10 Industrial Ave, Suite 3
Mahwah, NJ 07430
Phone: (845)499-4712
Jennifer Notaro
Real Estate Consultant

September 4, 2014

Hand Delivered

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

CC to Property Owner
Mountaintop Enterprises, Inc.
10 Quarry Road, Bolton, CT 06043

RE: Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at 130 Vernon Road, Bolton, CT 06043. Known to Sprint Spectrum L.P. as site CT33XC550

Dear Ms. Bachman:

In order to accommodate technological changes, implement Code Division Multiple Access ("CDMA") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the state of Connecticut, Sprint Spectrum L.P. plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and its attachments is being sent to the chief elected official of the municipality in which affected cell site is located.

CDMA employs Spread-Spectrum technology and special coding scheme to allow multiple users to be multiplexed over the same physical channel.

LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modification as defined Connecticut General Statues ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for the R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will not be affected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by 6 decibels or more.
4. Radio Frequency power density may increase due to the use of one or more CDMA transmissions. Moreover, LTE will utilize additional radio frequencies newly licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons Sprint Spectrum L.P. respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (845)-499-4712 or email JNotaro@Transcendwireless.com with questions concerning this matter.
Thank you for your consideration.

Sincerely,

Jennifer Notaro
Real Estate Consultant

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY FCC REGULATORY COMPLIANCE MAXIMUM PERMISSIBLE EXPOSURE (MPE) ASSESSMENT

Sprint Existing Facility

Site ID: CT33XC550

W. Coventry

130 Vernon Road
Bolton, CT 06091

July 2, 2014

EBI Project Number: 62143749

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

EBI Consulting
environmental | engineering | due diligence

July 2, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC550 - W. Coventry

Site Total: 73.35% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 130 Vernon Road, Bolton, CT, for the purpose of determining whether the radio frequency (RF) exposure levels from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (µW/cm2). The number of µW/cm2 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 public 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 public 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 ($\mu W/cm^2$). The general population exposure limit for the cellular band (850 MHz Band) is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz and 2500 MHz bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 130 Vernon Road, Bolton, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all emissions were calculated using the following assumptions:

1) 3 channels in the 1900 MHz Band were considered for each sector of the proposed installation.
2) 1 channel in the 800 MHz Band was considered for each sector of the proposed installation
3) 2 channels in the 2500 MHz Band were considered for each sector of the proposed installation.
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 six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-I20. This is based on feedback from the carrier with regards to anticipated antenna selection. The RFS APXVSPP18-C-A20 has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. The RFS APXVTM14-C-I20 has a 15.9 dBd gain value at its main lobe at 2500 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
7) The antenna mounting height centerline for the proposed antennas is **148 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.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT33XC550 - W. Coventry
Site Addresss	130 Vernon Road, Bolton, CT, 06091
Site Type	Guyed Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	5.9	148	142	1/2 "	0.5	0	208.04	0.37%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	148	142	1/2 "	0.5	0	39.00	0.12%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	148	142	1/2 "	0.5	0	138.69	0.44%
														Sector total Power Density Value:		0.93%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	5.9	148	142	1/2 "	0.5	0	208.04	0.37%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	148	142	1/2 "	0.5	0	39.00	0.12%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	148	142	1/2 "	0.5	0	138.69	0.44%
														Sector total Power Density Value:		0.93%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain (10 db reduction)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss (dB)	ERP	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	5.9	148	142	1/2 "	0.5	0	208.04	0.37%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	148	142	1/2 "	0.5	0	39.00	0.12%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	148	142	1/2 "	0.5	0	138.69	0.44%
														Sector total Power Density Value:		0.93%

Site Composite MPE %	
Carrier	MPE %
Sprint	2.79%
AT&T	12.12%
T-Mobile	1.00%
Verizon Wireless	24.45%
Bolton Radio	0.02%
Commsite Intl	0.43%
Metro Call	1.11%
Pagemart	20.30%
Airtouch	5.64%
Conn. Radio	2.09%
Nextel	3.00%
NU	0.40%
Total Site MPE %	**73.35%**

EBI Consulting
environmental | engineering | due diligence

Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public Maximum Permissible Exposure (MPE) to radio frequency energy.

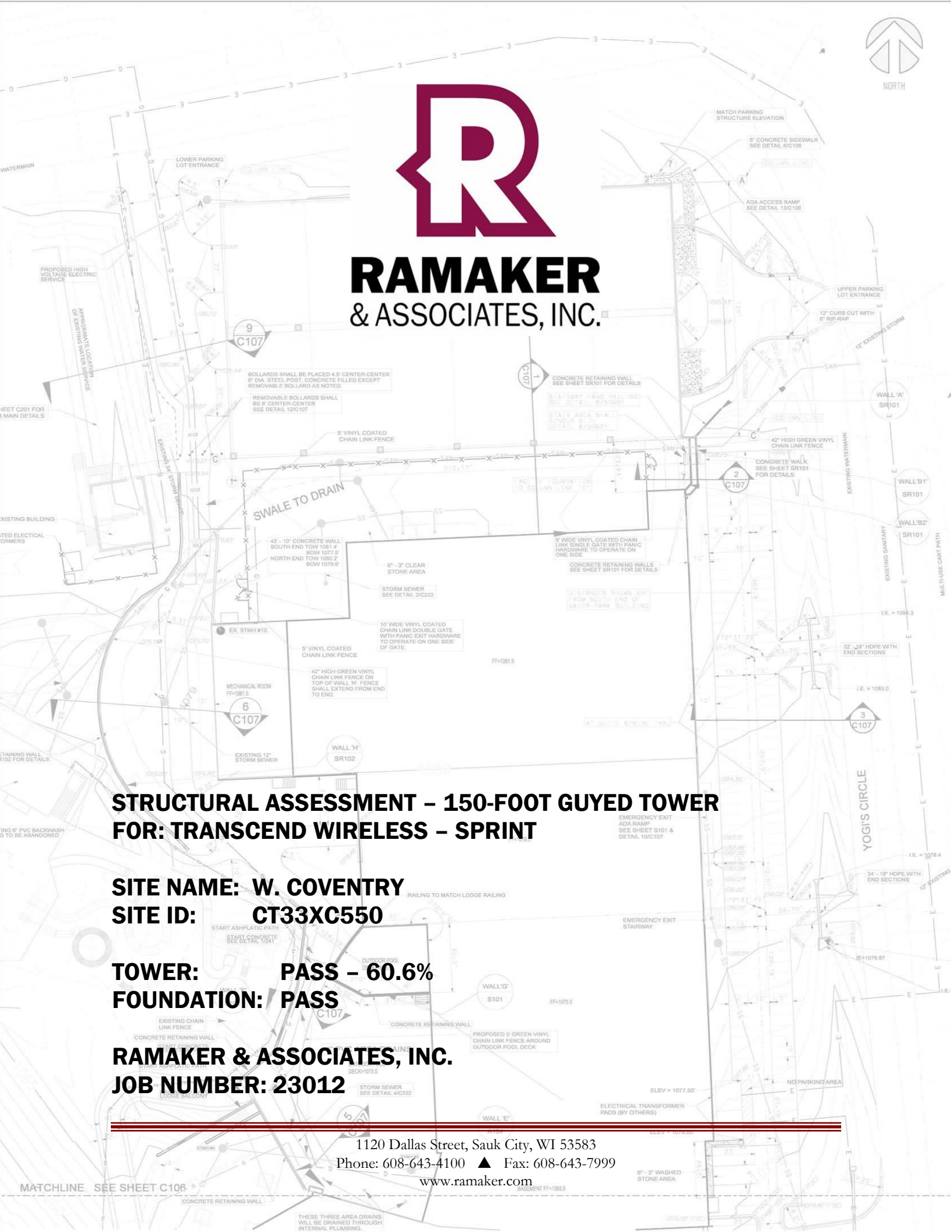
The anticipated Maximum Composite contributions from the Sprint facility are **2.79% (0.93% from sector 1, 0.93% from sector 2 and 0.93% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **73.35%** of the allowable FCC established general public limit sampled at 6 feet above ground level. This total composite site value is based upon MPE 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.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803



RAMAKER & ASSOCIATES, INC.

STRUCTURAL ASSESSMENT – 150-FOOT GUYED TOWER
FOR: TRANSCEND WIRELESS – SPRINT

SITE NAME: W. COVENTRY
SITE ID: CT33XC550

TOWER: PASS – 60.6%
FOUNDATION: PASS

RAMAKER & ASSOCIATES, INC.
JOB NUMBER: 23012

1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 ▲ Fax: 608-643-7999
www.ramaker.com

STRUCTURAL ASSESSMENT

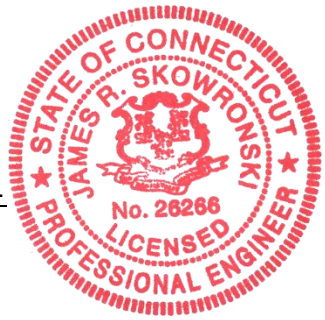
SITE:	W. Coventry (CT33XC550) 130 Vernon Road Bolton, Tolland County, Connecticut 06091
PREPARED FOR:	Transcend Wireless
CONTACT PERSON:	Mike Kithcart Transcend Wireless 48 Spruce Street, Oakland, NJ 07436
PREPARED BY:	Ramaker & Associates, Inc. 1120 Dallas Street Sauk City, Wisconsin 53583 Telephone: (608) 643-4100 Facsimile: (608) 643-7999
RAMAKER JOB NUMBER:	23012
DATE OF REPORT ISSUANCE:	July 15, 2014

Jonathan Styx
Engineering Technician

07/15/14
Date

James R. Skowronski, P.E.
Supervising Engineer

07/15/14
Date



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SECTION 1

EXECUTIVE SUMMARY

This report summarizes the structural analysis conducted by Ramaker & Associates, Inc. (RAMAKER) for Transcend Wireless on behalf of Sprint, who intends to install additional equipment on an existing tower.

The Sprint proposed loading includes installing three (3) RFS APXV9TM14-ALU-120 panel antennas on the three (3) existing V-sector frames at a centerline elevation of 148-feet AGL. The proposed antennas shall be fed with one (1) 5/8-inch hybrid cable.

Results of our tower analysis show that the tower will be stressed to a maximum of 60.6 percent of capacity under proposed loading conditions. All proposed model foundation reactions are less than the original design reactions. Therefore, it is anticipated that the existing foundation will provide adequate strength under proposed loading conditions.

Results of our mount assessment show that by engineering calculation and inspection, the antenna and RRH mounting structure is capable of supporting the existing and proposed Sprint 2.5 equipment deployment without causing an overstress condition in the antenna and RRH mounting structure, **provided the proposed structural modifications are completed prior to installation of new equipment per construction drawings by Ramaker & Associates.**

In summary, the tower and foundations will pass the TIA/EIA-222-F code requirements under proposed loading conditions. The mounting structure will pass the TIA-222 code requirements under proposed loading conditions.

SECTION 2
INTRODUCTION

2.1 PROJECT INFORMATION

This report summarizes the structural analysis conducted by Ramaker & Associates, Inc. (RAMAKER) for Transcend Wireless on behalf of Sprint, who intends to install additional equipment on an existing tower.

2.2 PURPOSE OF REPORT

The analysis activities of this report were conducted for the purposes of creating and analyzing a model of the subject structure under the required loading conditions. Base reactions from the resulting model were also determined for tower foundation and support development. Recommendations regarding the analysis results, loading configuration, and structural modifications are also provided.

2.3 SCOPE OF SERVICES

RAMAKER developed a finite element model (FEM) of the tower, using tnxTower, for member force, joint deflection, and structure reaction determinations. Subsequently, this report was drafted to provide our engineering recommendations. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the tower loading occur.

SECTION 3
MODEL DEVELOPMENT

3.1 INTRODUCTION

RAMAKER developed a FEM of the tower superstructure. Required static loads consisting of the antenna configuration, wind forces, ice loads, and linear appurtenances (including cable loads) were then applied to the FEM. As a result, all member forces, allowable capacities, and base reactions were computed. Additionally, potentially overstressed members were identified.

3.2 EXISTING STRUCTURE INFORMATION

Existing structure information was gathered from:

- Original tower drawings by Pirod, file number A-118677, dated October 17, 2001.
- Previous structural analysis by RAMAKER, dated January 16, 2013.

3.3 TOWER LOADING

RAMAKER understands that the tower loading to be used for this analysis will consist of the existing and proposed antenna, mount, and cable configurations as shown in the following chart:

Elevation	Appurtenance	Mount	Coax	Owner	Status
148	(3) RFS APXVSPP18-C-A20	(3) V-Sector Frames	(3) 1-5/8	Sprint	Existing
	(3) Alcatel-Lucent 1900 MHz RRH				
	(3) Alcatel-Lucent 800 MHZ RRH				
	(3) RFS APXV9TM14-ALU-120		**(1) 5/8 Hybrid**		**Proposed**
	(3) Alcatel-Lucent TD-RRH 8x20				
122	(2) 10' Omni	(3) 4' Stand-offs	(2) 1-1/4	Town	Existing
115	(3) 5' x 6" Panel Antennas	Leg Mount	(3) 1-1/4	Abandoned	Existing
55	(1) 10' Omni	(1) 4' Stand-off	(1) 1-1/4	Town	Existing

3.4 WIND AND ICE LOAD

Wind forces used in model development are in compliance with the TIA/EIA-222-F Standard. These guidelines call for an analysis to be performed which assumes a basic wind speed of 85 miles-per-hour (mph) without ice in Tolland County. The tower is also designed for a 74 mph basic wind speed with 0.50-inch of radial ice.

SECTION 4
ANALYSIS RESULTS

4.1 ANALYSIS RESULTS

The tower superstructure was analyzed with the combined existing and proposed antenna loading with and without radial ice. The computed maximum tower member stress capacities are as follows:

Component Type	Percent Capacity
Leg	25.6
Diagonal	36.5
Horizontal	14.8
Guy Pull Off	28.6
Guy Line	60.6
Bolt	9.5
RATING =	**60.6**

4.2 BASE REACTIONS

The computed maximum reactions are as follows:

Load Type	Original Design	Proposed Model
Base Axial (k)	213.2	55.4
Base Shear (k)	4.5	2.7
Guy Anchor Uplift (k)	88.2	18.7
Guy Anchor Lateral (k)	100.5	27.8

All proposed model foundation reactions are less than the original design reactions. Therefore, it is anticipated that the existing foundation will provide adequate strength under proposed loading conditions.

4.3 MOUNT ASSESSMENT

Results of our mount assessment show that by engineering calculation and inspection, the antenna and RRH mounting structure is capable of supporting the existing and proposed Sprint 2.5 equipment deployment without causing an overstress condition in the antenna and RRH mounting structure, **provided the proposed structural modifications are completed prior to installation of new equipment per construction drawings by Ramaker & Associates.**

This assessment is inclusive of the entire antenna mounting structure, including tower platforms, arms, and all other aspects of the mounting structure that will support the Sprint 2.5 equipment deployment. This assessment assumes that the mounting structure(s) has been installed correctly, is free from deterioration, and is maintained properly.

SECTION 5
LIMITATIONS

The recommendations contained within this report were developed using general project information provided by the owner, tower manufacturer, general field observations, reference information and laboratory testing data, as applicable. All recommendations pertain only to the proposed tower construction, location, and loading as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

1. Missing, corroding, and/or deteriorating members
2. Improper manufacturing and/or construction
3. Improper maintenance

RAMAKER assumes no responsibility for modifications completed prior to or hereafter in which RAMAKER was not directly involved. These modifications include but are not limited to the following:

1. Replacing or strengthening bracing members
2. Reinforcing or extending vertical members
3. Installing or removing antenna mounting gates or side arms
4. Changing loading configurations

Furthermore, RAMAKER hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations and conclusions are based on the information contained and set forth herein. If you are aware of any information contrary to that contained herein, or if you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact RAMAKER. RAMAKER isn't liable for any representation, recommendation or conclusion not expressly stated herein.

The tower owner is responsible for verifying that the existing loading on the tower is consistent with the loading applied to the tower within this report.

SECTION 6

REFERENCES

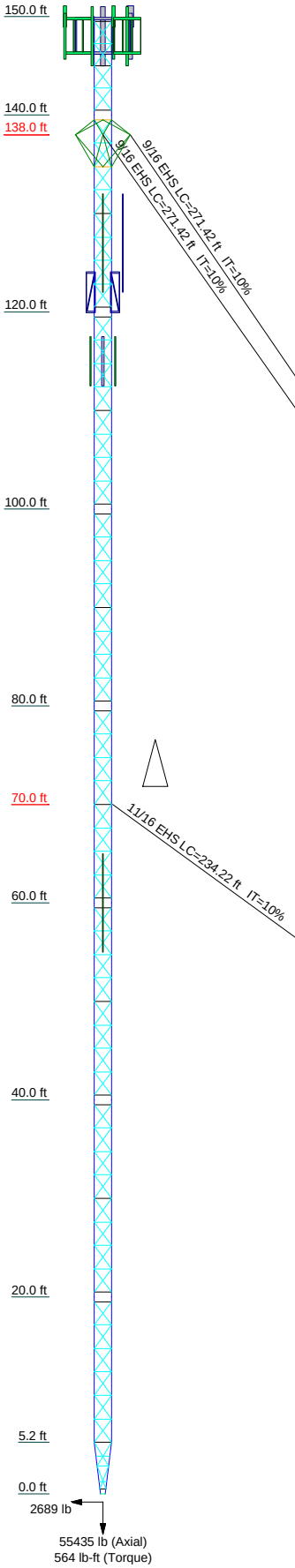
1. 2003 International Building Code.

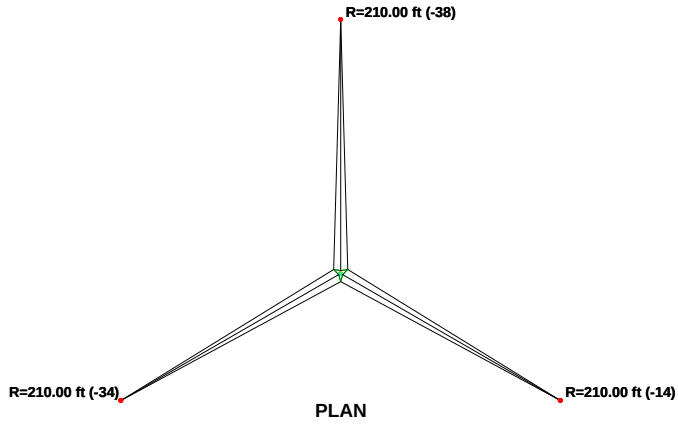
2. Telecommunications Industries Association, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA Standard TIA/EIA-222-F 1996, Washington, D.C.

APPENDIX A

TOWER FIGURES

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs		SR 2				SR 2 1/4		SR 2 1/2	
Leg Grade					A572-50				
Diagonals									SR 7/8
Diagonal Grade					SR 3/4				
Top Girts		N.A.			A572-50				N.A.
Mid Girts				SR 1		SR 1		N.A.	
Bottom Girts					SR 1			SR 1 1/4	SR 1
Horizontals					SR 3/4				6x1/2
Sec. Horizontals					N.A.				SR 7/8
Top Guy Pull-Offs		SR 1			N.A.				
Bot Guy Pull-Offs		SR 1			N.A.				
Face Width (ft)	3.75								1
# Panels @ (ft)	4 @ 2.26	1928.2	1107.6	1281.4	56 @ 2.38	1281.4	1281.4	1106.9	485.1
Weight (lb)	591.8								10345.3





DESIGNED APPURTENANCE LOADING

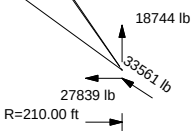
TYPE	ELEVATION	TYPE	ELEVATION
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	148	APXV9TM14-ALU-120 w/ 3.5" mount pipe (Sprint)	148
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	148	TD-RRH 8x20 (Sprint)	148
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	148	TD-RRH 8x20 (Sprint)	148
1900MHz 4x40W RRH (Sprint)	148	TD-RRH 8x20 (Sprint)	148
1900MHz 4x40W RRH (Sprint)	148	10' Omni (Omni)	122
1900MHz 4x40W RRH (Sprint)	148	10' Omni (Omni)	122
800MHz 2x50W RRH (Sprint)	148	4' Standoff (Omni)	122
800MHz 2x50W RRH (Sprint)	148	4' Standoff (Omni)	122
800MHz 2x50W RRH (Sprint)	148	4' Standoff (Omni)	122
PiROD 12' T-Frame (Sprint)	148	5' x 6" Panel Antenna w/Mount Pipe (Abandoned)	115
PiROD 12' T-Frame (Sprint)	148	5' x 6" Panel Antenna w/Mount Pipe (Abandoned)	115
PiROD 12' T-Frame (Sprint)	148	5' x 6" Panel Antenna w/Mount Pipe (Abandoned)	115
APXV9TM14-ALU-120 w/ 3.5" mount pipe (Sprint)	148	10' Omni (Omni)	55
APXV9TM14-ALU-120 w/ 3.5" mount pipe (Sprint)	148	4' Standoff (Omni)	55

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

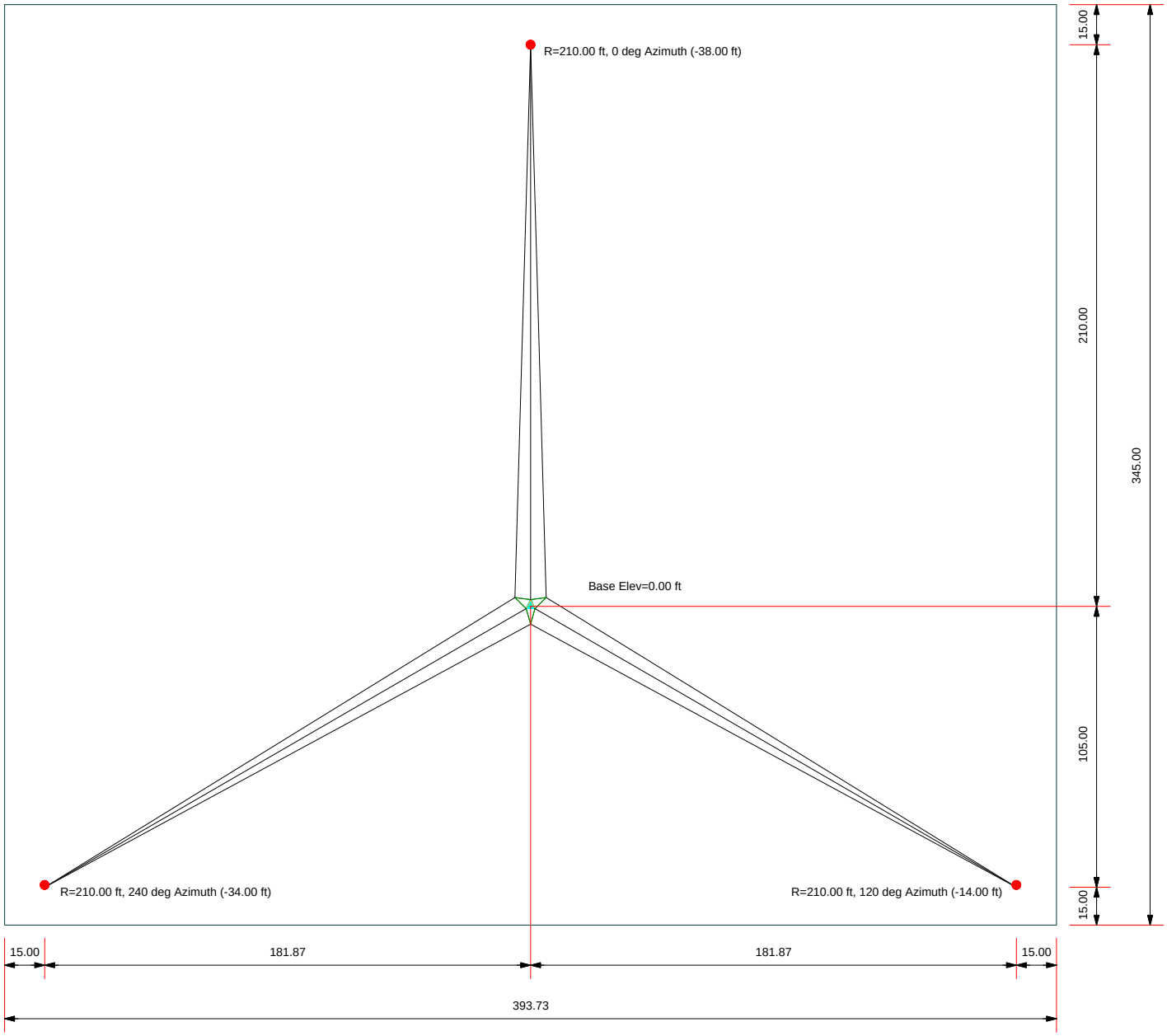
1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 60.6%



Ramaker & Associates
1120 Dallas St.
Sauk City, WI 53583
Phone: (608) 643-4100
FAX: (608) 643-7999

Job: W. Coventry (CT33XC550) Rev.1			
Project: 23012			
Client: Sprint	Drawn by: JDS	App'd:	
Code: TIA/EIA-222-F	Date: 07/15/14	Scale: NTS	
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri		Dwg No. E-1	

Plot Plan
Total Area - 3.12 Acres



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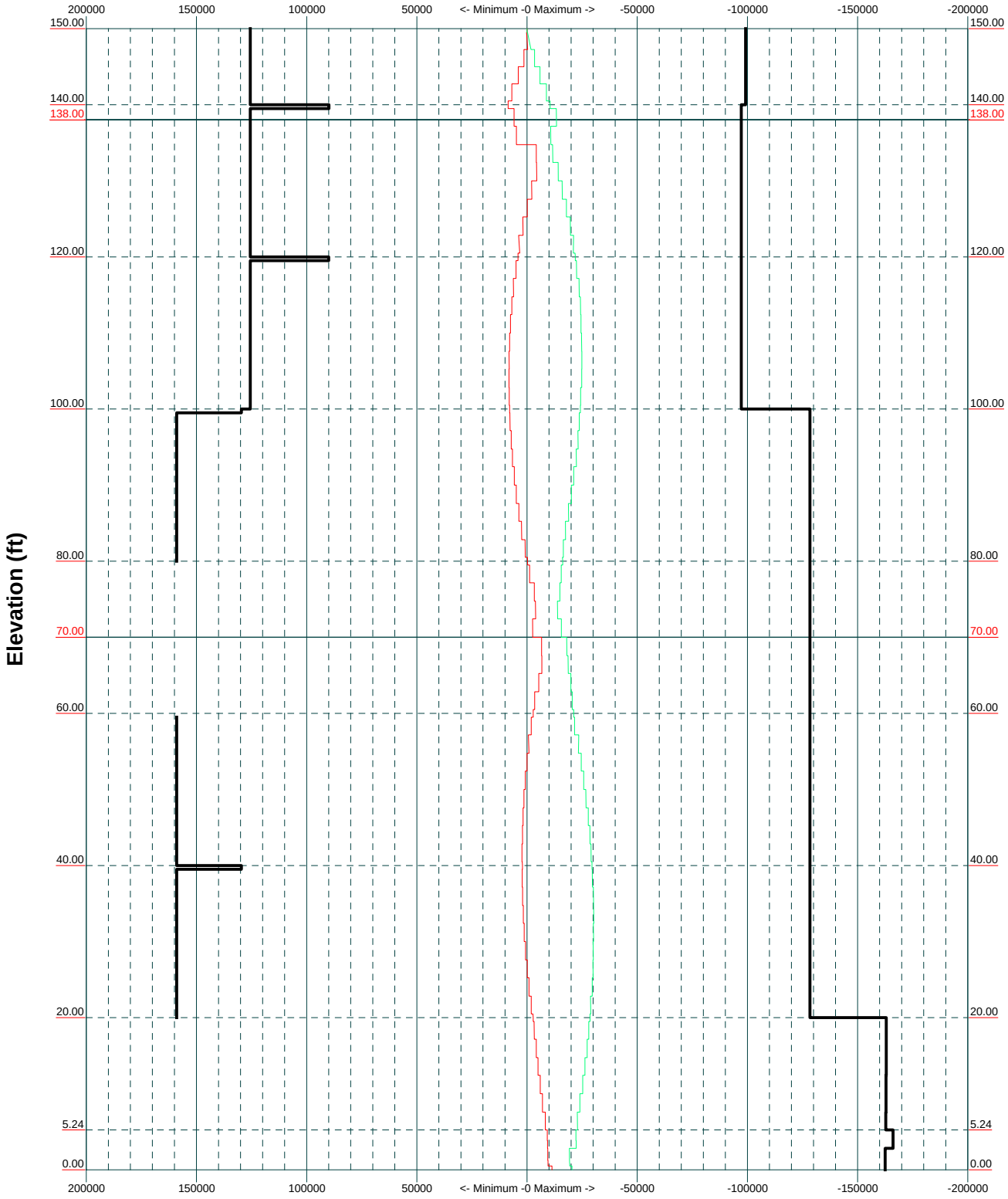
Client: Sprint	Drawn by: JDS	App'd:	
Code: TIA/EIA-222-F	Date: 07/15/14	Scale: NTS	
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri		Dwg No. E-2	

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Leg Capacity ——— **Leg Compression (lb)**



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Project: ***23012***			
Client: Sprint	Drawn by: JDS	App'd:	
Code: TIA/EIA-222-F	Date: 07/15/14	Scale: NTS	
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri		Dwg No. E-3	

