EMPIRE
telecom

April 7, 2015

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

Regarding:	Notice of Exempt Modification – Addition of 3 radio heads previously approved
Property Address:	623 HONEYSPOT ROAD STRATFORD, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 102 foot monopole tower ("tower") location on the Property. AT&T's facility consists of nine (9) wireless telecommunications antennas at 90 'feet. The tower is controlled by AT&T Towers. The Council approved the previous application on June 1, 2012 reference number EM-CING-138-110629. This application (attached) granted AT&T the use of 6 radio heads at this location. The approval expired one year from the issue date. During that time AT&T made the changes to the site per the approval but only installed three (3) of the six (6) radio heads that they received approval. AT&T would now like to install the additional three (3) radio heads that were originally approved under EM-CING-138-110629.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, and the Town Planner for the Town Stratford. A copy of this letter is also being sent to AT&T Towers, the owner of the structure that AT&T is located.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's additional, previously approved 3 radio heads will be installed at 90' foot level of the 102' foot Monopole
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety

16 Esquire Road, Billerica, MA 01862 Mobile 617-639-4908 Email: Dcooper@empiretelecomm.com

EMPIRE
telecom

standard. An RF emissions calculation (attached) for AT&T's modified facility was provided in the application which led to the July 15,2011 Decision.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by GPD dated June 16, 2011 and Ramaker & Associates Inc July 22,2014).

For the foregoing reasons AT&T respectfully requests that the proposed addition of 3 radio heads previously approved be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

David P. Cooper
Director of Site Acquisition
Empire Telecom

CC: John A. Harkins, Mayor, for the Town of Stratford CT
Planning and Zoning Administrator, for the Town of Stratford CT
AT&T Towers
Deborah and John Becker – Land Owner

16 Esquire Road, Billerica, MA 01862 Mobile 617-639-4908 Email: Dcooper@empiretelecomm.com

RAMAKER
& ASSOCIATES, INC.

COM-TRONICS
(CT60XC969)

PREPARED FOR:
SPRINT

PREPARED BY:
RAMAKER & ASSOCIATES, INC.
JOB NUMBER: 27746

STRUCTURAL ASSESSMENT
100-FOOT MONOPOLE TOWER

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

SITE:	COM-TRONICS (CT60XC969) 627 Honeyspot Road Stratford, Fairfield County, CT 06615
PREPARED FOR:	Sprint
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:	27746
DATE OF REPORT ISSUANCE:	July 22, 2014

Thomas E. Moore
Project Engineer

7/22/14
Date

James R. Skowronski
Supervising Engineer

7/22/14
Date

TABLE OF CONTENTS

EXECUTIVE SUMMARY 3

INTRODUCTION 4

2.1 PROJECT INFORMATION
2.2 PURPOSE OF REPORT
2.3 SCOPE OF SERVICES

MODEL DEVELOPMENT 5

3.1 INTRODUCTION
3.2 EXISTING STRUCTURE INFORMATION
3.3 TOWER LOADING
3.4 WIND AND ICE LOAD

ANALYSIS RESULTS 7

4.1 ANALYSIS RESULTS
4.2 BASE REACTIONS
4.3 MOUNT ASSESSMENT

LIMITATIONS 9

REFERENCES 10

LIST OF APPENDICES

A. TOWER FIGURES
B. TOWER CALCULATIONS
C. MOUNT CALCULATIONS

SECTION 1

EXECUTIVE SUMMARY

This report summarizes the structural analysis conducted by Ramaker & Associates for Sprint, who intends to install additional equipment on an existing tower.

The Sprint proposed loading includes installing three (3) RFS APXVTM14-C-120 panel antennas and three (3) Alcatel-Lucent TD-RRH8x20 units on the existing three (3) T-Arms at a centerline elevation of 72-feet AGL. The proposed antennas shall be fed with one (1) hybrid cable, which is to be routed on the inside of the pole.

Tower modifications are required. Plates shall be bolted onto the exterior face of the pole and additional anchor rods are required. Details of the modifications are shown in the attached drawings.

Results of our tower analysis show that the modified tower will be stressed to a maximum of 93.2 percent of capacity and the foundation will be stressed to 95.2 percent of capacity.

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 tower will pass and the mounting structure will pass the TIA-222-G 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

Tower information was gathered from a previous structural analysis performed by KMB Design Group (KMB), KMB ID# 332.1539, dated March 6, 2013. A previous structural report performed by Hudson Design Group, LLC (HDG), site number CT2112, dated June 16, 2011.

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
102	(6) Kathrein Scala 800 10504	(3) T-Arms	(12) 7/8	Unknown	Existing
92	(6) Allgon 7770	Platform w/Handrail	(12) 7/8	Unknown	Existing
	(12) Powerwave LGP 21401 TMA's				
	(3) KMW AM-X-CD-16-65-00T-RET				
	(3) Ericsson RRUS-11				
	(1) Raycap DC6-48-60-18-8F				
82	(3) Rymsa MG D3-800T0	Platform w/Handrail	(12) 7/8	Unknown	Existing
	(3) Andrew LNX-6512DS-T4M				
	(6) Decibel DB846F65ZAXY				
74	(3) Alcatel-Lucent 800 MHz RRH	Collar Mount	(3) Hybrid	Sprint	Existing
	(6) Alcatel-Lucent 1900 MHz RRH				
72	(3) RFS APXVSPP18-C-A20	(3) T-Arms			
	(3) RFS APXVTM14-C-120		**(1) Hybrid**		**Proposed**
	(3) Argus LLPX310R		(6) 1-1/4	Clearwire	Existing
	(1) 2'x2'x8" Junction Box				
	(2) Dragonwave 1' Dish w/ Radome		(3) 1/2	Unknown	
	(1) Andrew 3' Dish w/ Radome				
58	(3) EMS DR65-12-05DBL	Collar Mount	(12) 1-1/4	Unknown	Existing

Elevation	Appurtenance	Mount	Coax	Owner	Status
28	(1) 20' Omni	T-Arm w/ (2) Stand-offs	(6) 1/4*	Unknown	Existing
	(2) 12' Omni				
	(3) 10' Omni				
	(1) GPS Antenna		(1) 1/4*		

*Coax not supported by tower

3.4 WIND AND ICE LOAD

Wind forces used in model development are in compliance with the TIA-222-G Standard. These guidelines call for an analysis to be performed, which assumes a basic wind speed (3-second gust) of 85 miles-per-hour (mph) without ice in Fairfield County. The tower is also designed for a 38 mph basic wind speed with 0.75-inch of radial ice. The tower was analyzed using the following parameters: Structure Class II, Topographic Category I, and Exposure Category C.

SECTION 4
ANALYSIS RESULTS

4.1 ANALYSIS RESULTS

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

Component Type	Percent Capacity
Section 1	36.2
Section 2	88.3
Section 3	69.1
Reinforcing	93.2
RATING =	93.2

4.2 BASE REACTIONS

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

Load Type	Previous Analysis Reactions	Proposed Model
Axial (k)	18	27.7
Shear (k)	20	23.5
Moment (k-ft)	1420	1641.7

The proposed model reactions are all greater than the reactions determined in the previous analysis by KMB. The foundation was analyzed under proposed loading conditions and determined to be at 95.2 percent of capacity.

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

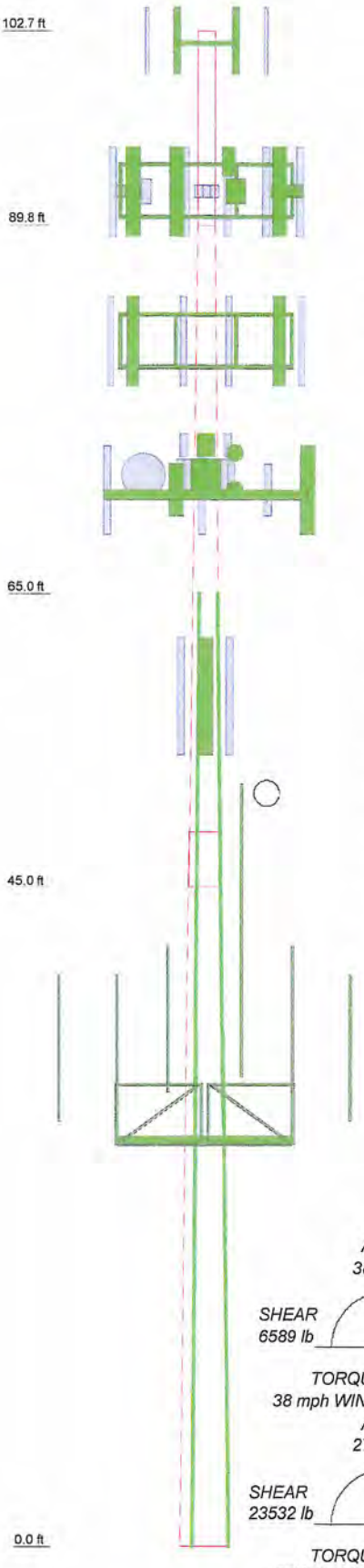
1. 2003 International Building Code.

2. Telecommunications Industries Association, Structural Standard for Antenna Supporting Structures and Antennas, TIA Standard ANSI/TIA-222-F 1996, Washington, D.C.

APPENDIX A

TOWER FIGURES

Length (ft)	12.92	44.80	48.78						449.1
Number of Sides	1	18	18						
Thickness (in)	0.2500	0.2500	0.3125						
Socket Length (ft)		3.80							
Top Dia (in)	13.0000	13.0000	25.1226						
Bot Dia (in)	13.0000	26.7925	40.0000						
Grade				A53-B-35			A572-65		2424.0
Tube Length (ft)			35.00			35.00			
Reinf Size					MS-600				
Reinf Grade							A572-65		5415.6
Weight (lb)									8288.7



DESIGNED APPURTENANCE LOADING

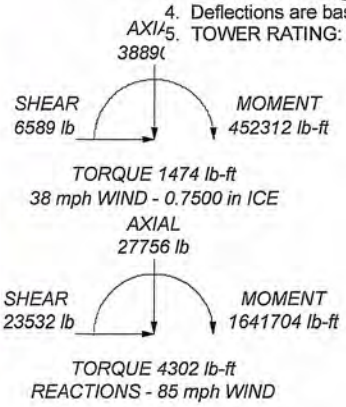
TYPE	ELEVATION	TYPE	ELEVATION
4' T-Arm	102	800MHz 2x50W RRH (Sprint)	75
4' T-Arm	102	800MHz 2x50W RRH (Sprint)	75
4' T-Arm	102	800MHz 2x50W RRH (Sprint)	75
800 10504 w/Mount Pipe	102	1900MHz 4x40W RRH (Sprint)	73
800 10504 w/Mount Pipe	102	1900MHz 4x40W RRH (Sprint)	73
800 10504 w/Mount Pipe	102	1900MHz 4x40W RRH (Sprint)	73
800 10504 w/Mount Pipe	102	1900MHz 4x40W RRH (Sprint)	73
800 10504 w/Mount Pipe	102	1900MHz 4x40W RRH (Sprint)	73
800 10504 w/Mount Pipe	102	1900MHz 4x40W RRH (Sprint)	73
PiROD 13' Platform w/handrails (Monopole)	92	14' T-Arm (Sprint)	72
		14' T-Arm (Sprint)	72
(2) 7770 w/ mount pipe	92	14' T-Arm (Sprint)	72
(2) 7770 w/ mount pipe	92	LLPX310R (Clearwire)	72
(2) 7770 w/ mount pipe	92	LLPX310R (Clearwire)	72
LGP214nn	92	LLPX310R (Clearwire)	72
LGP214nn	92	APXVSPP18-C w/Mount Pipe (Sprint)	72
LGP214nn	92	APXVSPP18-C w/Mount Pipe (Sprint)	72
LGP214nn	92	APXVSPP18-C w/Mount Pipe (Sprint)	72
LGP214nn	92	2'x2'x8" Box (Sprint)	72
LGP214nn	92	APXVTM14-C-120 w/Mount Pipe (Sprint)	72
LGP214nn	92		
LGP214nn	92	APXVTM14-C-120 w/Mount Pipe (Sprint)	72
LGP214nn	92		
LGP214nn	92	APXVTM14-C-120 w/Mount Pipe (Sprint)	72
LGP214nn	92		
LGP214nn	92		
LGP214nn	92	TD-RRH 8x20 (Sprint)	72
AM-X-CD-16-65-00T w/Mount Pipe	92	TD-RRH 8x20 (Sprint)	72
AM-X-CD-16-65-00T w/Mount Pipe	92	TD-RRH 8x20 (Sprint)	72
AM-X-CD-16-65-00T w/Mount Pipe	92	A-ANT-23G-1	72
RRUS-11	92	A-ANT-23G-1	72
RRUS-11	92	Andrew 3' w/Radome	72
RRUS-11	92	DR65-12-XXXBL w/Mount Pipe	58
DC6-48-60-18-8F	92	DR65-12-XXXBL w/Mount Pipe	58
PiROD 13' Platform w/handrails (Monopole)	82	DR65-12-XXXBL w/Mount Pipe	58
		10' Omni	28
(2) DB846F65ZAXY w/Mount Pipe	82	10' Omni	28
(2) DB846F65ZAXY w/Mount Pipe	82	10' Omni	28
(2) DB846F65ZAXY w/Mount Pipe	82	12' Omni	28
LNX-6512DS-T4M w/ mount pipe	82	12' Omni	28
LNX-6512DS-T4M w/ mount pipe	82	20' Omni	28
LNX-6512DS-T4M w/ mount pipe	82	12' T-Arm	28
Rymsa MDG3-800 T2 w/ mount pipe	82	4' Standoff	28
Rymsa MDG3-800 T2 w/ mount pipe	82	4' Standoff	28
Rymsa MDG3-800 T2 w/ mount pipe	82		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 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 38 mph basic wind with 0.75 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.2%



RAMAKER & ASSOCIATES, INC.
Consulting Engineers

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

Job: *Com-Tronics (CT60XC969)*			
Project: *27746*			
Client: Sprint	Drawn by: tmoore	App'd:	
Code: TIA/EIA-222-F	Date: 07/22/14	Scale: N	
Path: I:\27700\27746\Structural\Tower\tnx\27746 rev1.eri		Dwg No.	

