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

November 4, 2014

Hand Delivered

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

CC to Property Owner
TOWN OF WESTON
56 Norfield Road
Weston, CT 06883

RE: Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at 237 Godfrey Road Weston, CT 06883. Known to Sprint Spectrum L.P. as site CT33XC522.

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 (201)-704-8157 or email JArdis@Transcendwireless.com with questions concerning this matter.
Thank you for your consideration.

Sincerely,

Jennifer Ardis
Real Estate Consultant

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC522

Transfer Station

237 Godfrey Road
Weston, CT 06883

November 4, 2014

EBI Project Number: 62145909

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

EBI Consulting
environmental | engineering | due diligence

November 4, 2014

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

Re: Radio Frequency Maximum Permissible Exposure (MPE) Assessment for Site:
CT33XC522 - Transfer Station

Site Total: 31.13% - MPE% in full compliance

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at **237 Godfrey Road, Weston, 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 **237 Godfrey Road, Weston, 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) 2 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 **174 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	CT33XC522 - Transfer Station
Site Addresss	237 Godfrey Road, Weston, CT, 06883
Site Type	Self Support 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	2	40	5.9	174	168	1/2 "	0.5	0	138.69	0.18%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	174	168	1/2 "	0.5	0	39.00	0.09%
1B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	174	168	1/2 "	0.5	0	138.69	0.31%
														Sector total Power Density Value:		0.58%

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	2	40	5.9	174	168	1/2 "	0.5	0	138.69	0.18%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	174	168	1/2 "	0.5	0	39.00	0.09%
2B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	174	168	1/2 "	0.5	0	138.69	0.31%
														Sector total Power Density Value:		0.58%

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	2	40	5.9	174	168	1/2 "	0.5	0	138.69	0.18%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	3.4	174	168	1/2 "	0.5	0	39.00	0.09%
3B	RFS	APXVTMM14-C-120	RRH	2500 MHz	CDMA / LTE	20	2	40	5.9	174	168	1/2 "	0.5	0	138.69	0.31%
														Sector total Power Density Value:		0.58%

Site Composite MPE %	
Carrier	MPE %
Sprint	1.73%
Weston Police	0.22%
Weston FD	0.23%
Weston EMS	0.23%
Weston Public Works	0.22%
Verizon Wireless	19.46%
AT&T	8.93%
T-Mobile	0.11%
Total Site MPE %	**31.13%**

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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.

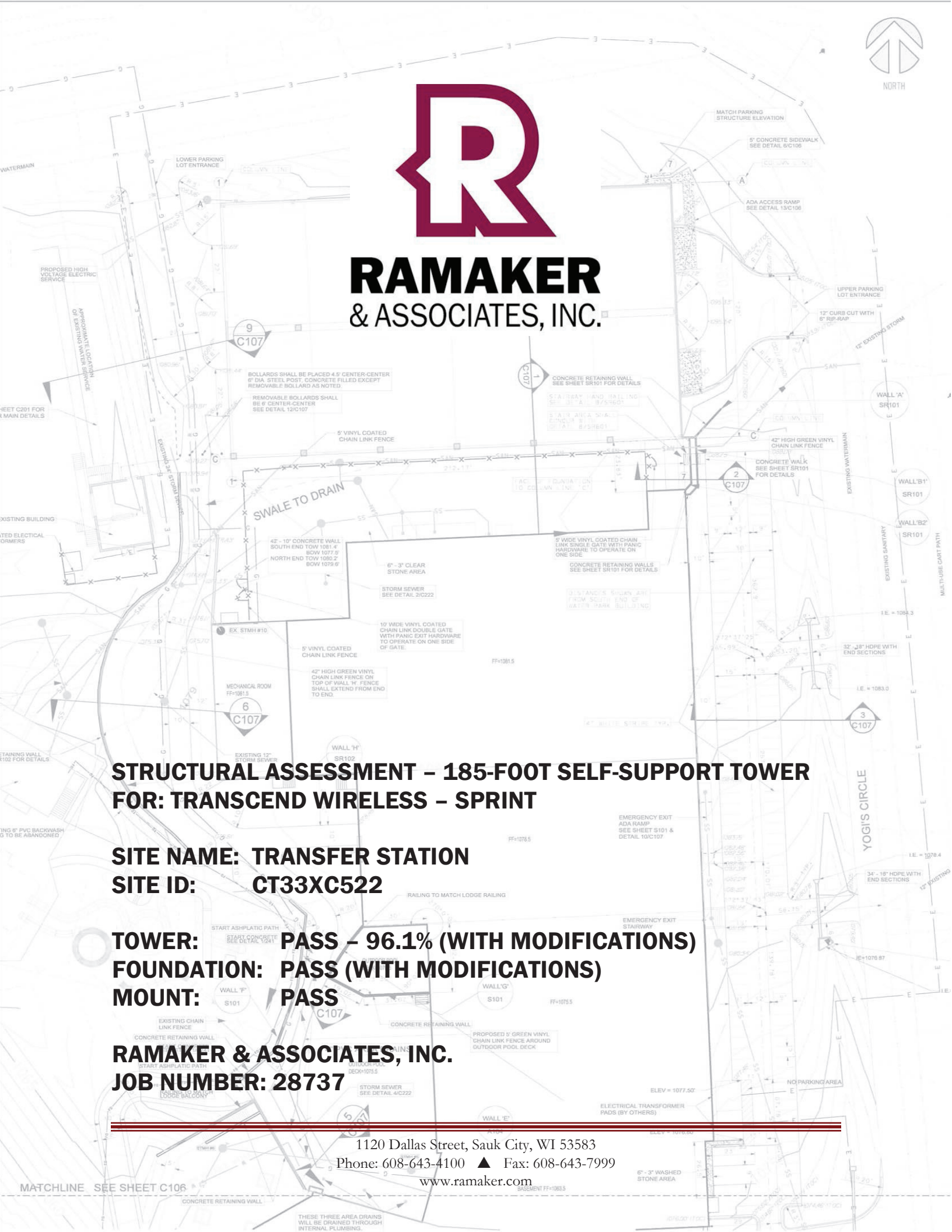
The anticipated Maximum Composite contributions from the Sprint facility are **1.73% (0.58% from sector 1, 0.58% from sector 2 and 0.58% from sector 3)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **31.13%** 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 – 185-FOOT SELF-SUPPORT TOWER
FOR: TRANSCEND WIRELESS – SPRINT

SITE NAME: TRANSFER STATION
SITE ID: CT33XC522

TOWER: PASS – 96.1% (WITH MODIFICATIONS)
FOUNDATION: PASS (WITH MODIFICATIONS)
MOUNT: PASS

RAMAKER & ASSOCIATES, INC.
JOB NUMBER: 28737

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

STRUCTURAL ASSESSMENT

SITE: Transfer Station (CT33XC522)
237 Godfrey Road
Weston, Fairfield County, Connecticut 06883

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: 28737

DATE OF REPORT ISSUANCE: October 15, 2014

Adam Kraus
Engineering Technician

10/15/14
Date

James R. Skowronski, P.E.
Supervising Engineer

10/15/14
Date

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

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LIST OF APPENDICES

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 installing three (3) RFS APXV9TM14-ALU-120 panel antennas and three (3) Alcatel-Lucent TD-RRH8x20 units on the three (3) existing T-frames at a centerline elevation of 174-feet AGL. The proposed antennas shall be fed with one (1) proposed 1-1/4-inch hybrid cable that shall be routed up the existing Sprint feedline ladder.

Existing tower members and the existing foundation could become overstressed under proposed loading conditions. ***The existing tower and foundation shall be modified per the modification drawings in Appendix D of this report prior to any equipment loading changes.***

Results of our tower analysis show that the ***modified*** tower will be stressed to a maximum of 96.1 percent of capacity under proposed loading conditions ***after all required tower modifications have been completed.***

The ***modified*** foundation was analyzed utilizing the foundation drawings and geotechnical report referenced below and it was determined that the ***modified*** foundation will provide adequate strength under proposed loading conditions ***after all required foundation modifications have been completed.***

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.

In summary, the ***modified*** tower and ***modified*** foundation will pass the TIA/EIA-222-F code requirements under proposed loading conditions ***after all required tower and foundation modifications have been completed***. 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 and foundation drawings by Sabre, proposal #06-8653-MJB-R3, dated June 20, 2006
- Previous structural analysis by Centek Engineering, project #14001.010, dated April 9, 2014
- Previous structural analysis by CHA, project #22702-1018-28000-R1, dated July 22, 2011

*** Note: It was assumed that all modifications to the original tower and foundation have been or will be completed as modeled and specified in the previous structural analyses by Centek Engineering and CHA referenced above. The contractor shall be responsible for verifying these modifications prior to any new equipment installation.*

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
185	(2) 8' Dipole	Leg Mount	(3) 7/8	Municipal	Existing
	(1) 15' Omni				
185	(4) Ericsson AIR 21 B2A B4P	(3) T-Frames	(12) 1-5/8 (1) 1-1/4 Hybrid	T-Mobile	Existing & Future
	(2) Ericsson AIR 21 B2A B2P				
	(6) Ericsson KRY 112 71				
174	(3) RFS APXVSPP18-C	(3) T-Frames	(3) 1-1/4 Hybrid	Sprint	Existing
	(3) Alcatel-Lucent 1900MHz RRH				
	(3) Alcatel-Lucent 800MHz RRH				
	(3) RFS APXV9TM14-ALU-120		**(1) 1-1/4 Hybrid**		**Proposed**
	(3) Alcatel-Lucent TD-RRH8x20				
164	(3) Antel BXA-70063-6CF	(3) T-Frames	(18) 1-5/8 (1) 1-5/8 Hybrid	Verizon	Existing & Future
	(4) Decibel DB846F65ZAXY				
	(2) Decibel DB846H80E-SX				
	(6) Kathrein Scala 742 213				
	(3) Alcatel-Lucent RRH2x40-AWS				
	(1) RFS DB-T1-6Z-8AB-0Z				

Elevation	Appurtenance	Mount	Coax	Owner	Status
154	(6) Powerwave 7770	(3) T-Frames	(12) 1-5/8 (2) Power (1) Fiber	AT&T	Existing
	(3) Powerwave P65-16-XLH-RR				
	(6) Powerwave LGP214nn				
	(3) Powerwave TT19-08BP111-001				
	(3) Ericsson RRUS-11				
	(1) Raycap DC6-48-60-18-8F				
146	(1) 15' Omni	(2) 6' Standoffs	(4) 7/8	Municipal	Existing
	(2) 8' Dipole				
138	(1) 3' Dish w/Radome	(1) 2' Standoff	(1) 1/2	Municipal	Existing

3.4 PROPOSED TOWER AND FOUNDATION MODIFICATIONS

The existing tower and foundation shall be modified per the modification drawings in Appendix D of this report prior to any equipment loading changes. All existing secondary and redundant bracing members and their associated hardware from 0- to 80-feet AGL and 100- to 140-feet AGL shall be removed. New secondary horizontal bracing shall be installed from 140- to 160-feet AGL. The existing diagonal members from 0- to 20-feet AGL, 40- to 60-feet AGL, 80- to 100-feet AGL, and 140- to 180-feet AGL shall be replaced with new diagonal members. The existing tower legs from 0- to 140-feet AGL shall be reinforced with new reinforcing angles along the length of each leg section. The existing foundation shall be modified by placing concrete on top of the existing footing up to the top of the existing piers. Further details regarding the required tower and foundation modifications can be found in Appendix D of this report.

3.5 WIND AND ICE LOAD

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

SECTION 4
ANALYSIS RESULTS

4.1 ANALYSIS RESULTS

The *modified* 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	89.9
Diagonal	90.0
Horizontal	21.5
Secondary Horizontal	10.0
Bolt	96.1
RATING =	**96.1**

4.2 BASE REACTIONS

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

Load Type	Proposed Model
Total Axial (k)	88.8
Total Shear (k)	57.5
Total Moment (k-ft)	6223.7
Leg Uplift (k)	297.5
Leg Compression (k)	371.8
Leg Shear (k)	31.7

The *modified* foundation was analyzed utilizing the foundation drawings and geotechnical report referenced below and it was determined that the *modified* foundation will provide adequate strength under proposed loading conditions ***after all required foundation modifications have been completed.***

4.3 MOUNT ASSESSMENT

By engineering calculation and inspection, the antenna mounting structure is capable of supporting the existing and proposed Sprint 2.5 equipment deployment without causing an overstress condition in the antenna mounting structure.

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

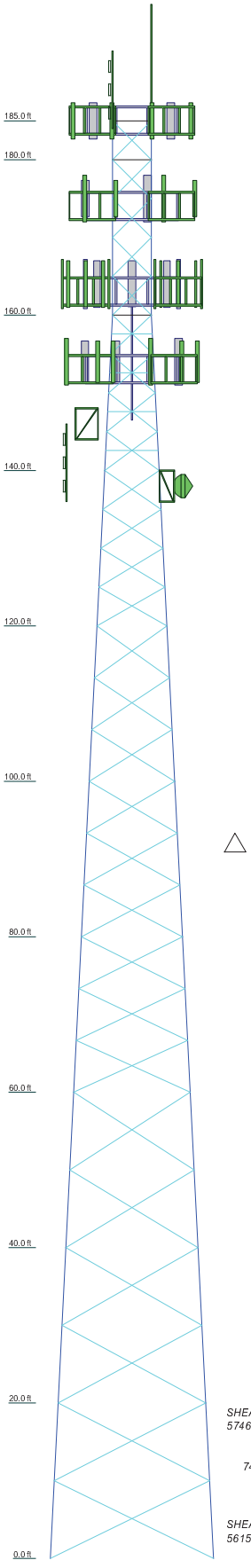
1. 2003 International Building Code.

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	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Sec. Horizontals	Face Width (ft)	# Panels @ (ft)	Weight (lb) 26842.3
T1	P2x.154		L2x2x1/8				5	13 @ 5	146.5
T2	P2.5x.203		L2x2x1/4		L2x2x1/8	N.A.			914.3
T3	P2.5x.375								1456.5
T4	P3.5x0.318 + L3.5x3.5x0.375		L2x2x3/16				7		1765.9
T5	P5x0.258 + L5x5x0.375	A572-50	L2 1/2x2 1/2x3/16	A36			9		2210.9
T6	P5x0.375 + L5x5x0.375		L2 1/2x2 1/2x5/16				11	9 @ 6.66667	3144.2
T7			L3x3x3/16		N.A.	N.A.	13		2911.7
T8	P5x0.500 + L5x5x0.500		L3x3x3/8				15		4126.1
T9			L3 1/2x3 1/2x1/4				17	6 @ 10	4429.9
T10	P8x0.322 + L8x8x0.500		L3 1/2x3 1/2x3/8				19		5470.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
8' Dipole (Municipal)	185	DB846F65ZAXY w/Mount Pipe (Verizon)	164
15' Omni (Municipal)	185	742 213 w/Mount Pipe (Verizon)	164
8' Dipole (Municipal)	185	742 213 w/Mount Pipe (Verizon)	164
Andrew 12'-6" Universal Sector Frame (T-Mobile)	185	742 213 w/Mount Pipe (Verizon)	164
Andrew 12'-6" Universal Sector Frame (T-Mobile)	185	742 213 w/Mount Pipe (Verizon)	164
Andrew 12'-6" Universal Sector Frame (T-Mobile)	185	742 213 w/Mount Pipe (Verizon)	164
(2) AIR 21 B2A B4P w/Mount Pipe (T-Mobile)	185	742 213 w/Mount Pipe (Verizon)	164
(2) AIR 21 B2A B4P w/Mount Pipe (T-Mobile)	185	RRH 2x40 AWS (Verizon)	164
(2) AIR 21 B2A B2P w/Mount Pipe (T-Mobile)	185	RRH 2x40 AWS (Verizon)	164
(2) KRY 112 71 (T-Mobile)	185	RRH 2x40 AWS (Verizon)	164
(2) KRY 112 71 (T-Mobile)	185	DB-T1-6Z-8AB-0Z (Verizon)	164
(2) KRY 112 71 (T-Mobile)	185	Andrew 12'-6" Quik-Tee Sector Frame (ATI)	154
Andrew 12'-6" Universal Sector Frame (Sprint)	174	Andrew 12'-6" Quik-Tee Sector Frame (ATI)	154
Andrew 12'-6" Universal Sector Frame (Sprint)	174	Andrew 12'-6" Quik-Tee Sector Frame (ATI)	154
Andrew 12'-6" Universal Sector Frame (Sprint)	174	RA21.7770.00 (ATI)	154
APXVSPP18-C w/Mount Pipe (Sprint)	174	RA21.7770.00 (ATI)	154
APXVSPP18-C w/Mount Pipe (Sprint)	174	RA21.7770.00 (ATI)	154
APXVSPP18-C w/Mount Pipe (Sprint)	174	RA21.7770.00 (ATI)	154
1900MHz 4x40W RRH (Sprint)	174	RA21.7770.00 (ATI)	154
1900MHz 4x40W RRH (Sprint)	174	RA21.7770.00 (ATI)	154
1900MHz 4x40W RRH (Sprint)	174	P65-16-XLH-RR w/Mount Pipe (ATI)	154
800MHz 2x50W RRH (Sprint)	174	P65-16-XLH-RR w/Mount Pipe (ATI)	154
800MHz 2x50W RRH (Sprint)	174	P65-16-XLH-RR w/Mount Pipe (ATI)	154
800MHz 2x50W RRH (Sprint)	174	(2) LGP214nn (ATI)	154
APXV9TM14-C-I20 w/Mount Pipe (Sprint)	174	(2) LGP214nn (ATI)	154
APXV9TM14-C-I20 w/Mount Pipe (Sprint)	174	(2) LGP214nn (ATI)	154
APXV9TM14-C-I20 w/Mount Pipe (Sprint)	174	TT19-08BP111-001 (ATI)	154
TD-RRH8x20-25 (Sprint)	174	TT19-08BP111-001 (ATI)	154
TD-RRH8x20-25 (Sprint)	174	TT19-08BP111-001 (ATI)	154
TD-RRH8x20-25 (Sprint)	174	RRUS-11 (ATI)	154
Andrew 12'-6" Quik-Tee Sector Frame (Verizon)	164	RRUS-11 (ATI)	154
Andrew 12'-6" Quik-Tee Sector Frame (Verizon)	164	RRUS-11 (ATI)	154
Andrew 12'-6" Quik-Tee Sector Frame (Verizon)	164	DC6-48-60-18-8F (ATI)	154
BXA-70063-6CF-EDIN-X w/Mount Pipe (Verizon)	164	6' Standoff (Municipal)	146
BXA-70063-6CF-EDIN-X w/Mount Pipe (Verizon)	164	6' Standoff (Municipal)	146
BXA-70063-6CF-EDIN-X w/Mount Pipe (Verizon)	164	15' Omni (Municipal)	146
DB846F65ZAXY w/Mount Pipe (Verizon)	164	8' Dipole (Municipal)	146
DB846F65ZAXY w/Mount Pipe (Verizon)	164	8' Dipole (Municipal)	146
DB846H80E-SX w/Mount Pipe (Verizon)	164	2' Standoff (Dish)	138
DB846H80E-SX w/Mount Pipe (Verizon)	164	Andrew 3' w/Radome (Sprint)	138
DB846F65ZAXY w/Mount Pipe (Verizon)	164		

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 Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 96.1%

MAX. CORNER REACTIONS AT BASE:
DOWN: 371821 lb
SHEAR: 31685 lb

UPLIFT: -297453 lb
SHEAR: 30176 lb

AXIAL
88817 lb
SHEAR 57462 lb *MOMENT 6223742 lb-ft*

TORQUE 9519 lb-ft
74 mph WIND - 0.5000 in ICE
AXIAL
56475 lb
SHEAR 56156 lb *MOMENT 6098448 lb-ft*

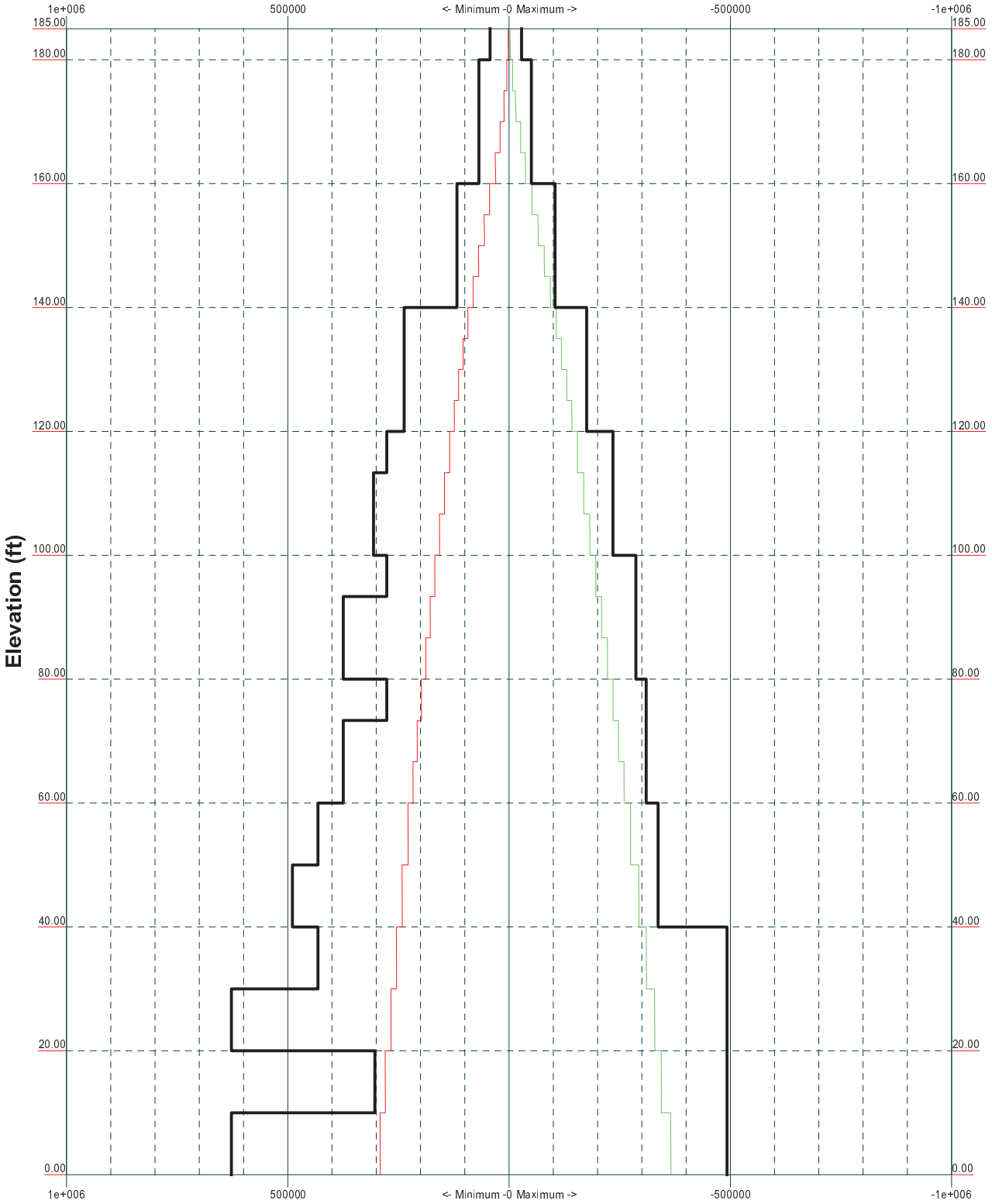
TORQUE 8251 lb-ft
REACTIONS - 85 mph WIND

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

Job: *Transfer Station (CT33XC522)*
Project: *28737*
Client: Transcend Wireless / Sprint | Drawn by: A. Kraus | Appr'd:
Code: TIA/EIA-222-F | Date: 10/10/14 | Scale: NTS
Path: I:\28700\28737\Structural\sx28737.rex1.sd | Dwg No. E-1

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

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



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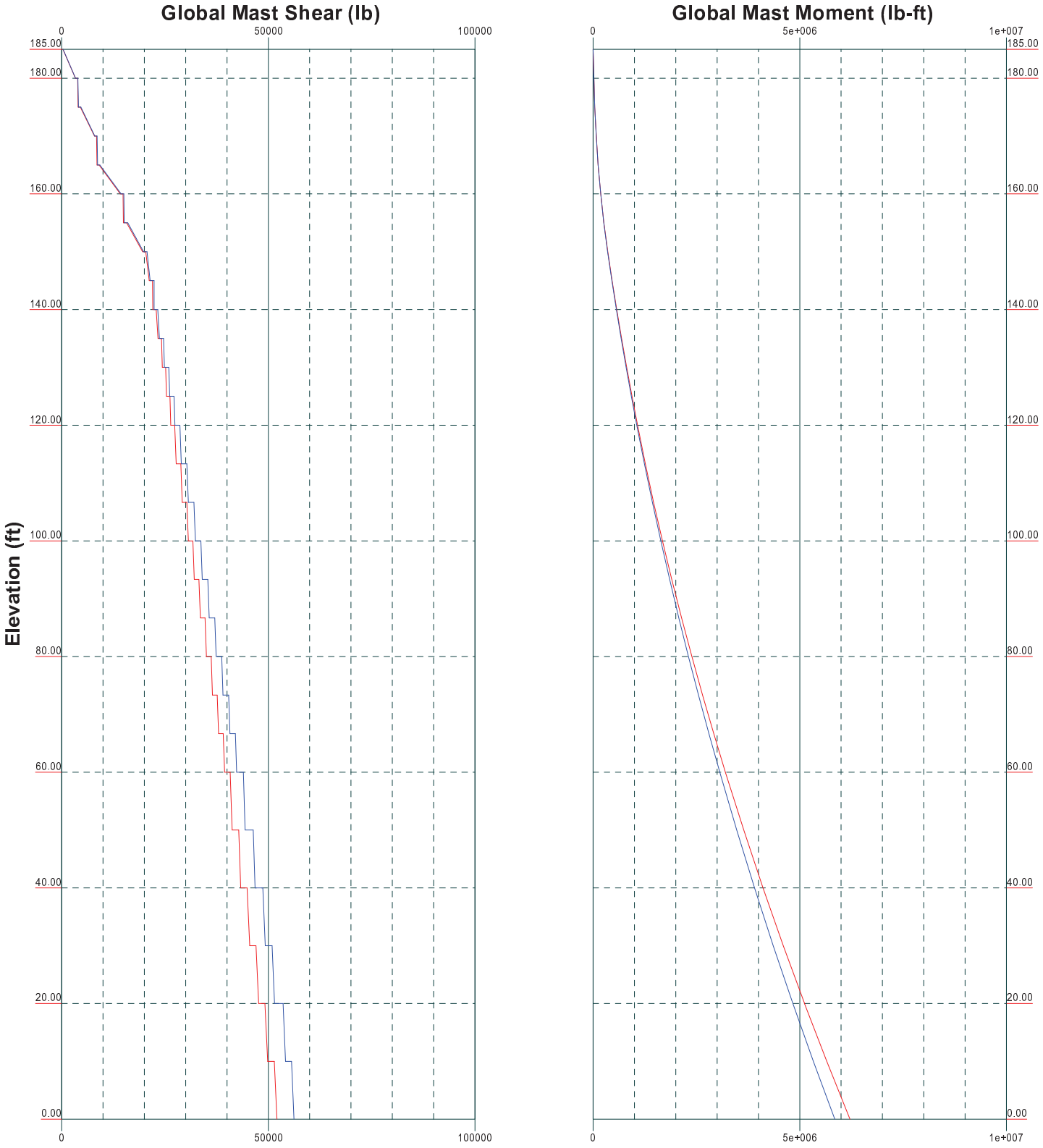
Job: *Transfer Station (CT33XC522)*			
Project: *28737*			
Client: Transcend Wireless / Sprint	Drawn by: A. Kraus	App'd:	
Code: TIA/EIA-222-F	Date: 10/10/14	Scale: NTS	
Path: I:\28700\28737\Structural\tnx\28737 rev1.eri		Dwg No. E-3	

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

Vx Vz

Maximum Values

Mx Mz



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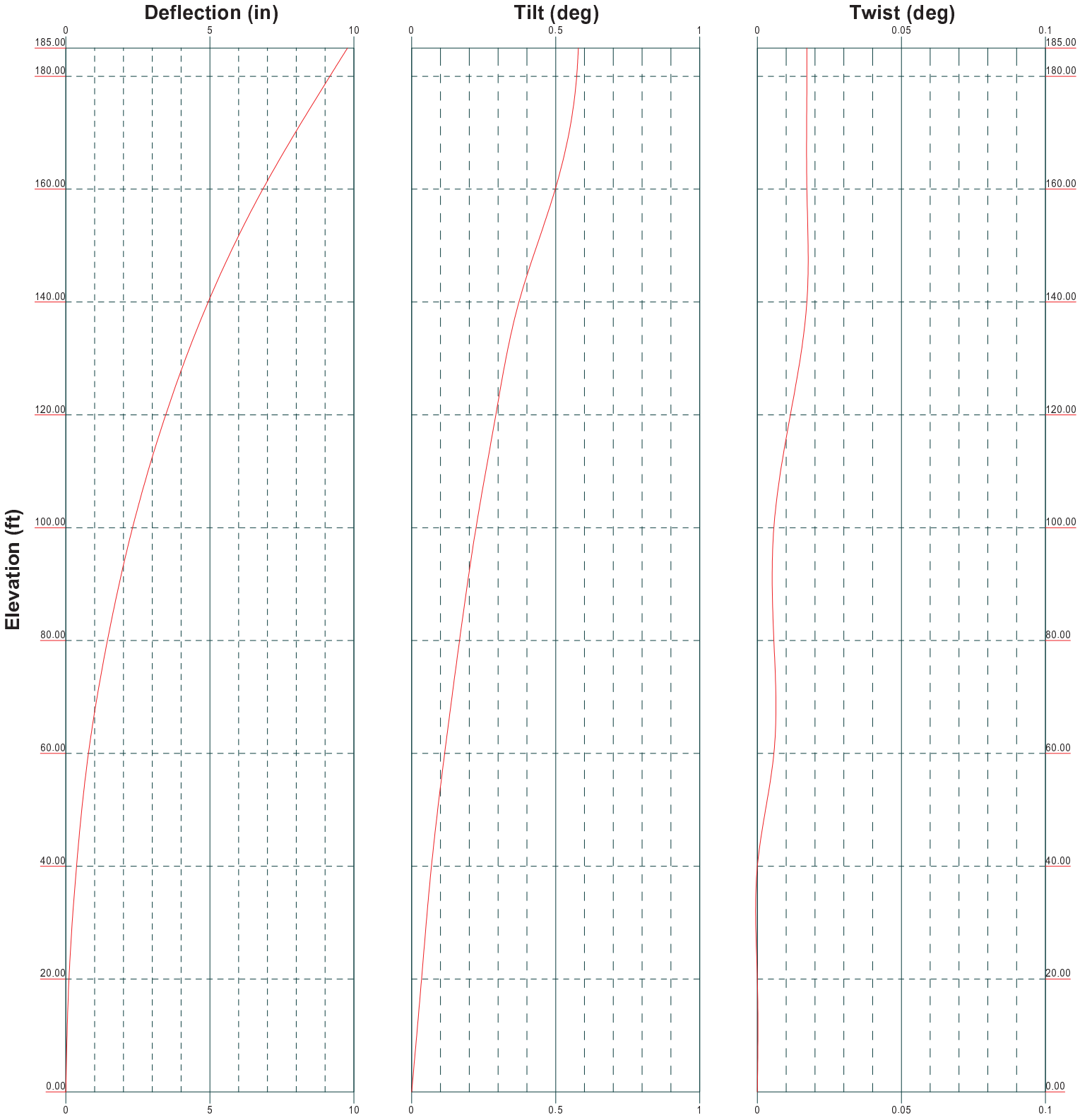
Sauk City, WI 53583
Phone: (608) 643-4100
FAX: (608) 643-7999

Job: Transfer Station (CT33XC522)			
Project: 28737			
Client: Transcend Wireless / Sprint	Drawn by: A. Kraus	App'd:	
Code: TIA/EIA-222-F	Date: 10/10/14	Scale: NTS	
Path: I:\28700\28737\Structural\tnx\28737 rev1.eri		Dwg No. E-4	