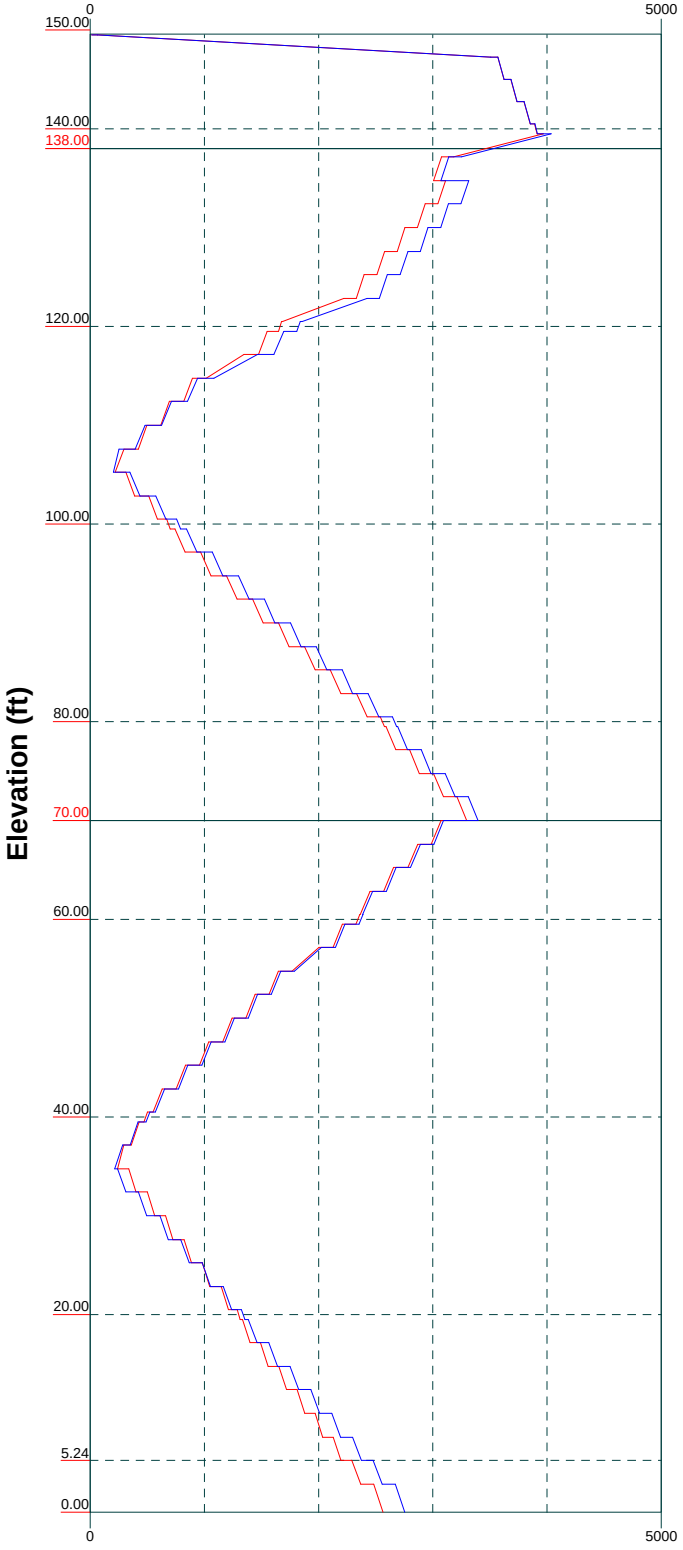
TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Vx Vz

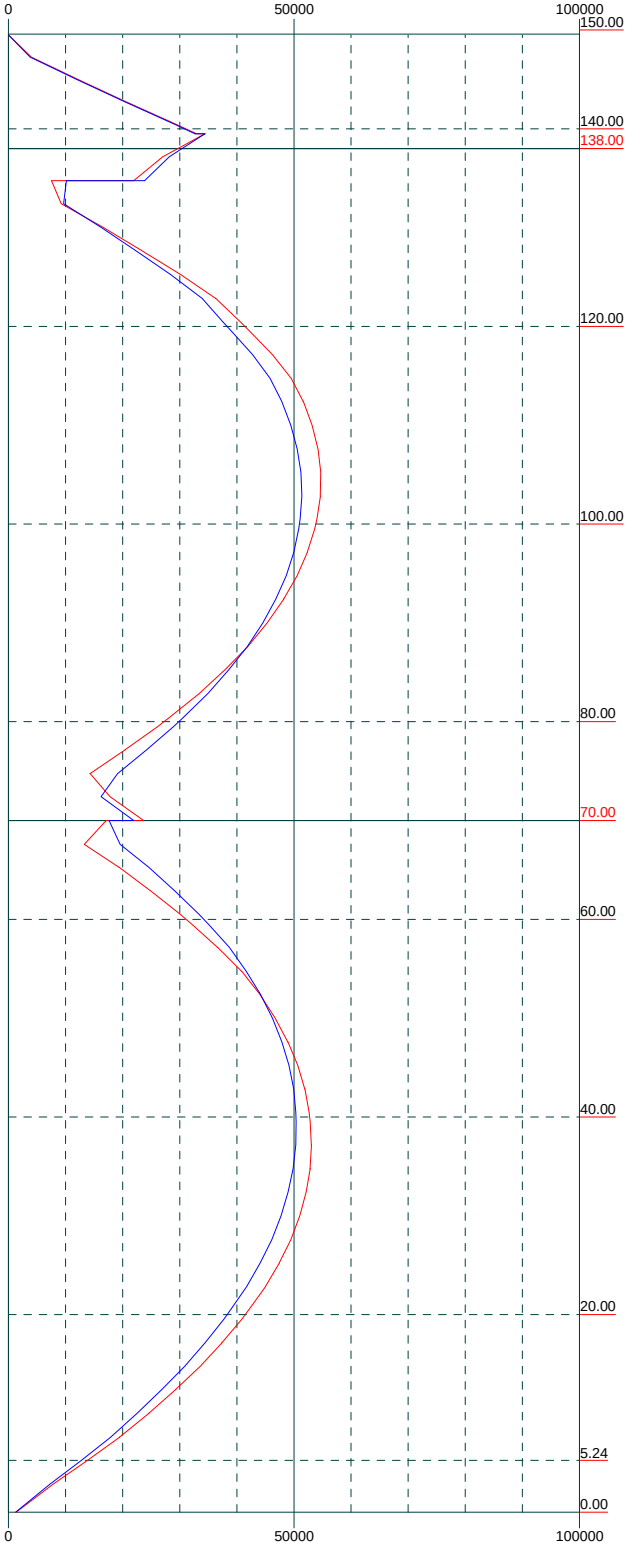
Maximum Values

Mx Mz

Global Mast Shear (lb)



Global Mast Moment (lb-ft)



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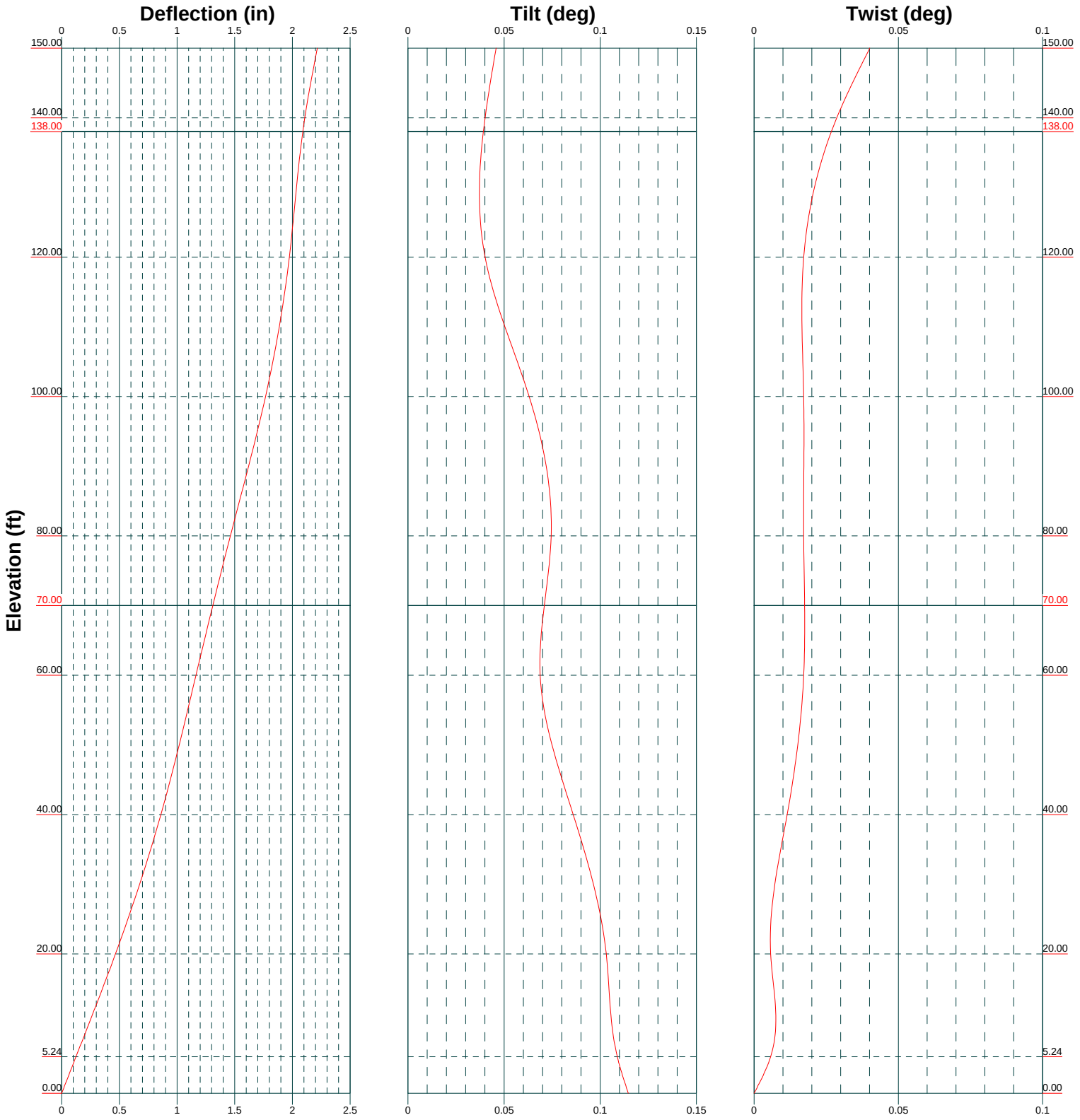
FAX: (608) 643-7999

Job: ***W. Coventry (CT33XC550) Rev.1***			
Project: ***23012***			
Client: Sprint	Drawn by: JDS	App'd:	
Code: TIA/EIA-222-F	Date: 07/15/14	Scale: NTS	
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri		Dwg No. E-4	

TIA/EIA-222-F - Service - 60 mph

Maximum Values



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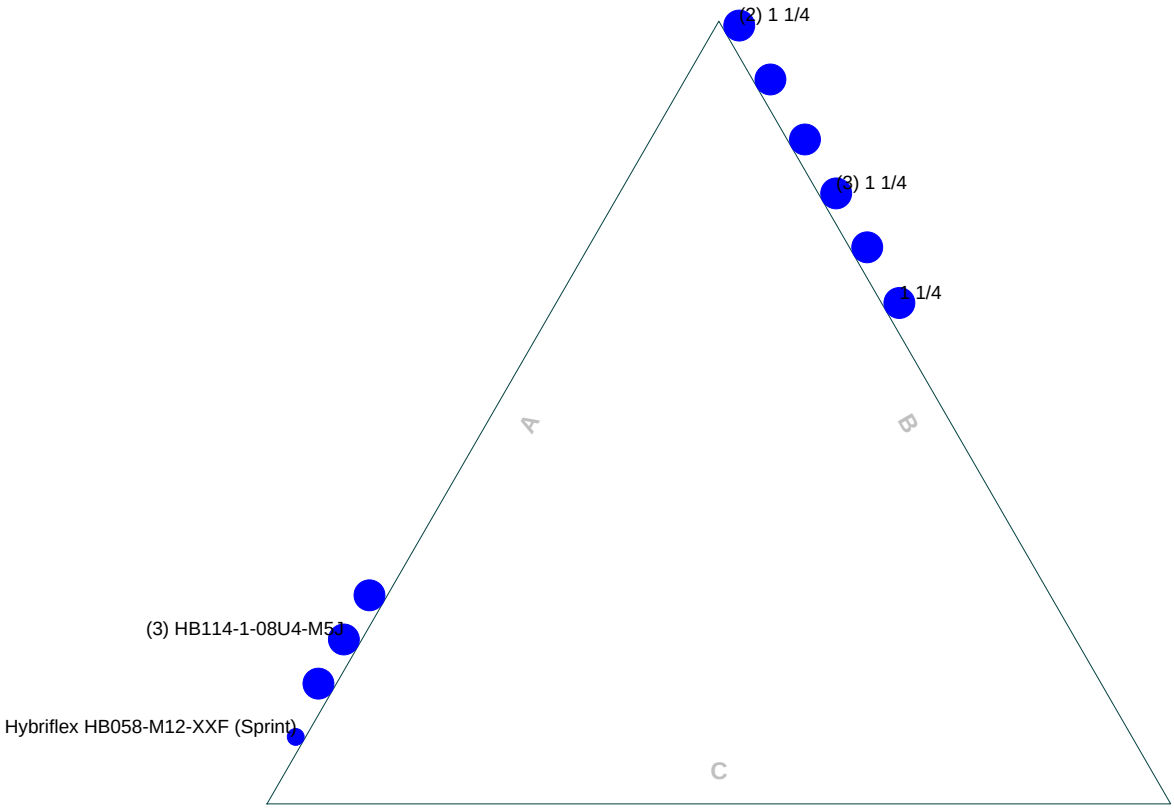
Job: ***W. Coventry (CT33XC550) Rev.1***			
Project: ***23012***			
Client: Sprint	Drawn by: JDS	App'd:	
Code: TIA/EIA-222-F	Date: 07/15/14	Scale: NTS	
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri		Dwg No. E-5	

Feed Line Plan

Round Flat App In Face App Out Face



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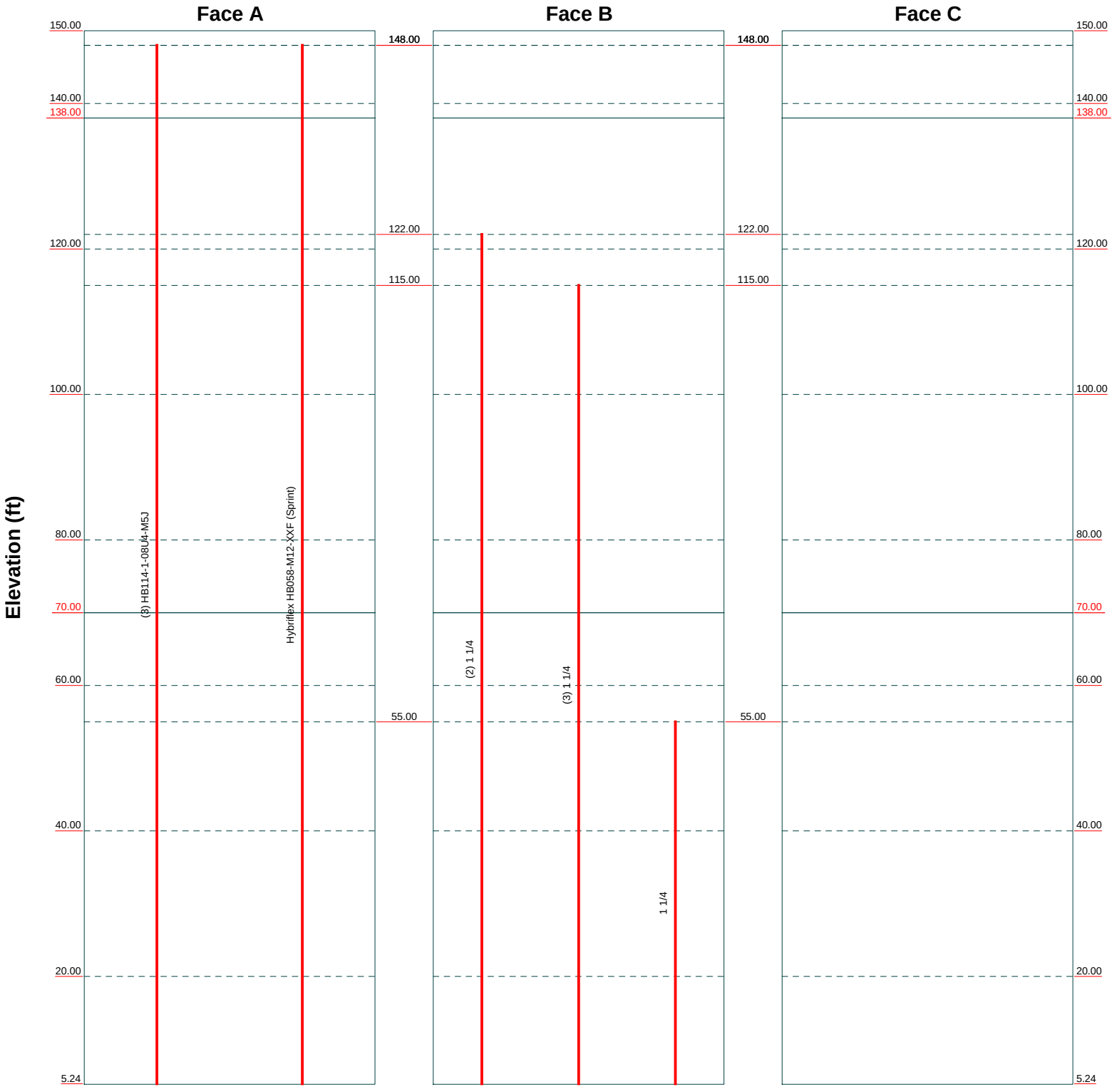
Job:	***W. Coventry (CT33XC550) Rev.1***		
Project:	***23012***		
Client: Sprint		Drawn by: JDS	App'd:
Code: TIA/EIA-222-F		Date: 07/15/14	Scale: NTS
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri			Dwg No. E-7

Feed Line Distribution Chart
5'2-7/8" - 150'

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



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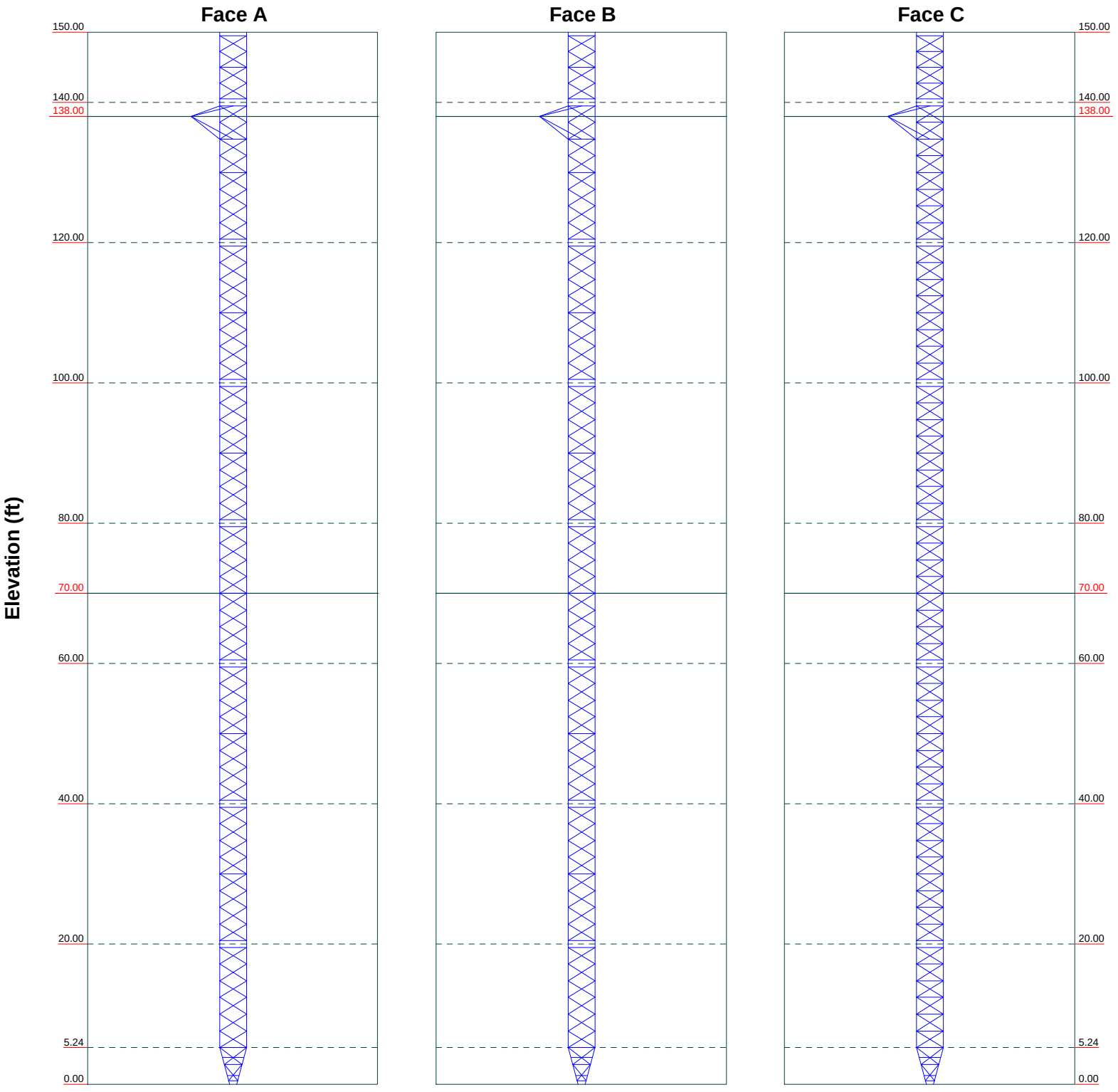
Job:	***W. Coventry (CT33XC550) Rev.1***		
Project:	***23012***		
Client: Sprint		Drawn by: JDS	App'd:
Code: TIA/EIA-222-F		Date: 07/15/14	Scale: NTS
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri			Dwg No. E-7

Stress Distribution Chart
0' - 150'

> 100% | 90%-100% | 75%-90% | 50%-75% | < 50% Overstress



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Job: ***W. Coventry (CT33XC550) Rev.1***			
Project: ***23012***			
Client: Sprint	Drawn by: JDS	App'd:	
Code: TIA/EIA-222-F	Date: 07/15/14	Scale: NTS	
Path: I:\23000\23012\Structural\Risa\23012 REV1.eri		Dwg No. E-8	

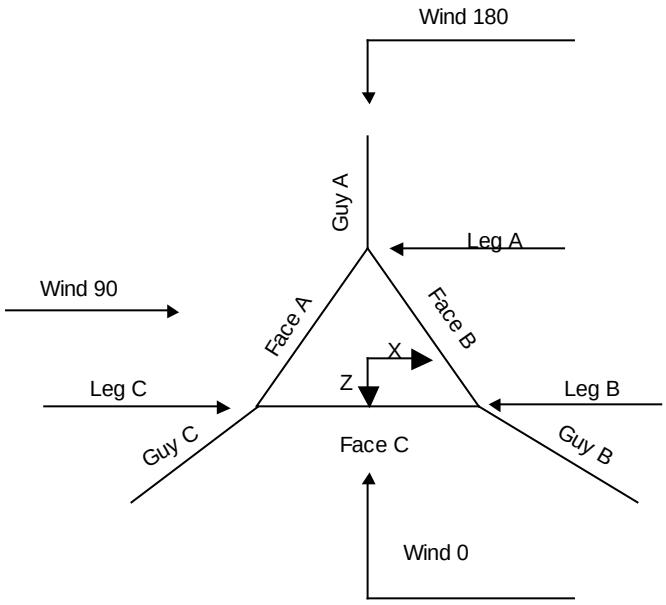
APPENDIX B

TOWER CALCULATIONS

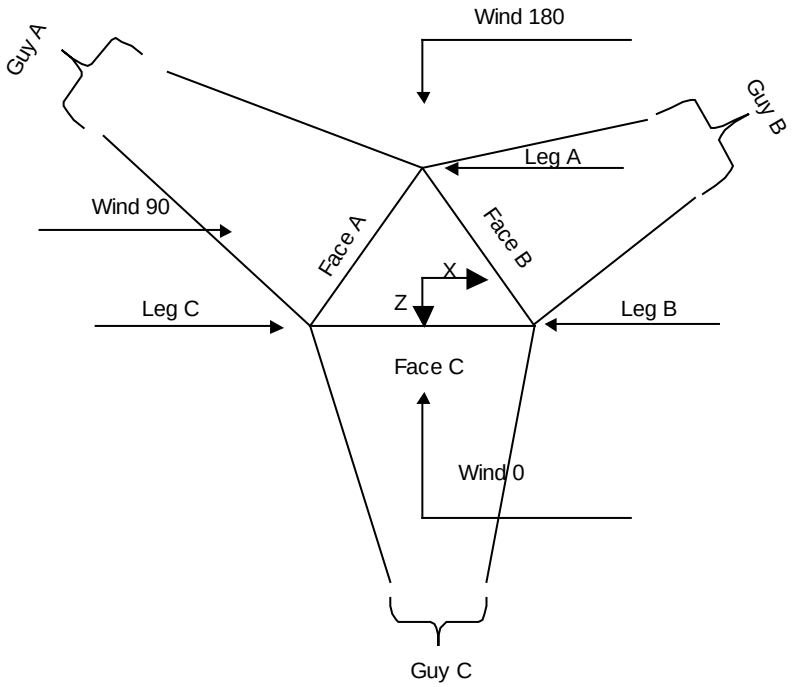
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 150.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.75 ft at the top and 1.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

- Tower is located in Tolland County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are calculated at each section.
- Safety factor used in guy design is 2.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	150.00-140.00		48M 103923	3.75	1	10.00
T2	140.00-120.00		48M 103923	3.75	1	20.00
T3	120.00-100.00		48M 103923	3.75	1	20.00
T4	100.00-80.00		48M 103926	3.75	1	20.00
T5	80.00-60.00		48M 103926	3.75	1	20.00
T6	60.00-40.00		48M 103926	3.75	1	20.00
T7	40.00-20.00		48M 103926	3.75	1	20.00
T8	20.00-5.24			3.75	1	14.76
T9	5.24-0.00			3.75	1	5.24

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	150.00-140.00	2.26	X Brace	No	Steps	5.7600	5.7600
T2	140.00-120.00	2.38	X Brace	No	Steps	5.7600	5.7600
T3	120.00-100.00	2.38	X Brace	No	Steps	5.7600	5.7600
T4	100.00-80.00	2.38	X Brace	No	Steps	5.7600	5.7600
T5	80.00-60.00	2.38	X Brace	No	Steps	5.7600	5.7600
T6	60.00-40.00	2.38	X Brace	No	Steps	5.7600	5.7600
T7	40.00-20.00	2.38	X Brace	No	Steps	5.7600	5.7600
T8	20.00-5.24	2.38	X Brace	No	Steps	5.7600	0.0000
T9	5.24-0.00	2.38	X Brace	No	Yes	0.0000	5.7600

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150.00-140.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T6 60.00-40.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T7 40.00-20.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T8 20.00-5.24	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T9 5.24-0.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 150.00-140.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T6 60.00-40.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T7 40.00-20.00	Solid Round	1	A572-50	Solid Round	1	A572-50

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
			(50 ksi)			(50 ksi)
T8 20.00-5.24	Solid Round	1	A572-50 (50 ksi)	Solid Round	1 1/4	A572-50 (50 ksi)
T9 5.24-0.00	Solid Round		A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 150.00-140.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 140.00-120.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T3 120.00-100.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T4 100.00-80.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T5 80.00-60.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T6 60.00-40.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T7 40.00-20.00	1	Solid Round	1	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T8 20.00-5.24	None	Solid Round		A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T9 5.24-0.00	None	Solid Round		A572-50 (50 ksi)	Flat Bar	6x1/2	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T9 5.24-0.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T2 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T3 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T4 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T5 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T6 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T7 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T8 20.00-5.24	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000
T9 5.24-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1]: Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	Yes	1	1	1	1	1	1	1	1
150.00-140.00				1	1	1	1	1	1	1
T2	No	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T3	No	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T4	No	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T5 80.00-60.00	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 60.00-40.00	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 40.00-20.00	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 20.00-5.24	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 5.24-0.00	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 150.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-5.24	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 5.24-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 150.00-140.00	Flange	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 140.00-120.00	Flange	0.6250 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 120.00-100.00	Flange	0.6250 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 100.00-80.00	Flange	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 80.00-60.00	Flange	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 60.00-40.00	Flange	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 40.00-20.00	Flange	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 20.00-5.24	Flange	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 5.24-0.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
138	EHS	A	9/16	3500.00	10%	21000	0.671	271.20	210.00	0.0000	-38.00	100%
		B	9/16	3500.00	10%	21000	0.671	256.30	210.00	0.0000	-14.00	100%
		C	9/16	3500.00	10%	21000	0.671	268.63	210.00	0.0000	-34.00	100%

70	EHS	A	11/16	5000.00	10%	19000	1.000	234.02	210.00	0.0000	-38.00	100%
		B	11/16	5000.00	10%	19000	1.000	223.97	210.00	0.0000	-14.00	100%
		C	11/16	5000.00	10%	19000	1.000	232.20	210.00	0.0000	-34.00	100%

Guy Data *(cont'd)*

Guy Elevation *ft*	*Mount Type*	*Torque-Arm Spread* *ft*	*Torque-Arm Leg Angle* °	*Torque-Arm Style*	*Torque-Arm Grade*	*Torque-Arm Type*	*Torque-Arm Size*
138	Torque Arm	12.00	15.0000	Wing	A36 (36 ksi)	Double Equal Angle	2L3x3x1/4x3/8
70	Corner						

Guy Data *(cont'd)*

Guy Elevation *ft*	*Diagonal Grade*	*Diagonal Type*	*Upper Diagonal Size*	*Lower Diagonal Size*	*Is Strap.*	*Pull-Off Grade*	*Pull-Off Type*	*Pull-Off Size*
138.00	A572-50 (50 ksi)	Solid Round			No	A572-50 (50 ksi)	Solid Round	1
70.00	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Guy Data *(cont'd)*

Guy Elevation *ft*	*Cable Weight A* *lb*	*Cable Weight B* *lb*	*Cable Weight C* *lb*	*Cable Weight D* *lb*	*Tower Intercept A* *ft*	*Tower Intercept B* *ft*	*Tower Intercept C* *ft*	*Tower Intercept D* *ft*
138	181.98	171.98	180.25		6.94 4.5 sec/pulse	6.21 4.3 sec/pulse	6.81 4.5 sec/pulse	
70	234.02	223.97	232.20		5.42 4.0 sec/pulse	4.98 3.9 sec/pulse	5.34 4.0 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation *ft*	*Calc K Single Angles*	*Calc K Solid Rounds*	*Torque Arm* K_x	*Torque Arm* K_y	*Pull Off* K_x	*Pull Off* K_y	*Diagonal* K_x	*Diagonal* K_y
138	Yes	Yes	1	1	1	1	1	1
70	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
138	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
70	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
138	A	50.00	21	16	0.5000
	B	62.00	22	17	0.5000
	C	52.00	21	16	0.5000
70	A	16.00	18	14	0.5000
	B	28.00	18	14	0.5000
	C	18.00	18	14	0.5000

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
138	A	206.62	176.00	4335	5.62	4051	6.01	3772	6.45	3500	6.94	3235	7.50	2981	8.13	2737	8.84
	B	206.62	152.00	4437	4.91	4118	5.29	3805	5.72	3500	6.21	3205	6.78	2922	7.42	2654	8.16
	C	206.62	172.00	4351	5.49	4062	5.88	3778	6.32	3500	6.81	3231	7.37	2971	8.00	2724	8.72
70	A	207.83	108.00	6485	4.19	5979	4.54	5483	4.95	5000	5.42	4535	5.97	4092	6.61	3678	7.35
	B	207.83	84.00	6625	3.76	6070	4.11	5527	4.51	5000	4.98	4494	5.54	4015	6.19	3572	6.95
	C	207.83	104.00	6509	4.11	5995	4.46	5490	4.87	5000	5.34	4528	5.89	4079	6.54	3659	7.28

