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

July 25th, 2014

Hand Delivered

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

CC to Property Owner
Central Connecticut State University
1615 Stanley Street, New Britain, CT 06053

RE: Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at 1679 Stanley Street, New Britain, CT 06053. Known to Sprint Spectrum L.P. as site CT03XC098.

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: CT03XC098

Vance Hall CCSU

1679 Stanley Street
New Britain, CT 06053

July 27, 2014

EBI Project Number: 62144005

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

EBI Consulting
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July 27, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT03XC098 - Vance Hall CCSU

Site Total: 5.47% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 1679 Stanley Street, New Britain, 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 1679 Stanley Street, New Britain, 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) 6 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 **138 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	CT03XC098 - Vance Hall CCSU
Site Addresss	1679 Stanley Street, New Britain, CT, 06053
Site Type	Rooftop 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	6	120	5.9	138	132	1/2 "	0.5	0	416.08	0.86%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	138	132	1/2 "	0.5	0	39.00	0.14%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	138	132	1/2 "	0.5	0	138.69	0.50%
														Sector total Power Density Value:		1.51%

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	6	120	5.9	138	132	1/2 "	0.5	0	416.08	0.86%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	138	132	1/2 "	0.5	0	39.00	0.14%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	138	132	1/2 "	0.5	0	138.69	0.50%
														Sector total Power Density Value:		1.51%

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	6	120	5.9	138	132	1/2 "	0.5	0	416.08	0.86%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	138	132	1/2 "	0.5	0	39.00	0.14%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	138	132	1/2 "	0.5	0	138.69	0.50%
														Sector total Power Density Value:		1.51%

Site Composite MPE %	
Carrier	MPE %
Sprint	4.52%
Clearwire	0.95%
Total Site MPE %	**5.47%**

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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.

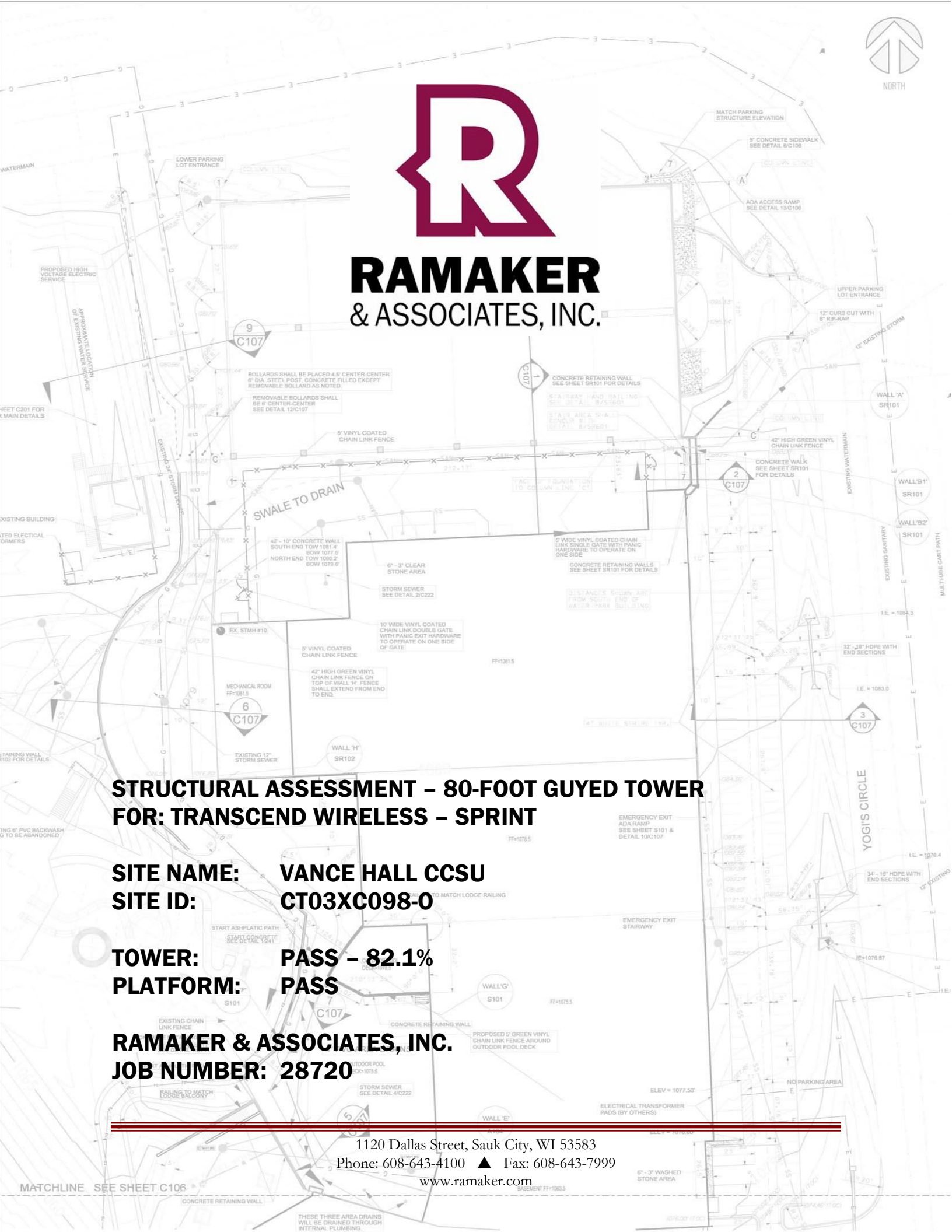
The anticipated Maximum Composite contributions from the Sprint facility are **4.52% (1.51% from sector 1, 1.51% from sector 2 and 1.51% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **5.47%** 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



STRUCTURAL ASSESSMENT – 80-FOOT GUYED TOWER
FOR: TRANSCEND WIRELESS – SPRINT

SITE NAME: VANCE HALL CCSU
SITE ID: CT03XC098-O

TOWER: PASS – 82.1%
PLATFORM: PASS

RAMAKER & ASSOCIATES, INC.
JOB NUMBER: 28720

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

STRUCTURAL ASSESSMENT

SITE: Vance Hall CCSU (CT03XC098-O)
1679 Stanley Street
New Britain, Hartford County, Connecticut 06053

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: 28720

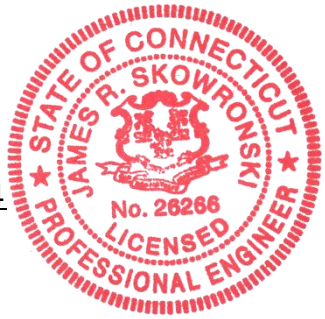
DATE OF REPORT ISSUANCE: July 10, 2014

Thomas E. Moore
Project Engineer

07/10/14
Date

James R. Skowronski, P.E.
Supervising Engineer

07/10/14
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-I20 panel antennas and three (3) Alcatel-Lucent TD-RRH8x20-25 RRH units on the existing T-Frames at a centerline elevation of 138 feet AGL. The proposed antennas shall be fed with one (1) 5/8-inch cable.

Results of our analysis show that the tower will be stressed to a maximum of 82.1 percent of capacity under proposed loading conditions. The tower base reaction is less than the original design reaction, however, the anchor reactions are 10.8 percent greater. The platform was analyzed under proposed loading conditions and it was determined to be at 50.4 percent of capacity. The anchors are adequate by engineering judgment.

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 supporting platform 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:

- Tower mapping by HighTower Solutions, Site ID CT03XC098, dated 6/11/08
- Structural analysis by Bay State Design, Site ID CT-HFD0100B, dated 4/30/10

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
143	Lightning Rod	Pipe Mount	---	---	Existing
138	(3) RFS APXVSPP18-C-A20	(3) T-Frames	(3) 1-1/4	Sprint	Existing
	(3) ALU 800MHz 2x50W RRH				
	(3) ALU 1900MHz 4x45W RRH				
	(3) RFS APXV9TM14-ALU-I20		**(1) 5/8**		**Proposed**
	(3) ALU TD-RRH8x20-25				
	(3) Kathrein 840 10054		(2) 2" Conduit (2) 1/2	Clearwire	Existing
	(3) Samsung FDD-01 RRH				
	(1) Raycap DC6-48-60-0-1E				
	(2) Andrew VHLP2.5				
123 - 93	4 Bay Antenna	(4) 2' Standoffs Pipe Mount	(1) 7/8	Unknown	Existing
94	Scala MF-900B	Leg Mounted	3/8	Unknown	Existing
84	4' Yagi	Leg Mounted	3/8	Unknown	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 80 miles-per-hour (mph) without ice in Hartford County. The tower is also designed for a 38 mph basic wind speed with 1.0-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	39.5
Diagonal	56.8
Horizontal	16.5
Guy Line	82.1
Bolts	79.4
RATING =	**82.1**

4.2 BASE REACTIONS

The computed maximum reactions under the corresponding maximum moment are as follows:

Load Type	Original Design	Proposed Model
Axial (k)	30.5	28.595
Shear (k)	0.0	1.171
Anchor Uplift (k)	11.4	12.634
Anchor Lateral (k)	11.0	11.163

The tower base reaction is less than the original design reaction, however, the anchor reactions are 10.8 percent greater. The platform was analyzed under proposed loading conditions and it was determined to be at 50.4 percent of capacity. The anchors are adequate by engineering judgment.

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

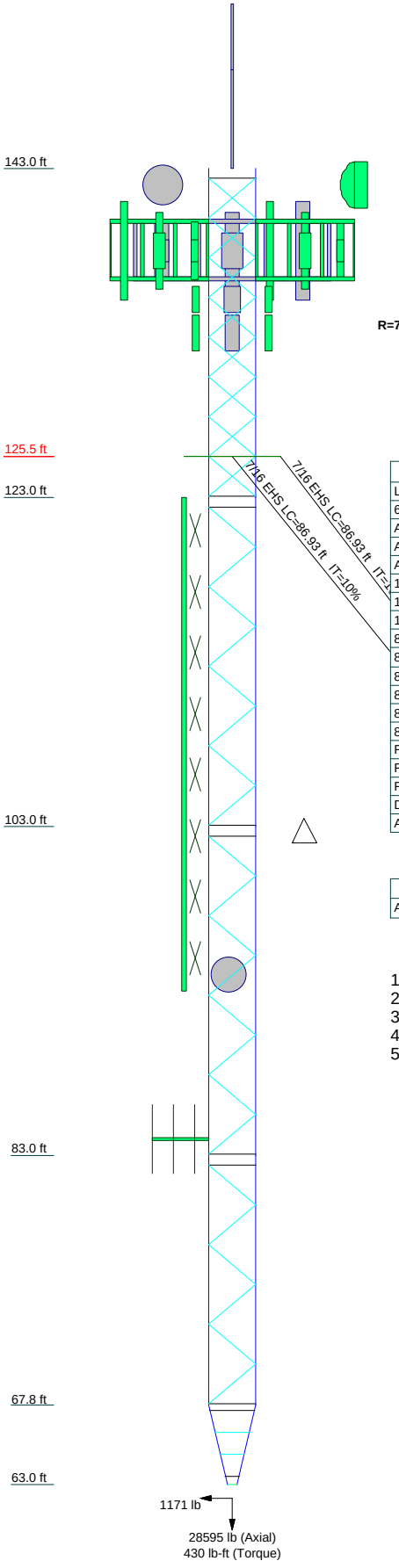
1. 2003 International Building Code.

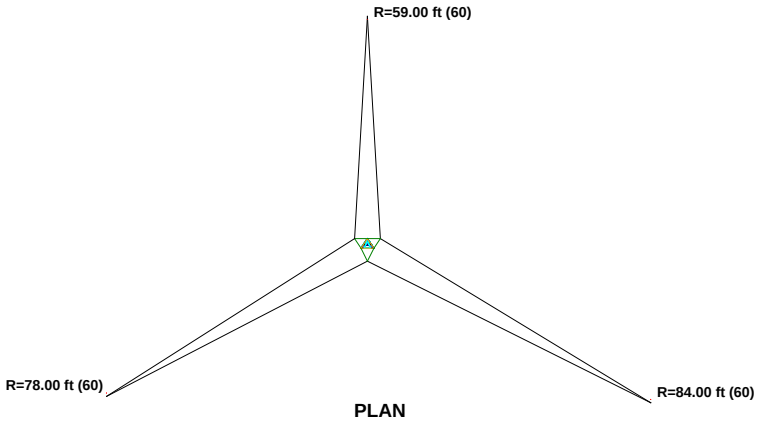
2. Telecommunications Industries Association, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA Standard TIA/EIA-222-F 1996, Washington, D.C.

APPENDIX A

TOWER FIGURES

Section	T1	T2	T3	T4	T5	
Legs	ROHN 2.5 X-STR	ROHN 2.5 STD		ROHN 2.5 X-STR		
Leg Grade		A572-50				
Diagonals		ROHN TS1.5x16 GA			N.A.	
Diagonal Grade		A36			N.A.	
Top Girts		ROHN TS1.5x16 GA			L4x4x1/4	
Bottom Girts		ROHN TS1.5x16 GA			L4x4x1/4	
Horizontals		N.A.			L4x4x1/4	
Top Guy Pull-Offs	2L2x2x1/4x3/8		N.A.			
Face Width (ft)	3.41667			0.666667		
# Panels @ (ft)		30 @ 2.40885			4 @ 1.32813	
Weight (lb)	1148.1	455.9	455.9	434.9	282.2	2777.0





DESIGNED APPURTENANCE LOADING

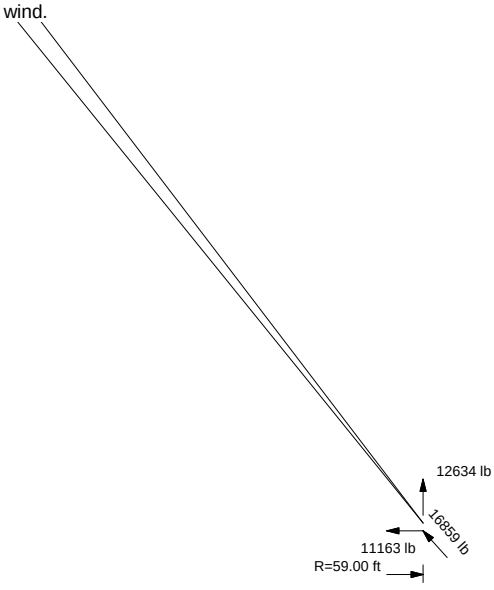
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	143	APXV9TM14-ALU-I20 w/Mount Pipe	138
6'x2 1/2" Pipe Mount	143	APXV9TM14-ALU-I20 w/Mount Pipe	138
APXVSPP18-C-A20 w/Mount Pipe	138	TD-RRH8x20-25	138
APXVSPP18-C-A20 w/Mount Pipe	138	TD-RRH8x20-25	138
APXVSPP18-C-A20 w/Mount Pipe	138	TD-RRH8x20-25	138
1900MHz 4x45W RRH	138	PiROD 15' T-Frame	138
1900MHz 4x45W RRH	138	PiROD 15' T-Frame	138
1900MHz 4x45W RRH	138	PiROD 15' T-Frame	138
800MHz 2x50W RRH	138	VHLP2.5	138
800MHz 2x50W RRH	138	VHLP2.5	138
800MHz 2x50W RRH	138	(3) 7'x2 1/2" Pipe Mount	136
840 10054 w/Mount Pipe	138	2' Standoff	123
840 10054 w/Mount Pipe	138	30'x2" Pipe Mount	123 - 93
840 10054 w/Mount Pipe	138	100-4(M/F)	123 - 93
FDD-01	138	2' Standoff	113
FDD-01	138	2' Standoff	103
FDD-01	138	MF-900B	94
DC6-48-60-0-1E	138	2' Standoff	93
APXV9TM14-ALU-I20 w/Mount Pipe	138	4' Yagi	84

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 82.1%

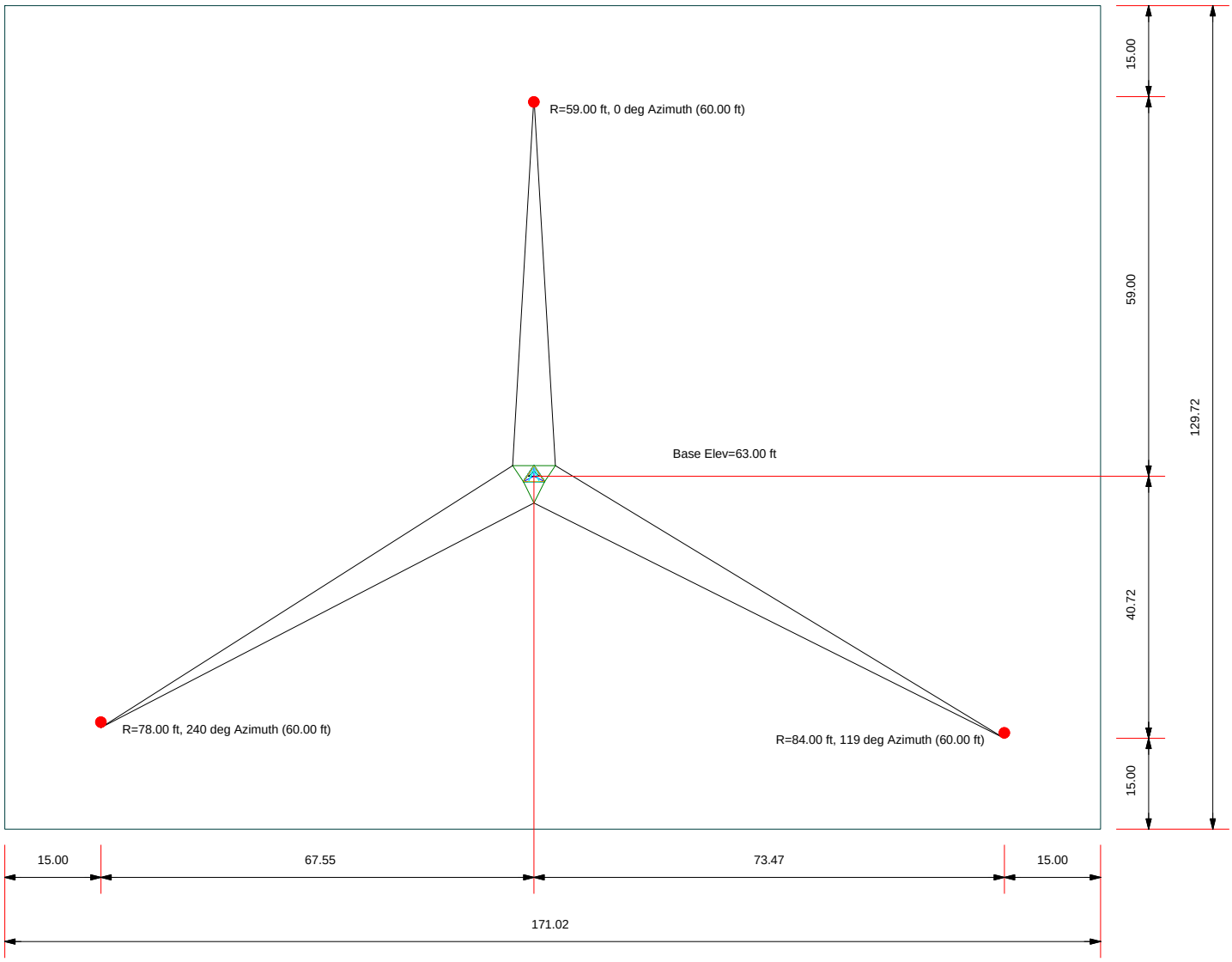


RAMAKER & ASSOCIATES, INC.
Consulting Engineers

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

Job: ***Vance Hall CCSU (CT03XC098-O)***			
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-1	

Plot Plan
Total Area - 0.51 Acres



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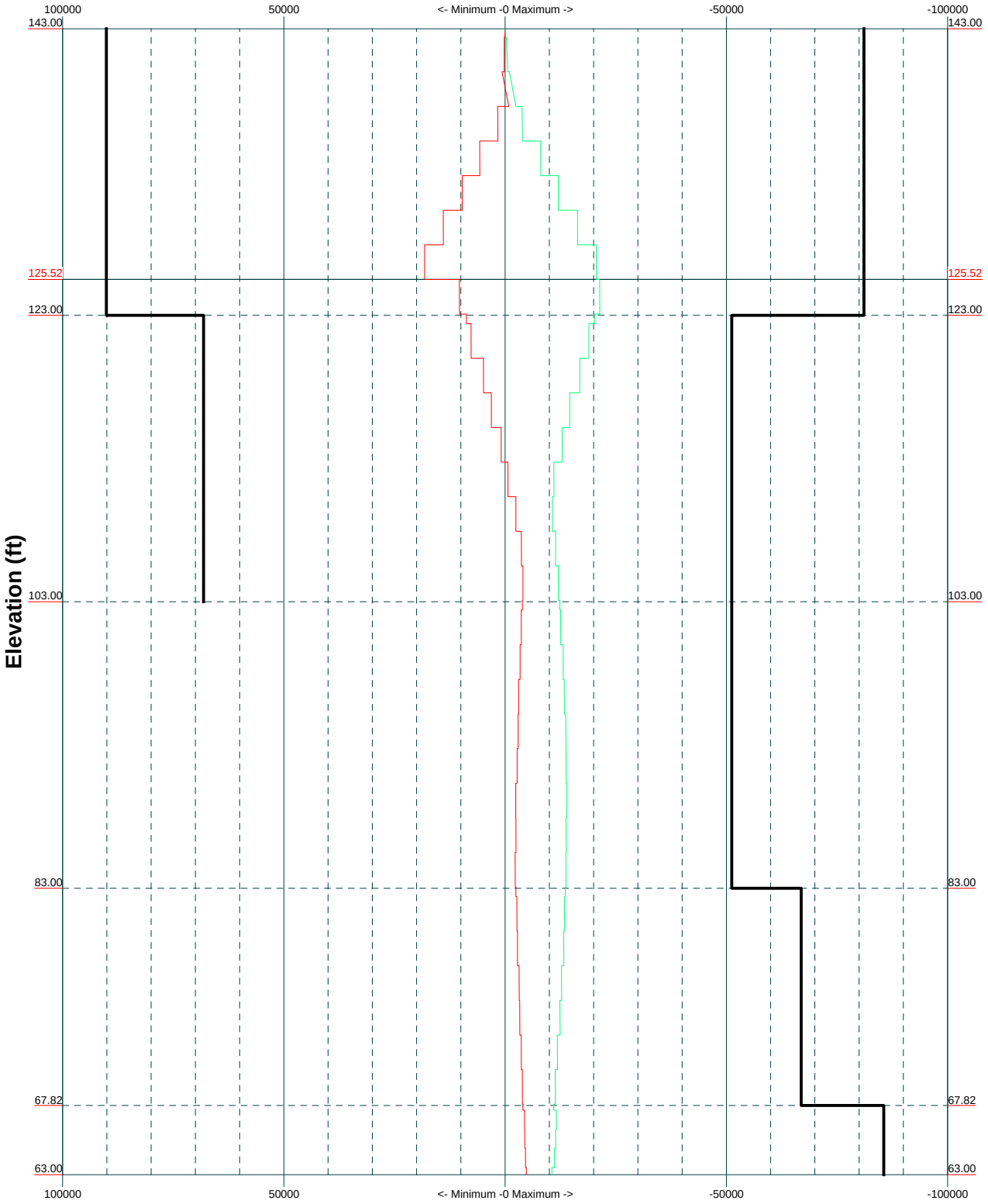
Consulting Engineers

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

Job: ***Vance Hall CCSU (CT03XC098-O)***			
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-2	

TIA/EIA-222-F - 80 mph/38 mph 1.0000 in Ice

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



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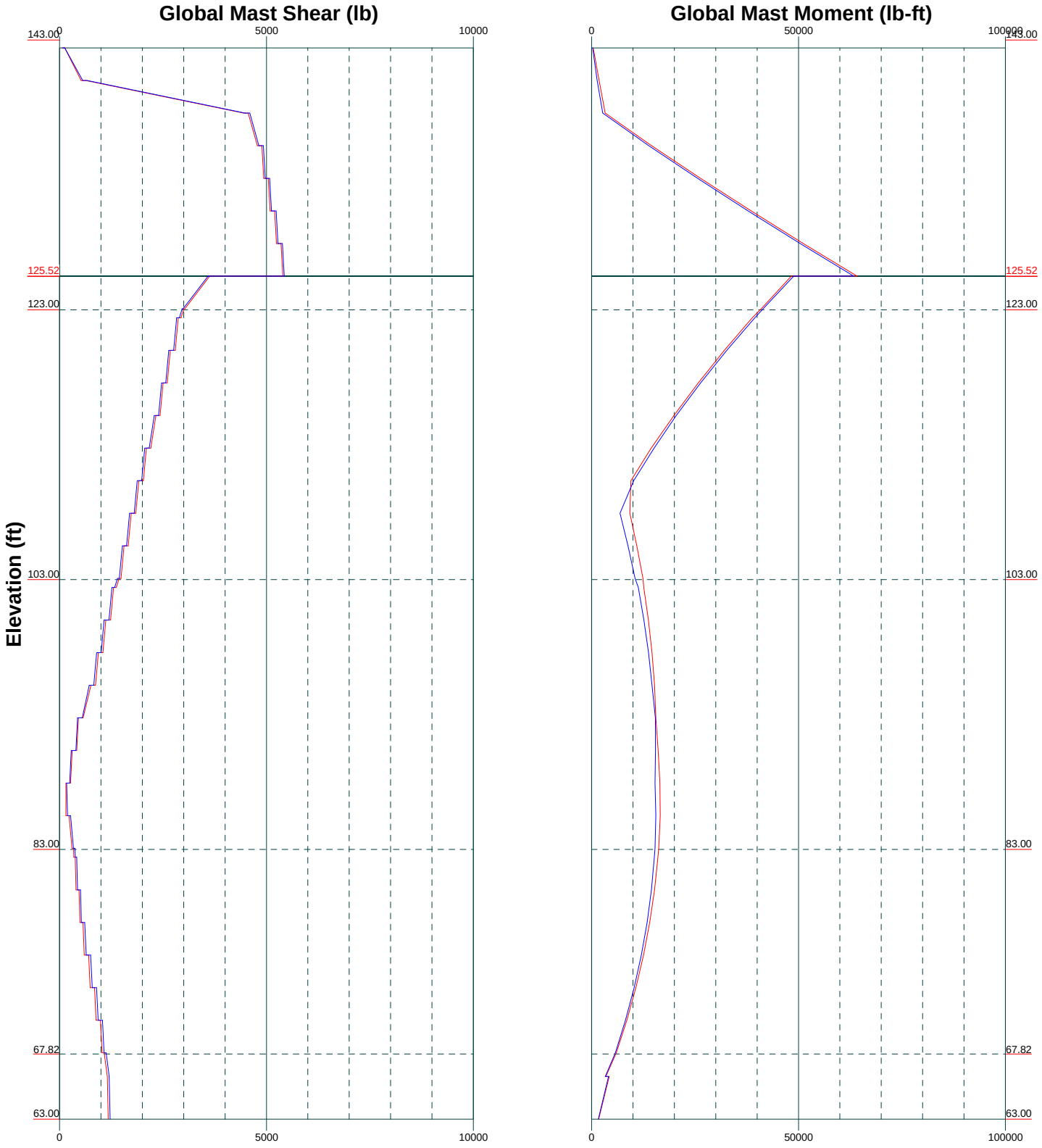
Job: ***Vance Hall CCSU (CT03XC098-O)***			
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-3	

TIA/EIA-222-F - 80 mph/38 mph 1.0000 in Ice

Vx Vz

Maximum Values

Mx Mz



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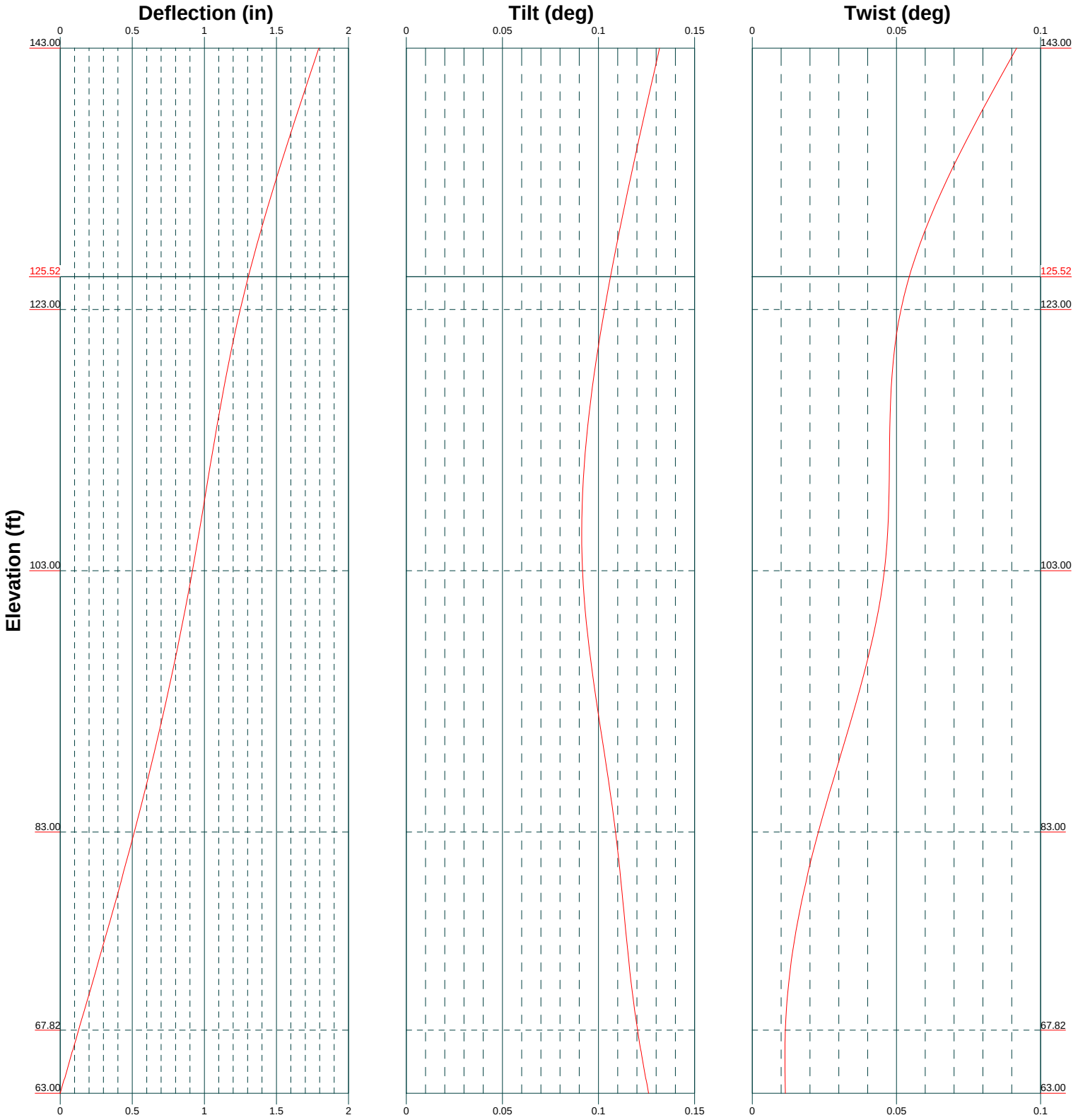
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore		App'd:
Code: TIA/EIA-222-F	Date: 07/09/14		Scale: NTS
Path: I:\28700\28720\Structural\TNX\28720.eri			Dwg No. E-4

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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Job: ***Vance Hall CCSU (CT03XC098-O)***			
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-5	

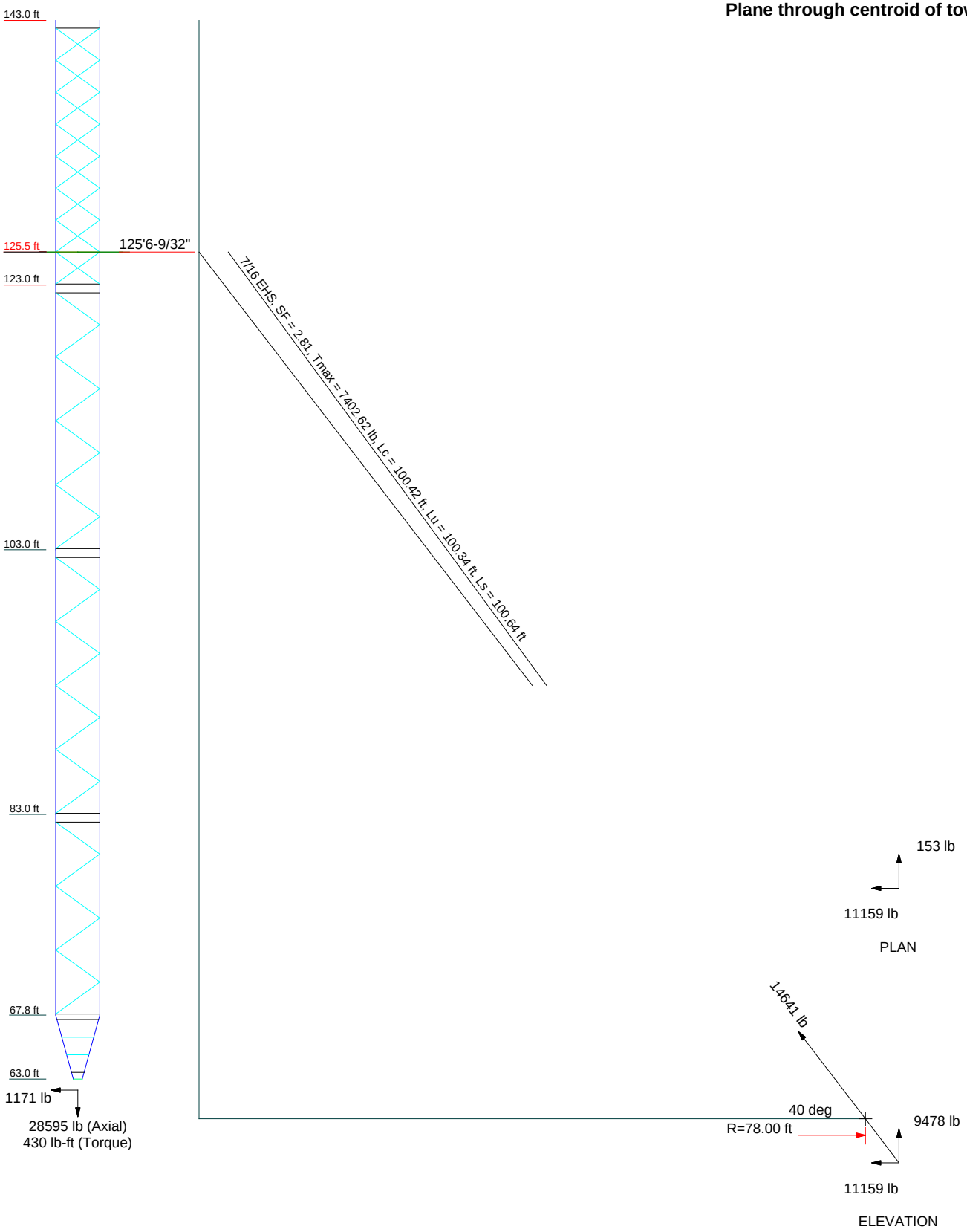
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 80 mph/38 mph 1.0000 in Ice

Maximum Values

Anchor 'C'@78 ft Azimuth 240 deg Elev 60 ft

Plane through centroid of tower



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Job: ***Vance Hall CCSU (CT03XC098-O)***			
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-6	