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

Maximum Values



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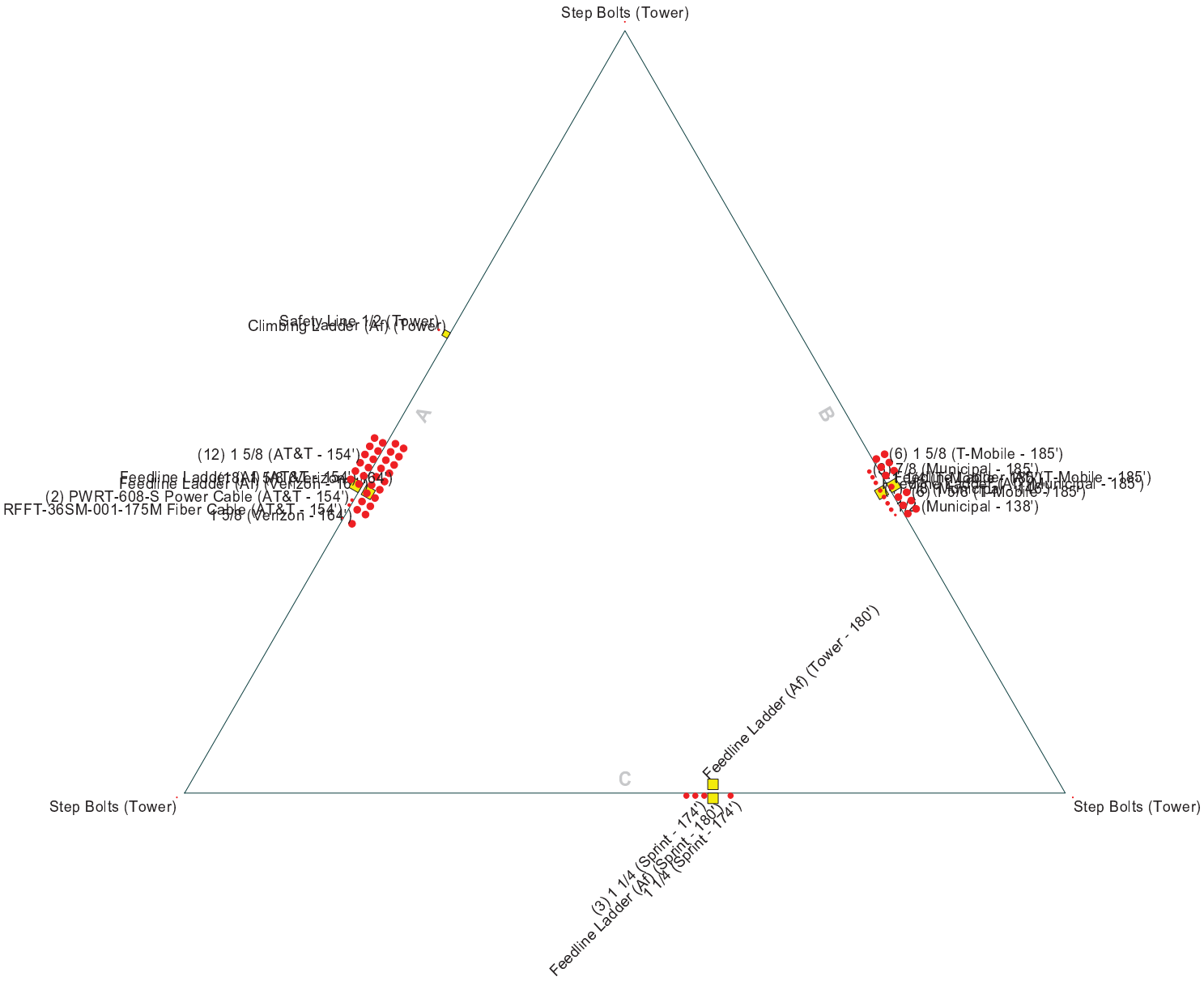
Phone: (608) 643-4100
FAX: (608) 643-7999

Job: ***Transfer Station (CT33XC522)***			
Project: ***28737***			
Client: Transcend Wireless / Sprint	Drawn by: A. Kraus		App'd:
Code: TIA/EIA-222-F	Date: 10/10/14		Scale: NTS
Path: I:\28700\28737\Structural\tnx\28737 rev1.eri			Dwg No. E-5

Feed Line Plan

Round Flat App In Face App Out Face



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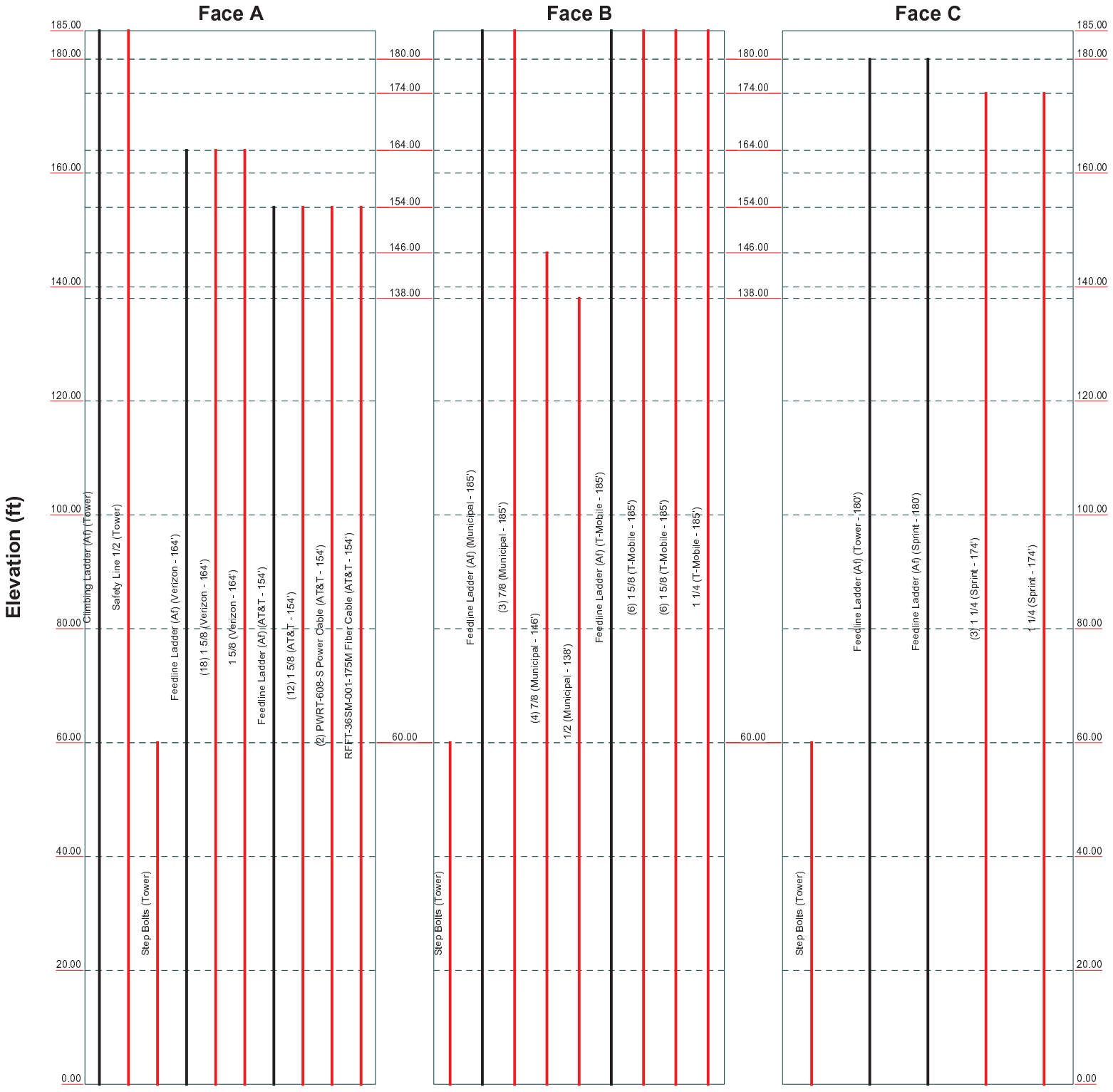
Job: *Transfer Station (CT33XC522)*			
Project: *28737*			
Client: Transcend Wireless / Sprint	Drawn by: A. Kraus	App'd:	
Code: TIA/EIA-222-F	Date: 10/10/14	Scale: NTS	
Path: I:\28700\28737\Structural\tnx\28737 rev1.eri		Dwg No. E-7	

Feed Line Distribution Chart
0' - 185'

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



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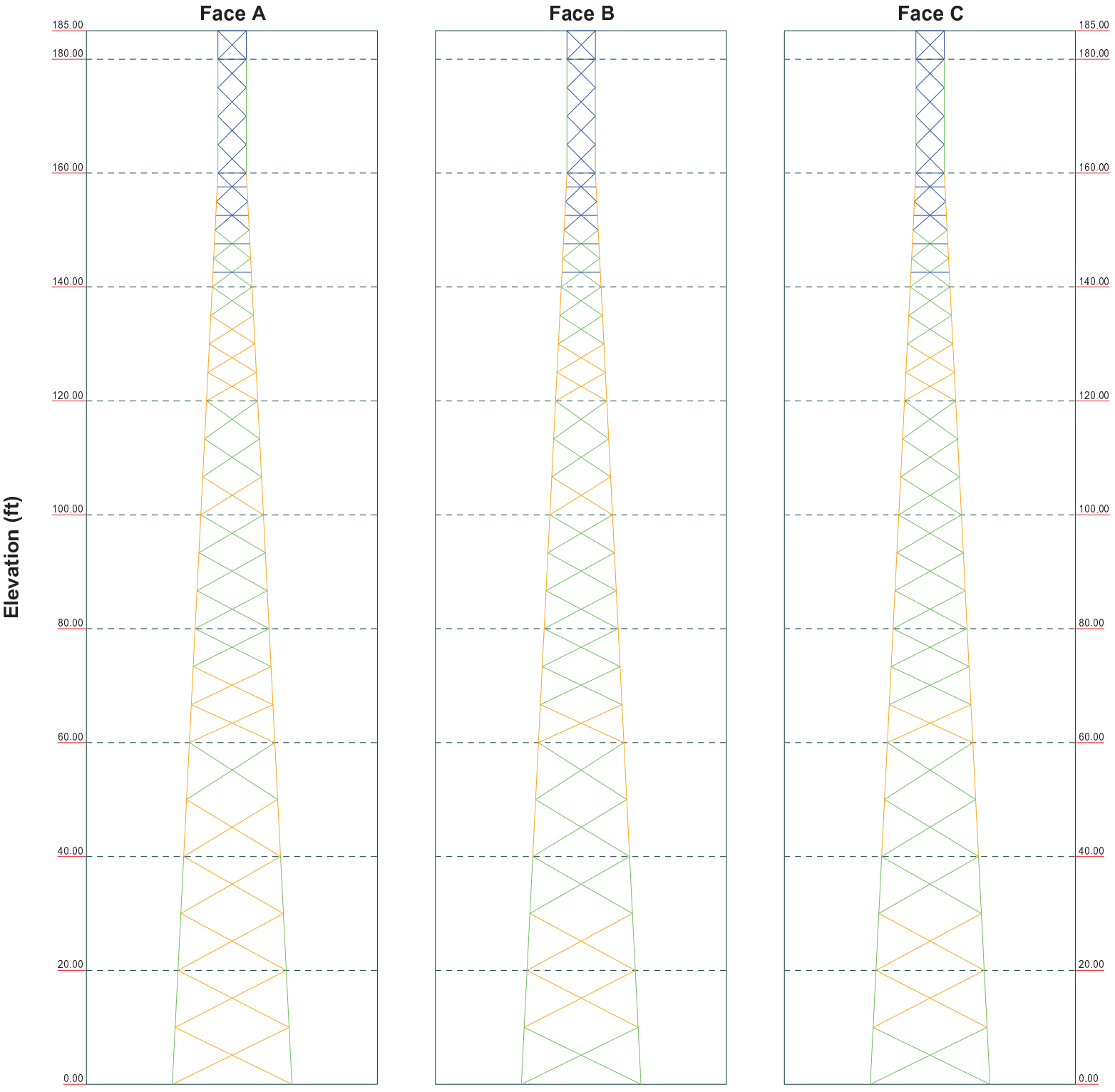
Job: ***Transfer Station (CT33XC522)***			
Project: ***28737***			
Client: Transcend Wireless / Sprint	Drawn by: A. Kraus	App'd:	
Code: TIA/EIA-222-F	Date: 10/10/14	Scale: NTS	
Path: I:\28700\28737\Structural\tnx\28737 rev1.eri		Dwg No. E-7	

Stress Distribution Chart
0' - 185'

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



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Job: *Transfer Station (CT33XC522)*			
Project: *28737*			
Client: Transcend Wireless / Sprint	Drawn by: A. Kraus	App'd:	
Code: TIA/EIA-222-F	Date: 10/10/14	Scale: NTS	
Path: I:\28700\28737\Structural\tnx\28737 rev1.eri		Dwg No. E-8	

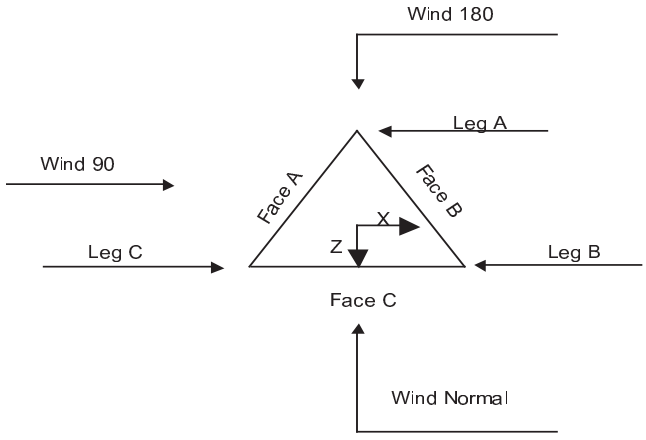
APPENDIX B

TOWER CALCULATIONS

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 185.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 21.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- 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.



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	185.00-180.00			5.00	1	5.00
T2	180.00-160.00			5.00	1	20.00
T3	160.00-140.00			5.00	1	20.00
T4	140.00-120.00			7.00	1	20.00
T5	120.00-100.00			9.00	1	20.00
T6	100.00-80.00			11.00	1	20.00
T7	80.00-60.00			13.00	1	20.00
T8	60.00-40.00			15.00	1	20.00
T9	40.00-20.00			17.00	1	20.00
T10	20.00-0.00			19.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	185.00-180.00	5.00	X Brace	No	Yes	0.0000	0.0000
T2	180.00-160.00	5.00	X Brace	No	Yes	0.0000	0.0000
T3	160.00-140.00	5.00	X Brace	No	Yes	0.0000	0.0000
T4	140.00-120.00	5.00	X Brace	No	Yes	0.0000	0.0000
T5	120.00-100.00	6.67	X Brace	No	Yes	0.0000	0.0000
T6	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T7	80.00-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	20.00-0.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 185.00-180.00	Pipe	P2x.154	A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T2 180.00-160.00	Pipe	P2.5x.203	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 160.00-140.00	Pipe	P2.5x.375	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 140.00-120.00	Arbitrary Shape	P3.5x0.318 + L3.5x3.5x0.375	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T5 120.00-100.00	Arbitrary Shape	P5x0.258 + L5x5x0.375	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	Arbitrary Shape	P5x0.375 + L5x5x0.375	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T7 80.00-60.00	Arbitrary Shape	P5x0.375 + L5x5x0.375	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T8 60.00-40.00	Arbitrary Shape	P5x0.500 + L5x5x0.500	A572-50 (50 ksi)	Equal Angle	L3x3x3/8	A36 (36 ksi)
T9 40.00-20.00	Arbitrary Shape	P8x0.322 + L8x8x0.500	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T10 20.00-0.00	Arbitrary Shape	P8x0.322 + L8x8x0.500	A572-50	Equal Angle	L3 1/2x3 1/2x3/8	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
			(50 ksi)			(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 185.00-180.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 160.00-140.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T3 160.00-140.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 185.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000

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
T10 20.00-0.00	0.00	0.0000	(36 ksi) 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	Yes	Yes	1	1	1	1	1	1	1	1
185.00-180.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T3	No	Yes	1	1	1	1	1	1	0.5	1
160.00-140.00				1	1	1	1	1	0.5	1
T4	Yes	Yes	1.396	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T5	Yes	Yes	1.395	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T6	Yes	Yes	1.385	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T7 80.00-60.00	Yes	Yes	1.109	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 60.00-40.00	Yes	Yes	1.107	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 40.00-20.00	Yes	Yes	1.377	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 20.00-0.00	Yes	Yes	1.377	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 Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
185.00-180.00														
T2	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
180.00-160.00														
T3	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
160.00-140.00														
T4	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
140.00-120.00														

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
T5 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T6 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 185.00-180.00	Flange	0.7500 A325X	6	0.6250 A325X	1	0.6250 A325X	1	0.0000 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325X	6	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	1.0000 A325X	6	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	1
T4 140.00-120.00	Flange	1.0000 A325X	6	0.6250 A325N	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.7500 A325N	0
T5 120.00-100.00	Flange	1.0000 A325X	6	0.6250 A325X	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	1.0000 A325X	6	0.6250 A325X	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	1.0000 A325X	6	0.7500 A325X	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	0	0.7500 A325N	0
T8 60.00-40.00	Flange	1.2500 A325X	6	0.7500 A325X	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	0	0.7500 A325N	0
T9 40.00-20.00	Flange	1.2500 A325X	6	0.7500 A325X	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	0	0.7500 A325N	0
T10 20.00-0.00	Flange	1.5000 A572-50	6	0.7500 A325X	1	1.0000 A325X	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	0	0.7500 A325N	0

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
Climbing Ladder (Af) (Tower)	A	Yes	Af (CfAe)	185.00 - 0.00	0.0000	0.1	1	1	1.8000	1.8000	7.2000	7.90
Safety Line 1/2 (Tower)	A	Yes	Ar (CfAe)	185.00 - 0.00	3.0000	0.1	1	1	0.5000	0.5000		0.35
Step Bolts (Tower)	A	No	Ar (Leg)	60.00 - 0.00	0.0000	-0.01	1	1	0.2920	0.2920		0.49
Step Bolts	B	No	Ar (Leg)	60.00 - 0.00	0.0000	-0.01	1	1	0.2920	0.2920		0.49

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
(Tower) Step Bolts (Tower)	C	No	Ar (Leg)	60.00 - 0.00	0.0000	-0.01	1	1	0.2920	0.2920		0.49
*****												
Feedline Ladder (Af) (Tower - 180')	C	Yes	Af (CfAe)	180.00 - 0.00	-1.0000	-0.1	1	1	3.0000	3.0000	12.0000	8.40
******												
Feedline Ladder (Af) (Municipal - 185')	B	Yes	Af (CfAe)	185.00 - 0.00	-1.0000	0.1	1	1	3.0000	3.0000	12.0000	8.40
7/8 (Municipal - 185')	B	Yes	Ar (CfAe)	185.00 - 0.00	-2.0000	0.08	3	3	0.7500	1.1100		0.54
7/8 (Municipal - 146')	B	Yes	Ar (CfAe)	146.00 - 0.00	-2.0000	0.11	4	4	1.0000 1.1100	1.1100		0.54
1/2 (Municipal - 138')	B	Yes	Ar (CfAe)	138.00 - 0.00	-2.0000	0.13	1	1	0.5800	0.5800		0.25
*****												
Feedline Ladder (Af) (T-Mobile - 185')	B	Yes	Af (CfAe)	185.00 - 0.00	0.0000	0.1	1	1	3.0000	3.0000	12.0000	8.40
1 5/8 (T-Mobile - 185')	B	Yes	Ar (CfAe)	185.00 - 0.00	0.0000	0.125	6	3	0.7500	1.9800		1.04
1 5/8 (T-Mobile - 185')	B	Yes	Ar (CfAe)	185.00 - 0.00	0.0000	0.075	6	3	0.7500	1.9800		1.04
1 1/4 (T-Mobile - 185')	B	Yes	Ar (CfAe)	185.00 - 0.00	0.0000	0.1	1	1	1.5500	1.5500		0.66
******												
Feedline Ladder (Af) (Sprint - 180')	C	Yes	Af (CfAe)	180.00 - 0.00	0.0000	-0.1	1	1	3.0000	3.0000	12.0000	8.40
1 1/4 (Sprint - 174')	C	Yes	Ar (CfAe)	174.00 - 0.00	0.0000	-0.08	3	3	1.0000	1.5500		0.66
1 1/4 (Sprint - 174')	C	Yes	Ar (CfAe)	174.00 - 0.00	0.0000	-0.12	1	1	1.5500	1.5500		0.66
******												
Feedline Ladder (Af) (Verizon - 164')	A	Yes	Af (CfAe)	164.00 - 0.00	-1.0000	-0.1	1	1	3.0000	3.0000	12.0000	8.40
1 5/8 (Verizon - 164')	A	Yes	Ar (CfAe)	164.00 - 0.00	-4.0000	-0.08	18	9	0.7500	1.9800		1.04
1 5/8 (Verizon - 164')	A	Yes	Ar (CfAe)	164.00 - 0.00	-2.0000	-0.14	1	1	0.7500	1.9800		1.04
******												
Feedline Ladder (Af) (AT&T - 154')	A	Yes	Af (CfAe)	154.00 - 0.00	0.0000	-0.1	1	1	3.0000	3.0000	12.0000	8.40
1 5/8 (AT&T - 154')	A	Yes	Ar (CfAe)	154.00 - 0.00	0.0000	-0.07	12	6	0.7500	1.9800		1.04
PWRT-608-S Power Cable (AT&T - 154')	A	Yes	Ar (CfAe)	154.00 - 0.00	0.0000	-0.12	2	2	0.8200	0.8200		0.62
RFFT-36SM-001-175M Fiber Cable (AT&T - 154')	A	Yes	Ar (CfAe)	154.00 - 0.00	0.0000	-0.14	1	1	0.4000	0.4000		0.09

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	185.00-180.00	A	0.208	0.750	0.000	0.000	41.25
		B	6.983	2.500	0.000	0.000	157.80

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
		C	0.000	0.000	0.000	0.000	0.00
T2	180.00-160.00	A	7.433	4.000	0.000	0.000	277.64
		B	27.933	10.000	0.000	0.000	631.20
		C	7.233	10.000	0.000	0.000	372.96
T3	160.00-140.00	A	50.073	11.500	0.000	0.000	1039.15
		B	30.153	10.000	0.000	0.000	644.16
		C	10.333	10.000	0.000	0.000	388.80
T4	140.00-120.00	A	57.033	13.000	0.000	0.000	1172.42
		B	36.203	10.000	0.000	0.000	678.90
		C	10.333	10.000	0.000	0.000	388.80
T5	120.00-100.00	A	57.033	13.000	0.000	0.000	1172.42
		B	36.300	10.000	0.000	0.000	679.40
		C	10.333	10.000	0.000	0.000	388.80
T6	100.00-80.00	A	57.033	13.000	0.000	0.000	1172.42
		B	36.300	10.000	0.000	0.000	679.40
		C	10.333	10.000	0.000	0.000	388.80
T7	80.00-60.00	A	57.033	13.000	0.000	0.000	1172.42
		B	36.300	10.000	0.000	0.000	679.40
		C	10.333	10.000	0.000	0.000	388.80
T8	60.00-40.00	A	58.007	13.000	0.000	0.000	1182.16
		B	37.273	10.000	0.000	0.000	689.14
		C	11.307	10.000	0.000	0.000	398.54
T9	40.00-20.00	A	58.007	13.000	0.000	0.000	1182.16
		B	37.273	10.000	0.000	0.000	689.14
		C	11.307	10.000	0.000	0.000	398.54
T10	20.00-0.00	A	58.007	13.000	0.000	0.000	1182.16
		B	37.273	10.000	0.000	0.000	689.14
		C	11.307	10.000	0.000	0.000	398.54

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	185.00-180.00	A	0.500	0.625	1.028	0.000	0.000	53.14
		B		4.425	9.156	0.000	0.000	315.65
		C		0.000	0.000	0.000	0.000	0.00
T2	180.00-160.00	A	0.500	4.487	12.613	0.000	0.000	473.36
		B		17.700	36.622	0.000	0.000	1262.60
		C		5.950	18.172	0.000	0.000	566.34
T3	160.00-140.00	A	0.500	19.667	68.738	0.000	0.000	2203.08
		B		18.755	39.787	0.000	0.000	1305.85
		C		8.500	20.722	0.000	0.000	618.74
T4	140.00-120.00	A	0.500	22.767	78.217	0.000	0.000	2497.33
		B		23.587	47.172	0.000	0.000	1423.15
		C		8.500	20.722	0.000	0.000	618.74
T5	120.00-100.00	A	0.500	22.767	78.217	0.000	0.000	2497.33
		B		23.850	47.172	0.000	0.000	1424.97
		C		8.500	20.722	0.000	0.000	618.74
T6	100.00-80.00	A	0.500	22.767	78.217	0.000	0.000	2497.33
		B		23.850	47.172	0.000	0.000	1424.97
		C		8.500	20.722	0.000	0.000	618.74
T7	80.00-60.00	A	0.500	22.767	78.217	0.000	0.000	2497.33
		B		23.850	47.172	0.000	0.000	1424.97
		C		8.500	20.722	0.000	0.000	618.74
T8	60.00-40.00	A	0.500	27.073	78.217	0.000	0.000	2516.74
		B		28.157	47.172	0.000	0.000	1444.38
		C		12.807	20.722	0.000	0.000	638.16

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
T9	40.00-20.00	A	0.500	27.073	78.217	0.000	0.000	2516.74
		B		28.157	47.172	0.000	0.000	1444.38
		C		12.807	20.722	0.000	0.000	638.16
T10	20.00-0.00	A	0.500	27.073	78.217	0.000	0.000	2516.74
		B		28.157	47.172	0.000	0.000	1444.38
		C		12.807	20.722	0.000	0.000	638.16

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	185.00-180.00	A	0.000	0.114	0.122	0.229
		B	0.000	0.884	1.210	1.769
		C	0.000	0.000	0.000	0.000
T2	180.00-160.00	A	0.000	0.912	1.173	1.823
		B	0.000	2.844	3.893	5.688
		C	0.000	1.295	1.768	2.589
T3	160.00-140.00	A	0.000	5.792	7.933	11.584
		B	0.000	3.843	5.173	7.686
		C	0.000	1.954	2.620	3.908
T4	140.00-120.00	A	0.000	4.042	5.516	8.085
		B	0.000	2.830	3.639	5.661
		C	0.000	1.195	1.601	2.389
T5	120.00-100.00	A	0.000	3.088	5.267	7.720
		B	0.000	2.170	3.482	5.425
		C	0.000	0.912	1.529	2.281
T6	100.00-80.00	A	0.000	2.938	5.010	7.344
		B	0.000	2.064	3.312	5.161
		C	0.000	0.868	1.455	2.170
T7	80.00-60.00	A	0.000	2.843	5.820	8.530
		B	0.000	1.998	3.848	5.994
		C	0.000	0.840	1.690	2.521
T8	60.00-40.00	A	0.000	2.018	4.131	6.054
		B	0.000	1.418	2.731	4.255
		C	0.000	0.596	1.199	1.789
T9	40.00-20.00	A	0.000	1.958	4.674	6.851
		B	0.000	1.376	3.090	4.815
		C	0.000	0.578	1.357	2.025
T10	20.00-0.00	A	0.000	1.913	4.568	6.696
		B	0.000	1.344	3.020	4.705
		C	0.000	0.565	1.326	1.979

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	185.00-180.00	5.8872	-1.8690	3.5231	-1.4155
T2	180.00-160.00	4.8864	0.5577	3.1001	0.4518
T3	160.00-140.00	-0.9235	-0.3740	-1.3859	-0.2798
T4	140.00-120.00	-1.4980	-0.8259	-1.7903	-0.6955

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T5	120.00-100.00	-1.7293	-0.9570	-2.0884	-0.8463
T6	100.00-80.00	-2.0757	-1.1460	-2.4755	-1.0196
T7	80.00-60.00	-2.2829	-1.2583	-2.7402	-1.1313
T8	60.00-40.00	-2.7569	-1.5177	-3.1919	-1.3523
T9	40.00-20.00	-2.5886	-1.4238	-3.1212	-1.3234
T10	20.00-0.00	-2.8474	-1.5649	-3.4222	-1.4582

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
8' Dipole	A	From Leg	0.00	0.0000	185.00	No Ice	4.80	4.80	45.00
(Muncipal)			0.00			1/2" Ice	6.40	6.40	89.00
			4.00						
15' Omni	B	From Leg	0.00	0.0000	185.00	No Ice	3.75	3.75	40.00
(Muncipal)			0.00			1/2" Ice	5.28	5.28	67.80
			7.50						
8' Dipole	C	From Leg	0.00	0.0000	185.00	No Ice	4.80	4.80	45.00
(Muncipal)			0.00			1/2" Ice	6.40	6.40	89.00
			4.00						
******									
Andrew 12'-6" Universal Sector Frame	A	From Leg	3.00	0.0000	185.00	No Ice	10.80	10.80	525.00
			0.00			1/2" Ice	15.10	15.10	675.00
(T-Mobile)			0.00						
Andrew 12'-6" Universal Sector Frame	B	From Leg	3.00	0.0000	185.00	No Ice	10.80	10.80	525.00
			0.00			1/2" Ice	15.10	15.10	675.00
(T-Mobile)			0.00						
Andrew 12'-6" Universal Sector Frame	C	From Leg	3.00	0.0000	185.00	No Ice	10.80	10.80	525.00
			0.00			1/2" Ice	15.10	15.10	675.00
(T-Mobile)			0.00						
(2) AIR 21 B2A B4P w/Mount Pipe	A	From Leg	3.00	0.0000	185.00	No Ice	6.69	5.64	120.25
			0.00			1/2" Ice	7.15	6.35	177.83
(T-Mobile)			0.00						
(2) AIR 21 B2A B4P w/Mount Pipe	B	From Leg	3.00	0.0000	185.00	No Ice	6.69	5.64	120.25
			0.00			1/2" Ice	7.15	6.35	177.83
(T-Mobile)			0.00						
(2) AIR 21 B2A B2P w/Mount Pipe	C	From Leg	3.00	0.0000	185.00	No Ice	6.69	5.64	119.15
			0.00			1/2" Ice	7.15	6.35	176.73
(T-Mobile)			0.00						
(2) KRY 112 71	A	From Leg	2.00	0.0000	185.00	No Ice	0.68	0.45	13.20
(T-Mobile)			0.00			1/2" Ice	0.80	0.56	18.38
			0.00						
(2) KRY 112 71	B	From Leg	2.00	0.0000	185.00	No Ice	0.68	0.45	13.20
(T-Mobile)			0.00			1/2" Ice	0.80	0.56	18.38
			0.00						
(2) KRY 112 71	C	From Leg	2.00	0.0000	185.00	No Ice	0.68	0.45	13.20
(T-Mobile)			0.00			1/2" Ice	0.80	0.56	18.38
			0.00						
*******									
Andrew 12'-6" Universal Sector Frame	A	From Leg	3.00	0.0000	174.00	No Ice	10.80	10.80	525.00
			0.00			1/2" Ice	15.10	15.10	675.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Sprint)			0.00						
Andrew 12'-6" Universal Sector	B	From Leg	3.00	0.0000	174.00	No Ice	10.80	10.80	525.00
Frame			0.00			1/2" Ice	15.10	15.10	675.00
(Sprint)			0.00						
Andrew 12'-6" Universal Sector	C	From Leg	3.00	0.0000	174.00	No Ice	10.80	10.80	525.00
Frame			0.00			1/2" Ice	15.10	15.10	675.00
(Sprint)			0.00						
APXVSPP18-C w/Mount Pipe	A	From Leg	3.00	0.0000	174.00	No Ice	8.26	6.71	78.90
(Sprint)			2.00			1/2" Ice	8.81	7.66	144.31
			1.00						
APXVSPP18-C w/Mount Pipe	B	From Leg	3.00	0.0000	174.00	No Ice	8.26	6.71	78.90
(Sprint)			2.00			1/2" Ice	8.81	7.66	144.31
			1.00						
APXVSPP18-C w/Mount Pipe	C	From Leg	3.00	0.0000	174.00	No Ice	8.26	6.71	78.90
(Sprint)			2.00			1/2" Ice	8.81	7.66	144.31
			1.00						
1900MHz 4x40W RRH	A	From Leg	2.00	0.0000	174.00	No Ice	2.71	2.61	60.00
(Sprint)			-2.00			1/2" Ice	2.95	2.84	83.12
			1.00						
1900MHz 4x40W RRH	B	From Leg	2.00	0.0000	174.00	No Ice	2.71	2.61	60.00
(Sprint)			-2.00			1/2" Ice	2.95	2.84	83.12
			1.00						
1900MHz 4x40W RRH	C	From Leg	2.00	0.0000	174.00	No Ice	2.71	2.61	60.00
(Sprint)			-2.00			1/2" Ice	2.95	2.84	83.12
			1.00						
800MHz 2x50W RRH	A	From Leg	2.50	0.0000	174.00	No Ice	2.40	2.25	64.00
(Sprint)			-2.00			1/2" Ice	2.61	2.46	86.12
			1.00						
800MHz 2x50W RRH	B	From Leg	2.50	0.0000	174.00	No Ice	2.40	2.25	64.00
(Sprint)			-2.00			1/2" Ice	2.61	2.46	86.12
			1.00						
800MHz 2x50W RRH	C	From Leg	2.50	0.0000	174.00	No Ice	2.40	2.25	64.00
(Sprint)			-2.00			1/2" Ice	2.61	2.46	86.12
			1.00						
APXV9TM14-C-I20 w/Mount	A	From Leg	3.00	0.0000	174.00	No Ice	6.99	5.10	93.02
Pipe			-6.00			1/2" Ice	7.46	5.77	151.55
(Sprint)			1.00						
APXV9TM14-C-I20 w/Mount	B	From Leg	3.00	0.0000	174.00	No Ice	6.99	5.10	93.02
Pipe			-6.00			1/2" Ice	7.46	5.77	151.55
(Sprint)			1.00						
APXV9TM14-C-I20 w/Mount	C	From Leg	3.00	0.0000	174.00	No Ice	6.99	5.10	93.02
Pipe			-6.00			1/2" Ice	7.46	5.77	151.55
(Sprint)			1.00						
TD-RRH8x20-25	A	From Leg	2.00	0.0000	174.00	No Ice	4.72	1.70	70.00
(Sprint)			-6.00			1/2" Ice	5.01	1.92	97.14
			1.00						
TD-RRH8x20-25	B	From Leg	2.00	0.0000	174.00	No Ice	4.72	1.70	70.00
(Sprint)			-6.00			1/2" Ice	5.01	1.92	97.14
			1.00						
TD-RRH8x20-25	C	From Leg	2.00	0.0000	174.00	No Ice	4.72	1.70	70.00
(Sprint)			-6.00			1/2" Ice	5.01	1.92	97.14
			1.00						
*******									
Andrew 12'-6" Quik-Tee Sector	A	From Leg	4.00	0.0000	164.00	No Ice	16.30	16.30	509.80
Frame			0.00			1/2" Ice	20.60	20.60	644.29
(Verizon)			-1.00						
Andrew 12'-6" Quik-Tee Sector	B	From Leg	4.00	0.0000	164.00	No Ice	16.30	16.30	509.80