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HB114-1-08U4-M5J **********	A	No	Ar (CaAa)	148.00 - 0.00	0.0000	-0.3	3	3	1.0000	1.5400		1.08
1 1/4	B	No	Ar (CaAa)	122.00 - 0.00	0.0000	-0.45	2	2	1.5500	1.5500		0.66
1 1/4	B	No	Ar (CaAa)	115.00 - 0.00	0.0000	-0.27	3	3	1.5500	1.5500		0.66
1 1/4 ******	B	No	Ar (CaAa)	55.00 - 0.00	0.0000	-0.13	1	1	1.5500	1.5500		0.66
Hybriflex HB058-M12-XXF (Sprint)	A	No	Ar (CaAa)	148.00 - 0.00	0.0000	-0.42	1	1	0.8400	0.8400		0.24

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	150.00-140.00	A	0.000	0.000	4.368	0.000	27.86
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	0.000	0.000	10.920	0.000	69.64
		B	0.000	0.000	0.620	0.000	2.64
		C	0.000	0.000	0.000	0.000	0.00
T3	120.00-100.00	A	0.000	0.000	10.920	0.000	69.64
		B	0.000	0.000	13.175	0.000	56.10
		C	0.000	0.000	0.000	0.000	0.00
T4	100.00-80.00	A	0.000	0.000	10.920	0.000	69.64
		B	0.000	0.000	15.500	0.000	66.00
		C	0.000	0.000	0.000	0.000	0.00
T5	80.00-60.00	A	0.000	0.000	10.920	0.000	69.64
		B	0.000	0.000	15.500	0.000	66.00
		C	0.000	0.000	0.000	0.000	0.00
T6	60.00-40.00	A	0.000	0.000	10.920	0.000	69.64
		B	0.000	0.000	17.825	0.000	75.90
		C	0.000	0.000	0.000	0.000	0.00
T7	40.00-20.00	A	0.000	0.000	10.920	0.000	69.64
		B	0.000	0.000	18.600	0.000	79.20
		C	0.000	0.000	0.000	0.000	0.00
T8	20.00-5.24	A	0.000	0.000	8.059	0.000	51.39
		B	0.000	0.000	13.727	0.000	58.45
		C	0.000	0.000	0.000	0.000	0.00
T9	5.24-0.00	A	0.000	0.000	2.861	0.000	18.25
		B	0.000	0.000	4.873	0.000	20.75
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	150.00-140.00	A	0.500	0.000	0.000	10.277	0.000	72.93
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	0.500	0.000	0.000	25.693	0.000	182.32
		B		0.000	0.000	1.020	0.000	7.65
		C		0.000	0.000	0.000	0.000	0.00
T3	120.00-100.00	A	0.500	0.000	0.000	25.693	0.000	182.32
		B		0.000	0.000	21.675	0.000	162.54
		C		0.000	0.000	0.000	0.000	0.00
T4	100.00-80.00	A	0.500	0.000	0.000	25.693	0.000	182.32
		B		0.000	0.000	25.500	0.000	191.23
		C		0.000	0.000	0.000	0.000	0.00
T5	80.00-60.00	A	0.500	0.000	0.000	25.693	0.000	182.32
		B		0.000	0.000	25.500	0.000	191.23
		C		0.000	0.000	0.000	0.000	0.00
T6	60.00-40.00	A	0.500	0.000	0.000	25.693	0.000	182.32
		B		0.000	0.000	29.325	0.000	219.91
		C		0.000	0.000	0.000	0.000	0.00
T7	40.00-20.00	A	0.500	0.000	0.000	25.693	0.000	182.32

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	30.600	0.000	229.47
		C		0.000	0.000	0.000	0.000	0.00
T8	20.00-5.24	A	0.500	0.000	0.000	18.962	0.000	134.55
		B		0.000	0.000	22.583	0.000	169.35
		C		0.000	0.000	0.000	0.000	0.00
T9	5.24-0.00	A	0.500	0.000	0.000	6.732	0.000	47.77
		B		0.000	0.000	8.017	0.000	60.12
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150.00-140.00	-2.2544	0.6582	-2.0401	0.6066
T2	140.00-120.00	-2.4733	0.5449	-2.2217	0.5224
T3	120.00-100.00	-1.1713	-1.5931	-1.1960	-1.2875
T4	100.00-80.00	-0.9829	-1.7438	-1.0384	-1.4471
T5	80.00-60.00	-0.9829	-1.7438	-1.0384	-1.4471
T6	60.00-40.00	-0.7879	-1.8188	-0.8653	-1.5282
T7	40.00-20.00	-0.7280	-1.8418	-0.8116	-1.5534
T8	20.00-5.24	-0.7152	-1.8094	-0.8036	-1.5381
T9	5.24-0.00	-0.4080	-1.0866	-0.4816	-0.9623

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice	8.56 9.21	6.95 8.13	82.55 147.99
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice	8.56 9.21	6.95 8.13	82.55 147.99
APXVSPP18-C-A20 w/Mount Pipe (Sprint)	C	From Leg	4.00 -6.00 0.00	0.0000	148.00	No Ice 1/2" Ice	8.56 9.21	6.95 8.13	82.55 147.99
1900MHz 4x40W RRH (Sprint)	A	From Leg	4.00 -1.50 0.00	0.0000	148.00	No Ice 1/2" Ice	2.71 2.95	2.61 2.84	60.00 83.12
1900MHz 4x40W RRH (Sprint)	B	From Leg	4.00 -1.50 0.00	0.0000	148.00	No Ice 1/2" Ice	2.71 2.95	2.61 2.84	60.00 83.12
1900MHz 4x40W RRH (Sprint)	C	From Leg	4.00 -1.50 0.00	0.0000	148.00	No Ice 1/2" Ice	2.71 2.95	2.61 2.84	60.00 83.12
800MHz 2x50W RRH	A	From Leg	4.00	0.0000	148.00	No Ice	2.40	2.25	64.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Sprint)			-1.50 1.50			1/2" Ice	2.61	2.46	86.12
800MHz 2x50W RRH	B	From Leg	4.00	0.0000	148.00	No Ice	2.40	2.25	64.00
(Sprint)			-1.50 1.50			1/2" Ice	2.61	2.46	86.12
800MHz 2x50W RRH	C	From Leg	4.00	0.0000	148.00	No Ice	2.40	2.25	64.00
(Sprint)			-1.50 1.50			1/2" Ice	2.61	2.46	86.12
PiROD 12' T-Frame	A	From Leg	4.00	0.0000	148.00	No Ice	12.20	12.20	360.00
(Sprint)			0.00 0.00			1/2" Ice	17.60	17.60	490.00
PiROD 12' T-Frame	B	From Leg	4.00	0.0000	148.00	No Ice	12.20	12.20	360.00
(Sprint)			0.00 0.00			1/2" Ice	17.60	17.60	490.00
PiROD 12' T-Frame	C	From Leg	4.00	0.0000	148.00	No Ice	12.20	12.20	360.00
(Sprint)			0.00 0.00			1/2" Ice	17.60	17.60	490.00
**********									
APXV9TM14-ALU-120 w/ 3.5"	A	From Leg	4.00	0.0000	148.00	No Ice	8.20	6.75	128.00
mount pipe			6.00			1/2" Ice	8.85	7.59	201.91
(Sprint)			0.00						
APXV9TM14-ALU-120 w/ 3.5"	B	From Leg	4.00	0.0000	148.00	No Ice	8.20	6.75	128.00
mount pipe			6.00			1/2" Ice	8.85	7.59	201.91
(Sprint)			0.00						
APXV9TM14-ALU-120 w/ 3.5"	C	From Leg	4.00	0.0000	148.00	No Ice	8.20	6.75	128.00
mount pipe			6.00			1/2" Ice	8.85	7.59	201.91
(Sprint)			0.00						
TD-RRH 8x20	A	From Leg	4.00	0.0000	148.00	No Ice	4.32	1.41	66.13
(Sprint)			6.00 2.00			1/2" Ice	4.60	1.61	90.06
TD-RRH 8x20	B	From Leg	4.00	0.0000	148.00	No Ice	4.32	1.41	66.13
(Sprint)			6.00 2.00			1/2" Ice	4.60	1.61	90.06
TD-RRH 8x20	C	From Leg	4.00	0.0000	148.00	No Ice	4.32	1.41	66.13
(Sprint)			6.00 2.00			1/2" Ice	4.60	1.61	90.06
**********									
10' Omni	B	From Face	4.00	0.0000	122.00	No Ice	2.50	2.50	30.00
(Omni)			0.00 5.00			1/2" Ice	3.53	3.53	48.64
10' Omni	C	From Face	4.00	0.0000	122.00	No Ice	2.50	2.50	30.00
(Omni)			0.00 5.00			1/2" Ice	3.53	3.53	48.64
4' Standoff	A	From Face	2.00	0.0000	122.00	No Ice	2.72	2.72	50.00
(Omni)			0.00 0.00			1/2" Ice	4.91	4.91	89.00
4' Standoff	B	From Face	2.00	0.0000	122.00	No Ice	2.72	2.72	50.00
(Omni)			0.00 0.00			1/2" Ice	4.91	4.91	89.00
4' Standoff	C	From Face	2.00	0.0000	122.00	No Ice	2.72	2.72	50.00
(Omni)			0.00 0.00			1/2" Ice	4.91	4.91	89.00
**********									
5' x 6" Panel Antenna w/Mount	A	From Leg	1.00	0.0000	115.00	No Ice	3.75	3.97	48.25
Pipe			0.00			1/2" Ice	4.13	4.64	84.05
(Abandoned)			0.00						
5' x 6" Panel Antenna w/Mount	B	From Leg	1.00	0.0000	115.00	No Ice	3.75	3.97	48.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pipe			0.00			1/2" Ice	4.13	4.64	84.05
(Abandoned)			0.00						
5' x 6" Panel Antenna w/Mount	C	From Leg	1.00	0.0000	115.00	No Ice	3.75	3.97	48.25
Pipe			0.00			1/2" Ice	4.13	4.64	84.05
(Abandoned)			0.00						
**********									
10' Omni	C	From Face	4.00	0.0000	55.00	No Ice	2.50	2.50	30.00
(Omni)			0.00			1/2" Ice	3.53	3.53	48.64
			5.00						
4' Standoff	C	From Face	2.00	0.0000	55.00	No Ice	2.72	2.72	50.00
(Omni)			0.00			1/2" Ice	4.91	4.91	89.00
			0.00						

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	5981.96			
Bracing Weight	4363.35			
Total Member Self-Weight	10345.31			
Guy Weight	1758.59			
Total Weight	15761.07			
Wind 0 deg - No Ice		0.00	-13936.46	322.03
Wind 30 deg - No Ice		6964.32	-12062.56	862.59
Wind 60 deg - No Ice		12060.30	-6963.02	1172.00
Wind 90 deg - No Ice		13928.64	0.00	1166.94
Wind 120 deg - No Ice		12069.33	6968.23	848.97
Wind 150 deg - No Ice		6964.32	12062.56	304.35
Wind 180 deg - No Ice		0.00	13926.03	-322.39
Wind 210 deg - No Ice		-6964.32	12062.56	-862.59
Wind 240 deg - No Ice		-12069.33	6968.23	-1171.00
Wind 270 deg - No Ice		-13928.64	0.00	-1166.94
Wind 300 deg - No Ice		-12060.30	-6963.02	-849.61
Wind 330 deg - No Ice		-6964.32	-12062.56	-304.35
Member Ice	2713.54			
Guy Ice	1534.11			
Total Weight Ice	22983.93			
Wind 0 deg - Ice		0.00	-16764.69	-142.22
Wind 30 deg - Ice		8379.82	-14514.27	320.60
Wind 60 deg - Ice		14512.82	-8378.98	697.46
Wind 90 deg - Ice		16759.64	0.00	887.18
Wind 120 deg - Ice		14518.65	8382.35	839.07
Wind 150 deg - Ice		8379.82	14514.27	566.58
Wind 180 deg - Ice		0.00	16757.96	141.95
Wind 210 deg - Ice		-8379.82	14514.27	-320.60
Wind 240 deg - Ice		-14518.65	8382.35	-696.86
Wind 270 deg - Ice		-16759.64	0.00	-887.18
Wind 300 deg - Ice		-14512.82	-8378.98	-839.41
Wind 330 deg - Ice		-8379.82	-14514.27	-566.58

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Total Weight	15761.07			
Wind 0 deg - Service		0.00	-6944.12	160.46
Wind 30 deg - Service		3470.11	-6010.41	429.80
Wind 60 deg - Service		6009.28	-3469.46	583.97
Wind 90 deg - Service		6940.22	0.00	581.45
Wind 120 deg - Service		6013.78	3472.06	423.02
Wind 150 deg - Service		3470.11	6010.41	151.65
Wind 180 deg - Service		0.00	6938.92	-160.64
Wind 210 deg - Service		-3470.11	6010.41	-429.80
Wind 240 deg - Service		-6013.78	3472.06	-583.48
Wind 270 deg - Service		-6940.22	0.00	-581.45
Wind 300 deg - Service		-6009.28	-3469.46	-423.34
Wind 330 deg - Service		-3470.11	-6010.41	-151.65

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy

Comb. No.	Description
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	150 - 140	Leg	Max Tension	8	8561.82	51.69	565.24
			Max. Compression	19	-10460.72	-26.69	-11.61
			Max. Mx	11	5569.96	-628.38	95.18
			Max. My	2	3601.58	35.41	-639.17
			Max. Vy	11	-1399.36	42.37	-30.12
			Max. Vx	2	-1467.22	-17.96	64.32
		Diagonal	Max Tension	11	2184.50	0.00	0.00
			Max. Compression	11	-2211.48	0.00	0.00
			Max. Mx	22	1234.36	-1.61	-0.10
			Max. My	11	-2203.38	-0.62	-0.83
			Max. Vy	22	-2.89	-1.61	-0.10
			Max. Vx	11	0.38	-0.62	-0.83
		Horizontal	Max Tension	2	377.38	0.00	0.00
			Max. Compression	8	-338.07	0.00	0.00
			Max. Mx	14	38.02	4.04	0.00
			Max. My	16	318.07	0.00	0.00
			Max. Vy	14	-4.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Top Girt	Max Tension	12	109.47	0.00	0.00
			Max. Compression	10	-125.64	0.00	0.00
			Max. Mx	14	-12.48	6.40	0.00
			Max. My	9	-12.73	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Bottom Girt	Max Tension	17	1185.67	0.00	0.00
			Max. Compression	6	-1114.00	0.00	0.00
			Max. Mx	14	42.69	6.40	0.00
			Max. My	22	-932.04	0.00	0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Mid Girt	Max Tension	4	509.94	0.00	0.00
			Max. Compression	6	-476.05	0.00	0.00
			Max. Mx	14	22.36	6.40	0.00
			Max. My	9	5.17	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
T2	140 - 120	Leg	Max Tension	8	8556.68	-2.56	-26.23
			Max. Compression	17	-21854.63	-3.24	-18.10
			Max. Mx	5	7135.98	-716.76	-155.88
			Max. My	2	3591.92	-71.25	769.75
			Max. Vy	11	-1404.43	715.50	-155.81
			Max. Vx	2	-1471.34	-71.25	769.75
		Diagonal	Max Tension	19	1394.70	0.00	0.00
			Max. Compression	18	-1607.60	0.00	0.00
			Max. Mx	17	339.87	-2.42	0.08
			Max. My	22	-939.40	-1.71	-0.62
			Max. Vy	17	3.24	-2.42	0.08
			Max. Vx	22	0.28	-1.71	-0.62
		Horizontal	Max Tension	15	657.29	0.00	0.00
			Max. Compression	21	-150.43	0.00	0.00
			Max. Mx	14	295.60	4.04	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	16	488.27	0.00	0.00
			Max. Vy	14	-4.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Bottom Girt	Max Tension	15	679.75	0.00	0.00
			Max. Compression	25	-312.04	0.00	0.00
			Max. Mx	14	54.62	6.40	0.00
			Max. My	20	390.16	0.00	0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Mid Girt	Max Tension	16	387.49	0.00	0.00
			Max. Compression	10	-21.63	0.00	0.00
			Max. Mx	14	33.45	6.40	0.00
			Max. My	22	4.01	0.00	0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	10365.93		
			Top Tension	21	10597.21		
			Top Cable Vert	21	7082.73		
			Top Cable Norm	21	7882.63		
			Top Cable Tan	21	6.65		
			Bot Cable Vert	21	-6484.58		
			Bot Cable Norm	21	8087.19		
			Bot Cable Tan	21	7.49		
		Guy B	Bottom Tension	25	10025.06		
			Top Tension	25	10224.88		
			Top Cable Vert	25	6264.40		
			Top Cable Norm	25	8081.17		
			Top Cable Tan	25	6.09		
			Bot Cable Vert	25	-5712.76		
			Bot Cable Norm	25	8238.10		
			Bot Cable Tan	25	6.89		
		Guy C	Bottom Tension	17	10331.40		
			Top Tension	17	10557.44		
			Top Cable Vert	17	6964.82		
			Top Cable Norm	17	7934.15		
			Top Cable Tan	17	6.76		
			Bot Cable Vert	17	-6373.80		
			Bot Cable Norm	17	8130.95		
			Bot Cable Tan	17	7.21		
		Top Guy Pull-Off	Max Tension	17	5032.18	0.00	0.00
			Max. Compression	19	-2380.88	0.00	0.00
			Max. Mx	14	1128.20	6.40	0.00
			Max. My	9	959.85	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Bottom Guy Pull-Off	Max Tension	25	1535.88	0.00	0.00
			Max. Compression	19	-3084.48	0.00	0.00
			Max. Mx	14	-635.81	6.40	0.00
			Max. My	22	-2749.06	0.00	0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	25	10638.01	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	19	3259.96	69.87	0.00
			Max. My	22	4954.50	0.00	-0.03
			Max. Vy	19	44.19	0.00	0.00
			Max. Vx	22	-0.02	0.00	0.00
		Torque Arm Bottom	Max Tension	6	1782.86	0.00	0.00
			Max. Compression	21	-11425.20	0.00	0.00
			Max. Mx	19	-6428.93	76.76	0.00
			Max. My	22	-3490.17	0.00	0.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	19	-44.23	0.00	0.00
			Max. Vx	22	-0.04	0.00	0.00
T3	120 - 100	Leg	Max Tension	19	8232.83	10.42	-5.17
			Max. Compression	21	-24890.77	1.44	46.78
			Max. Mx	23	-16340.07	-275.93	164.60
			Max. My	15	-16408.94	-9.97	-314.41
			Max. Vy	23	602.75	11.94	15.00
			Max. Vx	15	653.81	4.19	13.09
		Diagonal	Max Tension	22	805.69	0.00	0.00
			Max. Compression	16	-924.46	0.00	0.00
			Max. Mx	20	-220.67	-2.30	0.10
			Max. My	22	-898.03	-0.93	-0.40
			Max. Vy	20	3.19	-2.30	0.10
			Max. Vx	22	0.18	-0.93	-0.40
		Horizontal	Max Tension	15	685.75	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	323.25	4.04	0.00
			Max. My	26	628.75	0.00	0.00
			Max. Vy	14	-4.31	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Top Girt	Max Tension	21	340.46	0.00	0.00
			Max. Compression	19	-289.67	0.00	0.00
			Max. Mx	14	37.53	6.40	0.00
			Max. My	20	-192.38	0.00	0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Bottom Girt	Max Tension	15	316.26	0.00	0.00
			Max. Compression	7	-19.98	0.00	0.00
			Max. Mx	14	57.33	6.40	0.00
			Max. My	20	34.13	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Mid Girt	Max Tension	15	663.08	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	97.75	6.40	0.00
			Max. My	20	208.35	0.00	0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
T4	100 - 80	Leg	Max Tension	19	7924.60	1.83	-4.72
			Max. Compression	17	-24211.54	-143.47	23.69
			Max. Mx	18	-14575.48	441.20	-77.08
			Max. My	21	-15544.44	13.28	503.92
			Max. Vy	18	909.42	6.07	-12.85
			Max. Vx	21	1019.89	0.13	15.87
		Diagonal	Max Tension	20	1129.52	0.00	0.00
			Max. Compression	18	-1384.82	0.00	0.00
			Max. Mx	19	-34.27	-2.01	0.01
			Max. My	21	-1129.75	-1.87	-0.23
			Max. Vy	19	3.06	-2.01	0.01
			Max. Vx	21	0.11	0.00	0.00
		Horizontal	Max Tension	15	560.10	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	275.15	4.04	0.00
			Max. My	18	237.45	0.00	-0.00
			Max. Vy	14	-4.31	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	15	381.66	0.00	0.00
			Max. Compression	17	-155.12	0.00	0.00
			Max. Mx	14	43.93	6.40	0.00
			Max. My	20	70.50	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	600.70	0.00	0.00
			Max. Compression	20	-301.75	0.00	0.00
			Max. Mx	14	74.61	6.40	0.00
			Max. My	20	50.15	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Mid Girt	Max Tension	15	511.48	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	111.70	6.40	0.00
			Max. My	20	112.98	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T5	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-21184.67	-0.72	27.83
			Max. Mx	18	-7245.77	-432.84	-45.84
			Max. My	21	-13098.32	-12.74	-475.27
			Max. Vy	18	914.98	-431.83	51.87
			Max. Vx	21	1026.11	-12.74	-475.27
		Diagonal	Max Tension	17	1560.10	0.00	0.00
			Max. Compression	24	-1563.02	0.00	0.00
			Max. Mx	24	-186.44	-2.41	0.14
			Max. My	24	-1488.73	-1.39	0.29
			Max. Vy	24	3.24	-2.41	0.14
			Max. Vx	24	-0.13	-1.39	0.29
		Horizontal	Max Tension	15	513.03	0.00	0.00
			Max. Compression	13	-136.80	0.00	0.00
			Max. Mx	14	361.26	4.04	0.00
			Max. My	18	289.93	0.00	-0.00
			Max. Vy	14	-4.31	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	15	637.58	0.00	0.00
			Max. Compression	17	-425.71	0.00	0.00
			Max. Mx	14	71.81	6.40	0.00
			Max. My	20	109.15	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	15	677.52	0.00	0.00
			Max. Compression	25	-354.21	0.00	0.00
			Max. Mx	14	100.31	6.40	0.00
			Max. My	20	144.11	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Mid Girt	Max Tension	23	4661.52	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	3094.41	6.40	0.00
			Max. My	20	3449.48	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Guy A	Bottom Tension	21	13032.70		
			Top Tension	21	13218.50		
			Top Cable Vert	21	6303.48		
			Top Cable Norm	21	11618.73		
			Top Cable Tan	21	0.13		
			Bot Cable Vert	21	-5782.58		
			Bot Cable Norm	21	11679.60		
			Bot Cable Tan	21	0.13		
		Guy B	Bottom Tension	25	12619.86		
			Top Tension	25	12764.40		
			Top Cable Vert	25	4980.69		
			Top Cable Norm	25	11752.56		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Tan	25	0.08		
			Bot Cable Vert	25	-4516.89		
			Bot Cable Norm	25	11783.83		
			Bot Cable Tan	25	0.08		
		Guy C	Bottom Tension	17	12967.23		
			Top Tension	17	13146.16		
			Top Cable Vert	17	6089.43		
			Top Cable Norm	17	11650.77		
			Top Cable Tan	17	0.22		
			Bot Cable Vert	17	-5578.48		
			Bot Cable Norm	17	11705.97		
			Bot Cable Tan	17	0.22		
T6	60 - 40	Leg	Max Tension	19	2276.61	16.76	34.63
			Max. Compression	17	-29516.12	17.94	-33.81
			Max. Mx	24	-19732.82	-428.16	-44.44
			Max. My	21	-20599.70	1.86	461.45
			Max. Vy	24	876.27	-8.77	-17.89
			Max. Vx	21	-909.89	0.12	26.01
		Diagonal	Max Tension	26	1066.95	0.00	0.00
			Max. Compression	24	-1482.34	0.00	0.00
			Max. Mx	21	125.80	-2.18	0.11
			Max. My	18	-1443.78	-1.26	-0.34
			Max. Vy	20	3.13	-2.17	0.18
			Max. Vx	18	0.15	-1.26	-0.34
		Horizontal	Max Tension	15	678.87	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	385.02	4.04	0.00
			Max. My	26	628.94	0.00	0.00
			Max. Vy	14	-4.31	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Top Girt	Max Tension	21	593.21	0.00	0.00
			Max. Compression	22	-243.51	0.00	0.00
			Max. Mx	14	93.35	6.40	0.00
			Max. My	20	62.02	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	424.55	0.00	0.00
			Max. Compression	12	-57.78	0.00	0.00
			Max. Mx	14	81.27	6.40	0.00
			Max. My	20	111.52	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Mid Girt	Max Tension	15	638.82	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	168.44	6.40	0.00
			Max. My	20	170.99	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T7	40 - 20	Leg	Max Tension	19	2232.95	8.55	13.37
			Max. Compression	21	-30277.21	0.23	-43.69
			Max. Mx	19	-2747.36	208.72	95.12
			Max. My	15	-22626.98	19.46	-210.65
			Max. Vy	19	501.80	-31.17	-31.36
			Max. Vx	15	-504.77	-3.59	46.50
		Diagonal	Max Tension	15	490.98	0.00	0.00
			Max. Compression	19	-836.54	0.00	0.00
			Max. Mx	20	-426.31	-2.25	0.23
			Max. My	20	-351.38	-0.97	0.25
			Max. Vy	20	3.16	-2.25	0.23
			Max. Vx	20	-0.11	-0.97	0.25
		Horizontal	Max Tension	15	702.80	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	21	276.69	4.04	0.00
			Max. My	18	370.67	0.00	-0.00
			Max. Vy	21	-4.31	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	15	343.87	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	86.76	6.40	0.00
			Max. My	20	61.18	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	327.45	0.00	0.00
			Max. Compression	19	-93.14	0.00	0.00
			Max. Mx	14	88.21	6.40	0.00
			Max. My	20	109.65	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Mid Girt	Max Tension	15	674.15	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	175.16	6.40	0.00
			Max. My	20	180.72	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T8	20 - 5.24	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-28612.70	21.22	-180.56
			Max. Mx	19	-2759.30	-273.02	-159.18
			Max. My	15	-3355.95	-26.54	289.96
			Max. Vy	19	505.99	-273.02	-159.18
			Max. Vx	15	-509.78	-26.54	289.96
		Diagonal	Max Tension	15	939.63	0.00	0.00
			Max. Compression	19	-1030.26	0.00	0.00
			Max. Mx	21	-301.76	-1.80	-0.00
			Max. My	20	-591.46	-0.85	0.17
			Max. Vy	21	2.96	-1.80	-0.00
			Max. Vx	20	-0.08	-1.45	0.17
		Horizontal	Max Tension	16	451.75	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	21	329.06	4.04	0.00
			Max. My	18	390.11	0.00	-0.00
			Max. Vy	21	-4.31	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	15	525.58	0.00	0.00
			Max. Compression	17	-137.42	0.00	0.00
			Max. Mx	14	91.01	6.40	0.00
			Max. My	20	81.90	0.00	-0.00
			Max. Vy	14	-6.83	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	3503.61	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	2773.84	9.37	0.00
			Max. My	20	3148.65	0.00	-0.00
			Max. Vy	14	9.99	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
T9	5.24 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-22343.93	17.07	-1.49
			Max. Mx	19	-16142.52	-639.34	10.74
			Max. My	20	-18680.28	-208.91	438.52
			Max. Vy	19	1577.21	-639.34	10.74
			Max. Vx	20	-858.28	-208.91	438.52
		Diagonal	Max Tension	15	39.23	0.00	0.00
			Max. Compression	21	-2227.62	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	17	-571.03	-2.61	-1.44
			Max. My	20	-36.19	-2.23	1.55
			Max. Vy	17	3.85	-2.61	-1.44
			Max. Vx	20	0.92	0.00	0.00
		Horizontal	Max Tension	20	879.26	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	702.18	10.24	0.00
			Max. My	21	716.47	0.00	1.55
			Max. Vy	14	-16.38	0.00	0.00
			Max. Vx	21	2.48	0.00	0.00
		Secondary Horizontal	Max Tension	21	399.82	0.00	0.00
			Max. Compression	21	-399.82	0.00	0.00
			Max. Mx	14	292.57	3.29	0.00
			Max. My	20	384.06	0.00	-0.00
			Max. Vy	14	4.39	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	709.49	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	705.91	0.71	0.00
			Max. My	20	491.45	0.00	-0.00
			Max. Vy	17	-2.28	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Base Beam	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-5936.51	94.98	-26.39
			Max. Mx	21	-19549.38	-11191.86	-115.83
			Max. My	20	-18061.74	-10637.19	-613.33
			Max. Vy	21	-19549.38	-11191.86	-115.83
			Max. Vx	20	-838.62	-10637.19	-613.33

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 210 ft Elev -34 ft Azimuth 240 deg	Max. Vert	10	-1130.72	-1819.73	1051.79
	Max. H_x	10	-1130.72	-1819.73	1051.79
	Max. H_z	17	-18271.97	-24160.08	13945.47
	Min. Vert	17	-18271.97	-24160.08	13945.47
	Min. H_x	17	-18271.97	-24160.08	13945.47
	Min. H_z	10	-1130.72	-1819.73	1051.79
Guy B @ 210 ft Elev -14 ft Azimuth 120 deg	Max. Vert	6	-798.56	1712.75	989.32
	Max. H_x	25	-15897.91	24416.56	14094.38
	Max. H_z	25	-15897.91	24416.56	14094.38
	Min. Vert	25	-15897.91	24416.56	14094.38
	Min. H_x	6	-798.56	1712.75	989.32
	Min. H_z	6	-798.56	1712.75	989.32
Guy A @ 210 ft Elev -38 ft Azimuth 0 deg	Max. Vert	2	-1249.77	0.18	-2182.22
	Max. H_x	24	-11017.54	1083.38	-16241.20
	Max. H_z	2	-1249.77	0.18	-2182.22
	Min. Vert	21	-18744.09	-0.83	-27838.59
	Min. H_x	18	-10703.03	-1085.71	-15807.57

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Min. H_z	21	-18744.09	-0.83	-27838.59
	Max. Vert	21	55435.17	10.14	-2198.42
	Max. H_x	24	52998.15	2276.85	-81.03
	Max. H_z	15	50750.76	-18.86	2557.85
	Max. M_x	1	0.00	-14.67	-6.30
	Max. M_z	1	0.00	-14.67	-6.30
	Max. Torsion	26	522.02	1065.36	2006.56
	Min. Vert	1	34317.00	-14.67	-6.30
	Min. H_x	19	51530.62	-2328.95	-1343.36
	Min. H_z	21	55435.17	10.14	-2198.42
	Min. M_x	1	0.00	-14.67	-6.30
	Min. M_z	1	0.00	-14.67	-6.30
	Min. Torsion	20	-564.47	-1253.29	-1961.79

