.0
30.00		313.4	163.8					89.1	258.8	402.5	422.6	0.0	0.0
32.50		310.4	161.6					89.2	258.8	399.6	420.4	0.0	0.0
35.00		308.7	159.4					89.7	258.8	398.4	418.1	0.0	0.0
37.50		159.0	157.1					90.2	258.8	249.2	415.9	0.0	0.0
37.58	Bot - Section 2	155.2	5.2					3.0	8.6	158.3	13.8	0.0	0.0
40.00		273.5	283.1					87.6	250.2	361.1	533.3	0.0	0.0
42.00	Top - Section 1	154.0	231.3					72.8	207.0	226.8	438.4	0.0	0.0
42.50		183.3	27.1					18.2	51.8	201.5	78.8	0.0	0.0
45.00		303.5	134.1					91.2	258.8	394.8	392.9	0.0	0.0
47.50		300.3	132.2					91.6	258.8	391.8	391.0	0.0	0.0
50.00		296.8	130.2					91.8	258.8	388.6	389.0	0.0	0.0
52.50		293.2	128.3					92.1	258.8	385.2	387.1	0.0	0.0
55.00		289.4	126.3					92.3	258.8	381.7	385.1	0.0	0.0
57.50		285.4	124.4					92.5	258.8	378.0	383.2	0.0	0.0
60.00		281.4	122.4					92.7	258.8	374.1	381.2	0.0	0.0
62.50		277.3	120.5					92.9	258.8	370.2	379.3	0.0	0.0
65.00		273.1	118.5					93.0	258.8	366.1	377.3	0.0	0.0
67.50		268.8	116.5					93.2	258.8	362.0	375.3	0.0	0.0
70.00		264.5	114.6					93.3	258.8	357.8	373.4	0.0	0.0
72.50		260.1	112.6					93.4	258.8	353.6	371.4	0.0	0.0
75.00		188.4	110.7					93.5	258.8	281.9	369.5	0.0	0.0
76.17	Bot - Section 3	128.0	51.0					43.7	120.8	171.7	171.7	0.0	0.0
77.50		170.2	108.2					50.0	138.0	220.2	246.3	0.0	0.0
79.50	Reinf. Top Reinf	126.8	160.4					75.0	207.0	201.8	367.5	0.0	0.0
80.00	Top - Section 2	149.8	39.7					18.8	51.8	168.5	91.5	0.0	0.0
82.50		246.9	91.7					93.7	258.8	340.7	350.5	0.0	0.0
85.00		242.4	90.0					93.8	258.8	336.2	348.8	0.0	0.0
87.50		237.9	88.4					93.9	258.8	331.8	347.2	0.0	0.0
90.00	Appurtenance(s)	233.3	86.7	3,941.4	0.0	3,088.3	1,631.4	94.0	258.8	4,268.7	1,976.9	0.0	0.0
92.50		228.8	85.0					94.1	230.2	322.8	315.2	0.0	0.0
95.00		221.5	83.3					94.1	230.2	315.6	313.5	0.0	0.0
97.44	Reinf. Top	111.0	79.6					91.8	224.4	202.8	304.0	0.0	0.0
97.50		111.4	2.0					2.4	2.0	113.8	4.0	0.0	0.0
100.00	Appurtenance(s)	215.1	80.0	617.7	0.0	617.7	63.4	94.3	79.9	927.0	223.2	0.0	0.0
102.50		188.8	78.3					83.8	68.8	272.6	147.1	0.0	0.0



Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number:OAA718326\_C4\_09

5/21/2019 4:12:23 PM

Customer: CLEARWIRE

Load Case: 0.9D + 1.0W

117 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

105.00	163.0	76.6					0.0	68.8	163.0	145.4	0.0	0.0	
107.50	159.4	75.0					0.0	68.8	159.4	143.7	0.0	0.0	
110.00	155.8	73.3					0.0	68.8	155.8	142.1	0.0	0.0	
112.50	152.1	71.6					0.0	68.8	152.1	140.4	0.0	0.0	
115.00	148.5	69.9					0.0	68.8	148.5	138.7	0.0	0.0	
117.50	144.9	68.3					0.0	68.8	144.9	137.0	0.0	0.0	
120.00	Appurtenance(s)	71.6	66.6	1,552.1	0.0	1,500.9	1,812.6	0.0	68.8	1,623.6	1,948.0	0.0	0.0
Totals:									23,189.0	21,199.3	0.00	0.00	

**Load Case: 0.9D + 1.0W**

117 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10  
 Dead Load Factor :0.90  
 Wind Load Factor :1.00

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-22.72	-27.53	0.00	-2,128.13	0.00	2,128.13	1,590.66	434.43	1,260.13	996.98	0.00	0.00	0.639
2.50	-22.14	-27.08	0.00	-2,059.30	0.00	2,059.30	1,581.24	429.31	1,230.60	979.29	0.04	-0.15	0.623
5.00	-21.56	-26.63	0.00	-1,991.60	0.00	1,991.60	1,571.59	424.18	1,201.42	961.61	0.16	-0.29	0.606
7.50	-20.97	-26.19	0.00	-1,925.02	0.00	1,925.02	1,561.72	419.06	1,172.59	943.94	0.35	-0.44	0.590
10.00	-20.32	-25.76	0.00	-1,859.54	0.00	1,859.54	1,551.63	413.94	1,144.11	926.28	0.62	-0.58	0.574
12.50	-19.67	-25.33	0.00	-1,795.15	0.00	1,795.15	1,541.32	408.82	1,115.98	908.64	0.96	-0.72	0.558
15.00	-19.05	-25.03	0.00	-1,731.83	0.00	1,731.83	1,530.78	403.70	1,088.20	891.03	1.38	-0.86	0.542
15.48	-18.91	-24.86	0.00	-1,719.83	0.00	1,719.83	1,528.74	402.71	1,082.91	887.65	1.47	-0.89	0.539
15.48	-18.91	-24.86	0.00	-1,719.83	0.00	1,719.83	1,528.74	402.71	1,082.91	887.65	1.47	-0.89	0.848
17.50	-18.50	-24.51	0.00	-1,669.60	0.00	1,669.60	1,520.02	398.57	1,060.77	873.44	1.87	-1.00	0.830
20.00	-17.98	-24.13	0.00	-1,608.33	0.00	1,608.33	1,509.04	393.45	1,033.69	855.89	2.45	-1.22	0.808
22.50	-17.48	-23.76	0.00	-1,548.01	0.00	1,548.01	1,497.83	388.33	1,006.96	838.37	3.15	-1.43	0.785
25.00	-16.98	-23.39	0.00	-1,488.61	0.00	1,488.61	1,486.41	383.21	980.58	820.91	3.96	-1.64	0.763
27.50	-16.48	-23.03	0.00	-1,430.14	0.00	1,430.14	1,474.76	378.09	954.55	803.49	4.88	-1.85	0.740
30.00	-15.99	-22.67	0.00	-1,372.57	0.00	1,372.57	1,462.88	372.96	928.87	786.12	5.91	-2.06	0.718
32.50	-15.50	-22.31	0.00	-1,315.90	0.00	1,315.90	1,450.79	367.84	903.54	768.81	7.04	-2.27	0.696
35.00	-15.03	-21.95	0.00	-1,260.13	0.00	1,260.13	1,438.47	362.72	878.56	751.57	8.28	-2.47	0.673
37.50	-14.58	-21.70	0.00	-1,205.26	0.00	1,205.26	1,425.93	357.60	853.93	734.39	9.63	-2.67	0.651
37.58	-14.54	-21.57	0.00	-1,203.46	0.00	1,203.46	1,425.51	357.43	853.11	733.82	9.68	-2.68	0.650
40.00	-13.96	-21.23	0.00	-1,151.33	0.00	1,151.33	1,413.16	352.48	829.65	717.29	11.08	-2.87	0.619
42.00	-13.50	-21.00	0.00	-1,108.87	0.00	1,108.87	1,175.20	310.63	736.31	601.57	12.32	-3.02	0.670
42.50	-13.39	-20.82	0.00	-1,098.37	0.00	1,098.37	1,173.35	309.73	732.07	598.87	12.64	-3.06	0.665
45.00	-12.95	-20.45	0.00	-1,046.32	0.00	1,046.32	1,163.96	305.25	711.04	585.40	14.29	-3.25	0.639
47.50	-12.52	-20.08	0.00	-995.19	0.00	995.19	1,154.34	300.77	690.32	571.97	16.04	-3.44	0.614
50.00	-12.09	-19.70	0.00	-945.00	0.00	945.00	1,144.49	296.28	669.91	558.56	17.90	-3.63	0.589
52.50	-11.67	-19.33	0.00	-895.75	0.00	895.75	1,134.43	291.80	649.80	545.20	19.84	-3.81	0.564
55.00	-11.25	-18.96	0.00	-847.42	0.00	847.42	1,124.14	287.32	630.00	531.88	21.88	-3.98	0.539
57.50	-10.84	-18.59	0.00	-800.03	0.00	800.03	1,113.63	282.84	610.51	518.62	24.02	-4.16	0.514
60.00	-10.44	-18.21	0.00	-753.56	0.00	753.56	1,102.90	278.36	591.32	505.40	26.24	-4.32	0.489
62.50	-10.04	-17.84	0.00	-708.03	0.00	708.03	1,091.95	273.87	572.44	492.25	28.54	-4.49	0.464
65.00	-9.64	-17.48	0.00	-663.41	0.00	663.41	1,080.77	269.39	553.86	479.16	30.94	-4.65	0.439
67.50	-9.25	-17.11	0.00	-619.73	0.00	619.73	1,069.37	264.91	535.59	466.14	33.41	-4.80	0.415
70.00	-8.87	-16.74	0.00	-576.95	0.00	576.95	1,057.74	260.43	517.63	453.19	35.96	-4.95	0.391
72.50	-8.49	-16.38	0.00	-535.10	0.00	535.10	1,045.90	255.95	499.97	440.33	38.58	-5.09	0.366
75.00	-8.12	-16.08	0.00	-494.15	0.00	494.15	1,033.83	251.47	482.62	427.54	41.28	-5.22	0.342
76.17	-7.95	-15.90	0.00	-475.39	0.00	475.39	1,028.12	249.37	474.63	421.61	42.56	-5.28	0.331
77.50	-7.70	-15.67	0.00	-454.19	0.00	454.19	1,021.54	246.98	465.58	414.85	44.05	-5.35	0.312
79.50	-7.34	-15.44	0.00	-422.85	0.00	422.85	1,011.55	243.40	452.16	404.77	46.31	-5.45	0.293
79.50	-7.34	-15.44	0.00	-422.85	0.00	422.85	1,011.55	243.40	452.16	404.77	46.31	-5.45	0.293
80.00	-7.24	-15.27	0.00	-415.13	0.00	415.13	828.38	212.16	400.77	337.67	46.88	-5.47	0.322
82.50	-6.90	-14.92	0.00	-376.94	0.00	376.94	819.42	208.32	386.39	327.92	49.77	-5.59	0.295
85.00	-6.56	-14.56	0.00	-339.66	0.00	339.66	810.23	204.48	372.28	318.20	52.73	-5.69	0.269
87.50	-6.22	-14.20	0.00	-303.26	0.00	303.26	800.82	200.64	358.43	308.54	55.73	-5.80	0.243
90.00	-4.68	-9.76	0.00	-264.66	0.00	264.66	791.19	196.80	344.84	298.94	58.79	-5.89	0.211
92.50	-4.38	-9.42	0.00	-240.26	0.00	240.26	781.34	192.96	331.51	289.40	61.89	-5.97	0.194
95.00	-4.09	-9.07	0.00	-216.72	0.00	216.72	771.27	189.11	318.45	279.92	65.04	-6.05	0.176
97.44	-3.81	-8.84	0.00	-194.60	0.00	194.60	761.23	185.37	305.96	270.75	68.14	-6.13	0.160
97.44	-3.81	-8.84	0.00	-194.60	0.00	194.60	761.23	185.37	305.96	270.75	68.14	-6.13	0.726
97.50	-3.79	-8.74	0.00	-194.04	0.00	194.04	760.97	185.27	305.65	270.51	68.22	-6.13	0.725
100.00	-3.63	-7.81	0.00	-171.57	0.00	171.57	750.45	181.43	293.11	261.18	71.51	-6.44	0.664
102.50	-3.47	-7.54	0.00	-152.04	0.00	152.04	739.70	177.59	280.83	251.93	74.96	-6.74	0.610

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:23 PM

Customer: CLEARWIRE

Load Case: 0.9D + 1.0W

117 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

105.00	-3.31	-7.38	0.00	-133.18	0.00	133.18	728.74	173.75	268.82	242.77	78.55	-7.02	0.555
107.50	-3.16	-7.22	0.00	-114.73	0.00	114.73	713.61	169.91	257.07	232.42	82.29	-7.28	0.500
110.00	-3.01	-7.06	0.00	-96.68	0.00	96.68	697.47	166.07	245.58	221.97	86.16	-7.52	0.442
112.50	-2.87	-6.90	0.00	-79.04	0.00	79.04	681.34	162.22	234.35	211.76	90.14	-7.73	0.379
115.00	-2.73	-6.74	0.00	-61.79	0.00	61.79	665.20	158.38	223.39	201.79	94.22	-7.91	0.312
117.50	-2.60	-6.58	0.00	-44.94	0.00	44.94	649.07	154.54	212.69	192.06	98.39	-8.06	0.240
120.00	0.00	-6.15	0.00	-28.49	0.00	28.49	632.94	150.70	202.25	182.57	102.63	-8.16	0.158

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	25 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		43.3	0.0					0.0	0.0	43.3	0.0	0.0	0.0
2.50		85.9	347.8					0.0	512.5	85.9	860.3	0.0	0.0
5.00		84.9	354.5					0.0	521.4	84.9	875.9	0.0	0.0
7.50		83.9	355.4					0.0	557.0	83.9	912.4	0.0	0.0
10.00		82.1	354.3					0.0	686.1	82.1	1,040.4	0.0	0.0
12.50		80.3	352.3					3.5	688.8	83.8	1,041.1	0.0	0.0
15.00		47.2	349.7					3.7	690.8	50.9	1,040.5	0.0	0.0
15.48	Reinf. Top	38.8	66.8					0.7	132.6	39.6	199.4	0.0	0.0
17.50		69.3	280.1					3.1	397.8	72.5	678.0	0.0	0.0
20.00		75.2	343.4					4.0	493.4	79.2	836.8	0.0	0.0
22.50		73.6	339.9					4.2	494.5	77.8	834.4	0.0	0.0
25.00		72.0	336.3					4.3	461.4	76.3	797.6	0.0	0.0
27.50		70.5	332.5					4.5	461.9	74.9	794.4	0.0	0.0
30.00		69.4	328.6					4.6	462.4	74.0	790.9	0.0	0.0
32.50		69.1	324.6					4.8	462.8	73.9	787.4	0.0	0.0
35.00		69.2	320.5					5.0	463.1	74.2	783.6	0.0	0.0
37.50		35.7	316.4					5.2	463.4	40.9	779.8	0.0	0.0
37.58	Bot - Section 2	35.0	10.5					0.2	15.5	35.2	25.9	0.0	0.0
40.00		61.9	481.3					5.3	448.2	67.1	929.6	0.0	0.0
42.00	Top - Section 1	34.9	393.6					8.8	371.1	43.7	764.7	0.0	0.0
42.50		41.6	57.3					1.1	92.8	42.7	150.1	0.0	0.0
45.00		69.1	283.8					10.7	464.1	79.8	747.9	0.0	0.0
47.50		68.8	279.9					14.2	464.3	83.0	744.2	0.0	0.0
50.00		68.4	276.0					16.7	464.4	85.1	740.4	0.0	0.0
52.50		68.0	272.0					18.7	464.5	86.7	736.5	0.0	0.0
55.00		67.5	268.0					20.4	464.6	87.9	732.6	0.0	0.0
57.50		66.9	264.0					22.0	464.7	88.9	728.7	0.0	0.0
60.00		66.2	260.0					23.4	464.8	89.6	724.8	0.0	0.0
62.50		65.5	256.0					24.7	464.8	90.2	720.8	0.0	0.0
65.00		64.8	252.0					25.9	464.9	90.7	716.8	0.0	0.0
67.50		64.1	247.9					27.0	464.9	91.1	712.8	0.0	0.0
70.00		63.4	243.9					28.0	464.9	91.4	708.8	0.0	0.0
72.50		62.6	239.8					28.9	465.0	91.6	704.8	0.0	0.0
75.00		45.5	235.8					29.8	465.0	75.4	700.7	0.0	0.0
76.17	Bot - Section 3	31.0	108.8					14.2	217.0	45.2	325.8	0.0	0.0
77.50		41.3	191.4					16.5	248.0	57.8	439.4	0.0	0.0
79.50	Reinf. Top Reinf	30.9	283.6					25.1	372.0	56.0	655.5	0.0	0.0
80.00	Top - Section 2	36.5	70.3					6.4	93.0	42.9	163.3	0.0	0.0
82.50		60.3	207.6					31.5	465.0	91.8	672.6	0.0	0.0
85.00		59.6	203.9					32.2	465.0	91.8	668.9	0.0	0.0
87.50		58.7	200.2					32.9	465.0	91.6	665.2	0.0	0.0
90.00	Appurtenance(s)	57.7	196.5	892.5	0.0	659.7	6,052.5	33.6	465.0	983.7	6,714.0	0.0	0.0
92.50		56.7	192.8					34.2	387.3	90.9	580.0	0.0	0.0
95.00		55.0	189.1					34.8	387.2	89.8	576.3	0.0	0.0
97.44	Reinf. Top	27.6	180.8					34.4	377.6	62.0	558.3	0.0	0.0
97.50		27.8	4.6					0.9	4.7	28.7	9.3	0.0	0.0
100.00	Appurtenance(s)	53.7	181.6	139.3	0.0	139.3	324.6	35.9	186.8	228.9	693.1	0.0	0.0
102.50		48.3	177.9					21.3	119.9	69.6	297.9	0.0	0.0

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number:OAA718326\_C4\_09

5/21/2019 4:12:30 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

25 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

105.00	43.1	174.2					0.0	91.7	43.1	265.9	0.0	0.0	
107.50	42.2	170.5					0.0	91.7	42.2	262.2	0.0	0.0	
110.00	41.4	166.8					0.0	91.7	41.4	258.5	0.0	0.0	
112.50	40.6	163.1					0.0	91.7	40.6	254.8	0.0	0.0	
115.00	39.7	159.4					0.0	91.7	39.7	251.1	0.0	0.0	
117.50	38.9	155.7					0.0	91.7	38.9	247.4	0.0	0.0	
120.00	Appurtenance(s)	19.2	152.0	446.3	0.0	332.3	5,399.3	0.0	91.7	465.5	5,642.9	0.0	0.0
Totals:									5,260.42	44,545.7	0.00	0.00	