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Frame			0.00			1/2" Ice	20.60	20.60	644.29
(Verizon)			-1.00						
Andrew 12'-6" Quik-Tee Sector	C	From Leg	4.00	0.0000	164.00	No Ice	16.30	16.30	509.80
Frame			0.00			1/2" Ice	20.60	20.60	644.29
(Verizon)			-1.00						
BXA-70063-6CF-EDIN-X	A	From Leg	4.00	0.0000	164.00	No Ice	7.99	5.82	42.55
w/Mount Pipe			0.00			1/2" Ice	8.64	6.99	103.53
(Verizon)			0.00						
BXA-70063-6CF-EDIN-X	B	From Leg	4.00	0.0000	164.00	No Ice	7.99	5.82	42.55
w/Mount Pipe			0.00			1/2" Ice	8.64	6.99	103.53
(Verizon)			0.00						
BXA-70063-6CF-EDIN-X	C	From Leg	4.00	0.0000	164.00	No Ice	7.99	5.82	42.55
w/Mount Pipe			0.00			1/2" Ice	8.64	6.99	103.53
(Verizon)			0.00						
DB846F65ZAXY w/Mount Pipe	A	From Leg	4.00	0.0000	164.00	No Ice	7.27	7.82	46.55
(Verizon)			-4.50			1/2" Ice	7.88	9.01	113.93
			0.00						
DB846F65ZAXY w/Mount Pipe	A	From Leg	4.00	0.0000	164.00	No Ice	7.27	7.82	46.55
(Verizon)			4.50			1/2" Ice	7.88	9.01	113.93
			0.00						
DB846H80E-SX w/Mount Pipe	B	From Leg	4.00	0.0000	164.00	No Ice	5.32	7.73	40.55
(Verizon)			-4.50			1/2" Ice	5.87	8.92	98.56
			0.00						
DB846H80E-SX w/Mount Pipe	B	From Leg	4.00	0.0000	164.00	No Ice	5.32	7.73	40.55
(Verizon)			4.50			1/2" Ice	5.87	8.92	98.56
			0.00						
DB846F65ZAXY w/Mount Pipe	C	From Leg	4.00	0.0000	164.00	No Ice	7.27	7.82	46.55
(Verizon)			-4.50			1/2" Ice	7.88	9.01	113.93
			0.00						
DB846F65ZAXY w/Mount Pipe	C	From Leg	4.00	0.0000	164.00	No Ice	7.27	7.82	46.55
(Verizon)			4.50			1/2" Ice	7.88	9.01	113.93
			0.00						
742 213 w/Mount Pipe	A	From Leg	4.00	0.0000	164.00	No Ice	5.19	4.53	48.03
(Verizon)			-6.00			1/2" Ice	5.68	5.73	90.76
			0.00						
742 213 w/Mount Pipe	A	From Leg	4.00	0.0000	164.00	No Ice	5.19	4.53	48.03
(Verizon)			6.00			1/2" Ice	5.68	5.73	90.76
			0.00						
742 213 w/Mount Pipe	B	From Leg	4.00	0.0000	164.00	No Ice	5.19	4.53	48.03
(Verizon)			-6.00			1/2" Ice	5.68	5.73	90.76
			0.00						
742 213 w/Mount Pipe	B	From Leg	4.00	0.0000	164.00	No Ice	5.19	4.53	48.03
(Verizon)			6.00			1/2" Ice	5.68	5.73	90.76
			0.00						
742 213 w/Mount Pipe	C	From Leg	4.00	0.0000	164.00	No Ice	5.19	4.53	48.03
(Verizon)			-6.00			1/2" Ice	5.68	5.73	90.76
			0.00						
742 213 w/Mount Pipe	C	From Leg	4.00	0.0000	164.00	No Ice	5.19	4.53	48.03
(Verizon)			6.00			1/2" Ice	5.68	5.73	90.76
			0.00						
RRH 2x40 AWS	A	From Leg	3.00	0.0000	164.00	No Ice	2.52	1.59	44.00
(Verizon)			-6.00			1/2" Ice	2.75	1.80	61.40
			0.00						
RRH 2x40 AWS	B	From Leg	3.00	0.0000	164.00	No Ice	2.52	1.59	44.00
(Verizon)			-6.00			1/2" Ice	2.75	1.80	61.40
			0.00						
RRH 2x40 AWS	C	From Leg	3.00	0.0000	164.00	No Ice	2.52	1.59	44.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Verizon)			-6.00 0.00			1/2" Ice	2.75	1.80	61.40
DB-T1-6Z-8AB-0Z	C	From Leg	1.50	0.0000	164.00	No Ice	5.60	2.33	44.00
(Verizon)			0.00 0.00			1/2" Ice	5.92	2.56	80.13
*******									
Andrew 12'-6" Quik-Tee Sector Frame	A	From Leg	3.00 0.00	0.0000	154.00	No Ice 1/2" Ice	16.30 20.60	16.30 20.60	509.80 644.29
(AT&T)			-1.00						
Andrew 12'-6" Quik-Tee Sector Frame	B	From Leg	3.00 0.00	0.0000	154.00	No Ice 1/2" Ice	16.30 20.60	16.30 20.60	509.80 644.29
(AT&T)			-1.00						
Andrew 12'-6" Quik-Tee Sector Frame	C	From Leg	3.00 0.00	0.0000	154.00	No Ice 1/2" Ice	16.30 20.60	16.30 20.60	509.80 644.29
(AT&T)			-1.00						
RA21.7770.00	A	From Leg	3.00	0.0000	154.00	No Ice	6.79	3.51	37.20
(AT&T)			-6.00 0.00			1/2" Ice	7.28	3.90	74.53
RA21.7770.00	A	From Leg	3.00	0.0000	154.00	No Ice	6.79	3.51	37.20
(AT&T)			-2.00 0.00			1/2" Ice	7.28	3.90	74.53
RA21.7770.00	B	From Leg	3.00	0.0000	154.00	No Ice	6.79	3.51	37.20
(AT&T)			-6.00 0.00			1/2" Ice	7.28	3.90	74.53
RA21.7770.00	B	From Leg	3.00	0.0000	154.00	No Ice	6.79	3.51	37.20
(AT&T)			-2.00 0.00			1/2" Ice	7.28	3.90	74.53
RA21.7770.00	C	From Leg	3.00	0.0000	154.00	No Ice	6.79	3.51	37.20
(AT&T)			-6.00 0.00			1/2" Ice	7.28	3.90	74.53
RA21.7770.00	C	From Leg	3.00	0.0000	154.00	No Ice	6.79	3.51	37.20
(AT&T)			-2.00 0.00			1/2" Ice	7.28	3.90	74.53
P65-16-XLH-RR w/Mount Pipe	A	From Leg	3.00	0.0000	154.00	No Ice	8.40	6.13	85.90
(AT&T)			6.00 0.00			1/2" Ice	8.95	7.07	149.07
P65-16-XLH-RR w/Mount Pipe	B	From Leg	3.00	0.0000	154.00	No Ice	8.40	6.13	85.90
(AT&T)			6.00 0.00			1/2" Ice	8.95	7.07	149.07
P65-16-XLH-RR w/Mount Pipe	C	From Leg	3.00	0.0000	154.00	No Ice	8.40	6.13	85.90
(AT&T)			6.00 0.00			1/2" Ice	8.95	7.07	149.07
(2) LGP214nn	A	From Leg	3.00	0.0000	154.00	No Ice	1.30	0.23	14.10
(AT&T)			-6.00 0.00			1/2" Ice	1.45	0.31	21.30
(2) LGP214nn	B	From Leg	3.00	0.0000	154.00	No Ice	1.30	0.23	14.10
(AT&T)			-6.00 0.00			1/2" Ice	1.45	0.31	21.30
(2) LGP214nn	C	From Leg	3.00	0.0000	154.00	No Ice	1.30	0.23	14.10
(AT&T)			-6.00 0.00			1/2" Ice	1.45	0.31	21.30
TT19-08BP111-001	A	From Leg	3.00	0.0000	154.00	No Ice	0.64	0.52	16.00
(AT&T)			-2.00 0.00			1/2" Ice	0.76	0.62	21.80
TT19-08BP111-001	B	From Leg	3.00	0.0000	154.00	No Ice	0.64	0.52	16.00
(AT&T)			-2.00 0.00			1/2" Ice	0.76	0.62	21.80

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
TT19-08BP111-001	C	From Leg	3.00	0.0000	154.00	No Ice	0.64	0.52	16.00
(AT&T)			-2.00			1/2" Ice	0.76	0.62	21.80
			0.00						
RRUS-11	A	From Leg	1.00	0.0000	154.00	No Ice	2.94	1.25	55.00
(AT&T)			0.00			1/2" Ice	3.17	1.41	74.32
			3.00						
RRUS-11	B	From Leg	1.00	0.0000	154.00	No Ice	2.94	1.25	55.00
(AT&T)			0.00			1/2" Ice	3.17	1.41	74.32
			3.00						
RRUS-11	C	From Leg	1.00	0.0000	154.00	No Ice	2.94	1.25	55.00
(AT&T)			0.00			1/2" Ice	3.17	1.41	74.32
			3.00						
DC6-48-60-18-8F	C	From Leg	1.00	0.0000	154.00	No Ice	1.47	1.47	33.00
(AT&T)			0.00			1/2" Ice	1.67	1.67	50.72
			0.00						
*******									
6' Standoff	A	From Leg	3.00	0.0000	146.00	No Ice	4.97	4.97	70.00
(Municipal)			0.00			1/2" Ice	6.12	6.12	130.00
			0.00						
6' Standoff	C	From Leg	3.00	0.0000	146.00	No Ice	4.97	4.97	70.00
(Municipal)			0.00			1/2" Ice	6.12	6.12	130.00
			0.00						
15' Omni	A	From Leg	6.00	0.0000	146.00	No Ice	3.75	3.75	40.00
(Municipal)			0.00			1/2" Ice	5.28	5.28	67.80
			8.00						
8' Dipole	A	From Leg	6.00	0.0000	146.00	No Ice	4.80	4.80	45.00
(Municipal)			0.00			1/2" Ice	6.40	6.40	89.00
			-5.00						
8' Dipole	C	From Leg	6.00	0.0000	146.00	No Ice	4.80	4.80	45.00
(Municipal)			0.00			1/2" Ice	6.40	6.40	89.00
			-5.00						
*******									
2' Standoff	B	From Leg	1.00	0.0000	138.00	No Ice	1.80	1.80	33.00
(Dish)			0.00			1/2" Ice	3.30	3.30	59.00
			0.00						

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Andrew 3' w/Radome	B	Paraboloid	From	2.00	0.0000		138.00	3.00	No Ice	7.07	100.00
(Sprint)		w/Radome	Leg	0.00					1/2" Ice	7.47	138.35
				0.00							

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	16537.36					
Bracing Weight	10304.94					
Total Member Self-Weight	26842.30			-3794.11	7627.92	
Total Weight	56475.46			-3794.11	7627.92	
Wind 0 deg - No Ice		74.17	-56075.41	-6055805.36	-5177.82	-6990.47
Wind 30 deg - No Ice		26436.79	-45755.78	-5035879.64	-2901752.99	-8227.27
Wind 60 deg - No Ice		44784.98	-25925.37	-2876749.68	-4949312.79	-7454.39
Wind 90 deg - No Ice		52792.78	-93.78	-19304.99	-5795533.24	-4923.59
Wind 120 deg - No Ice		48516.48	27957.55	3008925.16	-5225737.66	-1052.01
Wind 150 deg - No Ice		26315.17	45674.20	5014463.57	-2880519.84	3145.52
Wind 180 deg - No Ice		-105.82	51667.44	5712371.61	24801.44	6436.30
Wind 210 deg - No Ice		-26487.45	45726.53	5024255.06	2924000.01	8227.27
Wind 240 deg - No Ice		-48618.22	28101.94	3033301.61	5257603.27	8042.48
Wind 270 deg - No Ice		-52854.02	93.18	11634.96	5819240.92	4843.76
Wind 300 deg - No Ice		-44781.22	-25801.00	-2855136.35	4961480.28	1018.09
Wind 330 deg - No Ice		-26346.31	-45726.94	-5029330.41	2900072.46	-3065.69
Member Ice	8355.57					
Total Weight Ice	88816.85			-12477.74	20117.91	
Wind 0 deg - Ice		56.72	-57400.26	-6171554.47	10308.15	-9043.11
Wind 30 deg - Ice		26082.13	-45150.58	-4965650.49	-2842661.29	-9435.80
Wind 60 deg - Ice		43603.29	-25227.62	-2805034.86	-4801894.41	-7882.82
Wind 90 deg - Ice		52103.81	-72.25	-24431.14	-5693663.34	-4661.73
Wind 120 deg - Ice		49674.52	28638.40	3056824.73	-5307773.29	106.98
Wind 150 deg - Ice		25989.33	45087.99	4930075.29	-2826420.77	4648.74
Wind 180 deg - Ice		-81.80	50313.57	5549650.56	33388.84	7837.17
Wind 210 deg - Ice		-26122.28	45127.40	4937496.45	2888437.15	9435.80
Wind 240 deg - Ice		-49753.08	28749.25	3075556.12	5360833.30	8936.13
Wind 270 deg - Ice		-52152.35	71.78	-589.18	5740596.68	4598.47
Wind 300 deg - Ice		-43602.37	-25132.64	-2788493.06	4840020.85	45.66
Wind 330 deg - Ice		-26014.01	-45129.78	-4960798.60	2870061.49	-4585.48
Total Weight	56475.46			-3794.11	7627.92	
Wind 0 deg - Service		36.96	-27940.69	-3015871.01	-5916.62	-3483.14
Wind 30 deg - Service		13172.65	-22798.73	-2507672.72	-1449192.82	-4099.40
Wind 60 deg - Service		22315.01	-12917.83	-1431843.26	-2469430.23	-3714.30
Wind 90 deg - Service		26305.05	-46.73	-8064.59	-2891076.41	-2453.28
Wind 120 deg - Service		24174.30	13930.41	1500811.33	-2607164.43	-524.19
Wind 150 deg - Service		13112.06	22758.08	2500110.75	-1438612.99	1567.32
Wind 180 deg - Service		-52.73	25744.33	2847857.31	9021.15	3207.01
Wind 210 deg - Service		-13197.90	22784.15	2504989.55	1453604.51	4099.40
Wind 240 deg - Service		-24224.99	14002.35	1512957.38	2616368.77	4007.33
Wind 270 deg - Service		-26335.57	46.43	7351.85	2896215.91	2413.50
Wind 300 deg - Service		-22313.13	-12855.86	-1421073.99	2468819.60	507.28
Wind 330 deg - Service		-13127.57	-22784.36	-2504409.44	1441682.14	-1527.54

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice

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

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	185 - 180	Leg	Max Tension	8	1850.33	-0.00	-0.00
			Max. Compression	19	-3263.60	17.52	-2.37
			Max. Mx	6	399.09	39.12	17.12
			Max. My	2	399.64	-15.98	-45.75
			Max. Vy	5	-1021.33	-0.00	-0.00
			Max. Vx	2	1023.23	-0.00	-0.00
		Diagonal	Max Tension	13	1451.28	0.00	0.00
			Max. Compression	7	-1706.42	0.00	0.00
			Max. Mx	15	79.22	8.25	0.55
			Max. My	25	-1365.57	3.17	-0.99
			Max. Vy	15	6.82	8.25	0.55
			Max. Vx	25	-0.31	0.00	0.00
		Top Girt	Max Tension	23	552.68	0.00	0.00
			Max. Compression	8	-371.50	0.00	0.00
			Max. Mx	14	123.80	-11.20	0.00
			Max. My	23	-93.74	0.00	-0.00
			Max. Vy	14	8.96	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
T2	180 - 160	Leg	Max Tension	4	31260.73	-517.23	294.73
			Max. Compression	19	-37645.24	-290.55	-164.93
			Max. Mx	11	-31087.24	-823.83	29.43
			Max. My	2	-36189.15	-7.63	-831.27

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	5	-1421.19	-602.74	-13.40
			Max. Vx	2	1431.16	-1.24	621.02
		Diagonal	Max Tension	8	6301.47	0.00	0.00
			Max. Compression	2	-6675.26	0.00	0.00
			Max. Mx	19	4296.35	56.05	-2.90
			Max. My	3	-6294.77	-31.59	-8.75
			Max. Vy	19	-22.37	56.05	-2.90
			Max. Vx	3	-2.48	0.00	0.00
		Top Girt	Max Tension	4	492.38	0.00	0.00
			Max. Compression	2	-404.33	0.00	0.00
			Max. Mx	14	56.03	-11.20	0.00
			Max. My	23	241.79	0.00	-0.00
			Max. Vy	14	8.96	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
T3	160 - 140	Leg	Max Tension	4	81105.27	162.36	98.21
			Max. Compression	15	-93458.66	-205.95	-38.52
			Max. Mx	4	56604.44	665.45	-7.91
			Max. My	3	-3545.21	-66.08	-744.90
			Max. Vy	12	-867.10	-202.92	7.40
			Max. Vx	7	-1303.91	-64.02	-743.92
		Diagonal	Max Tension	9	6354.10	0.00	0.00
			Max. Compression	9	-6459.30	0.00	0.00
			Max. Mx	15	4637.62	52.16	2.56
			Max. My	7	-5079.55	-21.65	7.77
			Max. Vy	15	-21.30	52.16	2.56
			Max. Vx	20	-2.49	0.00	0.00
		Secondary Horizontal	Max Tension	15	1620.77	0.00	0.00
			Max. Compression	15	-1620.77	0.00	0.00
			Max. Mx	14	147.05	-29.12	0.00
			Max. My	17	843.54	0.00	0.84
			Max. Vy	14	17.28	0.00	0.00
			Max. Vx	17	-0.50	0.00	0.00
		Top Girt	Max Tension	4	1005.02	0.00	0.00
			Max. Compression	10	-1002.32	0.00	0.00
			Max. Mx	14	40.69	-11.20	0.00
			Max. My	17	-406.19	0.00	0.32
			Max. Vy	14	8.96	0.00	0.00
			Max. Vx	17	-0.26	0.00	0.00
T4	140 - 120	Leg	Max Tension	4	123828.95	-340.44	1.06
			Max. Compression	23	-142063.02	646.25	-14.03
			Max. Mx	10	-139793.19	655.07	-12.96
			Max. My	11	-6211.59	-10.08	-616.77
			Max. Vy	10	-206.84	546.97	12.08
			Max. Vx	3	-128.88	-21.37	-389.33
		Diagonal	Max Tension	9	6023.07	0.00	0.00
			Max. Compression	9	-6083.53	0.00	0.00
			Max. Mx	23	4995.72	25.64	-1.26
			Max. My	17	-5062.53	5.52	4.07
			Max. Vy	17	14.70	25.02	2.01
			Max. Vx	17	-1.15	0.00	0.00
T5	120 - 100	Leg	Max Tension	4	157115.30	-644.24	3.48
			Max. Compression	23	-182576.35	1160.14	-27.31
			Max. Mx	23	-182576.35	1160.14	-27.31
			Max. My	11	-7561.47	2.06	-959.56
			Max. Vy	6	-137.84	1152.81	5.33
			Max. Vx	5	-100.13	9.19	957.77
		Diagonal	Max Tension	22	6534.61	0.00	0.00
			Max. Compression	22	-6678.87	0.00	0.00
			Max. Mx	23	5483.04	48.15	-2.94
			Max. My	16	-6537.20	-2.65	5.93
			Max. Vy	23	-21.90	48.15	-2.94

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	17	-1.52	0.00	0.00
T6	100 - 80	Leg	Max Tension	4	188228.76	-845.74	9.76
			Max. Compression	23	-222365.84	495.60	12.86
			Max. Mx	23	-195863.22	1160.14	-27.31
			Max. My	11	-7895.60	2.03	-959.56
			Max. Vy	6	131.14	1152.81	5.33
			Max. Vx	5	108.50	9.15	957.77
		Diagonal	Max Tension	22	6940.89	0.00	0.00
			Max. Compression	22	-7108.67	0.00	0.00
			Max. Mx	23	6029.55	69.18	-4.79
			Max. My	17	-5875.92	28.30	7.96
			Max. Vy	25	32.93	67.37	-5.92
			Max. Vx	17	-1.88	0.00	0.00
T7	80 - 60	Leg	Max Tension	4	217056.55	-634.97	-0.37
			Max. Compression	23	-260048.90	1314.82	-43.31
			Max. Mx	17	203408.35	-1544.86	37.53
			Max. My	11	-11016.80	13.58	-1129.11
			Max. Vy	17	211.29	-1544.86	37.53
			Max. Vx	5	-156.93	20.19	1127.47
		Diagonal	Max Tension	22	7278.07	0.00	0.00
			Max. Compression	22	-7428.38	0.00	0.00
			Max. Mx	23	6219.46	73.73	-5.32
			Max. My	16	-7104.04	22.91	10.37
			Max. Vy	25	32.91	72.45	-6.17
			Max. Vx	16	-2.04	0.00	0.00
T8	60 - 40	Leg	Max Tension	4	241835.92	-643.13	12.28
			Max. Compression	23	-293628.89	303.55	-3.41
			Max. Mx	17	226279.20	-1761.01	8.29
			Max. My	11	-11481.79	13.55	-1129.11
			Max. Vy	17	227.46	-1761.01	8.29
			Max. Vx	13	119.29	-73.39	945.37
		Diagonal	Max Tension	22	8650.19	0.00	0.00
			Max. Compression	22	-8750.73	0.00	0.00
			Max. Mx	23	7737.65	146.54	-13.19
			Max. My	16	-8693.49	49.29	21.08
			Max. Vy	25	56.13	139.61	-14.42
			Max. Vx	16	-3.63	0.00	0.00
T9	40 - 20	Leg	Max Tension	4	267108.37	-1771.87	8.01
			Max. Compression	23	-329551.71	-1796.67	-43.88
			Max. Mx	17	248852.33	-6853.75	42.09
			Max. My	11	-14181.70	-142.54	-2195.85
			Max. Vy	17	877.22	-6853.75	42.09
			Max. Vx	11	272.56	-142.54	-2195.85
		Diagonal	Max Tension	22	9916.73	0.00	0.00
			Max. Compression	22	-9231.22	0.00	0.00
			Max. Mx	23	6989.28	148.00	-13.68
			Max. My	17	-7650.13	90.03	16.34
			Max. Vy	25	54.11	147.75	-14.33
			Max. Vx	17	-2.93	0.00	0.00
T10	20 - 0	Leg	Max Tension	4	291481.49	-1706.01	14.71
			Max. Compression	23	-365807.96	-0.00	-0.00
			Max. Mx	23	-344409.45	6941.21	4.08
			Max. My	11	-16575.40	-213.24	-3598.40
			Max. Vy	17	-1167.35	-6853.75	42.09
			Max. Vx	11	-474.09	-213.29	-3598.40
		Diagonal	Max Tension	22	12563.14	0.00	0.00
			Max. Compression	22	-11588.50	0.00	0.00
			Max. Mx	25	4577.16	263.07	24.18
			Max. My	16	-11527.28	164.42	34.01
			Max. Vy	25	81.10	263.07	24.18
			Max. Vx	16	-4.95	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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	23	371821.41	27303.93	-16075.35
	Max. H_x	10	354152.80	30502.71	-17869.65
	Max. H_z	17	-278384.13	-29342.21	17173.75
	Min. Vert	4	-297453.32	-26030.96	15263.06
	Min. H_x	17	-278384.13	-29342.21	17173.75
	Min. H_z	10	354152.80	30502.71	-17869.65
Leg B	Max. Vert	19	368761.01	-27337.11	-15781.29
	Max. H_x	25	-279747.45	29443.57	17000.43
	Max. H_z	25	-279747.45	29443.57	17000.43
	Min. Vert	12	-297435.33	26089.06	15096.02
	Min. H_x	6	351954.73	-30497.65	-17640.02
	Min. H_z	6	351954.73	-30497.65	-17640.02
Leg A	Max. Vert	15	371332.81	-271.24	31643.76
	Max. H_x	11	18182.85	3221.80	1326.13
	Max. H_z	2	353375.77	-196.34	35297.21
	Min. Vert	8	-296776.19	173.71	-30122.36
	Min. H_x	5	19894.24	-3237.42	1450.88
	Min. H_z	21	-277748.54	200.77	-33955.11

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	56475.46	0.00	-0.00	-3794.25	7628.18	0.01
Dead+Wind 0 deg - No Ice	56475.46	74.17	-56075.41	-6084316.10	-5217.74	-7019.31
Dead+Wind 30 deg - No Ice	56475.46	26436.79	-45755.78	-5059877.43	-2915585.35	-8251.41
Dead+Wind 60 deg - No Ice	56475.46	44784.98	-25925.37	-2890545.04	-4972991.04	-7484.45
Dead+Wind 90 deg - No Ice	56475.46	52792.78	-93.78	-19443.00	-5823145.53	-4952.88
Dead+Wind 120 deg - No Ice	56475.46	48516.48	27957.55	3023068.67	-5250351.67	-1057.03
Dead+Wind 150 deg - No Ice	56475.46	26315.17	45674.20	5038344.13	-2894226.36	3166.36
Dead+Wind 180 deg - No Ice	56475.46	-105.82	51667.44	5739694.40	24939.93	6461.12
Dead+Wind 210 deg - No Ice	56475.46	-26487.45	45726.53	5048182.52	2937939.30	8250.82
Dead+Wind 240 deg - No Ice	56475.46	-48618.22	28101.94	3047575.10	5282362.37	8076.35
Dead+Wind 270 deg - No Ice	56475.46	-52854.02	93.18	11681.25	5846933.98	4874.48
Dead+Wind 300 deg - No Ice	56475.46	-44781.22	-25801.00	-2868782.56	4985177.81	1023.34
Dead+Wind 330 deg - No Ice	56475.46	-26346.31	-45726.94	-5053264.86	2913861.59	-3087.35
Dead+Ice+Temp	88816.85	0.00	0.00	-12492.21	20123.58	0.04
Dead+Wind 0 deg+Ice+Temp	88816.84	56.72	-57400.21	-6214833.01	10405.22	-9125.42
Dead+Wind 30 deg+Ice+Temp	88816.84	26082.12	-45150.54	-5001282.33	-2863109.29	-9518.94
Dead+Wind 60 deg+Ice+Temp	88816.85	43603.29	-25227.62	-2825312.03	-4836589.91	-7976.39
Dead+Wind 90 deg+Ice+Temp	88816.84	52103.77	-72.26	-24659.13	-5734552.24	-4738.93
Dead+Wind 120 deg+Ice+Temp	88816.84	49674.48	28638.37	3078245.68	-5345037.39	86.59
Dead+Wind 150 deg+Ice+Temp	88816.84	25989.31	45087.96	4965451.61	-2846701.40	4691.99
Dead+Wind 180 deg+Ice+Temp	88816.85	-81.80	50313.57	5589706.66	33624.11	7911.08
Dead+Wind 210 deg+Ice+Temp	88816.84	-26122.25	45127.37	4972927.71	2909138.00	9518.55
Dead+Wind 240 deg+Ice+Temp	88816.84	-49753.04	28749.22	3097062.89	5398441.57	9038.86

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 270 deg+Ice+Temp	88816.84	-52152.31	71.78	-596.97	5781717.72	4676.84
Dead+Wind 300 deg+Ice+Temp	88816.85	-43602.37	-25132.64	-2808590.08	4874874.22	65.36
Dead+Wind 330 deg+Ice+Temp	88816.84	-26013.99	-45129.75	-4996350.50	2890596.58	-4629.44
Dead+Wind 0 deg - Service	56475.46	36.96	-27940.69	-3033615.53	1233.98	-3497.36
Dead+Wind 30 deg - Service	56475.46	13172.66	-22798.72	-2523149.56	-1448946.21	-4114.19
Dead+Wind 60 deg - Service	56475.46	22315.01	-12917.83	-1442207.61	-2474109.64	-3729.73
Dead+Wind 90 deg - Service	56475.46	26305.05	-46.73	-11594.36	-2897724.59	-2465.20
Dead+Wind 120 deg - Service	56475.46	24174.30	13930.41	1504430.13	-2612314.05	-526.73
Dead+Wind 150 deg - Service	56475.46	13112.06	22758.08	2508598.05	-1438300.32	1574.90
Dead+Wind 180 deg - Service	56475.46	-52.73	25744.33	2858064.69	16260.23	3219.85
Dead+Wind 210 deg - Service	56475.46	-13197.89	22784.15	2513502.88	1467752.27	4114.02
Dead+Wind 240 deg - Service	56475.46	-24224.99	14002.35	1516645.35	2635939.21	4024.09
Dead+Wind 270 deg - Service	56475.46	-26335.57	46.43	3913.24	2917254.15	2425.81
Dead+Wind 300 deg - Service	56475.46	-22313.13	-12855.86	-1431367.74	2487855.18	510.12
Dead+Wind 330 deg - Service	56475.46	-13127.57	-22784.36	-2519857.74	1455759.48	-1535.34