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	34317.00	14.67	6.30	0.00	0.00	0.11
Dead+Wind 0 deg - No Ice+Guy	35973.65	10.72	-1811.87	0.00	0.00	-189.04
Dead+Wind 30 deg - No Ice+Guy	38052.03	827.21	-1407.57	0.00	0.00	-46.20
Dead+Wind 60 deg - No Ice+Guy	39026.79	1401.58	-816.98	0.00	0.00	-149.67
Dead+Wind 90 deg - No Ice+Guy	38491.89	1652.30	3.65	0.00	0.00	-228.81
Dead+Wind 120 deg - No Ice+Guy	36868.14	1606.74	924.82	0.00	0.00	37.99
Dead+Wind 150 deg - No Ice+Guy	38574.90	832.98	1422.31	0.00	0.00	287.24
Dead+Wind 180 deg - No Ice+Guy	39153.10	-0.49	1614.70	0.00	0.00	180.98
Dead+Wind 210 deg - No Ice+Guy	38199.22	-808.44	1415.40	0.00	0.00	39.75
Dead+Wind 240 deg - No Ice+Guy	36014.02	-1572.92	918.03	0.00	0.00	169.69
Dead+Wind 270 deg - No Ice+Guy	37698.74	-1628.26	-6.10	0.00	0.00	235.64
Dead+Wind 300 deg - No Ice+Guy	38359.09	-1399.63	-815.06	0.00	0.00	-23.15
Dead+Wind 330 deg - No Ice+Guy	37635.94	-815.21	-1413.46	0.00	0.00	-274.70
Dead+Ice+Temp+Guy	47448.53	23.45	13.23	0.00	0.00	-0.77
Dead+Wind 0 deg+Ice+Temp+Guy	50750.76	18.86	-2557.85	0.00	0.00	-339.57
Dead+Wind 30 deg+Ice+Temp+Guy	53481.25	1089.22	-2010.48	0.00	0.00	-65.79
Dead+Wind 60 deg+Ice+Temp+Guy	55259.44	1908.20	-1109.23	0.00	0.00	-280.68
Dead+Wind 90 deg+Ice+Temp+Guy	53980.56	2326.79	97.15	0.00	0.00	-444.00
Dead+Wind 120 deg+Ice+Temp+Guy	51530.62	2328.95	1343.36	0.00	0.00	45.73
Dead+Wind 150 deg+Ice+Temp+Guy	54091.51	1253.29	1961.79	0.00	0.00	564.47
Dead+Wind 180 deg+Ice+Temp+Guy	55435.17	-10.14	2198.42	0.00	0.00	341.03
Dead+Wind 210 deg+Ice+Temp+Guy	53661.49	-1206.42	1947.85	0.00	0.00	54.57
Dead+Wind 240 deg+Ice+Temp+Guy	50838.54	-2219.31	1301.93	0.00	0.00	290.15
Dead+Wind 270 deg+Ice+Temp+Guy	52998.15	-2276.85	81.03	0.00	0.00	426.67
Dead+Wind 300 deg+Ice+Temp+Guy	54341.64	-1878.75	-1099.81	0.00	0.00	-62.95
Dead+Wind 330 deg+Ice+Temp+Guy	52929.16	-1065.36	-2006.56	0.00	0.00	-522.02
Dead+Wind 0 deg - Service+Guy	34861.81	12.23	-888.14	0.00	0.00	-98.00
Dead+Wind 30 deg - Service+Guy	35035.42	425.76	-747.74	0.00	0.00	-57.16
Dead+Wind 60 deg - Service+Guy	35272.00	736.06	-415.13	0.00	0.00	-94.04
Dead+Wind 90 deg - Service+Guy	35218.63	876.84	25.03	0.00	0.00	-109.61

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead+Wind 120 deg - Service+Guy	35214.01	789.18	453.14	0.00	0.00	3.39
Dead+Wind 150 deg - Service+Guy	35242.97	462.85	742.98	0.00	0.00	116.45
Dead+Wind 180 deg - Service+Guy	35313.92	11.39	841.00	0.00	0.00	98.76
Dead+Wind 210 deg - Service+Guy	35082.34	-435.35	741.00	0.00	0.00	54.51
Dead+Wind 240 deg - Service+Guy	34907.67	-761.30	451.21	0.00	0.00	96.14
Dead+Wind 270 deg - Service+Guy	34920.07	-849.12	21.97	0.00	0.00	109.46
Dead+Wind 300 deg - Service+Guy	35022.67	-710.71	-414.05	0.00	0.00	-3.24
Dead+Wind 330 deg - Service+Guy	34897.40	-403.08	-750.14	0.00	0.00	-112.86

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-15761.07	0.00	2.51	15761.07	1.78	0.020%
2	18.54	-15897.94	-15752.44	-19.42	15897.80	15743.28	0.041%
3	7875.74	-15755.73	-13644.28	-7880.19	15755.60	13631.84	0.059%
4	13617.11	-15614.34	-7887.66	-13606.86	15614.24	7894.73	0.056%
5	15705.22	-15791.44	-6.30	-15697.23	15791.31	14.45	0.051%
6	13614.87	-15963.75	7864.96	-13598.82	15963.45	-7856.08	0.082%
7	7850.06	-15796.78	13612.40	-7838.43	15796.65	-13609.81	0.053%
8	-18.54	-15624.20	15742.01	28.29	15624.11	-15736.84	0.050%
9	-7875.74	-15766.41	13644.28	7868.80	15766.34	-13643.27	0.031%
10	-13626.14	-15907.81	7892.88	13617.03	15907.64	-7888.88	0.044%
11	-15705.22	-15730.70	6.30	15695.33	15730.54	2.02	0.058%
12	-13605.84	-15558.39	-7859.75	13601.52	15558.33	7859.02	0.020%
13	-7850.06	-15725.36	-13612.40	7852.19	15725.23	13601.12	0.052%
14	-0.00	-22983.93	-0.00	2.18	22983.93	1.39	0.011%
15	37.94	-23257.94	-20427.48	-39.60	23257.61	20412.28	0.049%
16	10218.45	-22973.56	-17705.46	-10224.78	22973.29	17686.05	0.066%
17	17652.20	-22690.74	-10244.33	-17643.13	22690.67	10255.05	0.046%
18	20342.00	-23043.46	-13.54	-20330.13	23043.20	24.60	0.053%
19	17633.80	-23386.85	10189.90	-17614.65	23386.33	-10179.40	0.070%
20	10165.14	-23053.82	17640.20	-10149.16	23053.57	-17635.84	0.054%
21	-37.94	-22709.92	20420.74	61.83	22709.79	-20415.97	0.080%
22	-10218.45	-22994.30	17705.46	10208.13	22994.16	-17703.56	0.034%
23	-17658.03	-23277.12	10247.70	17643.11	23276.77	-10241.50	0.052%
24	-20342.00	-22924.40	13.54	20334.47	22924.25	-7.44	0.032%
25	-17627.96	-22581.01	-10186.53	17610.68	22580.67	10185.68	0.057%
26	-10165.14	-22914.04	-17640.20	10168.34	22913.74	17621.11	0.063%
27	9.24	-15829.27	-7848.96	-9.47	15829.25	7846.07	0.016%
28	3924.24	-15758.41	-6798.53	-3924.07	15758.37	6792.63	0.034%
29	6785.00	-15687.96	-3930.18	-6781.66	15687.94	3931.66	0.021%
30	7825.44	-15776.21	-3.14	-7821.37	15776.17	5.58	0.027%
31	6783.88	-15862.06	3918.87	-6778.86	15862.01	-3916.12	0.032%
32	3911.45	-15778.86	6782.65	-3907.27	15778.83	-6780.46	0.027%
33	-9.24	-15692.87	7843.77	11.78	15692.86	-7841.73	0.019%
34	-3924.24	-15763.73	6798.53	3921.90	15763.71	-6797.22	0.015%
35	-6789.50	-15834.18	3932.78	6786.49	15834.16	-3931.43	0.019%
36	-7825.44	-15745.94	3.14	7822.74	15745.92	-1.77	0.017%
37	-6779.38	-15660.08	-3916.27	6775.42	15660.06	3915.02	0.024%
38	-3911.45	-15743.28	-6782.65	3911.30	15743.26	6779.96	0.015%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00008905
2	Yes	15	0.00000001	0.00009509
3	Yes	16	0.00000001	0.00013543
4	Yes	14	0.00000001	0.00012595
5	Yes	17	0.00000001	0.00011038
6	Yes	16	0.00000001	0.00013335
7	Yes	17	0.00000001	0.00011342
8	Yes	14	0.00000001	0.00011027
9	Yes	17	0.00000001	0.00007113
10	Yes	15	0.00000001	0.00010132
11	Yes	16	0.00000001	0.00013906
12	Yes	14	0.00000001	0.00005956
13	Yes	16	0.00000001	0.00012564
14	Yes	9	0.00000001	0.00011909
15	Yes	15	0.00000001	0.00010307
16	Yes	16	0.00000001	0.00013916
17	Yes	15	0.00000001	0.00008958
18	Yes	17	0.00000001	0.00010812
19	Yes	15	0.00000001	0.00014302
20	Yes	17	0.00000001	0.00010928
21	Yes	14	0.00000001	0.00014365
22	Yes	17	0.00000001	0.00007223
23	Yes	15	0.00000001	0.00010861
24	Yes	17	0.00000001	0.00007039
25	Yes	13	0.00000001	0.00012204
26	Yes	16	0.00000001	0.00013779
27	Yes	13	0.00000001	0.00006545
28	Yes	12	0.00000001	0.00013823
29	Yes	12	0.00000001	0.00008201
30	Yes	13	0.00000001	0.00010673
31	Yes	13	0.00000001	0.00011775
32	Yes	13	0.00000001	0.00010468
33	Yes	12	0.00000001	0.00007234
34	Yes	13	0.00000001	0.00006360
35	Yes	13	0.00000001	0.00007302
36	Yes	13	0.00000001	0.00007506
37	Yes	11	0.00000001	0.00013805
38	Yes	13	0.00000001	0.00006788

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	2.216	33	0.0449	0.0405
T2	140 - 120	2.107	33	0.0391	0.0288
T3	120 - 100	1.973	33	0.0387	0.0200
T4	100 - 80	1.767	33	0.0622	0.0154
T5	80 - 60	1.462	33	0.0735	0.0169
T6	60 - 40	1.164	33	0.0697	0.0171
T7	40 - 20	0.860	33	0.0837	0.0125
T8	20 - 5.24	0.466	33	0.1037	0.0068
T9	5.24 - 0	0.124	33	0.1113	0.0032

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	APXVSPP18-C-A20 w/Mount Pipe	33	2.192	0.0437	0.0379	44828
138.00	Guy	33	2.089	0.0382	0.0272	27438
122.00	10' Omni	33	1.987	0.0375	0.0207	47255
115.00	5' x 6" Panel Antenna w/Mount Pipe	33	1.933	0.0433	0.0179	34278
70.00	Guy	33	1.310	0.0712	0.0175	159502
55.00	10' Omni	33	1.092	0.0712	0.0164	116827

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	6.465	21	0.1202	0.1144
T2	140 - 120	6.231	21	0.1088	0.0958
T3	120 - 100	5.914	21	0.1069	0.0864
T4	100 - 80	5.337	21	0.1784	0.0865
T5	80 - 60	4.450	21	0.2177	0.0845
T6	60 - 40	3.548	21	0.2141	0.0772
T7	40 - 20	2.608	21	0.2568	0.0563
T8	20 - 5.24	1.404	21	0.3142	0.0320
T9	5.24 - 0	0.373	21	0.3356	0.0155

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	APXVSPP18-C-A20 w/Mount Pipe	21	6.415	0.1178	0.1103	21212
138.00	Guy	21	6.194	0.1069	0.0928	13787
122.00	10' Omni	21	5.950	0.1046	0.0864	13108
115.00	5' x 6" Panel Antenna w/Mount Pipe	21	5.807	0.1188	0.0864	10142
70.00	Guy	21	3.994	0.2151	0.0822	35806
55.00	10' Omni	21	3.326	0.2196	0.0731	20739

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T2	140	Leg	A325N	0.6250	5	1711.34	13489.00	0.127 ✔	1.333	Bolt Tension
T3	120	Leg	A325N	0.6250	5	821.65	13496.00	0.061 ✔	1.333	Bolt Tension
T4	100	Leg	A325N	0.7500	5	1584.92	19438.50	0.082 ✔	1.333	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T5	80	Leg	A325N	0.7500	5	0.00	19436.00	0.000 ✔	1.333	Bolt Tension
T6	60	Leg	A325N	0.7500	5	0.00	19436.60	0.000 ✔	1.333	Bolt Tension
T7	40	Leg	A325N	0.7500	5	429.70	19438.60	0.022 ✔	1.333	Bolt Tension
T8	20	Leg	A325N	0.7500	5	0.00	19437.90	0.000 ✔	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T2	138.00 (A) (526)	9/16 EHS	3500.00	35000.04	10597.20	17500.00	2.000	3.303 ✔
	138.00 (A) (527)	9/16 EHS	3500.00	35000.04	10585.40	17500.00	2.000	3.306 ✔
	138.00 (B) (520)	9/16 EHS	3500.00	35000.04	10224.90	17500.00	2.000	3.423 ✔
	138.00 (B) (521)	9/16 EHS	3500.00	35000.04	10149.40	17500.00	2.000	3.448 ✔
	138.00 (C) (512)	9/16 EHS	3500.00	35000.04	10472.50	17500.00	2.000	3.342 ✔
	138.00 (C) (513)	9/16 EHS	3500.00	35000.04	10557.40	17500.00	2.000	3.315 ✔
T5	70.00 (A) (534)	11/16 EHS	5000.00	49999.96	13218.50	25000.00	2.000	3.783 ✔
	70.00 (B) (533)	11/16 EHS	5000.00	49999.96	12764.40	25000.00	2.000	3.917 ✔
	70.00 (C) (532)	11/16 EHS	5000.00	49999.96	13146.20	25000.00	2.000	3.803 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	150 - 140	2	10.00	2.26	54.2 K=1.00	1.00	23.676	3.1416	-10460.70	74381.30	0.141 ✔
T2	140 - 120	2	20.00	2.38	57.1 K=1.00	1.00	23.203	3.1416	-21854.60	72894.40	0.300 ✔
T3	120 - 100	2	20.00	2.38	57.1 K=1.00	1.00	23.203	3.1416	-24890.80	72894.40	0.341 ✔
T4	100 - 80	2 1/4	20.00	2.38	50.8 K=1.00	1.00	24.230	3.9761	-24211.50	96339.00	0.251 ✔
T5	80 - 60	2 1/4	20.00	2.38	50.8 K=1.00	1.00	24.230	3.9761	-21184.70	96339.00	0.220 ✔
T6	60 - 40	2 1/4	20.00	2.38	50.8 K=1.00	1.00	24.230	3.9761	-29516.10	96339.00	0.306 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T7	40 - 20	2 1/4	20.00	2.38	50.8 K=1.00	1.00	24.230	3.9761	-30277.20	96339.00	0.314 ✔
T8	20 - 5.24	2 1/2	14.76	2.38	45.7 K=1.00	1.00	24.913	4.9087	-28612.70	122290.00	0.234 ✔
T9	5.24 - 0	2 1/2	5.48	1.66	31.8 K=1.00	0.94	25.389	4.9087	-22343.90	124630.00	0.179 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	3/4	4.38	2.09	120.5 K=0.90	10.286	0.4418	-2211.48	4544.04	0.487 ✔
T2	140 - 120	3/4	4.44	2.12	122.2 K=0.90	9.995	0.4418	-1607.60	4415.78	0.364 ✔
T3	120 - 100	3/4	4.44	2.12	122.2 K=0.90	9.995	0.4418	-924.46	4415.78	0.209 ✔
T4	100 - 80	3/4	4.44	2.11	121.5 K=0.90	10.113	0.4418	-1384.82	4467.58	0.310 ✔
T5	80 - 60	3/4	4.44	2.11	121.5 K=0.90	10.113	0.4418	-1563.02	4467.58	0.350 ✔
T6	60 - 40	3/4	4.44	2.11	121.5 K=0.90	10.113	0.4418	-1482.34	4467.58	0.332 ✔
T7	40 - 20	3/4	4.44	2.11	121.5 K=0.90	10.113	0.4418	-836.54	4467.58	0.187 ✔
T8	20 - 5.24	3/4	4.44	2.10	120.8 K=0.90	10.232	0.4418	-1030.26	4520.30	0.228 ✔
T9	5.24 - 0	7/8	3.05	1.87	101.2 K=0.99	14.428	0.6013	-2227.62	8676.01	0.257 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	3/4	3.75	3.58	160.5 K=0.70	5.795	0.4418	-338.07	2559.96	0.132 ✔
T2	140 - 120	3/4	3.75	3.58	160.5 K=0.70	5.795	0.4418	-150.43	2559.96	0.059 ✔
T5	80 - 60	3/4	3.75	3.56	159.6 K=0.70	5.863	0.4418	-136.80	2589.99	0.053 ✔

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	5.24 - 0	7/8	3.00	2.79	107.2 K=0.70	12.988	0.6013	-399.82	7810.05	0.051 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-125.64	8090.74	0.016 ✓
T3	120 - 100	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-289.67	8090.74	0.036 ✓
T4	100 - 80	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-155.12	8185.64	0.019 ✓
T5	80 - 60	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-425.70	8185.64	0.052 ✓
T6	60 - 40	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-243.51	8185.64	0.030 ✓
T8	20 - 5.24	1	3.75	3.54	119.0 K=0.70	10.545	0.7854	-137.42	8282.23	0.017 ✓

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-1114.00	8090.74	0.138 ✓
T2	140 - 120	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-312.04	8090.74	0.039 ✓
T3	120 - 100	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-19.98	8090.74	0.002 ✓
T4	100 - 80	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-301.75	8185.64	0.037 ✓
T5	80 - 60	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-354.21	8185.64	0.043 ✓
T6	60 - 40	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-57.78	8185.64	0.007 ✓
T7	40 - 20	1	3.75	3.56	119.7 K=0.70	10.422	0.7854	-93.14	8185.64	0.011 ✓

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-476.05	8090.74	0.059 ✔
T2	140 - 120	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-21.63	8090.74	0.003 ✔

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-2380.88	8090.74	0.294 ✔

Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120	1	3.75	3.58	120.4 K=0.70	10.301	0.7854	-3084.48	8090.74	0.381 ✔

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120 (516)	2L3x3x1/4x3/8	6.94	6.85	104.2 K=1.18	12.442	2.8800	-11311.90	35833.60	0.316 ✔
T2	140 - 120 (517)	2L3x3x1/4x3/8	6.94	6.85	104.2 K=1.18	12.442	2.8800	-11425.20	35833.60	0.319 ✔
T2	140 - 120 (524)	2L3x3x1/4x3/8	6.94	6.85	104.2 K=1.18	12.442	2.8800	-10416.70	35833.60	0.291 ✔
T2	140 - 120 (525)	2L3x3x1/4x3/8	6.94	6.85	104.2 K=1.18	12.442	2.8800	-11112.40	35833.60	0.310 ✔
T2	140 - 120 (530)	2L3x3x1/4x3/8	6.94	6.85	104.2 K=1.18	12.442	2.8800	-10461.20	35833.60	0.292 ✔
T2	140 - 120 (531)	2L3x3x1/4x3/8	6.94	6.85	104.2 K=1.18	12.442	2.8800	-11272.00	35833.60	0.315 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	2	10.00	2.26	54.2	30.000	3.1416	8561.82	94247.80	0.091 ✔
T2	140 - 120	2	20.00	2.38	57.1	30.000	3.1416	8556.68	94247.80	0.091 ✔
T3	120 - 100	2	20.00	2.38	57.1	30.000	3.1416	8232.83	94247.80	0.087 ✔
T4	100 - 80	2 1/4	20.00	2.38	50.8	30.000	3.9761	7924.60	119282.00	0.066 ✔
T6	60 - 40	2 1/4	20.00	2.38	50.8	30.000	3.9761	2276.61	119282.00	0.019 ✔
T7	40 - 20	2 1/4	20.00	2.38	50.8	30.000	3.9761	2232.95	119282.00	0.019 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	3/4	4.38	2.09	133.9	30.000	0.4418	2184.50	13253.60	0.165 ✔
T2	140 - 120	3/4	4.44	2.12	135.8	30.000	0.4418	1394.70	13253.60	0.105 ✔
T3	120 - 100	3/4	4.44	2.12	135.8	30.000	0.4418	805.69	13253.60	0.061 ✔
T4	100 - 80	3/4	4.44	2.11	135.0	30.000	0.4418	1129.52	13253.60	0.085 ✔
T5	80 - 60	3/4	4.44	2.11	135.0	30.000	0.4418	1560.10	13253.60	0.118 ✔
T6	60 - 40	3/4	4.44	2.11	135.0	30.000	0.4418	1066.95	13253.60	0.081 ✔
T7	40 - 20	3/4	4.44	2.11	135.0	30.000	0.4418	490.98	13253.60	0.037 ✔
T8	20 - 5.24	3/4	4.44	2.10	134.2	30.000	0.4418	939.64	13253.60	0.071 ✔
T9	5.24 - 0	7/8	3.95	2.20	120.7	30.000	0.6013	39.23	18039.60	0.002 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	3/4	3.75	3.58	229.3	30.000	0.4418	377.38	13253.60	0.028 ✔
T2	140 - 120	3/4	3.75	3.58	229.3	30.000	0.4418	657.29	13253.60	0.050 ✔
T3	120 - 100	3/4	3.75	3.58	229.3	30.000	0.4418	685.75	13253.60	0.052 ✔
T4	100 - 80	3/4	3.75	3.56	228.0	30.000	0.4418	560.10	13253.60	0.042 ✔
T5	80 - 60	3/4	3.75	3.56	228.0	30.000	0.4418	513.03	13253.60	0.039 ✔
T6	60 - 40	3/4	3.75	3.56	228.0	30.000	0.4418	678.87	13253.60	0.051 ✔
T7	40 - 20	3/4	3.75	3.56	228.0	30.000	0.4418	702.80	13253.60	0.053 ✔
T8	20 - 5.24	3/4	3.75	3.54	226.7	30.000	0.4418	342.18	13253.60	0.026* ✔
T9	5.24 - 0	6x1/2	2.50	2.29	190.6	21.600	3.0000	702.18	64800.00	0.011* ✔

* DL controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	5.24 - 0	7/8	1.67	1.46	80.1	30.000	0.6013	399.82	18039.60	0.022 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	1	3.75	3.58	172.0	30.000	0.7854	109.47	23561.90	0.005 ✔
T3	120 - 100	1	3.75	3.58	172.0	30.000	0.7854	340.46	23561.90	0.014 ✔
T4	100 - 80	1	3.75	3.56	171.0	30.000	0.7854	381.66	23561.90	0.016 ✔
T5	80 - 60	1	3.75	3.56	171.0	30.000	0.7854	637.58	23561.90	0.027 ✔
T6	60 - 40	1	3.75	3.56	171.0	30.000	0.7854	593.21	23561.90	0.025 ✔
T7	40 - 20	1	3.75	3.56	171.0	30.000	0.7854	343.86	23561.90	0.015 ✔
T8	20 - 5.24	1	3.75	3.54	170.0	30.000	0.7854	525.58	23561.90	0.022

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
										✔

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	1	3.75	3.58	172.0	30.000	0.7854	1185.67	23561.90	0.050 ✔
T2	140 - 120	1	3.75	3.58	172.0	30.000	0.7854	679.75	23561.90	0.029 ✔
T3	120 - 100	1	3.75	3.58	172.0	30.000	0.7854	316.26	23561.90	0.013 ✔
T4	100 - 80	1	3.75	3.56	171.0	30.000	0.7854	600.70	23561.90	0.025 ✔
T5	80 - 60	1	3.75	3.56	171.0	30.000	0.7854	677.52	23561.90	0.029 ✔
T6	60 - 40	1	3.75	3.56	171.0	30.000	0.7854	424.55	23561.90	0.018 ✔
T7	40 - 20	1	3.75	3.56	171.0	30.000	0.7854	327.45	23561.90	0.014 ✔
T8	20 - 5.24	1 1/4	3.75	3.54	136.0	30.000	1.2272	2807.61	36815.50	0.076* ✔
T9	5.24 - 0	1	1.25	1.04	50.1	30.000	0.7854	709.49	23561.90	0.030 ✔

* DL controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	150 - 140	1	3.75	3.58	172.0	30.000	0.7854	509.94	23561.90	0.022 ✔
T2	140 - 120	1	3.75	3.58	172.0	30.000	0.7854	387.49	23561.90	0.016 ✔
T3	120 - 100	1	3.75	3.58	172.0	30.000	0.7854	663.08	23561.90	0.028 ✔
T4	100 - 80	1	3.75	3.56	171.0	30.000	0.7854	511.48	23561.90	0.022 ✔
T5	80 - 60	1	3.75	3.56	171.0	30.000	0.7854	4661.52	23561.90	0.198 ✔
T6	60 - 40	1	3.75	3.56	171.0	30.000	0.7854	638.82	23561.90	0.027 ✔
T7	40 - 20	1	3.75	3.56	171.0	30.000	0.7854	674.15	23561.90	0.029 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120	1	3.75	3.58	172.0	30.000	0.7854	5032.18	23561.90	0.214 ✔

Bottom Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120	1	3.75	3.58	172.0	30.000	0.7854	1535.88	23561.90	0.065 ✔

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120 (514)	2L3x3x1/4x3/8	6.32	6.24	80.5	21.600	2.8800	10495.80	62208.00	0.169 ✔
T2	140 - 120 (515)	2L3x3x1/4x3/8	6.32	6.24	80.5	21.600	2.8800	10442.40	62208.00	0.168 ✔
T2	140 - 120 (522)	2L3x3x1/4x3/8	6.32	6.24	80.5	21.600	2.8800	10638.00	62208.00	0.171 ✔
T2	140 - 120 (523)	2L3x3x1/4x3/8	6.32	6.24	80.5	21.600	2.8800	10317.30	62208.00	0.166 ✔
T2	140 - 120 (528)	2L3x3x1/4x3/8	6.32	6.24	80.5	21.600	2.8800	10245.40	62208.00	0.165 ✔
T2	140 - 120 (529)	2L3x3x1/4x3/8	6.32	6.24	80.5	21.600	2.8800	10512.60	62208.00	0.169 ✔

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120 (516)	2L3x3x1/4x3/8	6.94	6.85	88.4	21.600	2.8800	1696.63	62208.00	0.027

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	140 - 120 (517)	2L3x3x1/4x3/8	6.94	6.85	88.4	21.600	2.8800	1663.01	62208.00	0.027
T2	140 - 120 (524)	2L3x3x1/4x3/8	6.94	6.85	88.4	21.600	2.8800	1766.82	62208.00	0.028
T2	140 - 120 (525)	2L3x3x1/4x3/8	6.94	6.85	88.4	21.600	2.8800	1758.31	62208.00	0.028
T2	140 - 120 (530)	2L3x3x1/4x3/8	6.94	6.85	88.4	21.600	2.8800	1782.86	62208.00	0.029
T2	140 - 120 (531)	2L3x3x1/4x3/8	6.94	6.85	88.4	21.600	2.8800	1730.69	62208.00	0.028

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	150 - 140	Leg	2	2	-10460.70	99150.26	10.6	Pass
		Diagonal	3/4	13	-2211.48	6057.21	36.5	Pass
		Horizontal	3/4	32	-338.07	3412.43	9.9	Pass
		Top Girt	1	5	-125.64	10784.96	1.2	Pass
		Bottom Girt	1	9	-1114.00	10784.96	10.3	Pass
		Mid Girt	1	12	-476.05	10784.96	4.4	Pass
T2	140 - 120	Leg	2	39	-21854.60	97168.23	22.5	Pass
		Diagonal	3/4	92	-1607.60	5886.23	27.3	Pass
		Horizontal	3/4	98	-150.43	3412.43	4.4	Pass
		Bottom Girt	1	47	-312.04	10784.96	2.9	Pass
		Mid Girt	1	48	387.49	31408.01	1.2	Pass
		Guy A@138	9/16	526	10597.20	17500.00	60.6	Pass
		Guy B@138	9/16	520	10224.90	17500.00	58.4	Pass
		Guy C@138	9/16	513	10557.40	17500.00	60.3	Pass
		Top Guy Pull-Off@138	1	44	-2380.88	10784.96	22.1	Pass
		Bottom Guy Pull-Off@138	1	519	-3084.48	10784.96	28.6	Pass
		Torque Arm Top@138	2L3x3x1/4x3/8	522	10638.00	82923.26	12.8	Pass
		Torque Arm Bottom@138	2L3x3x1/4x3/8	517	-11425.20	47766.19	23.9	Pass
T3	120 - 100	Leg	2	107	-24890.80	97168.23	25.6	Pass
		Diagonal	3/4	170	-924.46	5886.23	15.7	Pass
		Horizontal	3/4	164	685.75	17667.05	3.9	Pass
		Top Girt	1	110	-289.67	10784.96	2.7	Pass
		Bottom Girt	1	111	316.26	31408.01	1.0	Pass
		Mid Girt	1	114	663.08	31408.01	2.1	Pass
T4	100 - 80	Leg	2 1/4	171	-24211.50	128419.88	18.9	Pass
		Diagonal	3/4	184	-1384.82	5955.28	23.3	Pass
		Horizontal	3/4	189	560.10	17667.05	3.2	Pass
		Top Girt	1	175	-155.12	10911.46	1.4	Pass
		Bottom Girt	1	179	-301.75	10911.46	2.8	Pass
		Mid Girt	1	180	511.48	31408.01	1.6	Pass
T5	80 - 60	Leg	2 1/4	239	-21184.70	128419.88	16.5	Pass
		Diagonal	3/4	250	-1563.02	5955.28	26.2	Pass
		Horizontal	3/4	282	-136.80	3452.46	4.0	Pass
		Top Girt	1	241	-425.70	10911.46	3.9	Pass
		Bottom Girt	1	245	-354.21	10911.46	3.2	Pass
		Mid Girt	1	247	4661.52	31408.01	14.8	Pass
		Guy A@70	11/16	534	13218.50	25000.00	52.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
		Guy B@70	11/16	533	12764.40	25000.00	51.1	Pass
		Guy C@70	11/16	532	13146.20	25000.00	52.6	Pass
T6	60 - 40	Leg	2 1/4	303	-29516.10	128419.88	23.0	Pass
		Diagonal	3/4	364	-1482.34	5955.28	24.9	Pass
		Horizontal	3/4	362	678.87	17667.05	3.8	Pass
		Top Girt	1	307	-243.51	10911.46	2.2	Pass
		Bottom Girt	1	309	424.55	31408.01	1.4	Pass
		Mid Girt	1	312	638.82	31408.01	2.0	Pass
T7	40 - 20	Leg	2 1/4	371	-30277.20	128419.88	23.6	Pass
		Diagonal	3/4	382	-836.54	5955.28	14.0	Pass
		Horizontal	3/4	387	702.80	17667.05	4.0	Pass
		Top Girt	1	372	343.86	31408.01	1.1	Pass
		Bottom Girt	1	375	327.45	31408.01	1.0	Pass
		Mid Girt	1	378	674.15	31408.01	2.1	Pass
T8	20 - 5.24	Leg	2 1/2	437	-28612.70	163012.56	17.6	Pass
		Diagonal	3/4	452	-1030.26	6025.56	17.1	Pass
		Horizontal	3/4	478	342.18	13253.60	2.6	Pass
		Top Girt	1	438	525.58	31408.01	1.7	Pass
		Bottom Girt	1 1/4	441	2807.61	36815.50	7.6	Pass
T9	5.24 - 0	Leg	2 1/2	487	-22343.90	166131.78	13.4	Pass
		Diagonal	7/8	496	-2227.62	11565.12	19.3	Pass
		Horizontal	6x1/2	499	702.18	64800.00	1.1	Pass
		Secondary Horizontal	7/8	511	-399.82	10410.80	3.8	Pass
		Bottom Girt	1	488	709.49	31408.01	2.3	Pass
							Summary	
						Leg (T3)	25.6	Pass
						Diagonal (T1)	36.5	Pass
						Horizontal (T1)	9.9	Pass
						Secondary Horizontal (T9)	3.8	Pass
						Top Girt (T5)	3.9	Pass
						Bottom Girt (T1)	10.3	Pass
						Mid Girt (T5)	14.8	Pass
						Guy A (T2)	60.6	Pass
						Guy B (T2)	58.4	Pass
						Guy C (T2)	60.3	Pass
						Top Guy Pull-Off (T2)	22.1	Pass
						Bottom Guy Pull-Off (T2)	28.6	Pass
						Torque Arm Top (T2)	12.8	Pass
						Torque Arm Bottom (T2)	23.9	Pass
						Bolt Checks	9.5	Pass
						RATING =	**60.6**	**Pass**

APPENDIX C

MOUNT CALCULATIONS

WINDSPEED BY LOCATION

Applied Technology Council

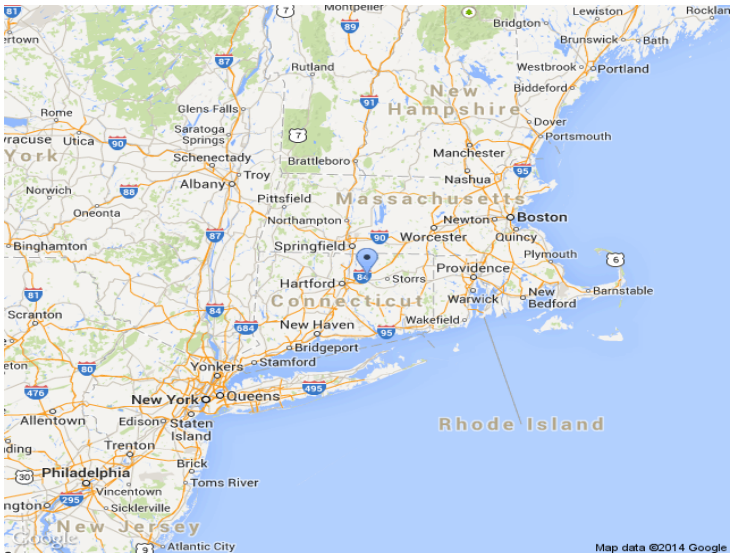
Search Results

Latitude: 41.8021
Longitude: -72.4412

ASCE 7-10 Wind Speeds (3-sec peak gust MPH*):

Risk Category I: 114
Risk Category II: 125
Risk Category III-IV: 134
MRI 10 Year:** 77
MRI 25 Year:** 87
MRI 50 Year:** 94
MRI 100 Year:** 101

ASCE 7-05: 100
ASCE 7-93: 81



*MPH(Miles per hour)

**MRI Mean Recurrence Interval (years)

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.