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

25 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.08	-6.25	0.00	-547.62	0.00	547.62	1,590.66	434.43	1,260.13	996.98	0.00	0.00	0.175
2.50	-50.22	-6.19	0.00	-532.01	0.00	532.01	1,581.24	429.31	1,230.60	979.29	0.01	-0.04	0.171
5.00	-49.34	-6.14	0.00	-516.53	0.00	516.53	1,571.59	424.18	1,201.42	961.61	0.04	-0.08	0.167
7.50	-48.42	-6.09	0.00	-501.18	0.00	501.18	1,561.72	419.06	1,172.59	943.94	0.09	-0.11	0.163
10.00	-47.38	-6.03	0.00	-485.97	0.00	485.97	1,551.63	413.94	1,144.11	926.28	0.16	-0.15	0.159
12.50	-46.33	-5.97	0.00	-470.89	0.00	470.89	1,541.32	408.82	1,115.98	908.64	0.25	-0.19	0.155
15.00	-45.29	-5.94	0.00	-455.95	0.00	455.95	1,530.78	403.70	1,088.20	891.03	0.36	-0.22	0.152
15.48	-45.09	-5.91	0.00	-453.11	0.00	453.11	1,528.74	402.71	1,082.91	887.65	0.38	-0.23	0.151
15.48	-45.09	-5.91	0.00	-453.11	0.00	453.11	1,528.74	402.71	1,082.91	887.65	0.38	-0.23	0.237
17.50	-44.41	-5.87	0.00	-441.16	0.00	441.16	1,520.02	398.57	1,060.77	873.44	0.49	-0.26	0.232
20.00	-43.57	-5.83	0.00	-426.49	0.00	426.49	1,509.04	393.45	1,033.69	855.89	0.64	-0.32	0.227
22.50	-42.73	-5.79	0.00	-411.92	0.00	411.92	1,497.83	388.33	1,006.96	838.37	0.82	-0.38	0.222
25.00	-41.92	-5.75	0.00	-397.44	0.00	397.44	1,486.41	383.21	980.58	820.91	1.03	-0.43	0.216
27.50	-41.12	-5.71	0.00	-383.07	0.00	383.07	1,474.76	378.09	954.55	803.49	1.27	-0.49	0.211
30.00	-40.33	-5.67	0.00	-368.81	0.00	368.81	1,462.88	372.96	928.87	786.12	1.54	-0.54	0.205
32.50	-39.54	-5.62	0.00	-354.64	0.00	354.64	1,450.79	367.84	903.54	768.81	1.84	-0.60	0.199
35.00	-38.75	-5.58	0.00	-340.59	0.00	340.59	1,438.47	362.72	878.56	751.57	2.17	-0.65	0.194
37.50	-37.97	-5.54	0.00	-326.65	0.00	326.65	1,425.93	357.60	853.93	734.39	2.53	-0.71	0.188
37.58	-37.94	-5.53	0.00	-326.19	0.00	326.19	1,425.51	357.43	853.11	733.82	2.54	-0.71	0.188
40.00	-37.01	-5.48	0.00	-312.84	0.00	312.84	1,413.16	352.48	829.65	717.29	2.92	-0.76	0.179
42.00	-36.24	-5.44	0.00	-301.88	0.00	301.88	1,175.20	310.63	736.31	601.57	3.24	-0.80	0.195
42.50	-36.09	-5.41	0.00	-299.16	0.00	299.16	1,173.35	309.73	732.07	598.87	3.33	-0.81	0.193
45.00	-35.34	-5.36	0.00	-285.63	0.00	285.63	1,163.96	305.25	711.04	585.40	3.77	-0.87	0.186
47.50	-34.59	-5.29	0.00	-272.24	0.00	272.24	1,154.34	300.77	690.32	571.97	4.24	-0.92	0.180
50.00	-33.84	-5.22	0.00	-259.01	0.00	259.01	1,144.49	296.28	669.91	558.56	4.73	-0.97	0.173
52.50	-33.10	-5.15	0.00	-245.95	0.00	245.95	1,134.43	291.80	649.80	545.20	5.25	-1.02	0.166
55.00	-32.37	-5.08	0.00	-233.06	0.00	233.06	1,124.14	287.32	630.00	531.88	5.80	-1.07	0.159
57.50	-31.64	-5.00	0.00	-220.37	0.00	220.37	1,113.63	282.84	610.51	518.62	6.37	-1.11	0.152
60.00	-30.91	-4.92	0.00	-207.86	0.00	207.86	1,102.90	278.36	591.32	505.40	6.97	-1.16	0.145
62.50	-30.19	-4.84	0.00	-195.55	0.00	195.55	1,091.95	273.87	572.44	492.25	7.59	-1.21	0.138
65.00	-29.47	-4.76	0.00	-183.45	0.00	183.45	1,080.77	269.39	553.86	479.16	8.23	-1.25	0.132
67.50	-28.76	-4.67	0.00	-171.55	0.00	171.55	1,069.37	264.91	535.59	466.14	8.90	-1.29	0.125
70.00	-28.05	-4.58	0.00	-159.88	0.00	159.88	1,057.74	260.43	517.63	453.19	9.58	-1.33	0.118
72.50	-27.34	-4.49	0.00	-148.42	0.00	148.42	1,045.90	255.95	499.97	440.33	10.29	-1.37	0.111
75.00	-26.64	-4.41	0.00	-137.18	0.00	137.18	1,033.83	251.47	482.62	427.54	11.02	-1.41	0.104
76.17	-26.32	-4.37	0.00	-132.03	0.00	132.03	1,028.12	249.37	474.63	421.61	11.37	-1.43	0.101
77.50	-25.88	-4.31	0.00	-126.21	0.00	126.21	1,021.54	246.98	465.58	414.85	11.77	-1.45	0.096
79.50	-25.22	-4.25	0.00	-117.59	0.00	117.59	1,011.55	243.40	452.16	404.77	12.38	-1.47	0.090
79.50	-25.22	-4.25	0.00	-117.59	0.00	117.59	1,011.55	243.40	452.16	404.77	12.38	-1.47	0.090
80.00	-25.06	-4.21	0.00	-115.46	0.00	115.46	828.38	212.16	400.77	337.67	12.53	-1.48	0.099
82.50	-24.38	-4.11	0.00	-104.95	0.00	104.95	819.42	208.32	386.39	327.92	13.32	-1.51	0.091
85.00	-23.72	-4.01	0.00	-94.67	0.00	94.67	810.23	204.48	372.28	318.20	14.12	-1.54	0.084
87.50	-23.05	-3.91	0.00	-84.64	0.00	84.64	800.82	200.64	358.43	308.54	14.93	-1.57	0.076
90.00	-16.37	-2.75	0.00	-74.19	0.00	74.19	791.19	196.80	344.84	298.94	15.76	-1.59	0.066
92.50	-15.79	-2.65	0.00	-67.31	0.00	67.31	781.34	192.96	331.51	289.40	16.60	-1.62	0.060
95.00	-15.21	-2.55	0.00	-60.68	0.00	60.68	771.27	189.11	318.45	279.92	17.45	-1.64	0.055
97.44	-14.66	-2.48	0.00	-54.46	0.00	54.46	761.23	185.37	305.96	270.75	18.30	-1.66	0.051
97.44	-14.66	-2.48	0.00	-54.46	0.00	54.46	761.23	185.37	305.96	270.75	18.30	-1.66	0.221
97.50	-14.65	-2.46	0.00	-54.30	0.00	54.30	760.97	185.27	305.65	270.51	18.32	-1.66	0.220
100.00	-13.96	-2.23	0.00	-48.02	0.00	48.02	750.45	181.43	293.11	261.18	19.21	-1.75	0.203
102.50	-13.66	-2.17	0.00	-42.44	0.00	42.44	739.70	177.59	280.83	251.93	20.15	-1.83	0.187

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:31 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

25 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

105.00	-13.39	-2.14	0.00	-37.02	0.00	37.02	728.74	173.75	268.82	242.77	21.13	-1.91	0.171
107.50	-13.13	-2.10	0.00	-31.67	0.00	31.67	713.61	169.91	257.07	232.42	22.15	-1.98	0.155
110.00	-12.87	-2.06	0.00	-26.42	0.00	26.42	697.47	166.07	245.58	221.97	23.21	-2.05	0.138
112.50	-12.61	-2.03	0.00	-21.26	0.00	21.26	681.34	162.22	234.35	211.76	24.30	-2.10	0.119
115.00	-12.36	-1.99	0.00	-16.19	0.00	16.19	665.20	158.38	223.39	201.79	25.41	-2.15	0.099
117.50	-12.12	-1.95	0.00	-11.23	0.00	11.23	649.07	154.54	212.69	192.06	26.55	-2.19	0.077
120.00	0.00	-1.48	0.00	-6.36	0.00	6.36	632.94	150.70	202.25	182.57	27.70	-2.22	0.035

<b>Load Case: 1.0D + 1.0W</b>	<b>Serviceability 60 mph</b>	<b>25 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		56.1	0.0					0.0	0.0	56.1	0.0	0.0	0.0
2.50		110.6	209.3					28.1	364.3	138.7	573.7	0.0	0.0
5.00		107.5	206.9					27.7	364.3	135.2	571.2	0.0	0.0
7.50		104.6	204.4					29.2	382.4	133.8	586.7	0.0	0.0
10.00		101.7	201.9					28.8	454.5	130.5	656.4	0.0	0.0
12.50		99.0	199.4					28.4	454.5	127.4	654.0	0.0	0.0
15.00		58.0	196.9					28.0	454.5	86.0	651.5	0.0	0.0
15.48	Reinf. Top	47.5	37.5					5.3	87.1	52.8	124.6	0.0	0.0
17.50		84.5	157.0					22.3	232.4	106.8	389.4	0.0	0.0
20.00		91.2	192.0					27.2	287.5	118.5	479.5	0.0	0.0
22.50		88.8	189.5					26.9	287.5	115.7	477.0	0.0	0.0
25.00		86.4	187.0					26.5	287.5	113.0	474.5	0.0	0.0
27.50		84.1	184.5					26.2	287.5	110.3	472.1	0.0	0.0
30.00		82.4	182.0					25.9	287.5	108.3	469.6	0.0	0.0
32.50		81.6	179.5					25.9	287.5	107.5	467.1	0.0	0.0
35.00		81.2	177.1					26.2	287.5	107.3	464.6	0.0	0.0
37.50		41.8	174.6					26.4	287.5	68.2	462.1	0.0	0.0
37.58	Bot - Section 2	40.8	5.8					0.9	9.6	41.7	15.4	0.0	0.0
40.00		71.9	314.6					25.7	278.0	97.6	592.5	0.0	0.0
42.00	Top - Section 1	40.5	257.0					21.4	230.0	61.9	487.1	0.0	0.0
42.50		48.2	30.1					5.4	57.5	53.6	87.6	0.0	0.0
45.00		79.8	149.0					26.9	287.5	106.7	436.6	0.0	0.0
47.50		79.0	146.9					27.0	287.5	106.0	434.4	0.0	0.0
50.00		78.1	144.7					27.1	287.5	105.2	432.3	0.0	0.0
52.50		77.1	142.5					27.3	287.5	104.4	430.1	0.0	0.0
55.00		76.1	140.4					27.4	287.5	103.4	427.9	0.0	0.0
57.50		75.1	138.2					27.4	287.5	102.5	425.7	0.0	0.0
60.00		74.0	136.0					27.5	287.5	101.5	423.6	0.0	0.0
62.50		72.9	133.8					27.6	287.5	100.5	421.4	0.0	0.0
65.00		71.8	131.7					27.6	287.5	99.5	419.2	0.0	0.0
67.50		70.7	129.5					27.7	287.5	98.4	417.0	0.0	0.0
70.00		69.6	127.3					27.7	287.5	97.3	414.9	0.0	0.0
72.50		68.4	125.2					27.8	287.5	96.2	412.7	0.0	0.0
75.00		49.5	123.0					27.8	287.5	77.4	410.5	0.0	0.0
76.17	Bot - Section 3	33.7	56.6					13.0	134.2	46.6	190.8	0.0	0.0
77.50		44.8	120.3					14.9	153.4	59.6	273.6	0.0	0.0
79.50	Reinf. Top Reinf	33.4	178.2					22.3	230.0	55.6	408.3	0.0	0.0
80.00	Top - Section 2	39.4	44.2					5.6	57.5	45.0	101.7	0.0	0.0
82.50		64.9	101.9					27.9	287.6	92.8	389.5	0.0	0.0
85.00		63.8	100.0					27.9	287.5	91.6	387.6	0.0	0.0
87.50		62.6	98.2					27.9	287.5	90.5	385.7	0.0	0.0
90.00	Appurtenance(s)	61.4	96.3	1,036.5	0.0	812.2	1,812.7	27.9	287.5	1,125.8	2,196.6	0.0	0.0
92.50		60.2	94.5					27.9	255.7	88.1	350.2	0.0	0.0
95.00		58.2	92.6					28.0	255.7	86.2	348.3	0.0	0.0
97.44	Reinf. Top	29.2	88.5					27.3	249.3	56.5	337.8	0.0	0.0
97.50		29.3	2.2					0.7	2.2	30.0	4.5	0.0	0.0
100.00	Appurtenance(s)	56.6	88.9	162.4	0.0	162.4	70.4	28.0	88.7	247.0	248.0	0.0	0.0
102.50		49.6	87.0					25.2	76.4	74.9	163.4	0.0	0.0



Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

105.00	42.9	85.2					0.0	76.4	42.9	161.6	0.0	0.0	
107.50	41.9	83.3					0.0	76.4	41.9	159.7	0.0	0.0	
110.00	41.0	81.4					0.0	76.4	41.0	157.9	0.0	0.0	
112.50	40.0	79.6					0.0	76.4	40.0	156.0	0.0	0.0	
115.00	39.1	77.7					0.0	76.4	39.1	154.1	0.0	0.0	
117.50	38.1	75.8					0.0	76.4	38.1	152.3	0.0	0.0	
120.00	Appurtenance(s)	18.8	74.0	408.2	0.0	394.7	2,014.0	0.0	76.4	427.0	2,164.4	0.0	0.0
								Totals:	6,230.03	23,554.7	0.00	0.00	

<b>Load Case: 1.0D + 1.0W</b>	<b>Serviceability 60 mph</b>	<b>25 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.00		
Wind Load Factor :1.00		

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-25.28	-7.37	0.00	-570.05	0.00	570.05	1,590.66	434.43	1,260.13	996.98	0.00	0.00	0.175
2.50	-24.71	-7.25	0.00	-551.62	0.00	551.62	1,581.24	429.31	1,230.60	979.29	0.01	-0.04	0.171
5.00	-24.13	-7.13	0.00	-533.49	0.00	533.49	1,571.59	424.18	1,201.42	961.61	0.04	-0.08	0.166
7.50	-23.54	-7.01	0.00	-515.67	0.00	515.67	1,561.72	419.06	1,172.59	943.94	0.09	-0.12	0.162
10.00	-22.88	-6.90	0.00	-498.14	0.00	498.14	1,551.63	413.94	1,144.11	926.28	0.17	-0.16	0.157
12.50	-22.22	-6.78	0.00	-480.90	0.00	480.90	1,541.32	408.82	1,115.98	908.64	0.26	-0.19	0.153
15.00	-21.57	-6.70	0.00	-463.95	0.00	463.95	1,530.78	403.70	1,088.20	891.03	0.37	-0.23	0.148
15.48	-21.44	-6.65	0.00	-460.74	0.00	460.74	1,528.74	402.71	1,082.91	887.65	0.39	-0.24	0.148
15.48	-21.44	-6.65	0.00	-460.74	0.00	460.74	1,528.74	402.71	1,082.91	887.65	0.39	-0.24	0.232
17.50	-21.05	-6.56	0.00	-447.29	0.00	447.29	1,520.02	398.57	1,060.77	873.44	0.50	-0.27	0.227
20.00	-20.56	-6.46	0.00	-430.89	0.00	430.89	1,509.04	393.45	1,033.69	855.89	0.66	-0.33	0.221
22.50	-20.08	-6.36	0.00	-414.74	0.00	414.74	1,497.83	388.33	1,006.96	838.37	0.84	-0.38	0.215
25.00	-19.60	-6.27	0.00	-398.83	0.00	398.83	1,486.41	383.21	980.58	820.91	1.06	-0.44	0.209
27.50	-19.12	-6.17	0.00	-383.16	0.00	383.16	1,474.76	378.09	954.55	803.49	1.31	-0.50	0.203
30.00	-18.65	-6.08	0.00	-367.74	0.00	367.74	1,462.88	372.96	928.87	786.12	1.58	-0.55	0.197
32.50	-18.17	-5.98	0.00	-352.55	0.00	352.55	1,450.79	367.84	903.54	768.81	1.89	-0.61	0.191
35.00	-17.71	-5.88	0.00	-337.60	0.00	337.60	1,438.47	362.72	878.56	751.57	2.22	-0.66	0.185
37.50	-17.24	-5.82	0.00	-322.89	0.00	322.89	1,425.93	357.60	853.93	734.39	2.58	-0.72	0.179
37.58	-17.22	-5.79	0.00	-322.40	0.00	322.40	1,425.51	357.43	853.11	733.82	2.59	-0.72	0.178
40.00	-16.63	-5.69	0.00	-308.42	0.00	308.42	1,413.16	352.48	829.65	717.29	2.97	-0.77	0.170
42.00	-16.14	-5.63	0.00	-297.03	0.00	297.03	1,175.20	310.63	736.31	601.57	3.30	-0.81	0.184
42.50	-16.05	-5.59	0.00	-294.22	0.00	294.22	1,173.35	309.73	732.07	598.87	3.39	-0.82	0.182
45.00	-15.61	-5.49	0.00	-280.25	0.00	280.25	1,163.96	305.25	711.04	585.40	3.83	-0.87	0.175
47.50	-15.17	-5.39	0.00	-266.54	0.00	266.54	1,154.34	300.77	690.32	571.97	4.30	-0.92	0.168
50.00	-14.74	-5.29	0.00	-253.07	0.00	253.07	1,144.49	296.28	669.91	558.56	4.80	-0.97	0.161
52.50	-14.30	-5.19	0.00	-239.85	0.00	239.85	1,134.43	291.80	649.80	545.20	5.32	-1.02	0.155
55.00	-13.87	-5.09	0.00	-226.88	0.00	226.88	1,124.14	287.32	630.00	531.88	5.86	-1.07	0.148
57.50	-13.45	-4.99	0.00	-214.16	0.00	214.16	1,113.63	282.84	610.51	518.62	6.44	-1.11	0.141
60.00	-13.02	-4.89	0.00	-201.69	0.00	201.69	1,102.90	278.36	591.32	505.40	7.03	-1.16	0.134
62.50	-12.60	-4.79	0.00	-189.47	0.00	189.47	1,091.95	273.87	572.44	492.25	7.65	-1.20	0.127
65.00	-12.18	-4.69	0.00	-177.50	0.00	177.50	1,080.77	269.39	553.86	479.16	8.29	-1.24	0.121
67.50	-11.76	-4.59	0.00	-165.78	0.00	165.78	1,069.37	264.91	535.59	466.14	8.95	-1.29	0.114
70.00	-11.34	-4.49	0.00	-154.30	0.00	154.30	1,057.74	260.43	517.63	453.19	9.64	-1.32	0.107
72.50	-10.93	-4.39	0.00	-143.08	0.00	143.08	1,045.90	255.95	499.97	440.33	10.34	-1.36	0.101
75.00	-10.52	-4.31	0.00	-132.10	0.00	132.10	1,033.83	251.47	482.62	427.54	11.07	-1.40	0.094
76.17	-10.33	-4.26	0.00	-127.07	0.00	127.07	1,028.12	249.37	474.63	421.61	11.41	-1.41	0.091
77.50	-10.06	-4.20	0.00	-121.39	0.00	121.39	1,021.54	246.98	465.58	414.85	11.81	-1.43	0.086
79.50	-9.65	-4.14	0.00	-112.99	0.00	112.99	1,011.55	243.40	452.16	404.77	12.41	-1.46	0.081
79.50	-9.65	-4.14	0.00	-112.99	0.00	112.99	1,011.55	243.40	452.16	404.77	12.41	-1.46	0.081
80.00	-9.55	-4.09	0.00	-110.92	0.00	110.92	828.38	212.16	400.77	337.67	12.57	-1.47	0.088
82.50	-9.16	-3.99	0.00	-100.69	0.00	100.69	819.42	208.32	386.39	327.92	13.34	-1.50	0.081
85.00	-8.77	-3.90	0.00	-90.71	0.00	90.71	810.23	204.48	372.28	318.20	14.13	-1.52	0.074
87.50	-8.39	-3.80	0.00	-80.97	0.00	80.97	800.82	200.64	358.43	308.54	14.94	-1.55	0.067
90.00	-6.22	-2.62	0.00	-70.66	0.00	70.66	791.19	196.80	344.84	298.94	15.76	-1.58	0.058
92.50	-5.87	-2.52	0.00	-64.12	0.00	64.12	781.34	192.96	331.51	289.40	16.59	-1.60	0.053
95.00	-5.52	-2.43	0.00	-57.82	0.00	57.82	771.27	189.11	318.45	279.92	17.44	-1.62	0.049
97.44	-5.19	-2.36	0.00	-51.91	0.00	51.91	761.23	185.37	305.96	270.75	18.27	-1.64	0.044
97.44	-5.19	-2.36	0.00	-51.91	0.00	51.91	761.23	185.37	305.96	270.75	18.27	-1.64	0.199
97.50	-5.18	-2.33	0.00	-51.76	0.00	51.76	760.97	185.27	305.65	270.51	18.29	-1.64	0.198
100.00	-4.94	-2.09	0.00	-45.76	0.00	45.76	750.45	181.43	293.11	261.18	19.17	-1.72	0.182
102.50	-4.78	-2.01	0.00	-40.54	0.00	40.54	739.70	177.59	280.83	251.93	20.10	-1.80	0.168

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

Load Case: 1.0D + 1.0W

Serviceability 60 mph

25 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

105.00	-4.61	-1.97	0.00	-35.51	0.00	35.51	728.74	173.75	268.82	242.77	21.06	-1.88	0.153
107.50	-4.45	-1.93	0.00	-30.58	0.00	30.58	713.61	169.91	257.07	232.42	22.06	-1.95	0.138
110.00	-4.29	-1.89	0.00	-25.75	0.00	25.75	697.47	166.07	245.58	221.97	23.10	-2.01	0.122
112.50	-4.14	-1.85	0.00	-21.03	0.00	21.03	681.34	162.22	234.35	211.76	24.17	-2.07	0.106
115.00	-3.98	-1.81	0.00	-16.41	0.00	16.41	665.20	158.38	223.39	201.79	25.26	-2.11	0.087
117.50	-3.83	-1.76	0.00	-11.90	0.00	11.90	649.07	154.54	212.69	192.06	26.38	-2.15	0.068
120.00	0.00	-1.62	0.00	-7.49	0.00	7.49	632.94	150.70	202.25	182.57	27.52	-2.18	0.041

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.05
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.09
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.22
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.86
Total Unfactored Dead Load:	25.29 k
Seismic Base Shear (E):	0.99 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
54	118.75	150	1,097	0.015	15	187
53	116.25	152	1,068	0.014	14	189
52	113.75	154	1,038	0.014	14	191
51	111.25	156	1,008	0.014	13	193
50	108.75	158	978	0.013	13	196
49	106.25	160	947	0.013	13	198
48	103.75	162	917	0.012	12	200
47	101.25	163	886	0.012	12	203
46	98.75	178	919	0.012	12	220
45	97.47	4	23	0.000	0	6
44	96.22	338	1,666	0.022	22	419
43	93.75	348	1,636	0.022	22	432
42	91.25	350	1,564	0.021	21	434
41	88.75	384	1,628	0.022	22	476
40	86.25	386	1,551	0.021	21	478
39	83.75	388	1,476	0.020	20	481
38	81.25	389	1,402	0.019	19	483
37	79.75	102	353	0.005	5	126
36	78.50	408	1,378	0.019	18	506
35	76.83	274	887	0.012	12	339
34	75.58	191	600	0.008	8	237
33	73.75	411	1,234	0.017	16	509
32	71.25	413	1,163	0.016	15	512
31	68.75	415	1,094	0.015	15	515
30	66.25	417	1,026	0.014	14	517