APPENDIX B

TOWER CALCULATIONS

Tower Input Data

There is a pole section.
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 0.7500 in.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	102.70-89.78	12.92	0.00	Round	13.0000	13.0000	0.2500		A53-B-35 (35 ksi)
L2	89.78-44.98	44.80	3.80	18	13.0000	26.7925	0.2500	1.0000	A572-65 (65 ksi)
L3	44.98-0.00	48.78		18	25.1226	40.0000	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	13.0000	10.0138	203.6400	4.5135	6.5000	31.3292	406.7253	5.0039	0.0000	0
	13.0000	10.0138	203.6400	4.5135	6.5000	31.3292	406.7253	5.0039	0.0000	0
L2	13.2005	10.1171	207.7854	4.5263	6.6040	31.4636	415.8441	5.0595	1.8480	7.392
	27.2058	21.0615	1874.6054	9.4226	13.6106	137.7314	3751.6774	10.5327	4.2755	17.102
L3	26.6870	24.6085	1913.7269	8.8076	12.7623	149.9518	3829.9719	12.3066	3.8716	12.389
	40.6171	39.3650	7833.4959	14.0891	20.3200	385.5067	15677.2994	19.6863	6.4900	20.768

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
L1 102.70-89.78				1	1	1.02		
L2 89.78-44.98				1	1	1.02		
L3 44.98-0.00				1	1	1.02		

Pole Reinforcing Data

Height Above Base ft	Segment Length ft	No. of Segments	Offset in	Grade	Type	Size	Unbraced Length ft	K	Bolt Hole Dia. in	Bolts per Row	Shear Lag Factor U
0.00	35.00	3	0.0000	A572-65 (65 ksi)	Flat Bar	MS-600	1.36	0.80	1.2500	1	1.000
30.00	35.00	3	0.0000	A572-65 (65 ksi)	Flat Bar	MS-600	1.36	0.80	1.2500	1	1.000

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
**********									
1 1/4 (Sprint)	B	Surface Ar (CaAa)	72.00 - 20.00	3	3	0.000 0.000	1.5500		0.66
1 1/4 (Sprint)	C	Surface Ar (CaAa)	72.00 - 20.00	3	3	0.000 0.000	1.5500		0.66
1/2 (Sprint)	C	Surface Ar (CaAa)	72.00 - 20.00	2	2	0.000 0.000	0.5800		0.25
**********									
MS-600	A	Surface Ar (CaAa)	67.00 - 33.50	1	1	0.000 0.000	1.0000		20.42
MS-600	B	Surface Ar (CaAa)	67.00 - 33.50	1	1	0.000 0.000	1.0000		20.42
MS-600	C	Surface Ar (CaAa)	67.00 - 33.50	1	1	0.000 0.000	1.0000		20.42
MS-600	A	Surface Ar (CaAa)	33.50 - 0.00	1	1	0.000 0.000	1.0000		20.42
MS-600	B	Surface Ar (CaAa)	33.50 - 0.00	1	1	0.000 0.000	1.0000		20.42
MS-600	C	Surface Ar (CaAa)	33.50 - 0.00	1	1	0.000 0.000	1.0000		20.42

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
7/8	C	No	Inside Pole	102.00 - 20.00	12	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
**********								
7/8	C	No	Inside Pole	92.00 - 20.00	12	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
**********								
7/8	B	No	Inside Pole	82.00 - 20.00	12	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
1/2	C	No	Inside Pole	72.00 - 20.00	1	No Ice	0.00	0.25

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
(Sprint)						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
**********								
1 1/4	A	No	Inside Pole	58.00 - 20.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
**********								
1 5/8	C	No	Inside Pole	72.00 - 20.00	1	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04

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
L1	102.70-89.78	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	93.57
L2	89.78-44.98	A	0.000	0.000	2.202	0.000	552.69
		B	0.000	0.000	14.766	0.000	742.96
		C	0.000	0.000	17.901	0.000	1132.05
L3	44.98-0.00	A	0.000	0.000	4.498	0.000	1116.18
		B	0.000	0.000	16.114	0.000	1129.67
		C	0.000	0.000	19.011	0.000	1336.26

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
L1	102.70-89.78	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	93.57
L2	89.78-44.98	A	0.750	0.000	0.000	5.505	0.000	588.00
		B		0.000	0.000	41.442	0.000	894.91
		C		0.000	0.000	59.041	0.000	1326.83
L3	44.98-0.00	A	0.750	0.000	0.000	11.245	0.000	1188.31
		B		0.000	0.000	44.468	0.000	1309.63
		C		0.000	0.000	60.739	0.000	1555.81

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	102.70-89.78	0.0000	0.0000	0.0000	0.0000
L2	89.78-44.98	0.3014	0.2573	0.3901	0.4122
L3	44.98-0.00	0.2428	0.2080	0.3561	0.3780

Discrete Tower Loads

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
4' T-Arm	A	None		0.0000	102.00	No Ice	2.87	0.82	83.50
						1/2" Ice	3.33	1.02	108.55
						1" Ice	3.79	1.22	133.60
4' T-Arm	B	None		0.0000	102.00	No Ice	2.87	0.82	83.50
						1/2" Ice	3.33	1.02	108.55
						1" Ice	3.79	1.22	133.60
4' T-Arm	A	None		0.0000	102.00	No Ice	2.87	0.82	83.50
						1/2" Ice	3.33	1.02	108.55
						1" Ice	3.79	1.22	133.60
800 10504 w/Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	102.00	No Ice	3.47	3.05	38.05
						1/2" Ice	3.84	3.68	69.36
						1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	A	From Face	3.00 2.00 0.00	0.0000	102.00	No Ice	3.47	3.05	38.05
						1/2" Ice	3.84	3.68	69.36
						1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	102.00	No Ice	3.47	3.05	38.05
						1/2" Ice	3.84	3.68	69.36
						1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	B	From Face	3.00 2.00 0.00	0.0000	102.00	No Ice	3.47	3.05	38.05
						1/2" Ice	3.84	3.68	69.36
						1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	C	From Face	3.00 -2.00 0.00	0.0000	102.00	No Ice	3.47	3.05	38.05
						1/2" Ice	3.84	3.68	69.36
						1" Ice	4.23	4.33	106.43
800 10504 w/Mount Pipe	C	From Face	3.00 2.00 0.00	0.0000	102.00	No Ice	3.47	3.05	38.05
						1/2" Ice	3.84	3.68	69.36
						1" Ice	4.23	4.33	106.43
****									
PiROD 13' Platform w/handrails (Monopole)	C	None		0.0000	92.00	No Ice	31.30	31.30	1822.00
						1/2" Ice	40.20	40.20	2452.00
						1" Ice	49.10	49.10	3082.00
(2) 7770 w/ mount pipe	A	From Face	4.00 0.00 0.00	0.0000	92.00	No Ice	6.86	5.23	81.32
						1/2" Ice	7.65	6.41	138.82
						1" Ice	8.30	7.25	204.24
(2) 7770 w/ mount pipe	B	From Face	4.00 0.00 0.00	0.0000	92.00	No Ice	6.86	5.23	81.32
						1/2" Ice	7.65	6.41	138.82
						1" Ice	8.30	7.25	204.24
(2) 7770 w/ mount pipe	C	From Face	4.00 0.00 0.00	0.0000	92.00	No Ice	6.86	5.23	81.32
						1/2" Ice	7.65	6.41	138.82
						1" Ice	8.30	7.25	204.24
LGP214nn	A	From Face	3.00 -6.00 0.00	0.0000	92.00	No Ice	1.30	0.23	14.10
						1/2" Ice	1.45	0.31	21.30
						1" Ice	1.62	0.40	30.39
LGP214nn	A	From Face	3.00 -6.00 0.00	0.0000	92.00	No Ice	1.30	0.23	14.10
						1/2" Ice	1.45	0.31	21.30
						1" Ice	1.62	0.40	30.39
LGP214nn	B	From Face	3.00 -6.00 0.00	0.0000	92.00	No Ice	1.30	0.23	14.10
						1/2" Ice	1.45	0.31	21.30
						1" Ice	1.62	0.40	30.39
LGP214nn	B	From Face	3.00 -6.00	0.0000	92.00	No Ice	1.30	0.23	14.10
						1/2" Ice	1.45	0.31	21.30

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
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	C	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			-6.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	C	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			-6.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	A	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			5.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	A	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			-5.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	B	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			5.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	B	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			-5.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	C	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			5.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
LGP214nn	C	From Face	3.00	0.0000	92.00	No Ice	1.30	0.23	14.10
			-5.00			1/2" Ice	1.45	0.31	21.30
			0.00			1" Ice	1.62	0.40	30.39
AM-X-CD-16-65-00T w/Mount Pipe	A	From Face	3.00	0.0000	92.00	No Ice	6.62	5.16	49.43
			2.00			1/2" Ice	7.05	5.83	102.89
			0.00			1" Ice	7.50	6.53	162.74
AM-X-CD-16-65-00T w/Mount Pipe	B	From Face	3.00	0.0000	92.00	No Ice	6.62	5.16	49.43
			2.00			1/2" Ice	7.05	5.83	102.89
			0.00			1" Ice	7.50	6.53	162.74
AM-X-CD-16-65-00T w/Mount Pipe	C	From Face	3.00	0.0000	92.00	No Ice	6.62	5.16	49.43
			2.00			1/2" Ice	7.05	5.83	102.89
			0.00			1" Ice	7.50	6.53	162.74
RRUS-11	A	From Face	3.00	0.0000	92.00	No Ice	3.25	1.37	50.71
			-2.00			1/2" Ice	3.49	1.55	71.49
			0.00			1" Ice	3.74	1.74	95.32
RRUS-11	B	From Face	3.00	0.0000	92.00	No Ice	3.25	1.37	50.71
			-2.00			1/2" Ice	3.49	1.55	71.49
			0.00			1" Ice	3.74	1.74	95.32
RRUS-11	C	From Face	3.00	0.0000	92.00	No Ice	3.25	1.37	50.71
			-2.00			1/2" Ice	3.49	1.55	71.49
			0.00			1" Ice	3.74	1.74	95.32
DC6-48-60-18-8F	C	From Face	3.00	0.0000	92.00	No Ice	1.47	1.47	32.80
			-1.50			1/2" Ice	1.67	1.67	50.52
			2.00			1" Ice	1.88	1.88	70.72
****									
PiROD 13' Platform w/handrails (Monopole)	C	None		0.0000	82.00	No Ice	31.30	31.30	1822.00
						1/2" Ice	40.20	40.20	2452.00
						1" Ice	49.10	49.10	3082.00
(2) DB846F65ZAXY w/Mount Pipe	A	From Face	4.00	0.0000	82.00	No Ice	7.27	7.82	46.55
			0.00			1/2" Ice	7.88	9.01	113.93
			0.00			1" Ice	8.48	9.91	189.25
(2) DB846F65ZAXY w/Mount Pipe	B	From Face	4.00	0.0000	82.00	No Ice	7.27	7.82	46.55
			0.00			1/2" Ice	7.88	9.01	113.93
			0.00			1" Ice	8.48	9.91	189.25
(2) DB846F65ZAXY w/Mount Pipe	C	From Face	4.00	0.0000	82.00	No Ice	7.27	7.82	46.55