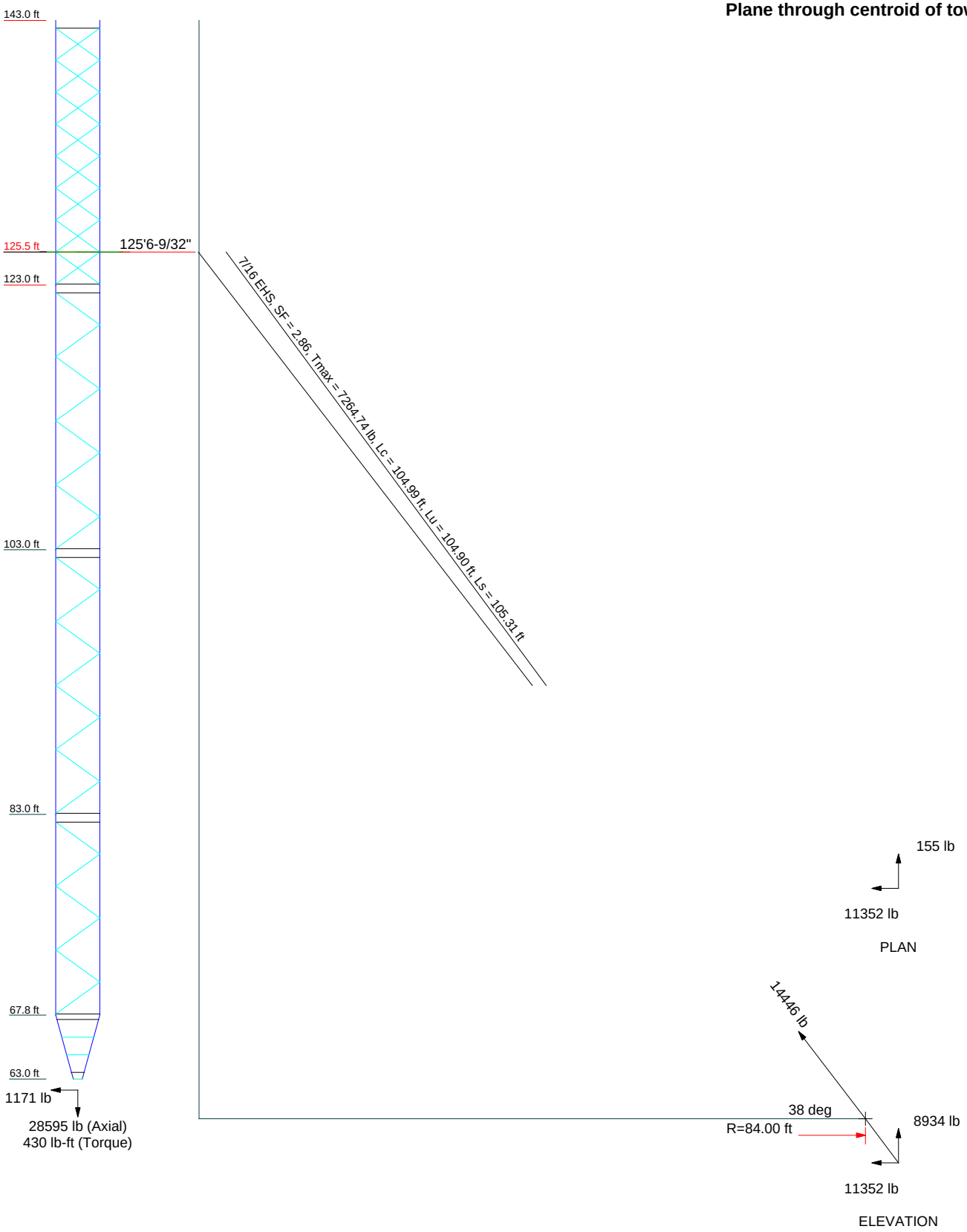
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 80 mph/38 mph 1.0000 in Ice

Maximum Values

Anchor 'B'@84 ft Azimuth 119 deg Elev 60 ft

Plane through centroid of tower



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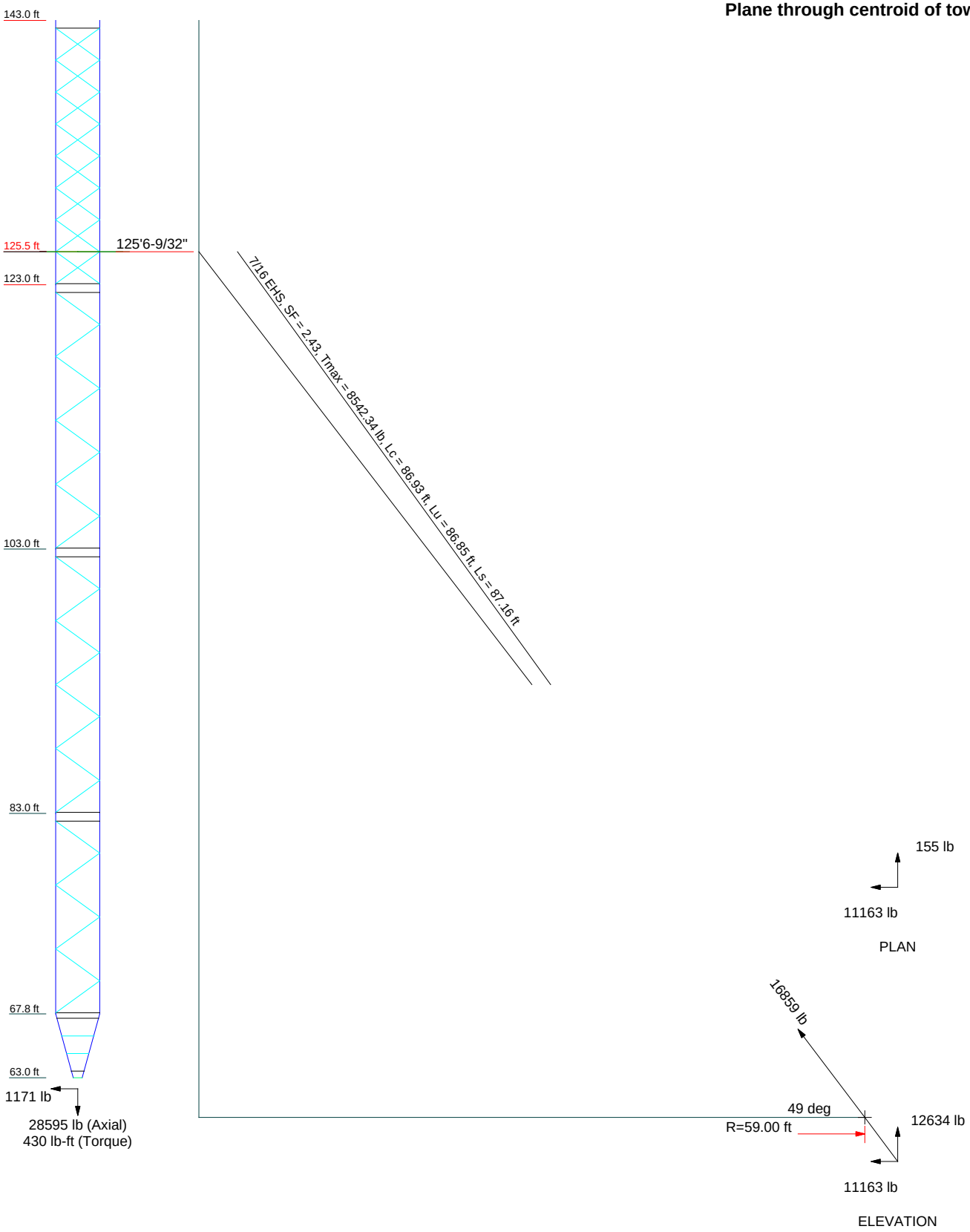
Job: ***Vance Hall CCSU (CT03XC098-O)***			
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-6	

Guy Tensions and Tower Reactions

TIA/EIA-222-F - 80 mph/38 mph 1.0000 in Ice

Maximum Values
Anchor 'A'@59 ft Azimuth 0 deg Elev 60 ft
Plane through centroid of tower



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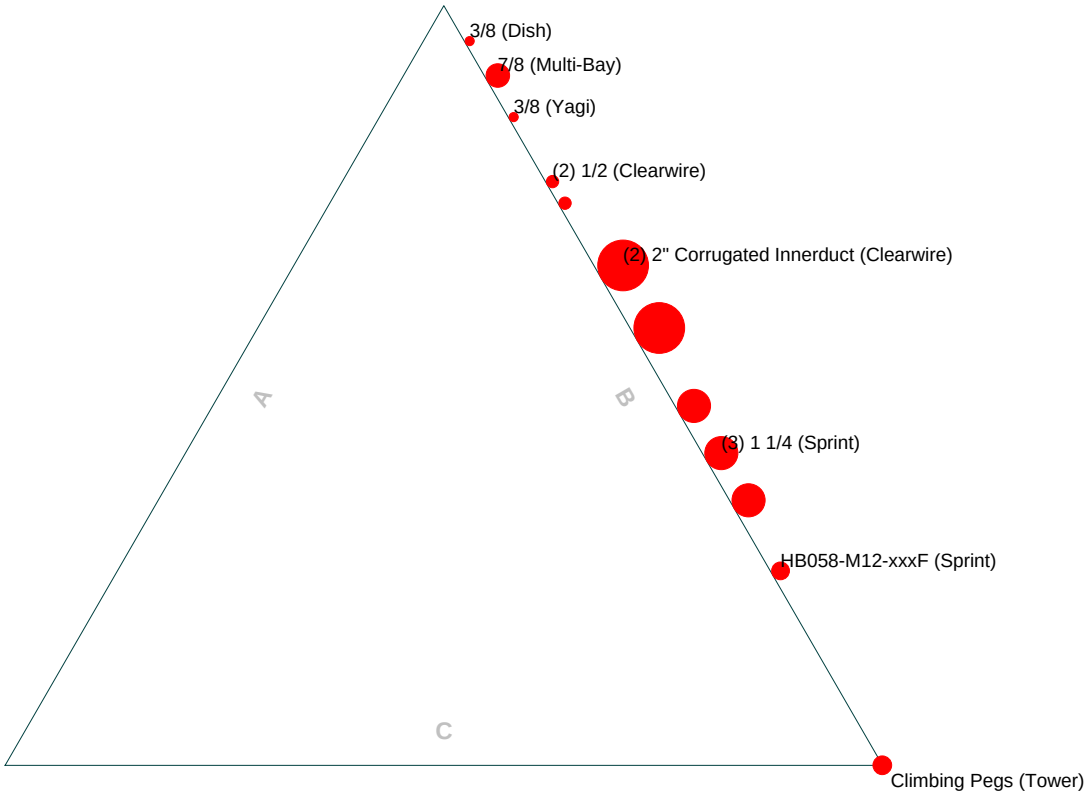
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-6	

Feed Line Plan

Round Flat App In Face App Out Face



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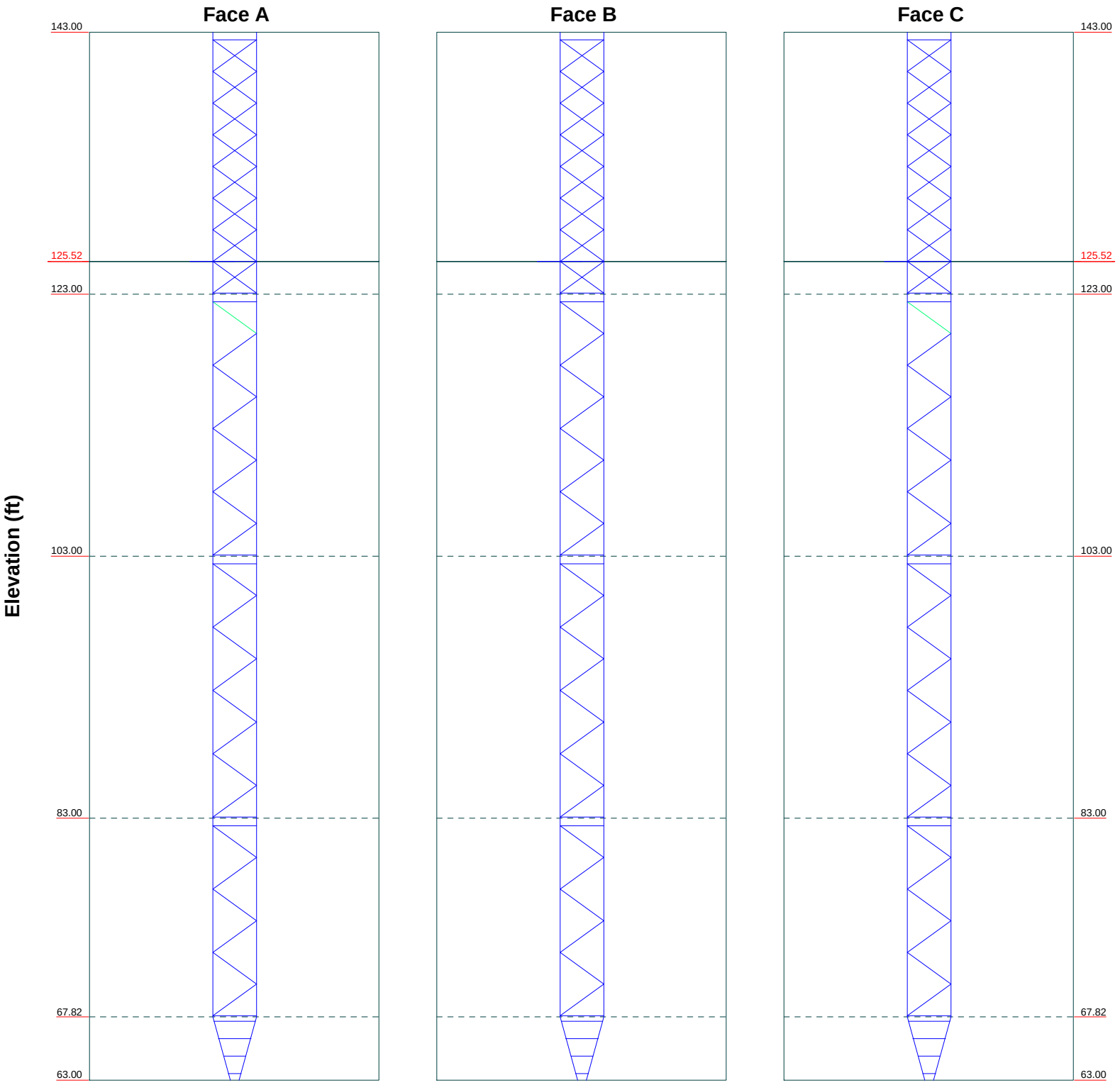
Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-7	

Stress Distribution Chart
63' - 143'

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



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Project: ***28720***			
Client: Transcend Wireless / Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/09/14	Scale: NTS	
Path: I:\28700\28720\Structural\TNX\28720.eri		Dwg No. E-8	

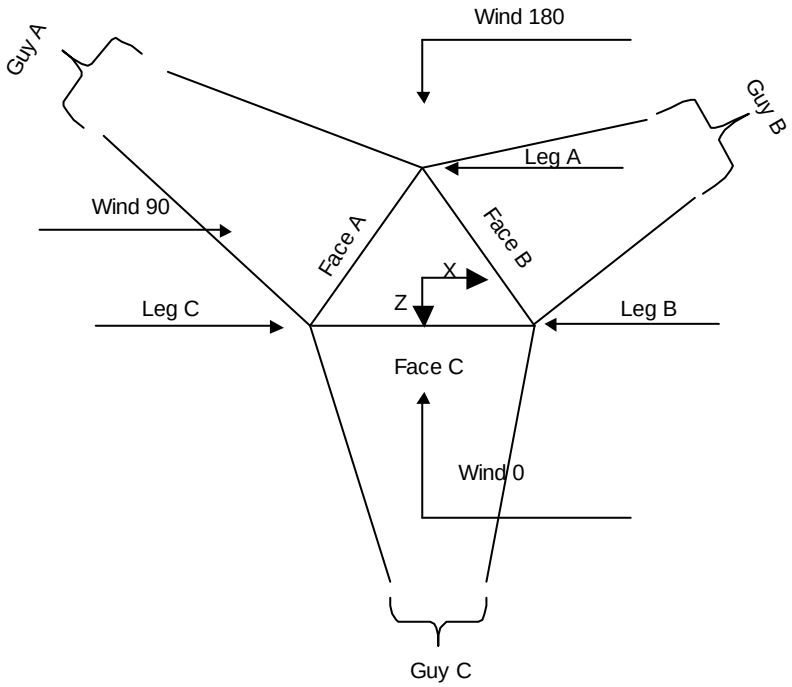
APPENDIX B

TOWER CALCULATIONS

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 143.00 ft above the ground line.
The base of the tower is set at an elevation of 63.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and 0.67 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Basic wind speed of 80 mph.
- Nominal ice thickness of 1.0000 in.
- Ice density of 56 pcf.
- A wind speed of 38 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 50 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.



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	143.00-123.00			3.42	1	20.00
T2	123.00-103.00			3.42	1	20.00
T3	103.00-83.00			3.42	1	20.00
T4	83.00-67.82			3.42	1	15.18
T5	67.82-63.00			3.42	1	4.82

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in

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	143.00-123.00	2.41	CX Brace	No	No	7.3750	1.3750
T2	123.00-103.00	2.41	K Brace Left	No	No	7.3750	1.3750
T3	103.00-83.00	2.41	K Brace Left	No	No	7.3750	1.3750
T4	83.00-67.82	2.41	K Brace Left	No	No	7.3750	1.3750
T5	67.82-63.00	1.33	CX Brace	No	Yes	4.0000	6.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 143.00-123.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T2 123.00-103.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T3 103.00-83.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T4 83.00-67.82	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T5 67.82-63.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe		A36 (36 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 143.00-123.00	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T2 123.00-103.00	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T3 103.00-83.00	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T4 83.00-67.82	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)	Pipe	ROHN TS1.5x16 GA	A36 (36 ksi)
T5 67.82-63.00	Equal Angle	L4x4x1/4	A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 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
T5 67.82-63.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 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
T1 143.00-123.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 123.00-103.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 103.00-83.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 83.00-67.82	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 67.82-63.00	0.00	0.0000	A36 (36 ksi)	1	1	1	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 143.00-123.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 123.00-103.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 103.00-83.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 83.00-67.82	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 67.82-63.00	No	No	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 143.00-123.00	0.0000	1	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 123.00-103.00	0.0000	1	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 103.00-83.00	0.0000	1	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 83.00-67.82	0.0000	1	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 67.82-63.00	0.0000	1	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 Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 143.00-123.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 123.00-103.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 103.00-83.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 83.00-67.82	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 67.82-63.00	Flange	0.7500 A325N	4	0.5000 A325N	0	0.5000 A325N	0	0.5000 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 %
125.523	EHS	A	7/16	2080.00	10%	21000	0.399	86.86	59.00	0.0000	60.00	100%
		B	7/16	2080.00	10%	21000	0.399	105.00	84.00	-1.0000	60.00	100%
		C	7/16	2080.00	10%	21000	0.399	100.34	78.00	0.0000	60.00	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
125.523	Torque Arm	6.83	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7

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
125.52	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Double Equal Angle	2L2x2x1/4x3/8

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
125.523	34.66	41.89	40.04		0.72 1.5 sec/pulse	1.05 1.8 sec/pulse	0.96 1.7 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
125.523	No	No	1	1	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
125.523	0.0000 A325N	0	0.0000	1	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
125.523	A	92.76	22	5	1.0000
	B	92.76	22	5	1.0000
	C	92.76	22	5	1.0000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F_x lb	F_y lb	F_z lb	M_x lb-ft	M_y lb-ft	M_z lb-ft
125.523	A	48.9149	2106.12 2080.00	-82.26	1594.93	-1373.01	-3146.19	4853.40	-5449.35
	A	48.9149	2106.12	82.26	1594.93	-1373.01	-3146.19	-4853.40	5449.35

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
			2080.00						
	B	38.5728	2106.12	1463.21	1325.97	732.50	5231.26	5772.70	0.00
			2080.00						
	B	38.6143	2106.12	1396.43	1327.14	851.13	-2617.93	-5662.65	-4534.39
			2080.00						
	C	40.7275	2106.12	-1336.62	1385.65	853.92	-2733.35	5554.19	4734.29
			2080.00						
	C	40.7275	2106.12	-1407.83	1385.65	730.59	5466.69	-5554.19	0.00
			2080.00						
			Sum:	**115.20**	8614.27	**422.10**	**-945.69**	**110.05**	**199.90**

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
125.523	A	48.9149	3108.10	-119.34	2382.95	-1991.88	-4700.64	7040.99	-8141.74
			2967.01						
	A	48.9149	3108.10	119.34	2382.95	-1991.88	-4700.64	-7040.99	8141.74
			2967.01						
	B	38.5728	3244.17	2217.49	2091.67	1110.09	8252.12	8748.49	0.00
			3103.09						
	B	38.6143	3243.45	2115.80	2092.92	1289.59	-4128.52	-8579.77	-7150.80
			3102.37						
	C	40.7275	3209.02	-2003.28	2155.63	1279.83	-4252.22	8324.42	7365.06
			3067.94						
	C	40.7275	3209.02	-2110.00	2155.63	1094.97	8504.43	-8324.42	0.00
			3067.94						
			Sum:	**220.02**	13261.74	**790.73**	**-1025.46**	**168.72**	**214.25**

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
125.523	A	48.9149	2106.12	-82.26	1594.93	-1373.01	-3146.19	4853.40	-5449.35
			2080.00						
	A	48.9149	2106.12	82.26	1594.93	-1373.01	-3146.19	-4853.40	5449.35
			2080.00						
	B	38.5728	2106.12	1463.21	1325.97	732.50	5231.26	5772.70	0.00
			2080.00						
	B	38.6143	2106.12	1396.43	1327.14	851.13	-2617.93	-5662.65	-4534.39
			2080.00						
	C	40.7275	2106.12	-1336.62	1385.65	853.92	-2733.35	5554.19	4734.29
			2080.00						

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom lb	F_x lb	F_y lb	F_z lb	M_x lb-ft	M_y lb-ft	M_z lb-ft
	C	40.7275	2106.12 2080.00	-1407.83	1385.65	730.59	5466.69	-5554.19	0.00
			Sum:	**115.20**	8614.27	**422.10**	**-945.69**	**110.05**	**199.90**

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
125.523	A	57.13	65.52	2486	0.60	2350	0.64	2215	0.68	2080	0.72	1945	0.77	1811	0.83	1677	0.89
	B	82.16	65.52	2650	0.83	2459	0.89	2269	0.96	2080	1.05	1892	1.16	1706	1.28	1522	1.43
	C	76.10	65.52	2617	0.76	2437	0.82	2258	0.88	2080	0.96	1903	1.05	1727	1.16	1553	1.28

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
1 1/4 (Sprint)	B	Yes	Ar (CfAe)	138.00 - 69.00	0.0000	0.1	3	3	1.0000	1.5500		0.66
HB058-M12-xxxF (Sprint)	B	Yes	Ar (CfAe)	138.00 - 69.00	0.0000	0.25	1	1	0.8400	0.8400		0.24
2" Corrugated Innerduct (Clearwire)	B	Yes	Ar (CfAe)	138.00 - 69.00	0.0000	-0.1	2	2	1.0000 2.3750	2.3750		0.22
1/2 (Clearwire)	B	Yes	Ar (CfAe)	138.00 - 69.00	0.0000	-0.25	2	2	0.5800	0.5800		0.25
**********												
3/8 (Dish)	B	Yes	Ar (CfAe)	94.00 - 69.00	0.0000	-0.45	1	1	0.4400	0.4400		0.08
7/8 (Multi-Bay)	B	Yes	Ar (CfAe)	94.00 - 69.00	0.0000	-0.4	1	1	1.1100	1.1100		0.54
3/8 (Yagi)	B	Yes	Ar (CfAe)	84.00 - 69.00	0.0000	-0.35	1	1	0.4400	0.4400		0.08
**********												
Climbing Pegs (Tower)	B	No	Ar (Leg)	143.00 - 69.00	0.0000	0	1	1	0.8800	0.8800		0.00

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	143.00-123.00	A	0.000	0.000	0.000	0.000	0.00
		B	15.717	0.000	0.000	0.000	47.40
		C	1.467	0.000	0.000	0.000	0.00

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
T2	123.00-103.00	A	0.000	0.000	0.000	0.000	0.00
		B	20.467	0.000	0.000	0.000	63.20
		C	1.467	0.000	0.000	0.000	0.00
T3	103.00-83.00	A	0.000	0.000	0.000	0.000	0.00
		B	21.924	0.000	0.000	0.000	70.10
		C	1.467	0.000	0.000	0.000	0.00
T4	83.00-67.82	A	0.000	0.000	0.000	0.000	0.00
		B	16.648	0.000	0.000	0.000	54.04
		C	1.027	0.000	0.000	0.000	0.00
T5	67.82-63.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		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	143.00-123.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		21.481	12.044	0.000	0.000	424.40
		C		4.800	0.000	0.000	0.000	0.00
T2	123.00-103.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		27.042	16.058	0.000	0.000	550.55
		C		4.800	0.000	0.000	0.000	0.00
T3	103.00-83.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		32.333	16.058	0.000	0.000	606.92
		C		4.800	0.000	0.000	0.000	0.00
T4	83.00-67.82	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		28.251	11.241	0.000	0.000	480.54
		C		3.360	0.000	0.000	0.000	0.00
T5	67.82-63.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	143.00-123.00	A	0.000	0.000	0.000	0.000
		B	1.922	9.278	0.119	0.239
		C	0.000	0.000	0.000	0.000
T2	123.00-103.00	A	0.000	0.000	0.000	0.000
		B	1.400	6.584	0.000	0.000
		C	0.000	0.000	0.000	0.000
T3	103.00-83.00	A	0.000	0.000	0.000	0.000
		B	1.507	7.494	0.000	0.000
		C	0.000	0.000	0.000	0.000
T4	83.00-67.82	A	0.000	0.000	0.000	0.000
		B	1.201	6.484	0.000	0.000
		C	0.000	0.000	0.000	0.000
T5	67.82-63.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	143.00-123.00	2.2820	-0.8939	1.2846	0.3338
T2	123.00-103.00	3.4882	-1.5696	2.2326	0.0315
T3	103.00-83.00	3.4610	-1.9709	2.2247	-0.6929
T4	83.00-67.82	3.2232	-2.2831	2.0916	-1.5221
T5	67.82-63.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Lightning Rod 5/8x4'	A	From Leg	0.00 0.00 8.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	31.00 33.82 39.29
6'x2 1/2" Pipe Mount	A	From Leg	0.00 0.00 3.00	0.0000	143.00	No Ice 1/2" Ice 1" Ice	1.73 2.09 2.46	1.73 2.09 2.46	34.80 47.55 64.42
**********									
APXVSPP18-C-A20 w/Mount Pipe	A	From Leg	4.00 5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	8.56 9.21 9.83	6.95 8.13 9.03	82.55 150.82 227.06
APXVSPP18-C-A20 w/Mount Pipe	B	From Leg	4.00 5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	8.56 9.21 9.83	6.95 8.13 9.03	82.55 150.82 227.06
APXVSPP18-C-A20 w/Mount Pipe	C	From Leg	4.00 5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	8.56 9.21 9.83	6.95 8.13 9.03	82.55 150.82 227.06
1900MHz 4x45W RRH	A	From Leg	1.00 0.00 -5.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.71 2.95 3.20	2.61 2.84 3.09	59.50 82.62 108.98
1900MHz 4x45W RRH	B	From Leg	1.00 0.00 -5.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.71 2.95 3.20	2.61 2.84 3.09	59.50 82.62 108.98
1900MHz 4x45W RRH	C	From Leg	1.00 0.00 -5.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.71 2.95 3.20	2.61 2.84 3.09	59.50 82.62 108.98
800MHz 2x50W RRH	A	From Leg	1.00 0.00 -3.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.40 2.61 2.83	2.25 2.46 2.68	64.00 86.12 111.30
800MHz 2x50W RRH	B	From Leg	1.00 0.00 -3.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.40 2.61 2.83	2.25 2.46 2.68	64.00 86.12 111.30
800MHz 2x50W RRH	C	From Leg	1.00 0.00 -3.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.40 2.61 2.83	2.25 2.46 2.68	64.00 86.12 111.30
(3) 7'x2 1/2" Pipe Mount	C	None		0.0000	136.00	No Ice	2.01	2.01	40.50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1/2" Ice	2.59	2.59	55.31
						1" Ice	3.02	3.02	74.85
**********									
840 10054 w/Mount Pipe	A	From Leg	4.00 -5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	5.29 5.68 6.08	2.23 2.73 3.25	48.60 83.42 123.44
840 10054 w/Mount Pipe	B	From Leg	4.00 -5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	5.29 5.68 6.08	2.23 2.73 3.25	48.60 83.42 123.44
840 10054 w/Mount Pipe	C	From Leg	4.00 -5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	5.29 5.68 6.08	2.23 2.73 3.25	48.60 83.42 123.44
FDD-01	A	From Leg	4.00 -5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.82 2.00 2.19	0.83 0.97 1.12	33.00 44.91 59.16
FDD-01	B	From Leg	4.00 -5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.82 2.00 2.19	0.83 0.97 1.12	33.00 44.91 59.16
FDD-01	C	From Leg	4.00 -5.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.82 2.00 2.19	0.83 0.97 1.12	33.00 44.91 59.16
DC6-48-60-0-1E	C	None		0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.06 1.22 1.38	35.00 52.29 72.35
**********									
APXV9TM14-ALU-I20 w/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	7.21 7.77 8.31	5.03 5.89 6.63	77.02 132.43 194.59
APXV9TM14-ALU-I20 w/Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	7.21 7.77 8.31	5.03 5.89 6.63	77.02 132.43 194.59
APXV9TM14-ALU-I20 w/Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	7.21 7.77 8.31	5.03 5.89 6.63	77.02 132.43 194.59
TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	4.72 5.01 5.32	1.70 1.92 2.14	70.00 97.14 127.80
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	4.72 5.01 5.32	1.70 1.92 2.14	70.00 97.14 127.80
TD-RRH8x20-25	C	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	4.72 5.01 5.32	1.70 1.92 2.14	70.00 97.14 127.80
**********									
PiROD 15' T-Frame	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	15.00 20.60 26.20	15.00 20.60 26.20	500.00 650.00 800.00
PiROD 15' T-Frame	B	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	15.00 20.60 26.20	15.00 20.60 26.20	500.00 650.00 800.00
PiROD 15' T-Frame	C	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	15.00 20.60 26.20	15.00 20.60 26.20	500.00 650.00 800.00
**********									
100-4(M/F)	C	From Leg	2.00 0.00 0.00	0.0000	123.00 - 93.00	No Ice 1/2" Ice 1" Ice	7.00 14.00 21.00	7.00 14.00 21.00	70.00 170.00 270.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
30'x2" Pipe Mount	C	From Leg	2.00 0.00 0.00	0.0000	123.00 - 93.00	No Ice 1/2" Ice 1" Ice	7.13 10.15 13.20	7.13 10.15 13.20	109.50 162.48 234.17
2' Standoff	C	From Leg	2.00 0.00 0.00	0.0000	123.00	No Ice 1/2" Ice 1" Ice	1.80 3.30 4.80	1.80 3.30 4.80	33.00 59.00 85.00
2' Standoff	C	From Leg	2.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice	1.80 3.30 4.80	1.80 3.30 4.80	33.00 59.00 85.00
2' Standoff	C	From Leg	2.00 0.00 0.00	0.0000	103.00	No Ice 1/2" Ice 1" Ice	1.80 3.30 4.80	1.80 3.30 4.80	33.00 59.00 85.00
2' Standoff	C	From Leg	2.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice	1.80 3.30 4.80	1.80 3.30 4.80	33.00 59.00 85.00
**********									
4' Yagi	C	From Leg	0.00 0.00 0.00	0.0000	84.00	No Ice 1/2" Ice 1" Ice	2.08 5.43 8.79	2.08 5.43 8.79	25.00 47.97 91.53

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
VHLP2.5	A	Paraboloid w/Shroud (HP)	From Leg	4.00 -5.00 4.00	0.0000		138.00	2.92	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.46	48.00 76.00 104.00
VHLP2.5	B	Paraboloid w/Shroud (HP)	From Leg	4.00 -5.00 4.00	0.0000		138.00	2.92	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.46	48.00 76.00 104.00
*********											
MF-900B	A	Grid	From Face	0.50 2.00 0.00	0.0000		94.00	2.66	No Ice 1/2" Ice 1" Ice	5.55 5.90 6.25	13.00 44.67 76.34

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	1621.89			
Bracing Weight	1155.13			
Total Member Self-Weight	2777.01			
Guy Weight	233.13			

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Total Weight	6716.70			
Wind 0 deg - No Ice		-137.52	-10278.01	-559.68
Wind 30 deg - No Ice		5050.15	-8846.72	-1106.07
Wind 60 deg - No Ice		8822.80	-5083.44	-1586.66
Wind 90 deg - No Ice		10225.91	46.92	-1313.50
Wind 120 deg - No Ice		8859.16	5258.38	218.40
Wind 150 deg - No Ice		5156.84	8952.81	722.24
Wind 180 deg - No Ice		86.71	10285.72	894.86
Wind 210 deg - No Ice		-5037.25	8910.48	1173.44
Wind 240 deg - No Ice		-8869.48	5105.55	2052.88
Wind 270 deg - No Ice		-10274.66	-109.21	1342.50
Wind 300 deg - No Ice		-8898.01	-5226.98	414.45
Wind 330 deg - No Ice		-5186.61	-8935.60	-214.41
Member Ice	3432.50			
Guy Ice	1026.16			
Total Weight Ice	16408.83			
Wind 0 deg - Ice		-36.72	-4545.90	-670.86
Wind 30 deg - Ice		2203.98	-3839.23	-545.26
Wind 60 deg - Ice		3847.99	-2167.33	-379.18
Wind 90 deg - Ice		4462.39	39.44	48.33
Wind 120 deg - Ice		3950.40	2316.21	614.37
Wind 150 deg - Ice		2266.15	3874.55	763.27
Wind 180 deg - Ice		66.22	4441.62	651.99
Wind 210 deg - Ice		-2198.39	3856.36	556.33
Wind 240 deg - Ice		-3930.46	2262.30	433.62
Wind 270 deg - Ice		-4457.67	-26.49	-59.97
Wind 300 deg - Ice		-3837.60	-2237.80	-511.65
Wind 330 deg - Ice		-2240.59	-3869.96	-733.78
Total Weight	6716.70			
Wind 0 deg - Service		-53.72	-4014.85	-218.63
Wind 30 deg - Service		1972.72	-3455.75	-432.06
Wind 60 deg - Service		3446.41	-1985.72	-619.79
Wind 90 deg - Service		3994.49	18.33	-513.09
Wind 120 deg - Service		3460.61	2054.05	85.31
Wind 150 deg - Service		2014.39	3497.19	282.13
Wind 180 deg - Service		33.87	4017.86	349.55
Wind 210 deg - Service		-1967.68	3480.66	458.38
Wind 240 deg - Service		-3464.64	1994.35	801.90
Wind 270 deg - Service		-4013.54	-42.66	524.41
Wind 300 deg - Service		-3475.78	-2041.79	161.89
Wind 330 deg - Service		-2026.02	-3490.47	-83.75