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RAMAKER & ASSOCIATES, INC.
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Office: (608) 643-4100

Job:	23012
Project:	W. Conventry (CT33XC550-A)
By:	JMO
Date:	7/15/2014

Topographic Effects TIA-222

2.6.6.2 Topographic Categories

The topographic category for a structure shall be assessed as being one of the following:

1. Category 1: No abrupt changes in general topography, e.g. flat or rolling terrain, no wind speed-up consideration shall be required.
2. Category 2: Structures located at or near the crest of an escarpment. Wind speed-up shall be considered to occur in all directions. Structures located vertically on the lower half of an escarpment or horizontally beyond 8 times the height of the escarpment from its crest, shall be permitted to be considered as Topographic Category 1.
3. Category 3: Structures located in the upper half of a hill. Wind speed-up shall be considered to occur in all directions. Structures located vertically on the lower half of a hill shall be permitted to be considered as Topographic Category 1.
4. Category 4: Structures located in the upper half of a ridge. Wind speed-up shall be considered to occur in all directions. Structures located vertically on the lower half of a ridge shall be permitted to be considered as Topographic Category 1.

Topographic Category	4		
H =	150	ft	height of hill
Exposure Category	C		
z =	148	ft	height of antennas above ground level
Ke =	1.00		
Kt =	0.72		
f =	1.50		
Kh =	4.39		
Kzt =	**1.35**		

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Wind Load on Antennas TIA-222

2.6.9.6 Velocity Pressure

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	C		Exposure Category
V:	100	mph	Basic Wind Speed (Annex B)
z:	148	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.37		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.35		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z =	**45.1**	**psf**	

G_h:	1.00	Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_f	**$F = q_z G_h C_a A_a$**	
Pipe2STD x 7 ft	84.0 in	2.4 in	35.3	Round	1.200	1.39 sf	**75.2 lb**	10.7 plf
Pipe1STD x 4.3 ft	51.6 in	1.3 in	39.1	Round	1.200	0.47 sf	**25.6 lb**	6.0 plf
Pipe2STD x 3.5 ft	42.0 in	2.4 in	17.6	Round	1.037	0.69 sf	**32.5 lb**	9.3 plf
Pipe3STD x 6 ft	72.0 in	3.5 in	20.6	Round	0.909	1.75 sf	**71.8 lb**	12.0 plf
Pipe2-1/2STD x 14 ft	168.0 in	2.9 in	58.3	Round	1.175	3.36 sf	**178.1 lb**	12.7 plf
APXV9TM14-ALU-120	56.3 in	12.6 in	4.5	Flat	1.287	4.93 sf	**286.2 lb**	
TD-RRH8x20	26.1 in	18.6 in	1.4	Flat	1.200	3.37 sf	**182.6 lb**	
APXVSPP18-C-A20	72.0 in	11.9 in	6.1	Flat	1.358	5.95 sf	**364.4 lb**	
1900MHz 4x45W RRH	25.1 in	11.1 in	2.3	Flat	1.200	1.93 sf	**104.8 lb**	
800MHz 2x50W RRH	19.0 in	13.0 in	1.5	Flat	1.200	1.72 sf	**92.9 lb**	

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Date:	7/15/2014

Wind Load on Antennas TIA-222

2.6.9.6 Velocity Pressure

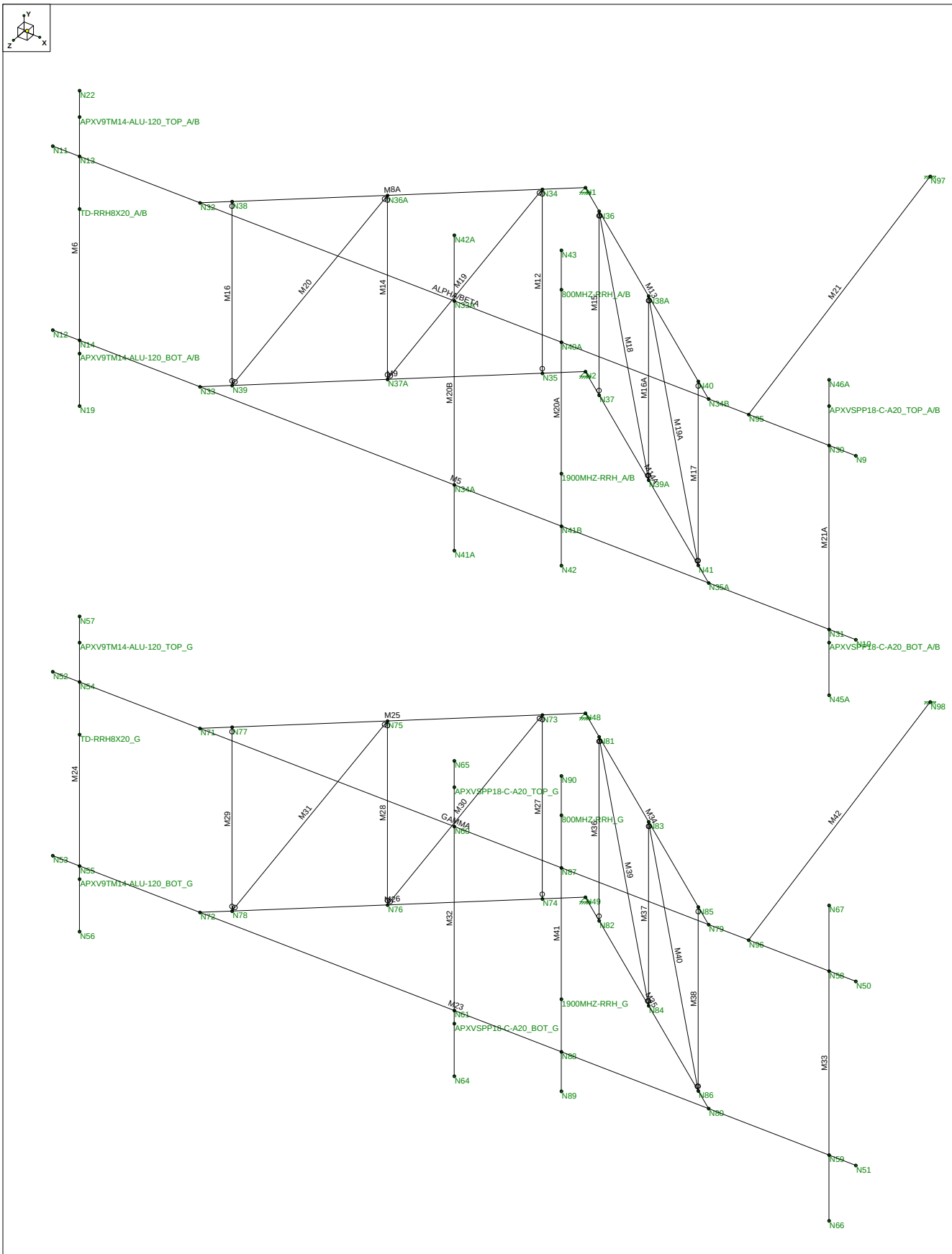
$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

Occupancy:	II	Classification of Structures (Table 2-1)
Exposure:	C	Exposure Category
V:	100 mph	Basic Wind Speed (Annex B)
z:	148 ft	Height above ground level to the center of the antenna
I:	1.00	Importance Factor (Table 2-3)
K_z:	1.37	Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.35	Topographic Factor (2.6.6.4)
K_d:	0.95	Wind Direction Probability Factor (Table 2-2)
q_z =	**45.1 psf**	

G_h:	1.00	Appurtenances and their Connections

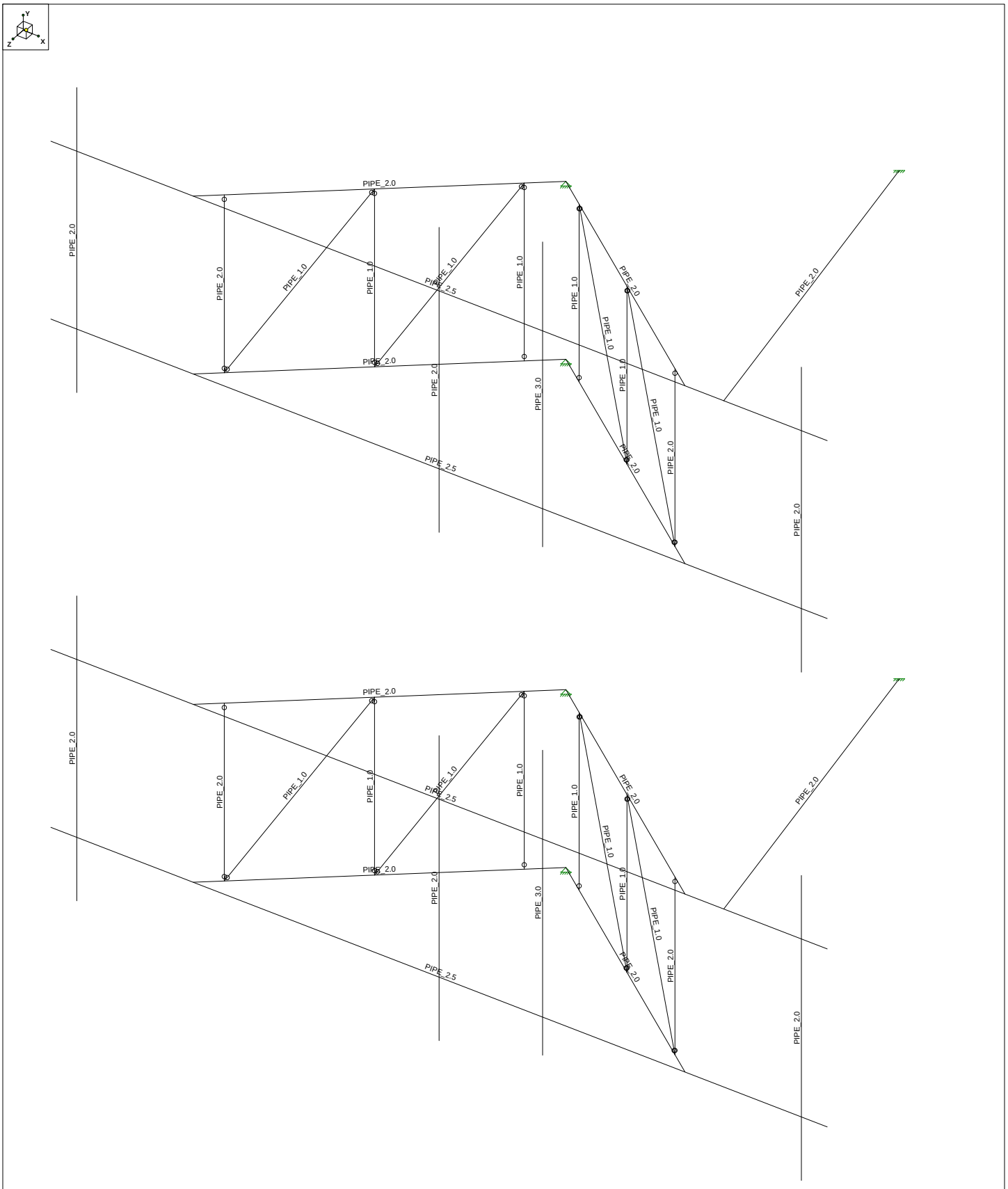
Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	**$F = q_z G_h C_a A_a$**	
Pipe2STD x 7 ft	84.0 in	2.4 in	35.3	Round	1.200	1.39 sf	**75.2 lb**	10.7 plf
Pipe1STD x 4.3 ft	51.6 in	1.3 in	39.1	Round	1.200	0.47 sf	**25.6 lb**	6.0 plf
Pipe2STD x 3.5 ft	42.0 in	2.4 in	17.6	Round	1.037	0.69 sf	**32.5 lb**	9.3 plf
Pipe3STD x 6 ft	72.0 in	3.5 in	20.6	Round	0.909	1.75 sf	**71.8 lb**	12.0 plf
Pipe2-1/2STD x 14 ft	168.0 in	2.9 in	58.3	Round	1.175	3.36 sf	**178.1 lb**	12.7 plf
APXV9TM14-ALU-120	56.3 in	6.3 in	8.9	Flat	1.465	2.46 sf	**162.8 lb**	
TD-RRH8x20	26.1 in	6.7 in	3.9	Flat	1.262	1.21 sf	**69.2 lb**	
APXVSPP18-C-A20	72.0 in	7.0 in	10.3	Flat	1.509	3.50 sf	**238.7 lb**	
1900MHz 4x45W RRH	25.1 in	10.7 in	2.3	Flat	1.200	1.86 sf	**100.9 lb**	
800MHz 2x50W RRH	19.0 in	12.2 in	1.6	Flat	1.200	1.61 sf	**87.2 lb**	



Envelope Only Solution

Ramaker & Associates	W. Conventry (CT33XC550-A)	SK - 1
JMO		July 15, 2014 at 8:33 AM
23012		23012 Mount.r3d



Envelope Only Solution

Ramaker & Associates	W. Conventry (CT33XC550-A)	SK - 2
JMO		July 15, 2014 at 8:34 AM
23012		23012 Mount.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E..Density[k/ft...		Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	pipe 3.0	PIPE_3.0	Beam	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
2	pipe 2.5	PIPE_2.5	Beam	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
3	pipe 2.0	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
4	pipe 1.0	PIPE_1.0	Beam	Pipe	A53 Gr. B	Typical	.469	.083	.083	.166

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	ALPHA/BETA	N11	N9			pipe 2.5	Beam	Pipe	A53 Gr. B	Typical
2	M5	N12	N10			pipe 2.5	Beam	Pipe	A53 Gr. B	Typical
3	M6	N22	N19			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
4	M8A	N1	N32			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
5	M9	N2	N33			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
6	M12	N34	N35			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
7	M14	N36A	N37A			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
8	M16	N38	N39			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
9	M19	N34	N37A			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
10	M20	N36A	N39			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
11	M20B	N42A	N41A			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
12	M21A	N46A	N45A			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
13	M13	N1	N34B			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
14	M14A	N2	N35A			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
15	M15	N36	N37			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
16	M16A	N38A	N39A			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
17	M17	N40	N41			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
18	M18	N36	N39A			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
19	M19A	N38A	N41			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
20	M20A	N43	N42			pipe 3.0	Beam	Pipe	A53 Gr. B	Typical
21	M21	N95	N97			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
22	GAMMA	N52	N50			pipe 2.5	Beam	Pipe	A53 Gr. B	Typical
23	M23	N53	N51			pipe 2.5	Beam	Pipe	A53 Gr. B	Typical
24	M24	N57	N56			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
25	M25	N48	N71			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
26	M26	N49	N72			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
27	M27	N73	N74			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
28	M28	N75	N76			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
29	M29	N77	N78			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
30	M30	N73	N76			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
31	M31	N75	N78			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
32	M32	N65	N64			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
33	M33	N67	N66			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
34	M34	N48	N79			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
35	M35	N49	N80			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
36	M36	N81	N82			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
37	M37	N83	N84			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
38	M38	N85	N86			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
39	M39	N81	N84			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
40	M40	N83	N86			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
41	M41	N90	N89			pipe 3.0	Beam	Pipe	A53 Gr. B	Typical
42	M42	N96	N98			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	-.25	-3	0	
2	N2	0	-3.75	-3	0	
3	N9	7.5	-.25	0.665723	0	
4	N10	7.5	-3.75	0.665723	0	
5	N11	-7.5	-.25	0.665723	0	
6	N12	-7.5	-3.75	0.665723	0	
7	N13	-7	-.25	0.665723	0	
8	N14	-7	-3.75	0.665723	0	
9	N19	-7	-5	0.665723	0	
10	N22	-7	1	0.665723	0	
11	N30	7	-.25	0.665723	0	
12	N31	7	-3.75	0.665723	0	
13	N33A	0	-.25	0.665723	0	
14	N34A	0	-3.75	0.665723	0	
15	APXVSPP18-C-A20_TOP_A/B	7	.5	0.665723	0	
16	APXVSPP18-C-A20_BOT_A/B	7	-4	0.665723	0	
17	N41A	0	-5	0.665723	0	
18	N42A	0	1	0.665723	0	
19	N45A	7	-5	0.665723	0	
20	N46A	7	1	0.665723	0	
21	APXV9TM14-ALU-120_TOP_A/B	-7	.5	0.665723	0	
22	APXV9TM14-ALU-120_BOT_A/B	-7	-4	0.665723	0	
23	TD-RRH8X20_A/B	-7	-1.25	0.665723	0	
24	N32	-4.749998	-.25	0.665723	0	
25	N33	-4.749998	-3.75	0.665723	0	
26	N34	-0.530416	-.25	-2.590661	0	
27	N35	-0.530416	-3.75	-2.590661	0	
28	N36A	-2.438332	-.25	-1.118262	0	
29	N37A	-2.438332	-3.75	-1.118262	0	
30	N38	-4.354164	-.25	0.360246	0	
31	N39	-4.354164	-3.75	0.360246	0	
32	N34B	4.749998	-.25	0.665723	0	
33	N35A	4.749998	-3.75	0.665723	0	
34	N36	0.530416	-.25	-2.590661	0	
35	N37	0.530416	-3.75	-2.590661	0	
36	N38A	2.438332	-.25	-1.118262	0	
37	N39A	2.438332	-3.75	-1.118262	0	
38	N40	4.354164	-.25	0.360246	0	
39	N41	4.354164	-3.75	0.360246	0	
40	N40A	2	-.25	0.665723	0	
41	N41B	2	-3.75	0.665723	0	
42	N42	2	-4.5	0.665723	0	
43	N43	2	1.5	0.665723	0	
44	1900MHZ-RRH_A/B	2	-2.75	0.665723	0	
45	800MHZ-RRH_A/B	2	.75	0.665723	0	
46	N48	0	-10.25	-3	0	
47	N49	0	-13.75	-3	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
48	N50	7.5	-10.25	0.665723	0	
49	N51	7.5	-13.75	0.665723	0	
50	N52	-7.5	-10.25	0.665723	0	
51	N53	-7.5	-13.75	0.665723	0	
52	N54	-7	-10.25	0.665723	0	
53	N55	-7	-13.75	0.665723	0	
54	N56	-7	-15	0.665723	0	
55	N57	-7	-9	0.665723	0	
56	N58	7	-10.25	0.665723	0	
57	N59	7	-13.75	0.665723	0	
58	N60	0	-10.25	0.665723	0	
59	N61	0	-13.75	0.665723	0	
60	APXVSPP18-C-A20_TOP_G	0	-9.5	0.665723	0	
61	APXVSPP18-C-A20_BOT_G	0	-14	0.665723	0	
62	N64	0	-15	0.665723	0	
63	N65	0	-9	0.665723	0	
64	N66	7	-15	0.665723	0	
65	N67	7	-9	0.665723	0	
66	APXV9TM14-ALU-120_TOP_G	-7	-9.5	0.665723	0	
67	APXV9TM14-ALU-120_BOT_G	-7	-14	0.665723	0	
68	TD-RRH8X20_G	-7	-11.25	0.665723	0	
69	N71	-4.749998	-10.25	0.665723	0	
70	N72	-4.749998	-13.75	0.665723	0	
71	N73	-0.530416	-10.25	-2.590661	0	
72	N74	-0.530416	-13.75	-2.590661	0	
73	N75	-2.438332	-10.25	-1.118262	0	
74	N76	-2.438332	-13.75	-1.118262	0	
75	N77	-4.354164	-10.25	0.360246	0	
76	N78	-4.354164	-13.75	0.360246	0	
77	N79	4.749998	-10.25	0.665723	0	
78	N80	4.749998	-13.75	0.665723	0	
79	N81	0.530416	-10.25	-2.590661	0	
80	N82	0.530416	-13.75	-2.590661	0	
81	N83	2.438332	-10.25	-1.118262	0	
82	N84	2.438332	-13.75	-1.118262	0	
83	N85	4.354164	-10.25	0.360246	0	
84	N86	4.354164	-13.75	0.360246	0	
85	N87	2	-10.25	0.665723	0	
86	N88	2	-13.75	0.665723	0	
87	N89	2	-14.5	0.665723	0	
88	N90	2	-8.5	0.665723	0	
89	1900MHZ-RRH_G	2	-12.75	0.665723	0	
90	800MHZ-RRH_G	2	-9.25	0.665723	0	
91	N95	5.499998	-.25	0.665723	0	
92	N96	5.499998	-10.25	0.665723	0	
93	N97	4.28446	-.25	-6.227932	0	
94	N98	4.28446	-10.25	-6.227932	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	N1	Reaction	Reaction	Reaction				
2	N2	Reaction	Reaction	Reaction				
3	N9							
4	N10							
5	N11							

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
6	N12							
7	N13							
8	N14							
9	N19							
10	N22							
11	N30							
12	N31							
13	N33A							
14	N34A							
15	APXVSPP18-C-A2..							
16	APXVSPP18-C-A2..							
17	N41A							
18	N42A							
19	N45A							
20	N46A							
21	APXV9TM14-ALU-..							
22	APXV9TM14-ALU-..							
23	TD-RRH8X20_A/B							
24	N32							
25	N33							
26	N34							
27	N35							
28	N36A							
29	N37A							
30	N38							
31	N39							
32	N34B							
33	N35A							
34	N36							
35	N37							
36	N38A							
37	N39A							
38	N40							
39	N41							
40	N40A							
41	N41B							
42	N42							
43	N43							
44	1900MHZ-RRH_A/B							
45	800MHZ-RRH_A/B							
46	N48	Reaction	Reaction	Reaction				
47	N49	Reaction	Reaction	Reaction				
48	N50							
49	N51							
50	N52							
51	N53							
52	N54							
53	N55							
54	N56							
55	N57							
56	N58							
57	N59							
58	N60							
59	N61							
60	APXVSPP18-C-A2..							
61	APXVSPP18-C-A2..							
62	N64							

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
63	N65							
64	N66							
65	N67							
66	APXV9TM14-ALU-...							
67	APXV9TM14-ALU-...							
68	TD-RRH8X20_G							
69	N71							
70	N72							
71	N73							
72	N74							
73	N75							
74	N76							
75	N77							
76	N78							
77	N79							
78	N80							
79	N81							
80	N82							
81	N83							
82	N84							
83	N85							
84	N86							
85	N87							
86	N88							
87	N89							
88	N90							
89	1900MHZ-RRH_G							
90	800MHZ-RRH_G							
91	N95							
92	N96							
93	N97	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
94	N98	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	

Joint Loads and Enforced Displacements (BLC 1 : DL)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
1	APXVSPP18-C-A20_TOP_A/B	L	Y	-28.5
2	APXVSPP18-C-A20_BOT_A/B	L	Y	-28.5
3	APXV9TM14-ALU-120_TOP_A/B	L	Y	-27.5
4	APXV9TM14-ALU-120_BOT_A/B	L	Y	-27.5
5	TD-RRH8X20_A/B	L	Y	-70
6	800MHZ-RRH_A/B	L	Y	-64
7	1900MHZ-RRH_A/B	L	Y	-60
8	APXVSPP18-C-A20_TOP_G	L	Y	-28.5
9	APXVSPP18-C-A20_BOT_G	L	Y	-28.5
10	APXV9TM14-ALU-120_TOP_G	L	Y	-27.5
11	APXV9TM14-ALU-120_BOT_G	L	Y	-27.5
12	TD-RRH8X20_G	L	Y	-70
13	1900MHZ-RRH_G	L	Y	-60
14	800MHZ-RRH_G	L	Y	-64

Joint Loads and Enforced Displacements (BLC 2 : WLz)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
1	APXVSPP18-C-A20_TOP_A/B	L	Z	-182.2
2	APXVSPP18-C-A20_BOT_A/B	L	Z	-182.2
3	APXV9TM14-ALU-120_TOP_A/B	L	Z	-143.1

Joint Loads and Enforced Displacements (BLC 2 : WLz) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
4	APXV9TM14-ALU-120_BOT_A/B	L	Z	-143.1
5	TD-RRH8X20_A/B	L	Z	-182.6
6	800MHZ-RRH_A/B	L	Z	-92.9
7	1900MHZ-RRH_A/B	L	Z	-104.8
8	APXVSPP18-C-A20_TOP_G	L	Z	-182.2
9	APXVSPP18-C-A20_BOT_G	L	Z	-182.2
10	APXV9TM14-ALU-120_TOP_G	L	Z	-143.1
11	APXV9TM14-ALU-120_BOT_G	L	Z	-143.1
12	TD-RRH8X20_G	L	Z	-182.6
13	1900MHZ-RRH_G	L	Z	-104.8
14	800MHZ-RRH_G	L	Z	-92.9

Joint Loads and Enforced Displacements (BLC 3 : WLx)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
1	APXVSPP18-C-A20_TOP_A/B	L	X	-119.3
2	APXVSPP18-C-A20_BOT_A/B	L	X	-119.3
3	APXV9TM14-ALU-120_TOP_A/B	L	X	-81.4
4	APXV9TM14-ALU-120_BOT_A/B	L	X	-81.4
5	TD-RRH8X20_A/B	L	X	-69.2
6	800MHZ-RRH_A/B	L	X	-87.2
7	1900MHZ-RRH_A/B	L	X	-100.9
8	APXVSPP18-C-A20_TOP_G	L	X	-119.3
9	APXVSPP18-C-A20_BOT_G	L	X	-119.3
10	APXV9TM14-ALU-120_TOP_G	L	X	-81.4
11	APXV9TM14-ALU-120_BOT_G	L	X	-81.4
12	TD-RRH8X20_G	L	X	-69.2
13	1900MHZ-RRH_G	L	X	-100.9
14	800MHZ-RRH_G	L	X	-87.2

Member Distributed Loads (BLC 2 : WLz)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M12	PZ	-6	-6	0	0
2	M14	PZ	-6	-6	0	0
3	M19	PZ	-6	-6	0	0
4	M20	PZ	-6	-6	0	0
5	M15	PZ	-6	-6	0	0
6	M16A	PZ	-6	-6	0	0
7	M18	PZ	-6	-6	0	0
8	M19A	PZ	-6	-6	0	0
9	M8A	PZ	-10.7	-10.7	0	0
10	M9	PZ	-10.7	-10.7	0	0
11	M13	PZ	-10.7	-10.7	0	0
12	M14A	PZ	-10.7	-10.7	0	0
13	M21	PZ	-10.7	-10.7	0	0
14	ALPHA/BETA	PZ	-12.7	-12.7	0	0
15	M5	PZ	-12.7	-12.7	0	0
16	M16	PZ	-9.3	-9.3	0	0
17	M17	PZ	-9.3	-9.3	0	0
18	GAMMA	PZ	-12.7	-12.7	0	0
19	M23	PZ	-12.7	-12.7	0	0
20	M25	PZ	-10.7	-10.7	0	0
21	M26	PZ	-10.7	-10.7	0	0
22	M27	PZ	-6	-6	0	0
23	M28	PZ	-6	-6	0	0
24	M29	PZ	-9.3	-9.3	0	0

Member Distributed Loads (BLC 2 : WLz) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
25	M30	PZ	-6	-6	0	0
26	M31	PZ	-6	-6	0	0
27	M34	PZ	-10.7	-10.7	0	0
28	M35	PZ	-10.7	-10.7	0	0
29	M36	PZ	-6	-6	0	0
30	M37	PZ	-6	-6	0	0
31	M38	PZ	-9.3	-9.3	0	0
32	M39	PZ	-6	-6	0	0
33	M40	PZ	-6	-6	0	0
34	M42	PZ	-10.7	-10.7	0	0
35	M20B	PZ	-10.7	-10.7	0	0
36	M33	PZ	-10.7	-10.7	0	0

Member Distributed Loads (BLC 3 : WLx)

	Member Label	Direction	Start Magnitude[lb/ft,F]	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M12	PX	-6	-6	0	0
2	M14	PX	-6	-6	0	0
3	M19	PX	-6	-6	0	0
4	M20	PX	-6	-6	0	0
5	M15	PX	-6	-6	0	0
6	M16A	PX	-6	-6	0	0
7	M18	PX	-6	-6	0	0
8	M19A	PX	-6	-6	0	0
9	M8A	PX	-10.7	-10.7	0	0
10	M9	PX	-10.7	-10.7	0	0
11	M13	PX	-10.7	-10.7	0	0
12	M14A	PX	-10.7	-10.7	0	0
13	M21	PX	-10.7	-10.7	0	0
14	M20A	PX	-12	-12	0	0
15	M6	PX	-10.7	-10.7	0	0
16	M16	PX	-9.3	-9.3	0	0
17	M17	PX	-9.3	-9.3	0	0
18	M24	PX	-10.7	-10.7	0	0
19	M25	PX	-10.7	-10.7	0	0
20	M26	PX	-10.7	-10.7	0	0
21	M27	PX	-6	-6	0	0
22	M28	PX	-6	-6	0	0
23	M29	PX	-9.3	-9.3	0	0
24	M30	PX	-6	-6	0	0
25	M31	PX	-6	-6	0	0
26	M34	PX	-10.7	-10.7	0	0
27	M35	PX	-10.7	-10.7	0	0
28	M36	PX	-6	-6	0	0
29	M37	PX	-6	-6	0	0
30	M38	PX	-9.3	-9.3	0	0
31	M39	PX	-6	-6	0	0
32	M40	PX	-6	-6	0	0
33	M41	PX	-12	-12	0	0
34	M42	PX	-10.7	-10.7	0	0
35	M20B	PX	-10.7	-10.7	0	0
36	M21A	PX	-10.7	-10.7	0	0
37	M32	PX	-10.7	-10.7	0	0
38	M33	PX	-10.7	-10.7	0	0

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
No Data to Print ...						