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-56475.46	-0.00	-0.00	56475.46	0.00	0.000%
2	74.17	-56475.46	-56075.41	-74.17	56475.46	56075.41	0.000%
3	26436.79	-56475.46	-45755.78	-26436.79	56475.46	45755.78	0.000%
4	44784.98	-56475.46	-25925.37	-44784.98	56475.46	25925.37	0.000%
5	52792.78	-56475.46	-93.78	-52792.78	56475.46	93.78	0.000%
6	48516.48	-56475.46	27957.55	-48516.48	56475.46	-27957.55	0.000%
7	26315.18	-56475.46	45674.20	-26315.17	56475.46	-45674.20	0.000%
8	-105.82	-56475.46	51667.44	105.82	56475.46	-51667.44	0.000%
9	-26487.45	-56475.46	45726.53	26487.45	56475.46	-45726.53	0.000%
10	-48618.22	-56475.46	28101.94	48618.22	56475.46	-28101.94	0.000%
11	-52854.02	-56475.46	93.18	52854.02	56475.46	-93.18	0.000%
12	-44781.22	-56475.46	-25801.00	44781.22	56475.46	25801.00	0.000%
13	-26346.31	-56475.46	-45726.94	26346.31	56475.46	45726.94	0.000%
14	0.00	-88816.85	-0.00	-0.00	88816.85	-0.00	0.000%
15	56.72	-88816.85	-57400.26	-56.72	88816.84	57400.21	0.000%
16	26082.13	-88816.85	-45150.58	-26082.12	88816.84	45150.54	0.000%
17	43603.29	-88816.85	-25227.62	-43603.29	88816.85	25227.62	0.000%
18	52103.81	-88816.85	-72.25	-52103.77	88816.84	72.26	0.000%
19	49674.52	-88816.85	28638.40	-49674.48	88816.84	-28638.37	0.000%
20	25989.33	-88816.85	45087.99	-25989.31	88816.84	-45087.96	0.000%
21	-81.80	-88816.85	50313.57	81.80	88816.85	-50313.57	0.000%
22	-26122.28	-88816.85	45127.40	26122.25	88816.84	-45127.37	0.000%
23	-49753.08	-88816.85	28749.25	49753.04	88816.84	-28749.22	0.000%
24	-52152.35	-88816.85	71.78	52152.31	88816.84	-71.78	0.000%
25	-43602.37	-88816.85	-25132.64	43602.37	88816.85	25132.64	0.000%
26	-26014.01	-88816.85	-45129.78	26013.99	88816.84	45129.75	0.000%
27	36.96	-56475.46	-27940.69	-36.96	56475.46	27940.69	0.000%
28	13172.65	-56475.46	-22798.73	-13172.66	56475.46	22798.72	0.000%
29	22315.01	-56475.46	-12917.83	-22315.01	56475.46	12917.83	0.000%
30	26305.05	-56475.46	-46.73	-26305.05	56475.46	46.73	0.000%
31	24174.30	-56475.46	13930.41	-24174.30	56475.46	-13930.41	0.000%
32	13112.06	-56475.46	22758.08	-13112.06	56475.46	-22758.08	0.000%
33	-52.73	-56475.46	25744.33	52.73	56475.46	-25744.33	0.000%
34	-13197.90	-56475.46	22784.15	13197.89	56475.46	-22784.15	0.000%
35	-24224.99	-56475.46	14002.35	24224.99	56475.46	-14002.35	0.000%
36	-26335.57	-56475.46	46.43	26335.57	56475.46	-46.43	0.000%
37	-22313.13	-56475.46	-12855.86	22313.13	56475.46	12855.86	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
38	-13127.57	-56475.46	-22784.36	13127.57	56475.46	22784.36	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000069
4	Yes	4	0.00000001	0.00000069
5	Yes	4	0.00000001	0.00000097
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000079
8	Yes	4	0.00000001	0.00000062
9	Yes	4	0.00000001	0.00000069
10	Yes	4	0.00000001	0.00000061
11	Yes	4	0.00000001	0.00000096
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000078
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000158
16	Yes	4	0.00000001	0.00000180
17	Yes	4	0.00000001	0.00000195
18	Yes	4	0.00000001	0.00000197
19	Yes	4	0.00000001	0.00000156
20	Yes	4	0.00000001	0.00000187
21	Yes	4	0.00000001	0.00000193
22	Yes	4	0.00000001	0.00000180
23	Yes	4	0.00000001	0.00000164
24	Yes	4	0.00000001	0.00000196
25	Yes	4	0.00000001	0.00000190
26	Yes	4	0.00000001	0.00000186
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	185 - 180	9.775	35	0.5772	0.0154
T2	180 - 160	9.165	35	0.5736	0.0152

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T3	160 - 140	6.838	35	0.4985	0.0165
T4	140 - 120	4.942	35	0.3728	0.0156
T5	120 - 100	3.468	35	0.2932	0.0104
T6	100 - 80	2.316	35	0.2260	0.0072
T7	80 - 60	1.444	35	0.1689	0.0054
T8	60 - 40	0.785	35	0.1120	0.0032
T9	40 - 20	0.372	35	0.0677	0.0021
T10	20 - 0	0.109	35	0.0339	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	8' Dipole	35	9.775	0.5772	0.0154	68542
174.00	Andrew 12'-6" Universal Sector Frame	35	8.440	0.5610	0.0154	23795
164.00	Andrew 12'-6" Quik-Tee Sector Frame	35	7.277	0.5205	0.0162	10942
154.00	Andrew 12'-6" Quik-Tee Sector Frame	35	6.218	0.4609	0.0167	9602
146.00	6' Standoff	35	5.461	0.4084	0.0164	10504
138.00	Andrew 3' w/Radome	35	4.777	0.3625	0.0152	11594

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	185 - 180	19.674	23	1.1583	0.0375
T2	180 - 160	18.463	23	1.1512	0.0373
T3	160 - 140	13.833	23	1.0003	0.0392
T4	140 - 120	10.042	23	0.7495	0.0364
T5	120 - 100	7.068	23	0.5929	0.0247
T6	100 - 80	4.731	23	0.4589	0.0172
T7	80 - 60	2.955	23	0.3439	0.0129
T8	60 - 40	1.608	23	0.2285	0.0074
T9	40 - 20	0.763	23	0.1384	0.0049
T10	20 - 0	0.223	23	0.0694	0.0020

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	8' Dipole	23	19.674	1.1583	0.0375	34762
174.00	Andrew 12'-6" Universal Sector Frame	23	17.021	1.1264	0.0376	11948
164.00	Andrew 12'-6" Quik-Tee Sector Frame	23	14.706	1.0447	0.0388	5483
154.00	Andrew 12'-6" Quik-Tee Sector Frame	23	12.597	0.9246	0.0395	4802
146.00	6' Standoff	23	11.084	0.8192	0.0385	5237
138.00	Andrew 3' w/Radome	23	9.711	0.7293	0.0355	5781

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	185	Leg	A325X	0.7500	6	308.39	19435.50	0.016 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	1451.28	3443.75	0.421 ✓	1.333	Member Block Shear
		Top Girt	A325X	0.6250	1	552.68	3443.75	0.160 ✓	1.333	Member Block Shear
T2	180	Leg	A325X	0.7500	6	5210.12	19432.20	0.268 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	6301.47	6887.50	0.915 ✓	1.333	Member Block Shear
		Top Girt	A325X	0.6250	1	492.38	3443.75	0.143 ✓	1.333	Member Block Shear
T3	160	Leg	A325X	1.0000	6	13504.20	34557.40	0.391 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	6354.10	6887.50	0.923 ✓	1.333	Member Block Shear
		Secondary Horizontal	A325X	0.6250	1	1620.77	6071.88	0.267 ✓	1.333	Member Block Shear
		Top Girt	A325X	0.6250	1	1005.02	3443.75	0.292 ✓	1.333	Member Block Shear
T4	140	Leg	A325X	1.0000	6	20638.20	34557.50	0.597 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	6023.07	5165.63	1.166 ✓	1.333	Member Block Shear
T5	120	Leg	A325X	1.0000	6	26185.90	34557.50	0.758 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	6534.61	6117.19	1.068 ✓	1.333	Member Bearing
T6	100	Leg	A325X	1.0000	6	31371.50	34557.50	0.908 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	7108.67	9203.88	0.772 ✓	1.333	Bolt Shear
T7	80	Leg	A325X	1.0000	6	36176.10	34557.50	1.047 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	7278.07	6796.88	1.071 ✓	1.333	Member Bearing
T8	60	Leg	A325X	1.2500	6	40306.00	53996.10	0.746 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	8750.73	13253.60	0.660 ✓	1.333	Bolt Shear
T9	40	Leg	A325X	1.2500	6	44518.10	53996.10	0.824 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	9916.73	9062.50	1.094 ✓	1.333	Member Bearing
T10	20	Leg	A572-50	1.5000	6	48580.20	37905.30	1.282 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	12563.10	13253.60	0.948 ✓	1.333	Bolt Shear

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 $\frac{P}{P_a}$
T1	185 - 180	P2x.154	5.00	5.00	76.2 K=1.00	19.756	1.0745	-3263.60	21228.60	0.154
T2	180 - 160	P2.5x.203	20.00	5.00	63.3 K=1.00	22.141	1.7040	-37645.20	37729.30	0.998
T3	160 - 140	P2.5x.375	20.03	2.62	35.2 K=1.00	26.484	2.9452	-93458.70	78001.30	1.198
T4	140 - 120	P3.5x0.318 + L3.5x3.5x0.375	20.03	5.01	63.1 K=1.40	22.184	5.9300	-142063.00	131554.00	1.080
T5	120 - 100	P5x0.258 + L5x5x0.375	20.03	6.68	58.3 K=1.39	23.009	7.6600	-182576.00	176245.00	1.036
T6	100 - 80	P5x0.375 + L5x5x0.375	20.03	6.68	58.7 K=1.38	22.934	9.3700	-222366.00	214896.00	1.035
T7	80 - 60	P5x0.375 + L5x5x0.375	20.03	6.68	47.0 K=1.11	24.808	9.3700	-260049.00	232454.00	1.119
T8	60 - 40	P5x0.500 + L5x5x0.500	20.03	10.02	71.5 K=1.11	20.651	12.2400	-293629.00	252770.00	1.162
T9	40 - 20	P8x0.322 + L8x8x0.500	20.03	10.02	55.0 K=1.38	23.552	15.6900	-329552.00	369523.00	0.892
T10	20 - 0	P8x0.322 + L8x8x0.500	20.03	10.02	55.0 K=1.38	23.552	15.6900	-365808.00	369523.00	0.990

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	185 - 180	L2x2x1/8	7.07	3.26	103.8 K=1.05	12.288	0.4844	-1706.42	5952.00	0.287
T2	180 - 160	L2x2x1/4	7.07	3.23	104.4 K=1.05	12.418	0.9380	-6675.26	11647.90	0.573
T3	160 - 140	L2x2x1/4	8.40	4.21	129.1 K=1.00	8.957	0.9380	-6459.30	8401.49	0.769
T4	140 - 120	L2x2x3/16	10.08	4.81	146.5 K=1.00	6.957	0.7150	-5965.79	4974.11	1.199
T5	120 - 100	L2 1/2x2 1/2x3/16	12.58	6.00	145.5 K=1.00	7.049	0.9020	-6678.87	6358.51	1.050
T6	100 - 80	L2 1/2x2 1/2x5/16	14.32	6.88	168.8 K=1.00	5.242	1.4600	-7108.67	7653.89	0.929
T7	80 - 60	L3x3x3/16	16.11	7.77	156.4 K=1.00	6.102	1.0900	-7289.98	6651.42	1.096
T8	60 - 40	L3x3x3/8	19.30	9.45	193.2 K=1.00	4.001	2.1100	-8508.90	8442.74	1.008
T9	40 - 20	L3 1/2x3 1/2x1/4	21.03	10.12	175.0 K=1.00	4.878	1.6900	-9022.85	8244.66	1.094
T10	20 - 0	L3 1/2x3 1/2x3/8	21.92	10.57	184.6 K=1.00	4.382	2.4800	-11588.50	10866.60	1.066

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T3	160 - 140	L2x2x1/4	6.74	6.50	99.8 K=0.50	13.008	0.9380	-1620.77	12201.40	0.133 ✓

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	185 - 180	L2x2x1/8	5.00	4.53	136.8 K=1.00	7.982	0.4844	-371.50	3866.35	0.096 ✓
T2	180 - 160	L2x2x1/8	5.00	4.53	136.8 K=1.00	7.982	0.4844	-404.33	3866.35	0.105 ✓
T3	160 - 140	L2x2x1/8	5.00	4.76	143.7 K=1.00	7.232	0.4844	-1002.32	3503.06	0.286 ✓

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	185 - 180	P2x.154	5.00	5.00	76.2	30.000	1.0745	1850.33	32235.90	0.057 ✓
T2	180 - 160	P2.5x.203	20.00	5.00	63.3	30.000	1.7040	31260.70	51121.50	0.611 ✓
T3	160 - 140	P2.5x.375	20.03	2.62	35.2	30.000	2.9452	81105.30	88357.30	0.918 ✓
T4	140 - 120	P3.5x0.318 + L3.5x3.5x0.375	20.03	5.01	45.2	30.000	5.9300	123829.00	177900.00	0.696 ✓
T5	120 - 100	P5x0.258 + L5x5x0.375	20.03	6.68	41.8	30.000	7.6600	157115.00	229800.00	0.684 ✓
T6	100 - 80	P5x0.375 + L5x5x0.375	20.03	6.68	42.4	30.000	9.3700	188229.00	281100.00	0.670 ✓
T7	80 - 60	P5x0.375 + L5x5x0.375	20.03	6.68	42.4	30.000	9.3700	217057.00	281100.00	0.772 ✓
T8	60 - 40	P5x0.500 + L5x5x0.500	20.03	10.02	64.6	30.000	12.2400	241836.00	367200.00	0.659 ✓
T9	40 - 20	P8x0.322 + L8x8x0.500	20.03	10.02	39.9	30.000	15.6900	267108.00	470700.00	0.567 ✓
T10	20 - 0	P8x0.322 + L8x8x0.500	20.03	10.02	39.9	30.000	15.6900	291482.00	470700.00	0.619 ✓

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	185 - 180	L2x2x1/8	7.07	3.26	65.1	21.600	0.4844	1451.28	10462.50	0.139 ✔
T2	180 - 160	L2x2x1/4	7.07	3.23	66.3	21.600	0.9380	6301.47	20260.80	0.311 ✔
T3	160 - 140	L2x2x1/4	8.40	4.21	82.9	21.600	0.9380	6354.10	20260.80	0.314 ✔
T4	140 - 120	L2x2x3/16	8.81	4.18	84.0	21.600	0.7150	6023.07	15444.00	0.390 ✔
T5	120 - 100	L2 1/2x2 1/2x3/16	12.02	5.73	90.4	21.600	0.9020	6534.61	19483.20	0.335 ✔
T6	100 - 80	L2 1/2x2 1/2x5/16	14.32	6.88	110.6	21.600	1.4600	6940.89	31536.00	0.220 ✔
T7	80 - 60	L3x3x3/16	16.11	7.77	101.2	21.600	1.0900	7278.07	23544.00	0.309 ✔
T8	60 - 40	L3x3x3/8	19.30	9.45	126.1	21.600	2.1100	8650.19	45576.00	0.190 ✔
T9	40 - 20	L3 1/2x3 1/2x1/4	21.03	10.12	113.0	21.600	1.6900	9916.73	36504.00	0.272 ✔
T10	20 - 0	L3 1/2x3 1/2x3/8	22.81	11.01	125.1	21.600	2.4800	12563.10	53568.00	0.235 ✔

Secondary Horizontal Design Data (Tension)

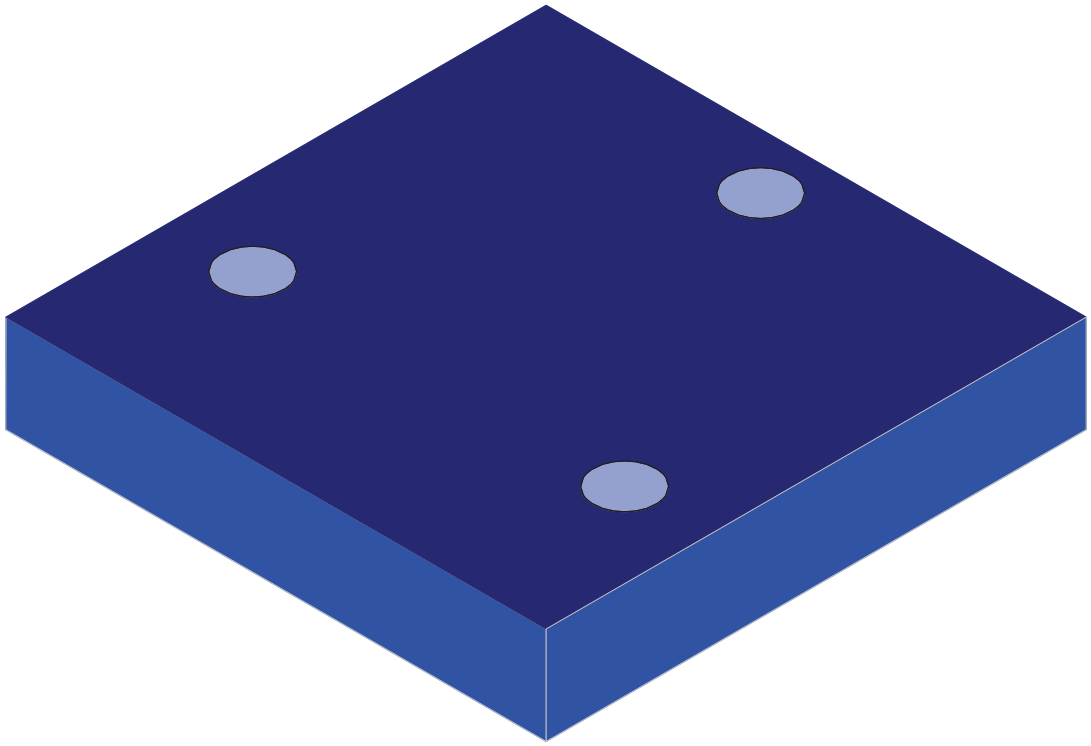
Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T3	160 - 140	L2x2x1/4	6.74	6.50	128.1	21.600	0.9380	1620.77	20260.80	0.080 ✔

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	185 - 180	L2x2x1/8	5.00	4.53	92.0	21.600	0.4844	552.68	10462.50	0.053 ✔
T2	180 - 160	L2x2x1/8	5.00	4.53	92.0	21.600	0.4844	492.38	10462.50	0.047 ✔
T3	160 - 140	L2x2x1/8	5.00	4.76	91.2	21.600	0.4844	1005.02	10462.50	0.096 ✔

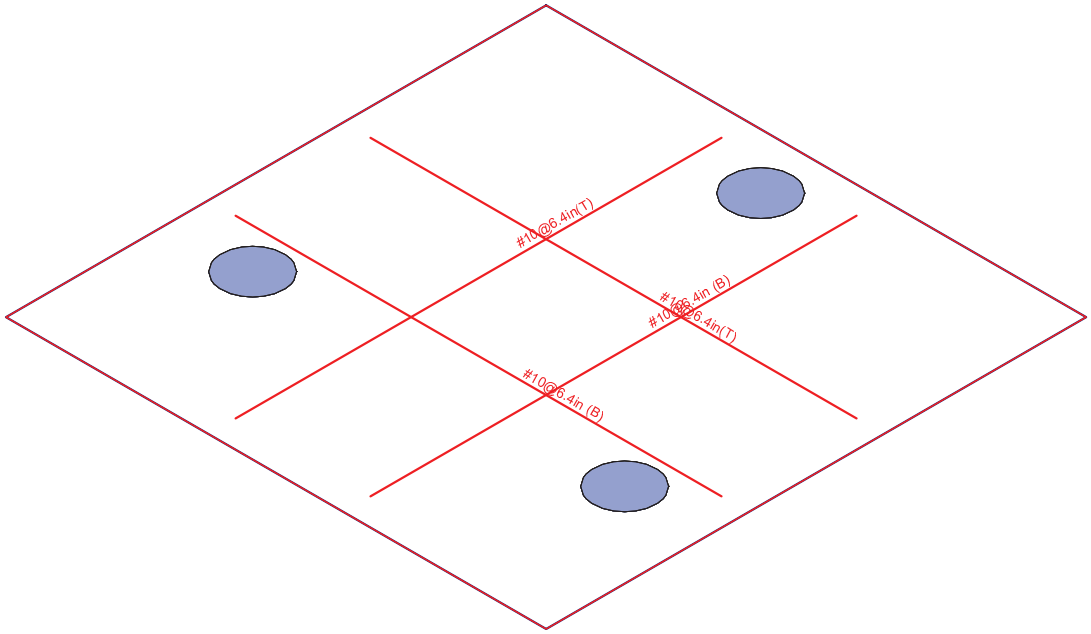
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	185 - 180	Leg	P2x.154	2	-3263.60	28297.72	11.5	Pass
T2	180 - 160	Leg	P2.5x.203	14	-37645.20	50293.16	74.9	Pass
T3	160 - 140	Leg	P2.5x.375	45	-93458.70	103975.72	89.9	Pass
T4	140 - 120	Leg	P3.5x0.318 + L3.5x3.5x0.375	85	-142063.00	175361.47	81.0	Pass
T5	120 - 100	Leg	P5x0.258 + L5x5x0.375	112	-182576.00	234934.58	77.7	Pass
T6	100 - 80	Leg	P5x0.375 + L5x5x0.375	133	-222366.00	286456.36	77.6	Pass
T7	80 - 60	Leg	P5x0.375 + L5x5x0.375	154	-260049.00	309861.17	83.9	Pass
T8	60 - 40	Leg	P5x0.500 + L5x5x0.500	175	-293629.00	336942.40	87.1	Pass
T9	40 - 20	Leg	P8x0.322 + L8x8x0.500	190	-329552.00	492574.14	66.9	Pass
T10	20 - 0	Leg	P8x0.322 + L8x8x0.500	205	-365808.00	492574.14	74.3	Pass
T1	185 - 180	Diagonal	L2x2x1/8	9	-1706.42	7934.02	21.5	Pass
T2	180 - 160	Diagonal	L2x2x1/4	22	-6675.26	15526.65	43.0	Pass
T3	160 - 140	Diagonal	L2x2x1/4	54	-6459.30	11199.19	57.7	Pass
T4	140 - 120	Diagonal	L2x2x3/16	93	-5965.79	6630.49	90.0	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	120	-6678.87	8475.89	78.8	Pass
T6	100 - 80	Diagonal	L2 1/2x2 1/2x5/16	141	-7108.67	10202.64	69.7	Pass
T7	80 - 60	Diagonal	L3x3x3/16	162	-7289.98	8866.34	82.2	Pass
T8	60 - 40	Diagonal	L3x3x3/8	182	-8508.90	11254.17	75.6	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	197	-9022.85	10990.13	82.1	Pass
T10	20 - 0	Diagonal	L3 1/2x3 1/2x3/8	219	-11588.50	14485.18	80.0	Pass
T3	160 - 140	Secondary Horizontal	L2x2x1/4	56	-1620.77	16264.47	10.0	Pass
T1	185 - 180	Top Girt	L2x2x1/8	4	-371.50	5153.84	7.2	Pass
T2	180 - 160	Top Girt	L2x2x1/8	16	-404.33	5153.84	7.8	Pass
T3	160 - 140	Top Girt	L2x2x1/8	47	-1002.32	4669.58	21.5	Pass
							Summary	
						Leg (T3)	89.9	Pass
						Diagonal (T4)	90.0	Pass
						Secondary Horizontal (T3)	10.0	Pass
						Top Girt (T3)	21.5	Pass
						Bolt Checks	96.1	Pass
						RATING =	**96.1**	**Pass**



Results for LC 69, 0.9D+1.6Wind0

Ramaker & Associates	Transfer Station (CT33XC522)	SK - 1
A. Kraus		Oct 13, 2014 at 4:55 PM
28737		28737 rev1 MODS.FND



Results for LC 69, 0.9D+1.6Wind0

Ramaker & Associates	Transfer Station (CT33XC522)	SK - 2
A. Kraus		Oct 13, 2014 at 4:56 PM
28737		28737 rev1 MODS.FND

Pedestals/Posts

	Label	Type	Shape	Material	Design Rules	Angle(deg)	Height[in]
1	R3D_N172	Pedestal	CRND42	Conc3000NW	Typical	0	0
2	R3D_N173	Pedestal	CRND42	Conc3000NW	Typical	0	0
3	R3D_N174	Pedestal	CRND42	Conc3000NW	Typical	0	0

Slabs

	Label	Thickness[in]	Material
1	S1	66	Conc3000NW

Load Categories

	Category	Point Loads	Line Loads	Area Loads
1	LL	9		
2	SL	9		
3	EPL			1
4	OL1	12		
5	OL2	12		
6	OL3	12		
7	OL4	12		
8	OL5	12		
9	OL6	12		
10	OL7	12		
11	OL8	12		
12	WL+X	12		
13	WL+Z	12		
14	WL-X	12		
15	WL-Z	12		
16	ELX+Z	12		
17	ELX-Z	12		
18	ELZ+X	12		
19	ELZ-X	12		
20	ELX+Y	12		
21	ELX-Y	12		
22	ELZ+Y	12		
23	ELZ-Y	12		
24	NL	5		
25	WLX+R	12		
26	WLZ+R	12		
27	WLX-R	12		
28	WLZ-R	12		

Load Combinations

	Label	Sol...	Se...	AB...	SF	Cate...	F...	Cate...	F...	Cate...	F...	Categ...	F...	Cate...	Fa...	Cate...	Fa...	Cate...	Factor	Cate...	Factor
1	** SERVICE**																				
2	Dead Only	Yes	Yes			LL	1							DL	.8	EPL	.5				
3	Dead+Wind 0 deg -...	Yes	Yes	1.3...		LL	1	WL-Z	1					DL	.8	EPL	.5				
4	Dead+Wind 30 deg...	Yes	Yes	1.3...		LL	1	OL1	1					DL	.8	EPL	.5				
5	Dead+Wind 60 deg...	Yes	Yes	1.3...		LL	1	OL2	1					DL	.8	EPL	.5				
6	Dead+Wind 90 deg...	Yes	Yes	1.3...		LL	1	WL+X	1					DL	.8	EPL	.5				
7	Dead+Wind 120 de...	Yes	Yes	1.3...		LL	1	OL3	1					DL	.8	EPL	.5				
8	Dead+Wind 150 de...	Yes	Yes	1.3...		LL	1	OL4	1					DL	.8	EPL	.5				
9	Dead+Wind 180 de...	Yes	Yes	1.3...		LL	1	WL+Z	1					DL	.8	EPL	.5				
10	Dead+Wind 210 de...	Yes	Yes	1.3...		LL	1	OL5	1					DL	.8	EPL	.5				
11	Dead+Wind 240 de...	Yes	Yes	1.3...		LL	1	OL6	1					DL	.8	EPL	.5				
12	Dead+Wind 270 de...	Yes	Yes	1.3...		LL	1	WL-X	1					DL	.8	EPL	.5				
13	Dead+Wind 300 de...	Yes	Yes	1.3...		LL	1	OL7	1					DL	.8	EPL	.5				
14	Dead+Wind 330 de...	Yes	Yes	1.3...		LL	1	OL8	1					DL	.8	EPL	.5				

Load Combinations (Continued)

	Label	Sol...	Se...	AB...	SF	Cate...	F...	Cate...	F...	Cate...	F...	Categ...	F...	Cate...	Fa...	Cate...	Fa...	Cate...	Factor	Cate...	Factor
15	Dead+Ice+Temp	Yes	Yes			LL	1	SL	1	NL	1			DL	.8	EPL	.5				
16	Dead+Wind 0 deg+...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLZ-R	1	DL	.8	EPL	.5				
17	Dead+Wind 30 deg...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ-X	1	DL	.8	EPL	.5				
18	Dead+Wind 60 deg...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ-Y	1	DL	.8	EPL	.5				
19	Dead+Wind 90 deg...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLX+R	1	DL	.8	EPL	.5				
20	Dead+Wind 120 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX+Y	1	DL	.8	EPL	.5				
21	Dead+Wind 150 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX+Z	1	DL	.8	EPL	.5				
22	Dead+Wind 180 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLZ+R	1	DL	.8	EPL	.5				
23	Dead+Wind 210 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ+X	1	DL	.8	EPL	.5				
24	Dead+Wind 240 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ+Y	1	DL	.8	EPL	.5				
25	Dead+Wind 270 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLX-R	1	DL	.8	EPL	.5				
26	Dead+Wind 300 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX-Y	1	DL	.8	EPL	.5				
27	Dead+Wind 330 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX-Z	1	DL	.8	EPL	.5				
28	Dead Only	Yes	Yes			LL	1							DL	.667	EPL	.667				
29	Dead+Wind 0 deg -...	Yes	Yes	1.3...		LL	1	WL-Z	1					DL	.667	EPL	.667				
30	Dead+Wind 30 deg...	Yes	Yes	1.3...		LL	1	OL1	1					DL	.667	EPL	.667				
31	Dead+Wind 60 deg...	Yes	Yes	1.3...		LL	1	OL2	1					DL	.667	EPL	.667				
32	Dead+Wind 90 deg...	Yes	Yes	1.3...		LL	1	WL+X	1					DL	.667	EPL	.667				
33	Dead+Wind 120 de...	Yes	Yes	1.3...		LL	1	OL3	1					DL	.667	EPL	.667				
34	Dead+Wind 150 de...	Yes	Yes	1.3...		LL	1	OL4	1					DL	.667	EPL	.667				
35	Dead+Wind 180 de...	Yes	Yes	1.3...		LL	1	WL+Z	1					DL	.667	EPL	.667				
36	Dead+Wind 210 de...	Yes	Yes	1.3...		LL	1	OL5	1					DL	.667	EPL	.667				
37	Dead+Wind 240 de...	Yes	Yes	1.3...		LL	1	OL6	1					DL	.667	EPL	.667				
38	Dead+Wind 270 de...	Yes	Yes	1.3...		LL	1	WL-X	1					DL	.667	EPL	.667				
39	Dead+Wind 300 de...	Yes	Yes	1.3...		LL	1	OL7	1					DL	.667	EPL	.667				
40	Dead+Wind 330 de...	Yes	Yes	1.3...		LL	1	OL8	1					DL	.667	EPL	.667				
41	Dead+Ice+Temp	Yes	Yes			LL	1	SL	1	NL	1			DL	.667	EPL	.667				
42	Dead+Wind 0 deg+...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLZ-R	1	DL	.667	EPL	.667				
43	Dead+Wind 30 deg...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ-X	1	DL	.667	EPL	.667				
44	Dead+Wind 60 deg...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ-Y	1	DL	.667	EPL	.667				
45	Dead+Wind 90 deg...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLX+R	1	DL	.667	EPL	.667				
46	Dead+Wind 120 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX+Y	1	DL	.667	EPL	.667				
47	Dead+Wind 150 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX+Z	1	DL	.667	EPL	.667				
48	Dead+Wind 180 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLZ+R	1	DL	.667	EPL	.667				
49	Dead+Wind 210 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ+X	1	DL	.667	EPL	.667				
50	Dead+Wind 240 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELZ+Y	1	DL	.667	EPL	.667				
51	Dead+Wind 270 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	WLX-R	1	DL	.667	EPL	.667				
52	Dead+Wind 300 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX-Y	1	DL	.667	EPL	.667				
53	Dead+Wind 330 de...	Yes	Yes	1.3...		LL	1	SL	1	NL	1	ELX-Z	1	DL	.667	EPL	.667				
54																					
55	** STRENGTH DE...																				
56	1.4D	Yes				LL	1.4							DL	1.4	EPL	1.4				
57	1.2D+1.6Wind0	Yes				LL	1.2	WL-Z	1.6					DL	1.2	EPL	1.2				
58	1.2D+1.6Wind30	Yes				LL	1.2	OL1	1.6					DL	1.2	EPL	1.2				
59	1.2D+1.6Wind60	Yes				LL	1.2	OL2	1.6					DL	1.2	EPL	1.2				
60	1.2D+1.6Wind90	Yes				LL	1.2	WL+X	1.6					DL	1.2	EPL	1.2				
61	1.2D+1.6Wind120	Yes				LL	1.2	OL3	1.6					DL	1.2	EPL	1.2				
62	1.2D+1.6Wind150	Yes				LL	1.2	OL4	1.6					DL	1.2	EPL	1.2				
63	1.2D+1.6Wind180	Yes				LL	1.2	WL+Z	1.6					DL	1.2	EPL	1.2				
64	1.2D+1.6Wind210	Yes				LL	1.2	OL5	1.6					DL	1.2	EPL	1.2				
65	1.2D+1.6Wind240	Yes				LL	1.2	OL6	1.6					DL	1.2	EPL	1.2				
66	1.2D+1.6Wind270	Yes				LL	1.2	WL-X	1.6					DL	1.2	EPL	1.2				
67	1.2D+1.6Wind300	Yes				LL	1.2	OL7	1.6					DL	1.2	EPL	1.2				
68	1.2D+1.6Wind330	Yes				LL	1.2	OL8	1.6					DL	1.2	EPL	1.2				
69	0.9D+1.6Wind0	Yes				LL	.9	WL-Z	1.6					DL	.9	EPL	.9				
70	0.9D+1.6Wind30	Yes				LL	.9	OL1	1.6					DL	.9	EPL	.9				
71	0.9D+1.6Wind60	Yes				LL	.9	OL2	1.6					DL	.9	EPL	.9				