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

Comb. No.	Description
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
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	143 - 123	Leg	Max Tension	12	18210.28	30.31	5.44
			Max. Compression	2	-21395.06	-155.72	592.10
			Max. Mx	5	-1189.85	-736.35	-11.16
			Max. My	7	-1148.95	-334.32	-648.17
			Max. Vy	5	-1353.49	-697.39	-24.26
			Max. Vx	8	-1248.52	162.20	-595.67
		Diagonal	Max Tension	13	2380.64	0.00	0.00
			Max. Compression	13	-2373.43	0.00	0.00
			Max. Mx	20	643.91	7.06	0.00
			Max. My	10	348.78	0.00	-0.01
			Max. Vy	20	-6.75	0.00	0.00
			Max. Vx	10	0.01	0.00	0.00
		Top Girt	Max Tension	7	29.89	0.00	0.00
			Max. Compression	8	-31.42	0.00	0.00
			Max. Mx	15	9.72	5.76	0.00
			Max. My	10	-9.41	0.00	0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
		Bottom Girt	Max Tension	9	541.74	0.00	0.00
			Max. Compression	7	-342.72	0.00	0.00
			Max. Mx	15	307.02	5.76	0.00
			Max. My	10	-152.07	0.00	0.00
			Max. Vy	15	6.75	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	10	-0.00	0.00	0.00
		Guy A	Bottom Tension	7	8516.59		
			Top Tension	7	8542.34		
			Top Cable Vert	7	6448.03		
			Top Cable Norm	7	5603.08		
			Top Cable Tan	7	8.35		
			Bot Cable Vert	7	-6379.29		
			Bot Cable Norm	7	5642.16		
			Bot Cable Tan	7	53.76		
		Guy B	Bottom Tension	13	7238.87		
			Top Tension	13	7264.74		
			Top Cable Vert	13	4552.43		
			Top Cable Norm	13	5661.43		
			Top Cable Tan	13	4.77		
			Bot Cable Vert	13	-4473.79		
			Bot Cable Norm	13	5690.74		
			Bot Cable Tan	13	44.95		
		Guy C	Bottom Tension	5	7376.77		
			Top Tension	5	7402.62		
			Top Cable Vert	5	4850.42		
			Top Cable Norm	5	5592.15		
			Top Cable Tan	5	1.14		
			Bot Cable Vert	5	-4773.87		
			Bot Cable Norm	5	5623.59		
			Bot Cable Tan	5	46.05		
		Top Guy Pull-Off	Max Tension	12	5248.64	0.00	0.00
			Max. Compression	2	-4891.98	0.00	0.00
			Max. Mx	15	-1841.10	19.22	0.00
			Max. My	10	2501.95	0.00	-0.00
			Max. Vy	15	-22.50	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Torque Arm Top	Max Tension	13	6395.61	0.00	0.00
			Max. Compression	9	-3304.91	0.00	0.00
			Max. Mx	7	-326.89	-21289.13	-0.00
			Max. My	10	-2719.21	-12001.27	0.00
			Max. Vy	7	6266.37	-21289.13	-0.00
			Max. Vx	10	0.00	-12001.27	0.00
T2	123 - 103	Leg	Max Tension	12	8738.31	-269.26	-120.33
			Max. Compression	2	-20241.56	-121.40	458.61
			Max. Mx	5	4946.61	-542.34	-32.49
			Max. My	2	-20241.56	-121.40	458.61
			Max. Vy	5	-1351.06	-542.34	-32.49
			Max. Vx	8	-1246.41	130.28	-452.65
		Diagonal	Max Tension	5	2671.66	0.00	0.00
			Max. Compression	11	-2793.80	0.00	0.00
			Max. Mx	20	-606.07	7.06	0.00
			Max. My	20	328.35	0.00	-0.01
			Max. Vy	20	-6.75	0.00	0.00
			Max. Vx	20	0.01	0.00	0.00
		Top Girt	Max Tension	2	1088.52	0.00	0.00
			Max. Compression	8	-919.82	0.00	0.00
			Max. Mx	15	24.48	5.76	0.00
			Max. My	10	1010.98	0.00	-0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Bottom Girt	Max Tension	4	465.07	0.00	0.00
			Max. Compression	10	-453.71	0.00	0.00
			Max. Mx	15	71.44	5.76	0.00
			Max. My	10	241.27	0.00	0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	10	-0.00	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
T3	103 - 83	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-13963.10	6.20	-0.35
			Max. Mx	11	-7213.66	-208.30	-56.08
			Max. My	8	-9082.72	7.52	214.12
			Max. Vy	11	659.69	189.45	-20.51
			Max. Vx	2	585.32	-9.86	165.20
		Diagonal	Max Tension	13	1177.44	0.00	0.00
			Max. Compression	11	-1234.26	0.00	0.00
			Max. Mx	20	33.90	7.06	0.00
			Max. My	20	-7.88	0.00	-0.01
			Max. Vy	20	-6.76	0.00	0.00
			Max. Vx	20	0.01	0.00	0.00
		Top Girt	Max Tension	10	420.46	0.00	0.00
			Max. Compression	13	-375.24	0.00	0.00
			Max. Mx	15	-10.15	5.76	0.00
			Max. My	10	-171.30	0.00	0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
		Bottom Girt	Max Tension	15	119.84	0.00	0.00
			Max. Compression	10	-95.51	0.00	0.00
			Max. Mx	15	54.11	5.76	0.00
			Max. My	20	64.96	0.00	-0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T4	83 - 67.8177	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-13644.74	69.01	-26.01
			Max. Mx	25	-10320.51	287.28	144.24
			Max. My	21	-10968.96	-32.07	-342.12
			Max. Vy	18	1587.83	-273.24	175.41
			Max. Vx	21	1793.85	-32.07	-342.12
		Diagonal	Max Tension	9	992.07	0.00	0.00
			Max. Compression	9	-876.98	0.00	0.00
			Max. Mx	20	578.73	7.07	0.00
			Max. My	21	-156.12	0.00	-0.01
			Max. Vy	20	6.76	0.00	0.00
			Max. Vx	21	-0.01	0.00	0.00
		Top Girt	Max Tension	8	204.60	0.00	0.00
			Max. Compression	15	-131.73	0.00	0.00
			Max. Mx	15	26.91	5.76	0.00
			Max. My	20	-39.97	0.00	-0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	792.43	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	15	709.42	5.76	0.00
			Max. My	20	773.28	0.00	-0.00
			Max. Vy	15	6.75	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T5	67.8177 - 63	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-11597.26	118.55	13.95
			Max. Mx	20	-7761.16	-425.84	-76.51
			Max. My	10	-9456.16	106.95	221.56
			Max. Vy	22	1823.95	-389.94	-71.57
			Max. Vx	8	-365.60	-162.17	207.77
		Horizontal	Max Tension	6	77.88	-14.43	24.22
			Max. Compression	6	-163.35	127.98	-57.43
			Max. Mx	10	-5.51	304.66	-81.14
			Max. My	6	3.16	180.80	-88.51
			Max. Vy	10	334.00	304.66	-81.14
			Max. Vx	6	-73.81	-165.57	37.36
		Top Girt	Max Tension	21	1370.49	24.29	-9.71

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	3	1085.92	235.89	-61.67
			Max. My	10	1033.62	133.84	-86.10
			Max. Vy	10	110.38	225.72	-58.28
			Max. Vx	5	-26.84	-19.04	10.58
		Bottom Girt	Max Tension	6	75.10	2.86	18.02
			Max. Compression	6	-343.20	206.14	-107.21
			Max. Mx	10	-323.00	328.95	-124.17
			Max. My	10	-323.00	328.95	-124.17
			Max. Vy	10	593.03	328.95	-124.17
			Max. Vx	10	-184.31	-232.70	50.81
		Base Beam	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-3202.91	-31.64	-24.38
			Max. Mx	21	-10080.93	-3911.79	-66.77
			Max. My	8	-6471.51	-2653.06	-190.93
			Max. Vy	21	-10080.93	-3911.79	-66.77
			Max. Vx	8	-373.66	-2653.06	-190.93

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 78 ft Elev 60 ft Azimuth 240 deg	Max. Vert	10	-89.91	-67.14	38.60
	Max. H_x	10	-89.91	-67.14	38.60
	Max. H_z	3	-9477.56	-9621.82	5652.42
	Min. Vert	3	-9477.56	-9621.82	5652.42
	Min. H_x	3	-9477.56	-9621.82	5652.42
	Min. H_z	10	-89.91	-67.14	38.60
Guy B @ 84 ft Elev 60 ft Azimuth 119 deg	Max. Vert	6	-61.07	49.45	25.86
	Max. H_x	13	-8934.44	9890.17	5572.34
	Max. H_z	13	-8934.44	9890.17	5572.34
	Min. Vert	13	-8934.44	9890.17	5572.34
	Min. H_x	6	-61.07	49.45	25.86
	Min. H_z	6	-61.07	49.45	25.86
Guy A @ 59 ft Elev 60 ft Azimuth 0 deg	Max. Vert	2	-195.45	-0.02	-126.05
	Max. H_x	10	-10424.58	155.10	-9192.40
	Max. H_z	2	-195.45	-0.02	-126.05
	Min. Vert	7	-12634.22	-91.86	-11162.77
	Min. H_x	6	-10770.42	-145.24	-9496.67
	Min. H_z	7	-12634.22	-91.86	-11162.77
Mast	Max. Vert	20	28594.56	-459.60	-787.81
	Max. H_x	11	21740.33	1043.83	-45.02
	Max. H_z	2	22863.36	-53.47	1040.05
	Max. M_x	1	0.00	-17.34	-24.29
	Max. M_z	1	0.00	-17.34	-24.29
	Max. Torsion	4	317.32	-994.45	551.71
	Min. Vert	27	14719.40	-29.26	444.80
	Min. H_x	5	22764.88	-1086.49	-6.59
	Min. H_z	8	20485.59	3.92	-1171.06
	Min. M_x	1	0.00	-17.34	-24.29

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. M_z	1	0.00	-17.34	-24.29
	Min. Torsion	10	-430.43	871.43	-600.52

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	15152.86	17.34	24.29	0.00	0.00	17.95
Dead+Wind 0 deg - No Ice+Guy	22863.36	53.47	-1040.05	0.00	0.00	-155.19
Dead+Wind 30 deg - No Ice+Guy	21109.81	594.82	-906.53	0.00	0.00	-190.98
Dead+Wind 60 deg - No Ice+Guy	17822.38	994.45	-551.71	0.00	0.00	-317.32
Dead+Wind 90 deg - No Ice+Guy	22764.88	1086.49	6.59	0.00	0.00	-220.52
Dead+Wind 120 deg - No Ice+Guy	25530.98	917.84	557.83	0.00	0.00	81.82
Dead+Wind 150 deg - No Ice+Guy	24463.53	500.18	994.74	0.00	0.00	225.65
Dead+Wind 180 deg - No Ice+Guy	20485.59	-3.92	1171.06	0.00	0.00	299.28
Dead+Wind 210 deg - No Ice+Guy	23746.00	-487.06	995.09	0.00	0.00	306.20
Dead+Wind 240 deg - No Ice+Guy	24628.77	-871.43	600.52	0.00	0.00	430.43
Dead+Wind 270 deg - No Ice+Guy	21740.33	-1043.83	45.02	0.00	0.00	306.08
Dead+Wind 300 deg - No Ice+Guy	17274.04	-959.09	-526.82	0.00	0.00	91.53
Dead+Wind 330 deg - No Ice+Guy	21054.27	-529.77	-900.52	0.00	0.00	-106.51
Dead+Ice+Temp+Guy	27178.71	16.29	33.30	0.00	0.00	28.64
Dead+Wind 0 deg+Ice+Temp+Guy	26853.60	25.86	-883.78	0.00	0.00	-177.03
Dead+Wind 30 deg+Ice+Temp+Guy	27126.91	448.01	-728.23	0.00	0.00	-100.42
Dead+Wind 60 deg+Ice+Temp+Guy	27524.47	767.39	-389.07	0.00	0.00	-48.80
Dead+Wind 90 deg+Ice+Temp+Guy	27950.25	884.83	41.41	0.00	0.00	79.89
Dead+Wind 120 deg+Ice+Temp+Guy	28514.42	798.07	484.33	0.00	0.00	209.41
Dead+Wind 150 deg+Ice+Temp+Guy	28594.56	459.60	787.81	0.00	0.00	252.88
Dead+Wind 180 deg+Ice+Temp+Guy	28588.34	33.53	900.23	0.00	0.00	204.47
Dead+Wind 210 deg+Ice+Temp+Guy	28354.86	-412.80	783.99	0.00	0.00	174.11
Dead+Wind 240 deg+Ice+Temp+Guy	28059.32	-752.47	488.73	0.00	0.00	102.24
Dead+Wind 270 deg+Ice+Temp+Guy	27542.56	-836.22	37.95	0.00	0.00	-24.17
Dead+Wind 300 deg+Ice+Temp+Guy	27224.09	-714.43	-399.26	0.00	0.00	-148.13
Dead+Wind 330 deg+Ice+Temp+Guy	26959.77	-405.83	-730.03	0.00	0.00	-220.06
Dead+Wind 0 deg - Service+Guy	14719.40	29.26	-444.80	0.00	0.00	-48.71
Dead+Wind 30 deg - Service+Guy	14897.40	243.33	-377.03	0.00	0.00	-59.54
Dead+Wind 60 deg - Service+Guy	15145.36	405.32	-208.84	0.00	0.00	-77.23
Dead+Wind 90 deg - Service+Guy	15392.13	467.70	21.56	0.00	0.00	-56.73
Dead+Wind 120 deg - Service+Guy	15646.84	413.16	251.25	0.00	0.00	40.47
Dead+Wind 150 deg - Service+Guy	15830.18	237.09	423.32	0.00	0.00	92.71
Dead+Wind 180 deg - Service+Guy	15866.90	8.81	484.07	0.00	0.00	103.34
Dead+Wind 210 deg - Service+Guy	15699.21	-213.05	418.75	0.00	0.00	105.19
Dead+Wind 240 deg - Service+Guy	15412.93	-374.82	261.11	0.00	0.00	136.08
Dead+Wind 270 deg - Service+Guy	15171.96	-429.69	34.00	0.00	0.00	93.62
Dead+Wind 300 deg - Service+Guy	14965.31	-369.58	-200.94	0.00	0.00	25.06
Dead+Wind 330 deg - Service+Guy	14796.99	-202.35	-375.50	0.00	0.00	-30.80

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-6716.69	0.00	-0.21	6716.70	0.38	0.006%
2	-132.84	-6747.07	-10731.95	132.81	6746.88	10727.69	0.034%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
3	5259.96	-6718.72	-9240.24	-5260.72	6718.64	9237.81	0.020%
4	9167.62	-6689.57	-5310.29	-9166.04	6689.57	5312.74	0.023%
5	10613.45	-6716.13	44.63	-10610.36	6715.98	-42.03	0.032%
6	9199.80	-6742.14	5477.27	-9192.23	6741.77	-5474.17	0.065%
7	5359.19	-6712.28	9338.25	-5353.76	6712.11	-9337.66	0.043%
8	82.03	-6686.32	10739.66	-78.54	6686.32	-10739.61	0.028%
9	-5247.06	-6714.68	9304.01	5243.21	6714.57	-9303.77	0.031%
10	-9214.30	-6743.82	5332.39	9209.16	6743.58	-5330.51	0.043%
11	-10662.21	-6717.27	-106.92	10660.18	6717.18	108.55	0.021%
12	-9238.66	-6691.25	-5445.88	9240.77	6691.26	5442.86	0.029%
13	-5388.96	-6721.12	-9321.04	5389.69	6721.03	9318.57	0.020%
14	-0.00	-16408.79	-0.00	2.34	16408.79	-2.23	0.020%
15	-30.95	-16446.21	-5105.18	30.82	16446.16	5101.71	0.020%
16	2462.47	-16411.28	-4324.06	-2463.75	16411.27	4322.55	0.012%
17	4272.82	-16375.37	-2446.82	-4271.84	16375.37	2448.65	0.012%
18	4939.86	-16408.08	36.62	-4938.26	16408.05	-35.37	0.012%
19	4370.09	-16440.13	2585.90	-4365.22	16440.04	-2584.23	0.030%
20	2515.47	-16403.34	4349.43	-2512.76	16403.31	-4349.35	0.016%
21	60.45	-16371.37	5000.89	-58.58	16371.39	-5002.06	0.013%
22	-2456.88	-16406.30	4341.20	2455.82	16406.29	-4341.26	0.006%
23	-4355.29	-16442.20	2541.78	4353.34	16442.17	-2541.28	0.012%
24	-4935.15	-16409.49	-23.66	4932.17	16409.44	25.84	0.022%
25	-4257.29	-16377.44	-2507.49	4257.00	16377.44	2508.25	0.005%
26	-2489.90	-16414.23	-4344.84	2491.15	16414.22	4342.50	0.015%
27	-51.89	-6728.56	-4192.17	50.72	6728.54	4189.37	0.038%
28	2054.67	-6717.48	-3609.47	-2054.81	6717.48	3608.45	0.013%
29	3581.10	-6706.10	-2074.33	-3580.53	6706.10	2075.46	0.016%
30	4145.88	-6716.47	17.43	-4145.01	6716.46	-16.84	0.013%
31	3593.67	-6726.63	2139.56	-3591.70	6726.61	-2139.02	0.026%
32	2093.44	-6714.97	3647.76	-2091.67	6714.96	-3647.94	0.022%
33	32.04	-6704.83	4195.18	-30.95	6704.85	-4197.32	0.030%
34	-2049.63	-6715.90	3634.38	2048.85	6715.90	-3634.50	0.010%
35	-3599.33	-6727.29	2082.97	3596.39	6727.26	-2082.42	0.038%
36	-4164.93	-6716.92	-41.76	4164.41	6716.91	42.02	0.007%
37	-3608.85	-6706.76	-2127.30	3608.52	6706.75	2127.77	0.007%
38	-2105.06	-6718.42	-3641.03	2105.13	6718.41	3639.90	0.014%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	9	0.00000001	0.00005251
2	Yes	17	0.00000001	0.00008885
3	Yes	17	0.00000001	0.00006313
4	Yes	16	0.00000001	0.00009531
5	Yes	17	0.00000001	0.00009067
6	Yes	17	0.00000001	0.00014937
7	Yes	17	0.00000001	0.00011414
8	Yes	17	0.00000001	0.00008939
9	Yes	17	0.00000001	0.00008649
10	Yes	17	0.00000001	0.00010699
11	Yes	17	0.00000001	0.00006320
12	Yes	14	0.00000001	0.00010752
13	Yes	17	0.00000001	0.00006265
14	Yes	9	0.00000001	0.00013589
15	Yes	11	0.00000001	0.00010687

16	Yes	11	0.00000001	0.00007684
17	Yes	12	0.00000001	0.00009441
18	Yes	13	0.00000001	0.00006932
19	Yes	13	0.00000001	0.00013416
20	Yes	13	0.00000001	0.00009689
21	Yes	12	0.00000001	0.00008533
22	Yes	13	0.00000001	0.00004565
23	Yes	13	0.00000001	0.00006079
24	Yes	12	0.00000001	0.00013042
25	Yes	12	0.00000001	0.00004089
26	Yes	11	0.00000001	0.00010270
27	Yes	7	0.00000001	0.00009057
28	Yes	10	0.00000001	0.00007876
29	Yes	10	0.00000001	0.00010043
30	Yes	11	0.00000001	0.00007565
31	Yes	11	0.00000001	0.00009979
32	Yes	11	0.00000001	0.00011295
33	Yes	10	0.00000001	0.00012695
34	Yes	11	0.00000001	0.00005718
35	Yes	10	0.00000001	0.00013923
36	Yes	11	0.00000001	0.00004665
37	Yes	10	0.00000001	0.00004730
38	Yes	10	0.00000001	0.00008665

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	143 - 123	1.794	33	0.1311	0.0931
T2	123 - 103	1.249	33	0.1035	0.0511
T3	103 - 83	0.917	33	0.0889	0.0481
T4	83 - 67.8177	0.514	33	0.1117	0.0251
T5	67.8177 - 63	0.127	33	0.1227	0.0131

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	Lightning Rod 5/8x4'	33	1.794	0.1311	0.0931	45851
142.00	VHLP2.5	33	1.764	0.1297	0.0905	45851
138.00	APXVSPP18-C-A20 w/Mount Pipe	33	1.644	0.1240	0.0805	45851
136.00	(3) 7'x2 1/2" Pipe Mount	33	1.585	0.1212	0.0757	32751
125.52	Guy	33	1.306	0.1069	0.0546	13292
123.00	100-4(M/F)	33	1.249	0.1035	0.0511	12656
118.00	100-4(M/F)	33	1.153	0.0972	0.0464	16756
113.00	100-4(M/F)	33	1.071	0.0920	0.0438	31129
108.00	100-4(M/F)	33	0.995	0.0890	0.0455	155987
103.00	100-4(M/F)	33	0.917	0.0889	0.0481	34804
98.00	100-4(M/F)	33	0.830	0.0925	0.0454	30953
94.00	MF-900B	33	0.754	0.0972	0.0404	31830
93.00	100-4(M/F)	33	0.734	0.0985	0.0389	32057
84.00	4' Yagi	33	0.538	0.1105	0.0259	34868

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	143 - 123	8.013	6	0.5547	0.2863
T2	123 - 103	5.705	6	0.4808	0.1776
T3	103 - 83	3.989	6	0.4287	0.1383
T4	83 - 67.8177	2.133	6	0.4819	0.0867
T5	67.8177 - 63	0.521	6	0.5095	0.0431

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	Lightning Rod 5/8x4'	6	8.013	0.5547	0.2863	18322
142.00	VHLP2.5	6	7.889	0.5511	0.2799	18322
138.00	APXVSPP18-C-A20 w/Mount Pipe	6	7.397	0.5368	0.2546	18322
136.00	(3) 7'x2 1/2" Pipe Mount	6	7.155	0.5295	0.2424	13087
125.52	Guy	6	5.962	0.4906	0.1874	5312
123.00	100-4(M/F)	6	5.705	0.4808	0.1776	5063
118.00	100-4(M/F)	6	5.236	0.4614	0.1633	6752
113.00	100-4(M/F)	6	4.809	0.4442	0.1535	12842
108.00	100-4(M/F)	6	4.400	0.4322	0.1460	25109
103.00	100-4(M/F)	6	3.989	0.4287	0.1383	14631
98.00	100-4(M/F)	6	3.559	0.4354	0.1317	12758
94.00	MF-900B	6	3.199	0.4462	0.1196	13009
93.00	100-4(M/F)	6	3.106	0.4494	0.1160	13073
84.00	4' Yagi	6	2.234	0.4791	0.0896	13966

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
T1	143	Leg	A325N	0.7500	4	16.94	19438.60	0.001 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2380.64	2523.00	0.944 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	29.89	2523.00	0.012 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	541.74	2523.00	0.215 ✔	1.333	Member Bearing
T2	123	Leg	A325N	0.7500	4	2184.58	19427.50	0.112 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2671.66	2523.00	1.059 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	1088.52	2523.00	0.431 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	465.07	2523.00	0.184 ✔	1.333	Member Bearing
T3	103	Leg	A325N	0.7500	4	0.00	19438.30	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1177.44	2523.00	0.467 ✔	1.333	Member Bearing

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
		Top Girt	A325N	0.5000	1	420.46	2523.00	0.167 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	119.84	2523.00	0.047 ✔	1.333	Member Bearing
T4	83	Leg	A325N	0.7500	4	0.00	19438.50	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	992.07	2523.00	0.393 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	204.60	2523.00	0.081 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	645.08	2523.00	0.256 ✔	1	Member Bearing
T5	67.8177	Leg	A325N	0.7500	4	0.00	19416.00	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.
T1	125.52 (A) (177)	7/16 EHS	2080.00	20800.02	8381.50	10400.00	2.000	2.482 ✔
	125.52 (A) (178)	7/16 EHS	2080.00	20800.02	8542.34	10400.00	2.000	2.435 ✔
	125.52 (B) (173)	7/16 EHS	2080.00	20800.02	7264.74	10400.00	2.000	2.863 ✔
	125.52 (B) (174)	7/16 EHS	2080.00	20800.02	7240.67	10400.00	2.000	2.873 ✔
	125.52 (C) (166)	7/16 EHS	2080.00	20800.02	7402.62	10400.00	2.000	2.810 ✔
	125.52 (C) (167)	7/16 EHS	2080.00	20800.02	7321.00	10400.00	2.000	2.841 ✔

Compression Checks

Leg 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 P / P_a
T1	143 - 123	ROHN 2.5 X-STR	20.00	2.41	31.3 K=1.00	26.993	2.2535	-21395.10	60829.50	0.352
T2	123 - 103	ROHN 2.5 STD	20.00	2.41	61.0 K=2.00	22.542	1.7040	-20241.60	38413.40	0.527
T3	103 - 83	ROHN 2.5 STD	20.00	2.41	61.0 K=2.00	22.542	1.7040	-13963.10	38413.40	0.363
T4	83 - 67.8177	ROHN 2.5 X-STR	15.18	2.41	62.6 K=2.00	22.275	2.2535	-13644.70	50197.60	0.272
T5	67.8177 - 63	ROHN 2.5 X-STR	5.07	1.40	18.2 K=1.00	28.490	2.2535	-8885.98	64204.30	0.138*

* DL controls

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	ROHN 2.5 X-STR	0.00	0.000	33.000	0.000	0.00	0.000	33.000	0.000
T2	123 - 103	ROHN 2.5 STD	0.00	0.000	33.000	0.000	0.00	0.000	33.000	0.000
T3	103 - 83	ROHN 2.5 STD	0.00	0.000	33.000	0.000	0.00	0.000	33.000	0.000
T4	83 - 67.8177	ROHN 2.5 X-STR	0.00	0.000	33.000	0.000	0.00	0.000	33.000	0.000
T5	67.8177 - 63	ROHN 2.5 X-STR	325.30	-2.916	33.000	0.088	0.00	0.000	33.000	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	ROHN 2.5 X-STR	0.352	0.000	0.000	0.352 ✔	1.333	H1-3 ✔
T2	123 - 103	ROHN 2.5 STD	0.527	0.000	0.000	0.527 ✔	1.333	H1-3 ✔
T3	103 - 83	ROHN 2.5 STD	0.363	0.000	0.000	0.363 ✔	1.333	H1-3 ✔
T4	83 - 67.8177	ROHN 2.5 X-STR	0.272	0.000	0.000	0.272 ✔	1.333	H1-3 ✔
T5	67.8177 - 63	ROHN 2.5 X-STR	0.138	0.088	0.000	0.227* ✔	1.000	H1-3 ✔

* DL controls

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	143 - 123	ROHN TS1.5x16 GA	4.18	3.89	91.4 K=1.00	14.035	0.2627	-2373.43	3687.62	0.644 ✔
T2	123 - 103	ROHN TS1.5x16 GA	4.18	3.89	91.4 K=1.00	14.035	0.2627	-2793.80	3687.62	0.758 ✔
T3	103 - 83	ROHN TS1.5x16 GA	4.18	3.89	91.4 K=1.00	14.035	0.2627	-1234.26	3687.62	0.335 ✔
T4	83 - 67.8177	ROHN TS1.5x16 GA	4.18	3.89	91.4 K=1.00	14.035	0.2627	-876.98	3687.62	0.238 ✔

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 $\frac{P}{P_a}$
T5	67.8177 - 63	L4x4x1/4	1.71	1.47	22.2 K=1.00	19.794	1.9400	-5.51	38399.50	0.000

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 $\frac{P}{P_a}$

Horizontal Bending Design Data

Section No.	Elevation (ft)	Size	Actual M_x (lb-ft)	Actual f_{bx} (ksi)	Allow. F_{bx} (ksi)	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y (lb-ft)	Actual f_{by} (ksi)	Allow. F_{by} (ksi)	Ratio $\frac{f_{by}}{F_{by}}$
T5	67.8177 - 63	L4x4x1/4	272.80	-1.848	20.869	0.089	158.05	-2.095	20.869	0.100

Horizontal Interaction Design Data

Section No.	Elevation (ft)	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T5	67.8177 - 63	L4x4x1/4	0.000	0.089	0.100	0.189 ✔	1.333	H1-3 ✔

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	143 - 123	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-31.42	4186.24	0.008
T2	123 - 103	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-919.82	4186.24	0.220
T3	103 - 83	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-375.24	4186.24	0.090
T4	83 - 67.8177	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-131.73	4186.24	0.031
T5	67.8177 - 63	L4x4x1/4	3.23	2.99	28.7 K=1.00	21.600	1.9400	0.00	35308.60	0.000

Top Girt Bending Design Data

Section No.	Elevation (ft)	Size	Actual M_x (lb-ft)	Actual f_{bx} (ksi)	Allow. F_{bx} (ksi)	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y (lb-ft)	Actual f_{by} (ksi)	Allow. F_{by} (ksi)	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T2	123 - 103	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T3	103 - 83	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T4	83 - 67.8177	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T5	67.8177 - 63	L4x4x1/4	210.40	-1.425	20.869	0.068	123.19	-1.633	20.869	0.078

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	ROHN TS1.5x16 GA	0.008	0.000	0.000	0.008 ✔	1.333	H1-3 ✔
T2	123 - 103	ROHN TS1.5x16 GA	0.220	0.000	0.000	0.220 ✔	1.333	H1-3 ✔
T3	103 - 83	ROHN TS1.5x16 GA	0.090	0.000	0.000	0.090 ✔	1.333	H1-3 ✔
T4	83 - 67.8177	ROHN TS1.5x16 GA	0.031	0.000	0.000	0.031 ✔	1.333	H1-3 ✔
T5	67.8177 - 63	L4x4x1/4	0.000	0.068	0.078	0.147 ✔	1.333	H1-3 ✔

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	143 - 123	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-342.72	4186.24	0.082
T2	123 - 103	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-453.71	4186.24	0.108
T3	103 - 83	ROHN TS1.5x16 GA	3.42	3.18	74.7 K=1.00	15.932	0.2627	-95.51	4186.24	0.023
T5	67.8177 - 63	L4x4x1/4	0.95	0.71	10.8 K=1.00	20.411	1.9400	-323.00	39598.10	0.008

Bottom Girt Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T2	123 - 103	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T3	103 - 83	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T5	67.8177 - 63	L4x4x1/4	320.40	-2.170	20.869	0.104	144.81	-1.920	20.869	0.092

Bottom Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	ROHN TS1.5x16 GA	0.082	0.000	0.000	0.082 ✔	1.333	H1-3 ✔
T2	123 - 103	ROHN TS1.5x16 GA	0.108	0.000	0.000	0.108 ✔	1.333	H1-3 ✔
T3	103 - 83	ROHN TS1.5x16 GA	0.023	0.000	0.000	0.023 ✔	1.333	H1-3 ✔
T5	67.8177 - 63	L4x4x1/4	0.008	0.104	0.092	0.204 ✔	1.333	H1-3 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

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 $\frac{P}{P_a}$
T1	143 - 123	2L2x2x1/4x3/8	3.42	3.18	99.8 K=1.00	13.005	1.8750	-4891.98	24383.50	0.201
		2L 'a' > 18.3674 in - 170								

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	2L2x2x1/4x3/8	9.31	-0.095	21.600	0.004	0.00	0.000	21.600	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	2L2x2x1/4x3/8	0.201	0.004	0.000	0.205 ✔	1.333	H1-3 ✔

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 $\frac{P}{P_a}$
T1	143 - 123 (168)	C12x20.7	3.42	3.30	102.6 K=1.00	12.647	6.0900	-3267.79	77019.20	0.042
T1	143 - 123 (169)	C12x20.7	3.42	3.30	102.6 K=1.00	12.647	6.0900	-3304.71	77019.20	0.043
T1	143 - 123 (175)	C12x20.7	3.42	3.30	102.6 K=1.00	12.647	6.0900	-3189.64	77019.20	0.041
T1	143 - 123 (176)	C12x20.7	3.42	3.30	102.6 K=1.00	12.647	6.0900	-3140.08	77019.20	0.041
T1	143 - 123 (179)	C12x20.7	3.42	3.30	102.6 K=1.00	12.647	6.0900	-3187.71	77019.20	0.041
T1	143 - 123 (180)	C12x20.7	3.42	3.30	102.6 K=1.00	12.647	6.0900	-3287.50	77019.20	0.043

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123 (168)	C12x20.7	-15945.17	-8.900	21.600	0.412	-0.00	-0.000	21.600	0.000
T1	143 - 123 (169)	C12x20.7	-20780.00	-11.598	21.600	0.537	0.00	-0.000	21.600	0.000
T1	143 - 123 (175)	C12x20.7	-14312.92	-7.989	21.600	0.370	0.00	-0.000	21.600	0.000
T1	143 - 123 (176)	C12x20.7	-15463.17	-8.631	21.600	0.400	-0.00	-0.000	21.600	0.000
T1	143 - 123 (179)	C12x20.7	-14967.00	-8.354	21.600	0.387	-0.00	-0.000	21.600	0.000
T1	143 - 123 (180)	C12x20.7	-20847.08	-11.636	21.600	0.539	0.00	-0.000	21.600	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123 (168)	C12x20.7	0.042	0.412	0.000	0.454 ✔	1.333	H1-3 ✔
T1	143 - 123 (169)	C12x20.7	0.043	0.537	0.000	0.580 ✔	1.333	H1-3 ✔
T1	143 - 123 (175)	C12x20.7	0.041	0.370	0.000	0.411 ✔	1.333	H1-3 ✔
T1	143 - 123 (176)	C12x20.7	0.041	0.400	0.000	0.440 ✔	1.333	H1-3 ✔
T1	143 - 123 (179)	C12x20.7	0.041	0.387	0.000	0.428 ✔	1.333	H1-3 ✔
T1	143 - 123 (180)	C12x20.7	0.043	0.539	0.000	0.581 ✔	1.333	H1-3 ✔

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	143 - 123	ROHN 2.5 X-STR	20.00	2.41	31.3	30.000	2.2535	18210.30	67606.20	0.269
T2	123 - 103	ROHN 2.5 STD	20.00	2.41	30.5	30.000	1.7040	8738.31	51121.50	0.171

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	ROHN 2.5 X-STR	0.00	0.000	33.000	0.000	0.00	0.000	33.000	0.000
T2	123 - 103	ROHN 2.5 STD	0.00	0.000	33.000	0.000	0.00	0.000	33.000	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	ROHN 2.5 X-STR	0.269	0.000	0.000	0.269 ✔	1.333	H2-1 ✔
T2	123 - 103	ROHN 2.5 STD	0.171	0.000	0.000	0.171 ✔	1.333	H2-1 ✔

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	143 - 123	ROHN TS1.5x16 GA	4.18	3.89	91.4	21.600	0.2627	2380.64	5675.41	0.419 ✔
T2	123 - 103	ROHN TS1.5x16 GA	4.18	3.89	91.4	21.600	0.2627	2671.66	5675.41	0.471 ✔
T3	103 - 83	ROHN TS1.5x16 GA	4.18	3.89	91.4	21.600	0.2627	1177.44	5675.41	0.207 ✔
T4	83 - 67.8177	ROHN TS1.5x16 GA	4.18	3.89	91.4	21.600	0.2627	992.07	5675.41	0.175 ✔

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 $\frac{P}{P_a}$
T5	67.8177 - 63	L4x4x1/4	1.71	1.47	14.1	21.600	1.9400	4.84	41904.00	0.000

Horizontal Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T5	67.8177 - 63	L4x4x1/4	257.08	1.741	23.760	0.073	159.22	2.159	23.760	0.091

Horizontal Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T5	67.8177 - 63	L4x4x1/4	0.000	0.073	0.091	0.164 ✔	1.333	H2-1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