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	DL	DL		-1		14				
2	WLz	WLZ				14		36		
3	WLx	WLX				14		38		
4	LL1	LL					2			
5	LL2	None					2			

Load Combinations

	Description	Sol..	PDelta	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	1.4DL	Yes	Y		DL	1.4																
2	1.2DL+1.6WLz	Yes	Y		DL	1.2	WLZ	1.6														
3	1.2DL-1.6WLz	Yes	Y		DL	1.2	WLZ	-1.6														
4	1.2DL+1.6WLx	Yes	Y		DL	1.2	W...	1.6														
5	1.2DL-1.6WLx	Yes	Y		DL	1.2	W...	-1.6														
6	1.2DL+1.6(0.75WLz+0.75WLx)	Yes	Y		DL	1.2	WLZ	1.2	W...	1.2												
7	1.2DL+1.6(0.75WLz-0.75WLx)	Yes	Y		DL	1.2	WLZ	1.2	W...	-1.2												
8	1.2DL-1.6(0.75WLz-0.75WLx)	Yes	Y		DL	1.2	WLZ	-1.2	W...	1.2												
9	1.2DL-1.6(0.75WLz+0.75WLx)	Yes	Y		DL	1.2	WLZ	-1.2	W...	-1.2												
10	1.2DL+1.5LLend	Yes	Y		DL	1.2	LL	1.5														
11	1.2DL+1.5LLmid	Yes	Y		DL	1.2	5	1.5														
12	1.2DL+1.5LL+10%1.6WLz	Yes	Y		DL	1.2	LL	1.5	WLZ	.16												
13	1.2DL+1.5LL-10%1.6WLz	Yes	Y		DL	1.2	LL	1.5	WLZ	-.16												
14	1.2DL+1.5LL+10%1.6WLx	Yes	Y		DL	1.2	LL	1.5	W...	.16												
15	1.2DL+1.5LL-10%1.6WLx	Yes	Y		DL	1.2	LL	1.5	W...	-.16												
16	1.2DL+1.5LL+10%1.6(0.75WLz+...	Yes	Y		DL	1.2	LL	1.5	WLZ	.12	W...	.12										
17	1.2DL+1.5LL+10%1.6(0.75WLz-...	Yes	Y		DL	1.2	LL	1.5	WLZ	.12	W...	-.12										
18	1.2DL+1.5LL-10%1.6(0.75WLz-0...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.12	W...	.12										
19	1.2DL+1.5LL-10%1.6(0.75WLz+...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.12	W...	-.12										
20	1.2DL+1.5LL+10%1.6WLz	Yes	Y		DL	1.2	5	1.5	WLZ	.16												
21	1.2DL+1.5LL-10%1.6WLz	Yes	Y		DL	1.2	5	1.5	WLZ	-.16												
22	1.2DL+1.5LL+10%1.6WLx	Yes	Y		DL	1.2	5	1.5	W...	.16												
23	1.2DL+1.5LL-10%1.6WLx	Yes	Y		DL	1.2	5	1.5	W...	-.16												
24	1.2DL+1.5LL+10%1.6(0.75WLz+...	Yes	Y		DL	1.2	5	1.5	WLZ	.12	W...	.12										
25	1.2DL+1.5LL+10%1.6(0.75WLz-...	Yes	Y		DL	1.2	5	1.5	WLZ	.12	W...	-.12										
26	1.2DL+1.5LL-10%1.6(0.75WLz-0...	Yes	Y		DL	1.2	5	1.5	WLZ	-.12	W...	.12										
27	1.2DL+1.5LL-10%1.6(0.75WLz+...	Yes	Y		DL	1.2	5	1.5	WLZ	-.12	W...	-.12										
28	DL		Y		DL	1																
29	WLz		Y		WLZ	1																
30	WLx		Y		W...	1																

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N1	max	1524.995	4	672.653	25	1618.355	6	0	1	0	1	0	1
2		min	-1473.902	5	442.631	8	-3290.932	9	0	1	0	1	0	1
3	N2	max	835.688	4	609.345	13	2164.266	2	0	1	0	1	0	1
4		min	-909.155	15	400.666	2	-488.929	3	0	1	0	1	0	1
5	N48	max	1656.279	4	675.156	23	2131.775	6	0	1	0	1	0	1
6		min	-1344.48	5	450.749	4	-3804.719	9	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
7	N49	max	704.086	4	607.913	13	2164.131	2	0	1	0	1	0	1
8		min	-1039.196	15	411.879	2	-489.588	3	0	1	0	1	0	1
9	N97	max	132.474	5	38.638	6	1409.525	5	32.64	9	246.658	6	27.869	6
10		min	-129.941	4	-10.091	9	-1410.322	4	-78.724	6	-244.181	9	-23.277	9
11	N98	max	205.4	9	39.02	6	1641.514	9	49.796	9	218.901	4	25.921	6
12		min	-201.846	6	-16.323	9	-1644.41	6	-78.533	6	-214.045	5	-41.592	9
13	Totals:	max	4461.484	4	2565.531	19	6199.109	2						
14		min	-4461.484	5	1815.531	6	-6199.109	3						

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code Ch...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	ALPHA/BE...	PIPE_2.5	.295	2.656	3	.131	12.344		6	10110.2...	50715	3596.25	3596.25	1....	H1-1b
2	M5	PIPE_2.5	.224	2.656	2	.067	12.344		8	10110.2...	50715	3596.25	3596.25	1....	H1-1b
3	M6	PIPE_2.0	.215	4.75	16	.059	1.25		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
4	M8A	PIPE_2.0	.224	6	9	.076	0		17	20866.7...	32130	1871.625	1871.625	2....	H1-1b
5	M9	PIPE_2.0	.185	6	2	.071	0		15	20866.7...	32130	1871.625	1871.625	2....	H1-1b
6	M12	PIPE_1.0	.054	1.75	9	.023	0		5	8869.951	14773.5	464.625	464.625	1....	H1-1b
7	M14	PIPE_1.0	.068	1.75	9	.022	0		5	8869.951	14773.5	464.625	464.625	1....	H1-1b
8	M16	PIPE_2.0	.018	1.75	9	.020	0		7	27741.09	32130	1871.625	1871.625	1....	H1-1b
9	M19	PIPE_1.0	.076	2.125	9	.009	4.249		6	6964.209	14773.5	464.625	464.625	1....	H1-1b
10	M20	PIPE_1.0	.067	2.128	9	.029	0		6	6950.214	14773.5	464.625	464.625	1....	H1-1b
11	M20B	PIPE_2.0	.160	1.25	5	.049	1.25		5	20866.7...	32130	1871.625	1871.625	1....	H1-1b
12	M21A	PIPE_2.0	.146	1.25	8	.051	1.25		7	20866.7...	32130	1871.625	1871.625	2....	H1-1b
13	M13	PIPE_2.0	.250	6	6	.054	0		6	20866.7...	32130	1871.625	1871.625	2....	H1-1b
14	M14A	PIPE_2.0	.156	6	2	.051	0		4	20866.7...	32130	1871.625	1871.625	2....	H1-1b
15	M15	PIPE_1.0	.053	1.75	8	.020	0		5	8869.951	14773.5	464.625	464.625	1....	H1-1b
16	M16A	PIPE_1.0	.066	1.75	6	.020	0		5	8869.951	14773.5	464.625	464.625	1....	H1-1b
17	M17	PIPE_2.0	.018	1.75	8	.044	3.5		5	27741.09	32130	1871.625	1871.625	1....	H1-1b
18	M18	PIPE_1.0	.075	2.125	8	.014	0		3	6964.209	14773.5	464.625	464.625	1....	H1-1b
19	M19A	PIPE_1.0	.066	2.128	8	.020	4.255		6	6950.214	14773.5	464.625	464.625	1....	H1-1b
20	M20A	PIPE_3.0	.094	1.75	4	.043	1.75		4	53775.8...	65205	5748.75	5748.75	2....	H1-1b
21	M21	PIPE_2.0	.203	0	9	.023	7		9	17855.0...	32130	1871.625	1871.625	2....	H1-1b
22	GAMMA	PIPE_2.5	.411	12.188	9	.145	12.344		6	10110.2...	50715	3596.25	3596.25	1....	H1-1a
23	M23	PIPE_2.5	.218	2.813	3	.072	12.344		6	10110.2...	50715	3596.25	3596.25	1....	H1-1b
24	M24	PIPE_2.0	.207	4.75	16	.067	2.25		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
25	M25	PIPE_2.0	.169	.625	19	.077	0		17	20866.7...	32130	1871.625	1871.625	2....	H1-1b
26	M26	PIPE_2.0	.185	.687	15	.072	0		19	20866.7...	32130	1871.625	1871.625	2....	H1-1b
27	M27	PIPE_1.0	.057	1.75	9	.030	0		9	8869.951	14773.5	464.625	464.625	1....	H1-1b
28	M28	PIPE_1.0	.074	1.75	9	.028	0		9	8869.951	14773.5	464.625	464.625	1....	H1-1b
29	M29	PIPE_2.0	.018	1.75	9	.018	0		5	27741.09	32130	1871.625	1871.625	1....	H1-1b
30	M30	PIPE_1.0	.082	2.125	9	.013	4.249		2	6964.209	14773.5	464.625	464.625	1....	H1-1b
31	M31	PIPE_1.0	.070	2.128	9	.019	0		6	6950.214	14773.5	464.625	464.625	1....	H1-1b
32	M32	PIPE_2.0	.220	1.25	9	.071	1.25		9	20866.7...	32130	1871.625	1871.625	1....	H1-1b
33	M33	PIPE_2.0	.115	1.25	6	.047	4.75		9	20866.7...	32130	1871.625	1871.625	1....	H1-1b
34	M34	PIPE_2.0	.203	6	6	.052	0		6	20866.7...	32130	1871.625	1871.625	2....	H1-1b
35	M35	PIPE_2.0	.124	.687	6	.051	0		6	20866.7...	32130	1871.625	1871.625	2....	H1-1b
36	M36	PIPE_1.0	.053	1.75	6	.026	0		9	8869.951	14773.5	464.625	464.625	1....	H1-1b
37	M37	PIPE_1.0	.067	1.75	6	.025	0		9	8869.951	14773.5	464.625	464.625	1....	H1-1b
38	M38	PIPE_2.0	.017	1.75	6	.050	0		9	27741.09	32130	1871.625	1871.625	1....	H1-1b
39	M39	PIPE_1.0	.072	2.125	6	.017	4.249		3	6964.209	14773.5	464.625	464.625	1....	H1-1b
40	M40	PIPE_1.0	.061	2.128	6	.025	0		8	6950.214	14773.5	464.625	464.625	1....	H1-1b
41	M41	PIPE_3.0	.107	1.75	6	.044	1.75		5	53775.8...	65205	5748.75	5748.75	2....	H1-1b
42	M42	PIPE_2.0	.160	0	5	.029	7		5	17855.0...	32130	1871.625	1871.625	2....	H1-1b

Sprint®

PROJECT: 2.5 EQUIPMENT DEPLOYMENT

SITE NAME: W. CONVENTRY

SITE CASCADE: CT33XC550-A

SITE ADDRESS: 130 VERNON ROAD
BOLTON, CT 06091

SITE TYPE: 150'-0" GUYED TOWER

SITE INFORMATION

PROPERTY OWNER:
MOUNTAINTOP ENTERPRISES, INC.
C/O MILTON HATHAWAY
PO BOX 9219
BOLTON, T 06043

SITE ADDRESS:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

GEOGRAPHIC COORDINATES:
LATITUDE: 41.80205°
LONGITUDE: -72.4412°

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
R-1

POWER COMPANY:
CONNECTICUT LIGHT & POWER
PH.: (800) 286-2000

AAV PROVIDER:
AT&T
PH.: (800) 288-2020

SPRINT CONSTRUCTION MANAGER:
NAME: MIKE DELIA
PHONE: (781) 316-6348
E-MAIL: michael.delia@sprint.com

EQUIPMENT SUPPLIER:
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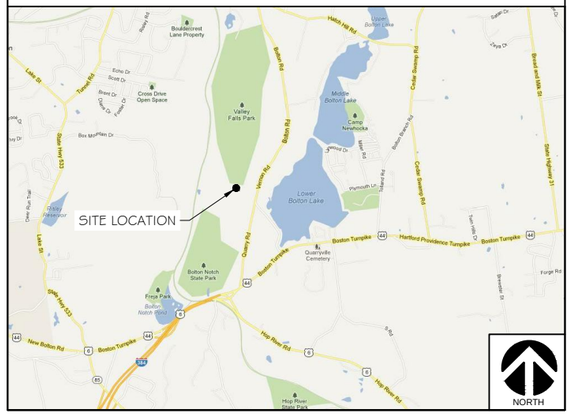
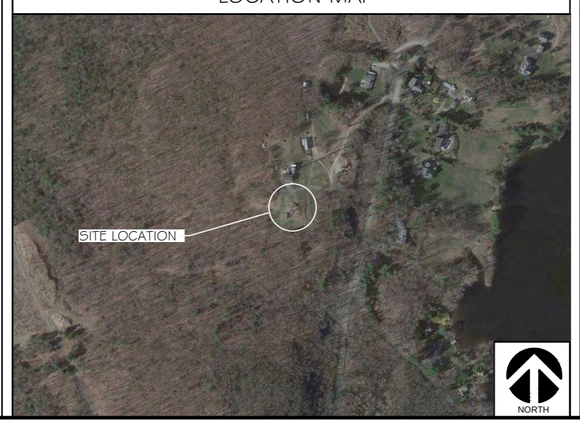
PH.: (908) 508-8080

PLANS PREPARED BY:
RAMAKER & ASSOCIATES, INC.
CONTACT: KEITH BOHNSACK, PROJECT MANAGER
PH.: (608) 643-4100
EMAIL: kbohnsack@ramaker.com

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

- INSTALL NEW 2.5 EQUIPMENT IN EXISTING BTS CABINET
  *(1) RECTIFIER SHELF AND (3) RECTIFIERS
  *(1) BASE BAND UNIT
- INSTALL (2) NEW BATTERY STRINGS IN EXISTING BATTERY CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRH'S ON TOWER
- INSTALL (1) FIBER CABLE AND (2) FIBER JUMPERS
- INSTALL (27) ANTENNA / RRH JUMPERS

APPLICABLE CODES

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

1. INTERNATIONAL BUILDING CODE
2. ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. NATIONAL ELECTRIC CODE

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Transcend Wireless
48 SPRUCE STREET
OAKLAND, NJ 07346

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT ★ JAMES R. SKOWRONSKI ★ No. 26266 ★ LICENSED PROFESSIONAL ENGINEER ★

Signature: 8/29/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 08/29/2014

PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
TITLE SHEET

SCALE: NONE

PROJECT NUMBER: 23012
SHEET NUMBER: T-1

DRAWN BY: TWS
CHECKED BY: KAB

SECTION 01 100 - SCOPE OF WORK

THE WORK:
THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE CONSTRUCTION DRAWINGS AND ASSOCIATED OUTLINE SPECIFICATIONS AND THE SITE SPECIFIC WORK ORDER, DESCRIBE THE WORK TO BE PERFORMED BY THIS CONSTRUCTION CONTRACTOR (SUPPLIER).

RELATED DOCUMENTS:
A. THE REQUIREMENTS OF EACH SECTION OF THIS SPECIFICATION APPLY TO ALL SECTIONS, INDIVIDUALLY AND COLLECTIVELY.
B. RELATED DOCUMENTS: THE CONTRACTOR SHALL COMPLY WITH THE MOST CURRENT VERSION OF THE FOLLOWING SUPPLEMENTAL REQUIREMENTS FOR INSTALLATION AND TESTING.
   1. EN-2012-001: (FIBER OPTIC, DC CABLE, AND DC CIRCUIT BREAKER TAGGING STANDARDS)
   2. TS-0200 - (TRANSMISSION ANTENNA LINE ACCEPTANCE STANDARDS)
   3. EL-0568: (FIBER TESTING POLICY)
   4. NP-312-201: (EXTERIOR GROUNDING SYSTEM TESTING)
   5. NP-760-500: ETHERNET, MICROWAVE, TESTING AND ACCEPTANCE

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

NATIONALLY RECOGNIZED CODES AND STANDARDS:
THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
C. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
D. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE - "NEC") AND NFPA 101 (LIFE SAFETY CODE).
E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
G. AMERICAN CONCRETE INSTITUTE (ACI)
H. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
I. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
J. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
K. PORTLAND CEMENT ASSOCIATION (PCA)
L. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
M. BRICK INDUSTRY ASSOCIATION (BIA)
N. AMERICAN WELDING SOCIETY (AWS)
O. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
P. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
Q. DOOR AND HARDWARE INSTITUTE (DHI)
R. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
S. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

DEFINITIONS:
A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B. COMPANY: "SPRINT"; SPRINT NEXTEL CORPORATION AND IT'S OPERATING ENTITIES.
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D. CONTRACTOR: CONSTRUCTION CONTRACTOR, SUPPLIER, 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. CONSTRUCTION MANAGER - ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT.

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.

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

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.

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

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.

UTILITY 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:

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.

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

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

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 LESSOR'S OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

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.

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

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

FURNISHED MATERIALS:
COMPANY FURNISHED MATERIALS AND EQUIPMENT TO BE INSTALLED BY THE CONTRACTOR (OFIC) IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

RECEIPT OF MATERIAL AND EQUIPMENT:
A. 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.
B. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
C. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
D. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

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.

SECTION 01 300 - CELL SITE CONSTRUCTION

NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S 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.

GENERAL REQUIREMENTS FOR 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

FUNCTIONAL REQUIREMENTS:
A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. CONTRACTOR SHALL TAKE ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
   2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
   3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND BACKHAUL (FIBER, COPPER, OR MICROWAVE).
   4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
   5. INSTALL ABOVE GROUND GROUNDING SYSTEMS, CONDUIT AND BOXES.
   6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
   7. INSTALL "H-FRAMES", CABINETS AND PADS AND PLATFORMS 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. CONDUCT ALL REQUIRED TESTS AND INSPECTIONS
   19. PERFORM, DOCUMENT, AND CLOSE OUT ALL JURISDICTIONAL PERMITTING REQUIREMENTS AND ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
   20. PERFORM ALL ADDITIONAL WORK AS IDENTIFIED IN SCOPE OF SERVICES ATTACHED TO THE SUPPLIER AGREEMENT FOR THIS PROJECT. THIS WORK MAY INCLUDE COMMISSIONING, INTEGRATION, SPECIAL WAREHOUSING, REVERSE LOGISTICS ACTIVITIES, ETC. PERFORM COMMISSIONING AND INTEGRATION ACTIVITIES PER APPLICABLE MOPS.

DELIVERABLES:
A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEST REPORTS AND DOCUMENTATION INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
   1. PRODUCT SPECIFICATIONS FOR MATERIALS OR SPECIAL CONSTRUCTION IF REQUESTED BY SPRINT
   2. ACTUALIZE ALL CONSTRUCTION RELATED MILESTONES IN SITERRA AND COMPLETE ALL ON-LINE FORMS AND COMPLETE DOCUMENT UP-LOADS. UPLOAD ALL REQUIRED CLOSEOUT DOCUMENTS AND FINAL SITE PHOTOS
   3. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT LEFT ON SITE INSIDE BASE OF MAIN RF CABINET IN A PROTECTIVE POUCH.
   4. ALL REQUIRED TEST REPORTS.
   5. REQUIRED CLOSEOUT DOCUMENTATION INCLUDING BUT NOT LIMITED TO:
      a. ALL JURISDICTIONAL PERMITTING AND OCCUPANCY INFORMATION
      b. PDF SCAN OF REDLINES PRODUCED IN THE FIELD
      c. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS
      d. LIEN WAIVERS
      e. FINAL PAYMENT APPLICATION
      f. REQUIRED FINAL CONSTRUCTION PHOTOS
      g. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
      h. LISTS OF SUBCONTRACTORS
B. PROVIDE ADDITIONAL 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. PRE-CONSTRUCTION MEETING NOTES.

SECTION 01 400 - TESTS, INSPECTIONS, SUBMITTALS, AND PROJECT CLOSEOUT

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 (CURRENT VERSION) ANTENNA LINE ACCEPTANCE STANDARDS
   2. POST CONSTRUCTION HEIGHT VERIFICATION, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
   3. CONCRETE BREAK TESTS
   4. SITE RESISTANCE TO EARTH TEST
   5. STRUCTURAL BACKFILL COMPACTION TESTS
   6. 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.
   7. ADDITIONAL TESTING AS REQUIRED ELSEWHERE IN THIS SPECIFICATION.

SUBMITTALS:
A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
B. UPLOAD THE FOLLOWING TO SITERRA AS APPLICABLE INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
   2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
   3. CHEMICAL GROUNDING SYSTEM .
   4. REINFORCEMENT CERTIFICATIONS
   5. STRUCTURAL BACKFILL TEST RESULTS
   6. SWEEP AND FIBER TESTS
   7. ANTENNA AZIMUTH AND DOWN-TILT VERIFICATION
   8. POST CONSTRUCTION HEIGHT VERIFICATION
   9. ADDITIONAL SUBMITTALS MAY BE REQUIRED FOR SPECIAL CONSTRUCTION OR MINOR MATERIALS
C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

TESTING BY THIRD PARTY AGENCY:
A. EMPLOY AN AGENCY OF ENGINEERS AND SCIENTISTS WHO IS REGULARLY ENGAGED IN FIELD AND LABORATORY TESTING AND ANALYSIS. AGENCY SHALL HAVE BEEN IN BUSINESS A MINIMUM OF FIVE YEARS, AND BE LICENSED AS PROFESSIONAL ENGINEERS IN THE STATE WHERE THE PROJECT IS LOCATED. AGENCY IS SUBJECT TO APPROVAL BY COMPANY.
   1. AGENCY MUST HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
   2. 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.
B. REQUIRED THIRD PARTY TESTS:
   1. SITE RESISTANCE TO EARTH TEST PER NP-312-201
   2. CONCRETE CYLINDER BREAK TESTS FOR TOWER PIER AND ANCHORS PER NATIONALLY RECOGNIZED STANDARDS
   3. STRUCTURAL SOILS COMPACTION TESTS PER NATIONALLY RECOGNIZED STANDARDS
   4. REBAR PLACEMENT VERIFICATION WITH REPORT
   5. TESTING TENSION STUDY FOR ROCK ANCHORS
   6. ALL THIRD PARTY TESTS AS REQUIRED BY LOCAL JURISDICTION
C. REQUIRED TESTS BY CONTRACTOR
   1. COAX SWEEP TESTS PER SPRINT STANDARD TS-0200
   2. FIBER TESTS PER SPRINT STANDARD EL-0568
   3. MICROWAVE LINK TESTS PER NP-760-500
   4. ANTENNA AZIMUTHS AND DOWN TILT USING ELECTRONIC ALIGNMENT TOOL PER ANTENNA INSTALLATION SPECIFICATION HEREIN.

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48 SPRUCE STREET
OAKLAND, NJ 07346

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT ★ JAMES R. SKOWRONSKI ★ No. 26266 LICENSED PROFESSIONAL ENGINEER

Signature: James R Skowronski Date: 8/29/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL
DATE ISSUED: 08/29/2014

PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 23012
SHEET NUMBER: SP-1

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DRAWN BY: TWS CHECKED BY: KAB

5. POST CONSTRUCTION HEIGHT VERIFICATION AS REQUIRED HEREWITH IN THE TOWER INSTALLATION SPECIFICATIONS.
6. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED HEREWITH IN THE ASPHALT PAVING SPECIFICATIONS.
7. FIELD QUALITY CONTROL TESTING AS SPECIFIED HEREWITH IN THE CONCRETE PAVING SPECIFICATIONS.
8. TESTING REQUIRED HEREWITH UNDER SPECIFICATIONS FOR AGGREGATE BASE FOR ROADWAYS
9. ALL OTHER TESTS REQUIRED BY LOCAL JURISDICTION

D. INSPECTIONS BY COMPANY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN INSPECTION ACTIVITIES, FINAL ACCEPTANCE / PUNCH WALK REVIEW, AND/OR AS A RESULT OF TESTING

E. SPRINT RESERVES THE RIGHT TO INSPECT THE CONSTRUCTION SITE AT ANY TIME VIA SITE WALKS AND/OR PHOTO REVIEWS. CONTRACTOR SHALL GIVE SPRINT 24 HOURS NOTICE PRIOR TO THE COMMENCEMENT OF THE FOLLOWING CONSTRUCTION ACTIVITIES AND PHOTOGRAPHS OF THE IN-PROGRESS WORK.
1. GROUNDING SYSTEM AND BURIED UTILITIES 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. PRIOR TO CONSTRUCTION ACTIVITIES AND AFTER CONSTRUCTION IS COMPLETE, PROVIDE PHOTOGRAPHIC DOCUMENTATION OF ROOF, FLASHINGS, AND PARAPETS, BOTH BEFORE AND AFTER CONSTRUCTION IS COMPLETE.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. TOWER TOP AND INACCESSIBLE EQUIPMENT (RRUS, ANTENNAS, AND CABLING): PROVIDE PHOTOS OF THE BACKS OF ALL ANTENNAS, RRUS, COMBINERS, FILTERS, FIBER AND DC CABLING, CABLE COLOR CODING, EQUIPMENT GROUNDING AND CONNECTOR WATER PROOFING INCLUDING NAME PLATE AND SERIAL NUMBER FOR ALL SERIALIZED EQUIPMENT.

PROJECT CLOSEOUT:

A. FINAL ACCEPTANCE PUNCH WALK AND INSPECTION: AS IDENTIFIED IN THE SCOPE OF SERVICES, SPRINT WILL CONDUCT A FINAL PUNCH WALK OR FINAL DESK TOP PHOTO REVIEW (SITE MODIFICATIONS). PUNCH WALKS MUST BE SCHEDULED IN ADVANCE AS REQUIRED. AT THE PUNCH WALK / REVIEW, SPRINT MAY IDENTIFY CRITICAL DEFICIENCIES WHICH MUST BE CORRECTED PRIOR TO PUTTING SITE ON AIR. MINOR DEFICIENCIES MUST BE CORRECTED WITHIN 30 DAYS EXCEPT AS OTHERWISE REQUIRED. VERIFICATIONS OF CORRECTIONS MAY BE MADE BY COMPANY DURING A REPEAT SITE WALK OR DESK TOP PHOTO REVIEW AT COMPANY'S SOLE DISCRETION.

B. CLOSEOUT DOCUMENTATION: ALL CLOSEOUT DOCUMENTATION AND PHOTOGRAPHS SHALL BE UPLOADED PRIOR TO FINAL ACCEPTANCE. SPRINT WILL REVIEW CLOSEOUT DOCUMENTATION FOR PRESENCE AND CONTENT. CLOSEOUT DOCUMENTATION SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING AS APPLICABLE:
1. COAX SWEEP TESTS:
2. FIBER TESTS:
3. JURISDICTION FINAL INSPECTION DOCUMENTATION
4. REINFORCEMENT CERTIFICATION (MILL CERTIFICATION)
5. CONCRETE MIX DESIGN AND PRODUCT DATA (TOWER FOUNDATION)
6. LIEN WAIVERS AND RELEASES.
7. POST -CONSTRUCTION HEIGHT VERIFICATION
8. JURISDICTION CERTIFICATE OF OCCUPANCY
9. ELECTRONIC ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
10. STRUCTURAL BACKFILL TEST RESULTS (IF APPLICABLE)
11. CELL SITE UTILITY SETUP
12. AS-BUILT REDLINE CONSTRUCTION DRAWINGS (PDF SCAN OF FIELD MARKS)
13. AS-BUILT CONSTRUCTION DRAWINGS IN DWG AND PDF FORMATS
14. LIST OF SUB CONTRACTORS
15. APPROVED PERMITTING DOCUMENTS
16. FINAL SITE PHOTOS UP-LOADED TO SITERRA. INCLUDE THE FOLLOWING AS APPLICABLE:
    a. TOWER, ANTENNAS, RRUS, 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/CABLE 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.
    b. 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;
    c. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
    d. 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.

PROJECT PHOTOGRAPHS:

A. PROVIDE PROJECT CLOSEOUT GENERAL ARRANGEMENT PHOTOS OF ALL NEW WORK. THE FOLLOWING LIST REPRESENTS MINIMUM REQUIREMENTS AND MINIMUM QUANTITY. ADDITIONAL PHOTOS MAY BE REQUIRED TO ADEQUATELY DOCUMENT THE WORK.
1. ASR AND RF MPE SIGNAGE (IF NOT IN PLACE, SUPPLIER NOTIFIES EMS FIELD REPRESENTATIVE)
2. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR)
3. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR) CLOSE UP SHOWING WEATHERPROOFING AND GROUNDING (AS REQUIRED). CLOSE-UP OF BACK SIDE OF EACH PERMANENT RRU SHOWING SERIAL NUMBER/BAR CODE.
4. VIEW (1 EACH SECTOR) ALONG THE AZIMUTH AND TILT OF THE ANTENNAS
5. TOP OF TOWER FROM GROUND, 1 EACH SECTOR
6. MAINLINE HYBRID CABLE ROUTE DOWN TOWER SHOWING FASTENERS AND SUPPORT
7. MAINLINE/HYBRID CABLE ROUTE ALONG ICE BRIDGE OR IN CABLE TRAY SHOWING FASTENERS AND SUPPORT
8. GROUND MOUNTED RRU RACKS (FRONT AND BACK)
9. FRONT, SIDE AND BACK ELEVATIONS OF ALL GROUND CABINETS
10. VIEW OF COMPOUND FROM A DISTANCE
11. VIEW OF EACH GROUND CABINET (POWER, RF, FIBER SPOOL, PPC POWER, PPC TELCO WITH DOOR OPEN)
12. BACKHAUL FIBER MEET-ME-POINT AND CONDUIT ROUTE (MICROWAVE INSTALLATION IF NOT FIBER)
13. AAV NETWORK INTERFACE DEVICE OR MICROWAVE RADIO INSTALLATION

DEFICIENCY CORRECTIONS:

CONTRACTOR IS RESPONSIBLE FOR ALL CORRECTIONS TO DEFICIENCIES IDENTIFIED THROUGH TESTING, REVIEW OF SUBMITTALS, INSPECTIONS AND CLOSEOUT REVIEWS.