Load Combinations (Continued)

	Label	Sol...	Se...	AB...	SF	Cate...	F...	Cate...	F...	Cate...	F...	Categ...	F...	Cate...	Fa...	Cate...	Fa...	Cate...	Factor	Cate...	Factor
72	0.9D+1.6Wind90	Yes				LL	.9	WL+X	1.6					DL	.9	EPL	.9				
73	0.9D+1.6Wind120	Yes				LL	.9	OL3	1.6					DL	.9	EPL	.9				
74	0.9D+1.6Wind150	Yes				LL	.9	OL4	1.6					DL	.9	EPL	.9				
75	0.9D+1.6Wind180	Yes				LL	.9	WL+Z	1.6					DL	.9	EPL	.9				
76	0.9D+1.6Wind210	Yes				LL	.9	OL5	1.6					DL	.9	EPL	.9				
77	0.9D+1.6Wind240	Yes				LL	.9	OL6	1.6					DL	.9	EPL	.9				
78	0.9D+1.6Wind270	Yes				LL	.9	WL-X	1.6					DL	.9	EPL	.9				
79	0.9D+1.6Wind300	Yes				LL	.9	OL7	1.6					DL	.9	EPL	.9				
80	0.9D+1.6Wind330	Yes				LL	.9	OL8	1.6					DL	.9	EPL	.9				
81	1.2D+1.6Wind0 (w/ ...	Yes				LL	1.2	SL	1	NL	1	WLZ-R	1	DL	1.2	EPL	1.2				
82	1.2D+1.6Wind30 (w...	Yes				LL	1.2	SL	1	NL	1	ELZ-X	1	DL	1.2	EPL	1.2				
83	1.2D+1.6Wind60 (w...	Yes				LL	1.2	SL	1	NL	1	ELZ-Y	1	DL	1.2	EPL	1.2				
84	1.2D+1.6Wind90 (w...	Yes				LL	1.2	SL	1	NL	1	WLX+R	1	DL	1.2	EPL	1.2				
85	1.2D+1.6Wind120 (...	Yes				LL	1.2	SL	1	NL	1	ELX+Y	1	DL	1.2	EPL	1.2				
86	1.2D+1.6Wind150 (...	Yes				LL	1.2	SL	1	NL	1	ELX+Z	1	DL	1.2	EPL	1.2				
87	1.2D+1.6Wind180 (...	Yes				LL	1.2	SL	1	NL	1	WLZ+R	1	DL	1.2	EPL	1.2				
88	1.2D+1.6Wind210 (...	Yes				LL	1.2	SL	1	NL	1	ELZ+X	1	DL	1.2	EPL	1.2				
89	1.2D+1.6Wind240 (...	Yes				LL	1.2	SL	1	NL	1	ELZ+Y	1	DL	1.2	EPL	1.2				
90	1.2D+1.6Wind270 (...	Yes				LL	1.2	SL	1	NL	1	WLX-R	1	DL	1.2	EPL	1.2				
91	1.2D+1.6Wind300 (...	Yes				LL	1.2	SL	1	NL	1	ELX-Y	1	DL	1.2	EPL	1.2				
92	1.2D+1.6Wind330 (...	Yes				LL	1.2	SL	1	NL	1	ELX-Z	1	DL	1.2	EPL	1.2				

Point Loads and Moments (Cat 2 : LL)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-1.247
2	R3D_N172	Y	19.084
3	R3D_N172	Z	.728
4	R3D_N173	X	1.24
5	R3D_N173	Y	18.358
6	R3D_N173	Z	.715
7	R3D_N174	X	.008
8	R3D_N174	Y	19.034
9	R3D_N174	Z	-1.443

Point Loads and Moments (Cat 5 : SL)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-.682
2	R3D_N172	Y	11.136
3	R3D_N172	Z	.41
4	R3D_N173	X	.669
5	R3D_N173	Y	9.947
6	R3D_N173	Z	.388
7	R3D_N174	X	.013
8	R3D_N174	Y	11.258
9	R3D_N174	Z	-.797

Point Loads and Moments (Cat 16 : OL1)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	23.19
2	R3D_N172	Y	-276.889
3	R3D_N172	Z	-15.454
4	R3D_N172	MY	-.014
5	R3D_N173	X	1.459
6	R3D_N173	Y	.195
7	R3D_N173	Z	-2.503

Point Loads and Moments (Cat 16 : OL1) (Continued)

	Label	Direction	Magnitude[k,k-ft]
8	R3D_N173	MY	.027
9	R3D_N174	X	1.787
10	R3D_N174	Y	276.693
11	R3D_N174	Z	-27.799
12	R3D_N174	MY	-.014

Point Loads and Moments (Cat 17 : OL2)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	27.158
2	R3D_N172	Y	-315.031
3	R3D_N172	Z	-15.917
4	R3D_N172	MY	-.000326
5	R3D_N173	X	14.806
6	R3D_N173	Y	157.059
7	R3D_N173	Z	5.765
8	R3D_N173	MY	.024
9	R3D_N174	X	2.82
10	R3D_N174	Y	157.972
11	R3D_N174	Z	-15.773
12	R3D_N174	MY	-.024

Point Loads and Moments (Cat 18 : OL3)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	16.171
2	R3D_N172	Y	-166.38
3	R3D_N172	Z	-5.941
4	R3D_N172	MY	.023
5	R3D_N173	X	29.339
6	R3D_N173	Y	332.037
7	R3D_N173	Z	16.977
8	R3D_N173	MY	.000342
9	R3D_N174	X	3.006
10	R3D_N174	Y	-165.657
11	R3D_N174	Z	16.922
12	R3D_N174	MY	-.023

Point Loads and Moments (Cat 19 : OL4)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	1.578
2	R3D_N172	Y	.436
3	R3D_N172	Z	2.796
4	R3D_N172	MY	.027
5	R3D_N173	X	23.262
6	R3D_N173	Y	275.497
7	R3D_N173	Z	15.134
8	R3D_N173	MY	-.013
9	R3D_N174	X	1.475
10	R3D_N174	Y	-275.933
11	R3D_N174	Z	27.744
12	R3D_N174	MY	-.013

Point Loads and Moments (Cat 20 : OL5)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-23.207
2	R3D_N172	Y	277.111

Point Loads and Moments (Cat 20 : OL5) (Continued)

	Label	Direction	Magnitude[k,k-ft]
3	R3D_N172	Z	15.462
4	R3D_N172	MY	.014
5	R3D_N173	X	-1.491
6	R3D_N173	Y	-.639
7	R3D_N173	Z	2.484
8	R3D_N173	MY	-.027
9	R3D_N174	X	-1.789
10	R3D_N174	Y	-276.471
11	R3D_N174	Z	27.78
12	R3D_N174	MY	.014

Point Loads and Moments (Cat 21 : OL6)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-29.338
2	R3D_N172	Y	333.497
3	R3D_N172	Z	17.193
4	R3D_N172	MY	.000299
5	R3D_N173	X	-16.086
6	R3D_N173	Y	-166.5
7	R3D_N173	Z	-6.109
8	R3D_N173	MY	-.024
9	R3D_N174	X	-3.195
10	R3D_N174	Y	-166.997
11	R3D_N174	Z	17.018
12	R3D_N174	MY	.024

Point Loads and Moments (Cat 22 : OL7)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-14.925
2	R3D_N172	Y	157.479
3	R3D_N172	Z	5.631
4	R3D_N172	MY	-.023
5	R3D_N173	X	-27.203
6	R3D_N173	Y	-314.262
7	R3D_N173	Z	-15.742
8	R3D_N173	MY	-.000364
9	R3D_N174	X	-2.65
10	R3D_N174	Y	156.784
11	R3D_N174	Z	-15.689
12	R3D_N174	MY	.023

Point Loads and Moments (Cat 23 : OL8)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-1.578
2	R3D_N172	Y	-.431
3	R3D_N172	Z	-2.796
4	R3D_N172	MY	-.027
5	R3D_N173	X	-23.29
6	R3D_N173	Y	-275.902
7	R3D_N173	Z	-15.154
8	R3D_N173	MY	.013
9	R3D_N174	X	-1.479
10	R3D_N174	Y	276.333
11	R3D_N174	Z	-27.778
12	R3D_N174	MY	.013

Point Loads and Moments (Cat 32 : WL+X)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	24.794
2	R3D_N172	Y	-276.768
3	R3D_N172	Z	-12.667
4	R3D_N172	MY	.013
5	R3D_N173	X	24.74
6	R3D_N173	Y	275.915
7	R3D_N173	Z	12.636
8	R3D_N173	MY	.014
9	R3D_N174	X	3.26
10	R3D_N174	Y	.853
11	R3D_N174	Z	-.062
12	R3D_N174	MY	-.027

Point Loads and Moments (Cat 34 : WL+Z)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-12.264
2	R3D_N172	Y	157.972
3	R3D_N172	Z	10.305
4	R3D_N172	MY	.023
5	R3D_N173	X	12.336
6	R3D_N173	Y	156.336
7	R3D_N173	Z	9.938
8	R3D_N173	MY	-.023
9	R3D_N174	X	-.178
10	R3D_N174	Y	-314.308
11	R3D_N174	Z	31.425
12	R3D_N174	MY	.000699

Point Loads and Moments (Cat 35 : WL-X)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-24.824
2	R3D_N172	Y	277.168
3	R3D_N172	Z	12.681
4	R3D_N172	MY	-.013
5	R3D_N173	X	-24.771
6	R3D_N173	Y	-276.32
7	R3D_N173	Z	-12.65
8	R3D_N173	MY	-.014
9	R3D_N174	X	-3.259
10	R3D_N174	Y	-.848
11	R3D_N174	Z	.062
12	R3D_N174	MY	.027

Point Loads and Moments (Cat 37 : WL-Z)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	13.155
2	R3D_N172	Y	-166.997
3	R3D_N172	Z	-11.251
4	R3D_N172	MY	-.023
5	R3D_N173	X	-13.273
6	R3D_N173	Y	-165.777
7	R3D_N173	Z	-10.874
8	R3D_N173	MY	.023
9	R3D_N174	X	.192
10	R3D_N174	Y	332.774

Point Loads and Moments (Cat 37 : WL-Z) (Continued)

	Label	Direction	Magnitude[k,k-ft]
11	R3D_N174	Z	-33.95
12	R3D_N174	MY	-.000649

Point Loads and Moments (Cat 42 : ELX+Z)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	1.593
2	R3D_N172	Y	.335
3	R3D_N172	Z	2.807
4	R3D_N172	MY	.024
5	R3D_N173	X	22.975
6	R3D_N173	Y	271.434
7	R3D_N173	Z	14.907
8	R3D_N173	MY	-.012
9	R3D_N174	X	1.422
10	R3D_N174	Y	-271.769
11	R3D_N174	Z	27.374
12	R3D_N174	MY	-.011

Point Loads and Moments (Cat 43 : ELX-Z)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-1.593
2	R3D_N172	Y	-.331
3	R3D_N172	Z	-2.807
4	R3D_N172	MY	-.024
5	R3D_N173	X	-22.997
6	R3D_N173	Y	-271.755
7	R3D_N173	Z	-14.922
8	R3D_N173	MY	.012
9	R3D_N174	X	-1.425
10	R3D_N174	Y	272.087
11	R3D_N174	Z	-27.401
12	R3D_N174	MY	.011

Point Loads and Moments (Cat 44 : ELZ+X)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-22.859
2	R3D_N172	Y	272.675
3	R3D_N172	Z	15.286
4	R3D_N172	MY	.012
5	R3D_N173	X	-1.453
6	R3D_N173	Y	-.498
7	R3D_N173	Z	2.44
8	R3D_N173	MY	-.024
9	R3D_N174	X	-1.81
10	R3D_N174	Y	-272.177
11	R3D_N174	Z	27.401
12	R3D_N174	MY	.013

Point Loads and Moments (Cat 45 : ELZ-X)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	22.846
2	R3D_N172	Y	-272.499
3	R3D_N172	Z	-15.28
4	R3D_N172	MY	-.012
5	R3D_N173	X	1.428

Point Loads and Moments (Cat 45 : ELZ-X) (Continued)

	Label	Direction	Magnitude[k,k-ft]
6	R3D_N173	Y	.146
7	R3D_N173	Z	-2.455
8	R3D_N173	MY	.024
9	R3D_N174	X	1.809
10	R3D_N174	Y	272.353
11	R3D_N174	Z	-27.416
12	R3D_N174	MY	-.013

Point Loads and Moments (Cat 48 : ELX+Y)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	16.571
2	R3D_N172	Y	-169.326
3	R3D_N172	Z	-6.011
4	R3D_N172	MY	.02
5	R3D_N173	X	30.028
6	R3D_N173	Y	338.094
7	R3D_N173	Z	17.333
8	R3D_N173	MY	.000332
9	R3D_N174	X	3.075
10	R3D_N174	Y	-168.768
11	R3D_N174	Z	17.316
12	R3D_N174	MY	-.02

Point Loads and Moments (Cat 49 : ELX-Y)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-14.545
2	R3D_N172	Y	153.199
3	R3D_N172	Z	5.449
4	R3D_N172	MY	-.02
5	R3D_N173	X	-26.501
6	R3D_N173	Y	-305.84
7	R3D_N173	Z	-15.302
8	R3D_N173	MY	-.000351
9	R3D_N174	X	-2.556
10	R3D_N174	Y	152.641
11	R3D_N174	Z	-15.28
12	R3D_N174	MY	.02

Point Loads and Moments (Cat 54 : ELZ+Y)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-29.975
2	R3D_N172	Y	339.219
3	R3D_N172	Z	17.59
4	R3D_N172	MY	.00036
5	R3D_N173	X	-16.454
6	R3D_N173	Y	-169.421
7	R3D_N173	Z	-6.23
8	R3D_N173	MY	-.021
9	R3D_N174	X	-3.324
10	R3D_N174	Y	-169.798
11	R3D_N174	Z	17.39
12	R3D_N174	MY	.021

Point Loads and Moments (Cat 55 : ELZ-Y)

	Label	Direction	Magnitude[k,k-ft]

Point Loads and Moments (Cat 55 : ELZ-Y) (Continued)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	26.423
2	R3D_N172	Y	-306.395
3	R3D_N172	Z	-15.506
4	R3D_N172	MY	-.000377
5	R3D_N173	X	14.411
6	R3D_N173	Y	152.844
7	R3D_N173	Z	5.622
8	R3D_N173	MY	.021
9	R3D_N174	X	2.77
10	R3D_N174	Y	153.551
11	R3D_N174	Z	-15.344
12	R3D_N174	MY	-.021

Point Loads and Moments (Cat 59 : NL)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	4.606
2	R3D_N172	Z	-2.659
3	R3D_N173	X	-4.606
4	R3D_N173	Z	-2.659
5	R3D_N174	Z	5.318

Point Loads and Moments (Cat 60 : WLX+R)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	24.459
2	R3D_N172	Y	-272.414
3	R3D_N172	Z	-12.48
4	R3D_N172	MY	.012
5	R3D_N173	X	24.417
6	R3D_N173	Y	271.756
7	R3D_N173	Z	12.455
8	R3D_N173	MY	.012
9	R3D_N174	X	3.228
10	R3D_N174	Y	.657
11	R3D_N174	Z	-.048
12	R3D_N174	MY	-.024

Point Loads and Moments (Cat 62 : WLZ+R)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-11.904
2	R3D_N172	Y	153.551
3	R3D_N172	Z	10.069
4	R3D_N172	MY	.021
5	R3D_N173	X	12.038
6	R3D_N173	Y	152.286
7	R3D_N173	Z	9.65
8	R3D_N173	MY	-.02
9	R3D_N174	X	-.216
10	R3D_N174	Y	-305.837
11	R3D_N174	Z	30.595
12	R3D_N174	MY	.000734

Point Loads and Moments (Cat 63 : WLX-R)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	-24.483
2	R3D_N172	Y	272.731

Point Loads and Moments (Cat 63 : WLX-R) (Continued)

	Label	Direction	Magnitude[k,k-ft]
3	R3D_N172	Z	12.491
4	R3D_N172	MY	-.012
5	R3D_N173	X	-24.442
6	R3D_N173	Y	-272.077
7	R3D_N173	Z	-12.467
8	R3D_N173	MY	-.012
9	R3D_N174	X	-3.228
10	R3D_N174	Y	-.654
11	R3D_N174	Z	.048
12	R3D_N174	MY	.024

Point Loads and Moments (Cat 65 : WLZ-R)

	Label	Direction	Magnitude[k,k-ft]
1	R3D_N172	X	13.397
2	R3D_N172	Y	-169.798
3	R3D_N172	Z	-11.575
4	R3D_N172	MY	-.021
5	R3D_N173	X	-13.588
6	R3D_N173	Y	-168.863
7	R3D_N173	Z	-11.112
8	R3D_N173	MY	.021
9	R3D_N174	X	.248
10	R3D_N174	Y	338.66
11	R3D_N174	Z	-34.713
12	R3D_N174	MY	-.000698

Area Loads (Cat 14 : EPL)

	Label	Base Mag[ksf]	Peak Mag[ksf]
1	AL1	0	0

Design Strips

	Label	Rebar Angle from P...	No. of Design Cuts	Design Rule
1	DS1	0	50	Typical
2	DS2	90	50	Typical

Slab Soil Pressures

	LC	Label	UC	Soil Pressure[ksf]	Allowable Bearing[ksf]	Point
1	2	S1	.109	.724	6.625	N218
2	3	S1	.283	2.498	8.831	N230
3	4	S1	.333	2.943	8.831	N6
4	5	S1	.327	2.89	8.831	N6
5	6	S1	.264	2.328	8.831	N957
6	7	S1	.358	3.165	8.831	N7
7	8	S1	.337	2.98	8.831	N7
8	9	S1	.256	2.263	8.831	N8
9	10	S1	.34	3.007	8.831	N8
10	11	S1	.362	3.198	8.831	N8
11	12	S1	.266	2.346	8.831	N764
12	13	S1	.327	2.886	8.831	N5
13	14	S1	.333	2.938	8.831	N5
14	15	S1	.115	.762	6.625	N218
15	16	S1	.285	2.515	8.831	N230
16	17	S1	.319	2.817	8.831	N6
17	18	S1	.308	2.724	8.831	N6
18	19	S1	.255	2.25	8.831	N899

Slab Soil Pressures (Continued)

	LC	Label	UC	Soil Pressure[ksf]	Allowable Bearing[ksf]	Point
19	20	S1	.358	3.164	8.831	N7
20	21	S1	.323	2.857	8.831	N7
21	22	S1	.245	2.159	8.831	N8
22	23	S1	.327	2.886	8.831	N8
23	24	S1	.363	3.204	8.831	N8
24	25	S1	.258	2.276	8.831	N764
25	26	S1	.31	2.735	8.831	N5
26	27	S1	.32	2.827	8.831	N5
27	28	S1	.093	.614	6.625	N218
28	29	S1	.33	2.912	8.831	N230
29	30	S1	.378	3.34	8.831	N6
30	31	S1	.37	3.264	8.831	N6
31	32	S1	.295	2.609	8.831	N824
32	33	S1	.413	3.649	8.831	N7
33	34	S1	.38	3.359	8.831	N7
34	35	S1	.287	2.534	8.831	N8
35	36	S1	.385	3.397	8.831	N8
36	37	S1	.419	3.702	8.831	N8
37	38	S1	.299	2.638	8.831	N923
38	39	S1	.369	3.26	8.831	N5
39	40	S1	.377	3.333	8.831	N5
40	41	S1	.098	.652	6.625	N218
41	42	S1	.32	2.829	8.831	N230
42	43	S1	.348	3.076	8.831	N6
43	44	S1	.334	2.948	8.831	N6
44	45	S1	.272	2.399	8.831	N957
45	46	S1	.402	3.547	8.831	N7
46	47	S1	.351	3.096	8.831	N7
47	48	S1	.26	2.293	8.831	N8
48	49	S1	.355	3.136	8.831	N8
49	50	S1	.409	3.61	8.831	N8
50	51	S1	.276	2.437	8.831	N923
51	52	S1	.336	2.966	8.831	N5
52	53	S1	.35	3.088	8.831	N5

Pedestals/Posts Design Values

	Label	UC	Gov LC	Shear UC	Dir	Phi Used	Vertical Reinf	Shear Reinf
1	R3D_N172	NC	NC	NC	NC	NC	NC	NC
2	R3D_N173	NC	NC	NC	NC	NC	NC	NC
3	R3D_N174	NC	NC	NC	NC	NC	NC	NC

Pedestals/Posts Punching Shear Values

	Label	UC	Gov LC	Location	Vuy[k]	Muz[k-ft]	Mux[k-ft]	Total Stress[...	Phi*Vny[ksi]
1	R3D_N172	.168	65	EDGE	394.209	133.2	78.051	.028	.164
2	R3D_N173	.168	61	EDGE	392.625	-133.185	77.057	.028	.164
3	R3D_N174	.238	57	EDGE	419.288	-.87	-154.143	.039	.164

Pedestals/Posts Punching Shear Geometries

	Label	Shape	Location	Effective De...	L1[in]	L2[in]	Polar Mome...	Polar Mome...	Gamma-x	Gamma-z
1	R3D_N172	CRND42	EDGE	62.365	95.352	104.676	3.61095e+7	2.7345e+7	.389	.411
2	R3D_N173	CRND42	EDGE	62.365	95.352	104.676	3.61095e+7	2.7345e+7	.389	.411
3	R3D_N174	CRND42	EDGE	62.365	85.184	95.352	1.6785e+7	3.05833e+7	.387	.414

Strip Reinforcing

	Label	UC Top	Top Bars	Governing Desig...	UC Bot	Bot Bars/...	Governin...	UC Shear	Governin...
1	DS1	.058	#10@6.4in	DS1-X36	.192	#10@6.4in	DS1-X34	.305	DS1-X40
2	DS2	.131	#10@6.4in	DS2-X26	.139	#10@6.4in	DS2-X26	.251	DS2-X7

Slab Overturning Safety Factors

	LC	Slab	Mo-XX[k-ft]	Ms-XX[k-ft]	Mo-ZZ[k-ft]	Ms-ZZ[k-ft]	Ms-XX/Mo-XX	Ms-ZZ/Mo-ZZ
1	2	S1	0	10220.43	0	10231.843	9.999+	9.999+
2	3	S1	6360.427	10220.43	13.217	10231.843	1.607	9.999+
3	4	S1	5283.75	10220.43	3054.785	10231.843	1.934	3.349
4	5	S1	3015.557	10220.43	5203.254	10231.843	3.389	1.966
5	6	S1	16.027	10220.43	6093.53	10231.843	9.999+	1.679
6	7	S1	3166.493	10228.02	5500.212	10231.843	3.23	1.86
7	8	S1	5269.473	10228.02	3032.88	10231.843	1.941	3.374
8	9	S1	6000.338	10228.02	17.756	10216.608	1.705	9.999+
9	10	S1	5279.553	10228.02	3062.055	10216.608	1.937	3.337
10	11	S1	3191.664	10228.02	5517.374	10216.608	3.205	1.852
11	12	S1	15.941	10228.02	6102.319	10216.608	9.999+	1.674
12	13	S1	2993.259	10220.43	5199.555	10216.608	3.414	1.965
13	14	S1	5277.042	10220.43	3037.348	10216.608	1.937	3.364
14	15	S1	0	10704.945	0	10737.531	9.999+	9.999+
15	16	S1	6474.759	10704.945	10.129	10737.531	1.653	9.999+
16	17	S1	5201.49	10704.945	3006.226	10737.531	2.058	3.572
17	18	S1	2931.308	10704.945	5061.834	10737.531	3.652	2.121
18	19	S1	12.351	10704.945	6000.354	10737.531	9.999+	1.789
19	20	S1	3226.821	10729.902	5601.113	10737.531	3.325	1.917
20	21	S1	5190.527	10729.902	2989.484	10737.531	2.067	3.592
21	22	S1	5838.841	10729.902	13.727	10697.317	1.838	9.999+
22	23	S1	5198.164	10729.902	3011.987	10697.317	2.064	3.552
23	24	S1	3246.162	10729.902	5614.368	10697.317	3.305	1.905
24	25	S1	12.284	10729.902	6007.319	10697.317	9.999+	1.781
25	26	S1	2914.244	10704.945	5059.714	10697.317	3.673	2.114
26	27	S1	5196.525	10704.945	2993.024	10697.317	2.06	3.574
27	28	S1	0	8659.94	0	8671.352	9.999+	9.999+
28	29	S1	6360.427	8659.94	13.217	8671.352	1.362	9.999+
29	30	S1	5283.75	8659.94	3054.785	8671.352	1.639	2.839
30	31	S1	3015.557	8659.94	5203.254	8671.352	2.872	1.667
31	32	S1	16.027	8659.94	6093.53	8671.352	9.999+	1.423
32	33	S1	3166.493	8667.53	5500.212	8671.352	2.737	1.577
33	34	S1	5269.473	8667.53	3032.88	8671.352	1.645	2.859
34	35	S1	6000.338	8667.53	17.756	8656.117	1.445	9.999+
35	36	S1	5279.553	8667.53	3062.055	8656.117	1.642	2.827
36	37	S1	3191.664	8667.53	5517.374	8656.117	2.716	1.569
37	38	S1	15.941	8667.53	6102.319	8656.117	9.999+	1.418
38	39	S1	2993.259	8659.94	5199.555	8656.117	2.893	1.665
39	40	S1	5277.042	8659.94	3037.348	8656.117	1.641	2.85
40	41	S1	0	9144.455	0	9177.041	9.999+	9.999+
41	42	S1	6474.759	9144.455	10.129	9177.041	1.412	9.999+
42	43	S1	5201.49	9144.455	3006.226	9177.041	1.758	3.053
43	44	S1	2931.308	9144.455	5061.834	9177.041	3.12	1.813
44	45	S1	12.351	9144.455	6000.354	9177.041	9.999+	1.529
45	46	S1	3226.821	9169.412	5601.113	9177.041	2.842	1.638
46	47	S1	5190.527	9169.412	2989.484	9177.041	1.767	3.07
47	48	S1	5838.841	9169.412	13.727	9136.826	1.57	9.999+
48	49	S1	5198.164	9169.412	3011.987	9136.826	1.764	3.033
49	50	S1	3246.162	9169.412	5614.368	9136.826	2.825	1.627
50	51	S1	12.284	9169.412	6007.319	9136.826	9.999+	1.521
51	52	S1	2914.244	9144.455	5059.714	9136.826	3.138	1.806

Slab Overturning Safety Factors (Continued)

	LC	Slab	Mo-XX[k-ft]	Ms-XX[k-ft]	Mo-ZZ[k-ft]	Ms-ZZ[k-ft]	Ms-XX/Mo-XX	Ms-ZZ/Mo-ZZ
52	53	S1	5196.525	9144.455	2993.024	9136.826	1.76	3.053

Slab Sliding Safety Factors

	LC	Slab	Va-XX[k]	Vr-XX[k]	Va-ZZ[k]	Vr-ZZ[k]	SR-XX	SR-ZZ
1	2	S1	0	201.132	0	201.132	9.999+	9.999+
2	3	S1	.075	201.132	56.075	201.132	9.999+	3.587
3	4	S1	26.438	201.132	45.756	201.132	7.608	4.396
4	5	S1	44.786	201.132	25.926	201.132	4.491	7.758
5	6	S1	52.794	201.132	.094	201.132	3.81	9.999+
6	7	S1	48.517	201.132	27.958	201.132	4.146	7.194
7	8	S1	26.316	201.132	45.674	201.132	7.643	4.404
8	9	S1	.105	201.132	51.667	201.132	9.999+	3.893
9	10	S1	26.486	201.132	45.727	201.132	7.594	4.399
10	11	S1	48.617	201.132	28.102	201.132	4.137	7.157
11	12	S1	52.853	201.132	.093	201.132	3.805	9.999+
12	13	S1	44.776	201.132	25.801	201.132	4.492	7.795
13	14	S1	26.345	201.132	45.727	201.132	7.634	4.399
14	15	S1	0	210.835	0	210.835	9.999+	9.999+
15	16	S1	.058	210.835	57.4	210.835	9.999+	3.673
16	17	S1	26.083	210.835	45.151	210.835	8.083	4.67
17	18	S1	43.604	210.835	25.228	210.835	4.835	8.357
18	19	S1	52.105	210.835	.072	210.835	4.046	9.999+
19	20	S1	49.676	210.835	28.638	210.835	4.244	7.362
20	21	S1	25.99	210.835	45.088	210.835	8.112	4.676
21	22	S1	.081	210.835	50.313	210.835	9.999+	4.19
22	23	S1	26.121	210.835	45.127	210.835	8.071	4.672
23	24	S1	49.752	210.835	28.749	210.835	4.238	7.334
24	25	S1	52.151	210.835	.072	210.835	4.043	9.999+
25	26	S1	43.601	210.835	25.133	210.835	4.835	8.389
26	27	S1	26.013	210.835	45.13	210.835	8.105	4.672
27	28	S1	0	170.434	0	170.434	9.999+	9.999+
28	29	S1	.075	170.434	56.075	170.434	9.999+	3.039
29	30	S1	26.438	170.434	45.756	170.434	6.447	3.725
30	31	S1	44.786	170.434	25.926	170.434	3.806	6.574
31	32	S1	52.794	170.434	.094	170.434	3.228	9.999+
32	33	S1	48.517	170.434	27.958	170.434	3.513	6.096
33	34	S1	26.316	170.434	45.674	170.434	6.476	3.732
34	35	S1	.105	170.434	51.667	170.434	9.999+	3.299
35	36	S1	26.486	170.434	45.727	170.434	6.435	3.727
36	37	S1	48.617	170.434	28.102	170.434	3.506	6.065
37	38	S1	52.853	170.434	.093	170.434	3.225	9.999+
38	39	S1	44.776	170.434	25.801	170.434	3.806	6.606
39	40	S1	26.345	170.434	45.727	170.434	6.469	3.727
40	41	S1	0	180.136	0	180.136	9.999+	9.999+
41	42	S1	.058	180.136	57.4	180.136	9.999+	3.138
42	43	S1	26.083	180.136	45.151	180.136	6.906	3.99
43	44	S1	43.604	180.136	25.228	180.136	4.131	7.14
44	45	S1	52.105	180.136	.072	180.136	3.457	9.999+
45	46	S1	49.676	180.136	28.638	180.136	3.626	6.29
46	47	S1	25.99	180.136	45.088	180.136	6.931	3.995
47	48	S1	.081	180.136	50.313	180.136	9.999+	3.58
48	49	S1	26.121	180.136	45.127	180.136	6.896	3.992
49	50	S1	49.752	180.136	28.749	180.136	3.621	6.266
50	51	S1	52.151	180.136	.072	180.136	3.454	9.999+
51	52	S1	43.601	180.136	25.133	180.136	4.131	7.167
52	53	S1	26.013	180.136	45.13	180.136	6.925	3.992