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	143 - 123	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	29.89	5675.41	0.005
T2	123 - 103	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	1088.52	5675.41	0.192
T3	103 - 83	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	420.46	5675.41	0.074
T4	83 - 67.8177	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	204.60	5675.41	0.036
T5	67.8177 - 63	L4x4x1/4	3.23	2.99	28.7	21.600	1.9400	1085.99	41904.00	0.026

Top Girt Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T2	123 - 103	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T3	103 - 83	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T4	83 - 67.8177	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T5	67.8177 - 63	L4x4x1/4	210.40	1.425	23.760	0.060	123.19	1.671	23.760	0.070

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	ROHN TS1.5x16 GA	0.005	0.000	0.000	0.005 ✔	1.333	H2-1 ✔
T2	123 - 103	ROHN TS1.5x16 GA	0.192	0.000	0.000	0.192 ✔	1.333	H2-1 ✔
T3	103 - 83	ROHN TS1.5x16 GA	0.074	0.000	0.000	0.074 ✔	1.333	H2-1 ✔
T4	83 - 67.8177	ROHN TS1.5x16 GA	0.036	0.000	0.000	0.036 ✔	1.333	H2-1 ✔
T5	67.8177 - 63	L4x4x1/4	0.026	0.060	0.070	0.156 ✔	1.333	H2-1 ✔

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	143 - 123	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	541.74	5675.41	0.095
T2	123 - 103	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	465.07	5675.41	0.082
T3	103 - 83	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	119.84	5675.41	0.021

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 $\frac{P}{P_a}$
T4	83 - 67.8177	ROHN TS1.5x16 GA	3.42	3.18	74.7	21.600	0.2627	645.08	5675.41	0.114*
T5	67.8177 - 63	L4x4x1/4	0.95	0.71	6.8	21.600	1.9400	9.41	41904.00	0.000

* DL controls

Bottom Girt Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T2	123 - 103	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T3	103 - 83	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T4	83 - 67.8177	ROHN TS1.5x16 GA	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000
T5	67.8177 - 63	L4x4x1/4	132.32	0.896	23.760	0.038	120.54	1.635	23.760	0.069

Bottom Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	ROHN TS1.5x16 GA	0.095	0.000	0.000	0.095 ✔	1.333	H2-1 ✔
T2	123 - 103	ROHN TS1.5x16 GA	0.082	0.000	0.000	0.082 ✔	1.333	H2-1 ✔
T3	103 - 83	ROHN TS1.5x16 GA	0.021	0.000	0.000	0.021 ✔	1.333	H2-1 ✔
T4	83 - 67.8177	ROHN TS1.5x16 GA	0.114	0.000	0.000	0.114* ✔	1.000	H2-1 ✔
T5	67.8177 - 63	L4x4x1/4	0.000	0.038	0.069	0.107 ✔	1.333	H2-1 ✔

* DL controls

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 $\frac{P}{P_a}$
T1	143 - 123	2L2x2x1/4x3/8 2L 'a' > 18.3674 in - 172	3.42	3.18	62.6	21.600	1.8750	5248.63	40500.00	0.130

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123	2L2x2x1/4x3/8	9.31	0.226	21.600	0.010	-0.00	0.000	21.600	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123	2L2x2x1/4x3/8	0.130	0.010	0.000	0.140 ✔	1.333	H2-1 ✔

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 $\frac{P}{P_a}$
T1	143 - 123 (168)	C12x20.7	3.42	3.30	49.5	21.600	6.0900	2536.11	131544.00	0.019
T1	143 - 123 (169)	C12x20.7	3.42	3.30	49.5	21.600	6.0900	2317.59	131544.00	0.018
T1	143 - 123 (175)	C12x20.7	3.42	3.30	49.5	21.600	6.0900	2407.43	131544.00	0.018
T1	143 - 123 (176)	C12x20.7	3.42	3.30	49.5	21.600	6.0900	2598.23	131544.00	0.020
T1	143 - 123 (179)	C12x20.7	3.42	3.30	49.5	21.600	6.0900	2204.61	131544.00	0.017
T1	143 - 123 (180)	C12x20.7	3.42	3.30	49.5	21.600	6.0900	2687.49	131544.00	0.020

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	143 - 123 (168)	C12x20.7	-14289.17	7.975	21.600	0.369	-0.00	0.000	27.000	0.000
T1	143 - 123 (169)	C12x20.7	-18599.92	10.381	21.600	0.481	-0.00	0.000	27.000	0.000
T1	143 - 123 (175)	C12x20.7	-13715.58	7.655	21.600	0.354	0.00	0.000	27.000	0.000
T1	143 - 123 (176)	C12x20.7	-14421.00	8.049	21.600	0.373	0.00	0.000	27.000	0.000
T1	143 - 123 (179)	C12x20.7	-12761.17	7.123	21.600	0.330	-0.00	0.000	27.000	0.000
T1	143 - 123 (180)	C12x20.7	-18477.75	10.313	21.600	0.477	-0.00	0.000	27.000	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123 (168)	C12x20.7	0.019	0.369	0.000	0.389 ✔	1.333	H2-1 ✔
T1	143 - 123 (169)	C12x20.7	0.018	0.481	0.000	0.498 ✔	1.333	H2-1 ✔
T1	143 - 123 (175)	C12x20.7	0.018	0.354	0.000	0.373 ✔	1.333	H2-1 ✔
T1	143 - 123 (176)	C12x20.7	0.020	0.373	0.000	0.392 ✔	1.333	H2-1 ✔

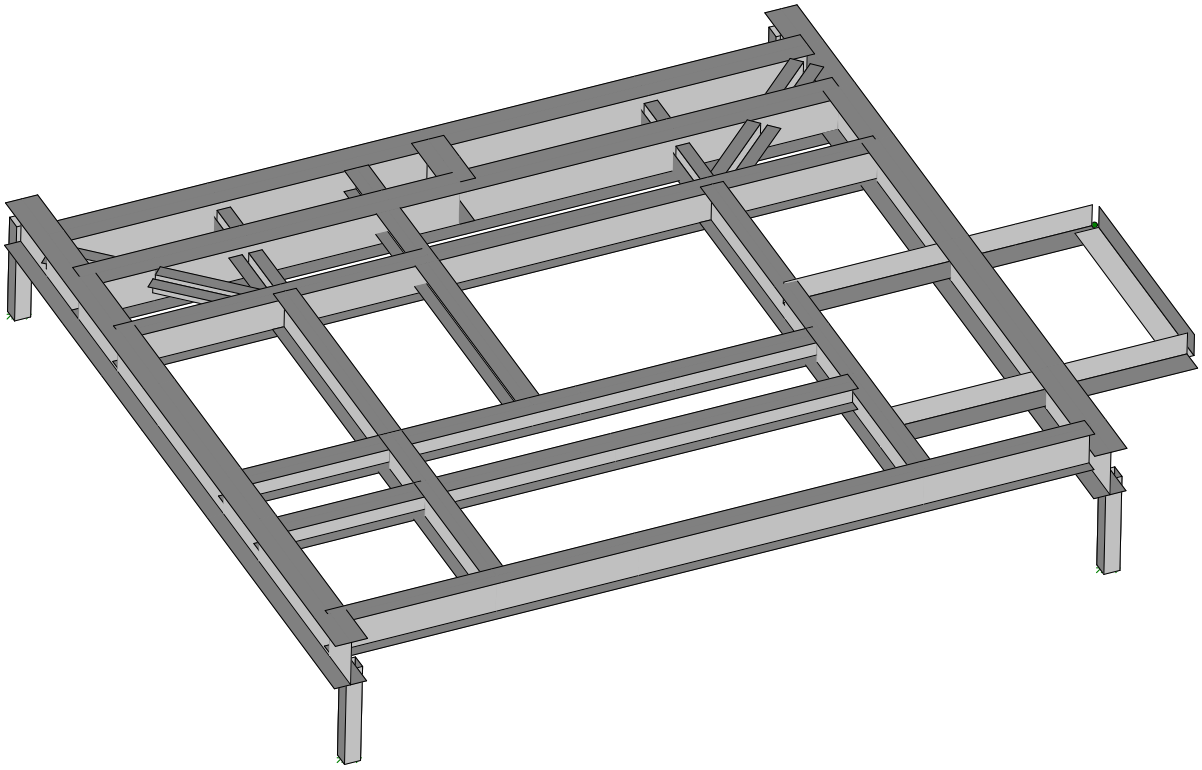
Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	143 - 123 (179)	C12x20.7	0.017	0.330	0.000	0.347 ✔	1.333	H2-1 ✔
T1	143 - 123 (180)	C12x20.7	0.020	0.477	0.000	0.498 ✔	1.333	H2-1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	143 - 123	Leg	ROHN 2.5 X-STR	3	-21395.10	81085.72	26.4	Pass
T2	123 - 103	Leg	ROHN 2.5 STD	60	-20241.60	51205.06	39.5	Pass
T3	103 - 83	Leg	ROHN 2.5 STD	93	-13963.10	51205.06	27.3	Pass
T4	83 - 67.8177	Leg	ROHN 2.5 X-STR	126	-13644.70	66913.40	20.4	Pass
T5	67.8177 - 63	Leg	ROHN 2.5 X-STR	153	-8885.98	64204.30	22.7	Pass
T1	143 - 123	Diagonal	ROHN TS1.5x16 GA	25	-2373.43	4915.60	48.3	Pass
T2	123 - 103	Diagonal	ROHN TS1.5x16 GA	88	-2793.80	4915.60	56.8	Pass
T3	103 - 83	Diagonal	ROHN TS1.5x16 GA	121	-1234.26	4915.60	25.1	Pass
T4	83 - 67.8177	Diagonal	ROHN TS1.5x16 GA	138	-876.98	4915.60	17.8	Pass
T5	67.8177 - 63	Horizontal	L4x4x1/4	162	-5.51	51186.53	14.2	Pass
T1	143 - 123	Top Girt	ROHN TS1.5x16 GA	4	-31.42	5580.26	0.6	Pass
T2	123 - 103	Top Girt	ROHN TS1.5x16 GA	63	-919.82	5580.26	16.5	Pass
T3	103 - 83	Top Girt	ROHN TS1.5x16 GA	95	-375.24	5580.26	6.7	Pass
T4	83 - 67.8177	Top Girt	ROHN TS1.5x16 GA	129	204.60	7565.32	2.7	Pass
T5	67.8177 - 63	Top Girt	L4x4x1/4	156	1085.99	55858.03	11.7	Pass
T1	143 - 123	Bottom Girt	ROHN TS1.5x16 GA	8	541.74	7565.32	7.2	Pass
T2	123 - 103	Bottom Girt	ROHN TS1.5x16 GA	64	-453.71	5580.26	8.1	Pass
T3	103 - 83	Bottom Girt	ROHN TS1.5x16 GA	99	-95.51	5580.26	1.7	Pass
T4	83 - 67.8177	Bottom Girt	ROHN TS1.5x16 GA	131	645.08	5675.41	11.4	Pass
T5	67.8177 - 63	Bottom Girt	L4x4x1/4	159	-323.00	52784.27	15.3	Pass
T1	143 - 123	Guy A@125.523	7/16	178	8542.34	10400.00	82.1	Pass
T1	143 - 123	Guy B@125.523	7/16	173	7264.74	10400.00	69.9	Pass
T1	143 - 123	Guy C@125.523 (-1 deg)	7/16	166	7402.62	10400.00	71.2	Pass
T1	143 - 123	Top Guy Pull-Off@125.523	2L2x2x1/4x3/8	170	-4891.98	32503.20	15.4	Pass
T1	143 - 123	Torque Arm Top@125.523	C12x20.7	180	-3287.50	102666.59	43.6	Pass
							Summary	
						Leg (T2)	39.5	Pass
						Diagonal (T2)	56.8	Pass
						Horizontal (T5)	14.2	Pass
						Top Girt (T2)	16.5	Pass
						Bottom Girt (T5)	15.3	Pass
						Guy A (T1)	82.1	Pass
						Guy B (T1)	69.9	Pass
						Guy C (T1)	71.2	Pass
						Top Guy Pull-Off (T1)	15.4	Pass
						Torque Arm Top (T1)	43.6	Pass
						Bolt Checks	79.4	Pass
						RATING =	**82.1**	**Pass**

APPENDIX C

PLATFORM CALCULATIONS



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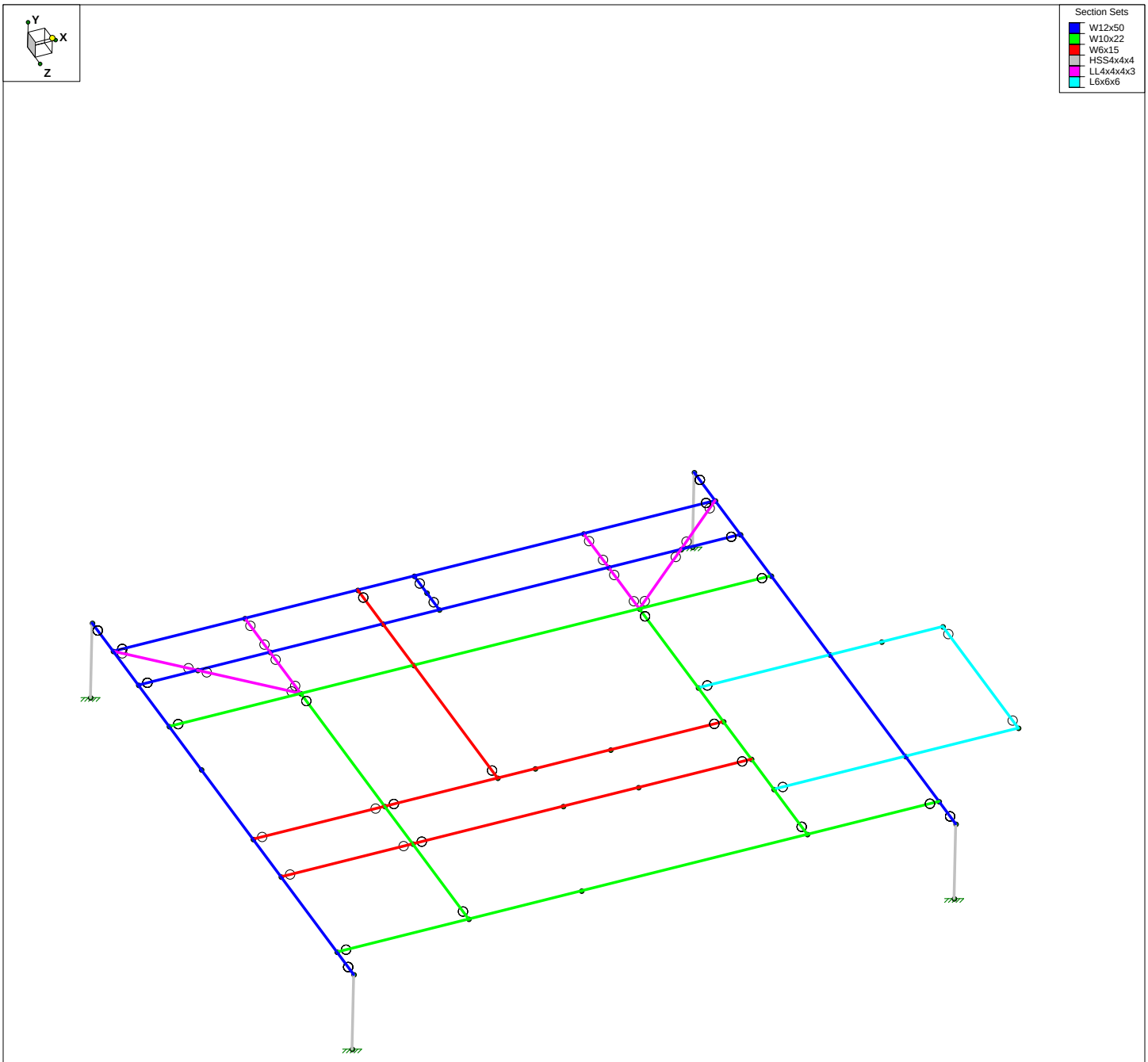

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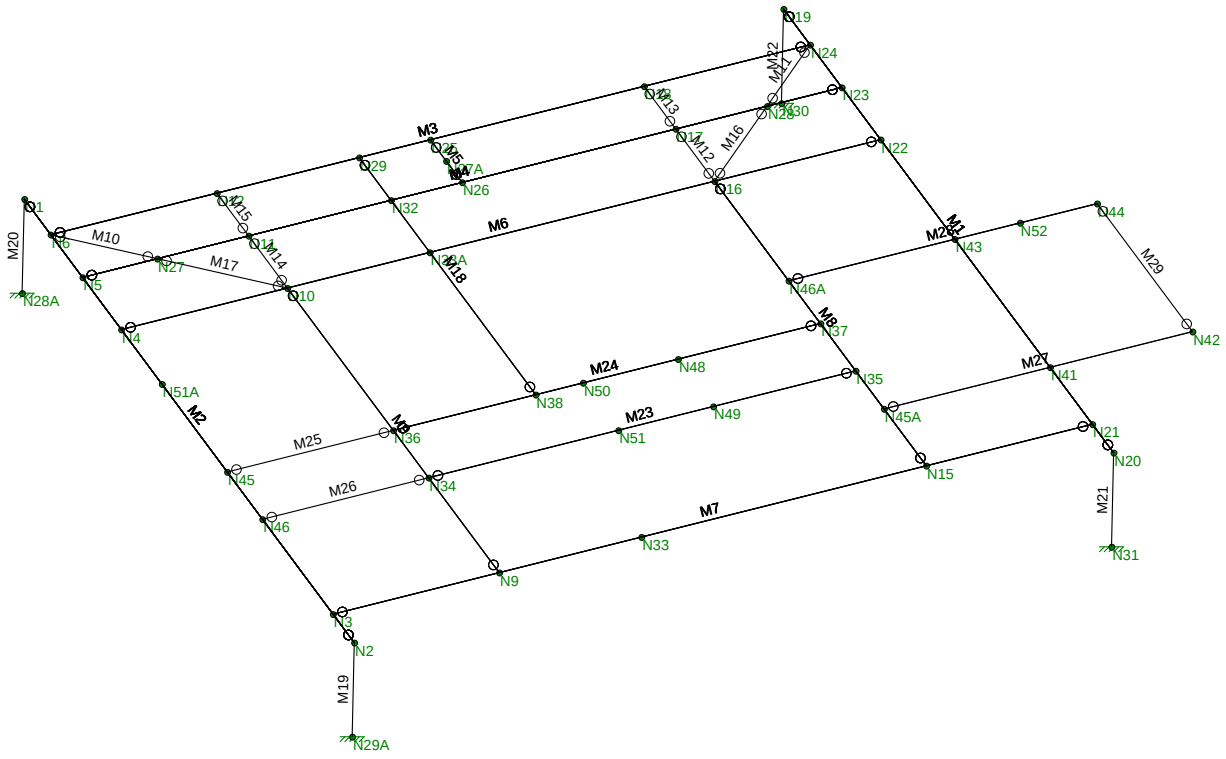

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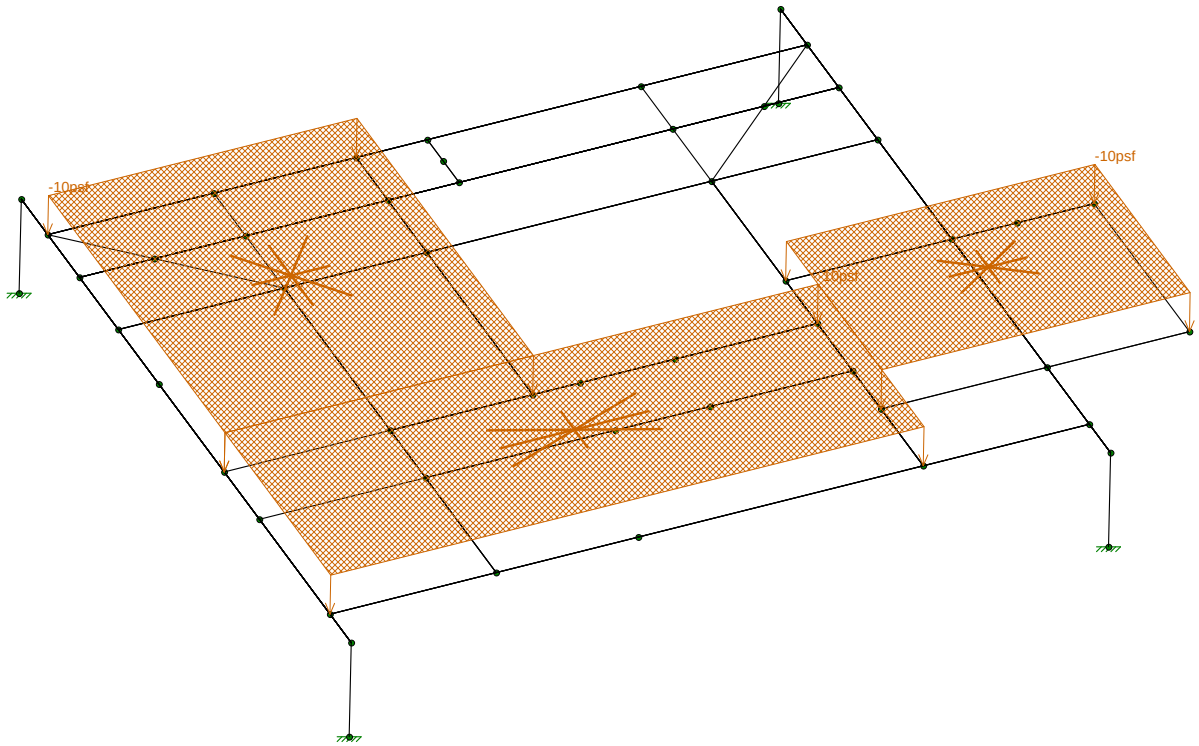

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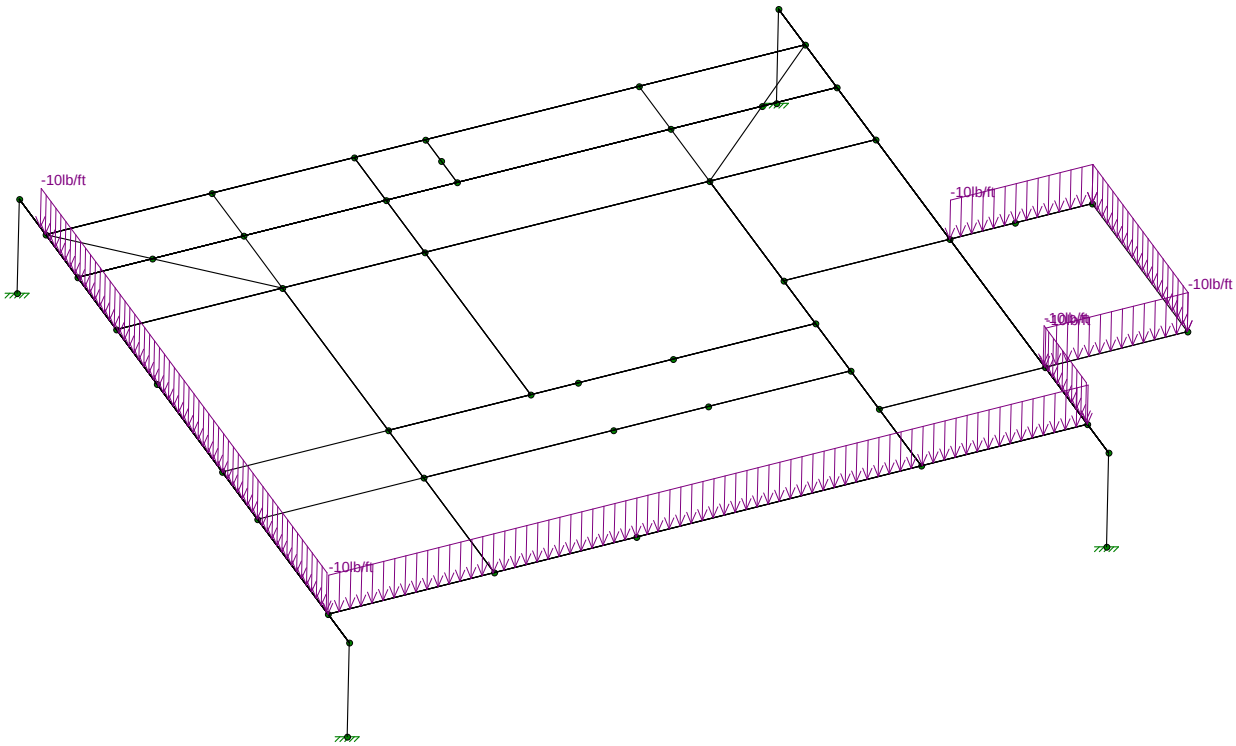

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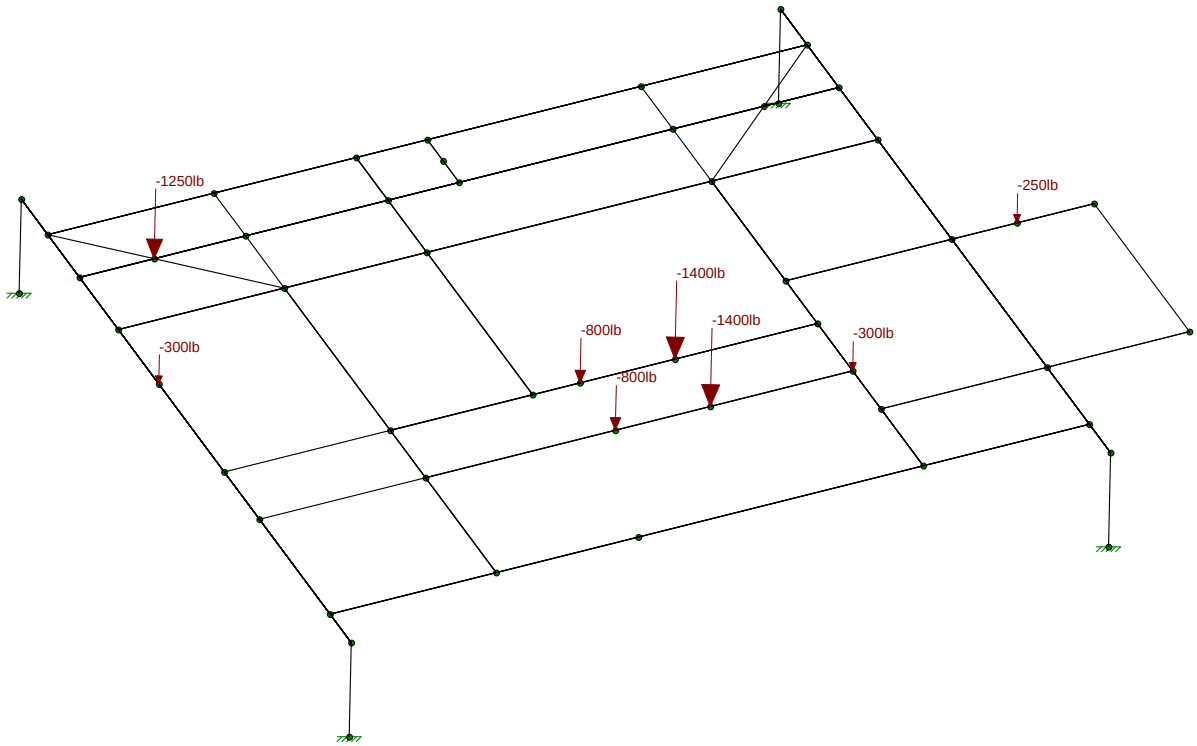

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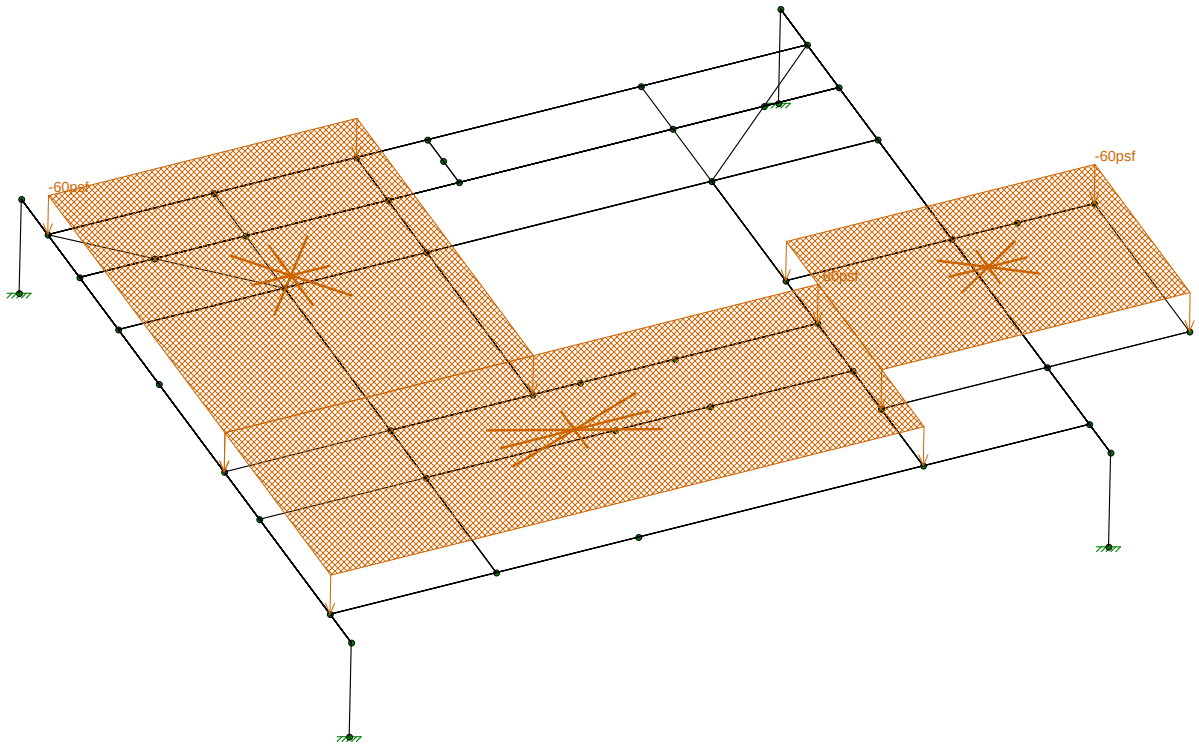

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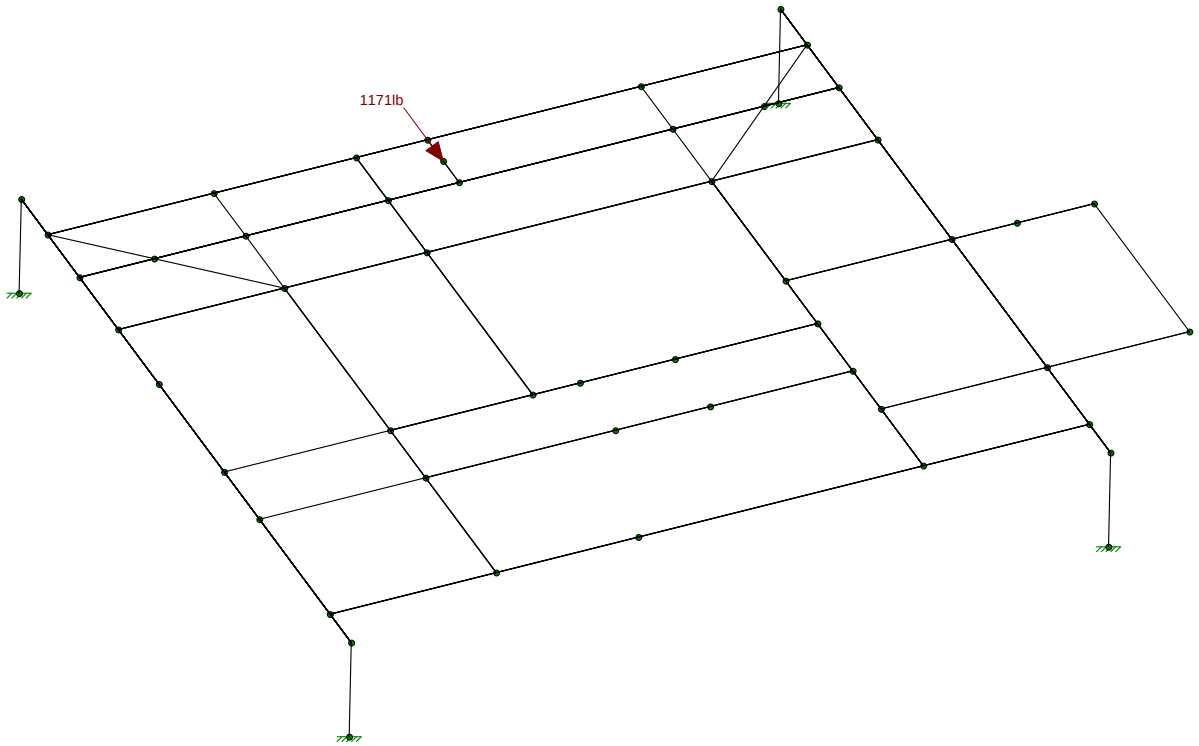

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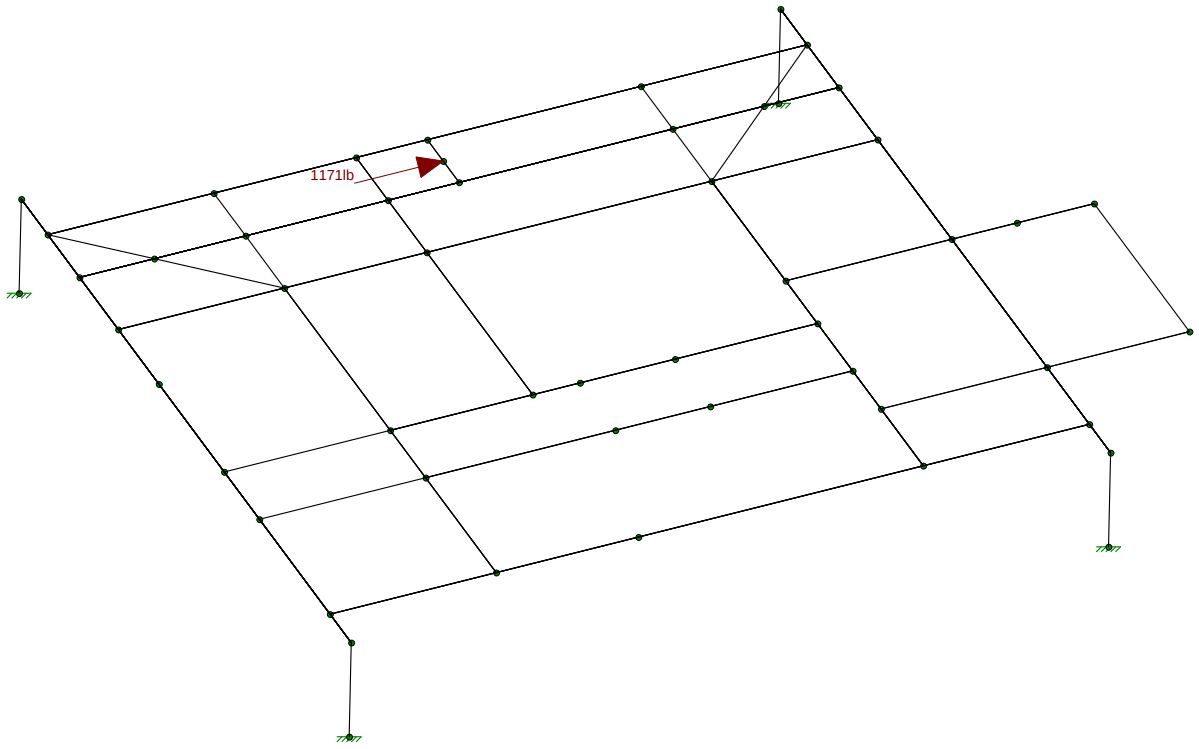