SECTION 01 500 - PROJECT REPORTING

WEEKLY REPORTS:

A. CONTRACTOR SHALL REPORT TO SPRINT AT MINIMUM ON A WEEKLY BASIS VIA SITERRA BY UPDATING ALL APPLICABLE POST END KEEPING MILESTONES WITH ACTUAL AND FORECASTED COMPLETION DATES.

B. ADDITIONAL REQUIREMENTS FOR REPORTING MAY BE IDENTIFIED ELSEWHERE OR REQUIRED BY THE SCOPE OF SERVICES OR SPRINTS LOCAL MARKET CONSTRUCTION MANAGER. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

PROJECT CONFERENCE CALLS:

SPRINT MAY HOLD PERIODIC 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.

FINAL PROJECT ACCEPTANCE: PRIOR TO SPRINTS FINAL PROJECT ACCEPTANCE. ALL REQUIRED MILESTONE ACTUALS MUST BE UPDATED IN SITERRA AND ALL REQUIRED REPORTING TASKS MUST BE COMPLETE.

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

SUMMARY:

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

ANTENNAS AND RRU'S:

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

HYBRID CABLE:

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

JUMPERS AND CONNECTORS:

FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRU'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRU'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE, MIN. LENGTH FOR JUMPER SHALL BE 10'-0".

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:

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

ANTENNA INSTALLATION:

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

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

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

HYBRID CABLE INSTALLATION:

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

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

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

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

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

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

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

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

SUMMARY:

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

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

C. COMPLY WITH MANUFACTURER'S INSTALLATION AND START-UP REQUIREMENTS.

DC CIRCUIT BREAKER LABELING

A. NEW DC CIRCUIT IS REQUIRED IN MMBS CABINET SHALL BE CLEARLY IDENTIFIED AS TO RRU BEING SERVICED.

SECTION 26 100 - BASIC ELECTRICAL REQUIREMENTS

SUMMARY:

THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS

QUALITY ASSURANCE:

A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.

B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.

C. MATERIALS AND EQUIPMENT: ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS.

SUPPORTING DEVICES:

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

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

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Certification & Seal:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · No. 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: 8/29/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 08/29/2014

PROJECT TITLE:

W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:

SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 23012

SHEET NUMBER: SP-2

DRAWN BY: TWS CHECKED BY: KAB

SUPPORTING DEVICES:

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

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

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

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

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

ELECTRICAL IDENTIFICATION:

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

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

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

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

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

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

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

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

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

HUBS AND BOXES:

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

B. CABLE TERMINATION FITTINGS FOR CONDUIT

1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL BY ROXTEC.

2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.

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

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

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

SUPPLEMENTAL GROUNDING SYSTEM:

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

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

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

EXISTING STRUCTURE:

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

CONDUIT AND CONDUCTOR INSTALLATION:

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

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

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Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT ★ JAMES R. SKOWRONSKI ★ No. 26266 LICENSED PROFESSIONAL ENGINEER

Signature: 8/29/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 08/29/2014

PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

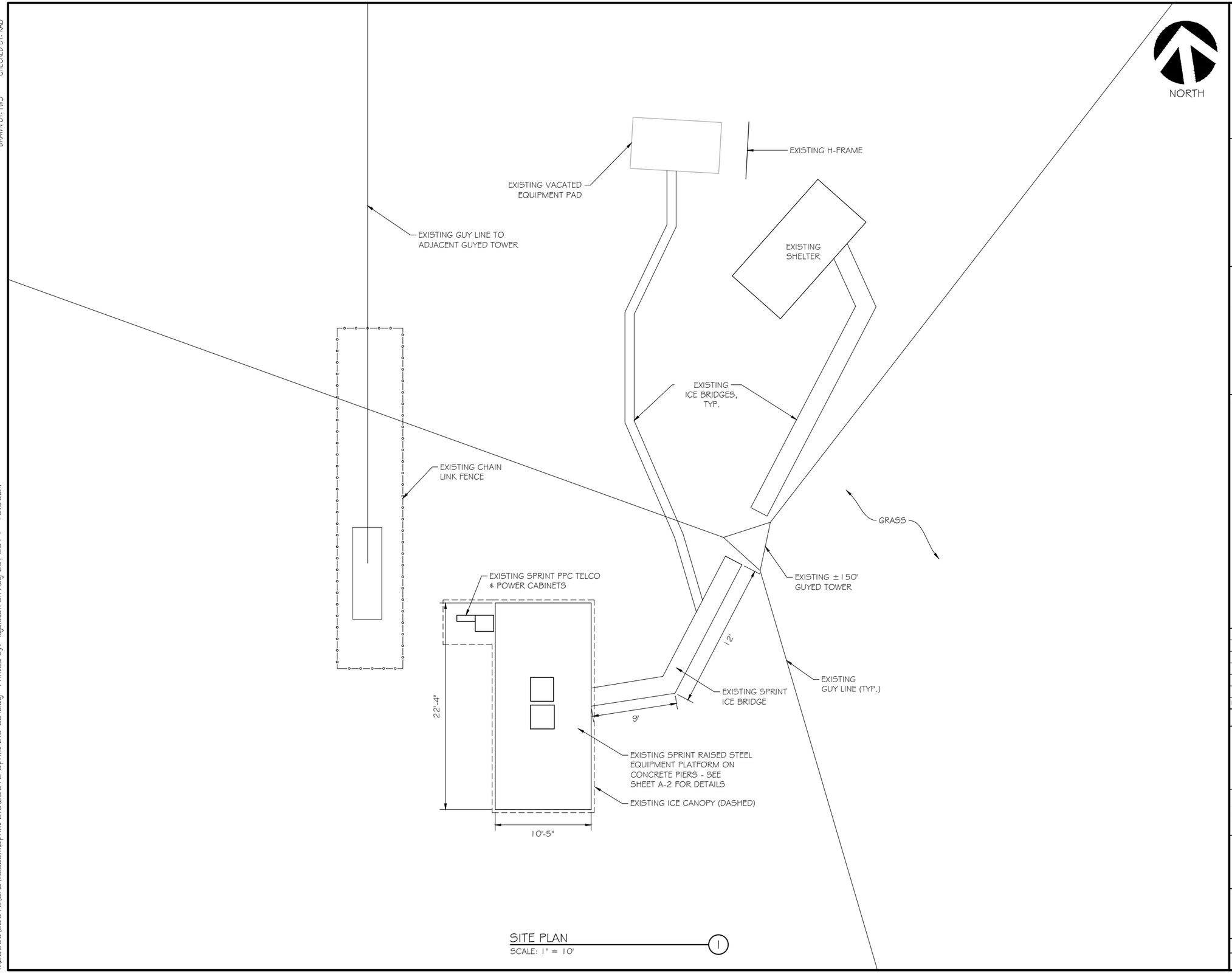
SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 23012

SHEET NUMBER: SP-3

DRAWN BY: TWS CHECKED BY: KAB



SITE PLAN
SCALE: 1" = 10'
1

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STATE OF CONNECTICUT ★ JAMES R. SKOWRONSKI ★ No. 26266 LICENSED PROFESSIONAL ENGINEER

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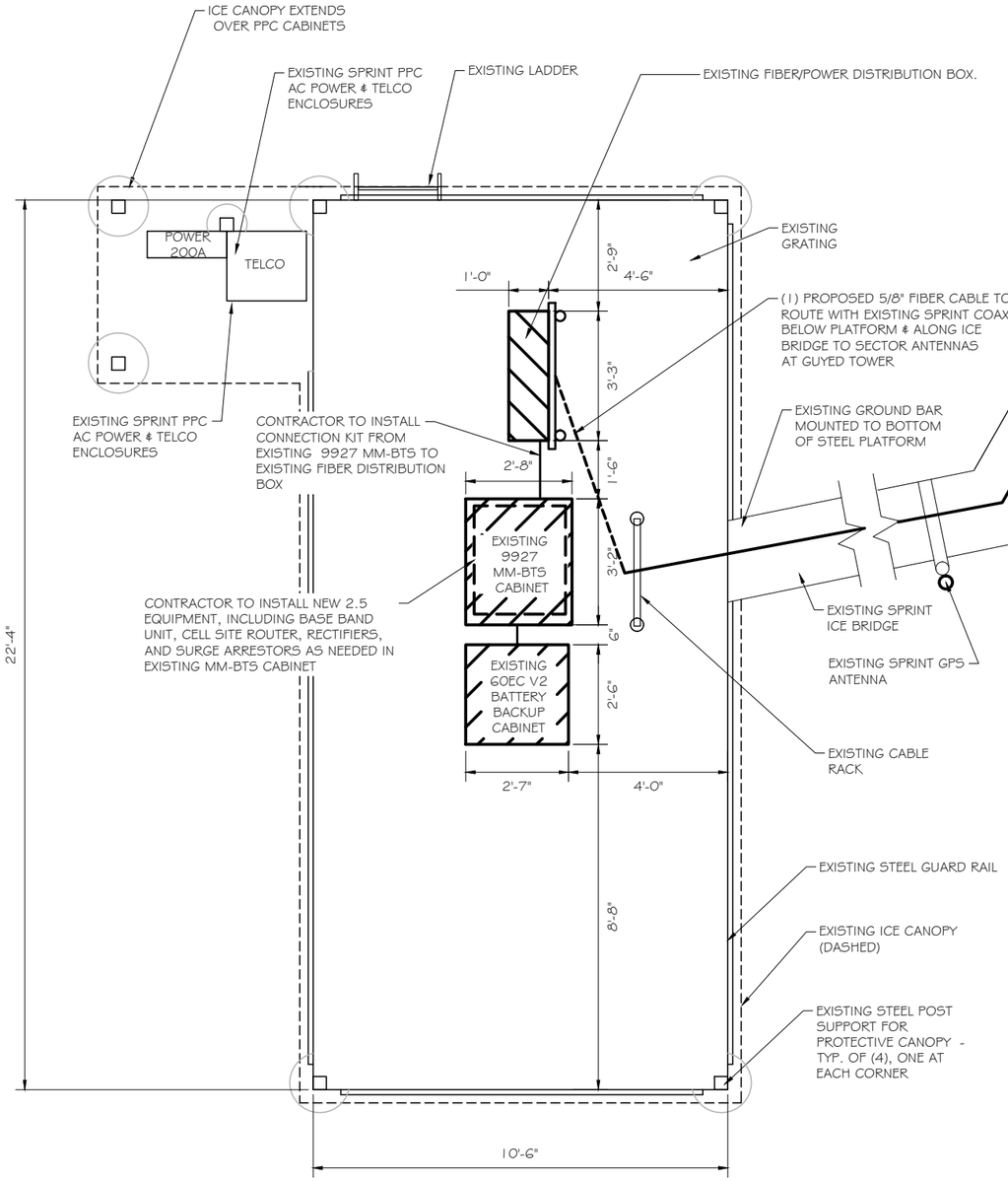
PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
SITE PLAN

0 5' 10' 20'
11" x 17" - 1" = 10'
22" x 34" - 1" = 5'

PROJECT NUMBER: 23012
SHEET NUMBER: A-1



EQUIPMENT PLAN
SCALE: 1" = 3.75'
1

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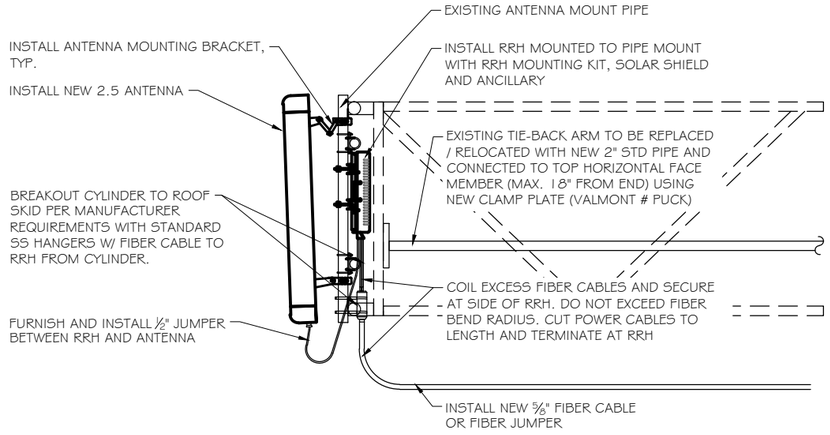
PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

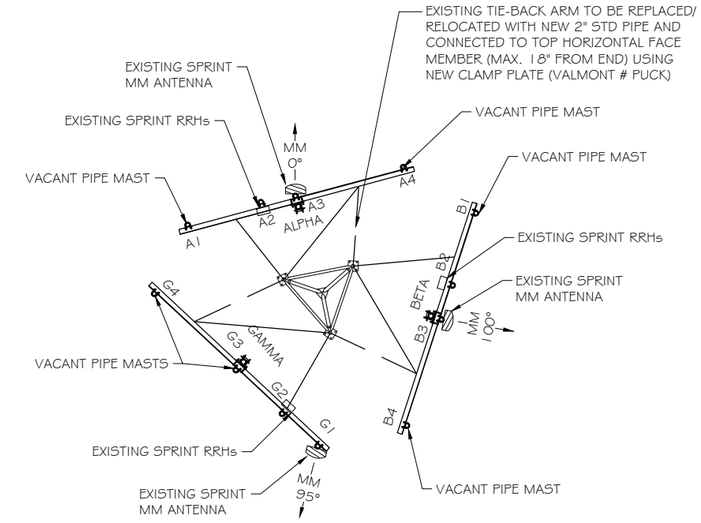
SHEET TITLE:
EQUIPMENT PLAN

0 1.875' 3.75' 7.5'
11" x 17" - 1" = 3.75'
22" x 34" - 1" = 1.875'

PROJECT NUMBER: 23012
SHEET NUMBER: A-2

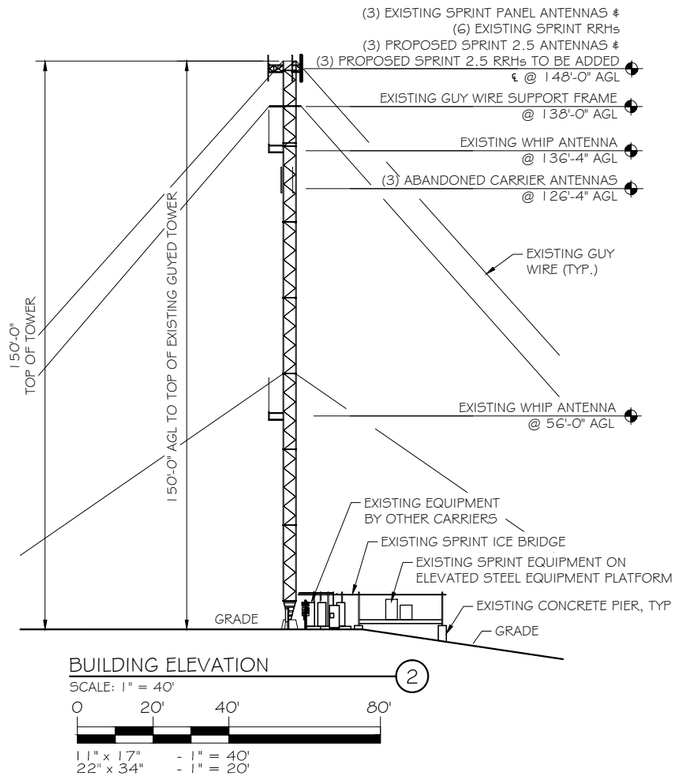


ANTENNA & RRH MOUNTING DETAILS (1)
SCALE: NTS



NORTH

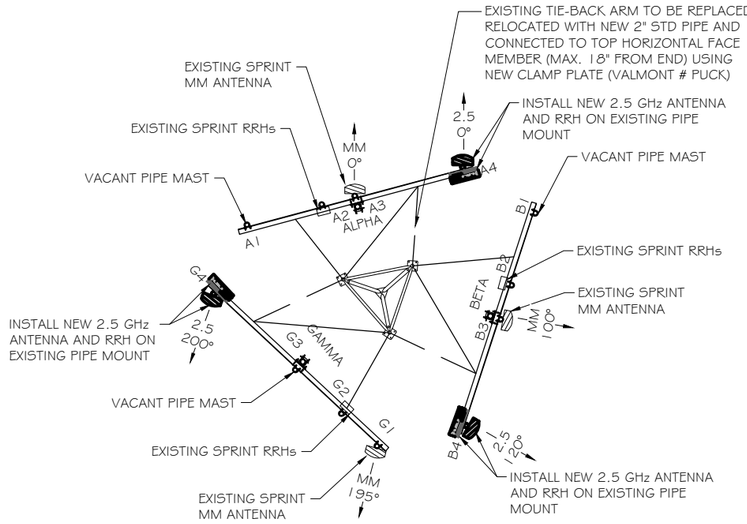
EXISTING ANTENNA ARRAY (3)
SCALE: NTS



BUILDING ELEVATION (2)
SCALE: 1" = 40'

0 20' 40' 80'

11" x 17" - 1" = 40'
22" x 34" - 1" = 20'



NORTH

PROPOSED ANTENNA ARRAY (4)
SCALE: NTS

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
No. 26266
LICENSED PROFESSIONAL ENGINEER

Signature: 8/29/2014 Date:

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ISSUE PHASE: FINAL
DATE ISSUED: 08/29/2014

PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
BUILDING ELEVATIONS & ANTENNA DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: A-3

Sprint

RFDS Sheet

General Site Information

Site ID	CT33XC550	Equipment Vendor	Alcatel-Lucent
Market	Northern Connecticut	Lattitude	41.80205
Region	Northeast	Longitude	-72.44118
MLA	N/A	LL SITE ID	N/A
Structure Type	GUY TOWER		
BTS Type			
Solution ID		Siterra SR Equipment type	
		Equipment Vendor	Alcatel-Lucent

Incremental Power Draw needed by added Equipment: N/A

Base Equipment

BBU Kit	ALU BBU Kit	Top Hat	None
BBU Kit Qty	1	Top Hat Qty	N/A
		Top Hat Dimenstions	N/A
Growth Cabinet	None	Top Hat Weight (lbs)	N/A
Growth Cabinet Qty	N/A		
Growth Cabinet Dimensions	N/A		
Growth Cabinet Weight	N/A		

RF Path Information

RRH	TD-RRH8x20-25	
RRH Qty	3	
RRH Dimensions	26.1"x18.6"x6.7"	
RRH Weight. lbs.	70	
RRH Mount Weight. Lbs.	10	
Power and Fiber Cable	ALU FIBER ONLY	
Cable Qty	1	
Weight per foot. Lbs.	0.242	
Diameter. Inches.	0.73	
Length Ft.	190	(calculated as antenna height plus 20%)
Coax Jumper	TBD	
Coax Jumper Qty	27	
Coax Jumper Length. Feet.	8	
Coax Jumper Weight	1.7	
Coax Jumper Diameter. Inches	0.5	
AISG Cable	COMMSCOPE ATCB-B01-006	
AISG Cable Qty	3	
AISG Diameter. Inches.	0.315	
AISG Cable length.	8'	
Weight of entire AISG cable. Lbs.	1.3	

Antenna Sector Information

	Sector 1	Sector 2	Sector 3
Antenna make/model	RFS APXV9TM14-ALU-I20	RFS APXV9TM14-ALU-I20	RFS APXV9TM14-ALU-I20
Antenna qty	1	1	1
Antenna Dimensions. Inches	56.3"x12.6"x6.3"	56.3"x12.6"x6.3"	56.3"x12.6"x6.3"
Antenna Weight. Lbs	55.12	55.12	55.12
Antenna Mounting Kit Weight. Lbs.	11.5	11.5	11.5
CL Height	148	148	148
Antenna Azimuth	0	120	200
Antenna Mechanical Downtilt	0	0	0
Antenna etilt	-2	-2	-2

*RFDS SHEET WAS GENERATED BY RAMAKER & ASSOCIATES FROM PLAN OF RECORD (FOR) PROVIDED BY SPRINT. CONTRACTOR SHALL VERIFY AND OBTAIN FINAL RFDS FROM SPRINT CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.

NOTES:

1. GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND C/L HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT BELOW, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING CONTACT INFORMATION ABOVE FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5GHZ ANTENNA AT SAME C/L HEIGHT AS 1.9GHZ ANTENNA AND EMAIL CORRECT C/L HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT C/L HEIGHT. ALSO EMAIL CORRECT 1.9GHZ AND 800MHZ ANTENNA C/L HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
2. AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5GHZ. TEST TO INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
3. GENERAL CONTRACTOR MUST ENSURE THAT NO OBJECT IS LOCATED WITHIN 45 DEGREES OF LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5GHZ ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
4. 2.5GHZ ANTENNA MUST BE AT LEAST 6' FROM 1.9GHZ ANTENNA, 30' FROM 800MHZ ANTENNA AND 30' FROM DUAL BAND 1.9GHZ AND 800MHZ ANTENNA.
5. GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREE. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL.

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · No. 26266 · LICENSED PROFESSIONAL ENGINEER

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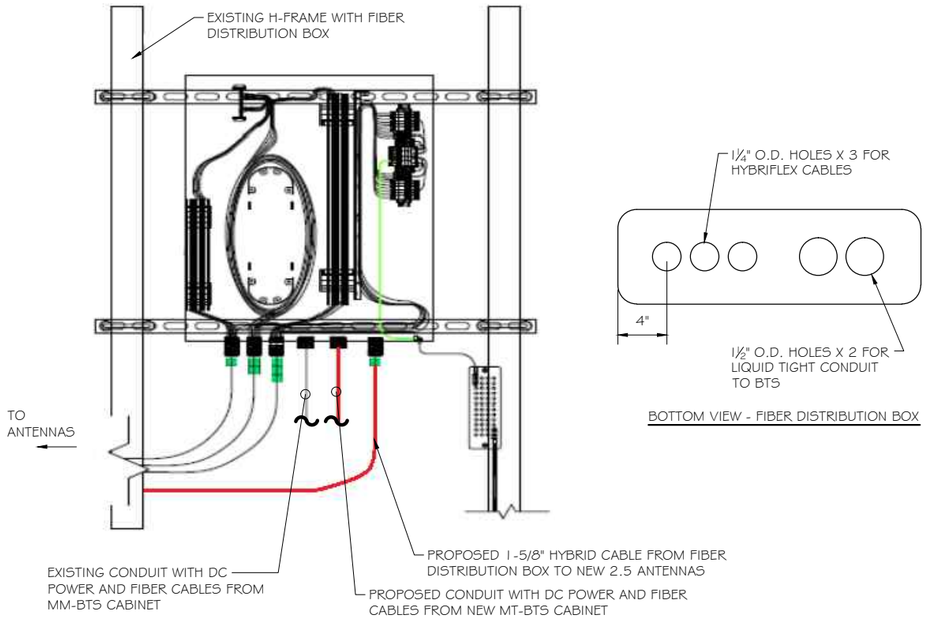
PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
RF DATA SHEET

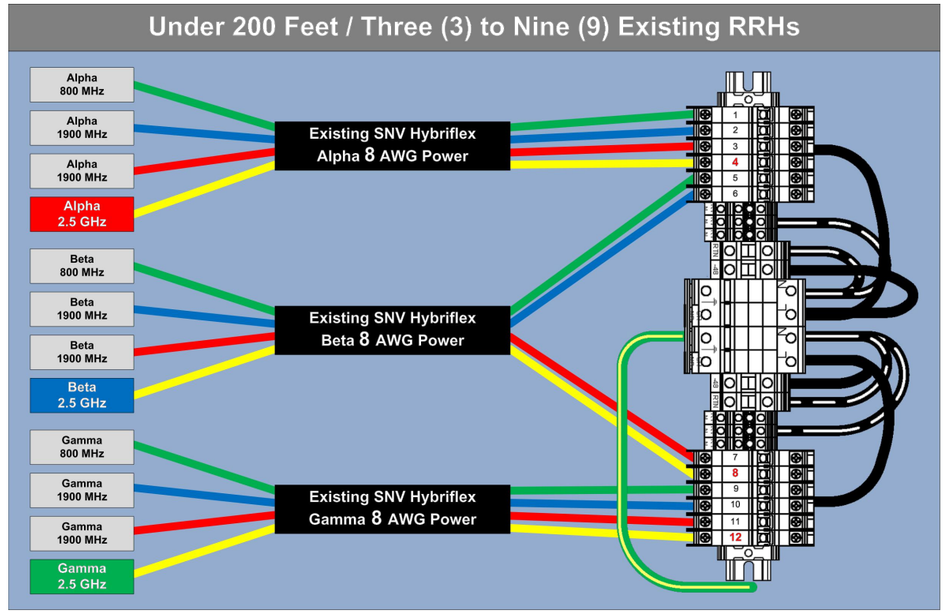
SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: A-4

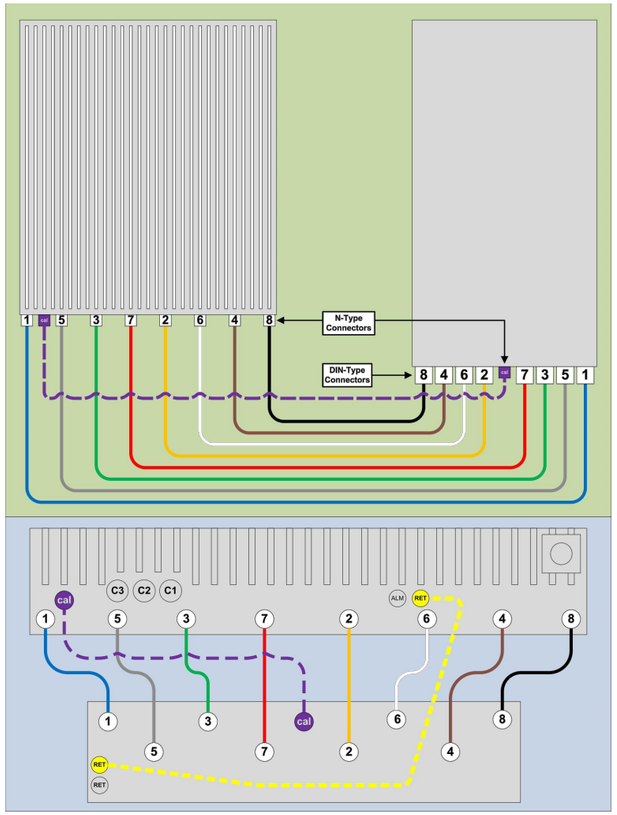


BOTTOM VIEW - FIBER DISTRIBUTION BOX

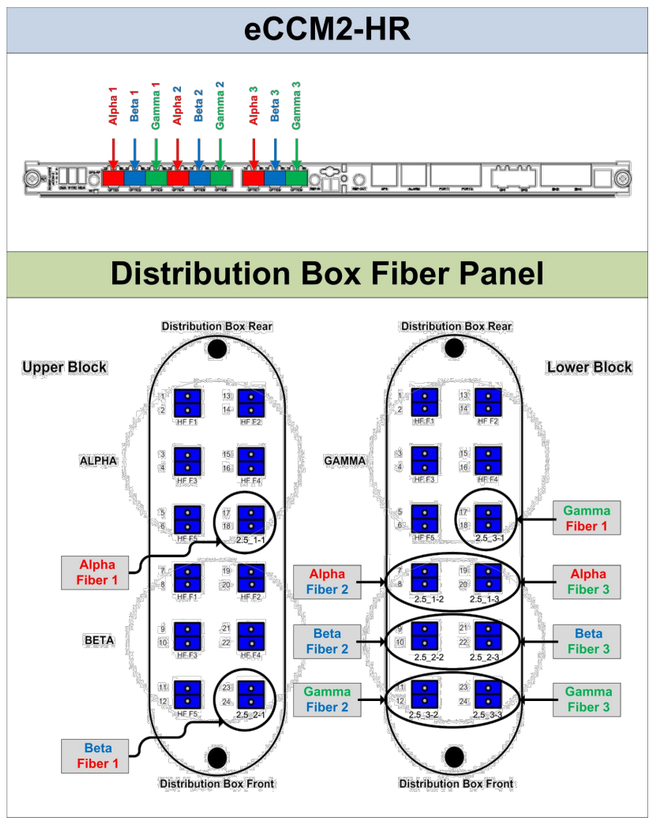
TYPICAL FIBER DISTRIBUTION BOX DETAIL (1)
SCALE: NTS



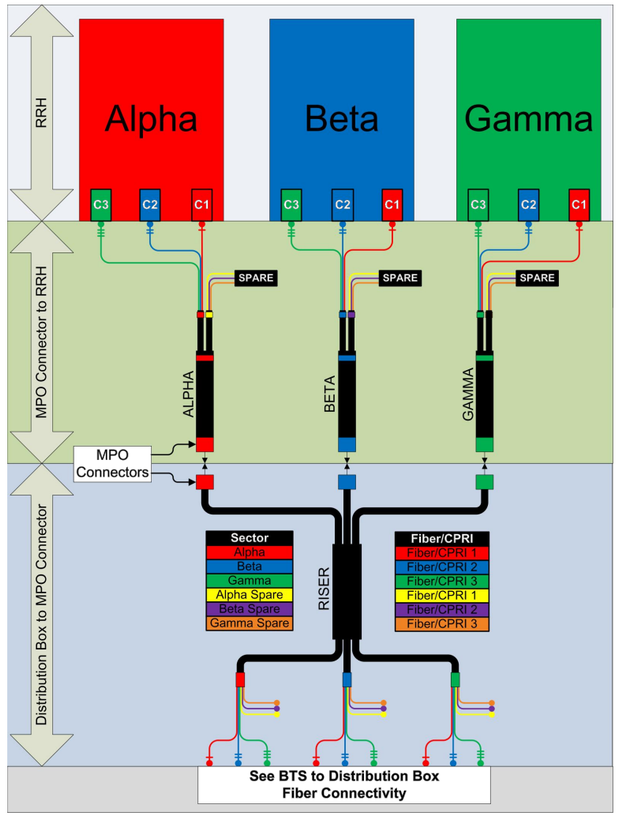
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL (2)
SCALE: NTS



8T8R DETAIL (3)
SCALE: NTS



BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (4)
SCALE: NTS



RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (5)
SCALE: NTS

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PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
FIBER PLUMBING DIAGRAM

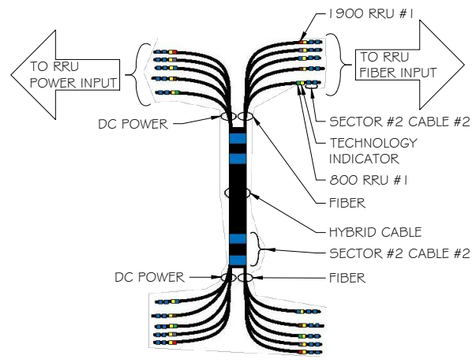
SCALE:
AS NOTED

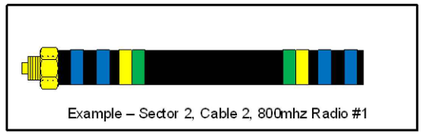
PROJECT NUMBER: 23012
SHEET NUMBER: A-5

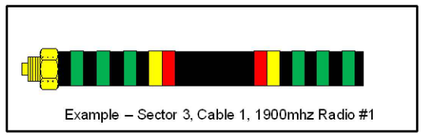
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue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

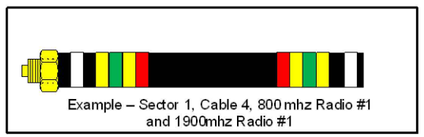
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

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




Example – Sector 2, Cable 2, 800mhz Radio #1


Example – Sector 3, Cable 1, 1900mhz Radio #1


Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

COLOR CODING CHARTS (1)
SCALE: NTS

CABLE MARKING NOTES

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

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Signature: James R. Skowronski Date: 8/29/2014

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ISSUE PHASE: FINAL
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PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
CABLE COLOR CODING

SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: A-6

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE
MANUF:RFS

CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
*Fiber Only	Varies	Use NV Hybriflex	5/8"
Hybriflex	<200'	8 AWG	1-1/4"
Hybriflex	225-300'	6 AWG	1-1/4"
Hybriflex	325-375'	4 AWG	1-1/4"

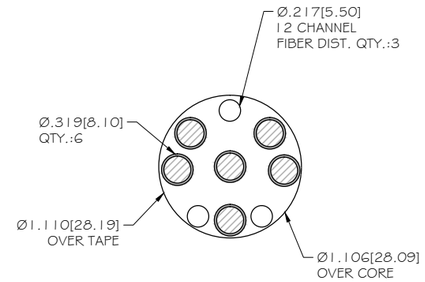
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

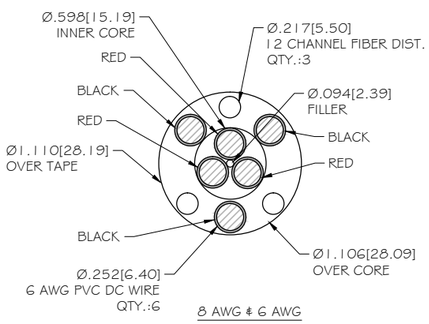
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

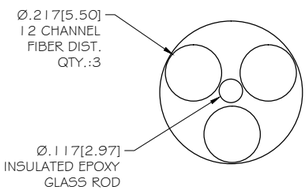
*NOTE: SPRINT CM TO CONFIRM HYBRID/FIBER RISER CABLE & HYBRID/FIBER JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG



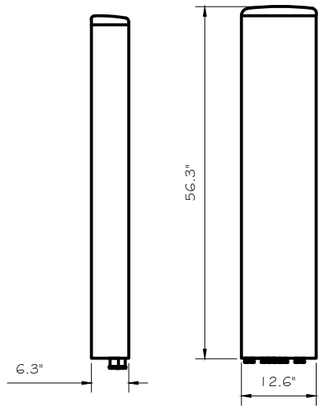
8 AWG & 6 AWG



FIBER ONLY

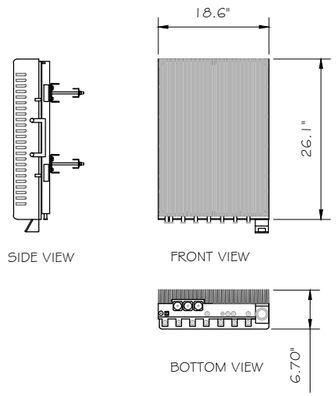
FIBER CABLE CROSS SECTION & DATA
SCALE: NTS (1)

RFS: APXV9TM14-ALU-120



DIMENSIONS, HxWxD:	56.3" x 12.6" x 6.3"
WEIGHT, WITHOUT PRE-MOUNTED BRACKETS:	52.9 lbs.
CONNECTOR:	(9) XX" MINI-DIN FEMALE/BOTTOM

2.5 ANTENNA DETAIL
SCALE: NTS (2)



ALCATEL-LUCENT: TD-RRH8x20

HxWxD = (26.1" x 18.6" x 6.7")

WEIGHT = 66.13 lbs.