APPENDIX C

MOUNT CALCULATIONS

WINDSPEED BY LOCATION

Applied Technology Council

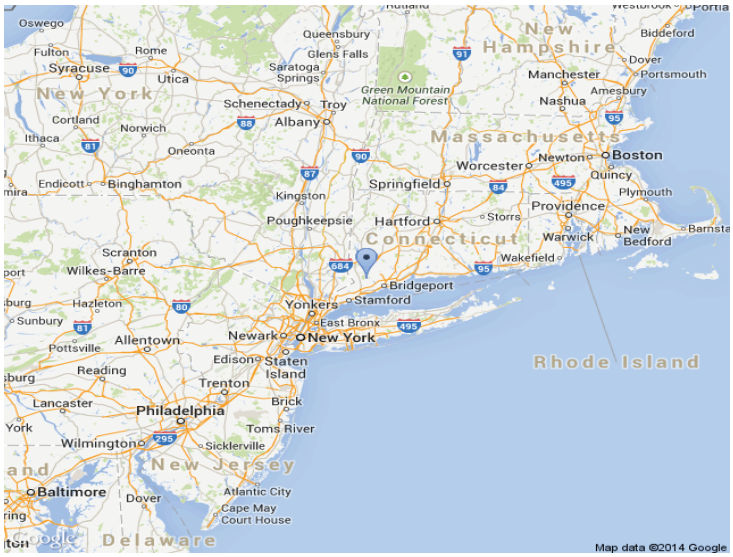
Search Results

Latitude: 41.2444
Longitude: -73.3634

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

Risk Category I: 109
Risk Category II: 119
Risk Category III-IV: 128
MRI 10 Year:** 76
MRI 25 Year:** 86
MRI 50 Year:** 91
MRI 100 Year:** 97

ASCE 7-05: 105
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:	28737
Project:	Transfer Station (CT33XC522-C)
By:	JMO
Date:	8/29/2014

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:	B		Exposure Category
V:	105	mph	Basic Wind Speed (Annex B)
z:	174	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.16		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 =	**31.0**	**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 12 ft	144.0 in	2.4 in	60.5	Round	1.200	2.38 sf	**88.7 lb**	7.4 plf
Pipe3STD x 4.5 ft	54.0 in	3.5 in	15.4	Round	0.966	1.31 sf	**39.3 lb**	8.7 plf
HSS3X3X1/4 x 24 ft	288.0 in	3.0 in	96.0	Flat	2.000	6.00 sf	**372.5 lb**	15.5 plf
APXV9TM14-ALU-I20	56.3 in	12.6 in	4.5	Flat	1.287	4.93 sf	**196.9 lb**	
TD-RRH8x20-25	26.1 in	18.6 in	1.4	Flat	1.200	3.37 sf	**125.6 lb**	
APXVSPP18-C-A20	72.0 in	11.9 in	6.1	Flat	1.358	5.95 sf	**250.6 lb**	
1900MHz 4x40W RRH	25.1 in	11.1 in	2.3	Flat	1.200	1.93 sf	**72.1 lb**	
800MHz 2x50W RRH	19.0 in	13.0 in	1.5	Flat	1.200	1.72 sf	**63.9 lb**	

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street
Sauk City, WI 53583
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Job:	28737
Project:	Transfer Station (CT33XC522-C)
By:	JMO
Date:	8/29/2014

Wind Load on Antennas TIA-222

2.6.9.6 Velocity Pressure

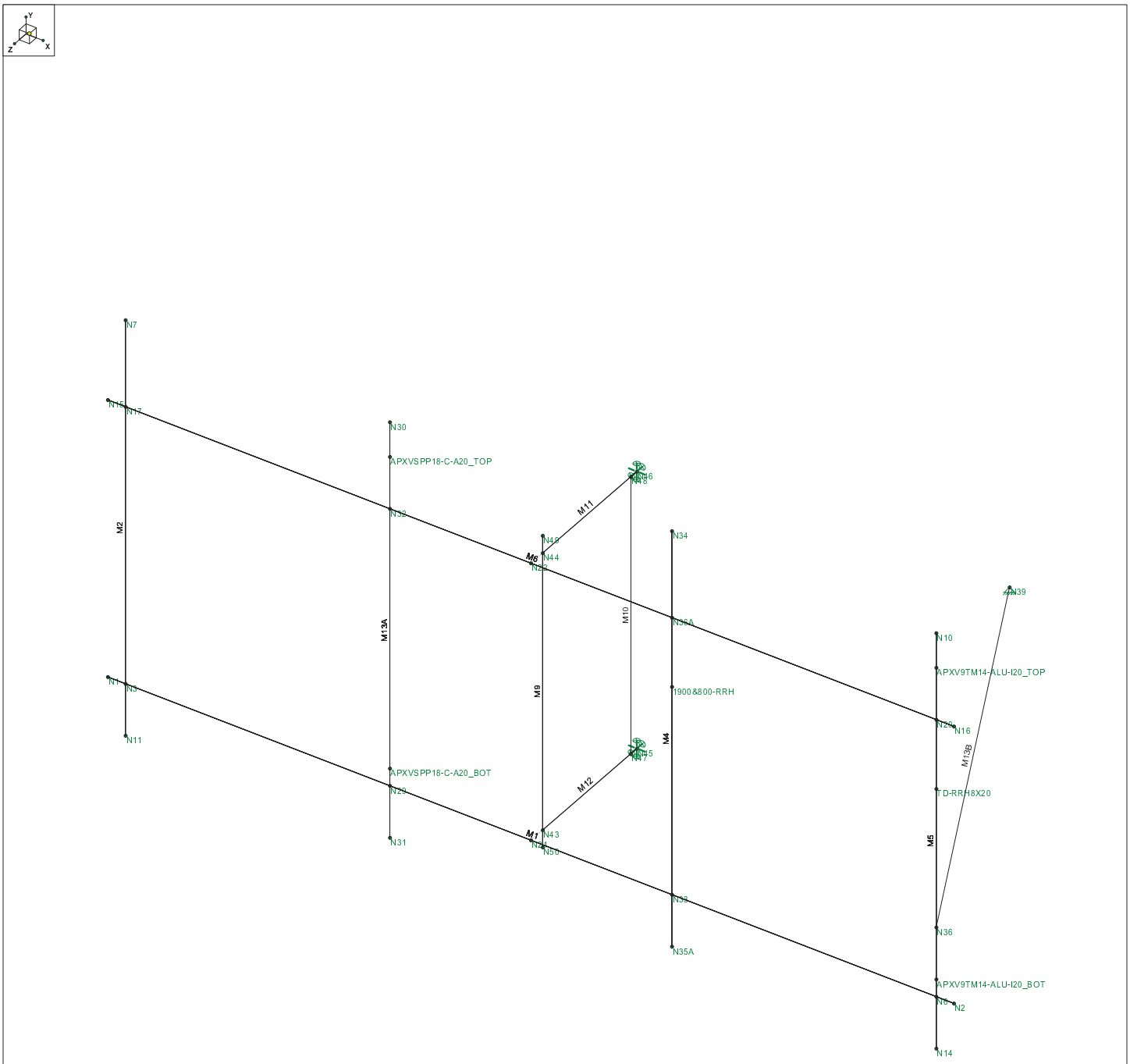
$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	105	mph	Basic Wind Speed (Annex B)
z:	174	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.16		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 =	**31.0**	**psf**	

G_h:	1.00	Appurtenances and their Connections

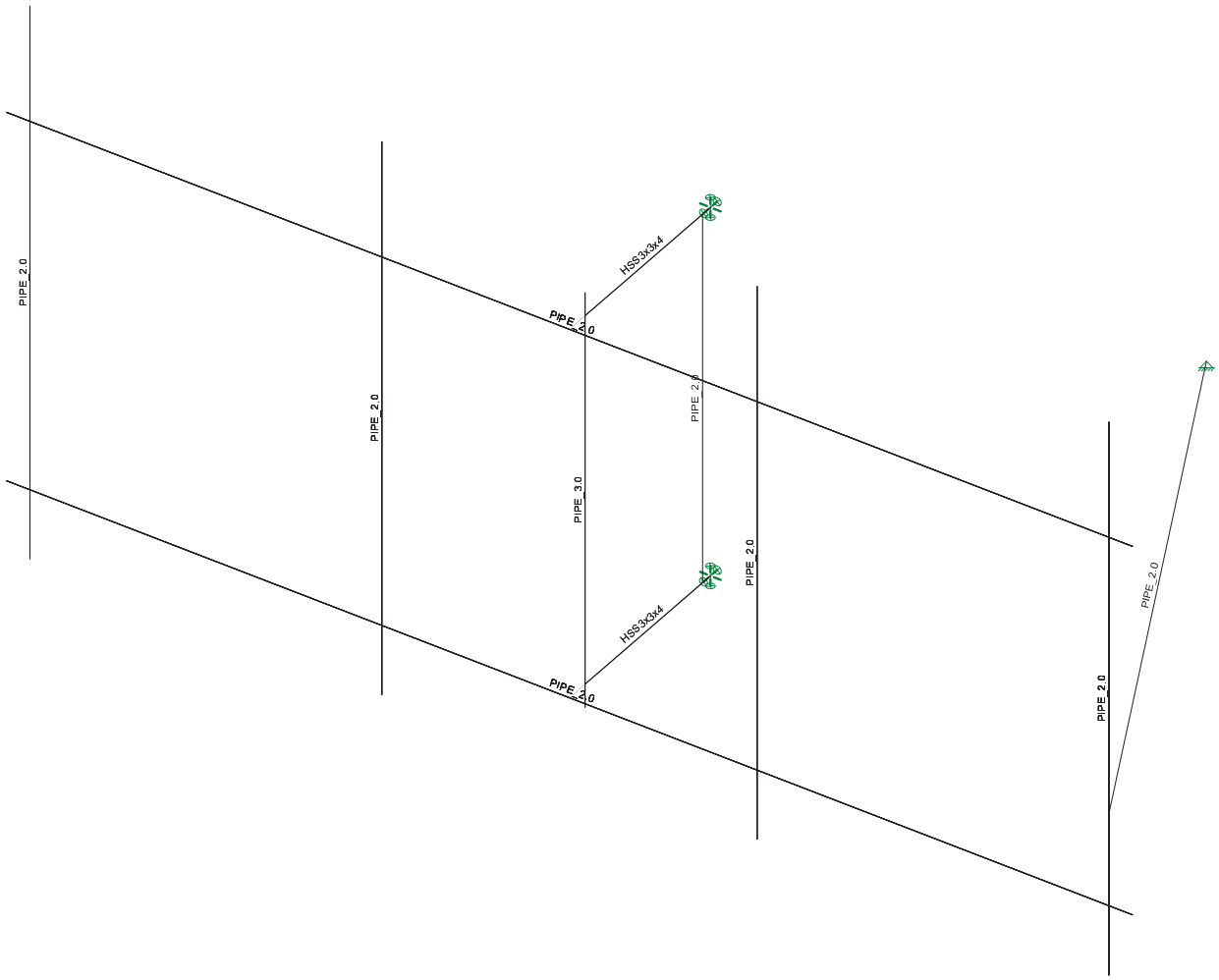
Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	**$F = q_z G_h C_a A_a$**	
Pipe2STD x 12 ft	144.0 in	2.4 in	60.5	Round	1.200	2.38 sf	**88.7 lb**	7.4 plf
Pipe3STD x 4.5 ft	54.0 in	3.5 in	15.4	Round	0.966	1.31 sf	**39.3 lb**	8.7 plf
HSS3X3X1/4 x 24 ft	288.0 in	3.0 in	96.0	Flat	2.000	6.00 sf	**372.5 lb**	15.5 plf
APXV9TM14-ALU-I20	56.3 in	6.3 in	8.9	Flat	1.465	2.46 sf	**112.0 lb**	
TD-RRH8x20-25	26.1 in	6.7 in	3.9	Flat	1.262	1.21 sf	**47.6 lb**	
APXVSPP18-C-A20	72.0 in	7.0 in	10.3	Flat	1.509	3.50 sf	**164.2 lb**	
1900MHz 4x40W RRH	25.1 in	10.7 in	2.3	Flat	1.200	1.86 sf	**69.4 lb**	
800MHz 2x50W RRH	19.0 in	12.2 in	1.6	Flat	1.200	1.61 sf	**60.0 lb**	



Envelope Only Solution

Ramaker & Associates	Transfer Station (CT33XC522-C)	SK - 1
JMO		Aug 29, 2014 at 8:05 AM
28737		28737 Mount.r3d



Envelope Only Solution

Ramaker & Associates	Transfer Station (CT33XC522-C)	SK - 2
JMO		Aug 29, 2014 at 8:06 AM
28737		28737 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 2.0	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
2	HSS3x3x1/4	HSS3x3x4	Beam	SquareTube	A36 Gr.36	Typical	2.44	3.02	3.02	5.08
3	pipe 3.0	PIPE_3.0	Beam	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
2	M2	N11	N7			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
3	M5	N14	N10			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
4	M6	N15	N16			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
5	M9	N49	N50			pipe 3.0	Beam	Pipe	A53 Gr. B	Typical
6	M10	N48	N47			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
7	M11	N44	N46			HSS3x3x1/4	Beam	SquareTube	A36 Gr.36	Typical
8	M12	N43	N45			HSS3x3x1/4	Beam	SquareTube	A36 Gr.36	Typical
9	M13	N44	N22			RIGID	None	None	RIGID	Typical
10	M14	N43	N21			RIGID	None	None	RIGID	Typical
11	M13A	N31	N30			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
12	M4	N35A	N34			pipe 2.0	Beam	Pipe	A53 Gr. B	Typical
13	M13B	N36	N39			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	.25	.25	0	0	
2	N2	12.25	.25	0	0	
3	N3	.5	.25	0	0	
4	N6	12	.25	0	0	
5	N7	.5	5.5	0	0	
6	N10	12	5.5	0	0	
7	N11	.5	-.5	0	0	
8	N14	12	-.5	0	0	
9	N15	.25	4.25	0	0	
10	N16	12.25	4.25	0	0	
11	N17	.5	4.25	0	0	
12	N20	12	4.25	0	0	
13	N21	6.25	.25	0	0	
14	N22	6.25	4.25	0	0	
15	N36	12	1.25	0	0	
16	N43	6.25	.25	-.25	0	
17	N44	6.25	4.25	-.25	0	
18	N45	6.25	.25	-2.25	0	
19	N46	6.25	4.25	-2.25	0	
20	N47	6.25	.25	-2.125	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
21	N48	6.25	4.25	-2.125	0	
22	N49	6.25	4.5	-.25	0	
23	N50	6.25	0	-.25	0	
24	N29	4.25	.25	0	0	
25	N30	4.25	5.5	0	0	
26	N31	4.25	-.5	0	0	
27	N32	4.25	4.25	0	0	
28	N33	8.25	.25	0	0	
29	N34	8.25	5.5	0	0	
30	N35A	8.25	-.5	0	0	
31	N36A	8.25	4.25	0	0	
32	APXV9TM14-ALU-I20_TOP	12	5	0	0	
33	APXVSPP18-C-A20_TOP	4.25	5	0	0	
34	APXV9TM14-ALU-I20_BOT	12	.5	0	0	
35	APXVSPP18-C-A20_BOT	4.25	.5	0	0	
36	1900&800-RRH	8.25	3.25	0	0	
37	TD-RRH8X20	12	3.25	0	0	
38	N39	8.859438	1.25	-6.255947	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	N46	Reaction	Reaction	Reaction		Reaction	Reaction	
2	N45	Reaction	Reaction	Reaction		Reaction	Reaction	
3	N39	Reaction	Reaction	Reaction				

Joint Loads and Enforced Displacements (BLC 1 : DL)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
1	APXV9TM14-ALU-I20_TOP	L	Y	-27.5
2	APXV9TM14-ALU-I20_BOT	L	Y	-27.5
3	TD-RRH8X20	L	Y	-70
4	1900&800-RRH	L	Y	-124
5	APXVSPP18-C-A20_TOP	L	Y	-28.5
6	APXVSPP18-C-A20_BOT	L	Y	-28.5

Joint Loads and Enforced Displacements (BLC 2 : WLz)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
1	APXV9TM14-ALU-I20_TOP	L	Z	-98.4
2	APXV9TM14-ALU-I20_BOT	L	Z	-98.4
3	TD-RRH8X20	L	Z	-125.6
4	1900&800-RRH	L	Z	-72.1
5	APXVSPP18-C-A20_TOP	L	Z	-125.3
6	APXVSPP18-C-A20_BOT	L	Z	-125.3

Joint Loads and Enforced Displacements (BLC 3 : WLx)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*...
1	APXV9TM14-ALU-I20_TOP	L	X	-56
2	APXV9TM14-ALU-I20_BOT	L	X	-56
3	TD-RRH8X20	L	X	-47.6
4	1900&800-RRH	L	X	-129.4
5	APXVSPP18-C-A20_TOP	L	X	-82.1
6	APXVSPP18-C-A20_BOT	L	X	-82.1

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	M1	PZ	-7.4	-7.4	0	0
2	M2	PZ	-7.4	-7.4	0	0
3	M6	PZ	-7.4	-7.4	0	0
4	M13B	PZ	-7.4	-7.4	0	0
5	M10	PZ	-7.4	-7.4	0	0
6	M9	PZ	-8.7	-8.7	0	0
7	M4	PZ	-7.4	-7.4	0	2.75
8	M4	PZ	-7.4	-7.4	4.75	6

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	M2	PX	-7.4	-7.4	0	0
2	M5	PX	-7.4	-7.4	0	0
3	M10	PX	-7.4	-7.4	0	0
4	M13A	PX	-7.4	-7.4	0	0
5	M4	PX	-7.4	-7.4	0	0
6	M13B	PX	-7.4	-7.4	0	0
7	M9	PX	-8.7	-8.7	0	0
8	M11	PX	-15.5	-15.5	0	0
9	M12	PX	-15.5	-15.5	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		6				
2	WLz	WLZ				6		8		
3	WLx	WLX				6		9		
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...
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								

Load Combinations (Continued)

	Description	Sol..	PDelta	SR...	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...	BLC	Fact...	BLC	Fact..	BLC	Fact...
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

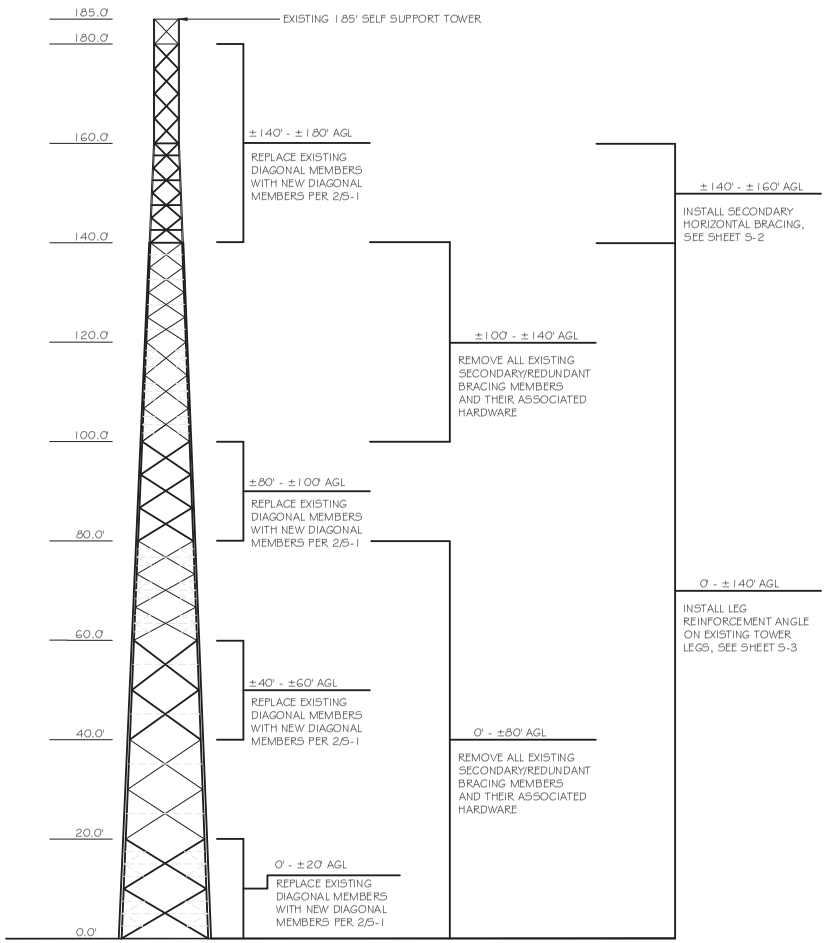
	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N46	max	523.178	4	529.154	13	412.481	2	0	1	1056.274	4	114.008	5
2		min	-971	5	285.357	2	-1140.878	3	0	1	-1705.087	5	-91.723	14
3	N45	max	791.986	8	528.247	20	612.932	2	0	1	1365.109	4	146.316	5
4		min	-344.525	7	319.782	3	114.374	3	0	1	-709.79	5	-94.851	14
5	N39	max	278.099	2	56.739	2	556.491	2	0	1	0	1	0	1
6		min	-277.316	3	-12.45	3	-555.4	3	0	1	0	1	0	1
7	Totals:	max	1292.551	4	1065.827	21	1581.904	2						
8		min	-1292.551	5	690.826	2	-1581.904	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	M1	PIPE_2.0	.446	6	3	.101	6		2	20866.7...	32130	1871.625	1871.625	1....	H1-1b
2	M2	PIPE_2.0	.218	4.75	14	.023	4.75		18	20866.7...	32130	1871.625	1871.625	1....	H1-1b
3	M5	PIPE_2.0	.334	1.75	2	.152	1.75		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
4	M6	PIPE_2.0	.506	6	3	.178	8		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
5	M9	PIPE_3.0	.136	4.219	21	.045	4.219		7	58506.3...	65205	5748.75	5748.75	2....	H1-1b
6	M10	PIPE_2.0	.166	0	21	.019	0		18	29628.5...	32130	1871.625	1871.625	2....	H1-1b
7	M11	HSS3x3x4	.262	1.875	5	.070	1.875	z	5	77142.6...	79056	6696	6696	2....	H1-1b
8	M12	HSS3x3x4	.215	1.875	4	.050	1.875	z	8	77142.6...	79056	6696	6696	2....	H1-1b
9	M13A	PIPE_2.0	.264	4.75	14	.037	4.75		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
10	M4	PIPE_2.0	.213	4.75	9	.118	3.75		3	20866.7...	32130	1871.625	1871.625	1....	H1-1b
11	M13B	PIPE_2.0	.182	0	2	.006	7		2	17855.0...	32130	1871.625	1871.625	1....	H1-1b

APPENDIX D

TOWER AND FOUNDATION MODIFICATION DRAWINGS



NOTES:

- CONTRACTOR SHALL BE RESPONSIBLE FOR STABILITY OF THE TOWER DURING CONSTRUCTION.

- ALL PROPOSED STEEL SHALL BE HOT DIPPED GALVANIZED.

- ALL PROPOSED DIAGONAL MEMBERS HORIZONTAL MEMBERS, AND PLATES SHALL BE ASTM A36 STEEL, OR APPROVED EQUAL.

- ALL PROPOSED LEG REINFORCEMENT ANGLES SHALL BE ASTM A572-50 STEEL, OR APPROVED EQUAL.

- ALL PROPOSED BOLTS SHALL BE ASTM A325-X BOLTS (UNO), CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING BOLT THREADS ARE NOT IN SHEAR PLANE OF CONNECTION.

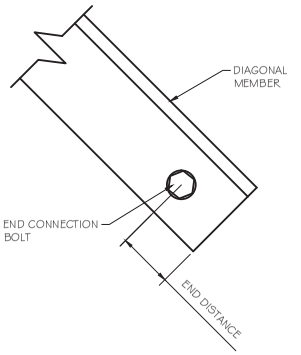
MODIFIED TOWER ELEVATION (1)
SCALE: 1" = 25'

ELEVATION	REPLACEMENT DIAGONAL SIZE	MINIMUM END CONNECTION END DISTANCE
0' - 20'	L3½ x 3½ x ⅜	1 ⅛"
40' - 60'	L3 x 3 x ⅜	1 ⅛"
80' - 100'	L2½ x 2½ x 5/16	1 ⅛"
140' - 180'	L2 x 2 x ¼	1 ¼"

NOTES:

- REPLACE ALL EXISTING DIAGONAL BOLTS WITH NEW A325-X BOLTS OF SAME DIAMETER

- DO NOT REUSE EXISTING BOLTS



REPLACEMENT DIAGONAL INFORMATION (2)
SCALE: NTS

Sprint
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

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: Date: 10/15/2014

MARK	DATE	DESCRIPTION
A	10/15/14	FINAL CONSTRUCTION DRAWING REVISIONS

ISSUE PHASE: FINAL
DATE ISSUED: 10/15/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: S-1

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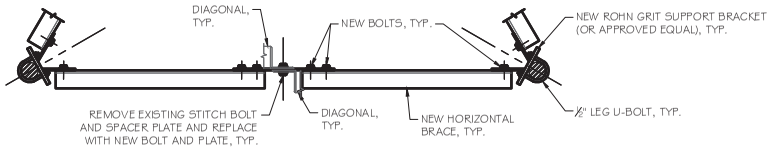
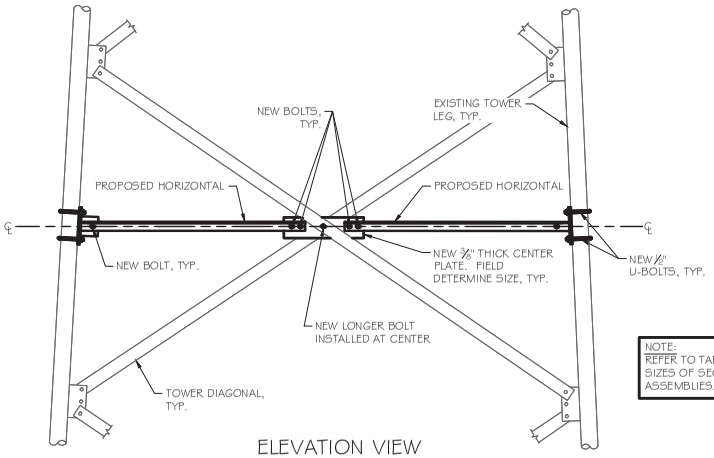


PLAN VIEW



NOTE:
REFER TO TABLE IN THIS DETAIL FOR REQUIRED SIZES OF SECONDARY HORIZONTALS AND BOLT ASSEMBLIES.

ELEVATION VIEW

ELEVATION	PROPOSED SECONDARY HORIZONTAL	BOLT SIZE
140' - 160' AGL	L2 x 2 x ¼	⅝" DIA.

TYP. SECONDARY HORIZONTAL ASSEMBLY (1)
SCALE: NTS

Sprint
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

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. 26286 LICENSED PROFESSIONAL ENGINEER

Signature: Date: 10/15/2014

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ISSUE PHASE: FINAL
DATE ISSUED: 10/15/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DEATILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: S-2

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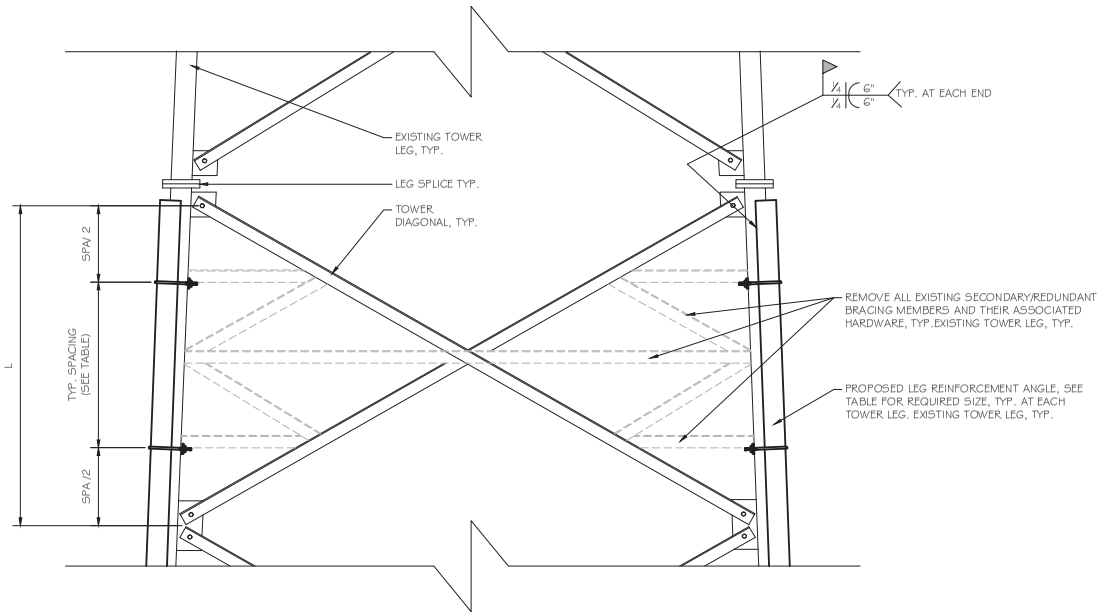
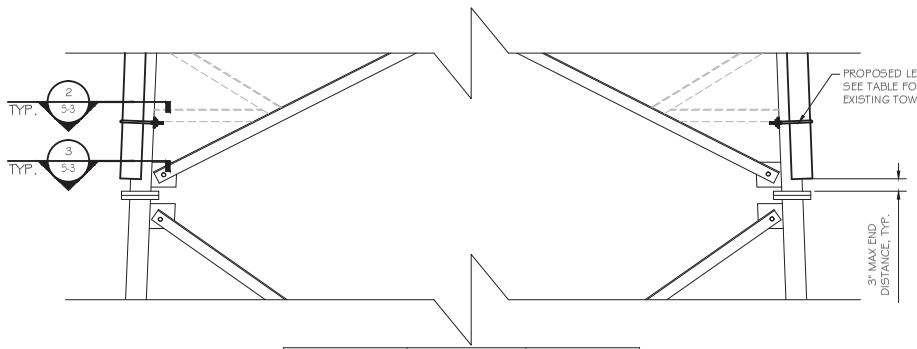
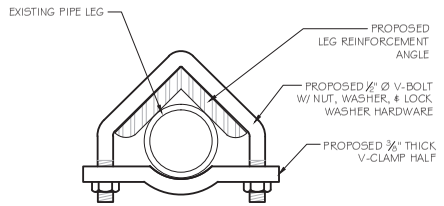


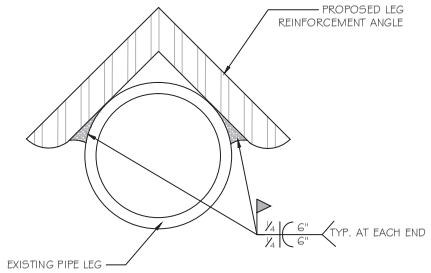


ELEVATION	LEG REINFORCEMENT ANGLE SIZE	MAXIMUM ANGLE CLAMP SPACING
0' - 40'	L8 x 8 x ½	L/2
40' - 60'	L5 x 5 x ½	L/4
60' - 80'	L5 x 5 x ⅜	L/4
80' - 100'	L5 x 5 x ⅜	L/2
100' - 120'	L5 x 5 x ⅜	L/2
120' - 140'	L3½ x 3½ x ⅜	L/2

TYPICAL LEG REINFORCEMENT 1
SCALE: NTS



TYP. LEG REINFORCEMENT ANGLE CLAMP 2
SCALE: NTS



TYP. LEG REINFORCEMENT ANGLE WELD 3
SCALE: NTS

Sprint

6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

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: Date: 10/15/2014

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ISSUE PHASE: FINAL
DATE ISSUED: 10/15/2014

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CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DEATILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: S-3

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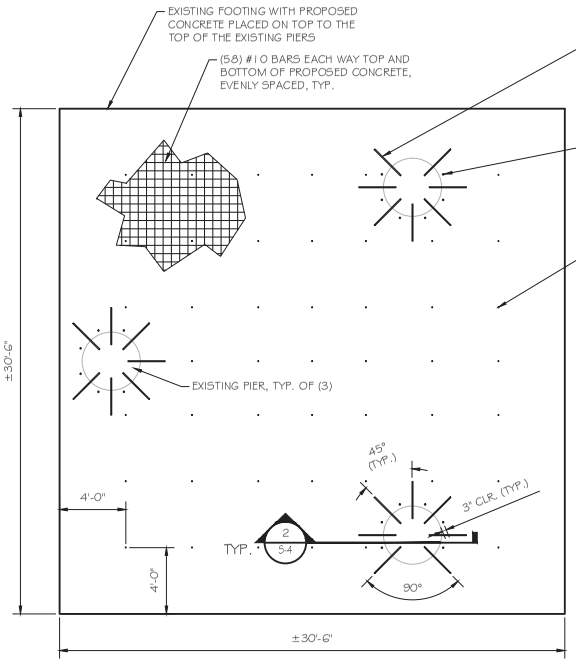
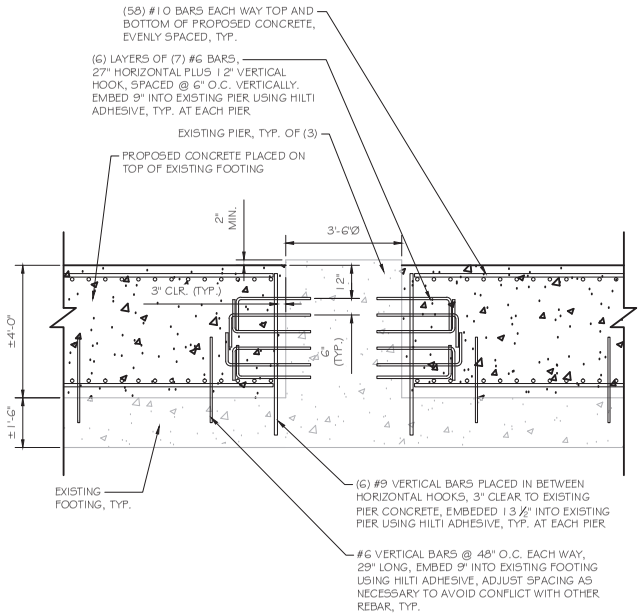


MODIFIED FOUNDATION PLAN (1)
SCALE: 1" = 7.5'

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR STABILITY OF TOWER/FOUNDATION DURING CONSTRUCTION.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
3. CONCRETE SHALL HAVE 3000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS.
4. STEEL REINFORCING BARS SHALL CONFORM TO ASTM A615-60.
5. MINIMUM CONCRETE COVER OF 3" SHALL BE PROVIDED FOR ALL REINFORCING BARS, U.N.O.
6. EMBED PROPOSED REBAR INTO EXISTING CONCRETE USING HILTI HIT-HY 200 ADHESIVE.
7. ALL SURFACES MUST BE FREE OF STANDING WATER PRIOR TO PLACING CONCRETE.
8. CLEAN AND APPLY APPROVED BONDING AGENT TO ALL EXISTING CONCRETE SURFACES PRIOR TO TO PLACING PROPOSED CONCRETE.
9. SLOPE TOP OF CONCRETE FINISHED SURFACE ⅛" PER FOOT AWAY FROM CENTER OF FOUNDATION.