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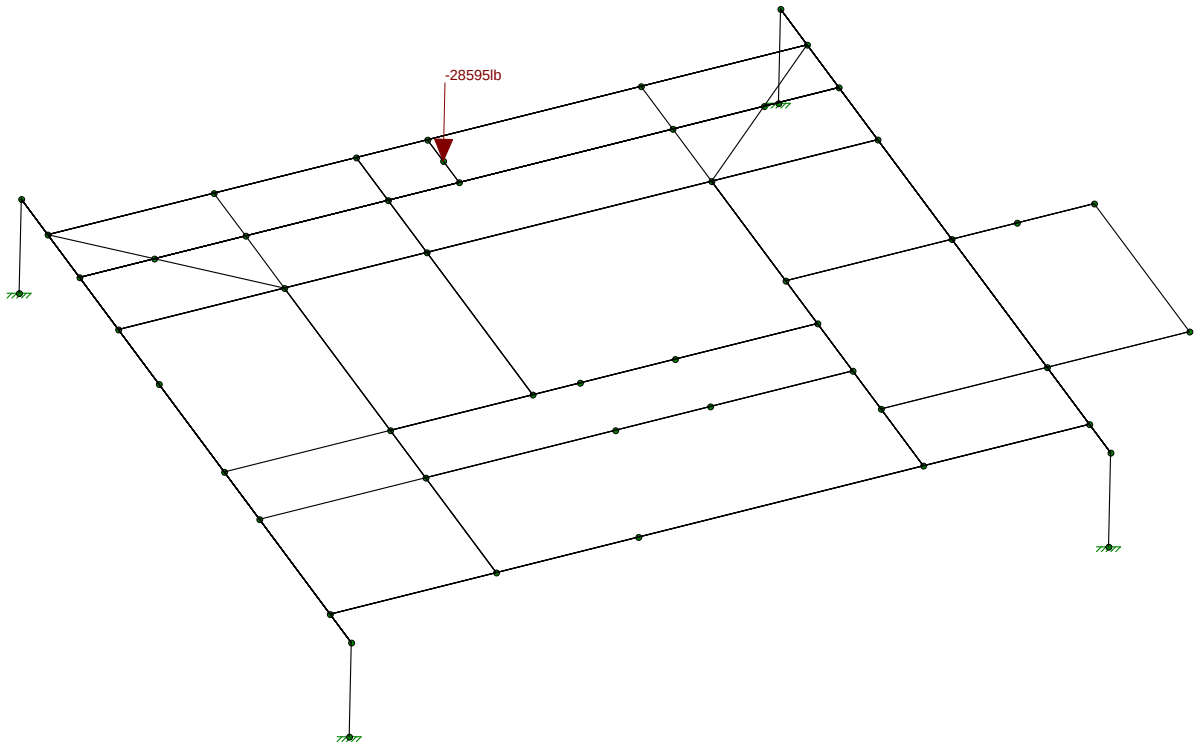

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Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Increase Nailing Capacity for Wind?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automaticly Iterate Stiffness for Walls?	Yes
Maximum Iteration Number for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 13th(360-05): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

Global, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct Z	.02
Ct X	.02
T Z (sec)	Not Entered
T X (sec)	Not Entered
R Z	3
R X	3
Ct Exp. Z	.75
Ct Exp. X	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Seismic Detailing Code	ASCE 7-05
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	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.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W12x50	W12x50	Beam	Wide Flange	A36 Gr.36	Typical	14.6	56.3	391	1.71
2	W10x22	W10x22	Beam	Wide Flange	A36 Gr.36	Typical	6.49	11.4	118	.239
3	W6x15	W6x15	Beam	Wide Flange	A36 Gr.36	Typical	4.43	9.32	29.1	.101
4	HSS4x4x4	HSS4x4x4	Column	Wide Flange	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
5	LL4x4x4x3	LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical	3.86	12.2	6	.0876
6	L6x6x6	L6x6x6	Beam	Wide Flange	A36 Gr.36	Typical	4.38	15.4	15.4	.218

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphra...
1	N1	0	0	0	0	
2	N2	0	0	15.583333	0	
3	N3	0	0	14.583333	0	
4	N4	0	0	4.583333	0	
5	N5	0	0	2.75	0	
6	N6	0	0	1.25	0	
7	N9	3.5	0	14.583333	0	
8	N10	3.5	0	4.583333	0	
9	N11	3.5	0	2.75	0	
10	N12	3.5	0	1.25	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphra...
11	N15	12.5	0	14.583333	0	
12	N16	12.5	0	4.583333	0	
13	N17	12.5	0	2.75	0	
14	N18	12.5	0	1.25	0	
15	N19	16	0	0	0	
16	N20	16	0	15.583333	0	
17	N21	16	0	14.583333	0	
18	N22	16	0	4.583333	0	
19	N23	16	0	2.75	0	
20	N24	16	0	1.25	0	
21	N25	8	0	1.25	0	
22	N26	8	0	2.75	0	
23	N27	1.575	0	2.75	0	
24	N28	14.425	0	2.75	0	
25	N29	6.5	0	1.25	0	
26	N33	6.5	0	14.583333	0	
27	N27A	8	0	2	0	
28	N28A	0	-2.25	0	0	
29	N29A	0	-2.25	15.583333	0	
30	N30	16	-2.25	0	0	
31	N31	16	-2.25	15.583333	0	
32	N32	6.5	0	2.75	0	
33	N33A	6.5	0	4.583333	0	
34	N34	3.5	0	11.25	0	
35	N35	12.5	0	11.25	0	
36	N36	3.5	0	9.583333	0	
37	N37	12.5	0	9.583333	0	
38	N38	6.5	0	9.583333	0	
39	N41	16	0	12.583333	0	
40	N42	19	0	12.583333	0	
41	N43	16	0	8.083333	0	
42	N44	19	0	8.083333	0	
43	N45	0	0	9.583333	0	
44	N46	0	0	11.25	0	
45	N45A	12.5	0	12.583333	0	
46	N46A	12.5	0	8.083333	0	
47	N48	9.5	0	9.583333	0	
48	N49	9.5	0	11.25	0	
49	N50	7.5	0	9.583333	0	
50	N51	7.5	0	11.25	0	
51	N51A	0	0	6.5	0	
52	N52	17.375	0	8.083333	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	N29A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N31	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
3	N30	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
4	N28A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N19	N20			W12x50	Beam	Wide Flange	A36 Gr.36	Typical
2	M2	N1	N2			W12x50	Beam	Wide Flange	A36 Gr.36	Typical
3	M3	N6	N24			W12x50	Beam	Wide Flange	A36 Gr.36	Typical
4	M4	N5	N23			W12x50	Beam	Wide Flange	A36 Gr.36	Typical
5	M5	N25	N26			W12x50	Beam	Wide Flange	A36 Gr.36	Typical
6	M6	N4	N22			W10x22	Beam	Wide Flange	A36 Gr.36	Typical
7	M7	N3	N21			W10x22	Beam	Wide Flange	A36 Gr.36	Typical
8	M8	N16	N15			W10x22	Beam	Wide Flange	A36 Gr.36	Typical
9	M9	N10	N9			W10x22	Beam	Wide Flange	A36 Gr.36	Typical
10	M10	N6	N27			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
11	M11	N24	N28			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
12	M12	N16	N17			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
13	M13	N17	N18			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
14	M14	N10	N11			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
15	M15	N11	N12			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
16	M16	N28	N16			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
17	M17	N27	N10			LL4x4x4x3	HBrace	Wide Flange	A36 Gr.36	Typical
18	M18	N38	N29			W6x15	Beam	Wide Flange	A36 Gr.36	Typical
19	M19	N29A	N2			HSS4x4x4	Column	Wide Flange	A36 Gr.36	Typical
20	M20	N28A	N1			HSS4x4x4	Column	Wide Flange	A36 Gr.36	Typical
21	M21	N31	N20			HSS4x4x4	Column	Wide Flange	A36 Gr.36	Typical
22	M22	N30	N19			HSS4x4x4	Column	Wide Flange	A36 Gr.36	Typical
23	M23	N34	N35			W6x15	Beam	Wide Flange	A36 Gr.36	Typical
24	M24	N36	N37			W6x15	Beam	Wide Flange	A36 Gr.36	Typical
25	M25	N45	N36			W6x15	Beam	Wide Flange	A36 Gr.36	Typical
26	M26	N46	N34			W6x15	Beam	Wide Flange	A36 Gr.36	Typical
27	M27	N45A	N42			L6x6x6	Beam	Wide Flange	A36 Gr.36	Typical
28	M28	N46A	N44			L6x6x6	Beam	Wide Flange	A36 Gr.36	Typical
29	M29	N42	N44		270	L6x6x6	Beam	Wide Flange	A36 Gr.36	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-torq...	Kyy	Kzz	Cb	Function
1	M1	W12x50	15.5833									Lateral
2	M2	W12x50	15.5833									Lateral
3	M3	W12x50	16									Lateral
4	M4	W12x50	16									Lateral
5	M5	W12x50	1.5									Lateral
6	M6	W10x22	16									Lateral
7	M7	W10x22	16									Lateral
8	M8	W10x22	10									Lateral
9	M9	W10x22	10									Lateral
10	M10	LL4x4x4x3	2.175									Lateral
11	M11	LL4x4x4x3	2.175									Lateral
12	M12	LL4x4x4x3	1.8333									Lateral
13	M13	LL4x4x4x3	1.5									Lateral
14	M14	LL4x4x4x3	1.8333									Lateral
15	M15	LL4x4x4x3	1.5									Lateral
16	M16	LL4x4x4x3	2.6583									Lateral
17	M17	LL4x4x4x3	2.6583									Lateral
18	M18	W6x15	8.3333									Lateral
19	M19	HSS4x4x4	2.25									Lateral
20	M20	HSS4x4x4	2.25									Lateral
21	M21	HSS4x4x4	2.25									Lateral
22	M22	HSS4x4x4	2.25									Lateral
23	M23	W6x15	9									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-torq...	Kyy	Kzz	Cb	Function
24	M24	W6x15	9									Lateral
25	M25	W6x15	3.5									Lateral
26	M26	W6x15	3.5									Lateral
27	M27	L6x6x6	6.5									Lateral
28	M28	L6x6x6	6.5									Lateral
29	M29	L6x6x6	4.5									Lateral

Joint Loads and Enforced Displacements (BLC 4 : Equipment DL)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N27	L	Y	-1250
2	N35	L	Y	-300
3	N49	L	Y	-1400
4	N48	L	Y	-1400
5	N50	L	Y	-800
6	N51	L	Y	-800
7	N51A	L	Y	-300
8	N52	L	Y	-250

Joint Loads and Enforced Displacements (BLC 6 : Wind Z Frame)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N27A	L	Z	1171

Joint Loads and Enforced Displacements (BLC 7 : Wind X Frame)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N27A	L	X	1171

Joint Loads and Enforced Displacements (BLC 10 : Tower)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N27A	L	Y	-28595

Member Point Loads

Member Label	Direction	Magnitude[lb,lb-ft]	Location[ft,%]
No Data to Print ...			

Member Distributed Loads (BLC 3 : Handrail DL)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M7	Y	-10	-10	0	0
2	M2	Y	-10	-10	1	14.5
3	M27	Y	-10	-10	3.5	0
4	M28	Y	-10	-10	3.5	0
5	M29	Y	-10	-10	0	0
6	M1	Y	-10	-10	12.5	14.5

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M2	Y	-6.6354	-6.6354	1.25	1.9444
2	M2	Y	-6.6354	-3.3854	1.9444	2.6389
3	M2	Y	-3.3854	-3.3854	2.6389	3.3333
4	M2	Y	-3.3854	-3.3854	3.3333	4.0278
5	M2	Y	-3.3854	-3.3854	4.0278	4.7222

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
6	M2	Y	-3.3854	-9.8854	4.7222	5.4167
7	M2	Y	-9.8854	-16.3854	5.4167	6.1111
8	M2	Y	-16.3854	-19.6354	6.1111	6.8056
9	M2	Y	-19.6354	-19.6354	6.8056	7.5
10	M2	Y	-19.6354	-16.3854	7.5	8.1944
11	M2	Y	-16.3854	-9.8854	8.1944	8.8889
12	M2	Y	-9.8854	-3.3854	8.8889	9.5833
13	M3	Y	-6.9444	-6.9444	.65	5.85
14	M4	Y	-3.8194	-10.7639	2.22e-16	.65
15	M4	Y	-10.7639	-14.2361	.65	1.3
16	M4	Y	-14.2361	-14.2361	1.3	1.95
17	M4	Y	-14.2361	-14.2361	1.95	2.6
18	M4	Y	-14.2361	-14.2361	2.6	3.25
19	M4	Y	-14.2361	-14.2361	3.25	3.9
20	M4	Y	-14.2361	-14.2361	3.9	4.55
21	M4	Y	-14.2361	-14.2361	4.55	5.2
22	M4	Y	-14.2361	-10.7639	5.2	5.85
23	M4	Y	-10.7639	-3.8194	5.85	6.5
24	M6	Y	-.6944	-14.5833	6.106e-16	.65
25	M6	Y	-14.5833	-25	.65	1.3
26	M6	Y	-25	-28.4722	1.3	1.95
27	M6	Y	-28.4722	-25	1.95	2.6
28	M6	Y	-25	-18.0556	2.6	3.25
29	M6	Y	-18.0556	-18.0556	3.25	3.9
30	M6	Y	-18.0556	-25	3.9	4.55
31	M6	Y	-25	-25	4.55	5.2
32	M6	Y	-25	-14.5833	5.2	5.85
33	M6	Y	-14.5833	-.6944	5.85	6.5
34	M9	Y	-.9286	-13.9286	.1389	.8333
35	M9	Y	-13.9286	-26.9286	.8333	1.5278
36	M9	Y	-26.9286	-33.4286	1.5278	2.2222
37	M9	Y	-33.4286	-33.4286	2.2222	2.9167
38	M9	Y	-33.4286	-26.9286	2.9167	3.6111
39	M9	Y	-26.9286	-13.9286	3.6111	4.3056
40	M9	Y	-13.9286	-.9286	4.3056	5
41	M18	Y	-3.3854	-9.8854	2.665e-15	.6944
42	M18	Y	-9.8854	-13.1354	.6944	1.3889
43	M18	Y	-13.1354	-13.1354	1.3889	2.0833
44	M18	Y	-13.1354	-13.1354	2.0833	2.7778
45	M18	Y	-13.1354	-13.1354	2.7778	3.4722
46	M18	Y	-13.1354	-9.8854	3.4722	4.1667
47	M18	Y	-9.8854	-3.3854	4.1667	4.8611
48	M18	Y	-3.3854	-3.3854	4.8611	5.5556
49	M18	Y	-3.3854	-3.3854	5.5556	6.25
50	M18	Y	-3.3854	-3.3854	6.25	6.9444
51	M18	Y	-3.3854	-6.6354	6.9444	7.6389
52	M18	Y	-6.6354	-6.6354	7.6389	8.3333
53	M24	Y	-4.6296	-11.5741	.4	1.05
54	M24	Y	-11.5741	-11.5741	1.05	1.7
55	M24	Y	-11.5741	-4.6296	1.7	2.35
56	M25	Y	-4.3403	-11.2847	.65	1.3
57	M25	Y	-11.2847	-14.7569	1.3	1.95
58	M25	Y	-14.7569	-11.2847	1.95	2.6
59	M25	Y	-11.2847	-4.3403	2.6	3.25
60	M2	Y	-5.3711	-5.3711	10.0833	10.5833
61	M2	Y	-5.3711	-2.7669	10.5833	11.0833
62	M2	Y	-2.7669	-2.7669	11.0833	11.5833

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
63	M2	Y	-2.7669	-7.9753	11.5833	12.0833
64	M2	Y	-7.9753	-13.1836	12.0833	12.5833
65	M2	Y	-13.1836	-13.1836	12.5833	13.0833
66	M2	Y	-13.1836	-7.9753	13.0833	13.5833
67	M2	Y	-7.9753	-2.7669	13.5833	14.0833
68	M7	Y	-2.6042	-7.6042	2.498e-15	.5208
69	M7	Y	-7.6042	-12.6042	.5208	1.0417
70	M7	Y	-12.6042	-15.1042	1.0417	1.5625
71	M7	Y	-15.1042	-12.6042	1.5625	2.0833
72	M7	Y	-12.6042	-7.6042	2.0833	2.6042
73	M7	Y	-7.6042	-2.6042	2.6042	3.125
74	M7	Y	-2.6042	-2.6042	3.125	3.6458
75	M7	Y	-2.6042	-7.6042	3.6458	4.1667
76	M7	Y	-7.6042	-12.6042	4.1667	4.6875
77	M7	Y	-12.6042	-15.1042	4.6875	5.2083
78	M7	Y	-15.1042	-15.1042	5.2083	5.7292
79	M7	Y	-15.1042	-15.1042	5.7292	6.25
80	M7	Y	-15.1042	-15.1042	6.25	6.7708
81	M7	Y	-15.1042	-15.1042	6.7708	7.2917
82	M7	Y	-15.1042	-15.1042	7.2917	7.8125
83	M7	Y	-15.1042	-15.1042	7.8125	8.3333
84	M7	Y	-15.1042	-15.1042	8.3333	8.8542
85	M7	Y	-15.1042	-15.1042	8.8542	9.375
86	M7	Y	-15.1042	-15.1042	9.375	9.8958
87	M7	Y	-15.1042	-15.1042	9.8958	10.4167
88	M7	Y	-15.1042	-15.1042	10.4167	10.9375
89	M7	Y	-15.1042	-12.6042	10.9375	11.4583
90	M7	Y	-12.6042	-7.6042	11.4583	11.9792
91	M7	Y	-7.6042	-2.6042	11.9792	12.5
92	M8	Y	-5.3711	-5.3711	5.5	6
93	M8	Y	-5.3711	-2.7669	6	6.5
94	M8	Y	-2.7669	-2.7669	6.5	7
95	M8	Y	-2.7669	-7.9753	7	7.5
96	M8	Y	-7.9753	-13.1836	7.5	8
97	M8	Y	-13.1836	-13.1836	8	8.5
98	M8	Y	-13.1836	-7.9753	8.5	9
99	M8	Y	-7.9753	-2.7669	9	9.5
100	M9	Y	-.5208	-10.9375	5	5.5
101	M9	Y	-10.9375	-13.5417	5.5	6
102	M9	Y	-13.5417	-5.7292	6	6.5
103	M9	Y	-5.7292	-5.7292	6.5	7
104	M9	Y	-5.7292	-16.1458	7	7.5
105	M9	Y	-16.1458	-26.5625	7.5	8
106	M9	Y	-26.5625	-29.1667	8	8.5
107	M9	Y	-29.1667	-21.3542	8.5	9
108	M9	Y	-21.3542	-10.9375	9	9.5
109	M9	Y	-10.9375	-.5208	9.5	10
110	M18	Y	-5.1979	-5.1979	0	.501
111	M23	Y	-.2941	-10.2941	.1458	.6667
112	M23	Y	-10.2941	-17.7941	.6667	1.1875
113	M23	Y	-17.7941	-22.7941	1.1875	1.7083
114	M23	Y	-22.7941	-25.2941	1.7083	2.2292
115	M23	Y	-25.2941	-25.2941	2.2292	2.75
116	M23	Y	-25.2941	-25.2941	2.75	3.2708
117	M23	Y	-25.2941	-25.2941	3.2708	3.7917
118	M23	Y	-25.2941	-25.2941	3.7917	4.3125
119	M23	Y	-25.2941	-25.2941	4.3125	4.8333

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
120	M23	Y	-25.2941	-25.2941	4.8333	5.3542
121	M23	Y	-25.2941	-25.2941	5.3542	5.875
122	M23	Y	-25.2941	-25.2941	5.875	6.3958
123	M23	Y	-25.2941	-25.2941	6.3958	6.9167
124	M23	Y	-25.2941	-22.7941	6.9167	7.4375
125	M23	Y	-22.7941	-17.7941	7.4375	7.9583
126	M23	Y	-17.7941	-10.2941	7.9583	8.4792
127	M23	Y	-10.2941	-.2941	8.4792	9
128	M24	Y	-2.6471	-7.6471	.1458	.6667
129	M24	Y	-7.6471	-10.1471	.6667	1.1875
130	M24	Y	-10.1471	-10.1471	1.1875	1.7083
131	M24	Y	-10.1471	-10.1471	1.7083	2.2292
132	M24	Y	-10.1471	-7.6471	2.2292	2.75
133	M24	Y	-7.6471	-7.6471	2.75	3.2708
134	M24	Y	-7.6471	-10.1471	3.2708	3.7917
135	M24	Y	-10.1471	-10.1471	3.7917	4.3125
136	M24	Y	-10.1471	-10.1471	4.3125	4.8333
137	M24	Y	-10.1471	-10.1471	4.8333	5.3542
138	M24	Y	-10.1471	-10.1471	5.3542	5.875
139	M24	Y	-10.1471	-10.1471	5.875	6.3958
140	M24	Y	-10.1471	-10.1471	6.3958	6.9167
141	M24	Y	-10.1471	-10.1471	6.9167	7.4375
142	M24	Y	-10.1471	-10.1471	7.4375	7.9583
143	M24	Y	-10.1471	-7.6471	7.9583	8.4792
144	M24	Y	-7.6471	-2.6471	8.4792	9
145	M25	Y	-2.9167	-7.9167	3.331e-16	.5208
146	M25	Y	-7.9167	-10.4167	.5208	1.0417
147	M25	Y	-10.4167	-10.4167	1.0417	1.5625
148	M25	Y	-10.4167	-10.4167	1.5625	2.0833
149	M25	Y	-10.4167	-7.9167	2.0833	2.6042
150	M25	Y	-7.9167	-2.9167	2.6042	3.125
151	M26	Y	-.744	-11.1607	1.665e-16	.5
152	M26	Y	-11.1607	-18.9732	.5	1
153	M26	Y	-18.9732	-24.1815	1	1.5
154	M26	Y	-24.1815	-24.1815	1.5	2
155	M26	Y	-24.1815	-18.9732	2	2.5
156	M26	Y	-18.9732	-11.1607	2.5	3
157	M26	Y	-11.1607	-.744	3	3.5
158	M1	Y	-.4643	-9.75	8.0833	8.5333
159	M1	Y	-9.75	-19.0357	8.5333	8.9833
160	M1	Y	-19.0357	-28.3214	8.9833	9.4333
161	M1	Y	-28.3214	-32.9643	9.4333	9.8833
162	M1	Y	-32.9643	-32.9643	9.8833	10.3333
163	M1	Y	-32.9643	-32.9643	10.3333	10.7833
164	M1	Y	-32.9643	-28.3214	10.7833	11.2333
165	M1	Y	-28.3214	-19.0357	11.2333	11.6833
166	M1	Y	-19.0357	-9.75	11.6833	12.1333
167	M1	Y	-9.75	-.4643	12.1333	12.5833
168	M8	Y	-2.6116	-7.2545	3.95	4.4
169	M8	Y	-7.2545	-11.8973	4.4	4.85
170	M8	Y	-11.8973	-16.5402	4.85	5.3
171	M8	Y	-16.5402	-18.8616	5.3	5.75
172	M8	Y	-18.8616	-16.5402	5.75	6.2
173	M8	Y	-16.5402	-11.8973	6.2	6.65
174	M8	Y	-11.8973	-7.2545	6.65	7.1
175	M8	Y	-7.2545	-2.6116	7.1	7.55
176	M27	Y	-2.4107	-6.9107	1.416e-15	.4643

Member Distributed Loads (BLC 11 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
177	M27	Y	-6.9107	-11.4107	.4643	.9286
178	M27	Y	-11.4107	-15.9107	.9286	1.3929
179	M27	Y	-15.9107	-15.9107	1.3929	1.8571
180	M27	Y	-15.9107	-11.4107	1.8571	2.3214
181	M27	Y	-11.4107	-6.9107	2.3214	2.7857
182	M27	Y	-6.9107	-2.4107	2.7857	3.25
183	M27	Y	-2.4107	-2.4107	3.25	3.7143
184	M27	Y	-2.4107	-6.9107	3.7143	4.1786
185	M27	Y	-6.9107	-11.4107	4.1786	4.6429
186	M27	Y	-11.4107	-13.6607	4.6429	5.1071
187	M27	Y	-13.6607	-11.4107	5.1071	5.5714
188	M27	Y	-11.4107	-6.9107	5.5714	6.0357
189	M27	Y	-6.9107	-2.4107	6.0357	6.5
190	M28	Y	-2.4107	-6.9107	3.58e-15	.4643
191	M28	Y	-6.9107	-11.4107	.4643	.9286
192	M28	Y	-11.4107	-15.9107	.9286	1.3929
193	M28	Y	-15.9107	-15.9107	1.3929	1.8571
194	M28	Y	-15.9107	-11.4107	1.8571	2.3214
195	M28	Y	-11.4107	-6.9107	2.3214	2.7857
196	M28	Y	-6.9107	-2.4107	2.7857	3.25
197	M28	Y	-2.4107	-2.4107	3.25	3.7143
198	M28	Y	-2.4107	-6.9107	3.7143	4.1786
199	M28	Y	-6.9107	-11.4107	4.1786	4.6429
200	M28	Y	-11.4107	-13.6607	4.6429	5.1071
201	M28	Y	-13.6607	-11.4107	5.1071	5.5714
202	M28	Y	-11.4107	-6.9107	5.5714	6.0357
203	M28	Y	-6.9107	-2.4107	6.0357	6.5
204	M29	Y	-2.6116	-7.2545	.45	.9
205	M29	Y	-7.2545	-11.8973	.9	1.35
206	M29	Y	-11.8973	-14.2187	1.35	1.8
207	M29	Y	-14.2187	-14.2187	1.8	2.25
208	M29	Y	-14.2187	-14.2188	2.25	2.7
209	M29	Y	-14.2188	-11.8973	2.7	3.15
210	M29	Y	-11.8973	-7.2545	3.15	3.6
211	M29	Y	-7.2545	-2.6116	3.6	4.05

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
1	M2	Y	-39.8125	-39.8125	1.25	1.9444
2	M2	Y	-39.8125	-20.3125	1.9444	2.6389
3	M2	Y	-20.3125	-20.3125	2.6389	3.3333
4	M2	Y	-20.3125	-20.3125	3.3333	4.0278
5	M2	Y	-20.3125	-20.3125	4.0278	4.7222
6	M2	Y	-20.3125	-59.3125	4.7222	5.4167
7	M2	Y	-59.3125	-98.3125	5.4167	6.1111
8	M2	Y	-98.3125	-117.8125	6.1111	6.8056
9	M2	Y	-117.8125	-117.8125	6.8056	7.5
10	M2	Y	-117.8125	-98.3125	7.5	8.1944
11	M2	Y	-98.3125	-59.3125	8.1944	8.8889
12	M2	Y	-59.3125	-20.3125	8.8889	9.5833
13	M3	Y	-41.6667	-41.6667	.65	5.85
14	M4	Y	-22.9167	-64.5833	2.22e-16	.65
15	M4	Y	-64.5833	-85.4167	.65	1.3
16	M4	Y	-85.4167	-85.4167	1.3	1.95
17	M4	Y	-85.4167	-85.4167	1.95	2.6
18	M4	Y	-85.4167	-85.4167	2.6	3.25

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
19	M4	Y	-85.4167	-85.4167	3.25	3.9
20	M4	Y	-85.4167	-85.4167	3.9	4.55
21	M4	Y	-85.4167	-85.4167	4.55	5.2
22	M4	Y	-85.4167	-64.5833	5.2	5.85
23	M4	Y	-64.5833	-22.9167	5.85	6.5
24	M6	Y	-4.1667	-87.5	6.106e-16	.65
25	M6	Y	-87.5	-150	.65	1.3
26	M6	Y	-150	-170.8333	1.3	1.95
27	M6	Y	-170.8333	-150	1.95	2.6
28	M6	Y	-150	-108.3333	2.6	3.25
29	M6	Y	-108.3333	-108.3333	3.25	3.9
30	M6	Y	-108.3333	-150	3.9	4.55
31	M6	Y	-150	-150	4.55	5.2
32	M6	Y	-150	-87.5	5.2	5.85
33	M6	Y	-87.5	-4.1667	5.85	6.5
34	M9	Y	-5.5714	-83.5714	.1389	.8333
35	M9	Y	-83.5714	-161.5714	.8333	1.5278
36	M9	Y	-161.5714	-200.5714	1.5278	2.2222
37	M9	Y	-200.5714	-200.5714	2.2222	2.9167
38	M9	Y	-200.5714	-161.5714	2.9167	3.6111
39	M9	Y	-161.5714	-83.5714	3.6111	4.3056
40	M9	Y	-83.5714	-5.5714	4.3056	5
41	M18	Y	-20.3125	-59.3125	2.665e-15	.6944
42	M18	Y	-59.3125	-78.8125	.6944	1.3889
43	M18	Y	-78.8125	-78.8125	1.3889	2.0833
44	M18	Y	-78.8125	-78.8125	2.0833	2.7778
45	M18	Y	-78.8125	-78.8125	2.7778	3.4722
46	M18	Y	-78.8125	-59.3125	3.4722	4.1667
47	M18	Y	-59.3125	-20.3125	4.1667	4.8611
48	M18	Y	-20.3125	-20.3125	4.8611	5.5556
49	M18	Y	-20.3125	-20.3125	5.5556	6.25
50	M18	Y	-20.3125	-20.3125	6.25	6.9444
51	M18	Y	-20.3125	-39.8125	6.9444	7.6389
52	M18	Y	-39.8125	-39.8125	7.6389	8.3333
53	M24	Y	-27.7778	-69.4444	.4	1.05
54	M24	Y	-69.4444	-69.4444	1.05	1.7
55	M24	Y	-69.4444	-27.7778	1.7	2.35
56	M25	Y	-26.0417	-67.7083	.65	1.3
57	M25	Y	-67.7083	-88.5417	1.3	1.95
58	M25	Y	-88.5417	-67.7083	1.95	2.6
59	M25	Y	-67.7083	-26.0417	2.6	3.25
60	M2	Y	-32.2266	-32.2266	10.0833	10.5833
61	M2	Y	-32.2266	-16.6016	10.5833	11.0833
62	M2	Y	-16.6016	-16.6016	11.0833	11.5833
63	M2	Y	-16.6016	-47.8516	11.5833	12.0833
64	M2	Y	-47.8516	-79.1016	12.0833	12.5833
65	M2	Y	-79.1016	-79.1016	12.5833	13.0833
66	M2	Y	-79.1016	-47.8516	13.0833	13.5833
67	M2	Y	-47.8516	-16.6016	13.5833	14.0833
68	M7	Y	-15.625	-45.625	2.498e-15	.5208
69	M7	Y	-45.625	-75.625	.5208	1.0417
70	M7	Y	-75.625	-90.625	1.0417	1.5625
71	M7	Y	-90.625	-75.625	1.5625	2.0833
72	M7	Y	-75.625	-45.625	2.0833	2.6042
73	M7	Y	-45.625	-15.625	2.6042	3.125
74	M7	Y	-15.625	-15.625	3.125	3.6458
75	M7	Y	-15.625	-45.625	3.6458	4.1667

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
76	M7	Y	-45.625	-75.625	4.1667	4.6875
77	M7	Y	-75.625	-90.625	4.6875	5.2083
78	M7	Y	-90.625	-90.625	5.2083	5.7292
79	M7	Y	-90.625	-90.625	5.7292	6.25
80	M7	Y	-90.625	-90.625	6.25	6.7708
81	M7	Y	-90.625	-90.625	6.7708	7.2917
82	M7	Y	-90.625	-90.625	7.2917	7.8125
83	M7	Y	-90.625	-90.625	7.8125	8.3333
84	M7	Y	-90.625	-90.625	8.3333	8.8542
85	M7	Y	-90.625	-90.625	8.8542	9.375
86	M7	Y	-90.625	-90.625	9.375	9.8958
87	M7	Y	-90.625	-90.625	9.8958	10.4167
88	M7	Y	-90.625	-90.625	10.4167	10.9375
89	M7	Y	-90.625	-75.625	10.9375	11.4583
90	M7	Y	-75.625	-45.625	11.4583	11.9792
91	M7	Y	-45.625	-15.625	11.9792	12.5
92	M8	Y	-32.2266	-32.2266	5.5	6
93	M8	Y	-32.2266	-16.6016	6	6.5
94	M8	Y	-16.6016	-16.6016	6.5	7
95	M8	Y	-16.6016	-47.8516	7	7.5
96	M8	Y	-47.8516	-79.1016	7.5	8
97	M8	Y	-79.1016	-79.1016	8	8.5
98	M8	Y	-79.1016	-47.8516	8.5	9
99	M8	Y	-47.8516	-16.6016	9	9.5
100	M9	Y	-3.125	-65.625	5	5.5
101	M9	Y	-65.625	-81.25	5.5	6
102	M9	Y	-81.25	-34.375	6	6.5
103	M9	Y	-34.375	-34.375	6.5	7
104	M9	Y	-34.375	-96.875	7	7.5
105	M9	Y	-96.875	-159.375	7.5	8
106	M9	Y	-159.375	-175	8	8.5
107	M9	Y	-175	-128.125	8.5	9
108	M9	Y	-128.125	-65.625	9	9.5
109	M9	Y	-65.625	-3.125	9.5	10
110	M18	Y	-31.1876	-31.1876	0	.501
111	M23	Y	-1.7647	-61.7647	.1458	.6667
112	M23	Y	-61.7647	-106.7647	.6667	1.1875
113	M23	Y	-106.7647	-136.7647	1.1875	1.7083
114	M23	Y	-136.7647	-151.7647	1.7083	2.2292
115	M23	Y	-151.7647	-151.7647	2.2292	2.75
116	M23	Y	-151.7647	-151.7647	2.75	3.2708
117	M23	Y	-151.7647	-151.7647	3.2708	3.7917
118	M23	Y	-151.7647	-151.7647	3.7917	4.3125
119	M23	Y	-151.7647	-151.7647	4.3125	4.8333
120	M23	Y	-151.7647	-151.7647	4.8333	5.3542
121	M23	Y	-151.7647	-151.7647	5.3542	5.875
122	M23	Y	-151.7647	-151.7647	5.875	6.3958
123	M23	Y	-151.7647	-151.7647	6.3958	6.9167
124	M23	Y	-151.7647	-136.7647	6.9167	7.4375
125	M23	Y	-136.7647	-106.7647	7.4375	7.9583
126	M23	Y	-106.7647	-61.7647	7.9583	8.4792
127	M23	Y	-61.7647	-1.7647	8.4792	9
128	M24	Y	-15.8824	-45.8824	.1458	.6667
129	M24	Y	-45.8824	-60.8824	.6667	1.1875
130	M24	Y	-60.8824	-60.8824	1.1875	1.7083
131	M24	Y	-60.8824	-60.8824	1.7083	2.2292
132	M24	Y	-60.8824	-45.8824	2.2292	2.75