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

29	63.75	419	960	0.013	13	520
28	61.25	421	896	0.012	12	523
27	58.75	424	833	0.011	11	525
26	56.25	426	773	0.010	10	528
25	53.75	428	713	0.010	9	531
24	51.25	430	656	0.009	9	533
23	48.75	432	601	0.008	8	536
22	46.25	434	548	0.007	7	539
21	43.75	437	496	0.007	7	542
20	42.25	88	93	0.001	1	109
19	41.00	487	491	0.007	7	604
18	38.79	593	538	0.007	7	735
17	37.54	15	13	0.000	0	19
16	36.25	462	370	0.005	5	573
15	33.75	465	326	0.004	4	576
14	31.25	467	284	0.004	4	579
13	28.75	470	244	0.003	3	582
12	26.25	472	207	0.003	3	586
11	23.75	475	173	0.002	2	589
10	21.25	477	141	0.002	2	592
9	18.75	480	113	0.002	1	595
8	16.49	389	72	0.001	1	483
7	15.24	125	20	0.000	0	155
6	13.75	651	86	0.001	1	808
5	11.25	654	59	0.001	1	811
4	8.75	656	37	0.001	0	814
3	6.25	587	18	0.000	0	728
2	3.75	571	7	0.000	0	708
1	1.25	574	1	0.000	0	712
CCI TPX-070821	124.00	45	356	0.005	5	56
Powerwave Allgon LGP	124.00	85	669	0.009	9	105
Raycap DC6-48-60-18-	124.00	40	316	0.004	4	50
Ericsson RRUS A2	124.00	45	356	0.005	5	56
Ericsson RRUS 4478 B	124.00	180	1,421	0.019	19	223
Ericsson RRUS-11 190	124.00	132	1,044	0.014	14	164
Ericsson RRUS 32 (50	124.00	152	1,205	0.016	16	189
Ericsson RRUS 32 B2	124.00	159	1,257	0.017	17	197
Powerwave Allgon 777	124.00	105	830	0.011	11	130
KMW AM-X-CD-16-65-00	124.00	49	383	0.005	5	60
Quintel QS66512-3 (1	124.00	112	886	0.012	12	139
Andrew SBNH-1D6565C	124.00	122	962	0.013	13	151
CCI TPA-65R-LCUUUU-H	124.00	163	1,290	0.017	17	202
Kathrein Scala 80010	124.00	344	2,718	0.037	36	426
Generic 2' Std. Dish	120.00	14	104	0.001	1	17
Platform w/ Handrail	120.00	2,000	14,878	0.200	198	2,481
Kathrein Scala 742 2	100.00	44	233	0.003	3	55
RFS APXV18-206517S-C	100.00	26	140	0.002	2	33
DragonWave Horizon C	90.00	42	185	0.002	2	53
Alcatel-Lucent RRH2x	90.00	317	1,382	0.019	18	394
Alcatel-Lucent 1900	90.00	180	784	0.011	10	223
Nokia 2.5G MAA - AAH	90.00	311	1,353	0.018	18	385
DragonWave A-ANT-18G	90.00	27	118	0.002	2	34
Side Arm	90.00	560	2,438	0.033	32	695
DragonWave A-ANT-11G	90.00	143	622	0.008	8	177
Commscope NNVV-65B-R	90.00	232	1,011	0.014	13	288
		25,287	74,249	1.000	986	31,363

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
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Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

54	118.75	150	1,097	0.015	15	129
53	116.25	152	1,068	0.014	14	131
52	113.75	154	1,038	0.014	14	133
51	111.25	156	1,008	0.014	13	134
50	108.75	158	978	0.013	13	136
49	106.25	160	947	0.013	13	137
48	103.75	162	917	0.012	12	139
47	101.25	163	886	0.012	12	141
46	98.75	178	919	0.012	12	153
45	97.47	4	23	0.000	0	4
44	96.22	338	1,666	0.022	22	290
43	93.75	348	1,636	0.022	22	299
42	91.25	350	1,564	0.021	21	301
41	88.75	384	1,628	0.022	22	330
40	86.25	386	1,551	0.021	21	332
39	83.75	388	1,476	0.020	20	333
38	81.25	389	1,402	0.019	19	335
37	79.75	102	353	0.005	5	87
36	78.50	408	1,378	0.019	18	351
35	76.83	274	887	0.012	12	235
34	75.58	191	600	0.008	8	164
33	73.75	411	1,234	0.017	16	353
32	71.25	413	1,163	0.016	15	355
31	68.75	415	1,094	0.015	15	357
30	66.25	417	1,026	0.014	14	359
29	63.75	419	960	0.013	13	360
28	61.25	421	896	0.012	12	362
27	58.75	424	833	0.011	11	364
26	56.25	426	773	0.010	10	366
25	53.75	428	713	0.010	9	368
24	51.25	430	656	0.009	9	370
23	48.75	432	601	0.008	8	372
22	46.25	434	548	0.007	7	373
21	43.75	437	496	0.007	7	375
20	42.25	88	93	0.001	1	75
19	41.00	487	491	0.007	7	419
18	38.79	593	538	0.007	7	509
17	37.54	15	13	0.000	0	13
16	36.25	462	370	0.005	5	397
15	33.75	465	326	0.004	4	399
14	31.25	467	284	0.004	4	402
13	28.75	470	244	0.003	3	404
12	26.25	472	207	0.003	3	406
11	23.75	475	173	0.002	2	408
10	21.25	477	141	0.002	2	410
9	18.75	480	113	0.002	1	412
8	16.49	389	72	0.001	1	335
7	15.24	125	20	0.000	0	107
6	13.75	651	86	0.001	1	560
5	11.25	654	59	0.001	1	562
4	8.75	656	37	0.001	0	564
3	6.25	587	18	0.000	0	504
2	3.75	571	7	0.000	0	491
1	1.25	574	1	0.000	0	493
CCI TPX-070821	124.00	45	356	0.005	5	39
Powerwave Allgon LGP	124.00	85	669	0.009	9	73
Raycap DC6-48-60-18-	124.00	40	316	0.004	4	34
Ericsson RRUS A2	124.00	45	356	0.005	5	39
Ericsson RRUS 4478 B	124.00	180	1,421	0.019	19	154
Ericsson RRUS-11 190	124.00	132	1,044	0.014	14	113
Ericsson RRUS 32 (50	124.00	152	1,205	0.016	16	131
Ericsson RRUS 32 B2	124.00	159	1,257	0.017	17	137
Powerwave Allgon 777	124.00	105	830	0.011	11	90
KMW AM-X-CD-16-65-00	124.00	49	383	0.005	5	42

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Quintel QS66512-3 (1	124.00	112	886	0.012	12	96
Andrew SBNH-1D6565C	124.00	122	962	0.013	13	105
CCI TPA-65R-LCUUUU-H	124.00	163	1,290	0.017	17	140
Kathrein Scala 80010	124.00	344	2,718	0.037	36	296
Generic 2' Std. Dish	120.00	14	104	0.001	1	12
Platform w/ Handrail	120.00	2,000	14,878	0.200	198	1,719
Kathrein Scala 742 2	100.00	44	233	0.003	3	38
RFS APXV18-206517S-C	100.00	26	140	0.002	2	23
DragonWave Horizon C	90.00	42	185	0.002	2	36
Alcatel-Lucent RRH2x	90.00	317	1,382	0.019	18	273
Alcatel-Lucent 1900	90.00	180	784	0.011	10	155
Nokia 2.5G MAA - AAH	90.00	311	1,353	0.018	18	267
DragonWave A-ANT-18G	90.00	27	118	0.002	2	23
Side Arm	90.00	560	2,438	0.033	32	481
DragonWave A-ANT-11G	90.00	143	622	0.008	8	123
Commscope NNVV-65B-R	90.00	232	1,011	0.014	13	200
		25,287	74,249	1.000	986	21,738

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-28.50	-0.80	0.00	-75.53	0.00	75.53	1,590.66	434.43	1,260.13	996.98	0.00	0.00	0.029
2.50	-27.80	-0.81	0.00	-73.52	0.00	73.52	1,581.24	429.31	1,230.60	979.29	0.00	-0.01	0.029
5.00	-27.07	-0.81	0.00	-71.50	0.00	71.50	1,571.59	424.18	1,201.42	961.61	0.01	-0.01	0.028
7.50	-26.25	-0.81	0.00	-69.48	0.00	69.48	1,561.72	419.06	1,172.59	943.94	0.01	-0.02	0.027
10.00	-25.44	-0.81	0.00	-67.45	0.00	67.45	1,551.63	413.94	1,144.11	926.28	0.02	-0.02	0.027
12.50	-24.63	-0.81	0.00	-65.42	0.00	65.42	1,541.32	408.82	1,115.98	908.64	0.03	-0.03	0.026
15.00	-24.48	-0.81	0.00	-63.39	0.00	63.39	1,530.78	403.70	1,088.20	891.03	0.05	-0.03	0.025
15.48	-24.00	-0.81	0.00	-63.00	0.00	63.00	1,528.74	402.71	1,082.91	887.65	0.05	-0.03	0.025
15.48	-24.00	-0.81	0.00	-63.00	0.00	63.00	1,528.74	402.71	1,082.91	887.65	0.05	-0.03	0.039
17.50	-23.40	-0.81	0.00	-61.36	0.00	61.36	1,520.02	398.57	1,060.77	873.44	0.07	-0.04	0.038
20.00	-22.81	-0.82	0.00	-59.32	0.00	59.32	1,509.04	393.45	1,033.69	855.89	0.09	-0.04	0.037
22.50	-22.22	-0.82	0.00	-57.29	0.00	57.29	1,497.83	388.33	1,006.96	838.37	0.11	-0.05	0.037
25.00	-21.64	-0.81	0.00	-55.25	0.00	55.25	1,486.41	383.21	980.58	820.91	0.14	-0.06	0.036
27.50	-21.05	-0.81	0.00	-53.21	0.00	53.21	1,474.76	378.09	954.55	803.49	0.18	-0.07	0.035
30.00	-20.47	-0.81	0.00	-51.18	0.00	51.18	1,462.88	372.96	928.87	786.12	0.21	-0.08	0.034
32.50	-19.90	-0.81	0.00	-49.15	0.00	49.15	1,450.79	367.84	903.54	768.81	0.26	-0.08	0.033
35.00	-19.32	-0.81	0.00	-47.12	0.00	47.12	1,438.47	362.72	878.56	751.57	0.30	-0.09	0.032
37.50	-19.30	-0.81	0.00	-45.10	0.00	45.10	1,425.93	357.60	853.93	734.39	0.35	-0.10	0.031
37.58	-18.57	-0.80	0.00	-45.04	0.00	45.04	1,425.51	357.43	853.11	733.82	0.35	-0.10	0.031
40.00	-17.97	-0.79	0.00	-43.10	0.00	43.10	1,413.16	352.48	829.65	717.29	0.40	-0.11	0.029
42.00	-17.86	-0.79	0.00	-41.51	0.00	41.51	1,175.20	310.63	736.31	601.57	0.45	-0.11	0.032
42.50	-17.32	-0.79	0.00	-41.12	0.00	41.12	1,173.35	309.73	732.07	598.87	0.46	-0.11	0.032
45.00	-16.78	-0.78	0.00	-39.15	0.00	39.15	1,163.96	305.25	711.04	585.40	0.52	-0.12	0.030
47.50	-16.24	-0.77	0.00	-37.19	0.00	37.19	1,154.34	300.77	690.32	571.97	0.59	-0.13	0.029
50.00	-15.71	-0.77	0.00	-35.26	0.00	35.26	1,144.49	296.28	669.91	558.56	0.66	-0.13	0.028
52.50	-15.18	-0.76	0.00	-33.34	0.00	33.34	1,134.43	291.80	649.80	545.20	0.73	-0.14	0.027
55.00	-14.65	-0.75	0.00	-31.45	0.00	31.45	1,124.14	287.32	630.00	531.88	0.80	-0.15	0.026
57.50	-14.12	-0.74	0.00	-29.58	0.00	29.58	1,113.63	282.84	610.51	518.62	0.88	-0.15	0.024
60.00	-13.60	-0.72	0.00	-27.73	0.00	27.73	1,102.90	278.36	591.32	505.40	0.96	-0.16	0.023
62.50	-13.08	-0.71	0.00	-25.92	0.00	25.92	1,091.95	273.87	572.44	492.25	1.05	-0.17	0.022
65.00	-12.56	-0.70	0.00	-24.14	0.00	24.14	1,080.77	269.39	553.86	479.16	1.14	-0.17	0.021
67.50	-12.05	-0.68	0.00	-22.40	0.00	22.40	1,069.37	264.91	535.59	466.14	1.23	-0.18	0.020
70.00	-11.54	-0.67	0.00	-20.69	0.00	20.69	1,057.74	260.43	517.63	453.19	1.32	-0.18	0.018
72.50	-11.03	-0.65	0.00	-19.02	0.00	19.02	1,045.90	255.95	499.97	440.33	1.42	-0.19	0.017
75.00	-10.79	-0.64	0.00	-17.39	0.00	17.39	1,033.83	251.47	482.62	427.54	1.52	-0.19	0.016
76.17	-10.45	-0.63	0.00	-16.64	0.00	16.64	1,028.12	249.37	474.63	421.61	1.57	-0.19	0.016
77.50	-9.94	-0.61	0.00	-15.81	0.00	15.81	1,021.54	246.98	465.58	414.85	1.62	-0.20	0.015
79.50	-9.82	-0.61	0.00	-14.59	0.00	14.59	1,011.55	243.40	452.16	404.77	1.71	-0.20	0.014
79.50	-9.82	-0.61	0.00	-14.59	0.00	14.59	1,011.55	243.40	452.16	404.77	1.71	-0.20	0.014
80.00	-9.34	-0.59	0.00	-14.28	0.00	14.28	828.38	212.16	400.77	337.67	1.73	-0.20	0.015
82.50	-8.85	-0.56	0.00	-12.82	0.00	12.82	819.42	208.32	386.39	327.92	1.83	-0.20	0.014
85.00	-8.38	-0.54	0.00	-11.41	0.00	11.41	810.23	204.48	372.28	318.20	1.94	-0.21	0.013
87.50	-7.90	-0.52	0.00	-10.05	0.00	10.05	800.82	200.64	358.43	308.54	2.05	-0.21	0.011
90.00	-5.22	-0.38	0.00	-8.75	0.00	8.75	791.19	196.80	344.84	298.94	2.16	-0.22	0.009
92.50	-4.79	-0.36	0.00	-7.79	0.00	7.79	781.34	192.96	331.51	289.40	2.28	-0.22	0.008
95.00	-4.37	-0.34	0.00	-6.88	0.00	6.88	771.27	189.11	318.45	279.92	2.39	-0.22	0.007
97.44	-4.36	-0.34	0.00	-6.06	0.00	6.06	761.23	185.37	305.96	270.75	2.51	-0.22	0.007
97.44	-4.36	-0.34	0.00	-6.06	0.00	6.06	761.23	185.37	305.96	270.75	2.51	-0.22	0.028
97.50	-4.14	-0.33	0.00	-6.04	0.00	6.04	760.97	185.27	305.65	270.51	2.51	-0.22	0.028
100.00	-3.85	-0.31	0.00	-5.22	0.00	5.22	750.45	181.43	293.11	261.18	2.63	-0.23	0.025
102.50	-3.65	-0.30	0.00	-4.45	0.00	4.45	739.70	177.59	280.83	251.93	2.75	-0.24	0.023
105.00	-3.45	-0.28	0.00	-3.71	0.00	3.71	728.74	173.75	268.82	242.77	2.88	-0.25	0.020
107.50	-3.26	-0.27	0.00	-3.01	0.00	3.01	713.61	169.91	257.07	232.42	3.01	-0.26	0.018
110.00	-3.06	-0.26	0.00	-2.33	0.00	2.33	697.47	166.07	245.58	221.97	3.15	-0.26	0.015
112.50	-2.87	-0.24	0.00	-1.70	0.00	1.70	681.34	162.22	234.35	211.76	3.29	-0.27	0.012
115.00	-2.68	-0.23	0.00	-1.09	0.00	1.09	665.20	158.38	223.39	201.79	3.43	-0.27	0.009



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Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

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Customer: CLEARWIRE

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117.50	-2.50	-0.21	0.00	-0.53	0.00	0.53	649.07	154.54	212.69	192.06	3.57	-0.27	0.007
120.00	0.00	-0.20	0.00	0.00	0.00	0.00	632.94	150.70	202.25	182.57	3.71	-0.27	0.000

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-19.76	-0.80	0.00	-74.59	0.00	74.59	1,590.66	434.43	1,260.13	996.98	0.00	0.00	0.027
2.50	-19.27	-0.81	0.00	-72.58	0.00	72.58	1,581.24	429.31	1,230.60	979.29	0.00	-0.01	0.026
5.00	-18.76	-0.81	0.00	-70.57	0.00	70.57	1,571.59	424.18	1,201.42	961.61	0.01	-0.01	0.026
7.50	-18.20	-0.81	0.00	-68.55	0.00	68.55	1,561.72	419.06	1,172.59	943.94	0.01	-0.02	0.025
10.00	-17.63	-0.81	0.00	-66.53	0.00	66.53	1,551.63	413.94	1,144.11	926.28	0.02	-0.02	0.024
12.50	-17.07	-0.81	0.00	-64.51	0.00	64.51	1,541.32	408.82	1,115.98	908.64	0.03	-0.03	0.024
15.00	-16.97	-0.81	0.00	-62.49	0.00	62.49	1,530.78	403.70	1,088.20	891.03	0.05	-0.03	0.023
15.48	-16.63	-0.81	0.00	-62.10	0.00	62.10	1,528.74	402.71	1,082.91	887.65	0.05	-0.03	0.023
15.48	-16.63	-0.81	0.00	-62.10	0.00	62.10	1,528.74	402.71	1,082.91	887.65	0.05	-0.03	0.036
17.50	-16.22	-0.81	0.00	-60.46	0.00	60.46	1,520.02	398.57	1,060.77	873.44	0.07	-0.04	0.035
20.00	-15.81	-0.81	0.00	-58.44	0.00	58.44	1,509.04	393.45	1,033.69	855.89	0.09	-0.04	0.035
22.50	-15.40	-0.81	0.00	-56.42	0.00	56.42	1,497.83	388.33	1,006.96	838.37	0.11	-0.05	0.034
25.00	-15.00	-0.81	0.00	-54.40	0.00	54.40	1,486.41	383.21	980.58	820.91	0.14	-0.06	0.033
27.50	-14.59	-0.81	0.00	-52.38	0.00	52.38	1,474.76	378.09	954.55	803.49	0.17	-0.07	0.032
30.00	-14.19	-0.80	0.00	-50.36	0.00	50.36	1,462.88	372.96	928.87	786.12	0.21	-0.07	0.031
32.50	-13.79	-0.80	0.00	-48.36	0.00	48.36	1,450.79	367.84	903.54	768.81	0.25	-0.08	0.030
35.00	-13.39	-0.80	0.00	-46.36	0.00	46.36	1,438.47	362.72	878.56	751.57	0.30	-0.09	0.029
37.50	-13.38	-0.80	0.00	-44.36	0.00	44.36	1,425.93	357.60	853.93	734.39	0.35	-0.10	0.028
37.58	-12.87	-0.79	0.00	-44.30	0.00	44.30	1,425.51	357.43	853.11	733.82	0.35	-0.10	0.028
40.00	-12.45	-0.78	0.00	-42.39	0.00	42.39	1,413.16	352.48	829.65	717.29	0.40	-0.10	0.027
42.00	-12.38	-0.78	0.00	-40.82	0.00	40.82	1,175.20	310.63	736.31	601.57	0.44	-0.11	0.029
42.50	-12.00	-0.78	0.00	-40.43	0.00	40.43	1,173.35	309.73	732.07	598.87	0.46	-0.11	0.029
45.00	-11.63	-0.77	0.00	-38.49	0.00	38.49	1,163.96	305.25	711.04	585.40	0.52	-0.12	0.028
47.50	-11.26	-0.76	0.00	-36.56	0.00	36.56	1,154.34	300.77	690.32	571.97	0.58	-0.13	0.027
50.00	-10.89	-0.75	0.00	-34.65	0.00	34.65	1,144.49	296.28	669.91	558.56	0.65	-0.13	0.026
52.50	-10.52	-0.75	0.00	-32.77	0.00	32.77	1,134.43	291.80	649.80	545.20	0.72	-0.14	0.025
55.00	-10.15	-0.74	0.00	-30.90	0.00	30.90	1,124.14	287.32	630.00	531.88	0.79	-0.14	0.023
57.50	-9.79	-0.72	0.00	-29.06	0.00	29.06	1,113.63	282.84	610.51	518.62	0.87	-0.15	0.022
60.00	-9.43	-0.71	0.00	-27.25	0.00	27.25	1,102.90	278.36	591.32	505.40	0.95	-0.16	0.021
62.50	-9.07	-0.70	0.00	-25.47	0.00	25.47	1,091.95	273.87	572.44	492.25	1.03	-0.16	0.020
65.00	-8.71	-0.69	0.00	-23.72	0.00	23.72	1,080.77	269.39	553.86	479.16	1.12	-0.17	0.019
67.50	-8.35	-0.67	0.00	-22.01	0.00	22.01	1,069.37	264.91	535.59	466.14	1.21	-0.17	0.018
70.00	-8.00	-0.66	0.00	-20.33	0.00	20.33	1,057.74	260.43	517.63	453.19	1.30	-0.18	0.017
72.50	-7.64	-0.64	0.00	-18.69	0.00	18.69	1,045.90	255.95	499.97	440.33	1.40	-0.18	0.016
75.00	-7.48	-0.63	0.00	-17.09	0.00	17.09	1,033.83	251.47	482.62	427.54	1.50	-0.19	0.015
76.17	-7.24	-0.62	0.00	-16.36	0.00	16.36	1,028.12	249.37	474.63	421.61	1.54	-0.19	0.014
77.50	-6.89	-0.60	0.00	-15.53	0.00	15.53	1,021.54	246.98	465.58	414.85	1.60	-0.19	0.013
79.50	-6.80	-0.59	0.00	-14.33	0.00	14.33	1,011.55	243.40	452.16	404.77	1.68	-0.20	0.012
79.50	-6.80	-0.59	0.00	-14.33	0.00	14.33	1,011.55	243.40	452.16	404.77	1.68	-0.20	0.012
80.00	-6.47	-0.58	0.00	-14.04	0.00	14.04	828.38	212.16	400.77	337.67	1.70	-0.20	0.014
82.50	-6.14	-0.55	0.00	-12.60	0.00	12.60	819.42	208.32	386.39	327.92	1.81	-0.20	0.012
85.00	-5.81	-0.53	0.00	-11.21	0.00	11.21	810.23	204.48	372.28	318.20	1.91	-0.21	0.011
87.50	-5.48	-0.51	0.00	-9.88	0.00	9.88	800.82	200.64	358.43	308.54	2.02	-0.21	0.010
90.00	-3.62	-0.38	0.00	-8.60	0.00	8.60	791.19	196.80	344.84	298.94	2.13	-0.21	0.008
92.50	-3.32	-0.36	0.00	-7.66	0.00	7.66	781.34	192.96	331.51	289.40	2.24	-0.21	0.008
95.00	-3.03	-0.33	0.00	-6.77	0.00	6.77	771.27	189.11	318.45	279.92	2.35	-0.22	0.007
97.44	-3.02	-0.33	0.00	-5.95	0.00	5.95	761.23	185.37	305.96	270.75	2.47	-0.22	0.006
97.44	-3.02	-0.33	0.00	-5.95	0.00	5.95	761.23	185.37	305.96	270.75	2.47	-0.22	0.026
97.50	-2.87	-0.32	0.00	-5.93	0.00	5.93	760.97	185.27	305.65	270.51	2.47	-0.22	0.026
100.00	-2.67	-0.30	0.00	-5.13	0.00	5.13	750.45	181.43	293.11	261.18	2.59	-0.23	0.023
102.50	-2.53	-0.29	0.00	-4.38	0.00	4.38	739.70	177.59	280.83	251.93	2.71	-0.24	0.021
105.00	-2.39	-0.28	0.00	-3.65	0.00	3.65	728.74	173.75	268.82	242.77	2.83	-0.25	0.018
107.50	-2.26	-0.26	0.00	-2.95	0.00	2.95	713.61	169.91	257.07	232.42	2.97	-0.25	0.016
110.00	-2.12	-0.25	0.00	-2.29	0.00	2.29	697.47	166.07	245.58	221.97	3.10	-0.26	0.013
112.50	-1.99	-0.24	0.00	-1.66	0.00	1.66	681.34	162.22	234.35	211.76	3.24	-0.26	0.011
115.00	-1.86	-0.22	0.00	-1.07	0.00	1.07	665.20	158.38	223.39	201.79	3.37	-0.27	0.008