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
			0.00			1/2" Ice	7.88	9.01	113.93
			0.00			1" Ice	8.48	9.91	189.25
LNX-6512DS-T4M w/ mount pipe	A	From Face	3.00	0.0000	82.00	No Ice	6.17	5.07	62.94
			2.00			1/2" Ice	6.69	5.80	116.49
			0.00			1" Ice	7.21	6.55	177.09
LNX-6512DS-T4M w/ mount pipe	B	From Face	3.00	0.0000	82.00	No Ice	6.17	5.07	62.94
			2.00			1/2" Ice	6.69	5.80	116.49
			0.00			1" Ice	7.21	6.55	177.09
LNX-6512DS-T4M w/ mount pipe	C	From Face	3.00	0.0000	82.00	No Ice	6.17	5.07	62.94
			2.00			1/2" Ice	6.69	5.80	116.49
			0.00			1" Ice	7.21	6.55	177.09
Rymsa MDG3-800 T2 w/ mount pipe	A	From Face	3.00	0.0000	82.00	No Ice	3.23	2.47	17.43
			-4.00			1/2" Ice	3.57	2.86	39.45
			0.00			1" Ice	3.91	3.27	66.35
Rymsa MDG3-800 T2 w/ mount pipe	B	From Face	3.00	0.0000	82.00	No Ice	3.23	2.47	17.43
			-4.00			1/2" Ice	3.57	2.86	39.45
			0.00			1" Ice	3.91	3.27	66.35
Rymsa MDG3-800 T2 w/ mount pipe	C	From Face	3.00	0.0000	82.00	No Ice	3.23	2.47	17.43
			-4.00			1/2" Ice	3.57	2.86	39.45
			0.00			1" Ice	3.91	3.27	66.35
****									
1900MHz 4x40W RRH (Sprint)	A	From Face	1.00	0.0000	73.00	No Ice	2.71	2.61	59.50
			-0.50			1/2" Ice	2.95	2.84	82.62
			0.00			1" Ice	3.20	3.09	108.98
1900MHz 4x40W RRH (Sprint)	B	From Face	1.00	0.0000	73.00	No Ice	2.71	2.61	59.50
			-0.50			1/2" Ice	2.95	2.84	82.62
			0.00			1" Ice	3.20	3.09	108.98
1900MHz 4x40W RRH (Sprint)	C	From Face	1.00	0.0000	73.00	No Ice	2.71	2.61	59.50
			-0.50			1/2" Ice	2.95	2.84	82.62
			0.00			1" Ice	3.20	3.09	108.98
1900MHz 4x40W RRH (Sprint)	A	From Face	1.00	0.0000	73.00	No Ice	2.71	2.61	59.50
			0.50			1/2" Ice	2.95	2.84	82.62
			0.00			1" Ice	3.20	3.09	108.98
1900MHz 4x40W RRH (Sprint)	B	From Face	1.00	0.0000	73.00	No Ice	2.71	2.61	59.50
			0.50			1/2" Ice	2.95	2.84	82.62
			0.00			1" Ice	3.20	3.09	108.98
1900MHz 4x40W RRH (Sprint)	C	From Face	1.00	0.0000	73.00	No Ice	2.71	2.61	59.50
			0.50			1/2" Ice	2.95	2.84	82.62
			0.00			1" Ice	3.20	3.09	108.98
800MHz 2x50W RRH (Sprint)	A	From Face	1.00	0.0000	75.00	No Ice	2.40	2.25	64.00
			0.00			1/2" Ice	2.61	2.46	86.12
			0.00			1" Ice	2.83	2.68	111.30
800MHz 2x50W RRH (Sprint)	B	From Face	1.00	0.0000	75.00	No Ice	2.40	2.25	64.00
			0.00			1/2" Ice	2.61	2.46	86.12
			0.00			1" Ice	2.83	2.68	111.30
800MHz 2x50W RRH (Sprint)	C	From Face	1.00	0.0000	75.00	No Ice	2.40	2.25	64.00
			0.00			1/2" Ice	2.61	2.46	86.12
			0.00			1" Ice	2.83	2.68	111.30
****									
14' T-Arm (Sprint)	A	None		0.0000	72.00	No Ice	5.80	5.80	336.00
						1/2" Ice	9.71	9.71	412.00
						1" Ice	13.62	13.62	488.00
14' T-Arm (Sprint)	B	None		0.0000	72.00	No Ice	5.80	5.80	336.00
						1/2" Ice	9.71	9.71	412.00
						1" Ice	13.62	13.62	488.00
14' T-Arm (Sprint)	C	None		0.0000	72.00	No Ice	5.80	5.80	336.00
						1/2" Ice	9.71	9.71	412.00

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
						1" Ice	13.62	13.62	488.00
LLPX310R (Clearwire)	A	From Face	3.00 2.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	4.87 5.22 5.59	1.97 2.24 2.52	27.56 53.68 83.80
LLPX310R (Clearwire)	B	From Face	3.00 2.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	4.87 5.22 5.59	1.97 2.24 2.52	27.56 53.68 83.80
LLPX310R (Clearwire)	C	From Face	3.00 2.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	4.87 5.22 5.59	1.97 2.24 2.52	27.56 53.68 83.80
APXVSPP18-C w/Mount Pipe (Sprint)	A	From Face	3.00 -7.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	8.56 9.21 9.83	6.95 8.13 9.03	82.55 150.82 227.06
APXVSPP18-C w/Mount Pipe (Sprint)	B	From Face	3.00 -7.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	8.56 9.21 9.83	6.95 8.13 9.03	82.55 150.82 227.06
APXVSPP18-C w/Mount Pipe (Sprint)	C	From Face	3.00 -7.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	8.56 9.21 9.83	6.95 8.13 9.03	82.55 150.82 227.06
2'x2'x8" Box (Sprint)	C	From Face	1.50 0.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	5.60 5.92 6.24	1.87 2.08 2.30	50.00 82.96 119.74
NEW									
APXVTM14-C-120 w/Mount Pipe (Sprint)	A	From Face	3.00 7.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	7.13 7.92 8.65	5.24 6.41 7.45	82.10 139.45 203.80
APXVTM14-C-120 w/Mount Pipe (Sprint)	B	From Face	3.00 7.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	7.13 7.92 8.65	5.24 6.41 7.45	82.10 139.45 203.80
APXVTM14-C-120 w/Mount Pipe (Sprint)	C	From Face	3.00 7.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	7.13 7.92 8.65	5.24 6.41 7.45	82.10 139.45 203.80
TD-RRH 8x20 (Sprint)	A	From Face	3.00 7.00 -3.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	4.32 4.60 4.89	1.41 1.61 1.83	66.13 90.06 117.33
TD-RRH 8x20 (Sprint)	B	From Face	3.00 7.00 -3.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	4.32 4.60 4.89	1.41 1.61 1.83	66.13 90.06 117.33
TD-RRH 8x20 (Sprint)	C	From Face	3.00 7.00 -3.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	4.32 4.60 4.89	1.41 1.61 1.83	66.13 90.06 117.33
****									
DR65-12-XXXBL w/Mount Pipe	A	From Face	1.00 0.00 0.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	9.72 11.23 12.77	66.35 155.65 254.88
DR65-12-XXXBL w/Mount Pipe	B	From Face	1.00 0.00 0.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	9.72 11.23 12.77	66.35 155.65 254.88
DR65-12-XXXBL w/Mount Pipe	C	From Face	1.00 0.00 0.00	0.0000	58.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	9.72 11.23 12.77	66.35 155.65 254.88
****									
12' T-Arm	C	None		0.0000	28.00	No Ice 1/2" Ice 1" Ice	4.70 5.33 5.96	4.70 5.33 5.96	333.00 400.00 467.00
4' Standoff	C	Stand-Off Left	2.00 7.00	0.0000	28.00	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00

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
4' Standoff	C	Stand-Off Right	1.50 2.00 -7.00	0.0000	28.00	1" Ice No Ice 1/2" Ice	7.10 2.72 4.91	7.10 2.72 4.91	128.00 50.00 89.00
10' Omni	C	From Face	1.50 2.00 -10.00	0.0000	28.00	1" Ice No Ice 1/2" Ice	7.10 2.75 3.78	7.10 2.75 3.78	128.00 30.00 50.21
10' Omni	C	From Face	6.00 2.00 10.00	0.0000	28.00	1" Ice No Ice 1/2" Ice	4.83 2.75 3.78	4.83 2.75 3.78	76.96 30.00 50.21
10' Omni	C	From Face	6.00 2.00 6.00	0.0000	28.00	1" Ice No Ice 1/2" Ice	4.83 2.75 3.78	4.83 2.75 3.78	76.96 30.00 50.21
12' Omni	C	From Face	6.00 2.00 -6.00	0.0000	28.00	1" Ice No Ice 1/2" Ice	4.83 3.30 4.53	4.83 3.30 4.53	76.96 35.00 59.18
12' Omni	C	From Face	8.00 2.00 2.50	0.0000	28.00	1" Ice No Ice 1/2" Ice	5.78 3.30 4.53	5.78 3.30 4.53	91.13 35.00 59.18
20' Omni	C	From Face	8.00 2.00 -2.50 14.00	0.0000	28.00	1" Ice No Ice 1/2" Ice 1" Ice	5.78 5.50 7.53 9.58	5.78 5.50 7.53 9.58	91.13 55.00 95.06 147.78

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
A-ANT-23G-1	C	Paraboloid w/Shroud (HP)	From Face	3.00 -2.00 0.00	0.0000		72.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	14.00 21.19 28.37
A-ANT-23G-1	C	Paraboloid w/Shroud (HP)	From Face	3.00 -2.00 2.50	0.0000		72.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	14.00 21.19 28.37
Andrew 3' w/Radome	A	Paraboloid w/Radome	From Face	3.00 -2.00 1.00	0.0000		72.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.87	100.00 138.35 176.70

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	8288.71					
Bracing Weight	4373.61					

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
Total Member Self-Weight	12662.32			1886.08	137.00	
Total Weight	27756.33			1886.08	137.00	
Wind 0 deg - No Ice		8.80	-23469.66	-1594688.42	-505.55	227.49
Wind 30 deg - No Ice		11657.17	-20324.35	-1380720.07	-792543.58	2327.42
Wind 60 deg - No Ice		20203.80	-11775.43	-799373.35	-1373773.94	3773.65
Wind 90 deg - No Ice		23393.38	18.10	3210.51	-1590998.54	4301.58
Wind 120 deg - No Ice		20248.48	11809.44	805622.31	-1377037.24	3690.54
Wind 150 deg - No Ice		11689.11	20423.78	1391744.46	-794873.97	2153.06
Wind 180 deg - No Ice		31.05	23516.71	1601888.94	-2129.37	-10.45
Wind 210 deg - No Ice		-11587.50	20335.66	1385311.26	787730.12	-2121.55
Wind 240 deg - No Ice		-20128.78	11750.50	801319.30	1368573.10	-3653.45
Wind 270 deg - No Ice		-23316.27	4.62	2226.50	1585643.64	-4220.76
Wind 300 deg - No Ice		-20200.14	-11809.17	-801836.12	1373780.85	-3507.19
Wind 330 deg - No Ice		-11655.80	-20382.89	-1384993.94	792717.68	-1965.74
Member Ice	3432.17					
Total Weight Ice	38890.47			4110.63	-33.13	
Wind 0 deg - Ice		1.87	-6576.42	-426516.99	-169.68	125.91
Wind 30 deg - Ice		3271.43	-5695.41	-368828.89	-214134.52	838.12
Wind 60 deg - Ice		5668.96	-3297.55	-211886.65	-371062.67	1319.77
Wind 90 deg - Ice		6560.01	4.09	4410.12	-429488.78	1467.16
Wind 120 deg - Ice		5678.61	3304.25	220595.59	-371767.74	1223.68
Wind 150 deg - Ice		3278.09	5715.97	378549.44	-214620.09	666.62
Wind 180 deg - Ice		6.60	6585.87	435426.22	-514.76	-78.68
Wind 210 deg - Ice		-3256.49	5697.24	377182.33	212977.47	-793.06
Wind 240 deg - Ice		-5653.18	3291.72	219681.17	369844.55	-1294.09
Wind 270 deg - Ice		-6543.63	1.23	4201.01	428226.33	-1450.97
Wind 300 deg - Ice		-5668.18	-3304.72	-212410.01	370939.64	-1182.74
Wind 330 deg - Ice		-3271.14	-5707.85	-369737.13	214047.03	-625.84
Total Weight	27756.33			1886.08	137.00	
Wind 0 deg - Service		3.05	-8121.81	-550728.95	17.82	78.71
Wind 30 deg - Service		4034.03	-7033.35	-476680.94	-274083.04	805.33
Wind 60 deg - Service		6991.64	-4074.95	-275494.16	-475229.55	1305.76
Wind 90 deg - Service		8095.41	6.26	2255.77	-550404.29	1488.43
Wind 120 deg - Service		7007.10	4086.72	279946.17	-476358.72	1277.00
Wind 150 deg - Service		4045.08	7067.76	482785.34	-274889.40	745.00
Wind 180 deg - Service		10.74	8138.09	555510.21	-544.05	-3.62
Wind 210 deg - Service		-4009.92	7037.27	480559.32	272802.99	-734.10
Wind 240 deg - Service		-6965.68	4066.32	278457.24	473815.46	-1264.17
Wind 270 deg - Service		-8068.73	1.60	1915.28	548936.89	-1460.47
Wind 300 deg - Service		-6990.38	-4086.63	-276346.33	475617.44	-1213.56
Wind 330 deg - Service		-4033.56	-7053.61	-478159.78	274528.79	-680.19

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
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice

Comb. No.	Description
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
L1	102.7 - 89.78	Pole	Max Tension	8	0.00	-0.02	-0.00
			Max. Compression	14	-6411.57	-90.59	-220.68
			Max. Mx	5	-3322.88	-28087.39	-109.42
			Max. My	8	-3320.35	-41.17	-28159.77
			Max. Vy	5	6176.71	-28087.39	-109.42
			Max. Vx	8	6178.09	-41.17	-28159.77
			Max. Torque	4			-242.19
L2	89.78 - 44.98	Pole	Max Tension	21	85004.15	344.56	-27896.02
			Max. Compression	14	-17903.09	407.86	-739.61
			Max. Mx	5	142.28	-343160.46	-544.44
			Max. My	8	241.16	-335.93	-345286.11
			Max. Vy	5	16415.67	-304016.26	-544.25
			Max. Vx	8	16542.39	26.23	-305569.31
			Max. Torque	6			-807.98
L3	44.98 - 0	Pole	Max Tension	21	141204.00	-3337.39	-99647.59
			Max. Compression	1	-18764.95	75.19	-1210.64
			Max. Mx	5	-11168.08	-1136738.09	-2178.46
			Max. My	8	-11055.85	-1548.68	-1144416.56
			Max. Vy	5	20038.22	-1136738.09	-2178.46
			Max. Vx	8	20140.94	-1548.68	-1144416.56
			Max. Torque	5			-4299.16
	0 - 35	Reinforcing	Max Tension	7	193765.71	-3735.51	-74.96
			Max. Compression	13	-203296.99	0.00	-0.00
			Max. Mx	6	166962.28	-4300.55	-15.59
			Max. My	11	191689.46	4.72	147.77

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	6	-150.33	-4300.55	-15.59
			Max. Vx	11	12.42	4.72	147.77
	30 - 65	Reinforcing	Max Tension	7	149715.78	-2501.13	-49.24
			Max. Compression	13	-158432.47	2908.99	37.98
			Max. Mx	4	112939.67	4223.82	-33.04
			Max. My	11	130048.51	9.36	127.58
			Max. Vy	6	-825.09	3150.63	22.49
			Max. Vx	11	-28.43	9.36	127.58

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	1	18764.95	-0.46	4.92
	Max. H_x	11	11230.85	19966.10	2.74
	Max. H_z	2	11152.51	-9.85	20100.10
	Max. M_x	2	1139515.73	-9.85	20100.10
	Max. M_z	5	1136738.09	-20028.56	-8.91
	Max. Torsion	11	4220.51	19966.10	2.74
	Min. Vert	21	-85977.73	-6.18	-5998.72
	Min. H_x	5	11185.40	-20028.56	-8.91
	Min. H_z	8	11073.37	-28.76	-20131.31
	Min. M_x	8	-1144416.56	-28.76	-20131.31
	Min. M_z	11	-1133016.26	19966.10	2.74
	Min. Torsion	5	-4299.18	-20028.56	-8.91
Reinf @ Azimuth 90 deg	Max. Vert	5	202706.78	-275.17	4.04
	Max. H_x	11	-191009.74	4588.25	-4.27
	Max. H_z	7	104055.58	-730.05	1153.54
	Min. Vert	11	-191009.74	4588.25	-4.27
	Min. H_x	18	95004.96	-911.53	3.75
	Min. H_z	3	103726.01	-729.56	-1141.25
Reinf @ Azimuth -30 deg	Max. Vert	13	203296.95	38.05	169.28
	Max. H_x	3	104568.11	1254.37	118.74
	Max. H_z	11	103492.32	-617.06	1079.09
	Min. Vert	7	-193087.33	-2216.39	-3983.13
	Min. H_x	6	-166295.64	-2568.89	-2718.63
	Min. H_z	7	-193087.33	-2216.39	-3983.13
Reinf @ Azimuth 210 deg	Max. Vert	9	203092.86	44.28	-168.60
	Max. H_x	7	105720.03	1270.32	-110.82
	Max. H_z	3	-191717.43	-2198.30	3938.40
	Min. Vert	3	-191717.43	-2198.30	3938.40
	Min. H_x	4	-165368.31	-2552.02	2694.69
	Min. H_z	11	104042.90	-621.02	-1082.18

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	27756.33	-0.00	0.00	1896.80	140.87	0.21
Dead+Wind 0 deg - No Ice	27756.33	8.80	-23469.66	-1633499.67	-473.72	233.62
Dead+Wind 30 deg - No Ice	27756.33	11657.17	-20324.35	-1414296.84	-811853.20	2331.10

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 60 deg - No Ice	27756.33	20203.80	-11775.43	-818867.67	-1407243.46	3774.28
Dead+Wind 90 deg - No Ice	27756.33	23393.38	18.10	3276.47	-1629695.89	4301.50
Dead+Wind 120 deg - No Ice	27756.33	20248.48	11809.44	825244.63	-1410581.89	3690.45
Dead+Wind 150 deg - No Ice	27756.33	11689.11	20423.78	1425555.59	-814237.84	2148.32
Dead+Wind 180 deg - No Ice	27756.33	31.05	23516.71	1640857.35	-2134.69	-18.50
Dead+Wind 210 deg - No Ice	27756.33	-11587.50	20335.66	1419057.51	806906.57	-2129.69
Dead+Wind 240 deg - No Ice	27756.33	-20128.78	11750.50	820784.55	1401904.11	-3659.34
Dead+Wind 270 deg - No Ice	27756.33	-23316.27	4.62	2270.39	1624311.81	-4221.30
Dead+Wind 300 deg - No Ice	27756.33	-20200.14	-11809.17	-821316.55	1407216.15	-3504.06
Dead+Wind 330 deg - No Ice	27756.33	-11655.80	-20382.89	-1418729.36	811997.48	-1959.74
Dead+Ice+Temp	38890.47	0.00	-0.00	4383.34	-64.91	1.11
Dead+Wind 0 deg+Ice+Temp	38890.47	1.87	-6576.42	-443069.55	-158.67	128.53
Dead+Wind 30 deg+Ice+Temp	38890.47	3271.43	-5695.41	-383143.31	-222428.12	843.71
Dead+Wind 60 deg+Ice+Temp	38890.47	5668.96	-3297.55	-220111.05	-385447.14	1326.78
Dead+Wind 90 deg+Ice+Temp	38890.47	6560.01	4.09	4574.44	-446138.66	1473.63
Dead+Wind 120 deg+Ice+Temp	38890.47	5678.61	3304.25	229144.86	-386178.36	1227.90
Dead+Wind 150 deg+Ice+Temp	38890.47	3278.09	5715.97	393225.97	-222931.93	667.47
Dead+Wind 180 deg+Ice+Temp	38890.47	6.60	6585.87	452312.15	-516.34	-81.39
Dead+Wind 210 deg+Ice+Temp	38890.47	-3256.49	5697.24	391809.90	221263.43	-798.58
Dead+Wind 240 deg+Ice+Temp	38890.47	-5653.18	3291.72	228197.06	384219.20	-1300.99
Dead+Wind 270 deg+Ice+Temp	38890.47	-6543.63	1.23	4357.84	444864.70	-1457.50
Dead+Wind 300 deg+Ice+Temp	38890.47	-5668.18	-3304.72	-220652.67	385353.14	-1187.20
Dead+Wind 330 deg+Ice+Temp	38890.47	-3271.14	-5707.85	-384084.40	222371.02	-626.92
Dead+Wind 0 deg - Service	27756.33	3.05	-8121.80	-564435.52	-79.66	80.68
Dead+Wind 30 deg - Service	27756.33	4034.03	-7033.35	-488533.09	-281052.46	809.16
Dead+Wind 60 deg - Service	27756.33	6991.64	-4074.95	-282305.65	-487240.84	1310.32
Dead+Wind 90 deg - Service	27756.33	8095.41	6.26	2400.00	-564295.75	1492.36
Dead+Wind 120 deg - Service	27756.33	7007.10	4086.72	287044.90	-488396.59	1279.32
Dead+Wind 150 deg - Service	27756.33	4045.08	7067.76	494963.30	-281878.00	745.08
Dead+Wind 180 deg - Service	27756.33	10.74	8138.08	569512.76	-654.62	-5.69
Dead+Wind 210 deg - Service	27756.33	-4009.92	7037.27	492687.39	279546.00	-737.72
Dead+Wind 240 deg - Service	27756.33	-6965.68	4066.32	285520.94	485597.47	-1268.46
Dead+Wind 270 deg - Service	27756.33	-8068.73	1.60	2051.73	562598.91	-1464.42
Dead+Wind 300 deg - Service	27756.33	-6990.38	-4086.63	-283176.22	487440.05	-1216.25
Dead+Wind 330 deg - Service	27756.33	-4033.56	-7053.61	-490046.62	281310.86	-680.64

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-27756.33	0.00	0.00	27756.33	-0.00	0.000%
2	8.80	-27756.33	-23469.66	-8.80	27756.33	23469.66	0.000%
3	11657.17	-27756.33	-20324.35	-11657.17	27756.33	20324.35	0.000%
4	20203.80	-27756.33	-11775.43	-20203.80	27756.33	11775.43	0.000%
5	23393.38	-27756.33	18.10	-23393.38	27756.33	-18.10	0.000%
6	20248.48	-27756.33	11809.44	-20248.48	27756.33	-11809.44	0.000%
7	11689.11	-27756.33	20423.78	-11689.11	27756.33	-20423.78	0.000%
8	31.05	-27756.33	23516.71	-31.05	27756.33	-23516.71	0.000%
9	-11587.50	-27756.33	20335.66	11587.50	27756.33	-20335.66	0.000%
10	-20128.78	-27756.33	11750.50	20128.78	27756.33	-11750.50	0.000%
11	-23316.27	-27756.33	4.62	23316.27	27756.33	-4.62	0.000%
12	-20200.14	-27756.33	-11809.17	20200.14	27756.33	11809.17	0.000%
13	-11655.80	-27756.33	-20382.89	11655.80	27756.33	20382.89	0.000%
14	0.00	-38890.47	0.00	-0.00	38890.47	0.00	0.000%
15	1.87	-38890.47	-6576.42	-1.87	38890.47	6576.42	0.000%
16	3271.43	-38890.47	-5695.41	-3271.43	38890.47	5695.41	0.000%
17	5668.96	-38890.47	-3297.55	-5668.96	38890.47	3297.55	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
18	6560.01	-38890.47	4.09	-6560.01	38890.47	-4.09	0.000%
19	5678.61	-38890.47	3304.25	-5678.61	38890.47	-3304.25	0.000%
20	3278.09	-38890.47	5715.97	-3278.09	38890.47	-5715.97	0.000%
21	6.60	-38890.47	6585.87	-6.60	38890.47	-6585.87	0.000%
22	-3256.49	-38890.47	5697.24	3256.49	38890.47	-5697.24	0.000%
23	-5653.18	-38890.47	3291.72	5653.18	38890.47	-3291.72	0.000%
24	-6543.63	-38890.47	1.23	6543.63	38890.47	-1.23	0.000%
25	-5668.18	-38890.47	-3304.72	5668.18	38890.47	3304.72	0.000%
26	-3271.14	-38890.47	-5707.85	3271.14	38890.47	5707.85	0.000%
27	3.05	-27756.33	-8121.81	-3.05	27756.33	8121.80	0.000%
28	4034.03	-27756.33	-7033.35	-4034.03	27756.33	7033.35	0.000%
29	6991.64	-27756.33	-4074.95	-6991.64	27756.33	4074.95	0.000%
30	8095.41	-27756.33	6.26	-8095.41	27756.33	-6.26	0.000%
31	7007.10	-27756.33	4086.72	-7007.10	27756.33	-4086.72	0.000%
32	4045.08	-27756.33	7067.76	-4045.08	27756.33	-7067.76	0.000%
33	10.74	-27756.33	8138.09	-10.74	27756.33	-8138.08	0.000%
34	-4009.92	-27756.33	7037.27	4009.92	27756.33	-7037.27	0.000%
35	-6965.68	-27756.33	4066.32	6965.68	27756.33	-4066.32	0.000%
36	-8068.73	-27756.33	1.60	8068.73	27756.33	-1.60	0.000%
37	-6990.38	-27756.33	-4086.63	6990.38	27756.33	4086.63	0.000%
38	-4033.56	-27756.33	-7053.61	4033.56	27756.33	7053.61	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	0.00004921
3	Yes	5	0.00000001	0.00004564
4	Yes	5	0.00000001	0.00004092
5	Yes	5	0.00000001	0.00001081
6	Yes	5	0.00000001	0.00004806
7	Yes	5	0.00000001	0.00003995
8	Yes	4	0.00000001	0.00004310
9	Yes	5	0.00000001	0.00004281
10	Yes	5	0.00000001	0.00004665
11	Yes	5	0.00000001	0.00000988
12	Yes	5	0.00000001	0.00004158
13	Yes	5	0.00000001	0.00004797
14	Yes	4	0.00000001	0.00000480
15	Yes	5	0.00000001	0.00000944
16	Yes	5	0.00000001	0.00001124
17	Yes	5	0.00000001	0.00001109
18	Yes	5	0.00000001	0.00000983
19	Yes	5	0.00000001	0.00001161
20	Yes	5	0.00000001	0.00001120
21	Yes	5	0.00000001	0.00000961
22	Yes	5	0.00000001	0.00001126
23	Yes	5	0.00000001	0.00001162
24	Yes	5	0.00000001	0.00000975
25	Yes	5	0.00000001	0.00001110
26	Yes	5	0.00000001	0.00001126
27	Yes	4	0.00000001	0.00004092
28	Yes	5	0.00000001	0.00000764
29	Yes	5	0.00000001	0.00000618
30	Yes	4	0.00000001	0.00012044