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
133	M24	Y	-45.8824	-45.8824	2.75	3.2708
134	M24	Y	-45.8824	-60.8824	3.2708	3.7917
135	M24	Y	-60.8824	-60.8824	3.7917	4.3125
136	M24	Y	-60.8824	-60.8824	4.3125	4.8333
137	M24	Y	-60.8824	-60.8824	4.8333	5.3542
138	M24	Y	-60.8824	-60.8824	5.3542	5.875
139	M24	Y	-60.8824	-60.8824	5.875	6.3958
140	M24	Y	-60.8824	-60.8824	6.3958	6.9167
141	M24	Y	-60.8824	-60.8824	6.9167	7.4375
142	M24	Y	-60.8824	-60.8824	7.4375	7.9583
143	M24	Y	-60.8824	-45.8824	7.9583	8.4792
144	M24	Y	-45.8824	-15.8824	8.4792	9
145	M25	Y	-17.5	-47.5	3.331e-16	.5208
146	M25	Y	-47.5	-62.5	.5208	1.0417
147	M25	Y	-62.5	-62.5	1.0417	1.5625
148	M25	Y	-62.5	-62.5	1.5625	2.0833
149	M25	Y	-62.5	-47.5	2.0833	2.6042
150	M25	Y	-47.5	-17.5	2.6042	3.125
151	M26	Y	-4.4643	-66.9643	1.665e-16	.5
152	M26	Y	-66.9643	-113.8393	.5	1
153	M26	Y	-113.8393	-145.0893	1	1.5
154	M26	Y	-145.0893	-145.0893	1.5	2
155	M26	Y	-145.0893	-113.8393	2	2.5
156	M26	Y	-113.8393	-66.9643	2.5	3
157	M26	Y	-66.9643	-4.4643	3	3.5
158	M1	Y	-2.7857	-58.5	8.0833	8.5333
159	M1	Y	-58.5	-114.2143	8.5333	8.9833
160	M1	Y	-114.2143	-169.9286	8.9833	9.4333
161	M1	Y	-169.9286	-197.7857	9.4333	9.8833
162	M1	Y	-197.7857	-197.7857	9.8833	10.3333
163	M1	Y	-197.7857	-197.7857	10.3333	10.7833
164	M1	Y	-197.7857	-169.9286	10.7833	11.2333
165	M1	Y	-169.9286	-114.2143	11.2333	11.6833
166	M1	Y	-114.2143	-58.5	11.6833	12.1333
167	M1	Y	-58.5	-2.7857	12.1333	12.5833
168	M8	Y	-15.6696	-43.5268	3.95	4.4
169	M8	Y	-43.5268	-71.3839	4.4	4.85
170	M8	Y	-71.3839	-99.2411	4.85	5.3
171	M8	Y	-99.2411	-113.1696	5.3	5.75
172	M8	Y	-113.1696	-99.2411	5.75	6.2
173	M8	Y	-99.2411	-71.3839	6.2	6.65
174	M8	Y	-71.3839	-43.5268	6.65	7.1
175	M8	Y	-43.5268	-15.6696	7.1	7.55
176	M27	Y	-14.4643	-41.4643	1.416e-15	.4643
177	M27	Y	-41.4643	-68.4643	.4643	.9286
178	M27	Y	-68.4643	-95.4643	.9286	1.3929
179	M27	Y	-95.4643	-95.4643	1.3929	1.8571
180	M27	Y	-95.4643	-68.4643	1.8571	2.3214
181	M27	Y	-68.4643	-41.4643	2.3214	2.7857
182	M27	Y	-41.4643	-14.4643	2.7857	3.25
183	M27	Y	-14.4643	-14.4643	3.25	3.7143
184	M27	Y	-14.4643	-41.4643	3.7143	4.1786
185	M27	Y	-41.4643	-68.4643	4.1786	4.6429
186	M27	Y	-68.4643	-81.9643	4.6429	5.1071
187	M27	Y	-81.9643	-68.4643	5.1071	5.5714
188	M27	Y	-68.4643	-41.4643	5.5714	6.0357
189	M27	Y	-41.4643	-14.4643	6.0357	6.5

Member Distributed Loads (BLC 12 : BLC 5 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/f...	End Magnitude[lb/ft,F]	Start Location[ft,%]	End Location[ft,%]
190	M28	Y	-14.4643	-41.4643	3.58e-15	.4643
191	M28	Y	-41.4643	-68.4643	.4643	.9286
192	M28	Y	-68.4643	-95.4643	.9286	1.3929
193	M28	Y	-95.4643	-95.4643	1.3929	1.8571
194	M28	Y	-95.4643	-68.4643	1.8571	2.3214
195	M28	Y	-68.4643	-41.4643	2.3214	2.7857
196	M28	Y	-41.4643	-14.4643	2.7857	3.25
197	M28	Y	-14.4643	-14.4643	3.25	3.7143
198	M28	Y	-14.4643	-41.4643	3.7143	4.1786
199	M28	Y	-41.4643	-68.4643	4.1786	4.6429
200	M28	Y	-68.4643	-81.9643	4.6429	5.1071
201	M28	Y	-81.9643	-68.4643	5.1071	5.5714
202	M28	Y	-68.4643	-41.4643	5.5714	6.0357
203	M28	Y	-41.4643	-14.4643	6.0357	6.5
204	M29	Y	-15.6696	-43.5268	.45	.9
205	M29	Y	-43.5268	-71.3839	.9	1.35
206	M29	Y	-71.3839	-85.3125	1.35	1.8
207	M29	Y	-85.3125	-85.3125	1.8	2.25
208	M29	Y	-85.3125	-85.3125	2.25	2.7
209	M29	Y	-85.3125	-71.3839	2.7	3.15
210	M29	Y	-71.3839	-43.5268	3.15	3.6
211	M29	Y	-43.5268	-15.6696	3.6	4.05

Member Area Loads (BLC 2 : Grating DL)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N6	N29	N38	N45	Y	Two Way	-10
2	N37	N15	N3	N45	Y	Two Way	-10
3	N44	N42	N45A	N46A	Y	Two Way	-10

Member Area Loads (BLC 5 : Live Load)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	N6	N29	N38	N45	Y	Two Way	-60
2	N37	N15	N3	N45	Y	Two Way	-60
3	N44	N42	N45A	N46A	Y	Two Way	-60

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(Pla...
1	Self Weight	DL		-1						
2	Grating DL	DL							3	
3	Handrail DL	DL						6		
4	Equipment DL	DL				8				
5	Live Load	LL							3	
6	Wind Z Frame	WLZ				1				
7	Wind X Frame	WLX				1				
8	Wind Z Antennas	WLZ								
9	Wind X Antennas	WLX								
10	Tower	DL				1				
11	BLC 2 Transient Area Loads	None						211		
12	BLC 5 Transient Area Loads	None						211		

Load Combinations

	Description	Solve	PDelta	SRSS	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1DL	Yes	Y		DL	1														
2	1DL + 1LL	Yes	Y		DL	1	LL	1												
3	1DL - 0.75LL	Yes	Y		DL	1	LL	.75												
4	1DL + 1WLX	Yes	Y		DL	1			WLX	1										
5	1DL + 1WLZ	Yes	Y		DL	1					WLZ	1								
6	1DL - 1WLX	Yes	Y		DL	1			WLX	-1										
7	1DL - 1WLZ	Yes	Y		DL	1					WLZ	-1								
8	1DL - 0.75WLX - 0.7...	Yes	Y		DL	1			WLX	.75	WLZ	.75								
9	1DL - 0.75WLX - 0.7...	Yes	Y		DL	1			WLX	.75	WLZ	-.75								
10	1DL - 0.75WLX - 0.7...	Yes	Y		DL	1			WLX	-.75	WLZ	.75								
11	1DL - 0.75WLX - 0.7...	Yes	Y		DL	1			WLX	-.75	WLZ	-.75								
12	1DL - 0.75LL - 0.75...	Yes	Y		DL	1	LL	.75	WLX	.75										
13	1DL - 0.75LL - 0.75...	Yes	Y		DL	1	LL	.75			WLZ	.75								
14	1DL - 0.75LL - 0.75...	Yes	Y		DL	1	LL	.75	WLX	-.75										
15	1DL - 0.75LL - 0.75...	Yes	Y		DL	1	LL	.75			WLZ	-.75								
16	1DL - 0.75WLX	Yes	Y		DL	1			WLX	.75										
17	1DL - 0.75WLZ	Yes	Y		DL	1					WLZ	.75								
18	1DL - 0.75WLX	Yes	Y		DL	1			WLX	-.75										
19	1DL - 0.75WLZ	Yes	Y		DL	1					WLZ	-.75								
20	0.6DL + 1WLX	Yes	Y		DL	.6			WLX	1										
21	0.6DL + 1WLZ	Yes	Y		DL	.6					WLZ	1								
22	0.6DL - 1WLX	Yes	Y		DL	.6			WLX	-1										
23	0.6DL - 1WLZ	Yes	Y		DL	.6					WLZ	-1								
24	0.6DL - 0.75WLX - 0....	Yes	Y		DL	.6			WLX	.75	WLZ	.75								
25	0.6DL - 0.75WLX - 0....	Yes	Y		DL	.6			WLX	.75	WLZ	-.75								
26	0.6DL - 0.75WLX - 0....	Yes	Y		DL	.6			WLX	-.75	WLZ	.75								
27	0.6DL - 0.75WLX - 0....	Yes	Y		DL	.6			WLX	-.75	WLZ	-.75								

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	N29A	max	58.133	6	7853.264	2	316.018	7	719.337	7	0	1	117.989	20
2		min	-48.518	20	3097.952	24	-283.761	21	-642.91	21	0	1	-140.312	6
3	N31	max	36.559	22	8057.217	2	279.82	23	634.322	23	0	1	151.332	4
4		min	-117.585	12	3334.461	26	-312.575	5	-712.129	5	0	1	-125.168	22
5	N30	max	538.438	6	16796.721	2	279.242	23	641.596	23	0	1	1170.876	20
6		min	-527.373	20	9270.435	25	-307.727	5	-717.163	5	0	1	-1268.959	6
7	N28A	max	555.292	6	18464.054	2	311.138	7	726.429	7	0	1	1154.707	20
8		min	-504.497	20	9741.632	27	-282.189	21	-649.069	21	0	1	-1279.851	6
9	Totals:	max	1171	22	51171.255	2	1171	7						
10		min	-1171	4	25449.753	24	-1171	21						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
1	N1	max	.019	20	-.003	27	.011	21	5.811e-4	21	0	1	1.132e-3	6
2		min	-.021	6	-.006	2	-.012	7	-6.503e-4	7	0	1	-1.029e-3	20
3	N2	max	.002	20	-.001	24	.011	21	5.755e-4	21	0	1	1.326e-4	6
4		min	-.002	6	-.003	2	-.012	7	-6.44e-4	7	0	1	-1.128e-4	20
5	N3	max	.005	20	-.017	24	.011	21	-1.214e-3	24	2.41e-4	6	1.919e-4	6
6		min	-.005	6	-.037	2	-.012	7	-2.645e-3	2	-2.03e-4	20	-1.731e-4	20
7	N4	max	.022	20	-.08	24	.011	21	1.47e-3	2	3.649e-5	27	7.85e-4	6
8		min	-.025	6	-.168	2	-.012	7	6.64e-4	24	-4.786e-5	8	-7.862e-4	4
9	N5	max	.022	20	-.059	24	.011	21	2.61e-3	2	3.124e-5	25	8.937e-4	6
10		min	-.025	6	-.123	2	-.012	7	1.227e-3	24	-5.575e-5	10	-8.99e-4	4

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
11	N6	max	.021	20	-.032	21	.011	21	3.335e-3	2	9.673e-5	20	9.826e-4	6
12		min	-.024	6	-.065	2	-.012	7	1.6e-3	24	-1.304e-4	6	-9.912e-4	4
13	N9	max	.005	20	-.071	20	.013	5	-1.214e-3	26	2.78e-5	25	-1.005e-3	20
14		min	-.005	6	-.201	2	-.014	7	-2.634e-3	2	-3.833e-5	10	-3.022e-3	2
15	N10	max	.022	20	-.148	24	.013	5	1.204e-3	2	9.873e-5	23	-1.283e-3	24
16		min	-.025	6	-.313	2	-.014	7	1.839e-4	24	-1.082e-4	5	-2.597e-3	2
17	N11	max	.022	20	-.142	24	.013	5	1.937e-3	2	7.679e-5	23	-1.602e-3	24
18		min	-.025	6	-.271	2	-.014	7	5.066e-4	20	-8.663e-5	5	-2.859e-3	2
19	N12	max	.021	20	-.132	23	.013	5	3.286e-3	2	7.908e-5	23	-1.951e-3	23
20		min	-.024	6	-.232	2	-.014	7	1.59e-3	26	-9.153e-5	5	-3.254e-3	13
21	N15	max	.005	20	-.073	20	.012	5	-1.215e-3	22	1.773e-5	21	3.023e-3	2
22		min	-.005	6	-.199	2	-.012	7	-2.603e-3	2	-4.042e-5	15	1.011e-3	20
23	N16	max	.022	20	-.144	24	.012	5	1.274e-3	2	5.313e-5	21	2.642e-3	2
24		min	-.026	6	-.295	2	-.012	7	3.307e-4	26	-6.884e-5	7	1.272e-3	24
25	N17	max	.022	20	-.141	26	.012	5	2.07e-3	2	6.716e-5	21	2.963e-3	2
26		min	-.025	6	-.265	2	-.012	7	7.243e-4	22	-8.405e-5	7	1.638e-3	24
27	N18	max	.021	20	-.13	23	.012	5	3.158e-3	2	7.59e-5	21	3.289e-3	2
28		min	-.024	6	-.227	2	-.012	7	1.562e-3	26	-9.248e-5	7	1.954e-3	23
29	N19	max	.019	20	-.003	25	.012	5	6.42e-4	5	0	1	1.148e-3	6
30		min	-.021	6	-.006	2	-.011	23	-5.744e-4	23	0	1	-1.013e-3	20
31	N20	max	.002	20	-.001	26	.012	5	6.375e-4	5	0	1	1.765e-4	6
32		min	-.003	6	-.003	2	-.011	23	-5.679e-4	23	0	1	-7.378e-5	20
33	N21	max	.005	20	-.017	22	.012	5	-1.215e-3	22	2.308e-4	6	1.121e-3	2
34		min	-.005	6	-.037	2	-.011	23	-2.592e-3	2	-2.102e-4	20	3.88e-4	20
35	N22	max	.022	20	-.078	22	.012	5	1.436e-3	2	3.666e-5	22	1.726e-3	14
36		min	-.025	6	-.158	2	-.011	23	6.655e-4	22	-5.646e-5	4	2.409e-4	20
37	N23	max	.022	20	-.057	26	.012	5	2.456e-3	2	1.626e-5	20	1.421e-3	14
38		min	-.025	6	-.114	2	-.011	23	1.199e-3	22	-4.961e-5	14	-2.429e-4	20
39	N24	max	.021	20	-.031	26	.012	5	3.108e-3	2	9.678e-5	20	1.274e-3	6
40		min	-.024	6	-.06	2	-.011	23	1.552e-3	26	-1.294e-4	6	-6.388e-4	20
41	N25	max	.021	20	-.196	23	.018	5	3.222e-3	2	1.719e-5	10	5.436e-5	2
42		min	-.024	6	-.338	2	-.018	7	1.576e-3	26	-1.477e-5	25	2.065e-5	20
43	N26	max	.022	20	-.195	24	.018	5	1.487e-3	2	1.644e-5	10	4.641e-5	2
44		min	-.025	6	-.364	2	-.018	7	7.919e-5	26	-1.285e-5	25	-1.295e-5	4
45	N27	max	.022	20	-.099	24	.012	21	2.351e-3	2	4.521e-5	25	-1.924e-3	24
46		min	-.025	6	-.194	2	-.013	7	9.186e-4	20	-6.715e-5	10	-3.456e-3	2
47	N28	max	.022	20	-.097	26	.012	5	2.319e-3	2	1.696e-5	24	3.522e-3	2
48		min	-.025	6	-.185	2	-.011	23	9.995e-4	22	-5.062e-5	14	1.954e-3	24
49	N29	max	.021	20	-.187	23	.017	5	3.243e-3	2	7.225e-5	23	-7.978e-4	27
50		min	-.024	6	-.323	2	-.017	7	1.581e-3	26	-7.249e-5	5	-1.331e-3	5
51	N33	max	.005	20	-.096	20	.014	5	-1.214e-3	26	1.29e-5	10	-3.643e-4	20
52		min	-.005	6	-.275	2	-.014	7	-2.624e-3	2	-8.213e-6	25	-1.015e-3	2
53	N27A	max	.022	20	-.198	23	.018	5	1.467e-3	2	4.862e-5	20	5.039e-5	2
54		min	-.025	6	-.354	2	-.018	7	-3.343e-5	5	-7.825e-5	6	6.405e-6	20
55	N28A	max	0	20	0	27	0	21	6.491e-021	21	0	1	1.28e-020	6
56		min	0	6	0	2	0	7	-7.264e-021	7	0	1	-1.155e-020	20
57	N29A	max	0	20	0	24	0	21	6.429e-021	21	0	1	1.403e-021	6
58		min	0	6	0	2	0	7	-7.193e-021	7	0	1	-1.18e-021	20
59	N30	max	0	20	0	25	0	5	7.172e-021	5	0	1	1.269e-020	6
60		min	0	6	0	2	0	23	-6.416e-021	23	0	1	-1.171e-020	20
61	N31	max	0	12	0	26	0	5	7.121e-021	5	0	1	1.252e-021	22
62		min	0	22	0	2	0	23	-6.343e-021	23	0	1	-1.513e-021	4
63	N32	max	.022	20	-.187	24	.017	5	1.293e-3	2	6.237e-5	23	-6.797e-4	26
64		min	-.025	6	-.351	2	-.017	7	-2.297e-4	5	-6.764e-5	5	-1.162e-3	2
65	N33A	max	.022	20	-.181	24	.017	5	9.055e-4	2	2.741e-5	27	-4.101e-4	24
66		min	-.025	6	-.373	2	-.017	7	-4.243e-4	5	-3.664e-5	8	-7.112e-4	2
67	N34	max	.012	20	-.114	24	.013	5	-8.755e-4	26	2.126e-4	6	-1.098e-3	24

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation ...	LC	Y Rotation ...	LC	Z Rotation [...	LC
68		min	-.014	6	-.292	2	-.014	7	-1.652e-3	2	-1.787e-4	20	-2.881e-3	2
69	N35	max	.012	20	-.118	20	.012	5	-8.851e-4	24	2.162e-4	6	2.896e-3	2
70		min	-.014	6	-.282	2	-.012	7	-1.477e-3	11	-1.796e-4	20	1.098e-3	20
71	N36	max	.015	20	-.129	24	.013	5	-6.212e-4	26	1.746e-4	6	-1.144e-3	24
72		min	-.018	6	-.318	2	-.014	7	-1.037e-3	9	-1.492e-4	20	-2.81e-3	2
73	N37	max	.015	20	-.133	24	.012	5	-5.525e-4	26	1.776e-4	6	2.833e-3	2
74		min	-.018	6	-.304	2	-.012	7	-9.232e-4	9	-1.482e-4	20	1.142e-3	24
75	N38	max	.015	20	-.172	24	.017	5	-5.983e-4	26	4.292e-5	23	-7.943e-4	24
76		min	-.018	6	-.41	2	-.017	7	-9.993e-4	9	-4.586e-5	5	-1.499e-3	2
77	N41	max	.009	20	-.045	22	.012	5	-1.047e-3	22	2.144e-4	6	3.185e-3	2
78		min	-.011	6	-.097	2	-.011	23	-2.193e-3	2	-1.648e-4	20	1.097e-3	22
79	N42	max	.009	20	-.002	12	.008	24	-1.047e-3	22	5.999e-4	14	2.393e-3	2
80		min	-.011	6	-.015	6	-.02	15	-2.193e-3	2	1.3e-5	20	9.163e-4	22
81	N43	max	.018	20	-.085	22	.012	5	-2.576e-4	24	1.627e-4	6	2.549e-3	2
82		min	-.021	6	-.176	2	-.011	23	-4.386e-4	2	-1.16e-4	20	1.015e-3	22
83	N44	max	.018	20	-.05	20	.008	24	-2.576e-4	24	5.99e-4	14	1.677e-3	12
84		min	-.021	6	-.108	2	-.02	15	-4.386e-4	2	-2.272e-5	20	7.419e-4	22
85	N45	max	.015	20	-.077	24	.011	21	-6.04e-4	24	1.837e-4	6	4.885e-4	6
86		min	-.018	6	-.166	2	-.012	7	-1.242e-3	2	-1.566e-4	20	-4.787e-4	4
87	N46	max	.012	20	-.061	24	.011	21	-8.862e-4	24	2.089e-4	6	3.896e-4	6
88		min	-.014	6	-.133	2	-.012	7	-1.876e-3	2	-1.761e-4	20	-3.762e-4	4
89	N45A	max	.009	20	-.102	20	.012	5	-1.094e-3	24	2.277e-4	6	2.947e-3	2
90		min	-.011	6	-.253	2	-.012	7	-1.953e-3	2	-1.909e-4	20	1.064e-3	20
91	N46A	max	.018	20	-.14	24	.012	5	-1.053e-4	2	1.364e-4	6	2.776e-3	2
92		min	-.021	6	-.309	2	-.012	7	-4.999e-4	9	-1.172e-4	20	1.181e-3	24
93	N48	max	.015	20	-.177	24	.016	5	-5.754e-4	26	7.996e-5	5	1.682e-3	2
94		min	-.018	6	-.408	2	-.016	7	-9.613e-4	9	-7.968e-5	7	6.385e-4	26
95	N49	max	.012	20	-.165	20	.012	5	-8.821e-4	21	1.072e-5	26	1.741e-3	2
96		min	-.014	6	-.394	2	-.013	7	-1.527e-3	2	-1.221e-5	9	6.742e-4	22
97	N50	max	.015	20	-.18	24	.017	5	-5.907e-4	26	7.17e-6	26	-3.671e-4	20
98		min	-.018	6	-.423	2	-.017	7	-9.867e-4	9	-8.839e-6	9	-6.143e-4	6
99	N51	max	.012	20	-.168	24	.013	5	-8.799e-4	21	1.072e-5	26	-3.837e-4	20
100		min	-.014	6	-.407	2	-.013	7	-1.569e-3	2	-1.221e-5	9	-6.418e-4	6
101	N51A	max	.02	20	-.088	24	.011	21	3.047e-4	2	1.051e-4	6	6.713e-4	6
102		min	-.024	6	-.187	2	-.012	7	1.092e-4	25	-9.821e-5	20	-6.683e-4	4
103	N52	max	.018	20	-.068	20	.01	21	-2.576e-4	24	5.113e-4	14	1.848e-3	2
104		min	-.021	6	-.142	2	-.013	7	-4.386e-4	2	-2.956e-5	20	7.876e-4	22

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

	Member	Shape	Code Che...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pnc/om ...	Pnt/om [lb]	Mnyy...	Mnzz/o...	Cb	Eqn
1	M1	W12x50	.282	4.545	2	.272	0	y	2	195257....	314730.5...	3826...	129161...	1.177	H1-1b
2	M2	W12x50	.315	4.545	2	.286	0	y	2	195257....	314730.5...	3826...	129161...	1.239	H1-1b
3	M3	W12x50	.504	8	5	.129	0	y	2	190270....	314730.5...	3826...	129161...	1.305	H1-1b
4	M4	W12x50	.445	8	13	.138	6.5	y	10	190270....	314730.5...	3826...	129161...	1.307	H1-1b
5	M5	W12x50	.095	.75	6	.222	1.5	y	4	313341....	314730.5...	3826...	129161...	1.316	H1-1b
6	M6	W10x22	.366	6.5	15	.101	0	y	2	46481.8...	139904.1...	1095...	34953....	1.126	H1-1b
7	M7	W10x22	.409	7.667	2	.103	0	y	2	46481.8...	139904.1...	1095...	32352....	1.042	H1-1b
8	M8	W10x22	.191	5.417	2	.077	7.917	y	2	90865.8...	139904.1...	1095...	46706....	1.228	H1-1b
9	M9	W10x22	.201	5	2	.081	10	y	2	90865.8...	139904.1...	1095...	46706....	1.209	H1-1b
10	M10	LL4x4x4x3	.012	1.088	11	.026	2.175	y	6	55827.1...	83209.581	8373...	5905.9...	1	H1-1b
11	M11	LL4x4x4x3	.014	1.088	9	.023	2.175	y	4	55827.1...	83209.581	8373...	5905.9...	1	H1-1b
12	M12	LL4x4x4x3	.010	.917	5	.005	1.833	y	8	55855.6...	83209.581	8373...	5905.9...	1	H1-1b
13	M13	LL4x4x4x3	.004	.75	5	.006	0	y	5	55878.4...	83209.581	8373...	5905.9...	1	H1-1b
14	M14	LL4x4x4x3	.007	.917	5	.005	1.833	y	5	55855.6...	83209.581	8373...	5905.9...	1	H1-1b
15	M15	LL4x4x4x3	.003	.75	5	.006	0	y	5	55878.4...	83209.581	8373...	5905.9...	1	H1-1b

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

	Member	Shape	Code Che...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pnc/om ...	Pnt/om [lb]	Mnyy...	Mnzz/o...	Cb	Eqn
16	M16	LL4x4x4x3	.015	1.329	7	.002	2.658	y	2	55777.4...	83209.581	8373...	5905.9...	1	H1-1b
17	M17	LL4x4x4x3	.014	1.329	7	.002	0	y	2	55777.4...	83209.581	8373...	5905.9...	1	H1-1b
18	M18	W6x15	.110	6.858	11	.066	5.035	y	5	74356.0...	95497.006	8340...	19101....	2.161	H1-1b
19	M19	HSS4x4x4	.123	0	7	.016	0	z	7	71452.07	72646.707	8425...	8425.15	1.663	H1-1b
20	M20	HSS4x4x4	.394	0	11	.029	0	y	6	71452.07	72646.707	8425...	8425.15	1.682	H1-1a
21	M21	HSS4x4x4	.125	0	5	.016	0	z	5	71452.07	72646.707	8425...	8425.15	1.821	H1-1b
22	M22	HSS4x4x4	.380	0	10	.028	0	y	6	71452.07	72646.707	8425...	8425.15	1.646	H1-1a
23	M23	W6x15	.293	5.063	2	.102	9	y	2	71323.5...	95497.006	8340...	19101....	1.179	H1-1b
24	M24	W6x15	.269	4.313	2	.090	9	y	2	71323.5...	95497.006	8340...	19101....	1.171	H1-1b
25	M25	W6x15	.012	1.786	2	.013	3.5	y	2	91373.3...	95497.006	8340...	19101....	1.162	H1-1b
26	M26	W6x15	.012	1.75	2	.012	3.5	y	2	91373.3...	95497.006	8340...	19101....	1.161	H1-1b
27	M27	L6x6x6	.138	3.521	2	.017	3.453	y	2	70033.6...	94419.162	7295...	15190....	1.549	H2-1
28	M28	L6x6x6	.181	3.521	2	.024	3.521	y	2	70033.6...	94419.162	7295...	15189....	1.549	H2-1
29	M29	L6x6x6	.038	2.25	2	.010	4.5	z	2	77970.7...	94419.162	7295...	15209....	1.162	H2-1

APPENDIX D

MOUNT CALCULATIONS

WINDSPEED BY LOCATION

Applied Technology Council

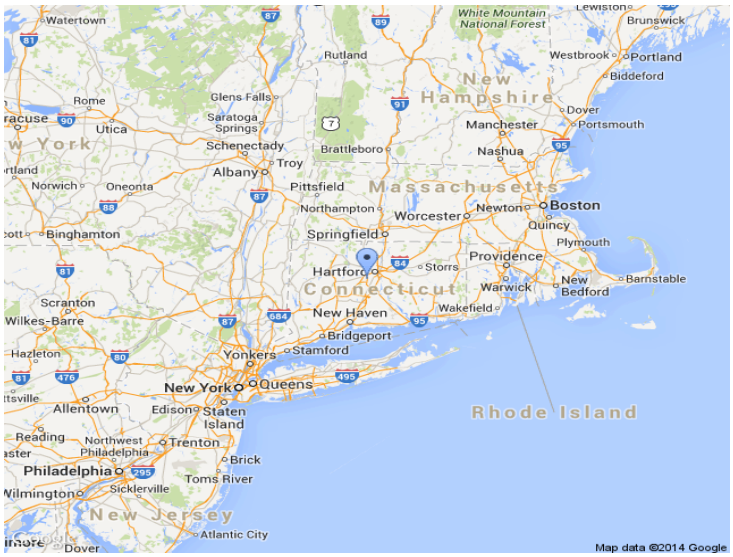
Search Results

Latitude: 41.6937
Longitude: -72.7629

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

Risk Category I: 112
Risk Category II: 122
Risk Category III-IV: 132
MRI 10 Year:** 76
MRI 25 Year:** 86
MRI 50 Year:** 93
MRI 100 Year:** 99

ASCE 7-05: 99
ASCE 7-93: 80



*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.

Sponsored by the ATC Endowment Fund Applied Technology Council 201 Redwood Shores Parkway, Suite 240 Redwood City, California 94065 (650) 595-1542

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street
Sauk City, WI 53583
Office: (608) 643-4100

Job:	28720
Project:	Vance Hall CCSU (CT03XC098-O)
By:	JMO
Date:	7/10/2014

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:	99	mph	Basic Wind Speed (Annex B)
z:	138	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.35		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z =	**32.3**	**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 8 ft	96.0 in	2.4 in	40.3	Round	1.200	1.59 sf	**61.5 lb**	7.7 plf
Pipe2-1/2STD x 13 ft	156.0 in	2.9 in	54.2	Round	1.200	3.12 sf	**120.9 lb**	9.3 plf
Pipe1STD x 4.3 ft	51.6 in	1.3 in	39.1	Round	1.200	0.47 sf	**18.3 lb**	4.3 plf
Pipe2STD x 3.5 ft	42.0 in	2.4 in	17.6	Round	1.037	0.69 sf	**23.2 lb**	6.6 plf
Pipe3STD x 9 ft	108.0 in	3.5 in	30.9	Round	1.143	2.63 sf	**96.8 lb**	10.8 plf
LLPX310R	42.4 in	11.8 in	3.6	Flat	1.248	3.48 sf	**140.2 lb**	
DAP	16.1 in	11.6 in	1.4	Flat	1.200	1.30 sf	**50.5 lb**	
VHLP2.5	35.0 in	0.0 in	1.0	Generic	1.262	6.68 sf	**272.1 lb**	
APXVSPP18-C-A20	72.0 in	11.9 in	6.1	Flat	1.358	5.95 sf	**260.7 lb**	
1900MHz 4x45W RRH	25.1 in	11.1 in	2.3	Flat	1.200	1.93 sf	**75.0 lb**	
800MHz 2x50W RRH	19.0 in	13.0 in	1.5	Flat	1.200	1.72 sf	**66.5 lb**	
APXV9TM14-ALU-120	56.3 in	12.6 in	4.5	Flat	1.287	4.93 sf	**204.8 lb**	
TD-RRH8x20	26.1 in	18.6 in	1.4	Flat	1.200	3.37 sf	**130.6 lb**	

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1120 Dallas Street
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By:	JMO
Date:	7/10/2014

Wind Load on Antennas TIA-222

2.6.9.6 Velocity Pressure

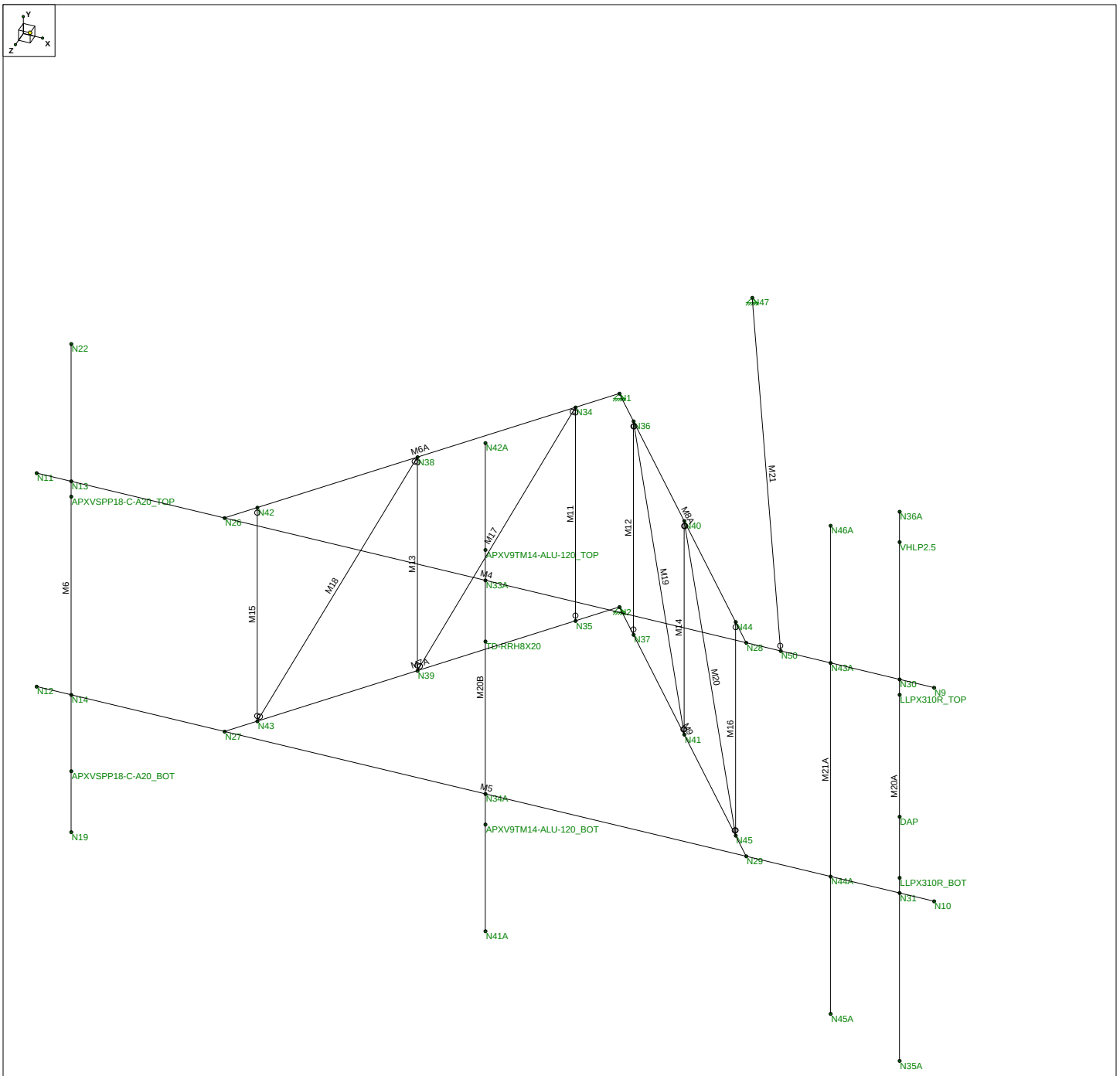
$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	C		Exposure Category
V:	99	mph	Basic Wind Speed (Annex B)
z:	138	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.35		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z =	**32.3**	**psf**	