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Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:39 PM

Customer: CLEARWIRE

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117.50	-1.73	-0.21	0.00	-0.52	0.00	0.52	649.07	154.54	212.69	192.06	3.51	-0.27	0.005
120.00	0.00	-0.20	0.00	0.00	0.00	0.00	632.94	150.70	202.25	182.57	3.66	-0.27	0.000

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:39 PM

Customer: CLEARWIRE

## Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	27.54	0.00	30.31	0.00	0.00	2154.60	15.48	0.86
0.9D + 1.0W	27.53	0.00	22.72	0.00	0.00	2128.13	15.48	0.85
1.2D + 1.0Di + 1.0Wi	6.25	0.00	51.08	0.00	0.00	547.62	15.48	0.24
1.2D + 1.0Ev + 1.0Eh	0.80	0.00	28.50	0.00	0.00	75.53	15.48	0.04
0.9D - 1.0Ev + 1.0Eh	0.80	0.00	19.76	0.00	0.00	74.59	15.48	0.04
1.0D + 1.0W	7.37	0.00	25.28	0.00	0.00	570.05	15.48	0.23

Site Number: 302500

Code: ANSI/TIA-222-H

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Site Name: Brst - Bristol, CT

Engineering Number: OAA718326\_C4\_09

5/21/2019 4:12:39 PM

Customer: CLEARWIRE

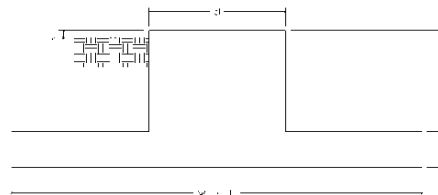
Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors				Max Member		
			VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Ratio	Pu (kip)	phiPn (kip)	Ratio
0.00	15.48	(4) SOL-#20 All Thread Bar	255.8	7.7	16.8	0.456	242.4	330.5	0.734
0.00	79.50	(4) SOL-#20 All Thread Bar	422.8	12.7	16.8	0.755	335.8	330.5	1.016
79.50	97.44	(4) SOL-#20 All Thread Bar	425.1	12.8	16.8	0.759	139.3	330.5	0.422

Elev From (ft)	Elev To (ft)	Member	Upper Termination Connectors					Lower Termination Connectors				
			MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Ratio
0.00	15.48	(4) SOL-#20 All Thread Bar	212.9	12.0	18	20	0.887	0.0	12.0	0	0	0.000
0.00	79.50	(4) SOL-#20 All Thread Bar	0.0	12.0	0	12	0.000	0.0	12.0	0	0	0.000
79.50	97.44	(4) SOL-#20 All Thread Bar	75.6	12.0	7	12	0.525	0.0	12.0	0	0	0.000

Site Name: BRST-Bristol, CT  
 Site Number: 302500  
 Engineering Number: OAA718326  
 Engineer: Garret.Heath  
 Date: 05/21/19  
 Tower Type: MP

Program Last Updated: 5/13/2014



**Design Loads (Factored) - Analysis per TIA-222-G Standards**

Design / Analysis / Mapping:	Mapping
Compression/Leg:	30.3 k
Uplift/Leg:	0.0 k
Total Shear:	27.5 k
Moment:	2154.6 k-ft
Tower + Appurtenance Weight:	30.3 k
Depth to Base of Foundation (l + t - h):	6.50 ft
Diameter of Pier (d):	6.00 ft
Height of Pier above Ground (h):	2.70
Width of Pad (W):	17.50 ft
Length of Pad (L):	18.40 ft
Thickness of Pad (t):	2.50 ft
Tower Leg Center to Center:	0.00 ft
Number of Tower Legs:	1.0 (1 if MP or GT)
Tower Center from Mat Center:	0.00 ft
Depth Below Ground Surface to Water Table:	99.00 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	115.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	50.0 pcf
Friction Angle of Uplift:	15.0 Degrees
Ultimate Coefficient of Shear Friction:	0.50
Ultimate Compressive Bearing Pressure:	32000.0 psf
Ultimate Passive Pressure on Pad Face:	2000.0 psf
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9
$\phi_{\text{Soil}}$ :	0.75

**Overturning Moment Usage**

Design OTM:	2407.4 k-ft
OTM Resistance:	2725.6 k-ft
Design OTM / OTM Resistance:	0.88 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	4948 psf
Factored Nominal Bearing Pressure:	24000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.21 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

**Sliding Factor of Safety**

Total Factored Sliding Resistance:	178.2 k
Sliding Design / Sliding Resistance:	0.15 Result: OK



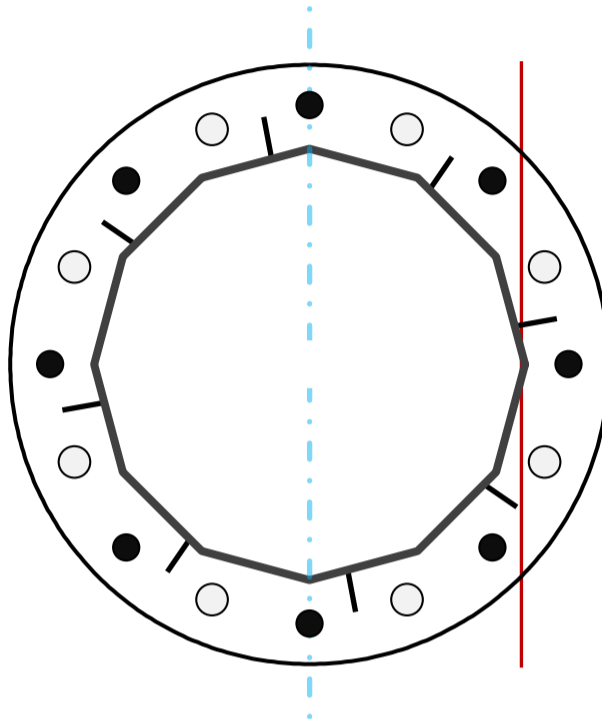
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	31.00	in
Thickness	0.250	in
Orientation Offset		°

Base Reactions			
Moment, Mu	2154.6	k-ft	
Axial, Pu	30.3	k	
Shear, Vu	27.5	k	
Neutral Axis	270	°	

Report Capacities		
Component	Capacity	Result
Base Plate	19%	Pass
Anchor Rods	38%	Pass
Dwyidag	58%	Pass

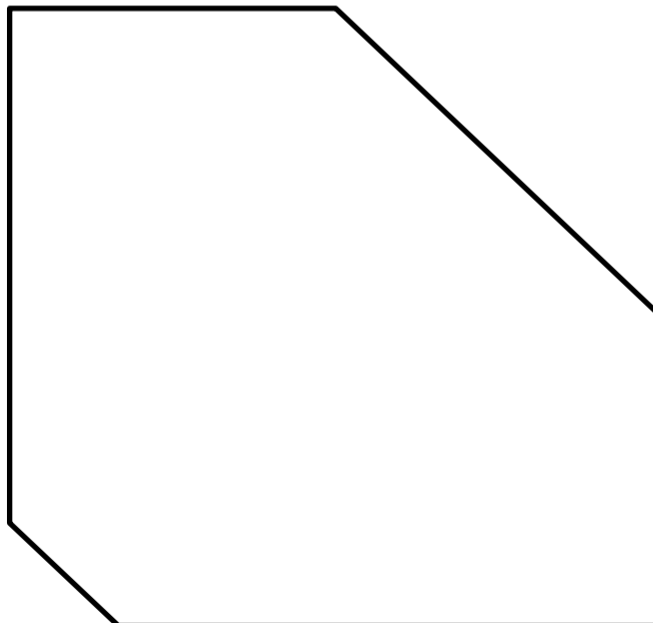
Base Plate		
Shape	Round	-
Diameter, $\phi$	44.59	in
Thickness	2 1/8	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	c	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	366.7	k
Bending Stress, $\phi Mn$	1903.2	k



Dwyidag Reinforcement		
Quantity	8	-
Bar Size	#20	in
Diameter, $\phi$	2.5	in
Bracket Type	Angle	-
Circle	37.88	in
Orientation Offset	22.5	°
Applied Force, Pu	227.5	k
Dwyidag Bar, $\phi Pn$	392.7	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	8	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	38.59	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	15.2	in
Orientation Offset	0	°
Applied Force, Pu	96.6	k
Anchor Rods, $\phi Pn$	259.8	k

Stiffeners		
Arrangement	Radial	-
Quantity	8	-
Height	3	in
Width	3	in
Effective Width	2.330	in
Thickness	3/8	in
Effective Thickness	0.375	in
Notch	0.5	in
Flat Edge	1.5	in
Grade	A36	-
Yield Strength, Fy	36	ksi
Tensile Strength, Fu	58	ksi
Horizontal Weld	Bevel+Fillet	
Horizontal Fillet Size	3/16	in
Bevel Depth	3/16	in
Vertical Weld	Fillet	
Vertical Fillet Size	3/16	in
Weld Strength	70	ksi
Electrode Coefficient	1	-
Orientation Offset	33	°
Vertical Weld, $\phi Rn$	20.9	k
Horz. Weld, $\phi Rn$	49.4	k
Ten. Capacity, $\phi Tn$	30.4	k
Comp. Capacity, $\phi Pn$	766.0	k



# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	27.5	615.4	0.29
Anchor Rod Forces	27.5	615.4	0.29
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1539.2	0.71
Stiffener Forces	5.4	120.6	0.06

## Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in <sup>2</sup>	in <sup>2</sup>	in <sup>4</sup>	#	in <sup>4</sup>
Pole	23.8761	1.9897	0.0416		2822.54
Bolt	3.9761	3.2477	0.8393	4.5	4843.14
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		7058.86
Stiffener	0.6863	0.6176	1.5812		687.73

Base Plate		
Shape	Round	-
Diameter, D	44.59	in
Thickness, t	2.125	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	32.051	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

Anchor Rods		
Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	38.59	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	96.6	k
Applied Shear, Vu	1.0	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.372	OK
Interaction Capacity	0.379	OK

Base Plate Stiffeners		
Applied Axial Force, Pu	21.5	k
Applied Horizontal Force, Vu	0.34	k
Vertical Weld		
Vert.-to-Stiffener a=e <sub>x</sub> /l	0.333	-
Spacing Ratio, k	0.125	-
Weld Coefficient, C	3.090	-
Compressive Capacity, φPn	20.9	k
Vert.-to-Plate a=e <sub>x</sub> /l	0.333	-
Spacing Ratio, k	0.125	-
Weld Coefficient, C	2.970	-
Shear Capacity, φVn	20.0	k
P <sub>u</sub> /φ <sub>p</sub> P <sub>n</sub> + V <sub>u</sub> /φ <sub>v</sub> V <sub>n</sub>	1.048	OK

External Base Plate		
Chord Length AA	26.970	in
Additional AA	4.250	in
Section Modulus, Z	35.245	in <sup>3</sup>
Applied Moment, Mu	366.7	k-ft
Bending Capacity, φMn	1903.2	k-ft
Capacity, Mu/φMn	0.193	OK
Chord Length AB	25.659	in
Additional AB	4.250	in
Section Modulus, Z	33.765	in <sup>3</sup>
Applied Moment, Mu	313.9	k-ft
Bending Capacity, φMn	1823.3	k-ft
Capacity, Mu/φMn	0.172	OK

Additional Bolt Group 1		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	0.0	k
Compressive Capacity, φPn		
Interaction Capacity		

Horizontal Weld		
Horz.-to-Stiffener a=e <sub>x</sub> /l	0.215	-
Spacing Ratio, k	0.125	-
Weld Coefficient, C	3.570	-
Effective Fillet	0.375	in
Compressive Capacity, φPn	48.2	k
Horz.-to-Pole a=e <sub>x</sub> /l	0.167	-
Spacing Ratio, k	0.125	-
Weld Coefficient, C	3.660	-
Shear Capacity, φVn	49.4	k
P <sub>u</sub> /φ <sub>p</sub> P <sub>n</sub> + V <sub>u</sub> /φ <sub>v</sub> V <sub>n</sub>	0.453	OK

Bend Line Length	22.360	in
Additional Bend Line	0.000	in
Section Modulus, Z	25.242	in <sup>3</sup>
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	1363.1	k-ft
Capacity, Mu/φMn	0.000	OK

Additional Bolt Group 2		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	0.0	k
Compressive Capacity, φPn		
Interaction Capacity		

Plate Tension		
Gross Cross Section	0.686	in <sup>2</sup>
Net Cross Section	0.618	in <sup>2</sup>
Tensile Capacity, φTn	30.4	k
Capacity, Tu/φTn	0.354	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

Dywidag Reinforcement		
Dywidag Quantity, N	8	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	37.88	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	227.5	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.579	OK

Plate Compression		
Radius of Gyration	0.108	in <sup>3</sup>
kl/r	16.63	-
4.71 √(E/Fy)	133.68	-
Buckling Stress(F <sub>e</sub> )	1035.2	-
Crit. Buckling Stress(F <sub>cr</sub> )	907.9	ksi
Compressive Capacity, φPn	766.0	k
Capacity, Pu/φPn	0.014	OK



# Sprint



PROJECT: DO MACRO UPGRADE  
 SITE NAME: BRST - BRISTOL CONNECTICUT  
 SITE CASCADE: CT52XC047  
 SITE ADDRESS: 790 WILLIS ST  
 BRISTOL, CT 06010  
 SITE TYPE: MONOPOLE  
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:



PLANS PREPARED BY:

**INFINIGY**  
 INFINIGY ENGINEERING, PLLC  
 1033 Watervliet Shaker Rd  
 Albany, NY 12205  
 Office # (518) 690-0790  
 Fax # (518) 690-0793  
 JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:

DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	06/11/19	ETC	0

SITE NAME:

**BRST - BRISTOL CONNECTICUT**

SITE NUMBER:

**CT52XC047**

SITE ADDRESS:

**790 WILLIS ST  
BRISTOL, CT 06010**

SHEET DESCRIPTION:

**TITLE SHEET & PROJECT DATA**

SHEET NUMBER:

**T-1**

**SITE INFORMATION**

**TOWER OWNER:**  
 AMERICAN TOWER CORPORATION  
 10 PRESIDENTIAL WAY  
 WOBURN, MA 01801

**LATITUDE (NAD83):**  
 41° 38' 56.7" N  
 41.649078

**LONGITUDE (NAD83):**  
 72° 56' 52.8" W  
 -72.947998

**COUNTY:**  
 HARTFORD

**ZONING JURISDICTION:**  
 CONNECTICUT SITING COUNCIL

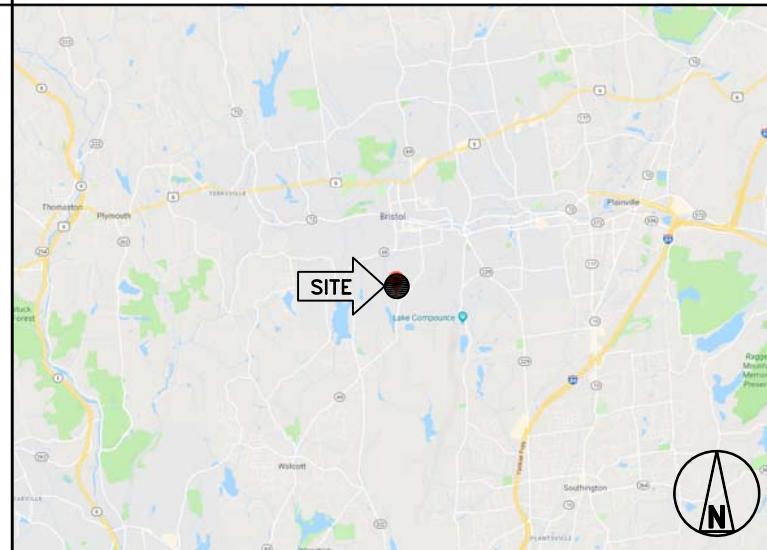
**ZONING DISTRICT:**  
 TBD

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

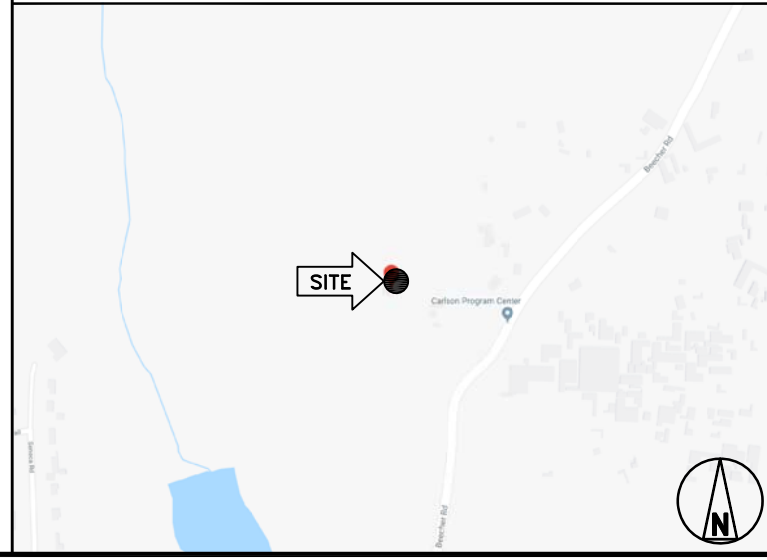
**AAV PROVIDER:**  
 TBD

**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 (3) PANEL ANTENNAS AND RRH'S
- INSTALL (6) PANEL ANTENNAS
- INSTALL (3) 1900 MHz RRH'S BEHIND ANTENNAS
- INSTALL (6) 800 MHz RRH'S BEHIND ANTENNAS
- INSTALL (48) JUMPER CABLES
- INSTALL (4) HYBRID CABLES
- REMOVE EXISTING CLEARWIRE GROUND EQUIPMENT
- INSTALL (2) EQUIPMENT CABINETS WITHIN EXISTING LEASE AREA
- INSTALL 7'x7' CONCRETE EQUIPMENT PAD

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.