31	Yes	5	0.00000001	0.00000856
32	Yes	5	0.00000001	0.00000604
33	Yes	4	0.00000001	0.00004025
34	Yes	5	0.00000001	0.00000625
35	Yes	5	0.00000001	0.00000837
36	Yes	4	0.00000001	0.00011466
37	Yes	5	0.00000001	0.00000621
38	Yes	5	0.00000001	0.00000750

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	102.7 - 89.78	18.835	33	1.7461	0.0076
L2	89.78 - 44.98	14.154	33	1.6894	0.0073
L3	48.78 - 0	3.813	32	0.7457	0.0035

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.00	4' T-Arm	33	18.575	1.7449	0.0076	7246
92.00	PiROD 13' Platform w/handrails (Monopole)	33	14.927	1.7082	0.0074	3429
82.00	PiROD 13' Platform w/handrails (Monopole)	33	11.610	1.5795	0.0069	2736
75.00	800MHz 2x50W RRH	33	9.547	1.4332	0.0063	2678
74.50	A-ANT-23G-1	33	9.408	1.4214	0.0062	2674
73.00	Andrew 3' w/Radome	33	8.998	1.3853	0.0061	2662
72.00	A-ANT-23G-1	33	8.730	1.3606	0.0060	2654
58.00	DR65-12-XXXBL w/Mount Pipe	33	5.463	0.9852	0.0045	2547
28.00	12' T-Arm	32	1.451	0.3454	0.0018	4322

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	102.7 - 89.78	54.170	8	5.0231	0.0219
L2	89.78 - 44.98	40.722	8	4.8607	0.0211
L3	48.78 - 0	10.983	7	2.1486	0.0101

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.00	4' T-Arm	8	53.423	5.0197	0.0219	2559
92.00	PiROD 13' Platform w/handrails (Monopole)	8	42.944	4.9145	0.0213	1210
82.00	PiROD 13' Platform w/handrails (Monopole)	7	33.411	4.5449	0.0197	962
75.00	800MHz 2x50W RRH	7	27.483	4.1247	0.0180	940
74.50	A-ANT-23G-1	7	27.083	4.0909	0.0179	938
73.00	Andrew 3' w/Radome	7	25.904	3.9872	0.0175	933
72.00	A-ANT-23G-1	7	25.134	3.9162	0.0172	930
58.00	DR65-12-XXXBL w/Mount Pipe	7	15.732	2.8374	0.0129	889
28.00	12' T-Arm	7	4.179	0.9961	0.0050	1502

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	102.7 - 89.78 (1)	TP13x13x0.25	12.92	0.00	0.0	21.000	10.0138	-3320.21	210290.00	0.016
L2	89.78 - 44.98 (2)	TP26.7925x13x0.25	44.80	0.00	0.0	39.000	16.1707	-10303.80	630658.00	0.016
L3	44.98 - 0 (3)	TP40x25.1226x0.3125	48.78	0.00	0.0	39.000	39.3650	-11050.50	1535240.00	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	102.7 - 89.78 (1)	TP13x13x0.25	28169.17	-10.790	23.100	0.467	0.00	0.000	23.100	0.000
L2	89.78 - 44.98 (2)	TP26.7925x13x0.25	305569.17	-45.290	39.000	1.161	0.00	0.000	39.000	0.000
L3	44.98 - 0 (3)	TP40x25.1226x0.3125	1145075.00	-35.644	39.000	0.914	0.00	0.000	39.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	102.7 - 89.78 (1)	TP13x13x0.25	0.016	0.467	0.000	0.483 ✓	1.333	H1-3 ✓
L2	89.78 - 44.98 (2)	TP26.7925x13x0.25	0.016	1.161	0.000	1.178 ✓	1.333	H1-3 ✓
L3	44.98 - 0 (3)	TP40x25.1226x0.3125	0.007	0.914	0.000	0.921 ✓	1.333	H1-3 ✓

Reinforcing 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 $\frac{P}{P_a}$
L3	35 - 0	MS-600	35.00	1.36	45.4 K=0.80	31.300	6.0000	-202985.00	187801.00	1.081
L3	65 - 30	MS-600	35.00	1.36	45.4 K=0.80	31.300	6.0000	-158432.00	187801.00	0.844

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L3	35 - 0	MS-600	3667.57	-7.335	48.750	0.150	44.85	-0.538	48.750	0.011
L3	65 - 30	MS-600	2908.99	-5.818	48.750	0.119	37.98	-0.456	48.750	0.009

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L3	35 - 0	MS-600	1.081	0.150	0.011	1.242 ✔	1.333	H1-3 ✔
L3	65 - 30	MS-600	0.844	0.119	0.009	0.972 ✔	1.333	H1-3 ✔

Tension Checks

Reinforcing 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 $\frac{P}{P_a}$
L3	35 - 0	MS-600	35.00	1.36	56.7	40.000	4.7500	193766.00	190000.00	1.020
L3	65 - 30	MS-600	35.00	1.36	56.7	40.000	4.7500	149092.00	190000.00	0.785

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L3	35 - 0	MS-600	-3735.51	7.471	48.750	0.153	-74.96	0.900	48.750	0.018
L3	65 - 30	MS-600	-2830.90	5.662	48.750	0.116	-55.64	0.668	48.750	0.014

tnxTower	Job	Page
	Com-Tronics (CT60XC969)	17 of 17
Ramaker & Associates, Inc. 1120 Dallas Street Sauk City, WI 53583 Phone: (608) 643-4100 FAX: (608) 643-7999	**Project** 27746	**Date** 16:47:43 07/22/14
	Client Sprint	**Designed by** tmoore

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L3	35 - 0	MS-600	1.020	0.153	0.018	1.192 ✓	1.333	H2-1 ✓
L3	65 - 30	MS-600	0.785	0.116	0.014	0.915 ✓	1.333	H2-1 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	102.7 - 89.78	Pole	TP13x13x0.25	1	-3320.21	280316.56	36.2	Pass
L2	89.78 - 44.98	Pole	TP26.7925x13x0.25	2	-10303.80	840667.08	88.3	Pass
L3	44.98 - 0	Pole	TP40x25.1226x0.3125	3	86290.40	2046474.84	69.1	Pass
	35 - 0	Reinforcing	MS-600	8	-202985.00	250338.72	93.2	Pass
	65 - 30	Reinforcing	MS-600	5	-158432.00	250338.72	72.9	Pass
							Summary	
						Pole (L2)	88.3	Pass
						Reinforcing (L3)	93.2	Pass
						RATING =	**93.2**	**Pass**

CAISSON Version 13.00 5:27:08 PM Tuesday, July 22, 2014
Ramaker & Associates, Inc.

* CAISSON - Pier Foundations Analysis and Design - Copyright Power Line Systems, Inc. 1993-2013 *

Project Title: 27746
Project Notes: CT60XC969-A

Calculation Method: Full BCD

******* I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
6.00	1.00	4.00	60.00

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	3.33	0.00	100.0			
2	Sand	0.60	3.33	100.0		3.000	30.00
3	Sand	15.00	3.93	169.0		5.045	42.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
1641.7	27.8	23.53	2.10

******* R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	Pressure Due To Axial Load (psf)	Pressure Due To Weight (psf)	Total End-Bearing Pressure (psf)
17.000	72.100	981.7	2550.0	3531.7

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft^3)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	1.00	3.33	100.0			0.00	2.67
Sand	4.33	0.60	100.0		3.000	11.76	4.64
Sand	4.93	8.11	169.0		5.045	793.42	9.84
Sand	13.04	3.96	169.0		5.045	-755.25	15.12

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	49.9	3559.1	23.8	1694.8
1.70	49.9	3644.0	23.8	1735.2
3.40	49.9	3728.9	23.8	1775.6
5.10	31.9	3807.8	15.2	1813.2
6.80	-55.4	3794.1	-26.4	1806.7
8.50	-187.0	3594.3	-89.1	1711.6
10.20	-363.0	3133.0	-172.9	1491.9
11.90	-583.4	2334.9	-277.8	1111.9
13.60	-662.4	1176.4	-315.4	560.2
15.30	-353.4	306.7	-168.3	146.0
17.00	-0.0	0.0	-0.0	0.0

Reinforcement and Capacity

Total Reinforcement Percent	Reinforcement Area (in^2)	Usable Axial Capacity (kips)	Usable Moment Capacity (ft-k)
0.40	16.29	27.8	2212.2

US Standard Re-Bars (Select one of the following)

Quantity	Name	Area (in^2)	Diameter (in)	Spacing (in)
82	#4	0.20	0.500	2.38
53	#5	0.31	0.625	3.68
38	#6	0.44	0.750	5.13
28	#7	0.60	0.875	6.96
21	#8	0.79	1.000	9.28
17	#9	1.00	1.128	11.46
13	#10	1.27	1.270	14.98
11	#11	1.56	1.410	17.71
8	#14	2.25	1.693	24.35

APPENDIX C

MOUNT CALCULATIONS

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

Job: CT60XC969
Project: 27746
By: EDK
Date: 3/24/2014

Wind Load on Antennas TIA-222-G

2.6.9.6 Velocity Pressure

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

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	C		Exposure Category
V:	111	mph	Basic Wind Speed (Annex B)
z:	72	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.18		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 =	**35.4**	**psf**	
G_h:	1.00		Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_f	$F = q_z G_h C_a A_a$	
HSS4X4X1/8 x 4 ft	48.0 in	4.0 in	12.0	Flat	1.567	1.33 sf	**73.9 lb**	18.5 plf
HSS4X4X1/8 x 12 ft	144.0 in	4.0 in	36.0	Flat	2.000	4.00 sf	**283.1 lb**	23.6 plf
Pipe2STD x 7 ft	84.0 in	2.4 in	35.3	Round	1.200	1.39 sf	**59.0 lb**	8.4 plf
PX2F-52	27.2 in	0.0 in	1.0	Generic	0.535	4.03 sf	**76.4 lb**	
Fiber Box	30.0 in	18.0 in	1.7	Flat	1.200	3.75 sf	**159.3 lb**	
APXVSPP18-C-A20	72.0 in	11.9 in	6.1	Flat	1.358	5.95 sf	**285.7 lb**	
LLPX310R	42.4 in	11.8 in	3.6	Flat	1.248	3.48 sf	**153.7 lb**	
VHLP1-23	15.3 in	0.0 in	1.0	Generic	1.262	1.28 sf	**57.1 lb**	
VHLP1-23	15.3 in	0.0 in	1.0	Generic	1.262	1.28 sf	**57.1 lb**	
1900 MHz RRU	23.8 in	13.8 in	1.7	Flat	1.200	2.28 sf	**96.8 lb**	
1900 MHz RRU	23.8 in	13.8 in	1.7	Flat	1.200	2.28 sf	**96.8 lb**	
800 MHz RRU	19.2 in	18.5 in	1.0	Flat	1.200	2.48 sf	**105.2 lb**	
APXVTM14-C-120	55.1 in	11.8 in	4.7	Flat	1.296	4.52 sf	**207.2 lb**	
TD-RRH8x20	25.4 in	17.5 in	1.5	Flat	1.200	3.09 sf	**131.1 lb**	

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

Job: CT60XC969
Project: 27746
By: EDK
Date: 3/24/2014

Wind Load on Antennas TIA-222-G

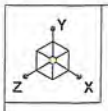
2.6.9.6 Velocity Pressure

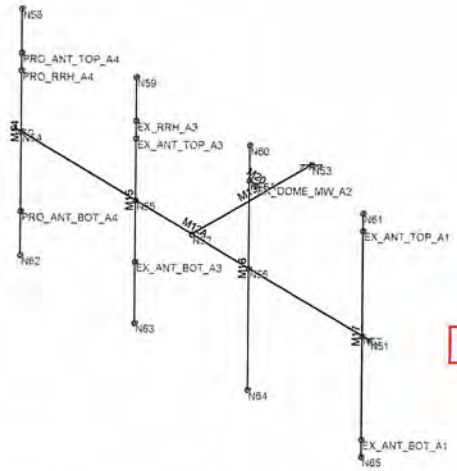
$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

Occupancy:	II	Classification of Structures (Table 2-1)
Exposure:	C	Exposure Category
V:	111 mph	Basic Wind Speed (Annex B)
z:	72 ft	Height above ground level to the center of the antenna
I:	1.00	Importance Factor (Table 2-3)
K_z:	1.18	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 =	**35.4 psf**	
G_h:	1.00	Appurtenances and their Connections