2.5 RRH DETAIL
SCALE: NTS (3)

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STATE OF CONNECTICUT ★ JAMES R. SKOWRONSKI ★ No. 26266 LICENSED PROFESSIONAL ENGINEER

Signature: James R Skowronski Date: 8/29/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 08/29/2014

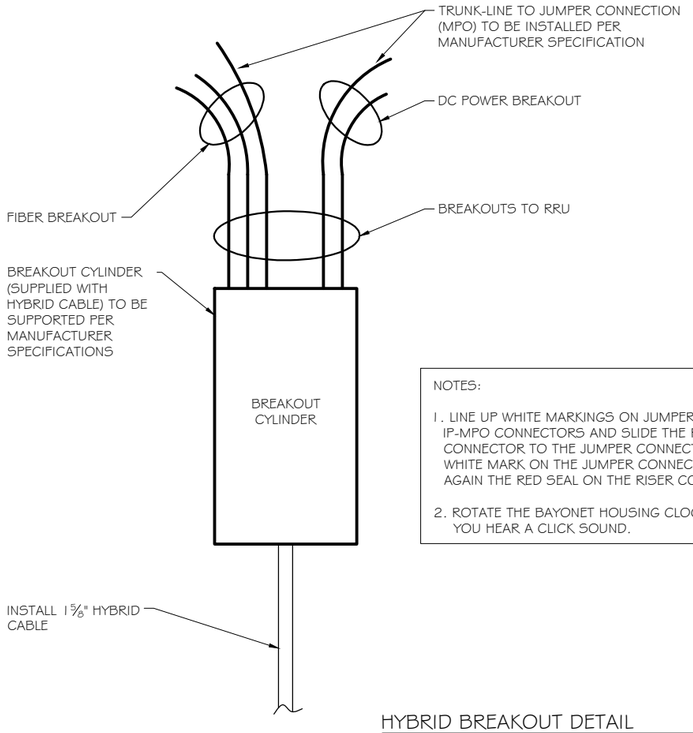
PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
ANTENNA & HYBRID CABLE DETAILS

SCALE:
AS NOTED

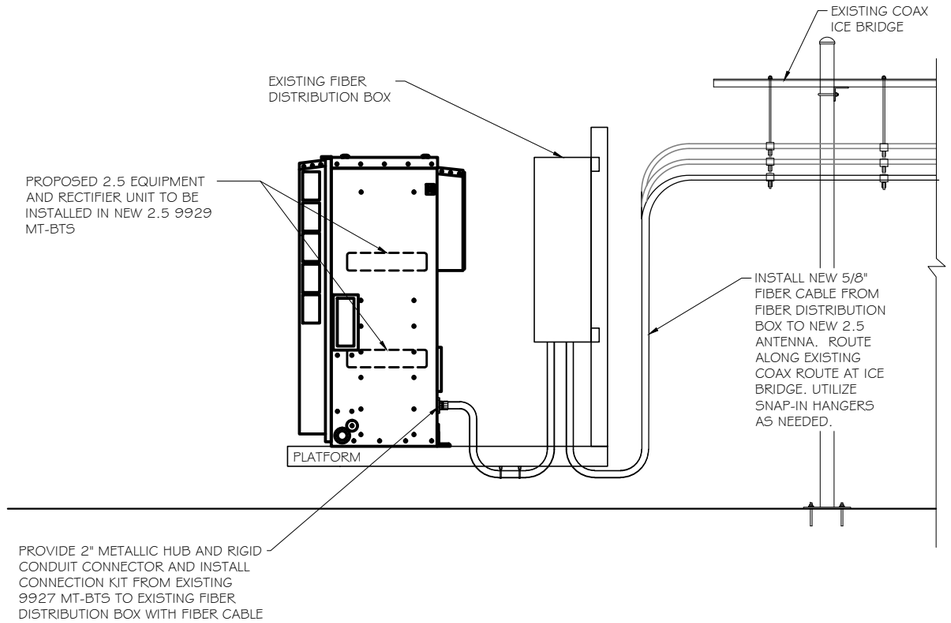
PROJECT NUMBER: 23012
SHEET NUMBER: A-7



NOTES:

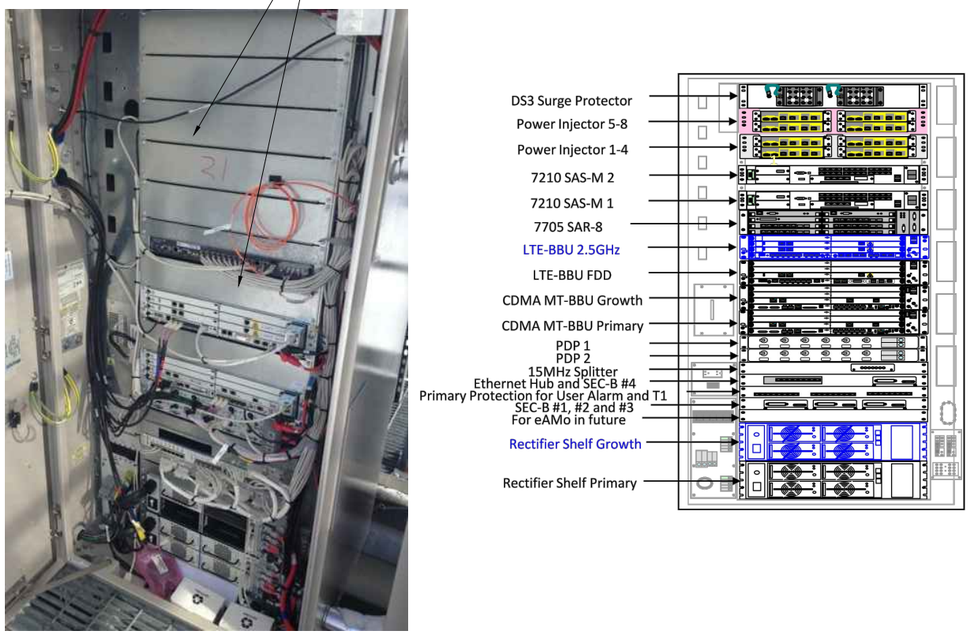
1. LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTORS AND SLIDE THE RISER CONNECTOR TO THE JUMPER CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAIN THE RED SEAL ON THE RISER CONNECTOR.
2. ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL YOU HEAR A CLICK SOUND.

HYBRID BREAKOUT DETAIL (1)
SCALE: NTS



CABLE ROUTE FROM FIBER BOX (2)
SCALE: NTS

EXISTING BBU CABINET (3)
SCALE: NTS



EXISTING MMBS CABINET (4)
SCALE: NTS

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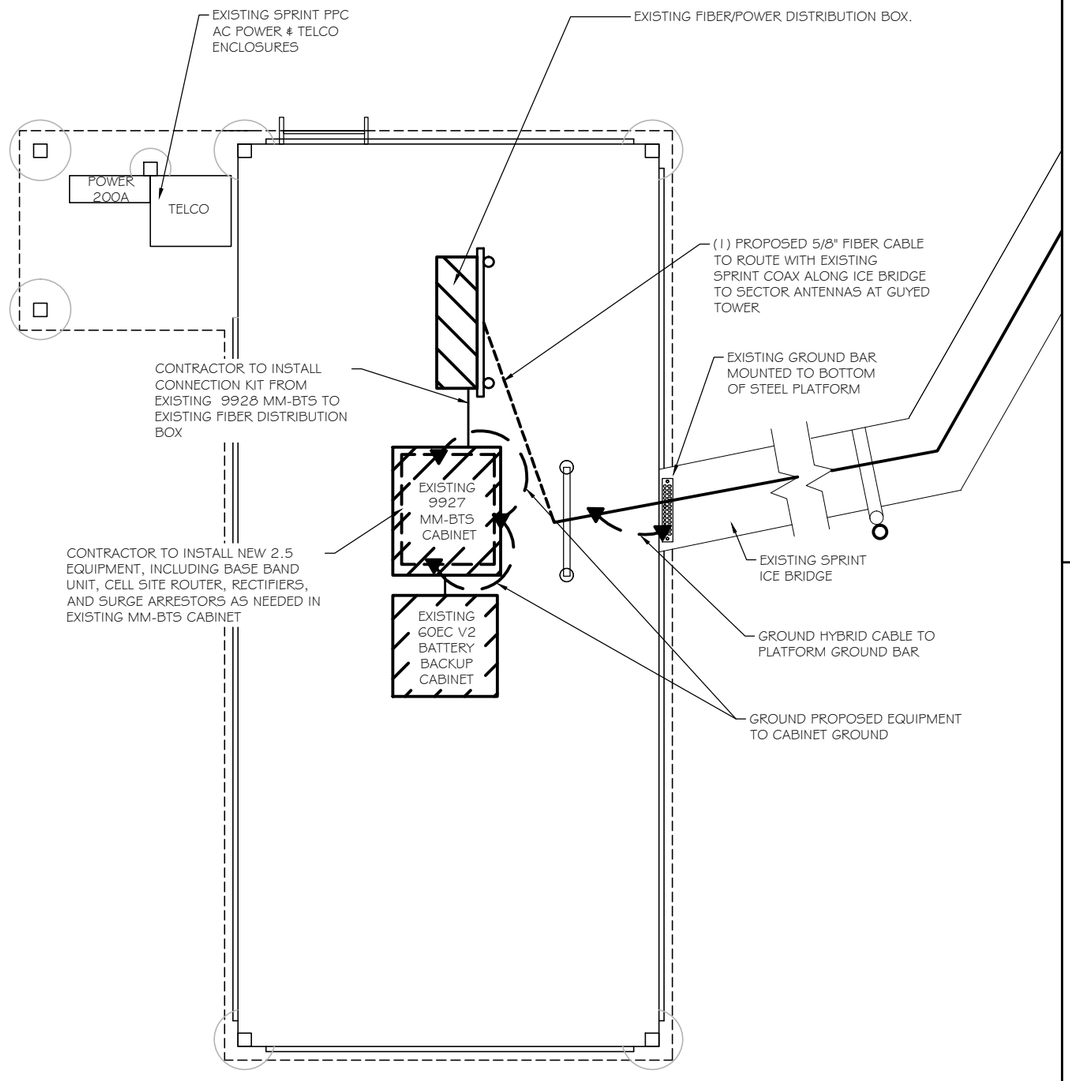
PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

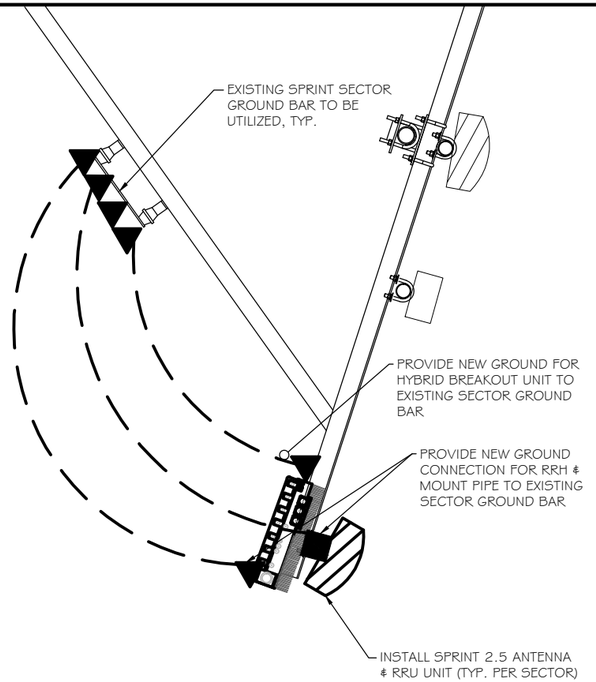
SHEET TITLE:
EQUIPMENT DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: A-8



EQUIPMENT UTILITY & GROUNDING PLAN (1)
SCALE: NTS



ANTENNA GROUNDING DETAIL (2)
SCALE: NTS

GROUNDING NOTES:

1. CONTRACTOR TO ENSURE PROPER SEQUENCING OF GROUNDING AND UNDERGROUND CONDUIT INSTALLATION TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM AND/OR DAMAGE TO THE CONDUIT.
2. ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID TINNED COPPER UNLESS NOTED OTHERWISE.
3. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC (CADWELD).
4. ALL GROUND CONNECTIONS ABOVE GRADE AND/OR INTERIOR SHALL BE COMPRESSION TYPE, TWO-HOLE LUGS OR DOUBLE-CRIMP "C" TAPS.
5. CONTACT AREAS WHERE CONNECTIONS ARE MADE SHALL BE PREPARED TO A BARE BRIGHT FINISH AND COATED WITH AN ANTI-OXIDATION MATERIAL BEFORE CONNECTIONS ARE MADE.
6. MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS.
7. WHERE GROUNDING CONNECTIONS ARE MADE TO PAINTED METAL SURFACES, PAINT SHALL BE REMOVED TO BEAR METAL TO ENSURE PROPER CONTACT AND RESTORED/PAINTED TO ORIGINAL FINISH.
8. GROUND DEPTH SHALL BE 30" MINIMUM BELOW FINISHED GRADE, OR 6" BELOW FROST LINE, WHICHEVER IS GREATER.

LEGEND:	
– – – – – – – – – – – –	EXISTING GROUND CABLE
▬▬▬▬▬▬▬▬▬▬▬▬	PROPOSED GROUND CABLE
▲	MECHANICAL CONNECTION
■	EXOTHERMIC CONNECTION
—E—E—E—E—	PROPOSED ELECTRIC

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W. COVENTRY
CT33XC550-A

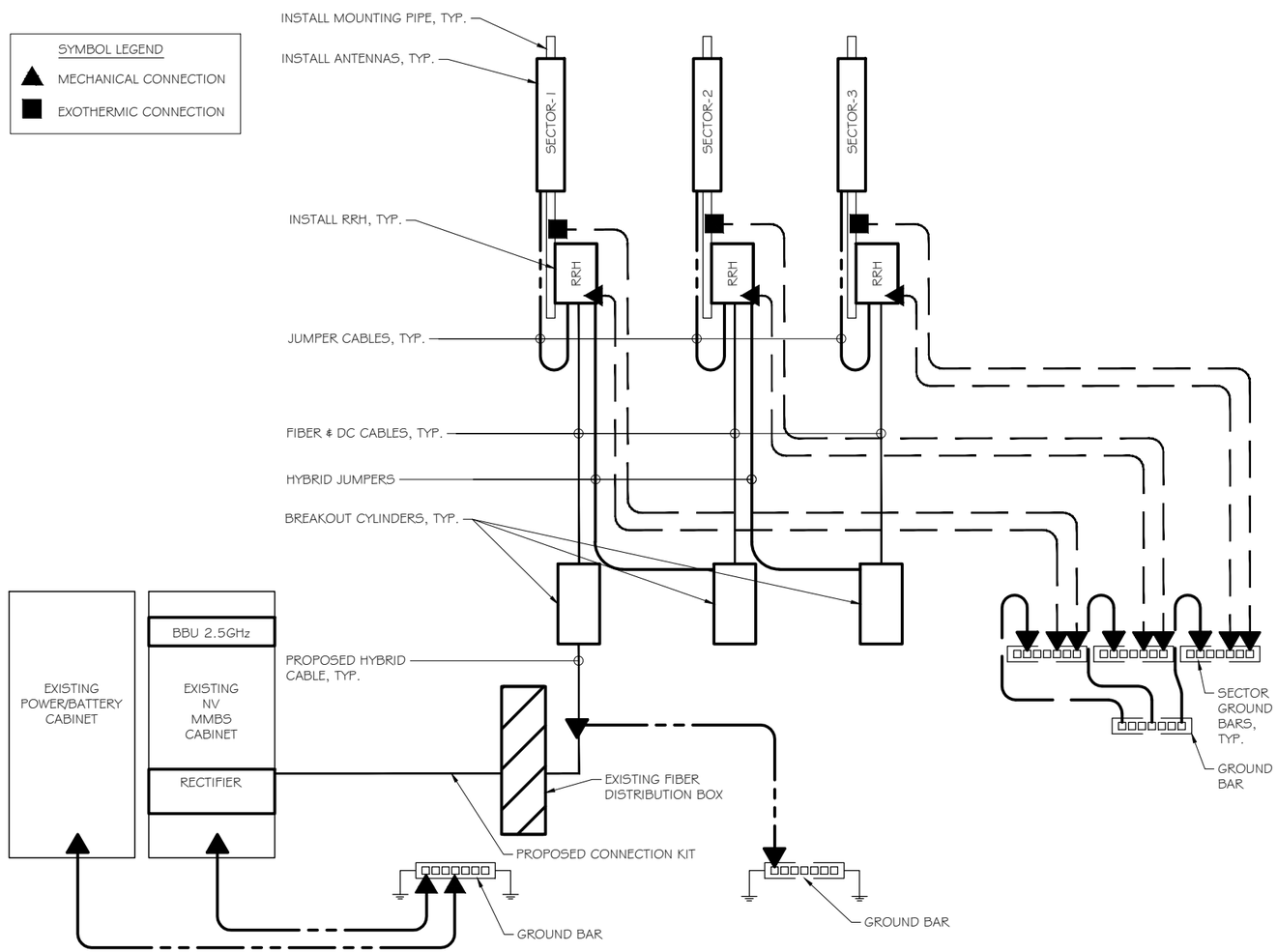
PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
EQUIPMENT UTILITY & GROUNDING PLAN

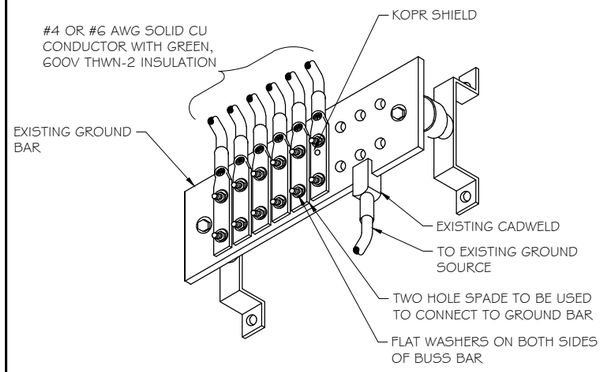
SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: E-1

SYMBOL LEGEND
- MECHANICAL CONNECTION
- EXOTHERMIC CONNECTION



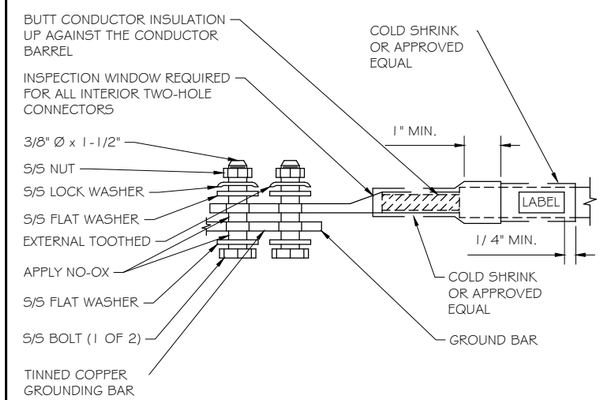
GROUNDING RISER DIAGRAM (1)
SCALE: NTS



NOTES:
1. APPLY NO-OX TO LUG AND GROUND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.

2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

GROUNDING CONDUCTOR INSTALLATION (2)
SCALE: NTS



TWO-HOLE LUG (3)
SCALE: NTS

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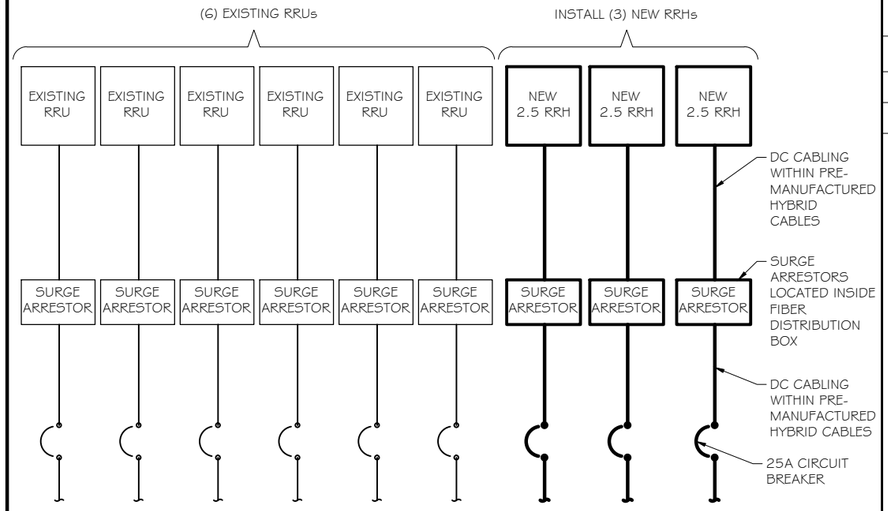
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
GROUNDING DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: E-2



DC ONE-LINE DIAGRAM (1)
SCALE: NTS

A/C PANEL SCHEDULE

VOLTAGE:	240V/120		PANEL STATUS:	EXISTING		N TO GROUND BOND:	YES
MAIN BREAKER:	200 AMP		MODEL NUMBER:	TBD		INTERNAL TVSS:	YES
MOUNT:	ROOFTOP		PHASE:	1		WIRE:	3
ENCLOSURE TYPE:	NEMA 3R		BUSS RATING:	200 AMP		GROUND BAR:	YES
			NEUTRAL BAR:	YES			

CKT	DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	PHASE A VA	PHASE B VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	DESCRIPTION	CKT
1	MBTS	100	2	ON			ON	2	60	SURGE PROTECTION	7
2											8
3	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	9
4	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	10
5	BLANK (UNUSED)	-	-	-			ON	1	15	GFI	11
6	FAN	10	1	ON			-	-	-	BLANK (UNUSED)	12

AC PANEL SCHEDULE (2)
SCALE: NTS

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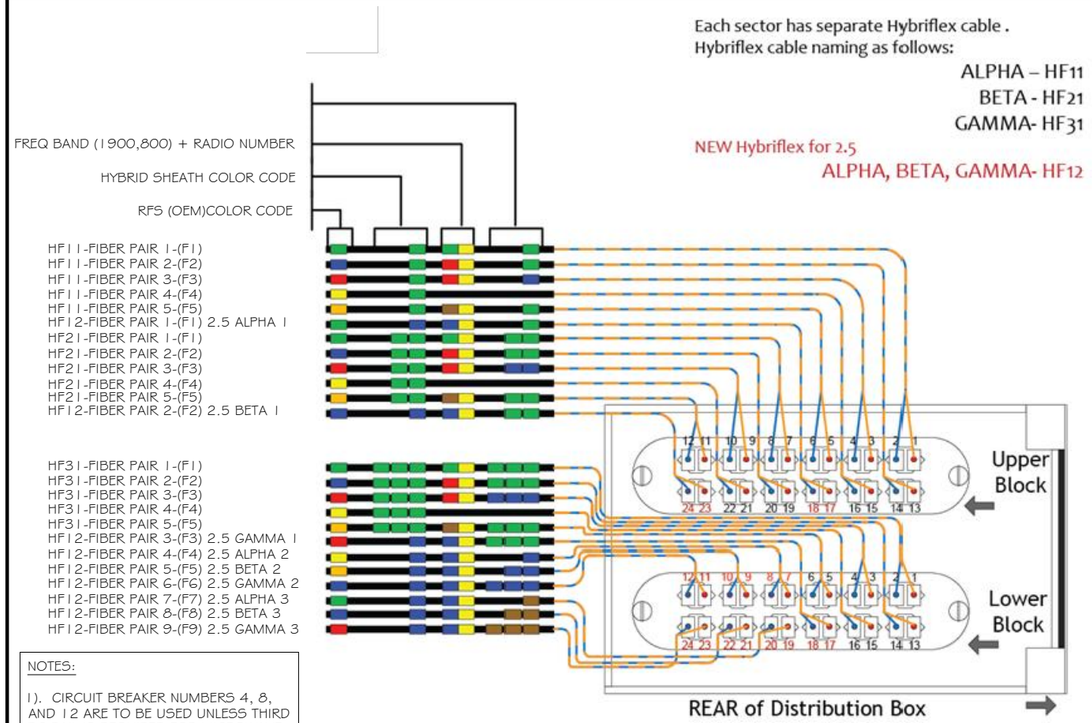
PROJECT TITLE:
W. COVENTRY
CT33XC550-A

PROJECT INFORMATION:
130 VERNON ROAD
BOLTON, CT 06091
TOLLAND COUNTY

SHEET TITLE:
DC POWER DETAILS & PANEL SCHEDULES

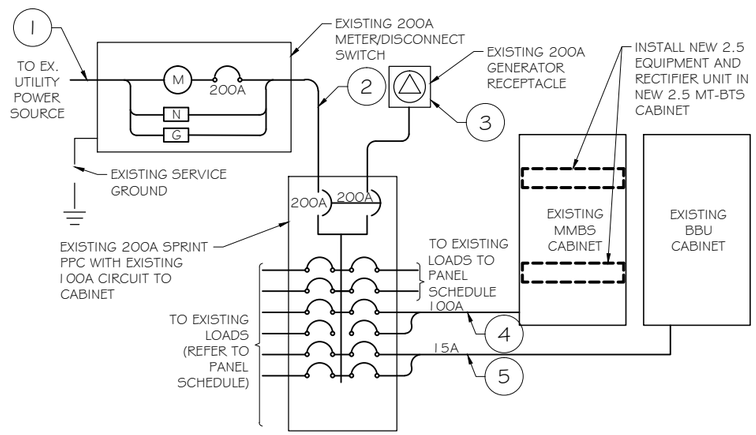
SCALE:
AS NOTED

PROJECT NUMBER: 23012
SHEET NUMBER: E-3



NOTES:
1). CIRCUIT BREAKER NUMBERS 4, 8, AND 12 ARE TO BE USED UNLESS THIRD DC RAIL IS REQUIRED FOR MICROWAVE.
2). USE DC POWER LOOP.
3). ALL UNUSED DC FEEDERS TO BE TERMINATED WITH WIRE NUTS AND TAPED.
4). REMOVE ALL DEBRIS FROM INTERIOR OF FIBER DISTRIBUTION BOX WHEN COMPLETE.

TYPICAL FIBER DISTRIBUTION (3)
SCALE: NTS



CIRCUIT SCHEDULE			
NO.	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/ DISCONNECT	EXISTING
2	METER/ DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EX. MMBS CABINET	(3) #2 AWG, (1) #8 GND IN 1½" CONDUIT
5	TRANSFER & LOAD CENTER	EX. BBU CABINET	(2) #12 AWG, (1) #12 GND IN ¾" CONDUIT

ELECTRICAL ONE-LINE DIAGRAM (4)
SCALE: NTS

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