MODIFIED FOUNDATION SECTION (2)
SCALE: 1" = 7.5'

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OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

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: Date: 10/15/2014

MARK	DATE	DESCRIPTION
A	10/15/14	FINAL CONSTRUCTION DRAWING REVISIONS

ISSUE PHASE: FINAL
DATE ISSUED: 10/15/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DEATILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: S-4

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Sprint®

PROJECT:	2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	TRANSFER STATION
SITE CASCADE:	CT33XC522-C
SITE ADDRESS:	237 GODFREY ROAD WESTON, CT 06883
SITE TYPE:	185'-0' SELF SUPPORT TOWER

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www.Ramaker.com

Transcend Wireless
48 SPRUCE STREET
OAKLAND, NJ 07346

SITE INFORMATION

PROPERTY OWNER:
TOWN OF WESTON
56 NORFIELD ROAD
WESTON, CT 06883

SITE ADDRESS:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

GEOGRAPHIC COORDINATES:
LATITUDE: 41.244386 (41° 14' 39.789"N)
LONGITUDE: -73.363386 (73° 21' 48.1896"W)

ZONING JURISDICTION:
TOWN OF WESTON

ZONING DISTRICT:
R-2A

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

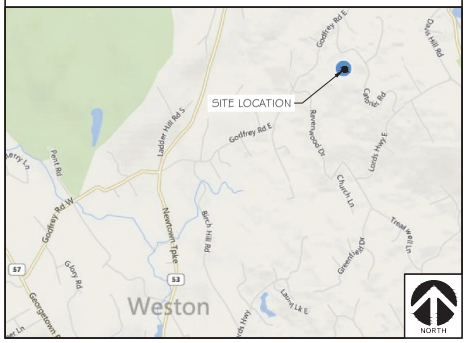
AAV PROVIDER:
AT&T
PH.: (210) 821-4105

SPRINT CONSTRUCTION MANAGER:
NAME: GARY WOOD
PHONE: (860) 940-9168
E-MAIL: gary.wood@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 NEW BATTERY STRING IN EXISTING BATTERY CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRH'S ON TOWER
- INSTALL (1) HYBRID CABLE AND (3) SECTOR 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:
T-1	TITLE SHEET	A	JRS
SP-1	SPRINT SPECIFICATIONS	A	JRS
SP-2	SPRINT SPECIFICATIONS	A	JRS
SP-3	SPRINT SPECIFICATIONS	A	JRS
A-1	SITE PLAN	A	JRS
A-2	EQUIPMENT PLAN	A	JRS
A-3	BUILDING ELEVATION & ANTENNA DETAILS	A	JRS
A-4	RF DATA SHEET	A	JRS
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
S-1	STRUCTURAL DETAILS	A	JRS
S-2	STRUCTURAL DETAILS	A	JRS
S-3	STRUCTURAL DETAILS	A	JRS
S-4	STRUCTURAL 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

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: Date: 10/20/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL
DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
TITLE SHEET

SCALE: NONE

PROJECT NUMBER: 28737
SHEET NUMBER: T-1

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DRAWN BY: TWS
CHECKED BY: KAB

SECTION 01 100 - SCOPE OF WORK

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

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

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

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

DEFINITIONS:
A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B. COMPANY: "SPRINT"; SPRINT NEXTEL CORPORATION AND ITS 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. 26286 LICENSED PROFESSIONAL ENGINEER ★

Signature: 10/20/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL — DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 28737
SHEET NUMBER: SP-1

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 COAXCABLE 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 PERIMETER TO DETERMINE ANY 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, RRUS, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRU'S:
THE NUMBER AND TYPE OF ANTENNAS AND RRUS 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 RRUS 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 RRUS 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 MANUFACTURERS 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 MANUFACTURERS 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 MANUFACTURERS 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. 26286 LICENSED PROFESSIONAL ENGINEER

Signature: 10/20/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL — DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 28737
SHEET NUMBER: SP-2

DRAWN BY: TWS CHECKED BY: KAB

SUPPORTING DEVICES:

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

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

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

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

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

ELECTRICAL IDENTIFICATION:

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

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

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

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

B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND PLUSH 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: Date: 10/20/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL
DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

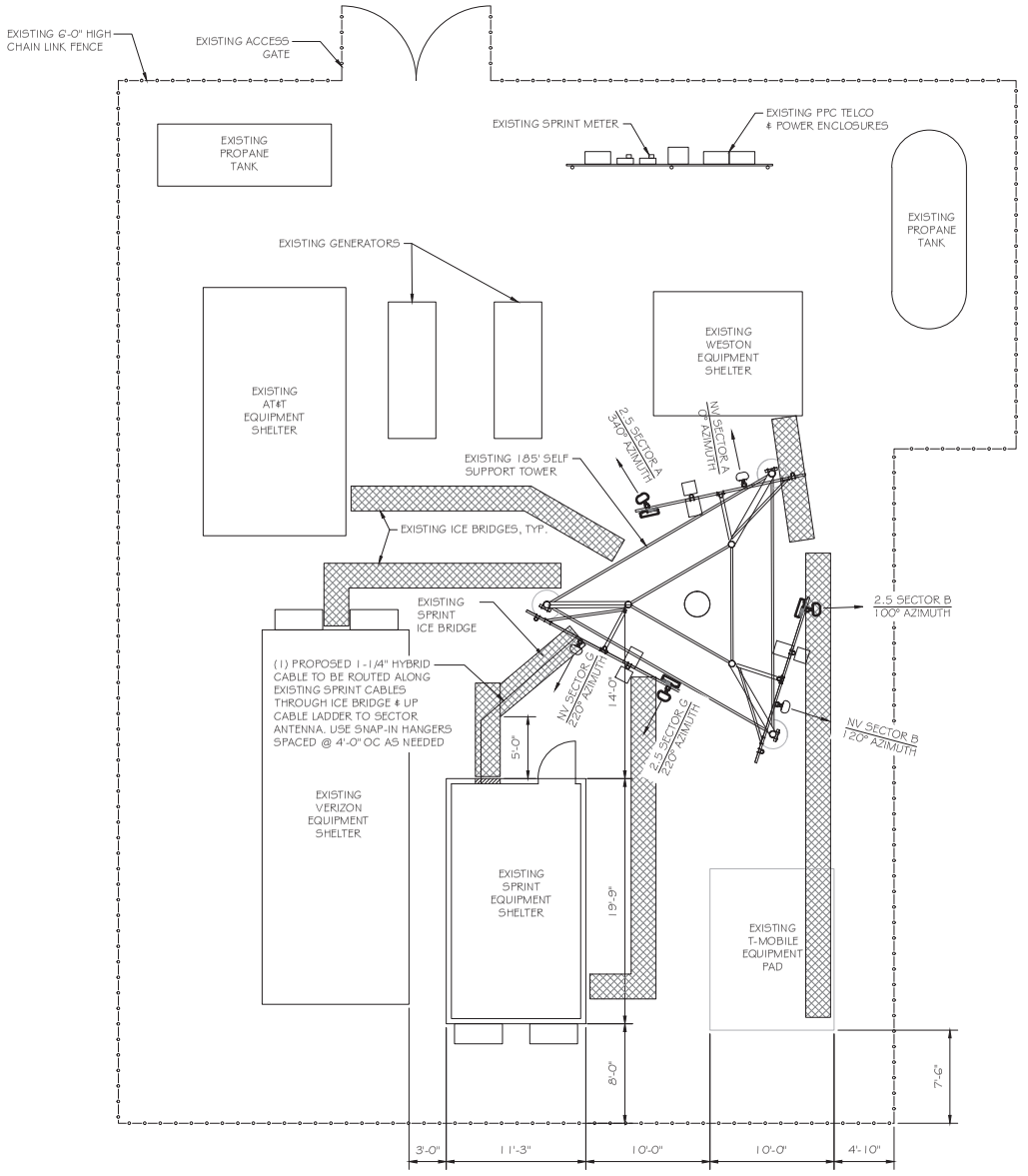
PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 28737
SHEET NUMBER: SP-3

I:\28700\28737\CADS\Sprint 2.5\28737 Sprint 2.5.dwg Printed by: kgalston on Oct 20, 2014 - 12:28pm



SITE PLAN
SCALE: 1" = 10'

NORTH

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DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
SITE PLAN

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

PROJECT NUMBER: 28737
SHEET NUMBER: A-1

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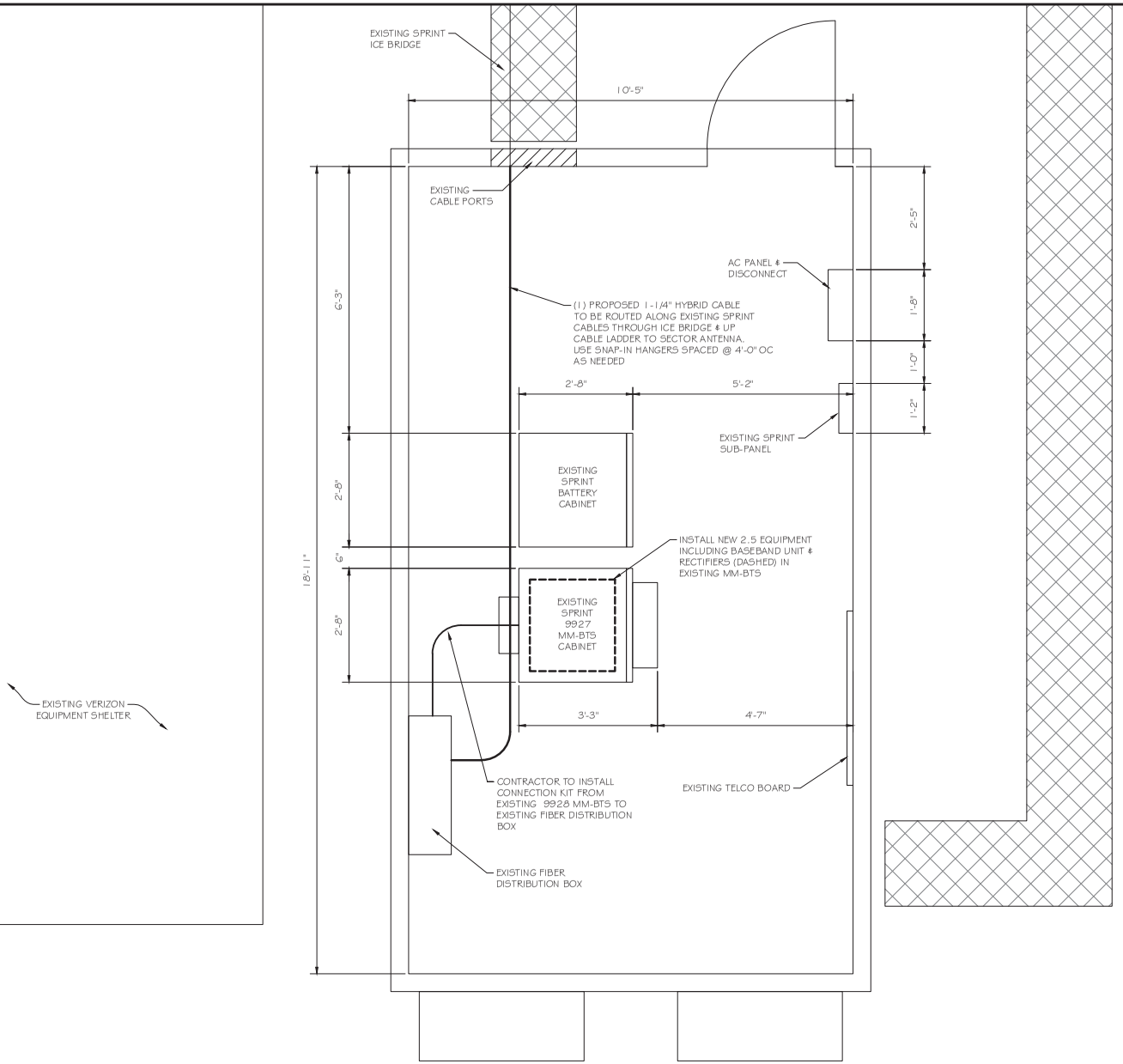

EQUIPMENT PLAN
SCALE: 1" = 2.5'

NORTH

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MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL
DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD 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: 28737
SHEET NUMBER: A-2

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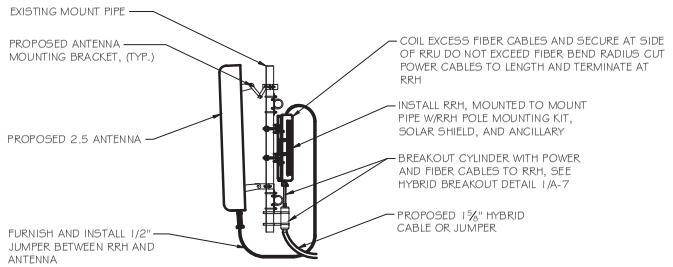
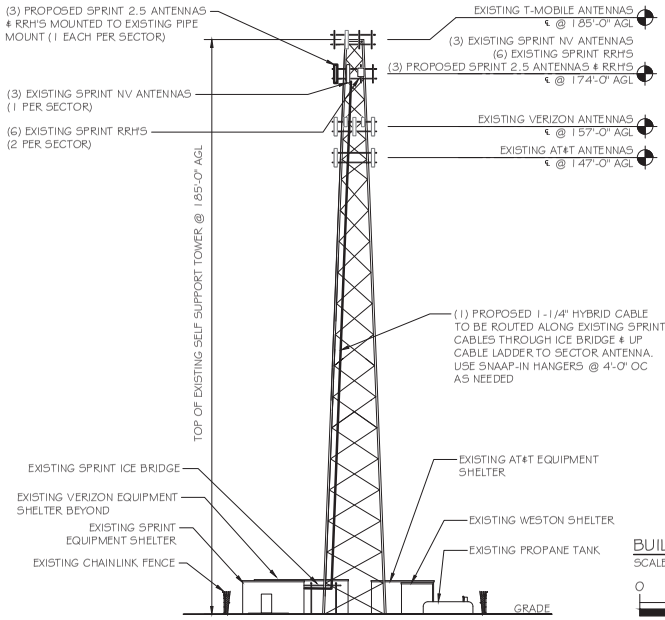


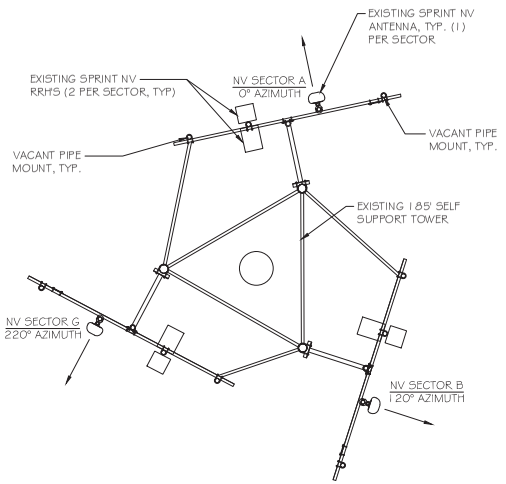
ANTENNA & RRH MOUNTING DETAILS (1)
SCALE: NTS



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

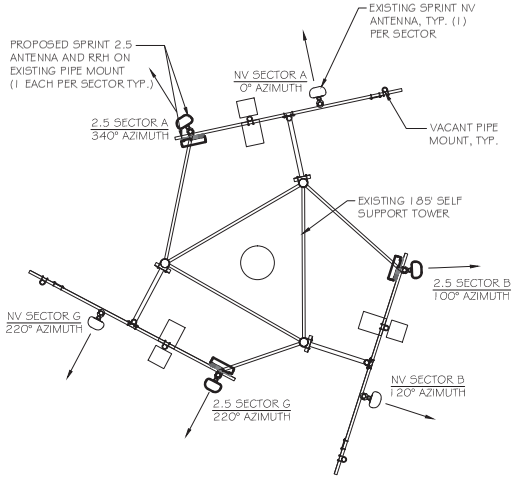
0 20' 40' 80'

11"x17" - 1" = 40'
22"x34" - 1" = 20'



NORTH

EXISTING ANTENNA ARRAY (3)
SCALE: NTS



NORTH

PROPOSED ANTENNA ARRAY (4)
SCALE: NTS

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Signature: Date: 10/20/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL
DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
BUILDING ELEVATIONS & ANTENNA DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: A-3

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Sprint

RFDS Sheet

General Site Information

Site ID	CT33XC522	Equipment Vendor	Alcatel-Lucent
Market	Southern Connecticut	Lattitude	41.244386
Region	Northeast	Longitude	-73.363386
MLA	N/A	LL SITE ID	N/A
Structure Type	Lattice Tower		
BTS Type			

				Incremental Power Draw needed by added Equipment
Solution ID		Siterra SR Equipment type		
		Equipment Vendor	Alcatel-Lucent	TBD

Base Equipment

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

RF Path Information

RRH	TD-RRH8x20-25	
RRH Qty	3	
RRH Dimensions	26.1"x18.6"x6.7"	
RRH Weight. lbs.	70	
RRH Mount Weight. Lbs.	10	
Power and Fiber Cable	ALU Hybrid	
Cable Qty	1	
Weight per foot. Lbs.	0.992	
Diameter. Inches.	1.25	
Length Ft.	209	(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	174	174	174
Antenna Azimuth	340	100	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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ISSUE PHASE: FINAL
DATE ISSUED: 10/20/2014

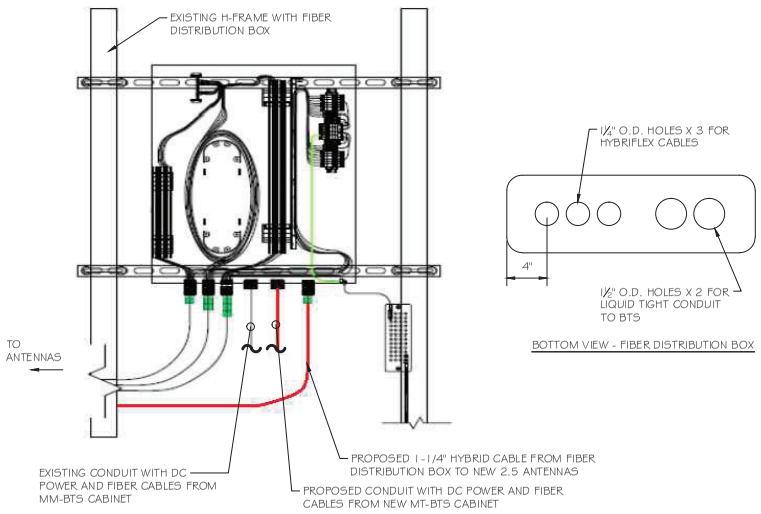
PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

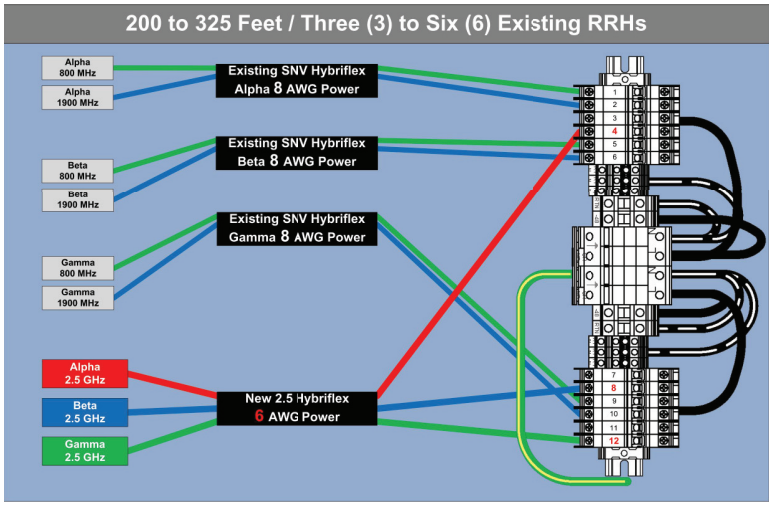
SHEET TITLE:
RF DATA SHEET

SCALE:
AS NOTED

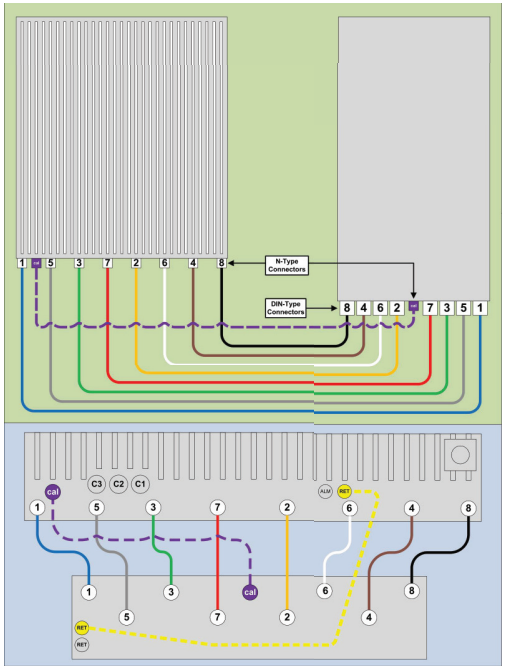
PROJECT NUMBER: 28737
SHEET NUMBER: A-4



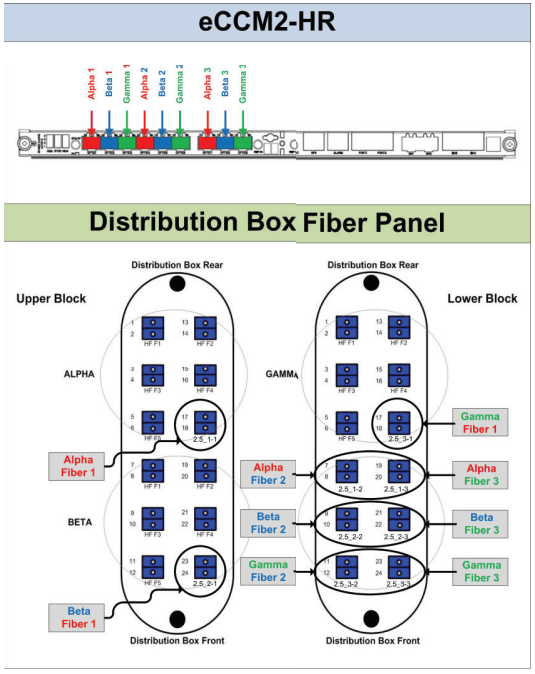
TYPICAL FIBER DISTRIBUTION BOX DETAIL (1)
SCALE: NTS



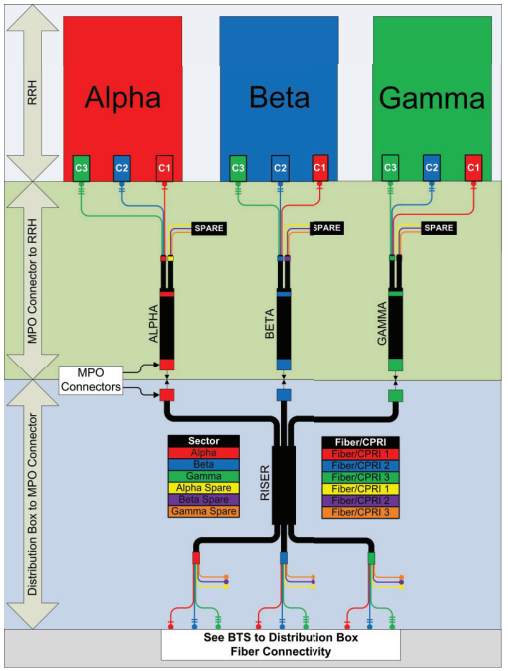
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL (2)
SCALE: NTS



8T8R DETAIL (3)
SCALE: NTS



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



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

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PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
FIBER PLUMBING DIAGRAM

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: A-5

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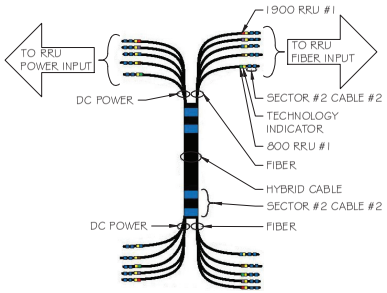
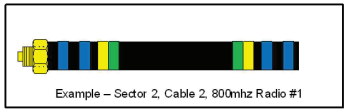
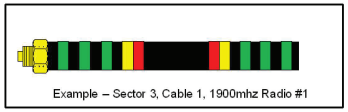
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

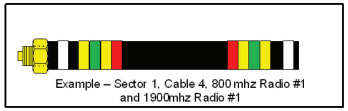
NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

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




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

Signature: 10/20/2014 Date:

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL DATE ISSUED: 10/20/2014

PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
CABLE COLOR CODING

SCALE:
AS NOTED

PROJECT NUMBER: 28737
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"

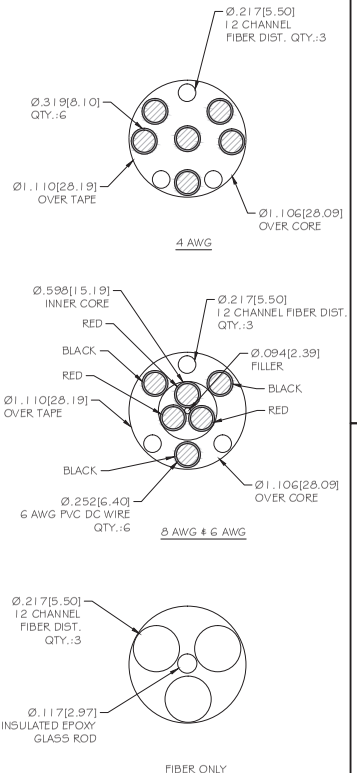
RFS HYBRIFLEX RISER CABLE SCHEDULE

FIBER ONLY (EXISTING DC POWER)	Hybrid cable MN: HB088-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors. 5/8 cable. 50 ft	50 ft
	MN: HB088-M12-075F	75 ft
	MN: HB088-M12-100F	100 ft
	MN: HB088-M12-125F	125 ft
	MN: HB088-M12-150F	150 ft
	MN: HB088-M12-175F	175 ft
	MN: HB088-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	

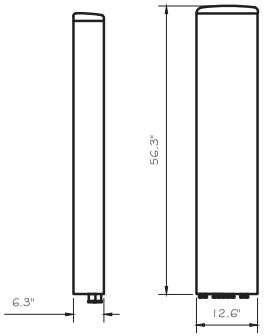
*NOTE: SPRINT CM TO CONFIRM HYBRID/FIBER RISER CABLE & HYBRID/FIBER JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



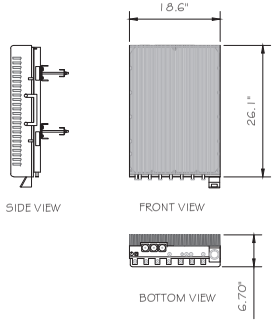
HYBRID CABLE CROSS SECTION & DATA
SCALE: NTS (1)

RFS: APXV9TM14-ALU-120

DIMENSIONS, HxWxD: 56.3" x 12.6" x 6.3"
WEIGHT, WITHOUT PRE-MOUNTED BRACKETS: 55.12 lbs.
CONNECTOR: (9) MINI-DIN FEMALE/BOTTOM



2.5 ANTENNA DETAIL
SCALE: NTS (2)



ALCATEL-LUCENT: TD-RRH8x20
HxWxD = 26.1" x 18.6" x 6.7"
WEIGHT = 70 lbs.