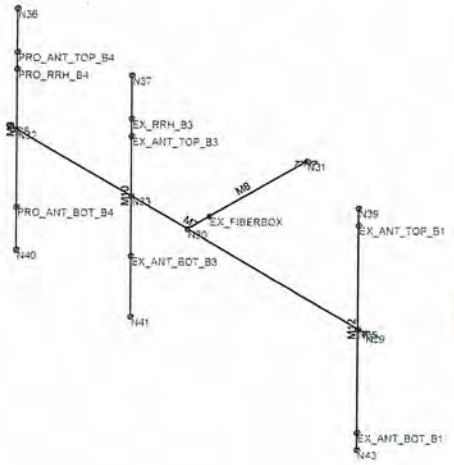
Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	$F = q_z G_h C_a A_a$	
HSS4X4X1/8 x 4 ft	48.0 in	4.0 in	12.0	Flat	1.567	1.33 sf	**73.9 lb**	18.5 plf
HSS4X4X1/8 x 12 ft	144.0 in	4.0 in	36.0	Flat	2.000	4.00 sf	**283.1 lb**	23.6 plf
Pipe2STD x 7 ft	84.0 in	2.4 in	35.3	Round	1.200	1.39 sf	**59.0 lb**	8.4 plf
PX2F-52	27.2 in	0.0 in	1.0	Generic	0.242	4.03 sf	**34.6 lb**	
Fiber Box	30.0 in	8.0 in	3.8	Flat	1.256	1.67 sf	**74.1 lb**	
APXVSPP18-C-A20	72.0 in	7.0 in	10.3	Flat	1.509	3.50 sf	**187.2 lb**	
LLPX310R	42.4 in	4.5 in	9.4	Flat	1.479	1.33 sf	**69.8 lb**	
VHLP1-23	15.3 in	0.0 in	1.0	Generic	0.625	1.28 sf	**28.3 lb**	
VHLP1-23	15.3 in	0.0 in	1.0	Generic	0.625	1.28 sf	**28.3 lb**	
1900 MHz RRU	23.8 in	9.0 in	2.7	Flat	1.207	1.48 sf	**63.3 lb**	
1900 MHz RRU	23.8 in	9.0 in	2.7	Flat	1.207	1.48 sf	**63.3 lb**	
800 MHz RRU	19.2 in	10.4 in	1.8	Flat	1.200	1.39 sf	**59.2 lb**	
APXVTM14-C-120	55.1 in	5.9 in	9.3	Flat	1.478	2.26 sf	**118.1 lb**	
TD-RRH8x20	25.4 in	5.7 in	4.5	Flat	1.287	1.01 sf	**45.8 lb**	

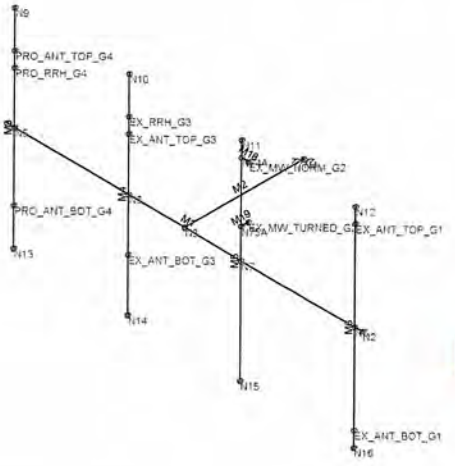




ALPHA SECTOR



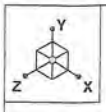
BETA SECTOR

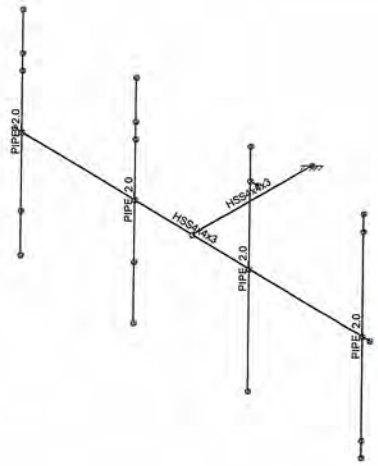


GAMMA SECTOR

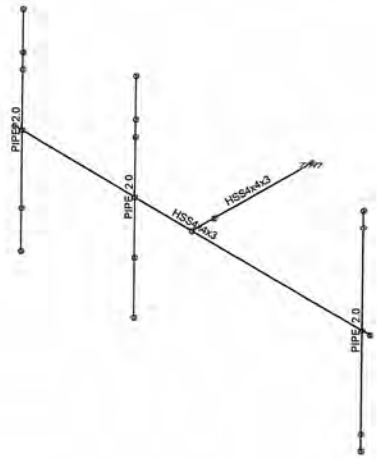
Envelope Only Solution

R&A	CT60XC969	SK - 1
EDK		Mar 24, 2014 at 9:45 AM
27746		27746 T-Arm 12.5-4 ae.r3d

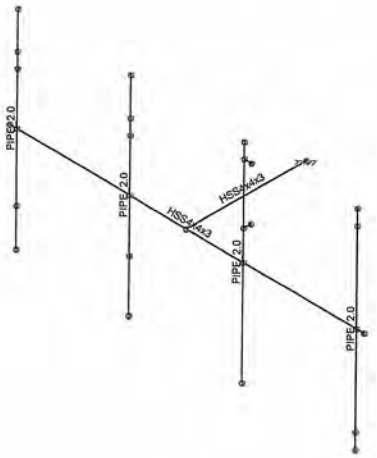




ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR

Envelope Only Solution

R&A	CT60XC969	SK - 2
EDK		Mar 24, 2014 at 9:45 AM
27746		27746 T-Arm 12.5-4 ae.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/f...	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
7	Q235	29000	11154	.3	.65	.49	34	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	horiz face	HSS4x4x3	Beam	SquareTube	Q235	Typical	2.58	6.21	6.21	10
2	EX pipe mount	PIPE_2.0	Beam	Pipe	A53 Gr....	Typical	1.02	.627	.627	1.25
3	EX standoff	HSS4x4x3	Beam	SquareTube	Q235	Typical	2.58	6.21	6.21	10

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			horiz face	Beam	SquareTube	Q235	Typical
2	M2	N3	N4			EX standoff	Beam	SquareTube	Q235	Typical
3	M3	N13	N9			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
4	M4	N14	N10			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
5	M5	N15	N11			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
6	M6	N16	N12			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
7	M7	N28	N29			horiz face	Beam	SquareTube	Q235	Typical
8	M8	N30	N31			EX standoff	Beam	SquareTube	Q235	Typical
9	M9	N40	N36			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
10	M10	N41	N37			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
11	M12	N43	N39			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
12	M12A	N50	N51			horiz face	Beam	SquareTube	Q235	Typical
13	M13	N52	N53			EX standoff	Beam	SquareTube	Q235	Typical
14	M14	N62	N58			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
15	M15	N63	N59			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
16	M16	N64	N60			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
17	M17	N65	N61			EX pipe mount	Beam	Pipe	A53 Gr. B	Typical
18	M18	N74A	EX_MW_...			RIGID	None	None	RIGID	Typical
19	M19	N75A	EX_MW_T...			RIGID	None	None	RIGID	Typical
20	M20	N76A	EX_DOM...			RIGID	None	None	RIGID	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From...
1	N1	.25	0	0	0	
2	N2	12.25	0	0	0	
3	N3	6.25	0	0	0	
4	N4	6.25	0	-4	0	
5	N5	.5	0	0	0	
6	N6	4.33333	0	0	0	
7	N7	8.16667	0	0	0	
8	N8	12	0	0	0	
9	N9	.5	3.5	0	0	
10	N10	4.33333	3.5	0	0	
11	N11	8.16667	3.5	0	0	
12	N12	12	3.5	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From...
13	N13	.5	-3.5	0	0	
14	N14	4.33333	-3.5	0	0	
15	N15	8.16667	-3.5	0	0	
16	N16	12	-3.5	0	0	
17	EX_ANT_TOP_G1	12	3	0	0	
18	EX_ANT_BOT_G1	12	-3	0	0	
19	EX_ANT_TOP_G3	4.33333	1.75	0	0	
20	EX_ANT_BOT_G3	4.33333	-1.75	0	0	
21	EX_RRH_G3	4.33333	2.25	0	0	
22	PRO_ANT_TOP_G4	.5	2.25	0	0	
23	PRO_ANT_BOT_G4	.5	-2.25	0	0	
24	PRO_RRH_G4	.5	1.75	0	0	
25	N28	.25	15	0	0	
26	N29	12.25	15	0	0	
27	N30	6.25	15	0	0	
28	N31	6.25	15	-4	0	
29	N32	.5	15	0	0	
30	N33	4.33333	15	0	0	
31	N35	12	15	0	0	
32	N36	.5	18.5	0	0	
33	N37	4.33333	18.5	0	0	
34	N39	12	18.5	0	0	
35	N40	.5	11.5	0	0	
36	N41	4.33333	11.5	0	0	
37	N43	12	11.5	0	0	
38	EX_FIBERBOX	6.25	15	-.75	0	
39	EX_ANT_TOP_B1	12	18	0	0	
40	EX_ANT_BOT_B1	12	12	0	0	
41	EX_ANT_TOP_B3	4.33333	16.75	0	0	
42	EX_ANT_BOT_B3	4.33333	13.25	0	0	
43	EX_RRH_B3	4.33333	17.25	0	0	
44	PRO_ANT_TOP_B4	.5	17.25	0	0	
45	PRO_ANT_BOT_B4	.5	12.75	0	0	
46	PRO_RRH_B4	.5	16.75	0	0	
47	N50	.25	30	0	0	
48	N51	12.25	30	0	0	
49	N52	6.25	30	0	0	
50	N53	6.25	30	-4	0	
51	N54	.5	30	0	0	
52	N55	4.33333	30	0	0	
53	N56	8.16667	30	0	0	
54	N57	12	30	0	0	
55	N58	.5	33.5	0	0	
56	N59	4.33333	33.5	0	0	
57	N60	8.16667	33.5	0	0	
58	N61	12	33.5	0	0	
59	N62	.5	26.5	0	0	
60	N63	4.33333	26.5	0	0	
61	N64	8.16667	26.5	0	0	
62	N65	12	26.5	0	0	
63	EX_ANT_TOP_A1	12	33	0	0	
64	EX_ANT_BOT_A1	12	27	0	0	
65	EX_ANT_TOP_A3	4.33333	31.75	0	0	
66	EX_ANT_BOT_A3	4.33333	28.25	0	0	
67	EX_RRH_A3	4.33333	32.25	0	0	
68	PRO_ANT_TOP_A4	.5	32.25	0	0	
69	PRO_ANT_BOT_A4	.5	27.75	0	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From...
70	PRO_RRH_A4	.5	31.75	0	0	
71	EX_MW_NORM_G2	8.41667	3	0	0	
72	EX_MW_TURNED_G2	8.16667	1	-.25	0	
73	N74A	8.16667	3	0	0	
74	N75A	8.16667	1	0	0	
75	EX_DOME_MW_A2	8.41667	32.5	0	0	
76	N76A	8.16667	32.5	0	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	N4	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
2	N31	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	
3	N53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction	

Joint Loads and Enforced Displacements (BLC 1 : DL)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb...
1	EX_ANT_TOP_G1	L	Y	-57
2	EX_ANT_TOP_G3	L	Y	-28
3	EX_RRH_G3	L	Y	-68
4	PRO_ANT_TOP_G4	L	Y	-53
5	PRO_RRH_G4	L	Y	-66
6	EX_ANT_TOP_B1	L	Y	-57
7	EX_ANT_TOP_B3	L	Y	-28
8	EX_RRH_B3	L	Y	-68
9	PRO_ANT_TOP_B4	L	Y	-53
10	PRO_RRH_B4	L	Y	-66
11	EX_ANT_TOP_A1	L	Y	-57
12	EX_ANT_TOP_A3	L	Y	-28
13	EX_RRH_A3	L	Y	-68
14	PRO_ANT_TOP_A4	L	Y	-53
15	PRO_RRH_A4	L	Y	-66
16	EX_MW_NORM_G2	L	Y	-14
17	EX_MW_TURNED_G2	L	Y	-14
18	EX_DOME_MW_A2	L	Y	-40
19	EX_FIBERBOX	L	Y	-45

Joint Loads and Enforced Displacements (BLC 2 : WLz)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb...
1	EX_MW_TURNED_G2	L	Z	-28.3
2	EX_DOME_MW_A2	L	Z	-76.4
3	PRO_RRH_G4	L	Z	-45.8
4	PRO_RRH_B4	L	Z	-45.8
5	PRO_RRH_A4	L	Z	-45.8
6	EX_MW_NORM_G2	L	Z	-57.1
7	EX_FIBERBOX	L	Z	-74.1
8	EX_ANT_TOP_G3	L	Z	-76.8
9	EX_ANT_BOT_G3	L	Z	-76.8
10	EX_ANT_TOP_B3	L	Z	-76.8
11	EX_ANT_BOT_B3	L	Z	-76.8
12	EX_ANT_TOP_A3	L	Z	-76.8
13	EX_ANT_BOT_A3	L	Z	-76.8
14	PRO_ANT_TOP_G4	L	Z	-103.6
15	PRO_ANT_BOT_G4	L	Z	-103.6

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb...
16	PRO_ANT_TOP_B4	L	Z	-103.6
17	PRO_ANT_BOT_B4	L	Z	-103.6
18	PRO_ANT_TOP_A4	L	Z	-103.6
19	PRO_ANT_BOT_A4	L	Z	-103.6
20	EX_RRH_G3	L	Z	-105.2
21	EX_RRH_B3	L	Z	-105.2
22	EX_RRH_A3	L	Z	-105.2
23	EX_ANT_TOP_G1	L	Z	-142.9
24	EX_ANT_BOT_G1	L	Z	-142.9
25	EX_ANT_TOP_B1	L	Z	-142.9
26	EX_ANT_BOT_B1	L	Z	-142.9
27	EX_ANT_TOP_A1	L	Z	-142.9
28	EX_ANT_BOT_A1	L	Z	-142.9