G_h:	1.00	Appurtenances and their Connections

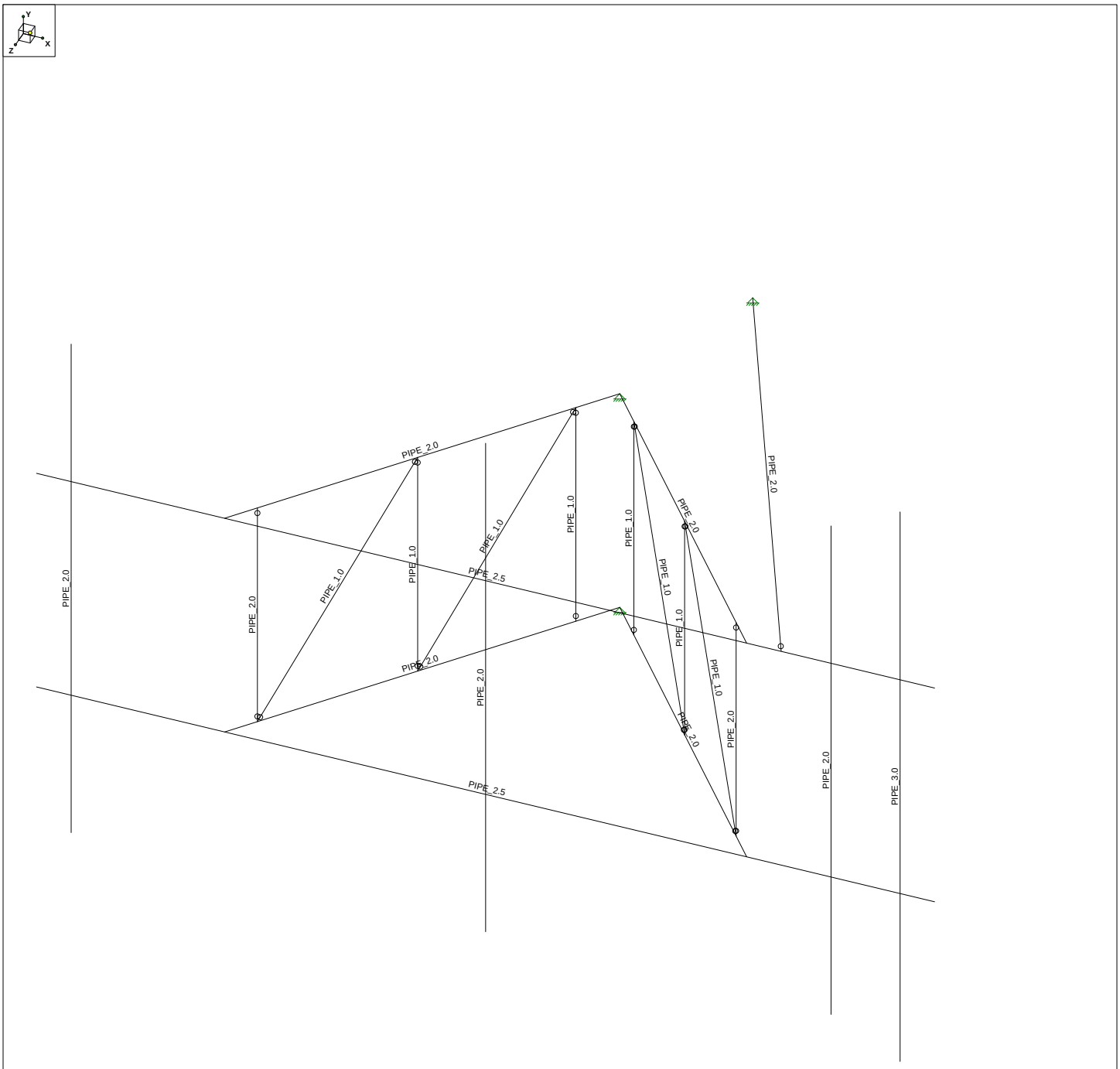
Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	**$F = q_z G_h C_a A_a$**	
Pipe2STD x 8 ft	96.0 in	2.4 in	40.3	Round	1.200	1.59 sf	**61.5 lb**	7.7 plf
Pipe2-1/2STD x 13 ft	156.0 in	2.9 in	54.2	Round	1.200	3.12 sf	**120.9 lb**	9.3 plf
Pipe1STD x 4.3 ft	51.6 in	1.3 in	39.1	Round	1.200	0.47 sf	**18.3 lb**	4.3 plf
Pipe2STD x 3.5 ft	42.0 in	2.4 in	17.6	Round	1.037	0.69 sf	**23.2 lb**	6.6 plf
Pipe3STD x 9 ft	108.0 in	3.5 in	30.9	Round	1.143	2.63 sf	**96.8 lb**	10.8 plf
LLPX310R	42.4 in	4.5 in	9.4	Flat	1.479	1.33 sf	**63.6 lb**	
DAP	16.1 in	5.3 in	3.1	Flat	1.224	0.59 sf	**23.4 lb**	
VHLP2.5	35.0 in	0.0 in	1.0	Generic	0.625	6.68 sf	**134.8 lb**	
APXVSPP18-C-A20	72.0 in	7.0 in	10.3	Flat	1.509	3.50 sf	**170.7 lb**	
1900MHz 4x45W RRH	25.1 in	10.7 in	2.3	Flat	1.200	1.86 sf	**72.2 lb**	
800MHz 2x50W RRH	19.0 in	12.2 in	1.6	Flat	1.200	1.61 sf	**62.4 lb**	
APXV9TM14-ALU-120	56.3 in	6.3 in	8.9	Flat	1.465	2.46 sf	**116.5 lb**	
TD-RRH8x20	26.1 in	6.7 in	3.9	Flat	1.262	1.21 sf	**49.5 lb**	



Envelope Only Solution

Ramaker & Associates	Vance Hall CCSU (CT03XC098-O)	SK - 1
JMO		July 10, 2014 at 11:35 AM
28720		28720 Mount.r3d



Envelope Only Solution

Ramaker & Associates	Vance Hall CCSU (CT03XC098-O)	SK - 2
JMO		July 10, 2014 at 11:35 AM
28720		28720 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	M4	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	M6A	N1	N26			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
5	M7A	N2	N27			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
6	M8A	N1	N28			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
7	M9	N2	N29			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
8	M11	N34	N35			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
9	M12	N36	N37			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
10	M13	N38	N39			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
11	M14	N40	N41			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
12	M15	N42	N43			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
13	M16	N44	N45			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
14	M17	N34	N39			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
15	M18	N38	N43			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
16	M19	N36	N41			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
17	M20	N40	N45			pipe 1.0	Beam	Pipe	A53 Gr. B	Typical
18	M21	N50	N47			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
19	M20A	N36A	N35A			pipe 3.0	Beam	Pipe	A53 Gr. B	Typical
20	M20B	N42A	N41A			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
21	M21A	N46A	N45A			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	6.5	-.25	1.687857	0	
4	N10	6.5	-3.75	1.687857	0	
5	N11	-6.5	-.25	1.687857	0	
6	N12	-6.5	-3.75	1.687857	0	
7	N13	-6	-.25	1.687857	0	
8	N14	-6	-3.75	1.687857	0	
9	N19	-6	-6	1.687857	0	
10	N22	-6	2	1.687857	0	
11	N26	-3.778095	-.25	1.687857	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
12	N27	-3.778095	-3.75	1.687857	0	
13	N28	3.778095	-.25	1.687857	0	
14	N29	3.778095	-3.75	1.687857	0	
15	N30	6	-.25	1.687857	0	
16	N31	6	-3.75	1.687857	0	
17	N34	-0.42043	-.25	-2.478331	0	
18	N35	-0.42043	-3.75	-2.478331	0	
19	N36	0.42043	-.25	-2.478331	0	
20	N37	0.42043	-3.75	-2.478331	0	
21	N38	-1.932723	-.25	-0.601879	0	
22	N39	-1.932723	-3.75	-0.601879	0	
23	N40	1.932723	-.25	-0.601879	0	
24	N41	1.932723	-3.75	-0.601879	0	
25	N42	-3.464468	-.25	1.298709	0	
26	N43	-3.464468	-3.75	1.298709	0	
27	N44	3.464468	-.25	1.298709	0	
28	N45	3.464468	-3.75	1.298709	0	
29	N47	0.252454	-1.25	-7.036861	0	
30	N33A	0	-.25	1.687857	0	
31	N34A	0	-3.75	1.687857	0	
32	N35A	6	-6.5	1.687857	0	
33	N36A	6	2.5	1.687857	0	
34	APXVSPP18-C-A20_TOP	-6	-.5	1.687857	0	
35	APXVSPP18-C-A20_BOT	-6	-5	1.687857	0	
36	LLPX310R_BOT	6	-3.5	1.687857	0	
37	LLPX310R_TOP	6	-.5	1.687857	0	
38	DAP	6	-2.5	1.687857	0	
39	VHLP2.5	6	2	1.687857	0	
40	N41A	0	-6	1.687857	0	
41	N42A	0	2	1.687857	0	
42	N43A	5	-.25	1.687857	0	
43	N44A	5	-3.75	1.687857	0	
44	N45A	5	-6	1.687857	0	
45	N46A	5	2	1.687857	0	
46	APXV9TM14-ALU-120_TOP	0	.25	1.687857	0	
47	APXV9TM14-ALU-120_BOT	0	-4.25	1.687857	0	
48	TD-RRH8X20	0	-1.25	1.687857	0	
49	N50	4.278095	-.25	1.687857	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							
6	N12							
7	N13							
8	N14							
9	N19							
10	N22							
11	N30							
12	N31							
13	N47	Reaction	Reaction	Reaction				
14	N33A							

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
15	N34A							
16	N35A							
17	N36A							
18	APXVSPP18-C-A2...							
19	APXVSPP18-C-A2...							
20	LLPX310R_BOT							
21	LLPX310R_TOP							
22	DAP							
23	VHLP2.5							
24	N41A							
25	N42A							
26	N43A							
27	N44A							
28	N45A							
29	N46A							
30	APXV9TM14-ALU-...							
31	APXV9TM14-ALU-...							
32	TD-RRH8X20							

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	L	Y	-28.5
2	APXVSPP18-C-A20_BOT	L	Y	-28.5
3	DAP	L	Y	-33
4	LLPX310R_BOT	L	Y	-14
5	LLPX310R_TOP	L	Y	-14
6	VHLP2.5	L	Y	-48
7	APXV9TM14-ALU-120_TOP	L	Y	-27.5
8	APXV9TM14-ALU-120_BOT	L	Y	-27.5
9	TD-RRH8X20	L	Y	-70

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	L	Z	-130.3
2	APXVSPP18-C-A20_BOT	L	Z	-130.3
3	DAP	L	Z	-50.5
4	LLPX310R_BOT	L	Z	-70.1
5	LLPX310R_TOP	L	Z	-70.1
6	VHLP2.5	L	Z	-272.1
7	APXV9TM14-ALU-120_TOP	L	Z	-102.4
8	APXV9TM14-ALU-120_BOT	L	Z	-102.4
9	TD-RRH8X20	L	Z	-130.6

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	L	X	-85.4
2	APXVSPP18-C-A20_BOT	L	X	-85.4
3	DAP	L	X	-23.4
4	LLPX310R_BOT	L	X	-31.8
5	LLPX310R_TOP	L	X	-31.8
6	VHLP2.5	L	X	-134.8
7	APXV9TM14-ALU-120_TOP	L	X	-58.2
8	APXV9TM14-ALU-120_BOT	L	X	-58.2
9	TD-RRH8X20	L	X	-49.5

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	M4	Z	-9.3	-9.3	0	0
2	M5	Z	-9.3	-9.3	0	0
3	M21	PZ	-7.7	-7.7	0	0
4	M21A	PZ	-7.7	-7.7	0	0
5	M11	PZ	-4.3	-4.3	0	0
6	M12	PZ	-4.3	-4.3	0	0
7	M13	PZ	-4.3	-4.3	0	0
8	M14	PZ	-4.3	-4.3	0	0
9	M17	PZ	-4.3	-4.3	0	0
10	M18	PZ	-4.3	-4.3	0	0
11	M19	PZ	-4.3	-4.3	0	0
12	M20	PZ	-4.3	-4.3	0	0
13	M15	PZ	-6.6	-6.6	0	0
14	M16	PZ	-6.6	-6.6	0	0
15	M6A	PZ	-7.7	-7.7	0	0
16	M7A	PZ	-7.7	-7.7	0	0
17	M8A	PZ	-7.7	-7.7	0	0
18	M9	PZ	-7.7	-7.7	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	M6	PX	-7.7	-7.7	0	0
2	M21	PX	-7.7	-7.7	0	0
3	M20B	PX	-7.7	-7.7	0	0
4	M21A	PX	-7.7	-7.7	0	0
5	M11	PX	-4.3	-4.3	0	0
6	M12	PX	-4.3	-4.3	0	0
7	M13	PX	-4.3	-4.3	0	0
8	M14	PX	-4.3	-4.3	0	0
9	M17	PX	-4.3	-4.3	0	0
10	M18	PX	-4.3	-4.3	0	0
11	M19	PX	-4.3	-4.3	0	0
12	M20	PX	-4.3	-4.3	0	0
13	M15	PX	-6.6	-6.6	0	0
14	M16	PX	-6.6	-6.6	0	0
15	M20A	PX	-10.8	-10.8	0	0
16	M6A	PX	-7.7	-7.7	0	0
17	M7A	PX	-7.7	-7.7	0	0
18	M8A	PX	-7.7	-7.7	0	0
19	M9	PX	-7.7	-7.7	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		9				
2	WLz	WLZ				9		18		
3	WLx	WLX				9		19		
4	LL1	LL					1			
5	LL2	None					1			

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	2119.372	4	685.586	22	2042.751	4	0	1	0	1	0	1
2		min	-2627.313	5	247.245	5	-4215.793	5	0	1	0	1	0	1
3	N2	max	1494.949	4	660.706	8	2051.245	6	0	1	0	1	0	1
4		min	-990.752	5	215.113	7	151.974	9	0	1	0	1	0	1
5	N47	max	1659.718	7	442.935	5	3692.395	7	0	1	0	1	0	1
6		min	-1650.624	4	-402.599	4	-3714.833	4	0	1	0	1	0	1
7	Totals:	max	1963.697	4	1300.29	22	2692.081	2						
8		min	-1963.697	5	925.29	5	-2692.081	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	M4	PIPE_2.5	.485	10.292	6	.343	10.292		4	13460.4...	50715	3596.25	3596.25	1....	H1-1b
2	M5	PIPE_2.5	.238	10.292	6	.129	10.292		4	13460.4...	50715	3596.25	3596.25	1....	H1-1b
3	M6	PIPE_2.0	.193	5.75	12	.045	5.75		2	14916.0...	32130	1871.625	1871.625	3	H1-1b
4	M6A	PIPE_2.0	.153	.627	19	.066	0		18	20804.2...	32130	1871.625	1871.625	2....	H1-1b
5	M7A	PIPE_2.0	.167	.69	15	.063	0		13	20804.28	32130	1871.625	1871.625	2....	H1-1b
6	M8A	PIPE_2.0	.474	6.021	4	.087	0		4	20804.28	32130	1871.625	1871.625	2....	H1-1a
7	M9	PIPE_2.0	.244	.69	4	.080	0		4	20804.28	32130	1871.625	1871.625	2....	H1-1b
8	M11	PIPE_1.0	.045	1.75	9	.022	0		6	8869.951	14773.5	464.625	464.625	1....	H1-1b
9	M12	PIPE_1.0	.065	1.75	4	.016	0		6	8869.951	14773.5	464.625	464.625	1....	H1-1b

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

	Member	Shape	Code Ch...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
10	M13	PIPE_1.0	.057	1.823	19	.026	0		6	8869.951	14773.5	464.625	464.625	1....	H1-1b
11	M14	PIPE_1.0	.096	1.75	4	.019	3.5		6	8869.951	14773.5	464.625	464.625	1....	H1-1b
12	M15	PIPE_2.0	.014	1.75	9	.027	0		6	27741.09	32130	1871.625	1871.625	1....	H1-1b
13	M16	PIPE_2.0	.020	1.75	4	.066	0		4	27741.09	32130	1871.625	1871.625	1....	H1-1b
14	M17	PIPE_1.0	.063	2.125	9	.010	0		4	6964.209	14773.5	464.625	464.625	1....	H1-1b
15	M18	PIPE_1.0	.052	2.134	5	.028	0		6	6920.73	14773.5	464.625	464.625	1....	H1-1b
16	M19	PIPE_1.0	.095	2.125	4	.009	0		8	6964.209	14773.5	464.625	464.625	1....	H1-1b
17	M20	PIPE_1.0	.077	2.134	4	.023	0		4	6920.73	14773.5	464.625	464.625	1....	H1-1b
18	M21	PIPE_2.0	.449	4.73	5	.006	9.661		5	10539.9...	32130	1871.625	1871.625	1....	H1-1a
19	M20A	PIPE_3.0	.169	2.719	2	.084	2.813		9	42263.9...	65205	5748.75	5748.75	3	H1-1b
20	M20B	PIPE_2.0	.241	2.25	6	.058	2.25		6	14916.0...	32130	1871.625	1871.625	3	H1-1b
21	M21A	PIPE_2.0	.124	2.25	8	.090	2.25		9	14916.0...	32130	1871.625	1871.625	2....	H1-1b

Sprint®

PROJECT: 2.5 EQUIPMENT DEPLOYMENT

SITE NAME: VANCE HALL CCSU

SITE CASCADE: CT03XC098-O

SITE ADDRESS: 1679 STANLEY STREET
NEW BRITAIN, CT 06053

SITE TYPE: 80'-0" GUYED TOWER ON ROOFTOP

SITE INFORMATION

PROPERTY OWNER:
CENTRAL CONNECTICUT STATE UNIVERSITY
1615 STANLEY STREET
NEW BRITAIN, CT 06053

SITE ADDRESS:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

GEOGRAPHIC COORDINATES:
LATITUDE: 41° 41' 37.4" N, (41.693722)
LONGITUDE: 72° 45' 46.55" W, (-72.76293)

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

ZONING DISTRICT:
OP OFFICE & PUBLIC

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

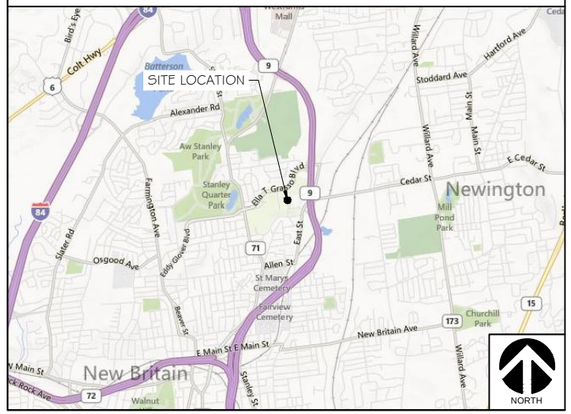
AAV PROVIDER:
AT&T
PH.: (888) 944-0447

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

EQUIPMENT SUPPLIER:
ALCATEL-LUCENT
600-700 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974
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
- 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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SHEET INDEX

SHT NO:	SHEET TITLE:	REV:	ENGINEER:
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SP-3	SPRINT SPECIFICATIONS	A	JRS
A-1	SITE PLAN	A	JRS
A-2	EQUIPMENT PLAN	A	JRS
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A-5	FIBER PLUMBING DIAGRAM	A	JRS
A-6	CABLE COLOR CODING	A	JRS
A-7	ANTENNA & HYBRID CABLE DETAILS	A	JRS
A-8	EQUIPMENT DETAILS	A	JRS
E-1	EQUIPMENT UTILITY & GROUNDING PLAN	A	JRS
E-2	GROUNDING DETAILS	A	JRS
E-3	DC POWER DETAILS & PANEL SCHEDULES	A	JRS

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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: 7/10/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
TITLE SHEET

SCALE: NONE

PROJECT NUMBER: 28720
SHEET NUMBER: T-1

DRAWN BY: LHB 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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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: 7/10/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 28720
SHEET NUMBER: SP-1

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DRAWN BY: LHB 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: 7/10/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 07/10/2014

PROJECT TITLE:

VANCE HALL CCSU
CT03XC098-0

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:

SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 28720

SHEET NUMBER: SP-2

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DRAWN BY: LHB 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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STATE OF CONNECTICUT ★ JAMES R. SKOWRONSKI ★ No. 26266 LICENSED PROFESSIONAL ENGINEER

Signature: James R. Skowronski Date: 7/10/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 28720
SHEET NUMBER: SP-3

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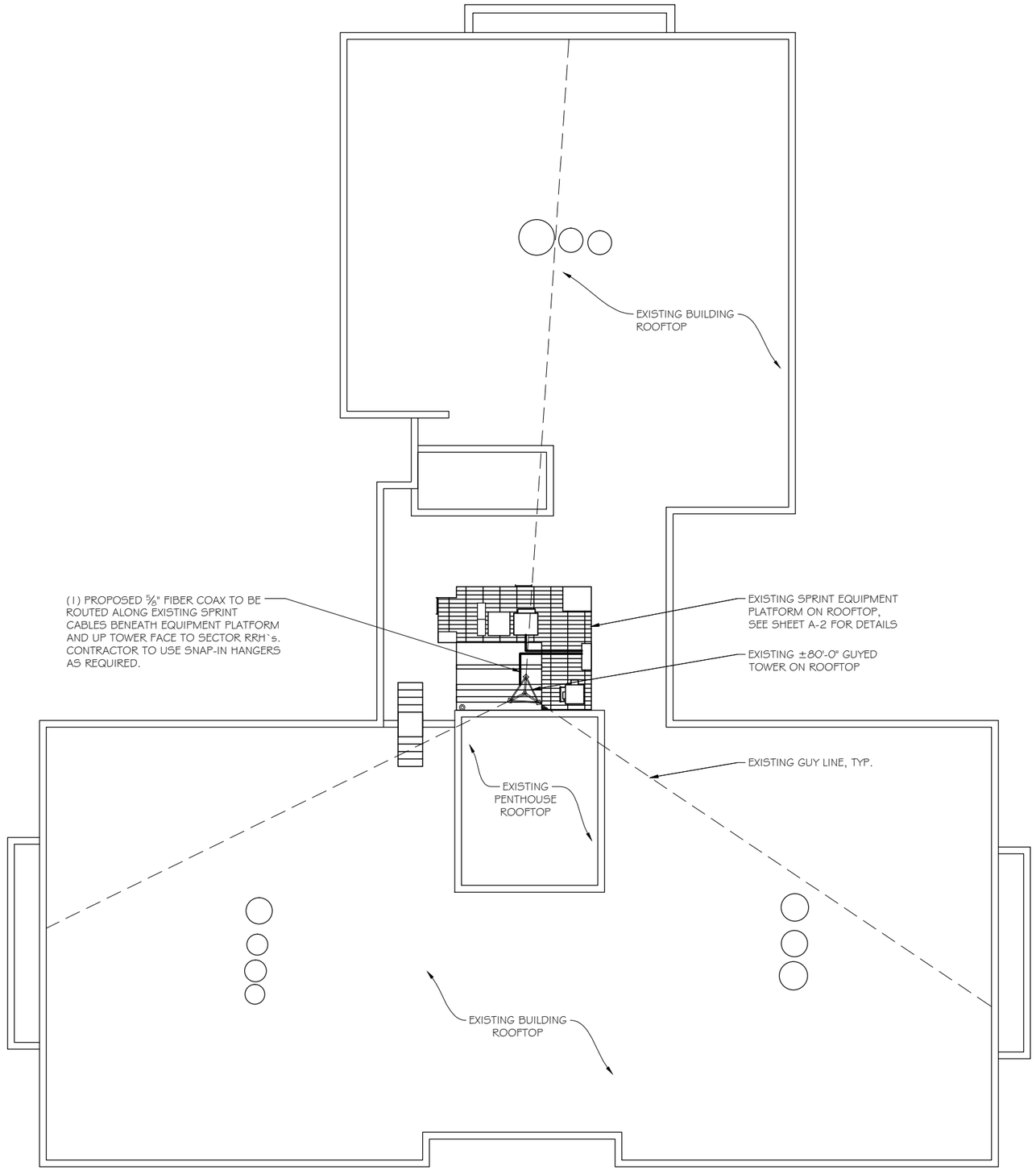

SITE PLAN
SCALE: 1" = 15'

NORTH

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ISSUE PHASE: FINAL
DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
SITE PLAN

0 7.5' 15' 30'
11" x 17" - 1" = 15'
22" x 34" - 1" = 7.5'

PROJECT NUMBER: 28720
SHEET NUMBER: A-1

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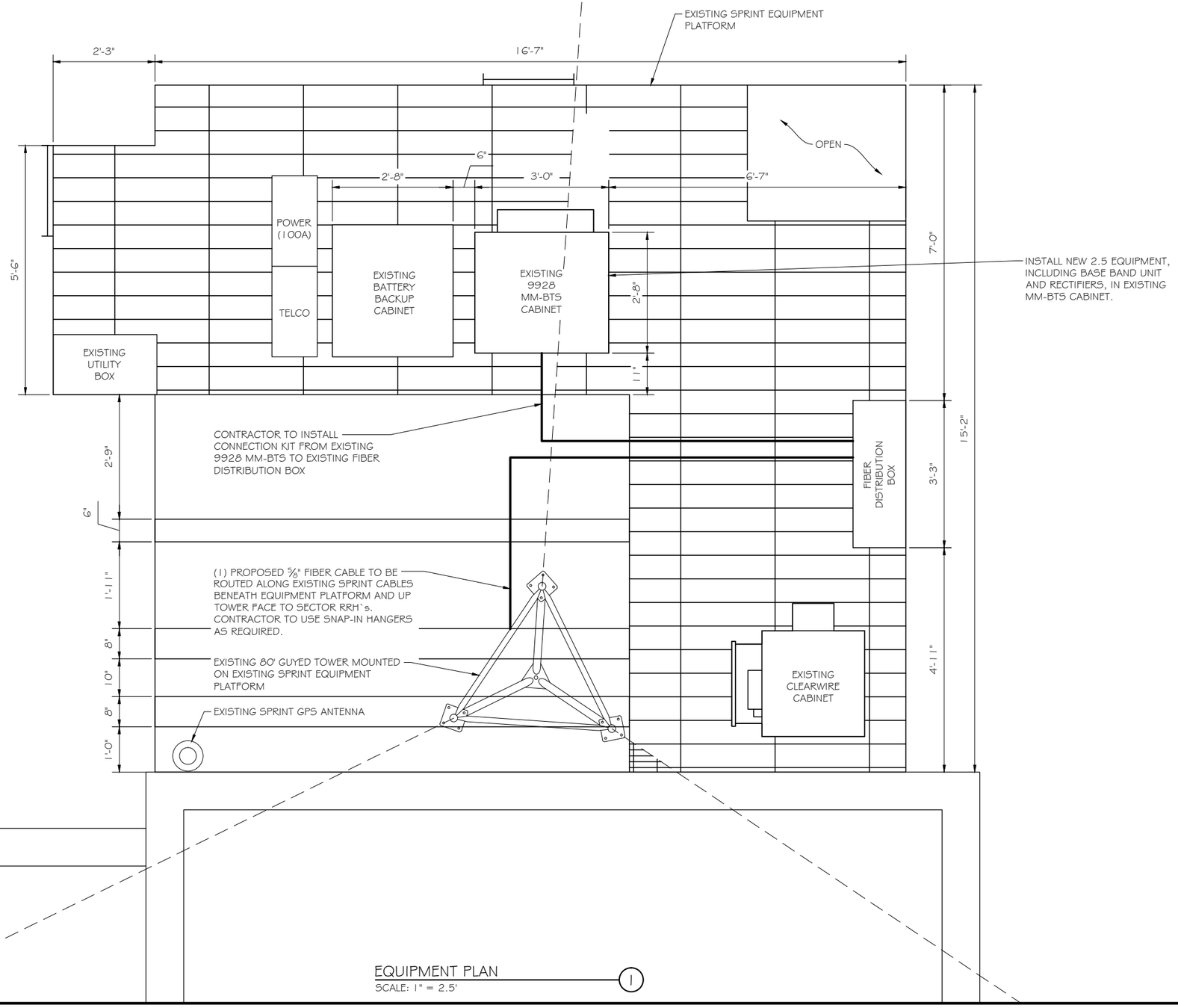

EQUIPMENT PLAN
SCALE: 1" = 2.5'
1

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DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
EQUIPMENT PLAN

0 1.25' 2.5' 5'
11" x 17" - 1" = 2.5'
22" x 34" - 1" = 1.25'

PROJECT NUMBER: 28720
SHEET NUMBER: A-2

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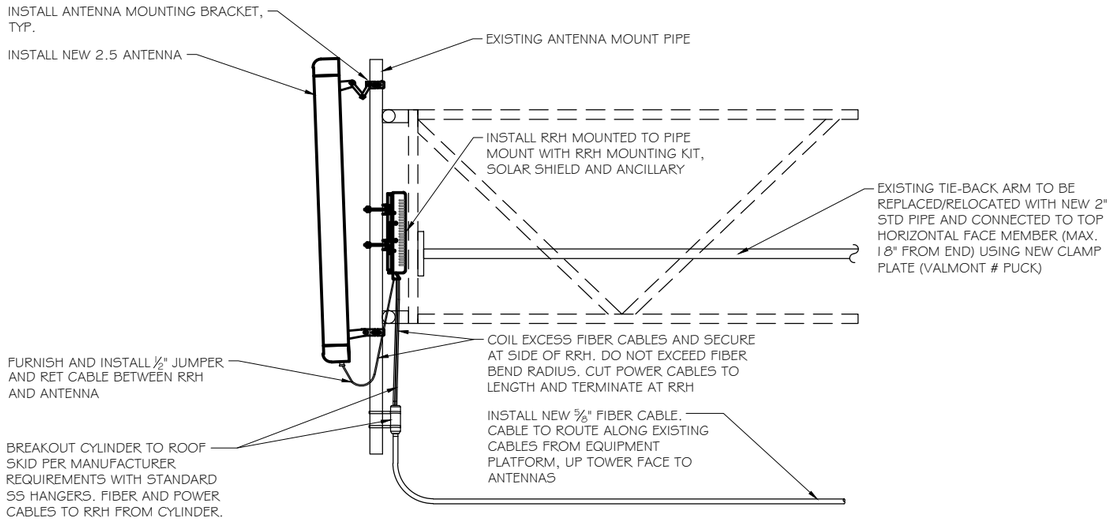
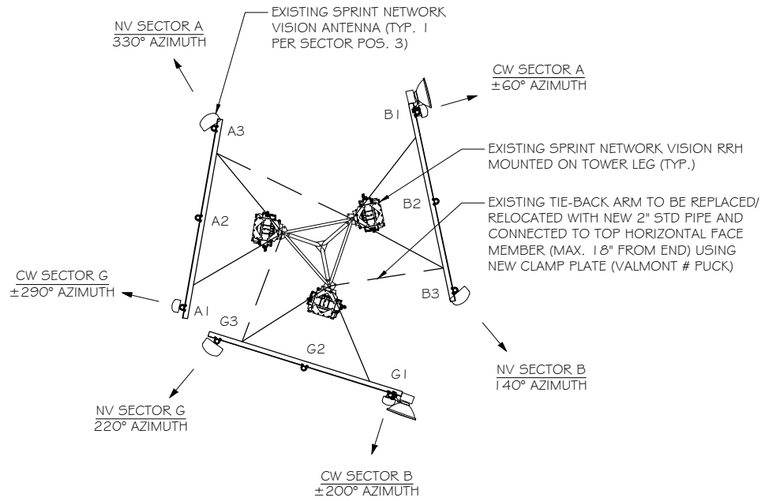


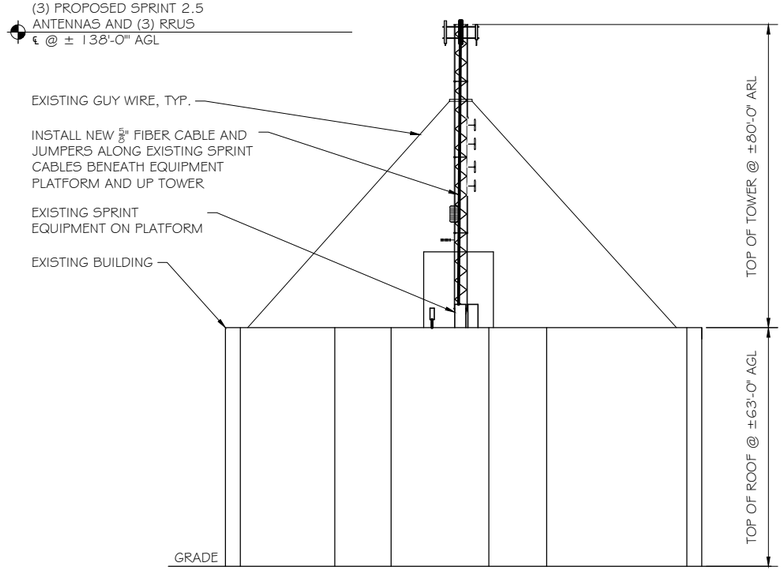
ANTENNA & RRH MOUNTING DETAILS — 1
SCALE: NTS



NORTH

EXISTING ANTENNA ARRAY — 3
SCALE: NTS

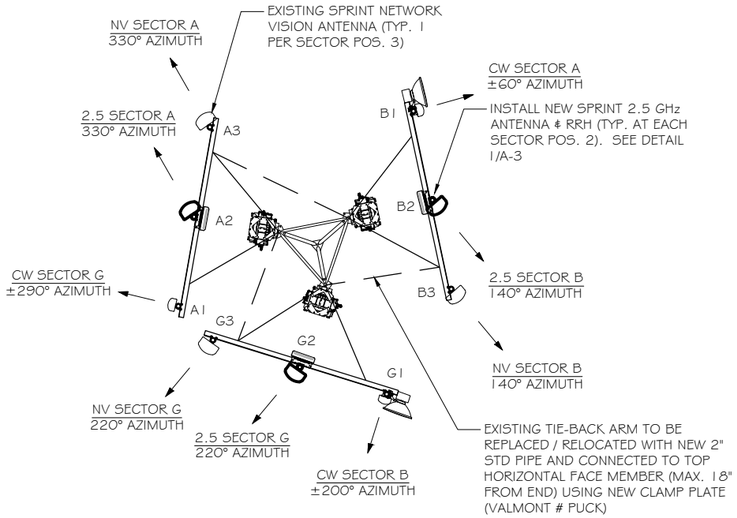
(3) EXISTING CLEARWIRE PANEL ANTENNAS,
(2) EXISTING CLEARWIRE MW ANTENNAS,
(3) EXISTING SPRINT PANEL ANTENNAS &
(3) PROPOSED SPRINT 2.5 ANTENNAS AND (3) RRUS
℄ @ ± 138'-0" AGL



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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VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
BUILDING ELEVATIONS & ANTENNA DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28720
SHEET NUMBER: A-3

Sprint

RFDS Sheet

General Site Information

Site ID	CT03XC098	Equipment Vendor	Alcatel-Lucent
Market	Northern Connecticut	Lattitude	41.69378
Region	Northeast	Longitude	-72.76273
MLA	N/A	LL SITE ID	N/A
Structure Type	Rooftop Tower		
BTS Type			

				Incremental Power Draw needed by added Equipment
Solution ID		Siterra SR Equipment type		
		Equipment Vendor	Alcatel-Lucent	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	FIBER ONLY	
Cable Qty	1	
Weight per foot. Lbs.	0.242	
Diameter. Inches.	0.73	
Length Ft.	100	(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	~~146~~ 138	~~146~~ 138	~~146~~ 138	PER ACTUAL FIELD CONDITIONS
Antenna Azimuth	330	140	220	
Antenna Mechanical Downtilt	0	0	0	
Antenna etilt	-2	-2	-2	