2.5 RRH DETAIL
SCALE: NTS (3)

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TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
ANTENNA & HYBRID CABLE DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: A-7

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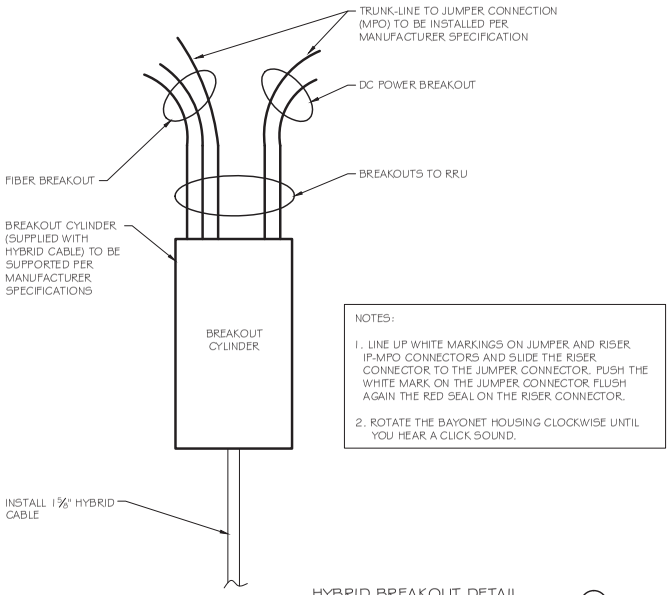
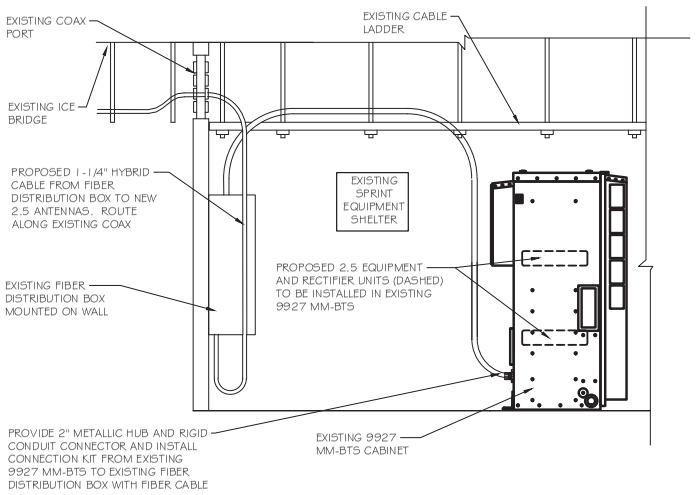


NOTES:

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

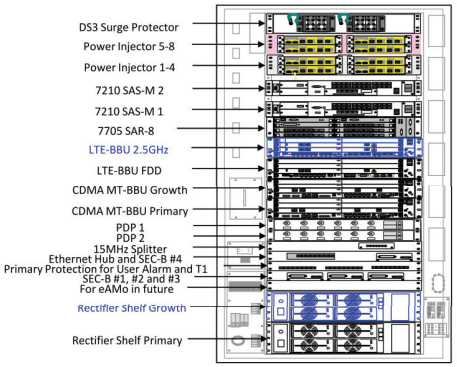


CABLE ROUTE FROM CABINET (2)
SCALE: NTS

(1) PROPOSED BATTERY STRING TO BE INSTALLED IN EXISTING BATTERY CABINET

EXISTING BBU CABINET (3)
SCALE: NTS

INSTALL NEW 2.5 EQUIPMENT, INCLUDING BASE BAND UNIT, CELL SITE ROUTER, RECTIFIERS, AND SURGE ARRESTORS AS NEEDED IN EXISTING MM-BTS CABINET



EXISTING MMBS CABINET (4)
SCALE: NTS

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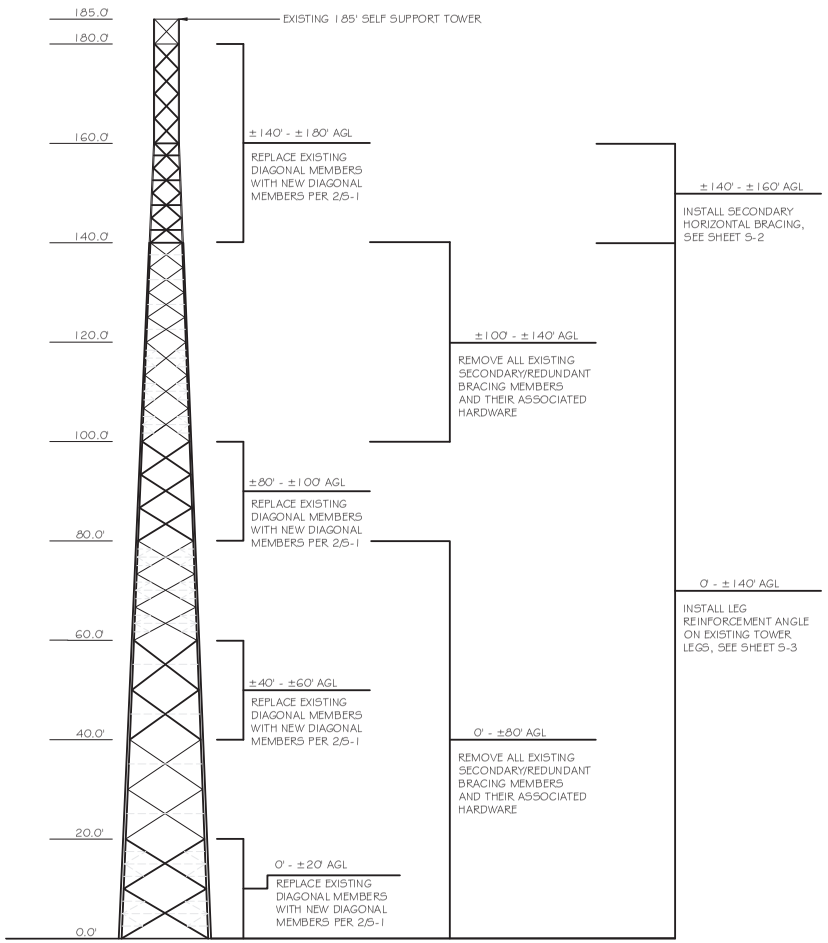
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
EQUIPMENT DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: A-8



NOTES:

- CONTRACTOR SHALL BE RESPONSIBLE FOR STABILITY OF THE TOWER DURING CONSTRUCTION.

- ALL PROPOSED STEEL SHALL BE HOT DIPPED GALVANIZED.

- ALL PROPOSED DIAGONAL MEMBERS HORIZONTAL MEMBERS, AND PLATES SHALL BE ASTM A36 STEEL, OR APPROVED EQUAL.

- ALL PROPOSED LEG REINFORCEMENT ANGLES SHALL BE ASTM A572-50 STEEL, OR APPROVED EQUAL.

- ALL PROPOSED BOLTS SHALL BE ASTM A325-X BOLTS (UNO), CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING BOLT THREADS ARE NOT IN SHEAR PLANE OF CONNECTION.

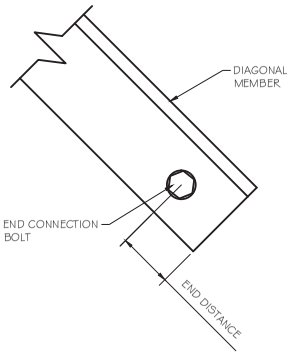
MODIFIED TOWER ELEVATION (1)
SCALE: 1" = 25'

ELEVATION	REPLACEMENT DIAGONAL SIZE	MINIMUM END CONNECTION END DISTANCE
0' - 20'	L3½ x 3½ x ⅜	1 ⅛"
40' - 60'	L3 x 3 x ⅜	1 ⅛"
80' - 100'	L2½ x 2½ x 5/16	1 ⅛"
140' - 180'	L2 x 2 x ¼	1 ¼"

NOTES:

- REPLACE ALL EXISTING DIAGONAL BOLTS WITH NEW A325-X BOLTS OF SAME DIAMETER.

- DO NOT REUSE EXISTING BOLTS



REPLACEMENT DIAGONAL INFORMATION (2)
SCALE: NTS

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PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: S-1

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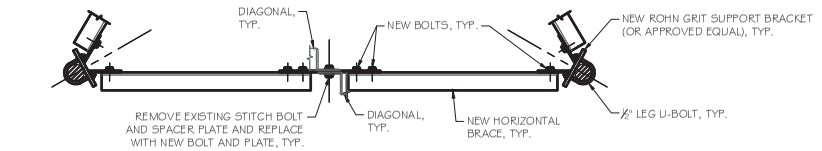
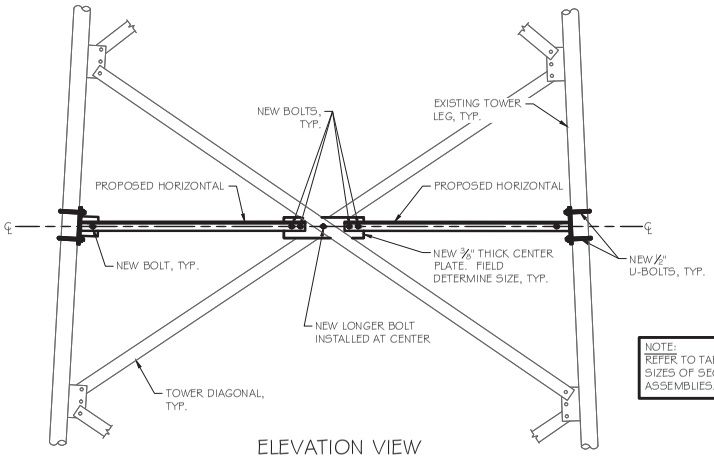


PLAN VIEW



NOTE:
REFER TO TABLE IN THIS DETAIL FOR REQUIRED SIZES OF SECONDARY HORIZONTALS AND BOLT ASSEMBLIES.

ELEVATION VIEW

ELEVATION	PROPOSED SECONDARY HORIZONTAL	BOLT SIZE
140' - 160' AGL	L2 x 2 x ¼	⅝" DIA.

TYP. SECONDARY HORIZONTAL ASSEMBLY (1)
SCALE: NTS

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FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
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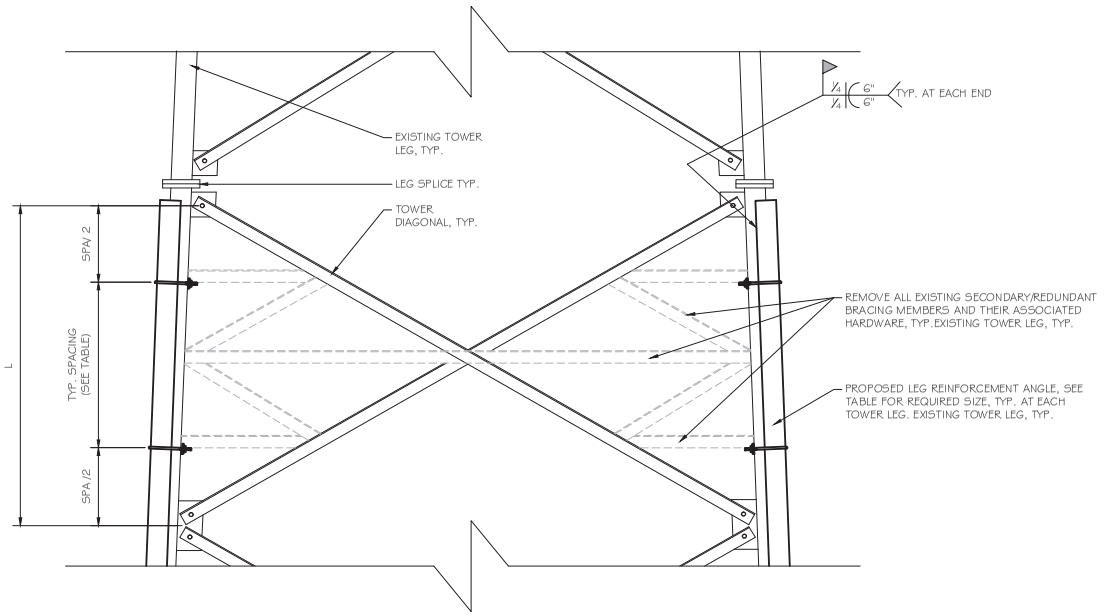
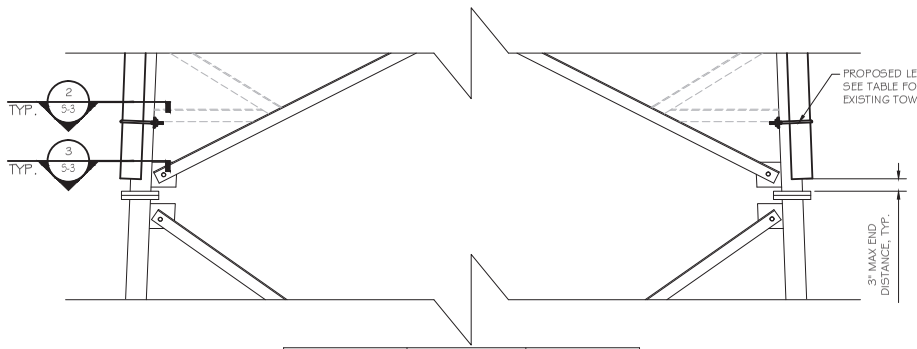
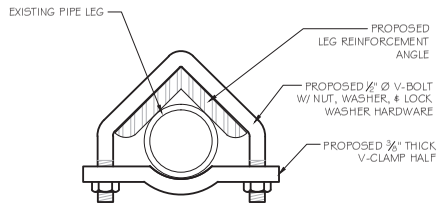
PROJECT NUMBER: 28737
SHEET NUMBER: S-2



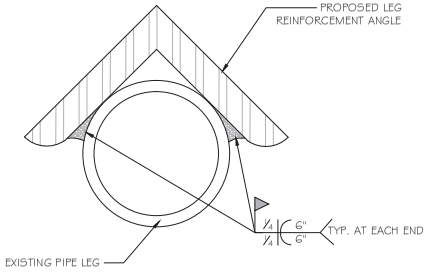


ELEVATION	LEG REINFORCEMENT ANGLE SIZE	MAXIMUM ANGLE CLAMP SPACING
0' - 40'	L8 x 8 x ½	L/2
40' - 60'	L5 x 5 x ½	L/4
60' - 80'	L5 x 5 x ⅜	L/4
80' - 100'	L5 x 5 x ⅜	L/2
100' - 120'	L5 x 5 x ⅜	L/2
120' - 140'	L3½ x 3½ x ⅜	L/2

TYPICAL LEG REINFORCEMENT 1
SCALE: NTS



TYP. LEG REINFORCEMENT ANGLE CLAMP 2
SCALE: NTS



TYP. LEG REINFORCEMENT ANGLE WELD 3
SCALE: NTS

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FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
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PROJECT NUMBER: 28737
SHEET NUMBER: S-3

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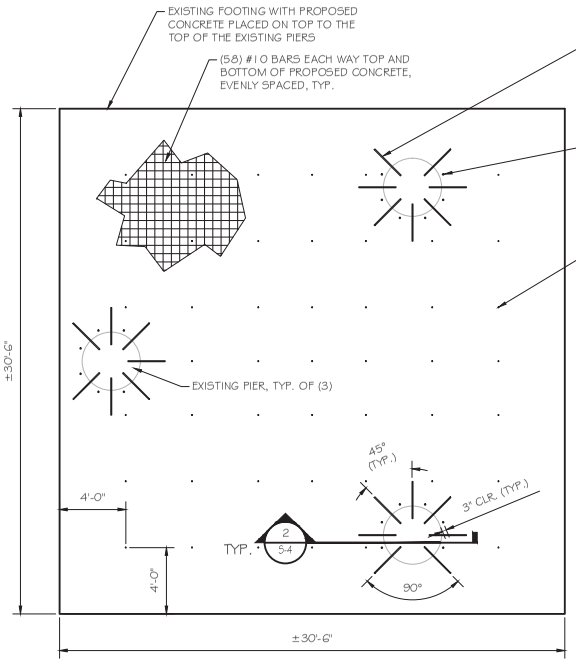
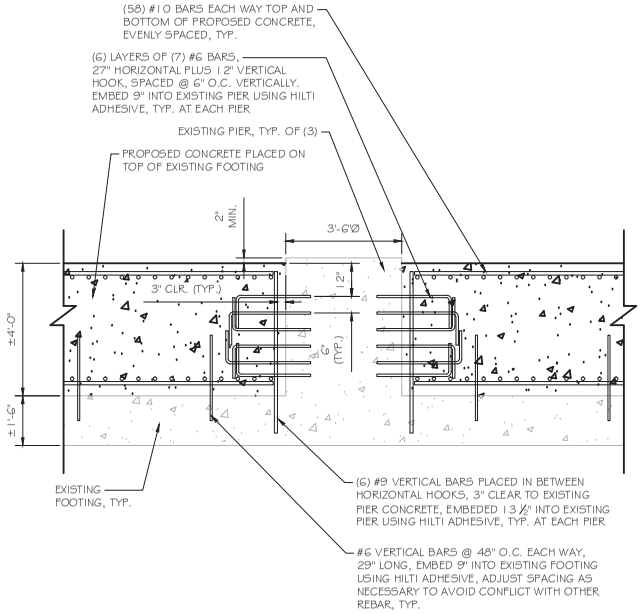


MODIFIED FOUNDATION PLAN (1)
SCALE: 1" = 7.5'

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR STABILITY OF TOWER/FOUNDATION DURING CONSTRUCTION.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
3. CONCRETE SHALL HAVE 3000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS.
4. STEEL REINFORCING BARS SHALL CONFORM TO ASTM A615-60.
5. MINIMUM CONCRETE COVER OF 3" SHALL BE PROVIDED FOR ALL REINFORCING BARS, U.N.O.
6. EMBED PROPOSED REBAR INTO EXISTING CONCRETE USING HILTI HIT-HY 200 ADHESIVE.
7. ALL SURFACES MUST BE FREE OF STANDING WATER PRIOR TO PLACING CONCRETE.
8. CLEAN AND APPLY APPROVED BONDING AGENT TO ALL EXISTING CONCRETE SURFACES PRIOR TO TO PLACING PROPOSED CONCRETE.
9. SLOPE TOP OF CONCRETE FINISHED SURFACE ¼" PER FOOT AWAY FROM CENTER OF FOUNDATION.



MODIFIED FOUNDATION SECTION (2)
SCALE: 1" = 7.5'

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237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: S-4

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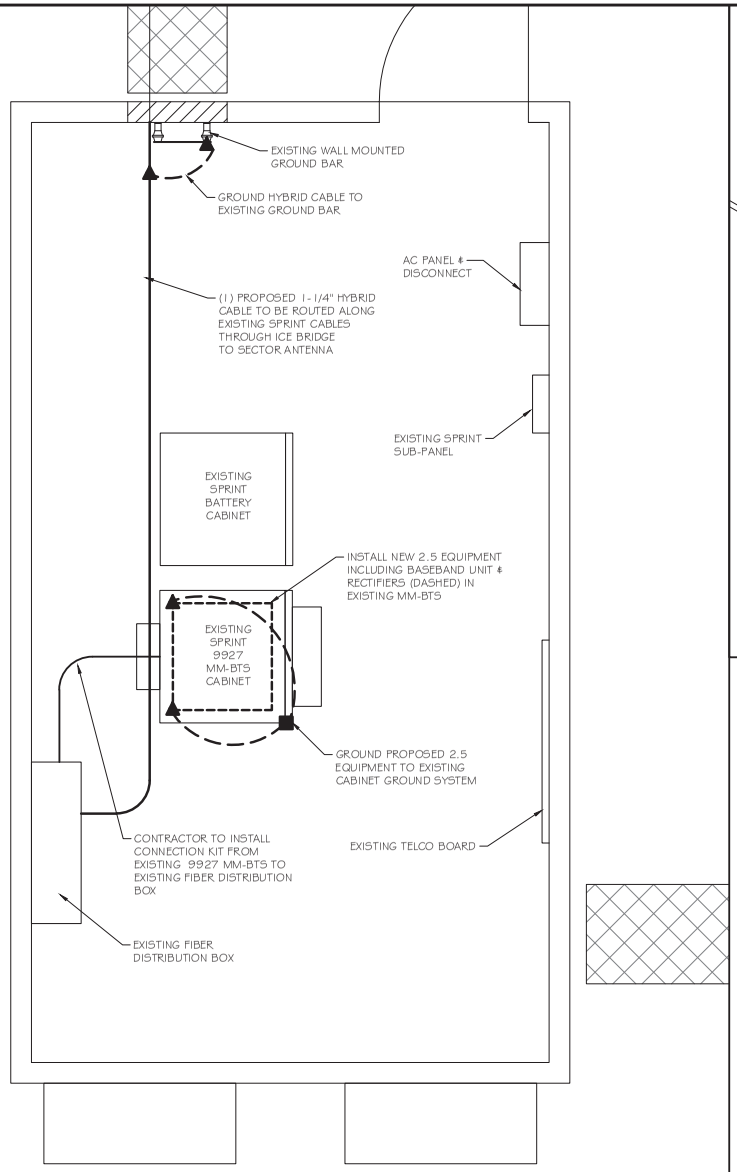
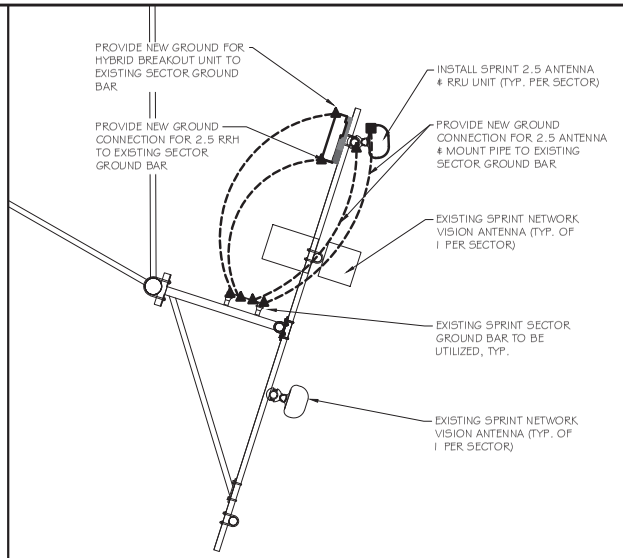


EQUIPMENT UTILITY & GROUNDING PLAN (1)
SCALE: NTS



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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RAMAKER & ASSOCIATES, INC.
1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

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: Date: 10/20/2014

MARK	DATE	DESCRIPTION

ISSUE PHASE: FINAL
DATE ISSUED: 10/20/2014

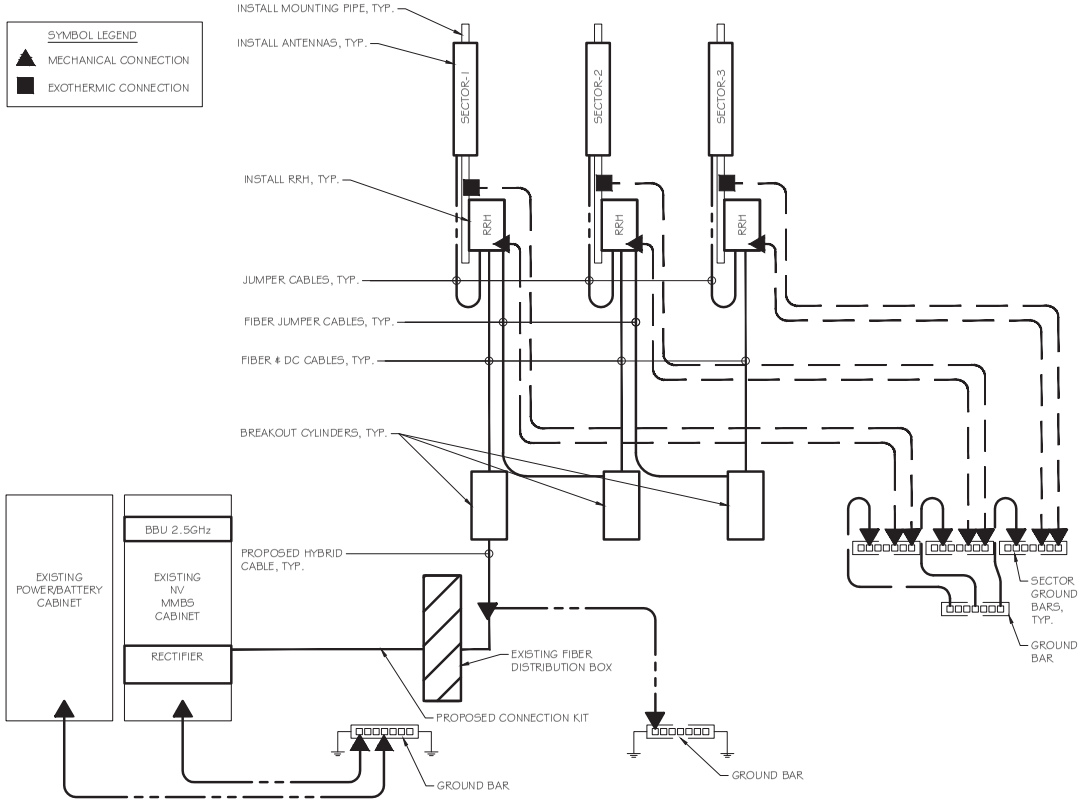
PROJECT TITLE:
TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

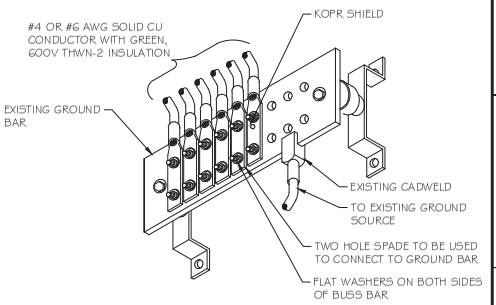
SHEET TITLE:
EQUIPMENT UTILITY & GROUNDING PLAN

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: E-1



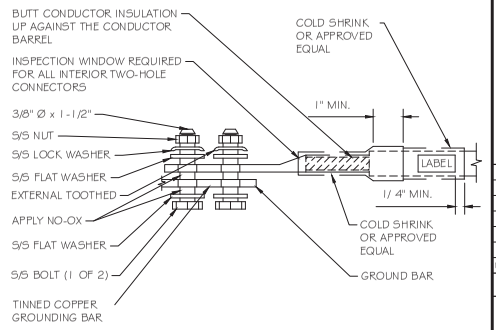
GROUNDING RISER DIAGRAM (1)
SCALE: NTS



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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TRANSFER STATION
CT33XC522-C

PROJECT INFORMATION:
237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:
GROUNDING DETAILS

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: E-2

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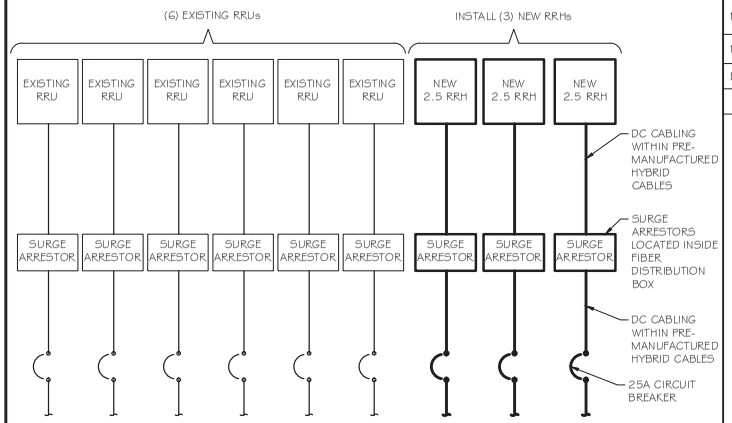


DC ONE-LINE DIAGRAM (1)
SCALE: NTS

A/C PANEL SCHEDULE

VOLTAGE:	240V/120		PANEL STATUS:	EXISTING		N TO GROUND BOND:	YES
MAIN BREAKER:	200 AMP		MODEL NUMBER:	TBD		INTERNAL TVSS:	YES
MOUNT:	GROUND		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	SURGE ARRESTOR	20	2	ON			OFF	2	30	RECTIFIER #2	2
3											4
5	RECTIFIER #1	30	2	OFF			OFF	2	30	RECTIFIER #4	6
7											8
9	RECTIFIER #3	30	2	OFF			OFF	2	30	RECTIFIER #6	10
11											12
13	RECTIFIER #5	30	2	OFF			OFF	2	30	RECTIFIER #8	14
15											16
17	RECTIFIER #7	30	2	OFF			OFF	2	30	RECTIFIER #8	18
19											20
21	RECTIFIER #9 SPARE	30	2	OFF			ON	2	50	HVAC #2	22
23											24
25	HVAC #1	50	2	ON			ON	2	100	BTS	26
27											28
29	HVAC #3 SPARE	35	2	OFF			ON	1	20	LIGHTING	30
31							ON	1	20	SMOKE DETECTOR	32
33	RECEPTACLE	20	1	OFF			OFF	2	40	BTS	34
35	RECEPTACLE	20	1	OFF							36
37	RECEPTACLE	20	1	OFF			ON	1	20	EXT. RECEPTACLE	38
39	RECEPTACLE	20	1	OFF			ON	1	20	RECEPTACLE	40
41	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	42

AC PANEL SCHEDULE (2)
SCALE: NTS

FREQ BAND (1900,800) + RADIO NUMBER

HYBRID SHEATH COLOR CODE

RFS (OEM)COLOR CODE

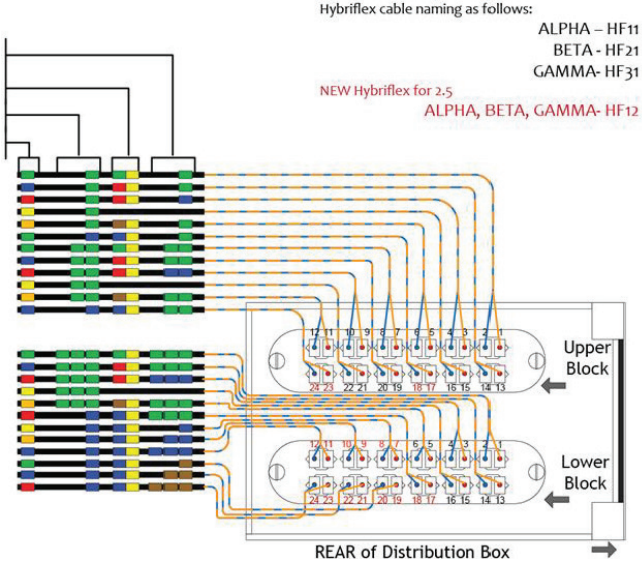
HF11-FIBER PAIR 1-(F1)
HF11-FIBER PAIR 2-(F2)
HF11-FIBER PAIR 3-(F3)
HF11-FIBER PAIR 4-(F4)
HF11-FIBER PAIR 5-(F5)
HF12-FIBER PAIR 1-(F1) 2.5 ALPHA 1
HF21-FIBER PAIR 1-(F1)
HF21-FIBER PAIR 2-(F2)
HF21-FIBER PAIR 3-(F3)
HF21-FIBER PAIR 4-(F4)
HF21-FIBER PAIR 5-(F5)
HF12-FIBER PAIR 2-(F2) 2.5 BETA 1

HF31-FIBER PAIR 1-(F1)
HF31-FIBER PAIR 2-(F2)
HF31-FIBER PAIR 3-(F3)
HF31-FIBER PAIR 4-(F4)
HF31-FIBER PAIR 5-(F5)
HF12-FIBER PAIR 3-(F3) 2.5 GAMMA 1
HF12-FIBER PAIR 4-(F4) 2.5 ALPHA 2
HF12-FIBER PAIR 5-(F5) 2.5 BETA 2
HF12-FIBER PAIR 6-(F6) 2.5 GAMMA 2
HF12-FIBER PAIR 7-(F7) 2.5 ALPHA 3
HF12-FIBER PAIR 8-(F8) 2.5 BETA 3
HF12-FIBER PAIR 9-(F9) 2.5 GAMMA 3

Each sector has separate Hybriflex cable .
Hybriflex cable naming as follows:

ALPHA – HF11
BETA - HF21
GAMMA- HF31

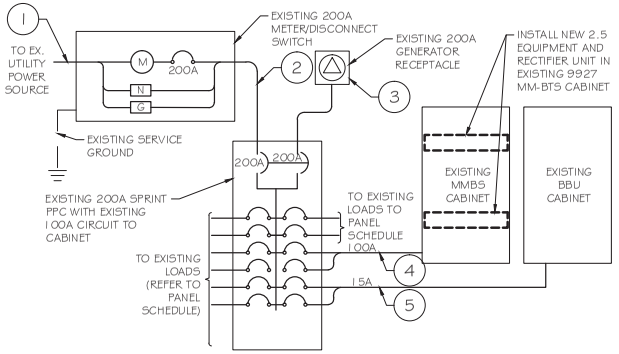
NEW Hybriflex for 2.5
ALPHA, BETA, GAMMA- HF12



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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237 GODFREY ROAD
WESTON, CT 06883
FAIRFIELD COUNTY

SHEET TITLE:

DC POWER DETAILS & PANEL SCHEDULES

SCALE:
AS NOTED

PROJECT NUMBER: 28737
SHEET NUMBER: E-3