Joint Loads and Enforced Displacements (BLC 3 : WLx)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb...
1	EX_MW_NORM_G2	L	X	-28.3
2	EX_ANT_TOP_G3	L	X	-34.9
3	EX_ANT_BOT_G3	L	X	-34.9
4	EX_ANT_TOP_B3	L	X	-34.9
5	EX_ANT_BOT_B3	L	X	-34.9
6	EX_ANT_TOP_A3	L	X	-34.9
7	EX_ANT_BOT_A3	L	X	-34.9
8	EX_MW_TURNED_G2	L	X	-57.1
9	PRO_ANT_TOP_G4	L	X	-59
10	PRO_ANT_BOT_G4	L	X	-59
11	PRO_ANT_TOP_B4	L	X	-59
12	PRO_ANT_BOT_B4	L	X	-59
13	PRO_ANT_TOP_A4	L	X	-59
14	PRO_ANT_BOT_A4	L	X	-59
15	EX_RRH_G3	L	X	-59.2
16	EX_RRH_B3	L	X	-59.2
17	EX_RRH_A3	L	X	-59.2
18	EX_DOME_MW_A2	L	X	-76.4
19	EX_ANT_TOP_G1	L	X	-93.6
20	EX_ANT_BOT_G1	L	X	-93.6
21	EX_ANT_TOP_B1	L	X	-93.6
22	EX_ANT_BOT_B1	L	X	-93.6
23	EX_ANT_TOP_A1	L	X	-93.6
24	EX_ANT_BOT_A1	L	X	-93.6
25	PRO_RRH_G4	L	X	-131.1
26	PRO_RRH_B4	L	X	-131.1
27	PRO_RRH_A4	L	X	-131.1
28	EX_FIBERBOX	L	X	-159.3

Member Distributed Loads (BLC 2 : WLz)

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,...
1	M3	Z	-8.4	-8.4	0	1.25
2	M4	Z	-8.4	-8.4	0	1.75
3	M3	Z	-8.4	-8.4	5.75	7
4	M4	Z	-8.4	-8.4	5.75	7
5	M5	Z	-8.4	-8.4	0	0
6	M9	Z	-8.4	-8.4	0	1.25
7	M9	Z	-8.4	-8.4	5.75	7
8	M10	Z	-8.4	-8.4	0	1.75

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

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,...
9	M10	Z	-8.4	-8.4	5.75	7
10	M14	Z	-8.4	-8.4	0	1.25
11	M14	Z	-8.4	-8.4	5.75	7
12	M15	Z	-8.4	-8.4	0	1.75
13	M15	Z	-8.4	-8.4	5.75	7
14	M16	Z	-8.4	-8.4	0	0
15	M1	Z	-23.6	-23.6	0	0
16	M7	Z	-23.6	-23.6	0	0
17	M12A	Z	-23.6	-23.6	0	0

Member Distributed Loads (BLC 3 : WLx)

	Member Label	Direction	Start Magnitude[...	End Magnitude[l...	Start Location[ft,...	End Location[ft,...
1	M3	X	-8.4	-8.4	0	0
2	M4	X	-8.4	-8.4	0	0
3	M5	X	-8.4	-8.4	0	0
4	M6	X	-8.4	-8.4	0	0
5	M9	X	-8.4	-8.4	0	0
6	M10	X	-8.4	-8.4	0	0
7	M12	X	-8.4	-8.4	0	0
8	M14	X	-8.4	-8.4	0	0
9	M15	X	-8.4	-8.4	0	0
10	M16	X	-8.4	-8.4	0	0
11	M17	X	-8.4	-8.4	0	0
12	M2	X	-18.5	-18.5	0	0
13	M8	X	-18.5	-18.5	0	0
14	M13	X	-18.5	-18.5	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(...
1	DL	DL		-1		19				
2	WLz	WLZ				28		17		
3	WLx	WLX				28		14		
4	LL1	LL					3			
5	LL2	None					3			

Load Combinations

	Description	So...	P...	S...	BLC	Fa...	BLC	Factor	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
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	WLX	1.6												
5	1.2DL-1.6WLx	Yes	Y		DL	1.2	WLX	-1.6												
6	1.2DL+1.6(0.75WLz+0.75WLx)	Yes	Y		DL	1.2	WLZ	1.2	WLX	1.2										
7	1.2DL+1.6(0.75WLz-0.75WLx)	Yes	Y		DL	1.2	WLZ	1.2	WLX	-1.2										
8	1.2DL-1.6(0.75WLz-0.75WLx)	Yes	Y		DL	1.2	WLZ	-1.2	WLX	1.2										
9	1.2DL-1.6(0.75WLz+0.75WLx)	Yes	Y		DL	1.2	WLZ	-1.2	WLX	-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												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Factor	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
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	WLX	.16										
15	1.2DL+1.5LL-10%1.6WLx	Yes	Y		DL	1.2	LL	1.5	WLX	-.16										
16	1.2DL+1.5LL+10%1.6(0.75WLz+0...	Yes	Y		DL	1.2	LL	1.5	WLZ	.12	WLX	.12								
17	1.2DL+1.5LL+10%1.6(0.75WLz-0...	Yes	Y		DL	1.2	LL	1.5	WLZ	.12	WLX	-.12								
18	1.2DL+1.5LL-10%1.6(0.75WLz-0....	Yes	Y		DL	1.2	LL	1.5	WLZ	-.12	WLX	.12								
19	1.2DL+1.5LL-10%1.6(0.75WLz+0...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.12	WLX	-.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	WLX	.16										
23	1.2DL+1.5LL-10%1.6WLx	Yes	Y		DL	1.2	5	1.5	WLX	-.16										
24	1.2DL+1.5LL+10%1.6(0.75WLz+0...	Yes	Y		DL	1.2	5	1.5	WLZ	.12	WLX	.12								
25	1.2DL+1.5LL+10%1.6(0.75WLz-0...	Yes	Y		DL	1.2	5	1.5	WLZ	.12	WLX	-.12								
26	1.2DL+1.5LL-10%1.6(0.75WLz-0....	Yes	Y		DL	1.2	5	1.5	WLZ	-.12	WLX	.12								
27	1.2DL+1.5LL-10%1.6(0.75WLz+0...	Yes	Y		DL	1.2	5	1.5	WLZ	-.12	WLX	-.12								
28	DL		Y		DL	1														
29	WLz		Y		W...	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	N4	max	1535.869	4	1020.18	12	2033.924	2	-1689.099	2	5876.153	4	225.16	5
2		min	-1535.864	5	645.18	3	-2033.932	3	-4076.208	13	-5892.302	5	-2546.689	14
3	N31	max	1560	4	1011.425	14	1921.76	2	-1941.343	2	5799.64	4	-128.552	5
4		min	-1560	5	636.425	5	-1921.76	3	-3972.547	13	-5825.186	5	-2647.352	14
5	N53	max	1521.45	4	1034.58	23	2019.52	2	-1765.52	2	5841.295	4	339.817	5
6		min	-1521.449	5	659.58	4	-2019.521	3	-4137.15	21	-5857.445	5	-2519.584	14
7	Totals:	max	4617.319	4	3066.185	25	5975.204	2						
8		min	-4617.313	5	1941.184	8	-5975.212	3						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [l...	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M1	HSS4x4x3	.591	6	2	.115	6	z	3	51442.052	78948	9358.5	9358.5	1...	H1-1b
2	M2	HSS4x4x3	.896	4	5	.373	4	y	14	75278.668	78948	9358.5	9358.5	1...	H1-1b
3	M3	PIPE_2.0	.361	3.5	4	.037	3.5		4	17855.085	32130	1871.625	1871.625	1...	H1-1b
4	M4	PIPE_2.0	.349	3.5	3	.032	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b
5	M5	PIPE_2.0	.218	3.5	2	.041	3.5		9	17855.085	32130	1871.625	1871.625	1...	H1-1b
6	M6	PIPE_2.0	.371	3.5	3	.024	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b
7	M7	HSS4x4x3	.591	6	3	.115	6	z	3	51442.052	78948	9358.5	9358.5	1...	H1-1b
8	M8	HSS4x4x3	.882	4	5	.385	4	y	14	75278.668	78948	9358.5	9358.5	1...	H1-1b
9	M9	PIPE_2.0	.361	3.5	4	.037	3.5		4	17855.085	32130	1871.625	1871.625	1...	H1-1b
10	M10	PIPE_2.0	.348	3.5	3	.032	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b
11	M12	PIPE_2.0	.370	3.5	3	.024	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b
12	M12A	HSS4x4x3	.591	6	2	.115	6	z	3	51442.052	78948	9358.5	9358.5	1...	H1-1b
13	M13	HSS4x4x3	.899	4	5	.370	4	y	14	75278.668	78948	9358.5	9358.5	1...	H1-1b
14	M14	PIPE_2.0	.361	3.5	4	.037	3.5		4	17855.085	32130	1871.625	1871.625	1...	H1-1b
15	M15	PIPE_2.0	.349	3.5	3	.032	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b
16	M16	PIPE_2.0	.227	3.5	9	.036	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b
17	M17	PIPE_2.0	.371	3.5	3	.024	3.5		3	17855.085	32130	1871.625	1871.625	1...	H1-1b

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

CT2112

July 15, 2011

Douglas L. Culp, Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-138-110629** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 623 Honeyspot Road, Stratford, Connecticut.

Dear Mr. Culp:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated June 29, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable John A. Harkins, Mayor, Town of Stratford
Gary Lorentson, Planning & Zoning Administrator, Town of Stratford
Comtronics

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

June 30, 2011

The Honorable John A. Harkins
Mayor
Town of Stratford
Town Hall, Room 202
2725 Main Street
Stratford, CT 06615

RE: **EM-CING-138-110629** - New Cingular Wireless PCS, LLC notice of intent to install a temporary cellular telecommunications facility located at 623 Honeyspot Road, Stratford, Connecticut.

Dear Mayor Harkins:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by July 15, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts LMB

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Gary Lorentson, Planning & Zoning Administrator, Town of Stratford

CSC
CONNECTICUT SITING COUNCIL

EM-CING-138-110629

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

HAND DELIVERED

June 29, 2011

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing tele-communications facility located at 623 Honeyspot Road Stratford, CT(Com-Tronics/John and Deborah Beck).

Dear Ms. Roberts:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") 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 attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

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 AT&T'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 modifications as defined in Connecticut General Statutes ("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 in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS 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, New Cingular Wireless 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 (860) 463-5511 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Douglas L. Culp
Real Estate Consultant

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

623 Honeyspot Road Stratford, CT
Site Number CT2112
Exempt Mod

Tower Owner/Manager: Com-Tronics/John and Deborah Beck

Equipment configuration: Monopole

Current and/or approved: Six PowerWave antennas @ 90 ft
Six PowerWave TMA's @ 90 ft
Twelve runs 7/8 inch coax @ 90 ft
Equipment Shelter

Planned Modifications: Install three KMWAM-X-CD-16-65-00T-RET antennas or equivalent @ 90 ft
Install six remote radio heads Ericsson RRUS-11 @ 90 ft
Install one RayCap DC/Fiber Connector DC6-48-60-18-8F @ 90 ft
Install one fiber and two DC power cables to @ 90 ft
Install one new cabinet and surge suppressor equipment in shelter

Power Density:

Worst-case calculations for existing wireless operations at the site, using standard parameters for other carriers, indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the Tower, of approximately 56.9% of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 61.4% of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users							4.02
AT&T UMTS	90	1900 Band	2	500	0.0444	1.0000	4.44
AT&T UMTS	90	800 Band	1	500	0.0222	0.5867	3.78
AT&T GSM	90	800Band	14	296	0.1840	0.5867	31.35
AT&T GSM	90	1900 Band	7	427	0.1327	1.0000	13.27
Total							**56.9%**

* Data for other users are from Actual reading performed at the site by SAI Communications, report dated 6-29-11.

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users							4.02
AT&T UMTS	90	800 Band	1	500	0.0222	0.5867	3.78
AT&T UMTS	90	1900 Band	2	500	0.0444	1.0000	4.44
AT&T GSM	90	880 - 894	14	296	0.1840	0.5867	31.35
AT&T GSM	90	1900 Band	7	427	0.1327	1.0000	13.27
AT&T LTE	90	740 - 746	1	500	0.0222	0.4933	4.50
Total							**61.4%**

* Data for other users are from Actual reading performed at the site by SAI Communications, report dated 6-29-11.

Structural information:

The attached structural analysis demonstrates that the structure and foundation have adequate structural capacity to accommodate the proposed modifications. (GPD Group dated 6-16-11).