- INTERNATIONAL BUILDING CODE (2015 IBC)
- TIA-222-G OR LATEST EDITION
- NFPA 780 - LIGHTNING PROTECTION CODE
- 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
- ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
- CT BUILDING CODE
- LOCAL BUILDING CODE
- CITY/COUNTY ORDINANCES

**DRAWING INDEX**

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	EQUIPMENT DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ONE LINE & NOTES	0
E-2	ELECTRICAL & GROUNDING DETAILS	0
E-3	ELECTRICAL & GROUNDING DETAILS	0



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 (ASHTO)
    - 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:



PLANS PREPARED BY:



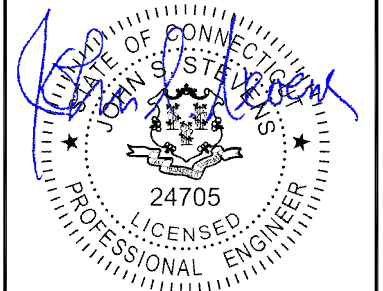
INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

PROJECT MANAGER:



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

ENGINEERING LICENSE:



06/11/2019

DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	06/11/19	ETC	0

SITE NAME:

BRST - BRISTOL CONNECTICUT

SITE NUMBER:

CT52XC047

SITE ADDRESS:

790 WILLIS ST  
BRISTOL, CT 06010

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 ANTENNA AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
  1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
  2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
  1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
  2. PROJECT PROGRESS REPORTS.
  3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
  4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

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

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 - ANTENNA ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:



PLANS PREPARED BY:



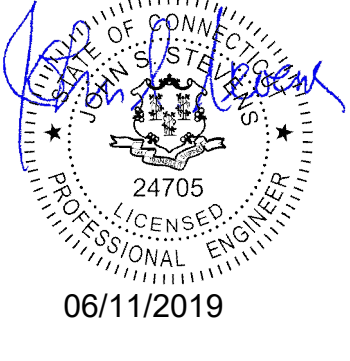
INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

PROJECT MANAGER:



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

ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	06/11/19	ETC	0

SITE NAME:

BRST - BRISTOL CONNECTICUT

SITE NUMBER:

CT52XC047

SITE ADDRESS:

790 WILLIS ST  
BRISTOL, CT 06010

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. SHELTER AND TOWER OVERVIEW.
    2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
    3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
    4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
    5. PHOTOS OF TOWER SECTION STACKING.
    6. CONCRETE TESTING / SAMPLES.
    7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
    8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
    9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
    10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
    11. COAX CABLE ENTRY INTO SHELTER.
    12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
    13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
    14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
    15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
    16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
    17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
    18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
    19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
    20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
    21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
    22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
    23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING - WHERE APPLICABLE.

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

PLANS PREPARED FOR:



PLANS PREPARED BY:



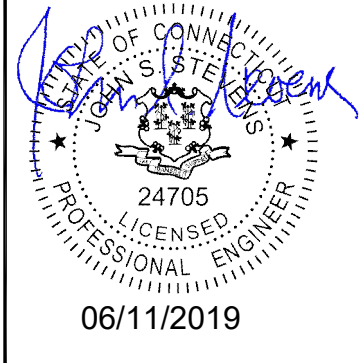
INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

PROJECT MANAGER:



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

ENGINEERING LICENSE:



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ISSUED FOR CONSTRUCTION	06/11/19	ETC	0

SITE NAME:

BRST - BRISTOL CONNECTICUT

SITE NUMBER:

CT52XC047

SITE ADDRESS:

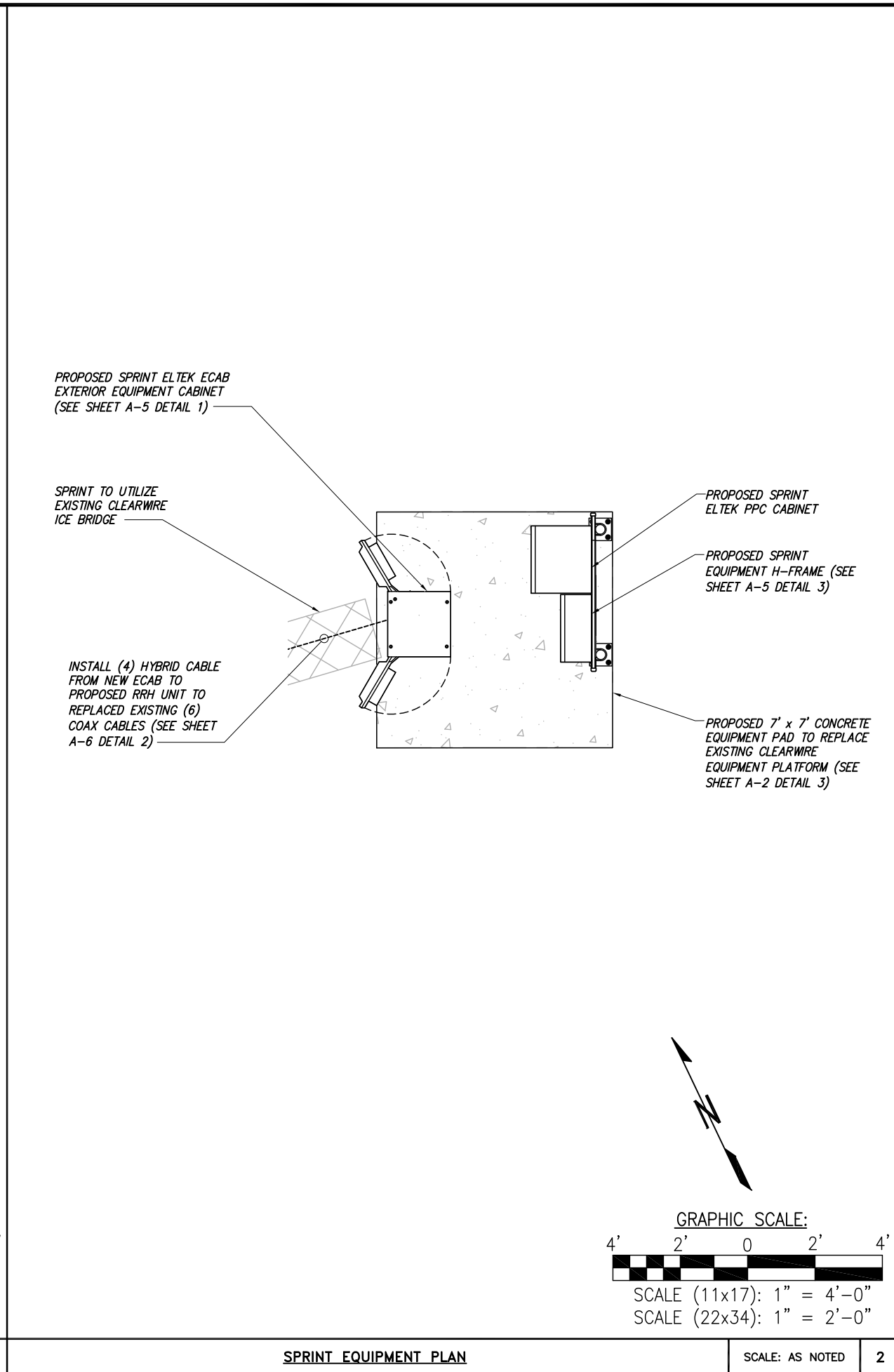
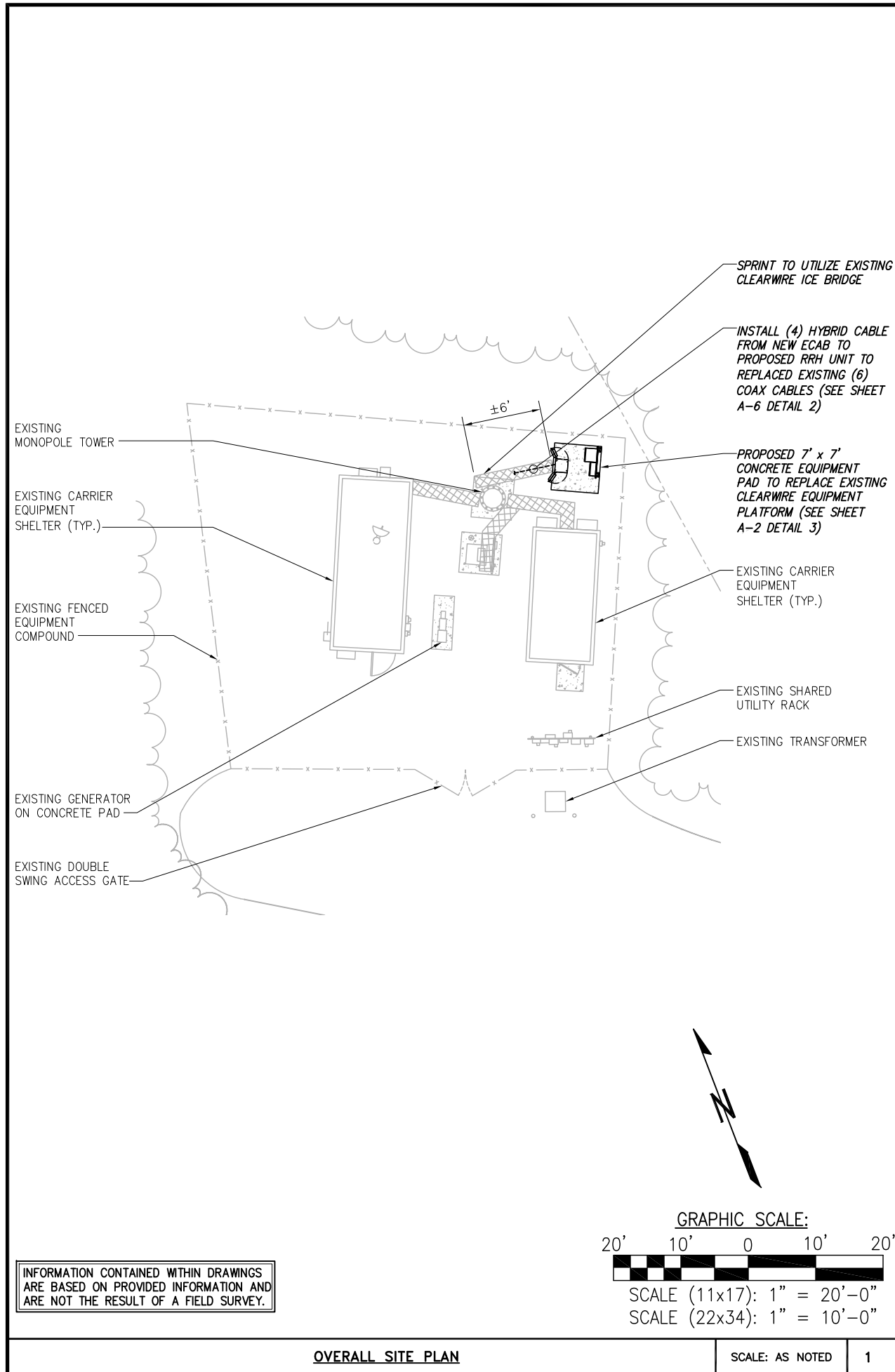
790 WILLIS ST  
BRISTOL, CT 06010

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3



PLANS PREPARED FOR:  
**Sprint**

PLANS PREPARED BY:  
**INFINIGY**  
 INFINIGY ENGINEERING, PLLC  
 1033 Watervliet Shaker Rd  
 Albany, NY 12205  
 Office # (518) 690-0790  
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PROJECT MANAGER:  
**AIROSMITH**  
 DEVELOPMENT  
 32 CLINTON ST.  
 SARATOGA SPRINGS, NY 12866  
 OFFICE#, (518) 306-3740

ENGINEERING LICENSE:  
  
 06/11/2019

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**BRST - BRISTOL CONNECTICUT**

SITE NUMBER:  
**CT52XC047**

SITE ADDRESS:  
**790 WILLIS ST  
 BRISTOL, CT 06010**

SHEET DESCRIPTION:  
**SITE PLAN**

SHEET NUMBER:  
**A-1**

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

OVERALL SITE PLAN

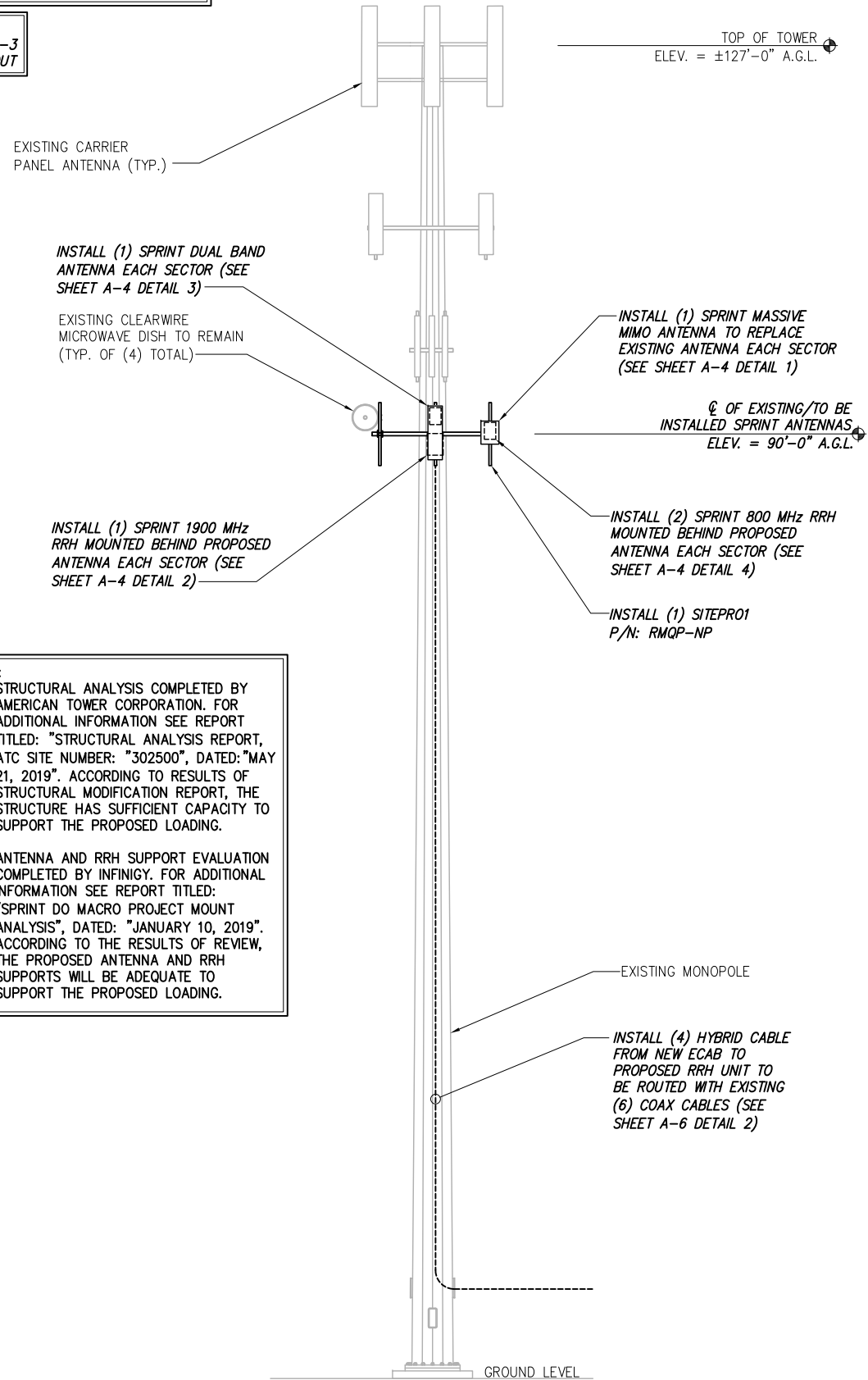
SCALE: AS NOTED 1

SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

**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 AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, ATC SITE NUMBER: "302500", DATED: "MAY 21, 2019". 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: "JANUARY 10, 2019". ACCORDING TO THE RESULTS OF REVIEW, THE PROPOSED 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	AAHC	NOKIA	25°	1	-	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±120*	±90' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	25°	1	-	(1) 1900 MHZ 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	30°	1	REMOVE	EXISTING COAX			
BETA	PROPOSED	AAHC	NOKIA	155°	1	-	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±120*	±90' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	155°	1	-	(1) 1900 MHZ 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	150°	1	REMOVE	EXISTING COAX			
GAMMA	PROPOSED	AAHC	NOKIA	265°	1	-	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±120*	±90' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	265°	1	-	(1) 1900 MHZ 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	270°	1	REMOVE	EXISTING COAX			

**PROJECT SCOPE:**

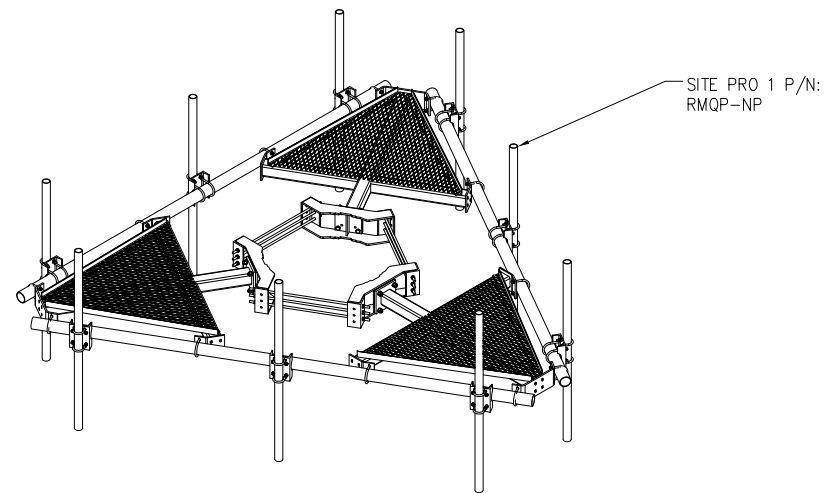
REMOVE: (3) PANEL ANTENNAS INSTALL: (6) PANEL ANTENNAS AND (9) RRH'S

\* 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

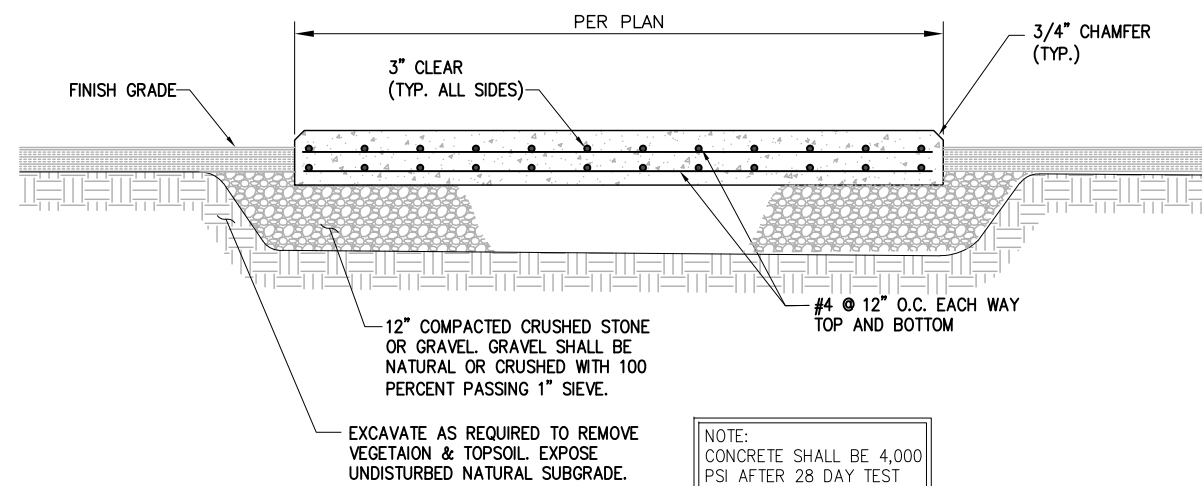
2



**ANTENNA MOUNT DETAIL**

NO SCALE

3



**NOTE:**  
 CONCRETE SHALL BE 4,000 PSI AFTER 28 DAY TEST

**EQUIPMENT CABINET FOUNDATION**

NO SCALE

4

PLANS PREPARED FOR:



PLANS PREPARED BY:



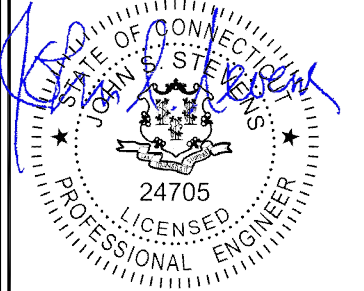
INFINIGY ENGINEERING, PLLC  
 1033 Watervliet Shaker Rd  
 Albany, NY 12205  
 Office # (518) 690-0790  
 Fax # (518) 690-0793  
 JOB NUMBER 526-104

PROJECT MANAGER:



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

ENGINEERING LICENSE:



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TOWER ELEVATION

SHEET NUMBER:

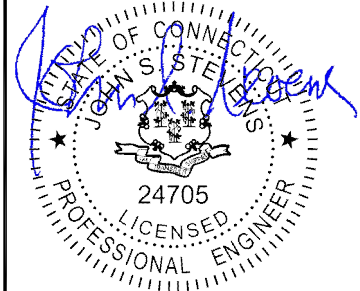
A-2



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BRST - BRISTOL CONNECTICUT

CT52XC047

790 WILLIS ST  
BRISTOL, CT 06010

ANTENNA LAYOUT & MOUNTING DETAILS

A-3

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

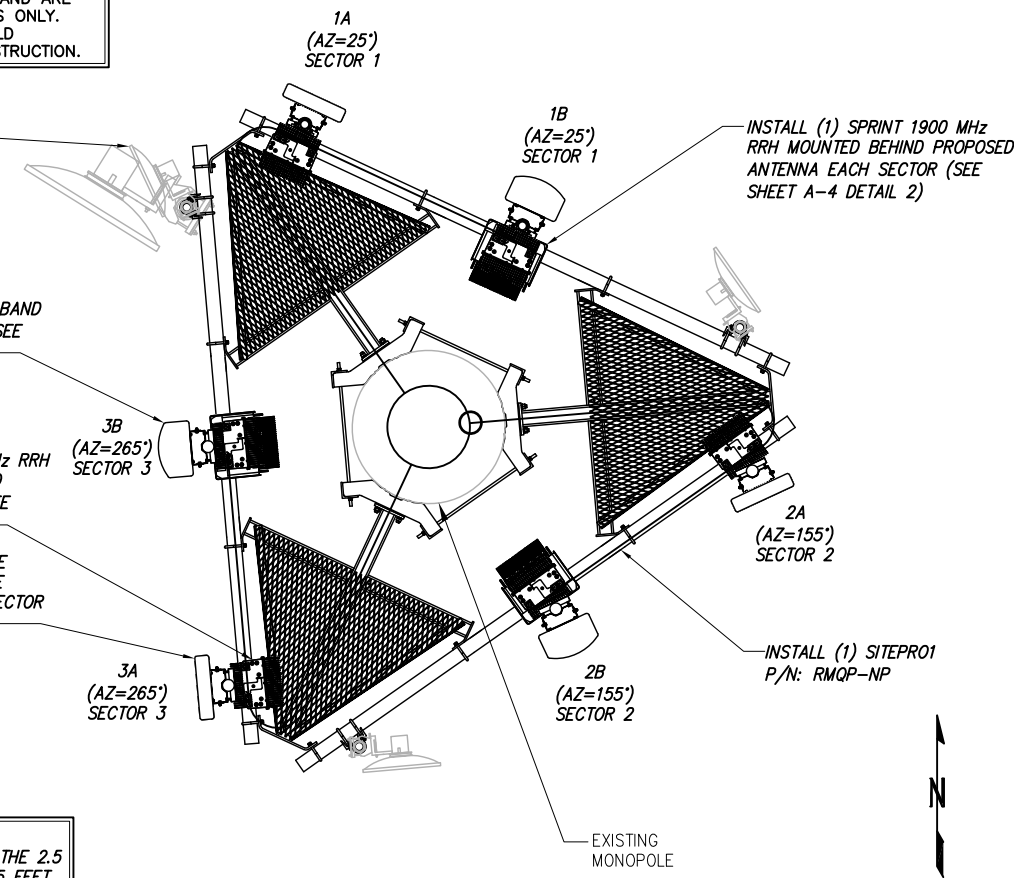
EXISTING CLEARWIRE MICROWAVE DISH TO REMAIN (TYP. OF (4) TOTAL)