*RFDS SHEET WAS GENERATED BY RAMAKER & ASSOCIATES FROM PLAN OF RECORD (POR) 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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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. SKOWRONSKY ★ No. 26266 LICENSED PROFESSIONAL ENGINEER

Signature: James R Skowronsky Date: 7/10/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 07/10/2014

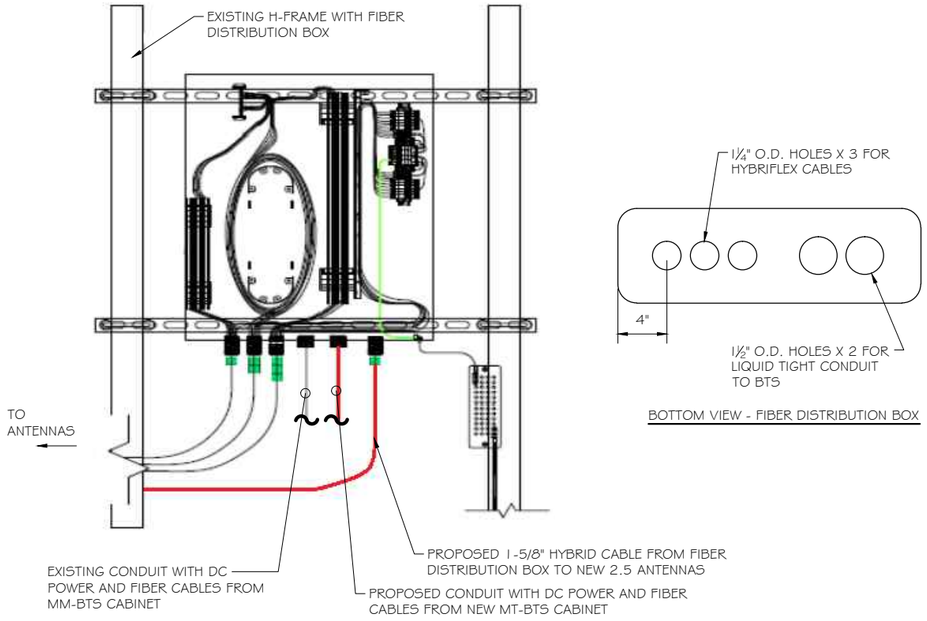
PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
RF DATA SHEET

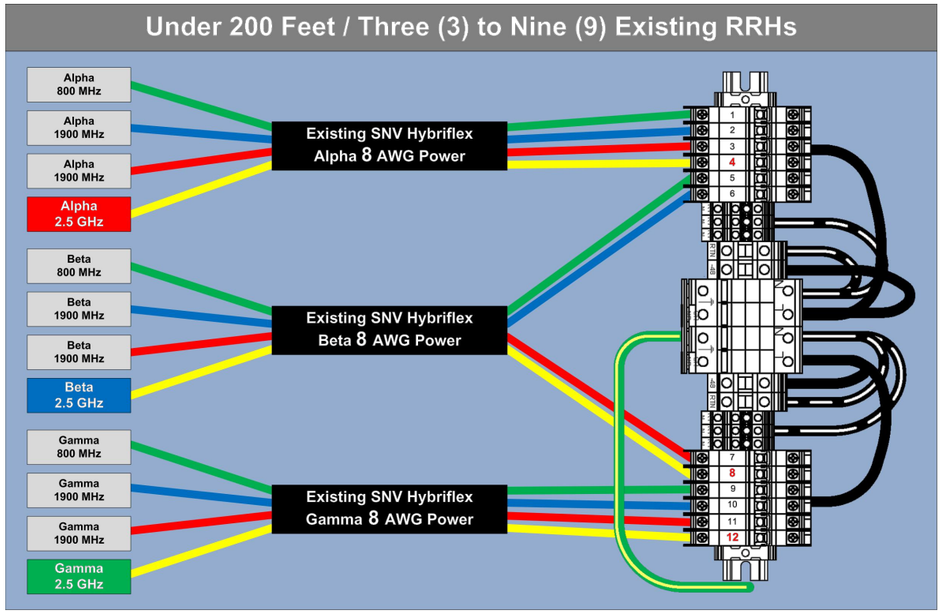
SCALE: NONE

PROJECT NUMBER: 28720
SHEET NUMBER: A-4

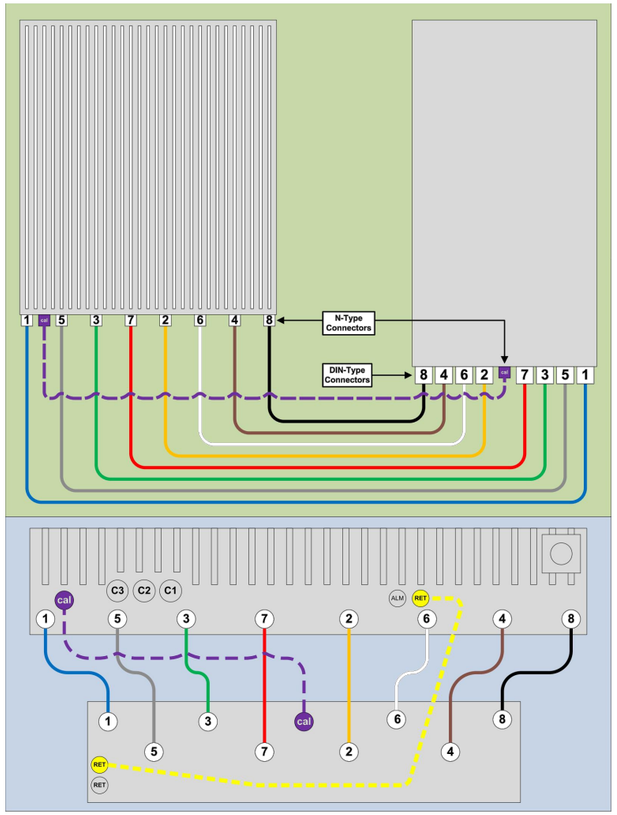


BOTTOM VIEW - FIBER DISTRIBUTION BOX

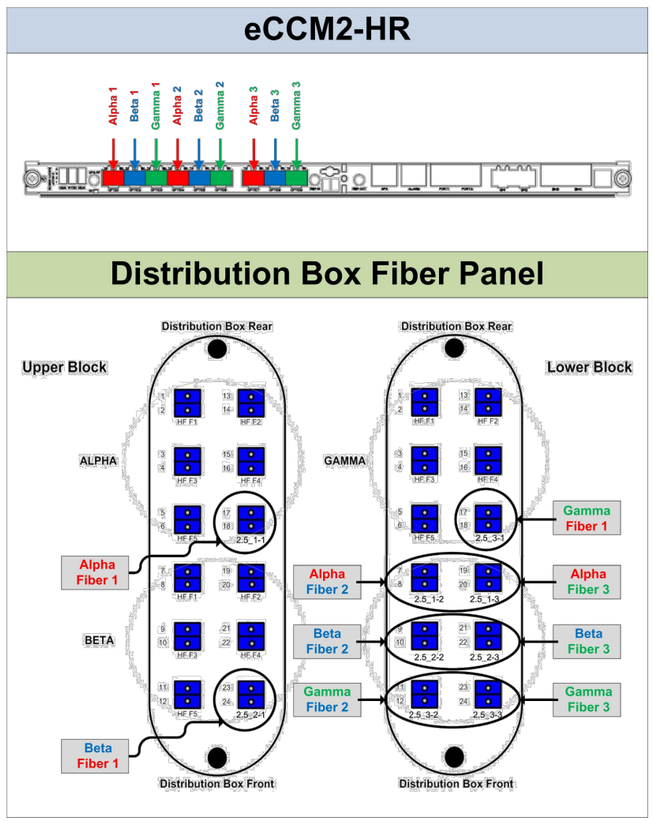
TYPICAL FIBER DISTRIBUTION BOX DETAIL (1)
SCALE: NTS



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



8T8R DETAIL (3)
SCALE: NTS



BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (4)
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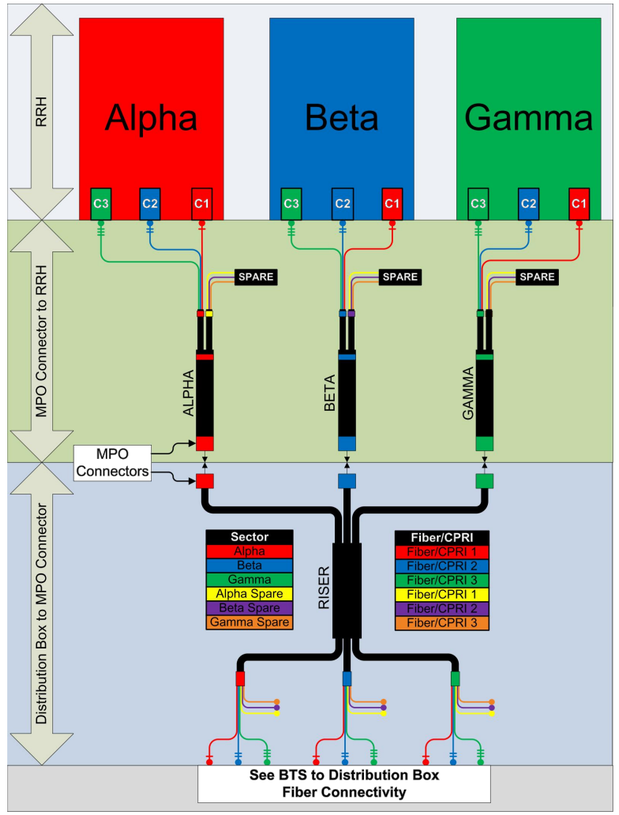

RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (5)
SCALE: NTS

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PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
FIBER PLUMBING DIAGRAM

SCALE: NONE

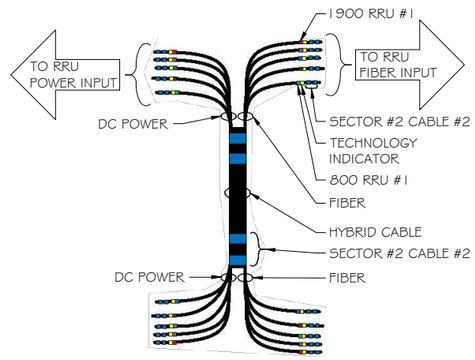
PROJECT NUMBER: 28720
SHEET NUMBER: A-5

I:\28700\28720\CAD\28720 2.5 CDs 041514.dwg Printed by: kgalston on Jul 10, 2014 - 12:57pm

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

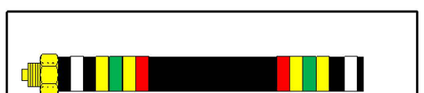
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

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: 7/10/2014

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DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
CABLE COLOR CODING

SCALE: NONE

PROJECT NUMBER: 28720
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"

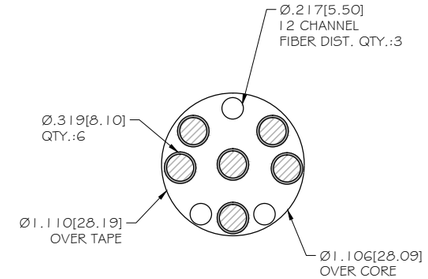
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

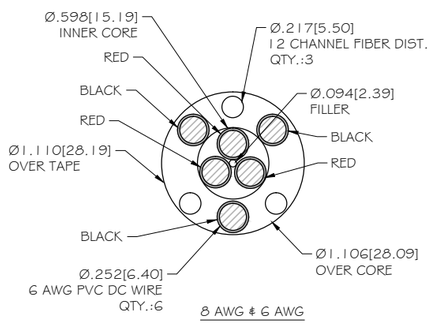
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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	

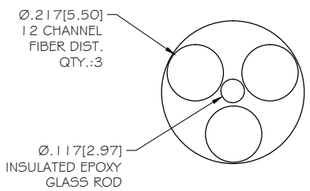
*NOTE: SPRINT CM TO CONFIRM HYBRID/FIBER RISER CABLE & HYBRID/FIBER JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG



8 AWG & 6 AWG



FIBER ONLY

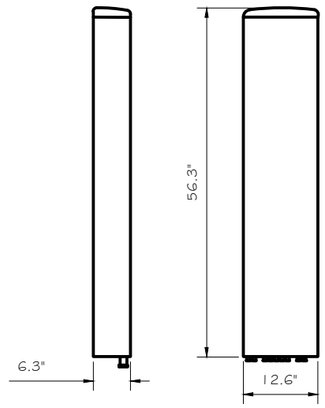
FIBER CABLE CROSS SECTION & DATA (1)
SCALE: NTS

RFS: APXV9TM14-ALU-120

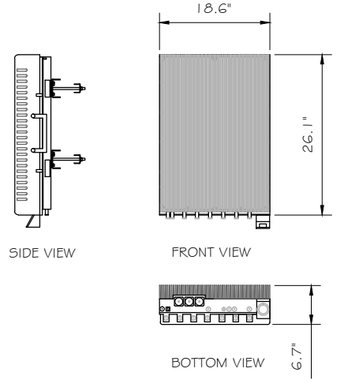
DIMENSIONS, HxWxD: 56.3" x 12.6" x 6.3"

WEIGHT, WITHOUT PRE-MOUNTED BRACKETS: 55.12 lbs.

CONNECTOR: (9) DIN FEMALE/BOTTOM



2.5 ANTENNA DETAIL (2)
SCALE: NTS



ALCATEL-LUCENT: TD-RRH8x20

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

WEIGHT = 70 lbs.

2.5 RRH DETAIL (3)
SCALE: NTS

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PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-0

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
ANTENNA & HYBRID CABLE DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28720
SHEET NUMBER: A-7

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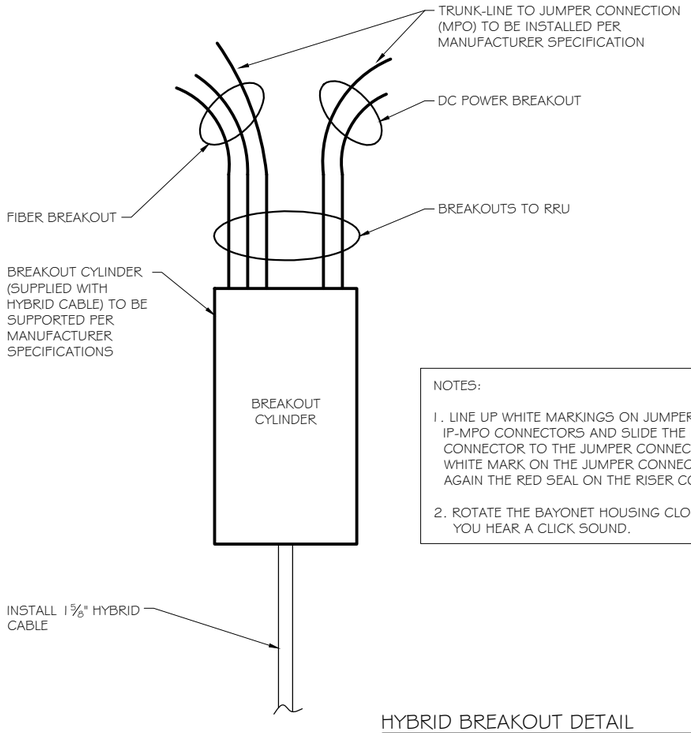
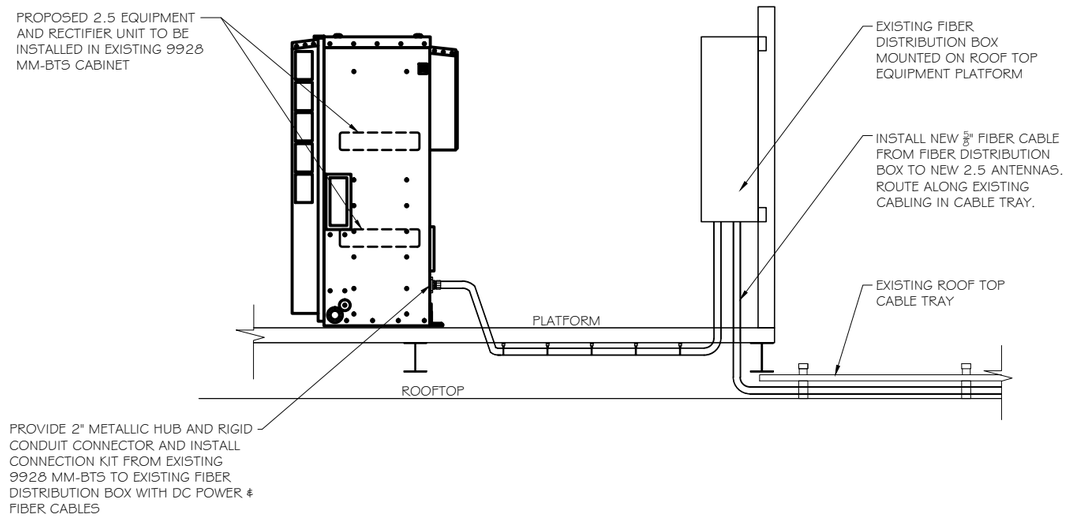


NOTES:

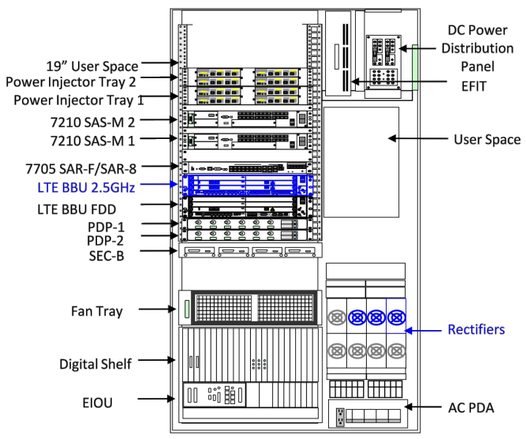
1. LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTORS AND SLIDE THE RISER CONNECTOR TO THE JUMPER CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAIN THE RED SEAL ON THE RISER CONNECTOR.
2. ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL YOU HEAR A CLICK SOUND.

HYBRID BREAKOUT DETAIL (1)
SCALE: NTS



CABLE ROUTE FROM CABINET (2)
SCALE: NTS

EXISTING BBU CABINET (3)
SCALE: NTS



EXISTING MMBS CABINET (4)
SCALE: NTS

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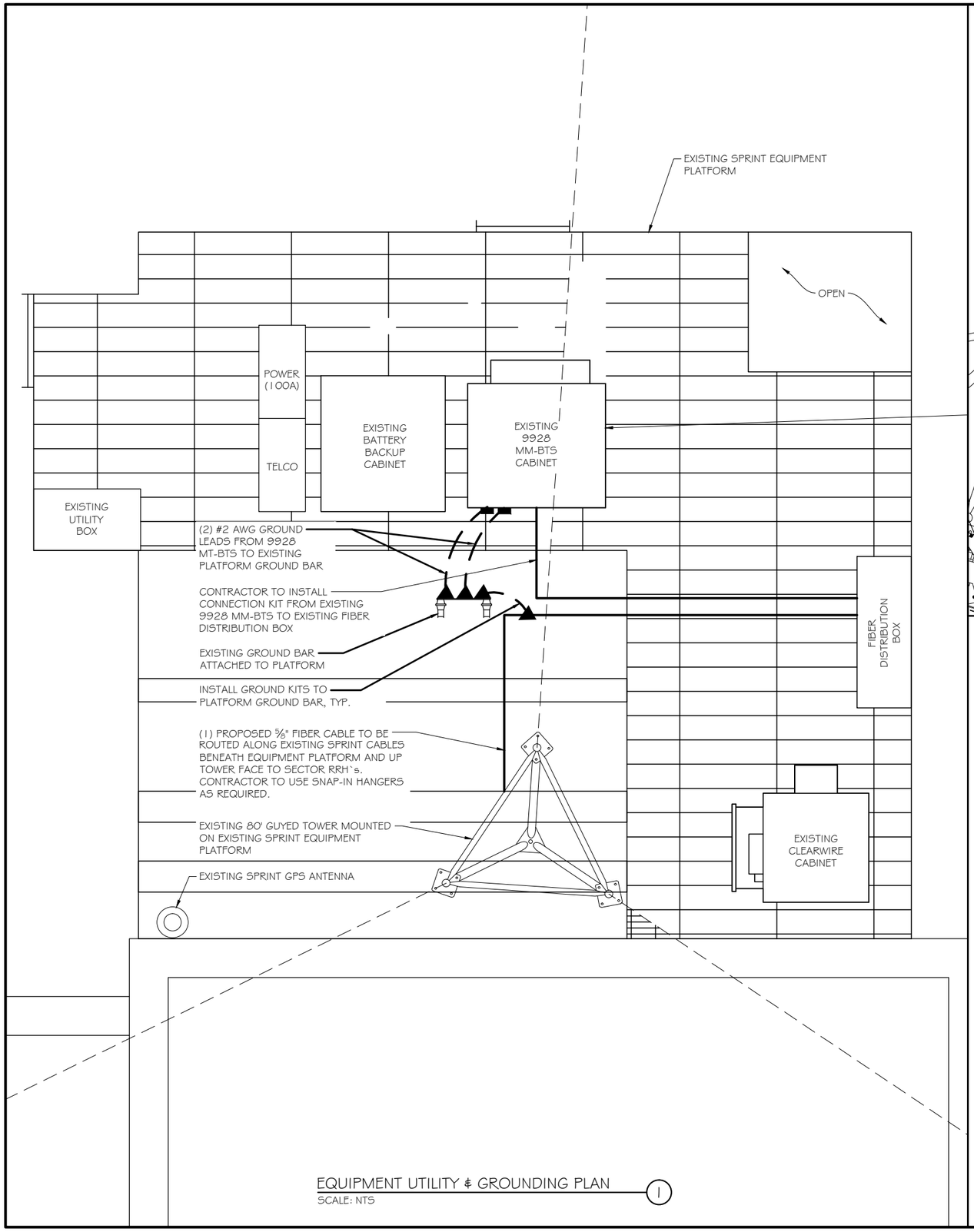
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

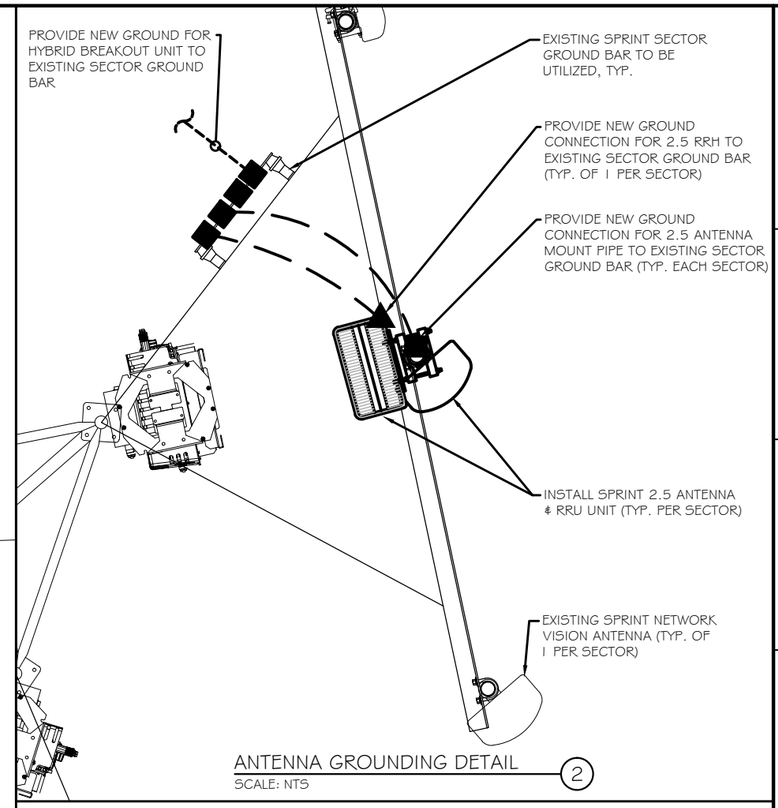
SHEET TITLE:
EQUIPMENT DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28720
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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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

James R Skowronski 7/10/2014
Signature: Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 07/10/2014

PROJECT TITLE:
VANCE HALL CCSU
CT03XC098-O

PROJECT INFORMATION:
1679 STANLEY STREET
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
EQUIPMENT UTILITY & GROUNDING PLAN

SCALE:
AS NOTED

PROJECT NUMBER: 28720
SHEET NUMBER: E-1

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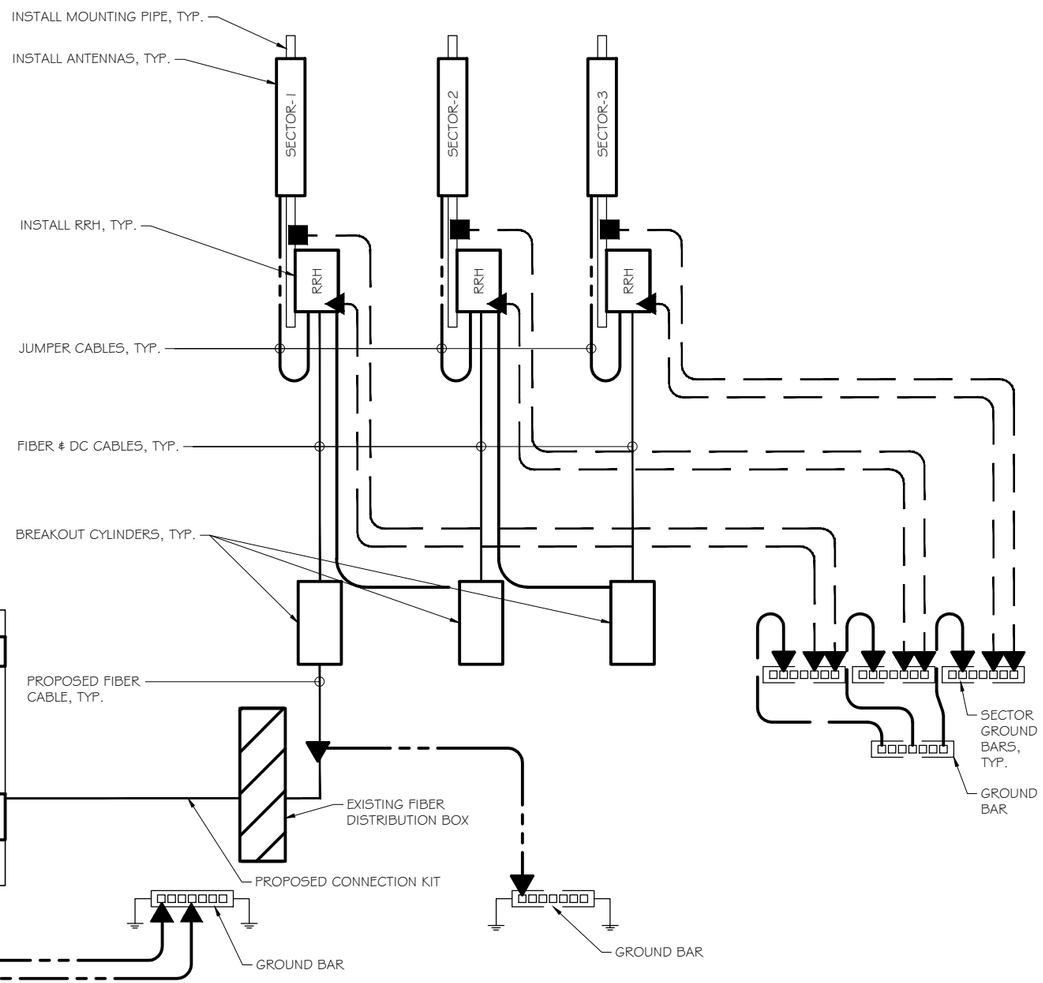
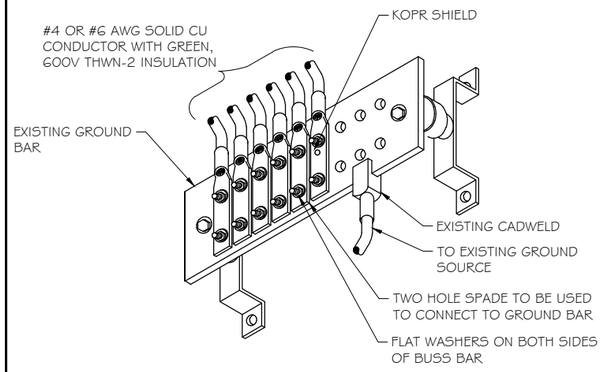
SYMBOL LEGEND
- MECHANICAL CONNECTION
- EXOTHERMIC CONNECTION



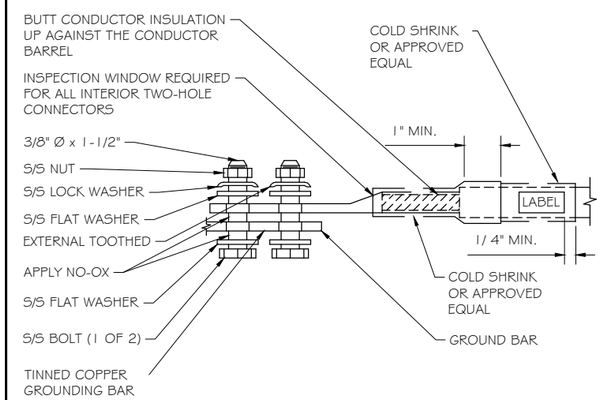
GROUNDING RISER DIAGRAM (1)
SCALE: NTS



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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PROJECT INFORMATION:
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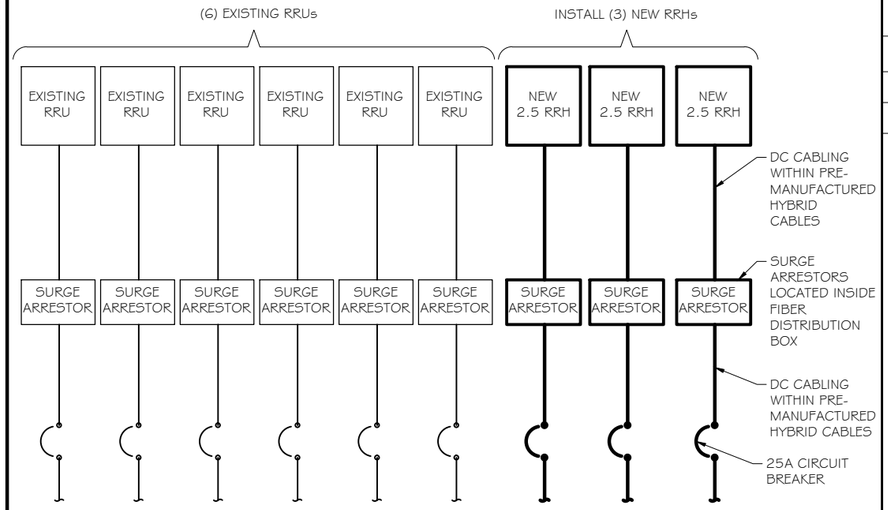
NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
GROUNDING DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28720
SHEET NUMBER: E-2



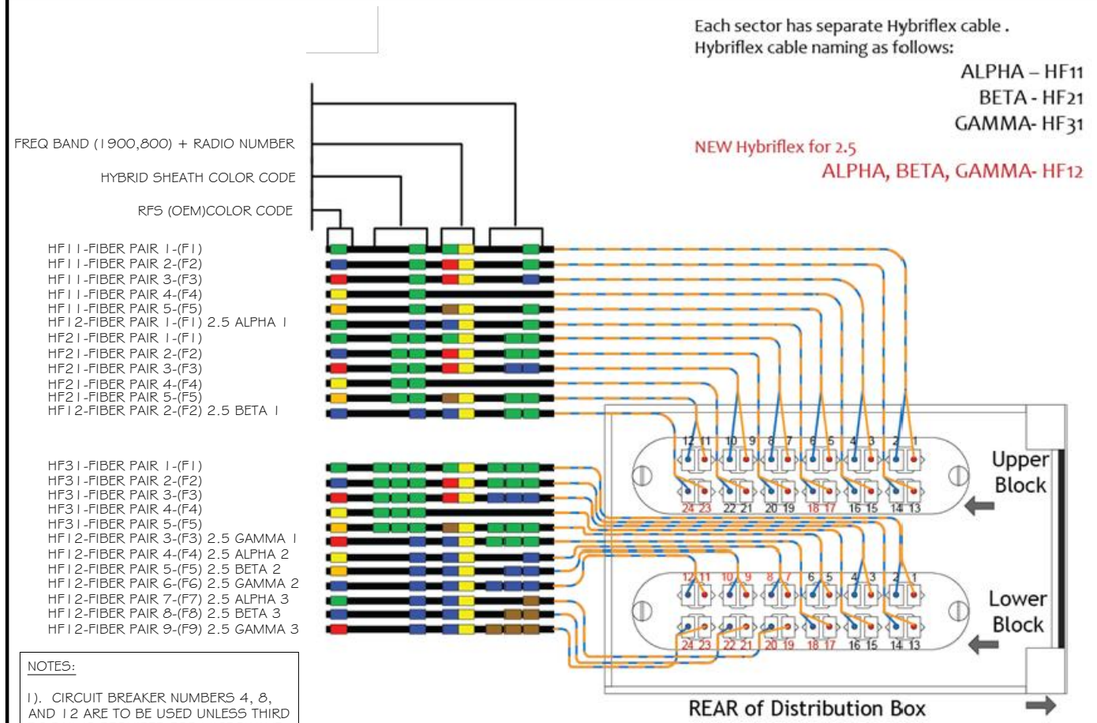
DC ONE-LINE DIAGRAM (1)
SCALE: NTS

A/C PANEL SCHEDULE

VOLTAGE:	240V/120		PANEL STATUS:	EXISTING		N TO GROUND BOND:	YES
MAIN BREAKER:	100 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	MMBTS	100	2	ON			ON	2	60	NOT LABELED	7
2											8
3	CLEARWIRE	40	2	ON			ON	1	20	NOT LABELED	9
4							ON	1	20	NOT LABELED	10
5	NOT LABELED	20	1	ON			ON	1	20	NOT LABELED	11
6	NOT LABELED	10	1	ON			ON	1	20	LIGHT	12

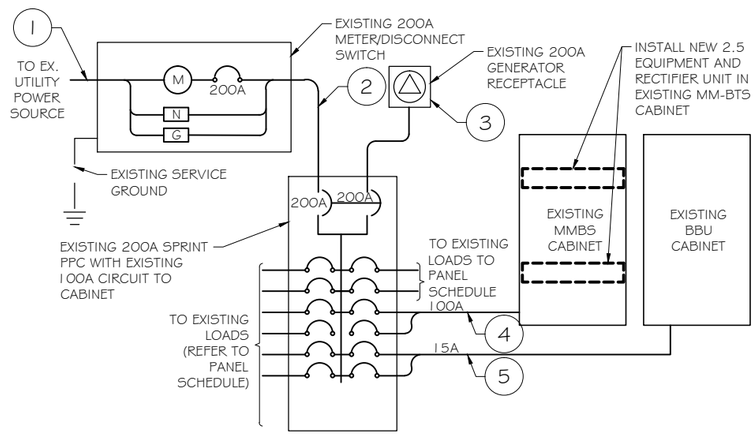
AC PANEL SCHEDULE (2)
SCALE: NTS



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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NEW BRITAIN, CT 06053
HARTFORD COUNTY

SHEET TITLE:
DC POWER DETAILS & PANEL SCHEDULES

SCALE:
AS NOTED

PROJECT NUMBER: 28720
SHEET NUMBER: E-3