INSTALL (1) SPRINT DUAL BAND ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 3)

INSTALL (2) SPRINT 800 MHz RRH MOUNTED BEHIND PROPOSED ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 4)

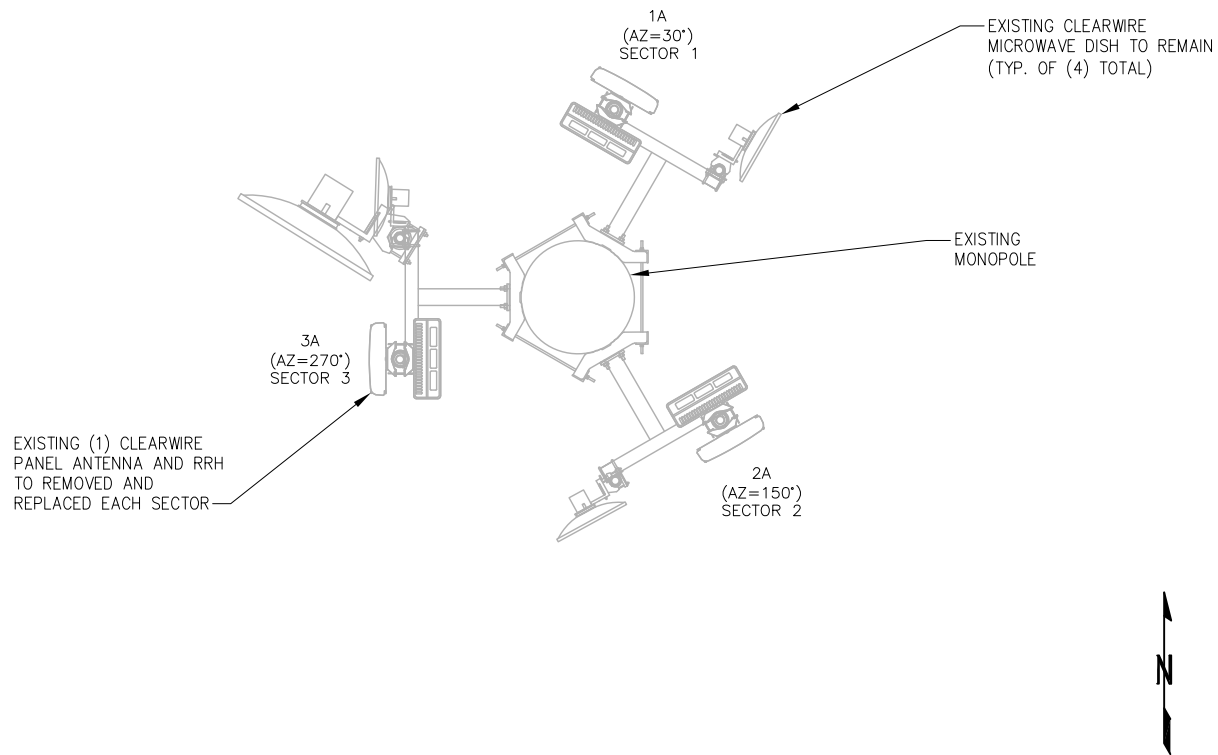
INSTALL (1) SPRINT MASSIVE MIMO ANTENNA TO REPLACE EXISTING ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 1)

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



FINAL ANTENNA & RRH LAYOUT

0' = TRUE NORTH



EXISTING ANTENNA LAYOUT

0' = TRUE NORTH

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

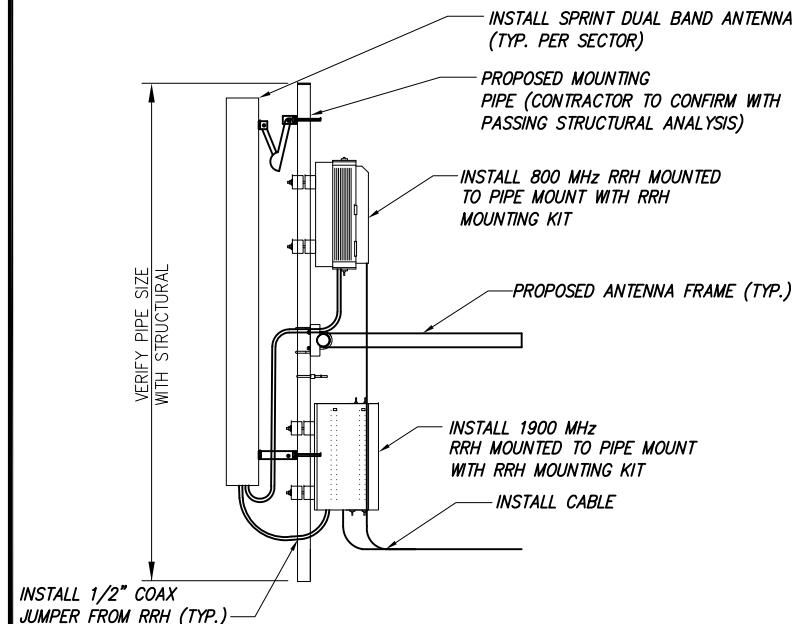
NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
  - COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
  - DO NOT EXCEED BEND RADIUS.

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

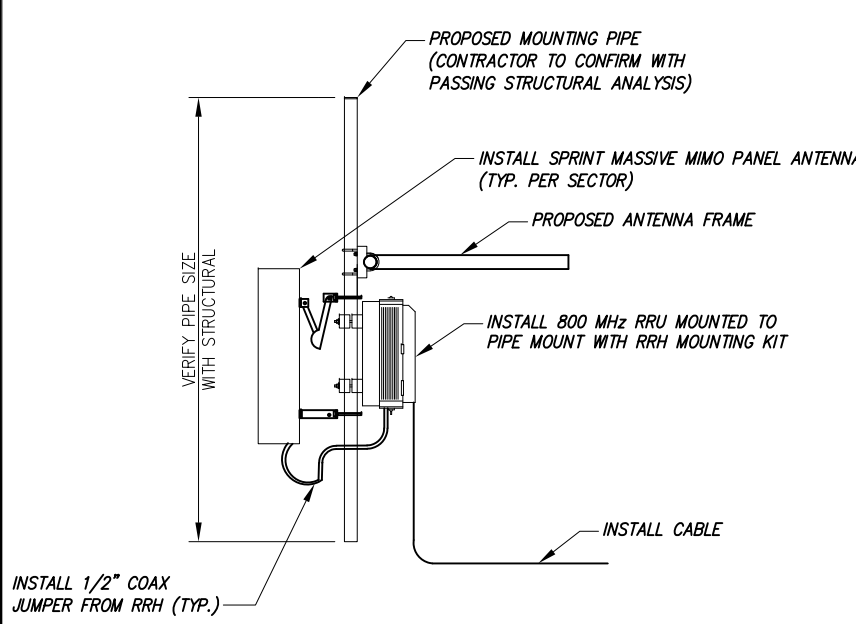
NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
  - COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
  - DO NOT EXCEED BEND RADIUS.



TYPICAL DUAL BAND ANTENNA & RRH MOUNTING DETAILS

NO SCALE 3

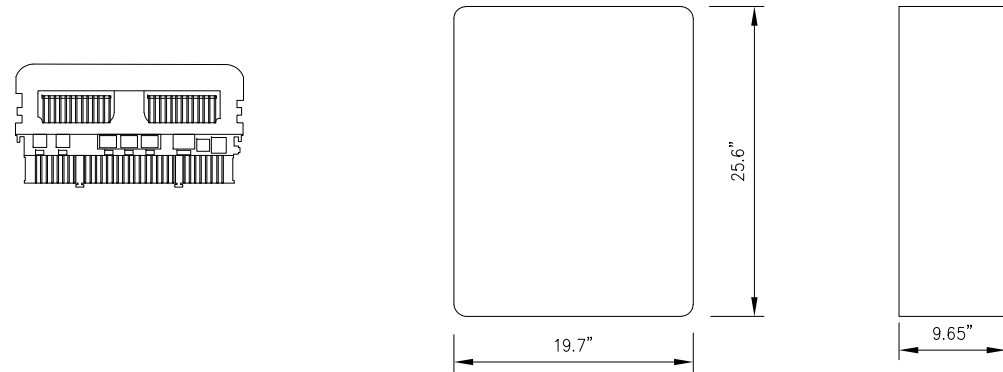


TYPICAL MASSIVE MIMO ANTENNA & RRH MOUNTING DETAILS

NO SCALE 4

**ANTENNA: NOKIA AAHC**

RADOME MATERIAL: FIBERGLASS  
 RADOME COLOR: LIGHT GREY  
 DIMENSIONS, HxWxD.in(mim): 25.6"x19.7"x9.65" (651x501x245mm)  
 WEIGHT: 103.6 lbs

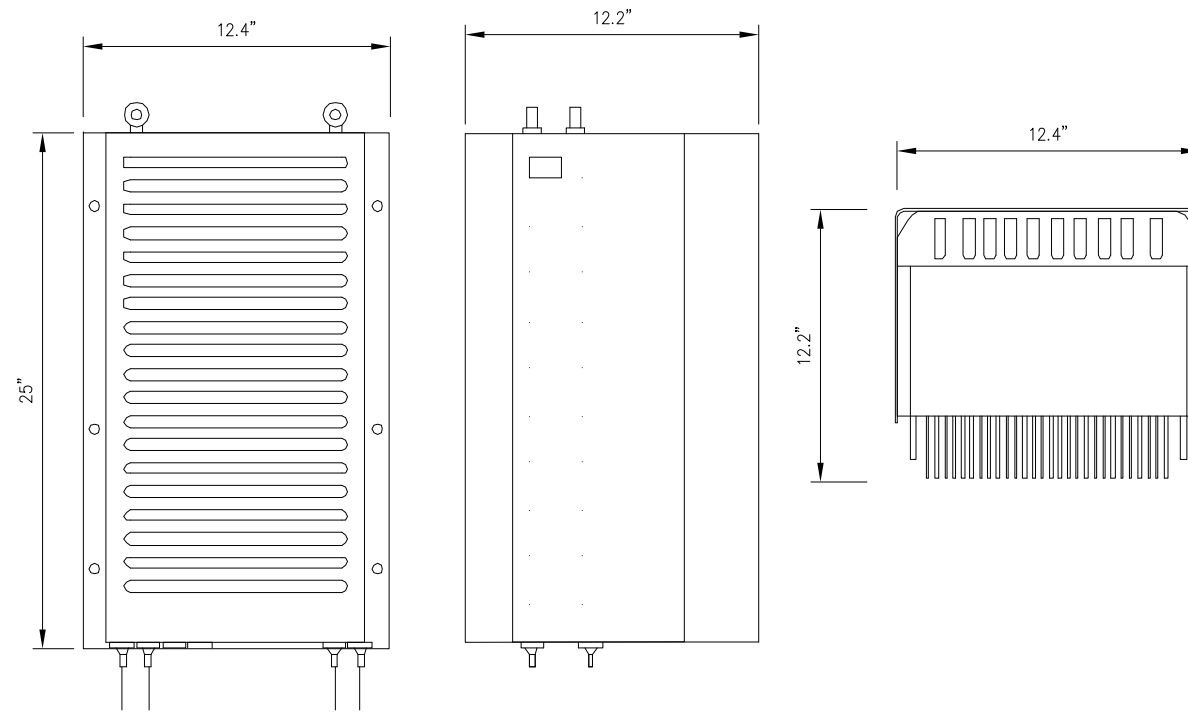


**MASSIVE MIMO ANTENNA DETAIL**

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

PLANS PREPARED FOR:



PLANS PREPARED BY:



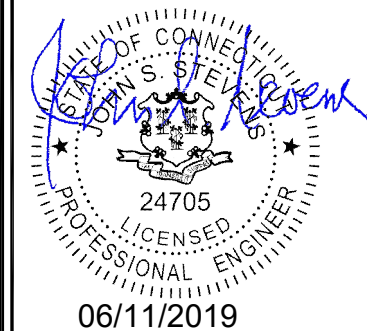
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PROJECT MANAGER:



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 OFFICE#, (518) 306-3740

ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	06/11/19	ETC	0

SITE NAME:

**BRST - BRISTOL CONNECTICUT**

SITE NUMBER:

**CT52XC047**

SITE ADDRESS:

**790 WILLIS ST  
 BRISTOL, CT 06010**

SHEET DESCRIPTION:

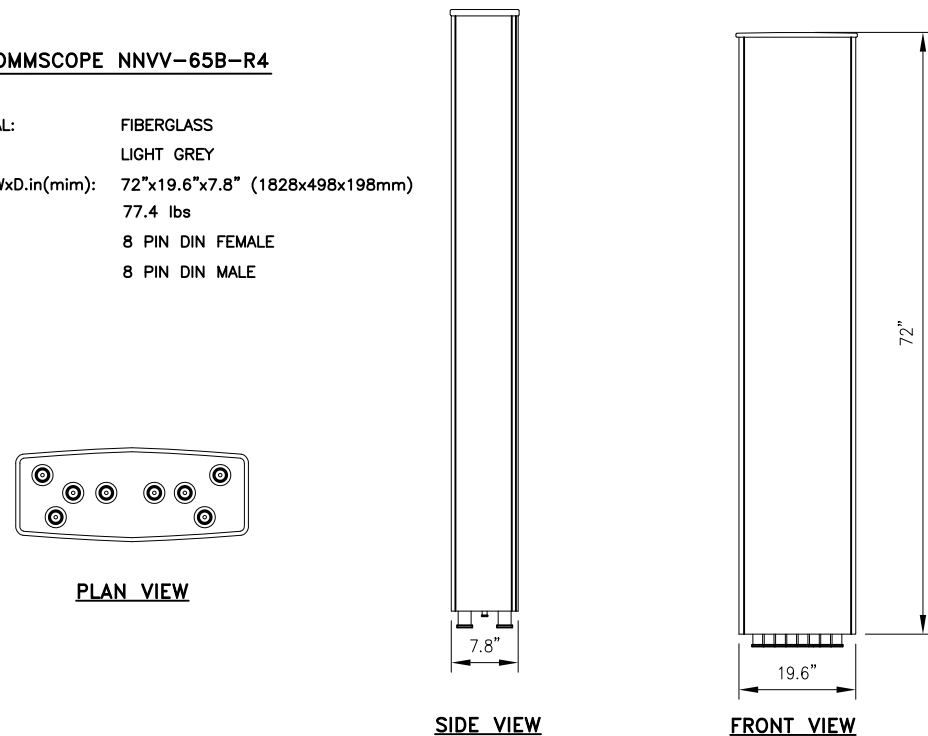
**EQUIPMENT &  
 MOUNTING DETAILS**

SHEET NUMBER:

**A-4**

**ANTENNA COMMSCOPE NNVV-65B-R4**

RADOME MATERIAL: FIBERGLASS  
 RADOME COLOR: LIGHT GREY  
 DIMENSIONS, HxWxD.in(mim): 72"x19.6"x7.8" (1828x498x198mm)  
 WEIGHT: 77.4 lbs  
 CONNECTORS: 8 PIN DIN FEMALE  
 8 PIN DIN MALE



**PLAN VIEW**

**SIDE VIEW**

**FRONT VIEW**

**DUAL BAND ANTENNA DETAIL**

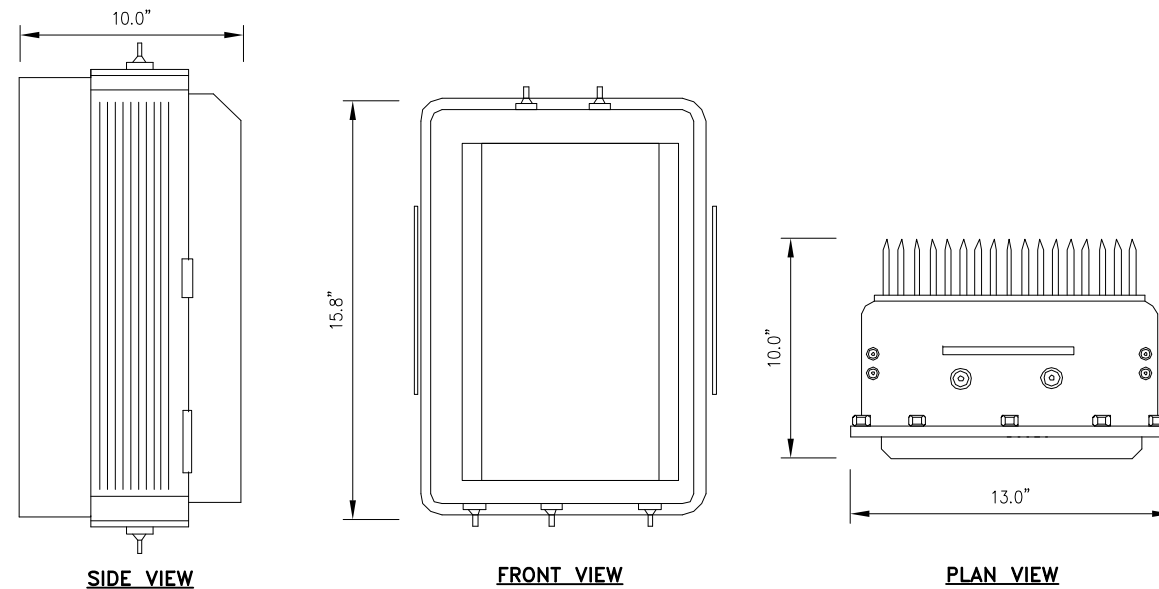
NO SCALE

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**

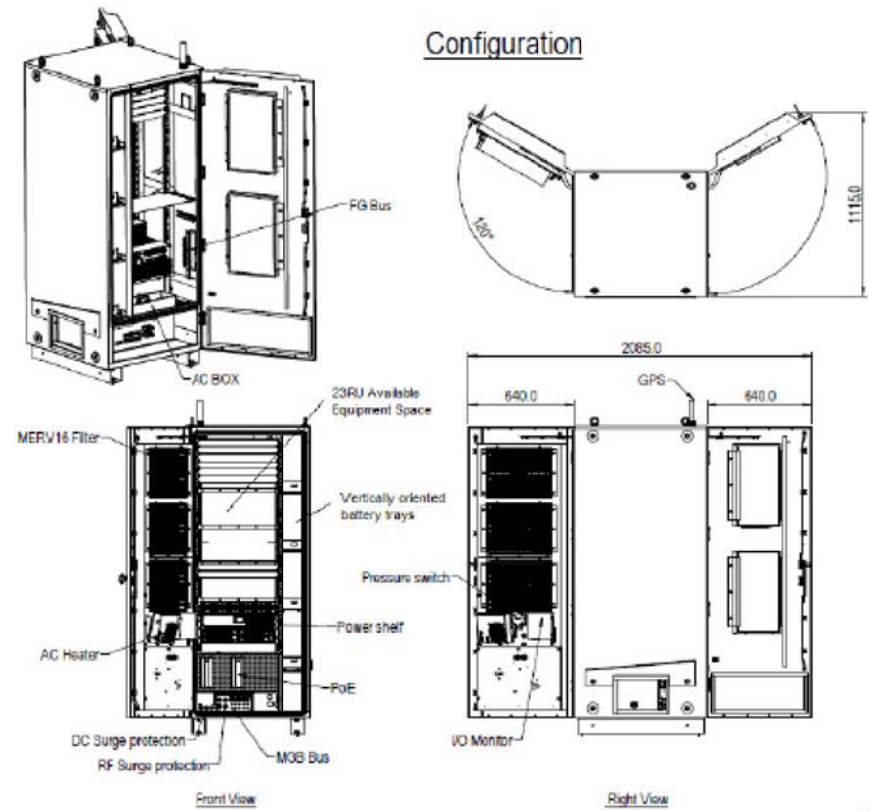
**PLAN VIEW**

**800 MHz RRH**

NO SCALE

4



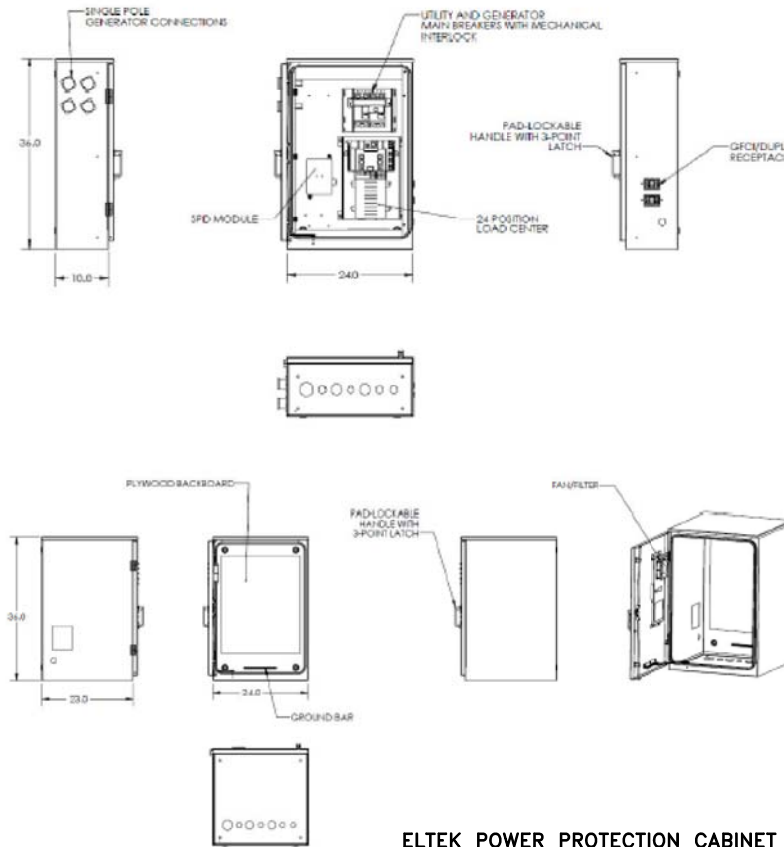


**ELTEK ECAB EXTERIOR CABINET**  
P/N: ESOA220-SCA02

EQUIPMENT CABINET DETAIL

NO SCALE

1



**ELTEK POWER PROTECTION CABINET**  
P/N: 581122212

EQUIPMENT CABINET DETAIL

NO SCALE

2

PLANS PREPARED FOR:



PLANS PREPARED BY:



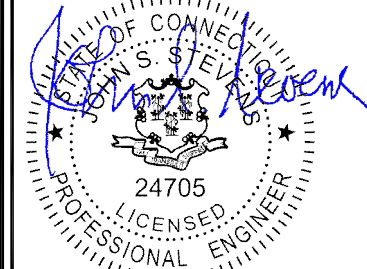
INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

PROJECT MANAGER:



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SARATOGA SPRINGS, NY 12866  
OFFICE#, (518) 306-3740

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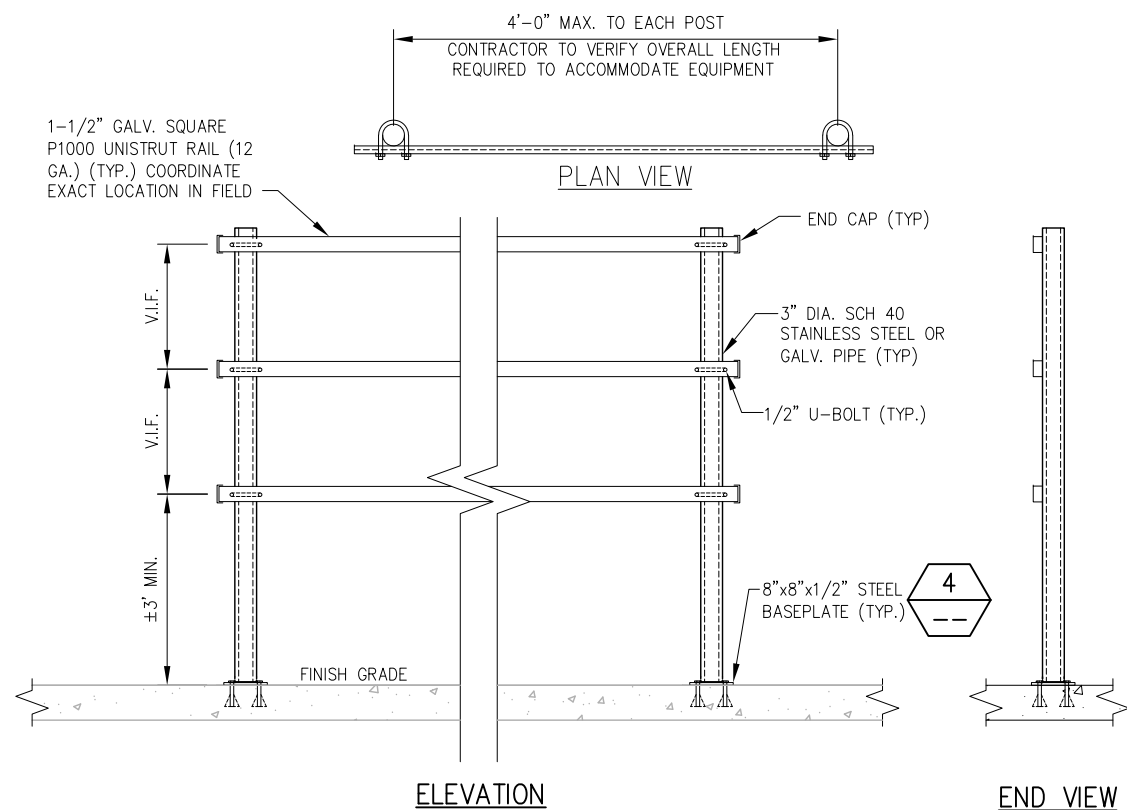
**790 WILLIS ST  
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**EQUIPMENT &  
MOUNTING DETAILS**

SHEET NUMBER:

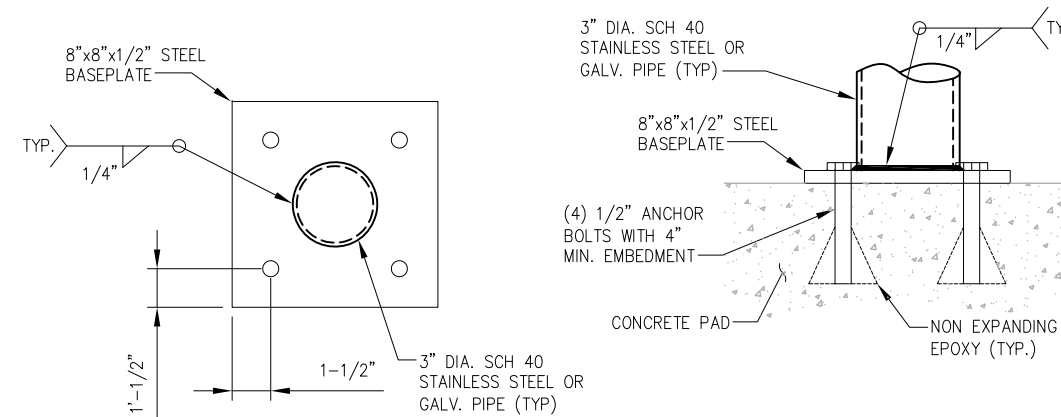
**A-5**



H-FRAME DETAIL

NO SCALE

3



SUPPORT POST MOUNTING DETAIL

NO SCALE

4

**RFS HYBRIFLEX RISER CABLE SCHEDULE**

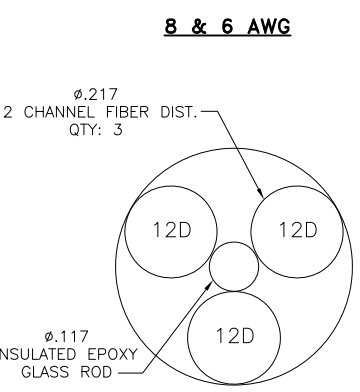
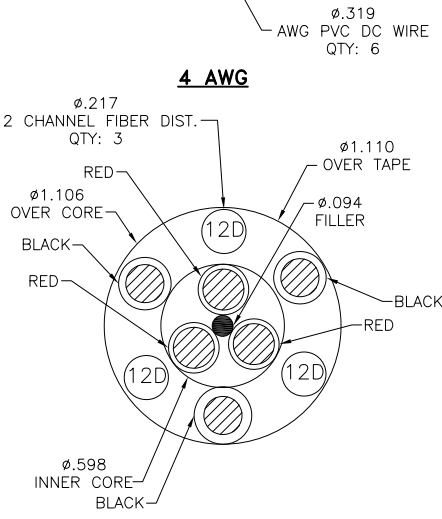
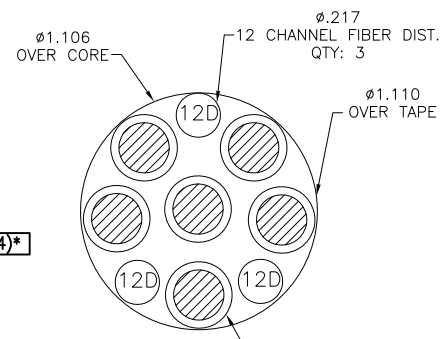
Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175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

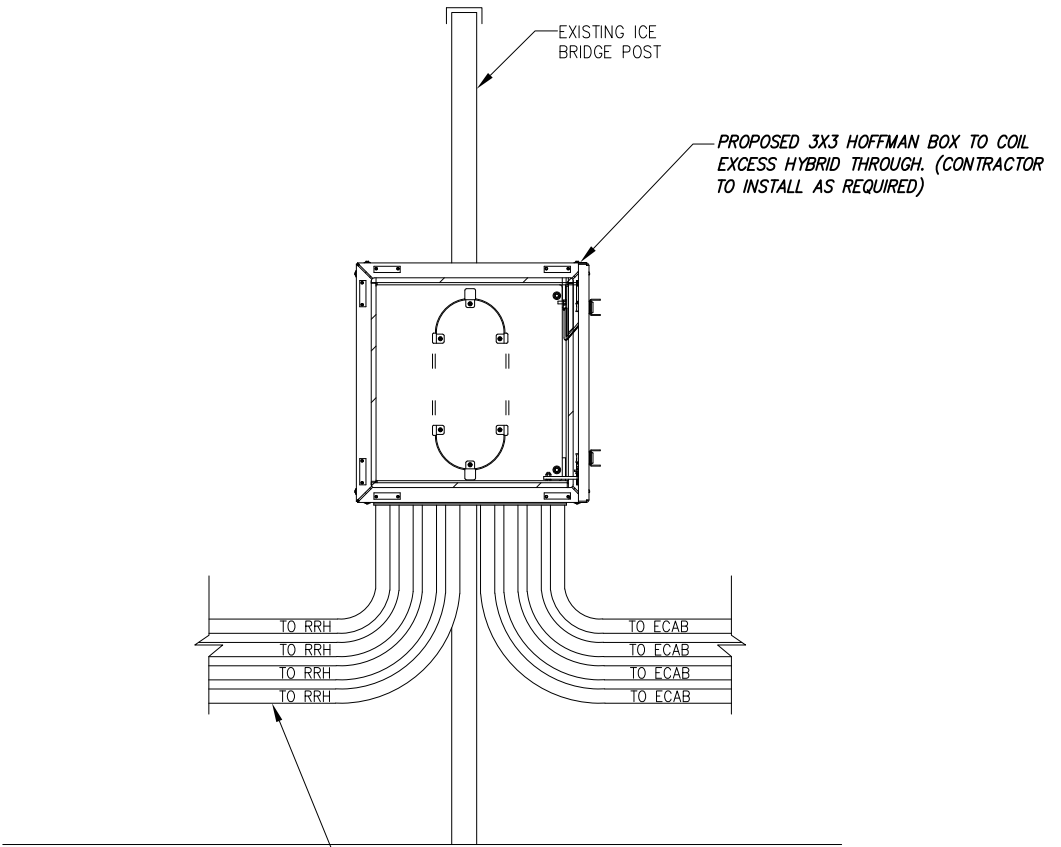
**NOTE:**  
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

\* 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.



**800/1900/2500 CABLE CROSS SECTION DATA**

NO SCALE 1



**OPTIONAL HYBRID SLACK BOX**

NO SCALE 2

**FIBER JUNCTION BOX**

NO SCALE 3

PLANS PREPARED FOR:  
**Sprint**

PLANS PREPARED BY:  
**INFINIGY**  
INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

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

ENGINEERING LICENSE:  
**JOHN S. STEVENSON**  
24705  
PROFESSIONAL ENGINEER  
06/11/2019

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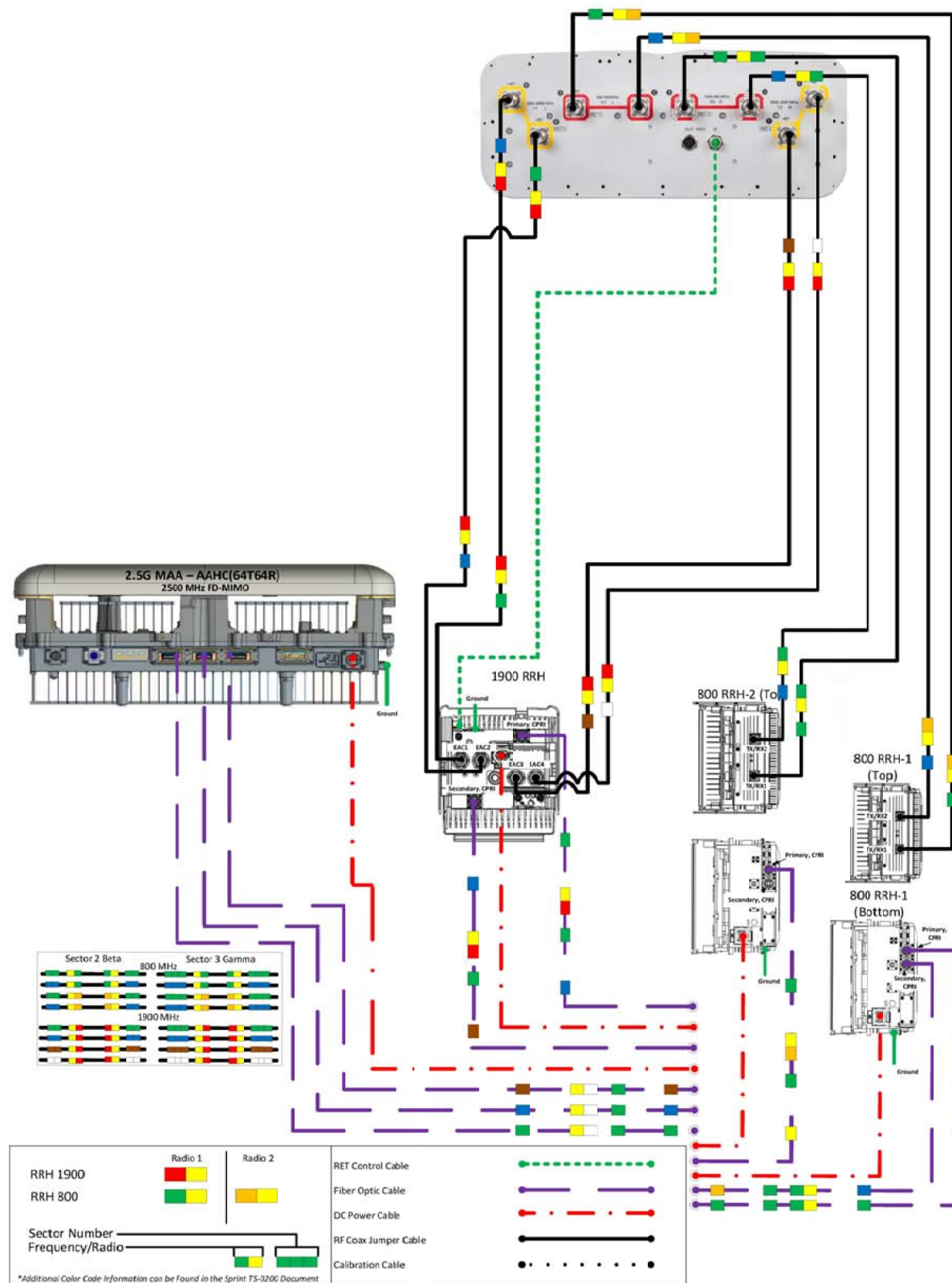
SITE NUMBER:  
**CT52XC047**

SITE ADDRESS:  
**790 WILLIS ST  
BRISTOL, CT 06010**

SHEET DESCRIPTION:  
**CIVIL DETAILS**

SHEET NUMBER:  
**A-6**

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



Not to Scale

PLANS PREPARED FOR:



PLANS PREPARED BY:



INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

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OFFICE#, (518) 306-3740

ENGINEERING LICENSE:



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CONNECTICUT

SITE NUMBER:

CT52XC047

SITE ADDRESS:

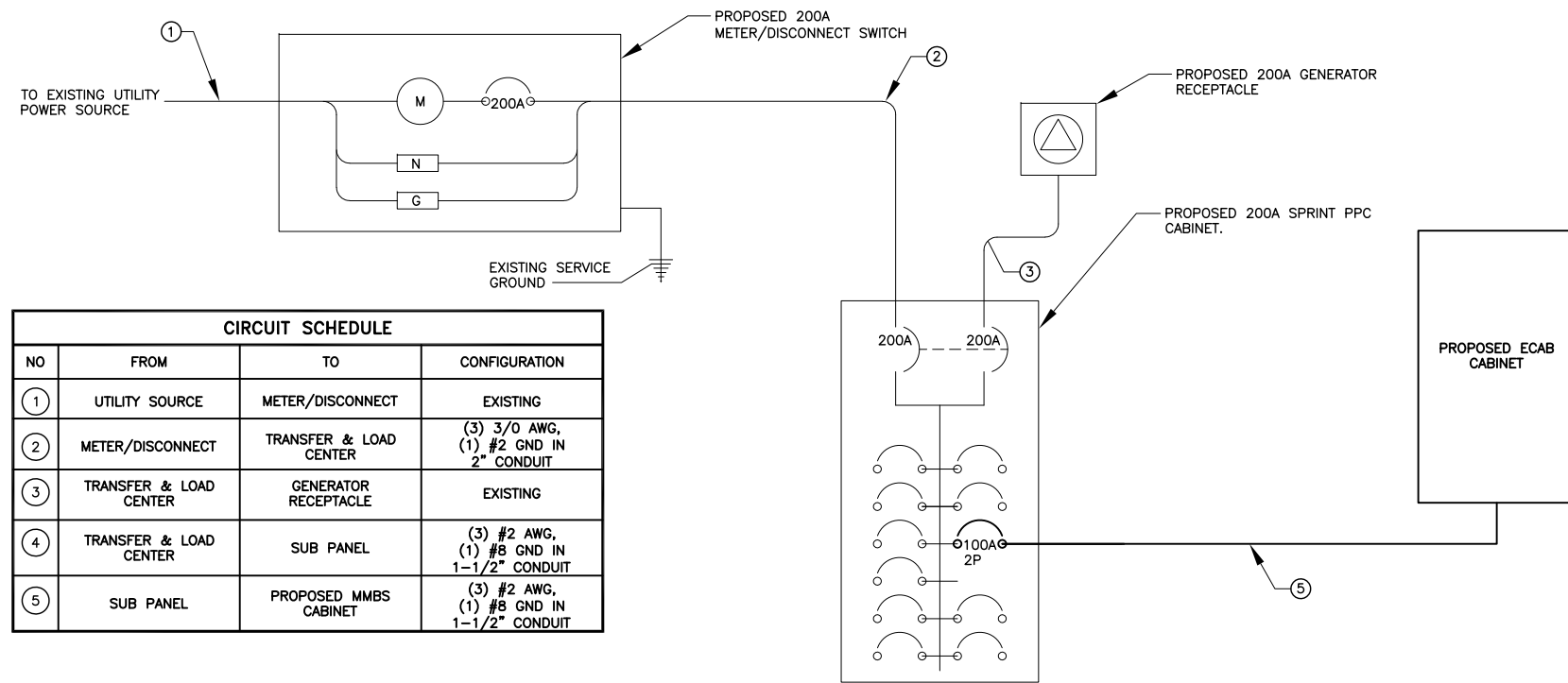
790 WILLIS ST  
BRISTOL, CT 06010

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-7



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
①	UTILITY SOURCE	METER/DISCONNECT	EXISTING
②	METER/DISCONNECT	TRANSFER & LOAD CENTER	(3) 3/0 AWG, (1) #2 GND IN 2" CONDUIT
③	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
④	TRANSFER & LOAD CENTER	SUB PANEL	(3) #2 AWG, (1) #8 GND IN 1-1/2" CONDUIT
⑤	SUB PANEL	PROPOSED MMBS CABINET	(3) #2 AWG, (1) #8 GND IN 1-1/2" CONDUIT

ONE LINE DIAGRAM

NO SCALE

1

GENERAL ELECTRICAL NOTES:

- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE AND ALL LOCAL AND STATE CODES, LAWS, AND ORDINANCES.
- ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE INDICATED. CONDUITS EXPOSED ABOVE GROUND SHALL BE RIGID GALVANIZED STEEL. ALL UNDERGROUND CONDUIT SHALL TRANSITION FROM PVC TO RIGID ABOVE GRADE. PROVIDE 36" SEPARATION BETWEEN UNDERGROUND POWER AND TELEPHONE CONDUITS. SUPPLY UTILITY MARKING TAPE BURIED 12" BELOW GRADE ALONG ENTIRE LENGTH OF UNDERGROUND CONDUITS.
- ALL CONDUCTORS SHALL BE COPPER WITH THHN/THWN INSULATION. CONTROL CONDUCTORS SHALL BE STRANDED, POWER & LIGHTING CONDUCTORS SHALL BE SOLID FOR #10 & #12 CONDUCTORS AND STRANDED FOR ALL OTHER SIZES.
- ELECTRICAL DRAWINGS ARE IN PART DIAGRAMMATIC. COORDINATE ELECTRICAL WORK WITH SITE CONDITIONS.
- LOCATE ALL UNDERGROUND UTILITIES BEFORE TRENCHING. IF CONFLICTS ARISE, CONTACT UTILITY COMPANY AND ENGINEER IMMEDIATELY.
- ALL EXPOSED CONDUITS SHALL HAVE WEATHERPROOF CAPS NOT DUCT TAPE.
- PROVIDE 200 LB TEST PULL WIRES IN EACH TELEPHONE AND POWER CONDUIT.
- PULL BOXES SHALL BE INSTALLED AS NEEDED PER NEC UTILITY REQUIREMENTS.

GENERAL GROUNDING NOTES:

- TO ENSURE PROPER BONDING, ALL CONNECTIONS SHALL BE AS FOLLOWS:
  - #2/0 BARE TINNED SOLID COPPER CONDUCTOR: CADWELDED TO RODS OR GROUND RING
  - LUGS AND BUS BAR (UNLESS NOTED OTHERWISE): SANDED CLEAN, COATED WITH OXIDE INHIBITOR AND BOLTED FOR MAXIMUM SURFACE CONTACT. ALL LUGS SHALL BE COPPER (NO ALUMINUM SHALL BE PERMITTED). PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT.
- ALL GROUNDING CABLE IN CONCRETE OR THROUGH WALLS SHALL BE IN 3/4" PVC CONDUIT. SEAL AROUND CONDUIT THROUGH WALLS. NO METALLIC CONDUIT SHALL BE USED FOR GROUNDING CONDUCTORS.
- OWNER'S REPRESENTATIVE WILL INSPECT CADWELDS AND CONDUCT MEGGER TEST PRIOR TO BURIAL. MAXIMUM 5 OHMS RESISTANCE IS REQUIRED.
- DO NOT INSTALL GROUND RING OUTSIDE OF LEASED AREA.
- MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. ALL BENDS SHALL BE A MINIMUM 8" RADIUS AND NO GREATER THAN 90 DEGREES.
- ALL CADWELDS TO BURIED GROUND RING SHALL BE THE PARALLEL TYPE, EXCEPT FOR THE GROUND RODS WHICH SHALL BE THE TEE TYPE.
- BOND SERVICE CONDUITS TO GROUND RING AS THEY CROSS. DO NOT EXOTHERMICALLY WELD TO CONDUITS.
- THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDING SYSTEM PRIOR TO BACKFILLING.
- THE MINIMUM SPACING BETWEEN GROUND RODS SHALL BE 10'-0" (MAX. 15'-0").
- BOND CIGBE TO EXTERNAL GROUND RING WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR IN PVC. CONNECT BAR END WITH 2 HOLE LUG, AND "CADWELD" THE OTHER END TO THE EXTERNAL GROUND ROD.
- THE PREFERRED LOCATION FOR COAX GROUNDING IS AT THE BASE OF THE TOWER PRIOR TO THE COAX BEND. BONDING IS SHOWN ON THE ICE BRIDGE DUE TO DIFFICULTY WITH WELDING OR ATTACHING TO TOWER LEGS. CONTRACTOR SHALL ADVISE CONSTRUCTION MANAGER PRIOR TO PLACING CIGBE ON ICE BRIDGE IF MOUNTING TO TOWER LEG IS POSSIBLE.
- BONDING OF THE GROUNDED CONDUCTOR (NEUTRAL) AND THE GROUNDING CONDUCTOR SHALL BE AT THE SERVICE DISCONNECTING MEANS. BONDING JUMPER SHALL BE INSTALLED PER N.E.C. ARTICLE 250-30.

ELECTRICAL NOTES

NO SCALE

2

GROUNDING NOTES

NO SCALE

3

PLANS PREPARED FOR:



PLANS PREPARED BY:



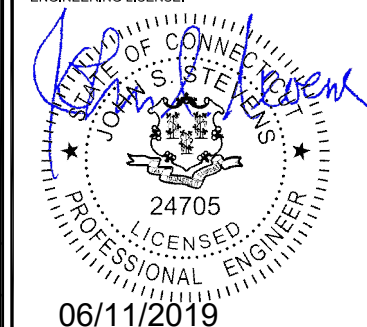
INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
Fax # (518) 690-0793  
JOB NUMBER 526-104

PROJECT MANAGER:



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

ENGINEERING LICENSE:



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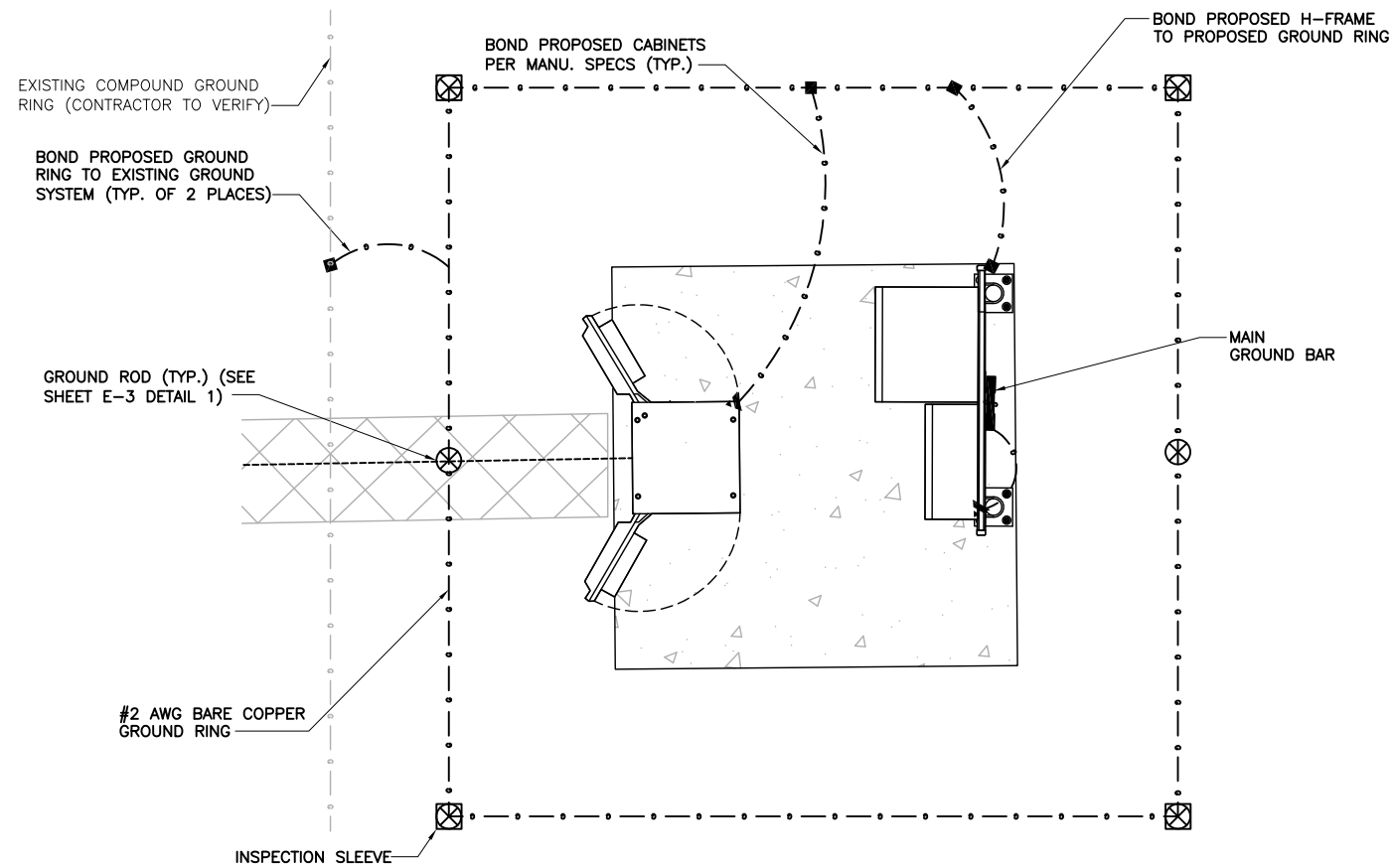
790 WILLIS ST  
BRISTOL, CT 06010

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1



PLANS PREPARED FOR:



PLANS PREPARED BY:

**INFINIGY**

INFINIGY ENGINEERING, PLLC  
1033 Watervliet Shaker Rd  
Albany, NY 12205  
Office # (518) 690-0790  
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**790 WILLIS ST  
BRISTOL, CT 06010**

SHEET DESCRIPTION:

**ELECTRICAL &  
GROUNDING DETAILS**

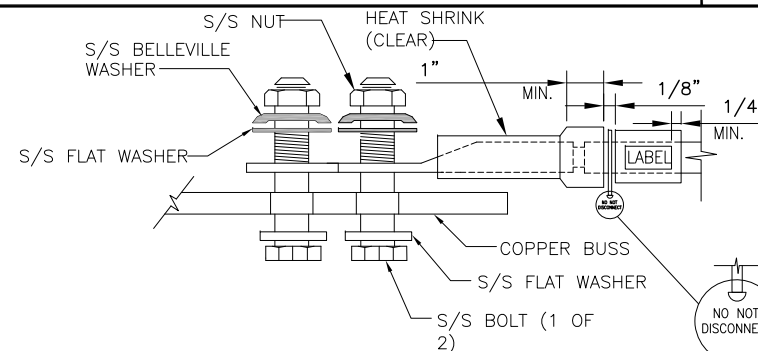
SHEET NUMBER:

**E-2**

**GROUNDING PLAN**

NO SCALE

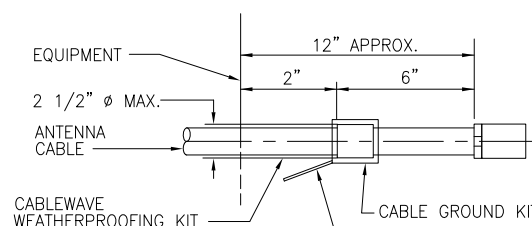
1



**EQUIPMENT GROUND CONNECTION**

NO SCALE

4



#2 AWG STRANDED COPPER GROUND WIRE (GROUNDED TO GROUND BAR) (STANDARD CABLEWAVE GROUNDING KIT)

**NOTE:**

DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

**CABLE GROUND KIT CONNECTION**

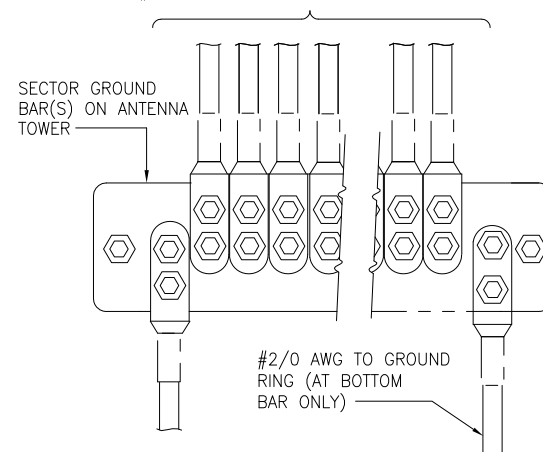
NO SCALE

5

**NOTE:**

1. COPPER GROUND BAR 1/4"x4"x24" 2-HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. SIMILAR INSTALLATION FOR TOP AND BOTTOM TOWER GROUND BARS AND FOR COAX ENTRY PORT GROUND BARS.

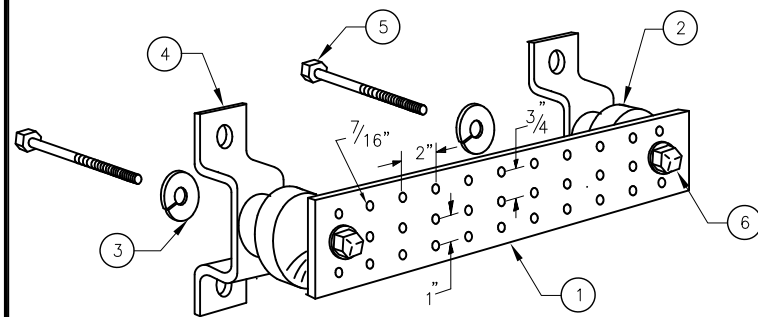
#6 AWG FROM ANTENNA COAX GROUND KIT.



**ANTENNA GROUND WIRE INSTALLATION**

NO SCALE

3



**LEGEND**

- 1 - TINNED COPPER GROUND BAR, 1/4"x 4"x 24"
- 2 - INSULATORS (NO INSULATORS ON TOWER)
- 3 - 5/8" LOCK WASHERS
- 4 - MOUNTING BRACKET (MOUNT HORIZONTAL ON VERTICAL CABLE LADDER)
- 5 - 5/8-11 X 1" H.H.C.S.BOLTS
- 6 - "LOCTITE" THREAD LOCK (RED) ON ALL REMOVABLE BOLTS

**TINNED GROUND BAR DETAIL**

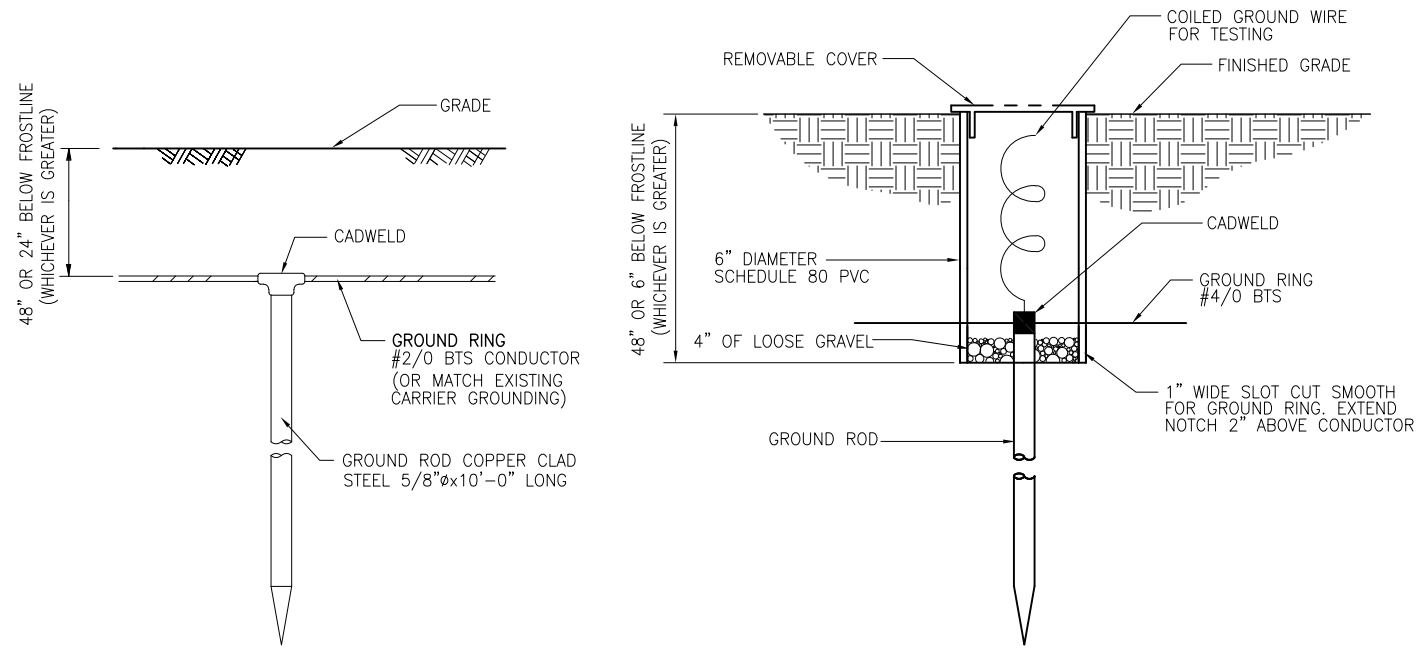
NO SCALE

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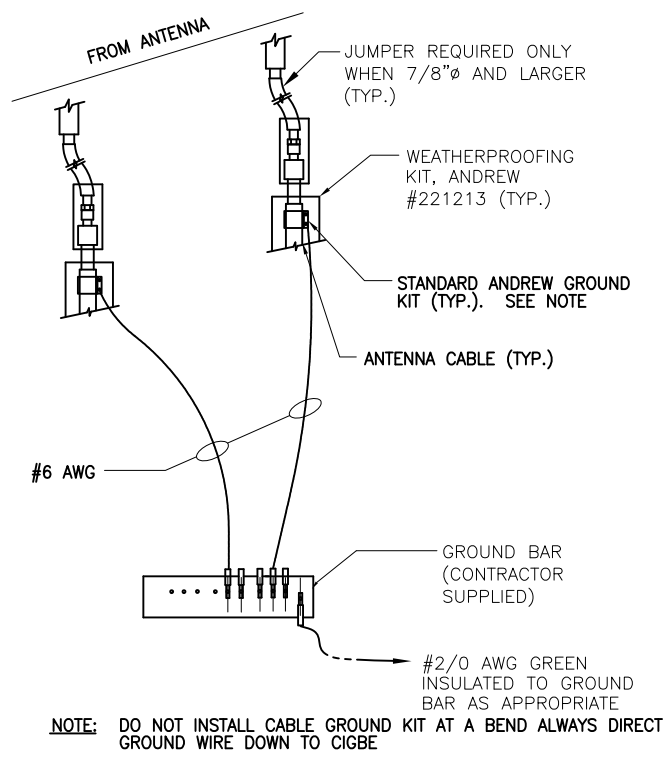
**INFINIGY**  
 INFINIGY ENGINEERING, PLLC  
 1033 Watervliet Shaker Rd  
 Albany, NY 12205  
 Office # (518) 690-0790  
 Fax # (518) 690-0793  
 JOB NUMBER 526-104

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



**GROUND ROD & INSPECTION SLEEVE DETAIL**

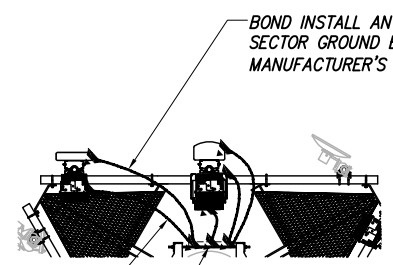
NO SCALE 1



**CONNECTION OF GROUND WIRES TO GROUND BARS @ ANTENNAS**

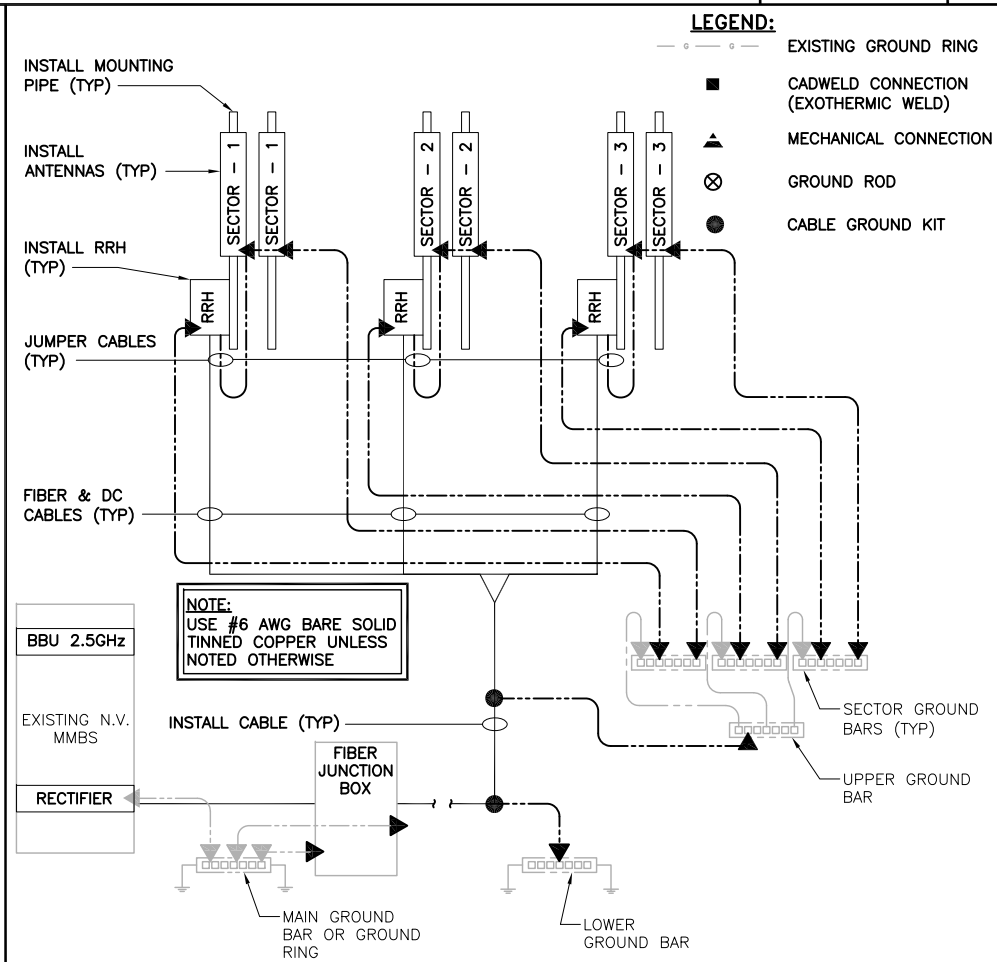
NO SCALE 2

- LEGEND:**
- - - - - EXISTING GROUND RING
  - CADWELD CONNECTION (EXOTHERMIC WELD)
  - ▲ MECHANICAL CONNECTION
  - ⊗ GROUND ROD
  - CABLE GROUND KIT



**TYPICAL ANTENNA GROUNDING PLAN**

NO SCALE 3



**GROUNDING RISER DIAGRAM**

NO SCALE 4

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 BRISTOL, CT 06010**

SHEET DESCRIPTION:  
**ELECTRICAL & GROUNDING DETAILS**

SHEET NUMBER:  
**E-3**