MAXIMUM PERMISSIBLE EXPOSURE STUDY

Site ID: CT2112
Site Name: Stratford
Address: 623 Honeyspot Road, Stratford, CT 06615

Conclusion: ***The site measurement was 4.0165% of FCC Standard for Uncontrolled/General Public Maximum Permissible Exposure (MPE).***

Prepared by:

SAI Communications
260 Cedar Hill Street
Marlboro, MA 01752
508-573-5077

Date of Report: June 29, 2011

Contents

1. INTRODUCTION 3
2. SITE DESCRIPTION & CONFIGURATION 3
3. FCC GUIDELINES 5
4. FCC RF EXPOSURE LIMITS 6
5. FIELD SURVEY RESULTS 7
   - 5.1 MEASUREMENT LOCATIONS 7
   - 5.1.1 MEASUREMENT RESULTS 8
6. THEORETICAL CALCULATIONS FOR THE PROPOSED LTE TECHNOLOGY 9
   - 6.1 RF EXPOSURE PREDICTION METHOD 9
   - 6.2 CALCULATION RESULTS 10
     - 6.2.1 %MPE AT GROUND LEVEL 10
     - 6.2.2 %MPE AT ROOFTOP LEVEL 10
   - 6.3 ADDING THEORETICAL CALCULATIONS OF PROPOSED LTE TO ACTUAL MEASUREMENTS 11
     - 6.3.1 %MPE AT GROUND LEVEL 11
     - 6.3.2 %MPE AT ROOFTOP LEVEL 11
7. EQUIPMENT USED FOR MEASUREMENTS 12
8. CONCLUSION 12
9. STATEMENT OF CERTIFICATION 12

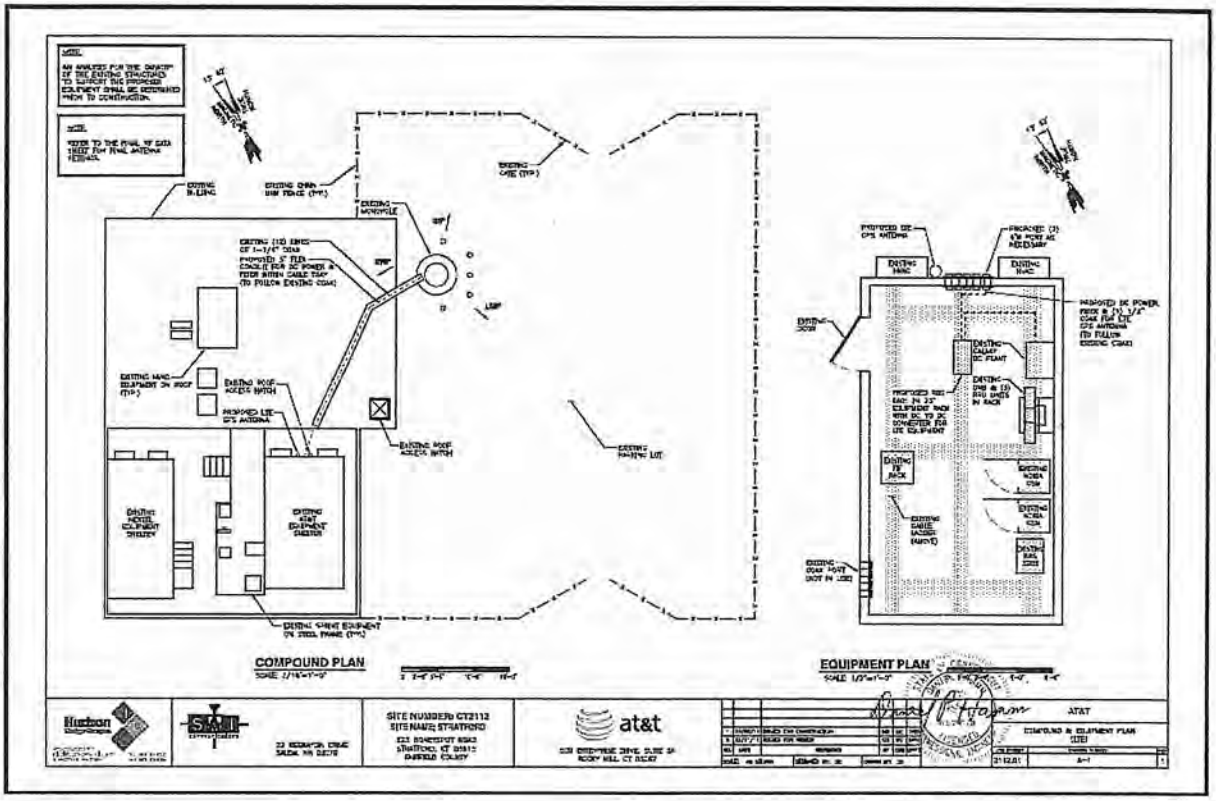
1. INTRODUCTION

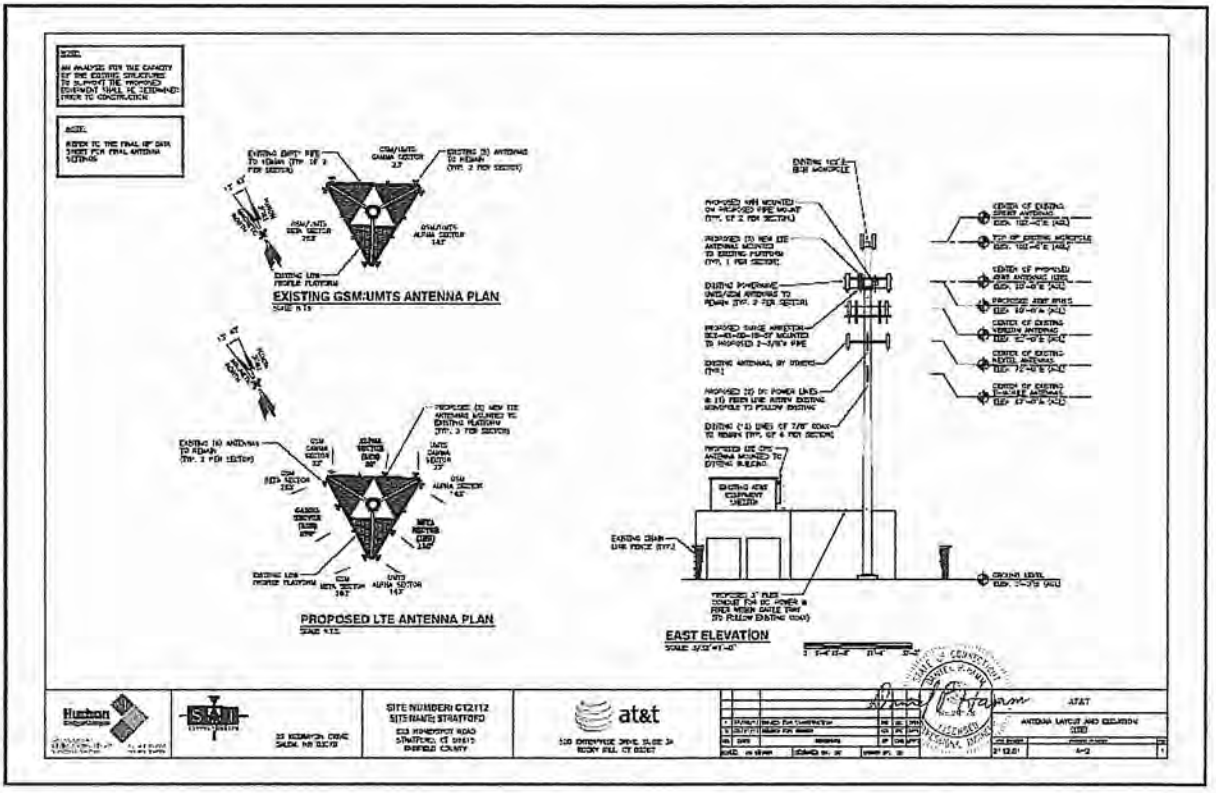
SAI Communications conducted Radio Frequency measurements at 623 Honeyspot Road, Stratford, CT on the rooftop as well as around the outer perimeter ground level to determine the current RF exposure levels at the surrounding area prior to construction/modifications of the site. The measurements collected represent the cumulative power density levels of all the RF transmitters in the area, within the frequency range of the equipment used. The FCC has established Maximum Permissible Exposure (MPE) limits for general population exposures and occupational exposures. This report summarizes the Radio Frequency Emission findings in relevance to the FCC compliance standards for limiting human exposure to RF Electromagnetic fields.

2. SITE DESCRIPTION & CONFIGURATION

Below is the current AT&T antenna configuration for the three sectors containing two antennas per sector for a total of six antennas with construction complete. AT&T's antennas are located at 90 feet at 623 Honeyspot Road, Stratford, CT, which is a 102 foot tall monopole tower. AT&T installation is in a shelter located on the rooftop directly next to the tower. Other carriers with antenna at this location include Sprint / Nextel Wireless at 102 feet and 72 feet respectively, Verizon Wireless at 82 feet, and T-Mobile at 62 feet. These other carriers have bay stations and BTUs mounted on the rooftop as well.

Sector	1 (alpha)	2 (beta)	3 (gamma)
Number of existing antennas	2	2	2
Current antenna model	7770.00A	7770.00A	7770.00A
Current antenna azimuth	143	263	23
Current center line (ft)	90	90	90
Current number of feeders	2	2	2
Current feeder diameter	7/8"	7/8"	7/8"
Current feeder length (ft)	120	120	120


COMPOUND PLAN
EQUIPMENT PLAN
SITE NUMBER: CT2112
SITE NAME: STRATFORD
at&t


EXISTING GSM/UMTS ANTENNA PLAN
PROPOSED LTE ANTENNA PLAN
EAST ELEVATION
SITE NUMBER: CT2112
SITE NAME: STRATFORD
at&t

3. FCC GUIDELINES

The FCC, in responding to the Telecommunications Act of 1996, issued ET Docket 93-62 which prescribed rules regarding the environmental effects of RF emission and to modify Title 47 parts 1, 2, 15, 24 and 97. The FCC established two levels for Maximum Permissible Exposure (MPE), the General Public/Uncontrolled limits and the Occupational/Controlled limits. The MPEs are presented in the Table 1 and Table 2, respectively below.

Table 1. MPE Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time for $\|E\|^2$, $\|H\|^2$, or S (Minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 -30	824/f	2.19/f	$(180/f^2)$*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	f/1500	30
1500– 100,000	--	--	1.0	30
f = frequency in MHz		* = Plane wave equivalent power density		

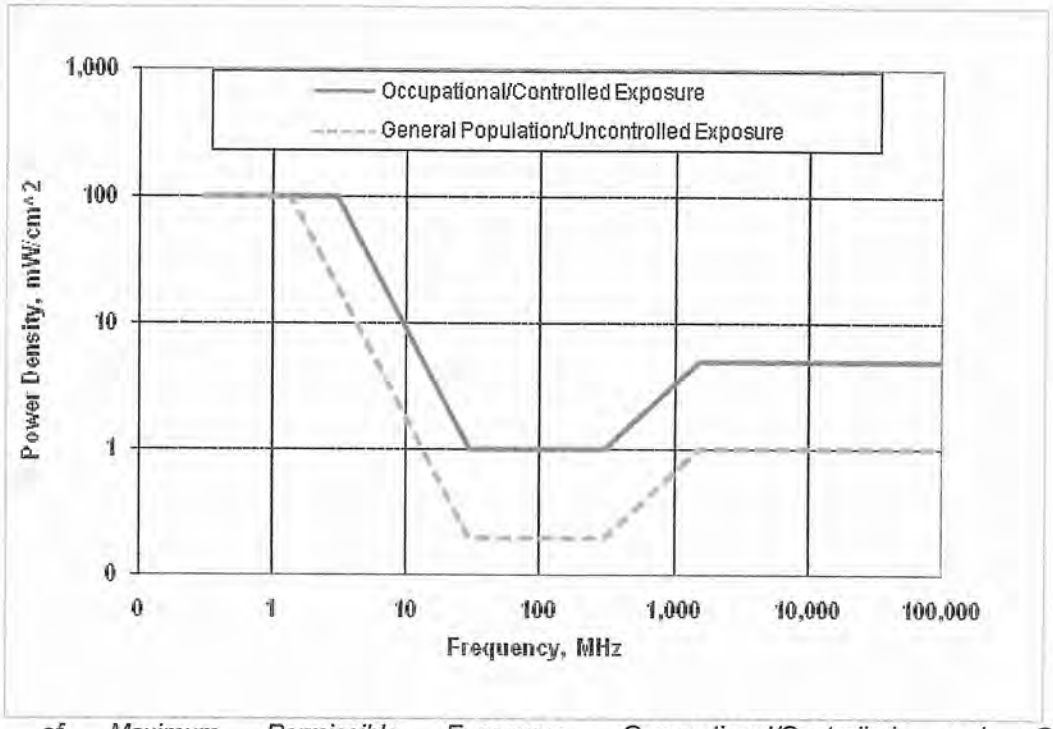
TABLE 1: *General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can't exercise control over their exposure.*

Table 2. MPE Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time for $\|E\|^2$, $\|H\|^2$, or S (Minutes)
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1842/f	4.89/f	$(900/f^2)$*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	--	--	f/300	6
1500– 100,000	--	--	5.0	6
f = frequency in MHz		* = Plane wave equivalent power density		

TABLE 2: *Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where such occupational/controlled limits apply provided he or she is made aware of the potential for exposure.*

4. FCC RF EXPOSURE LIMITS



Graph of Maximum Permissible Exposures. Occupational/Controlled and General Population/Uncontrolled MPE's are functions of frequency.

5. FIELD SURVEY RESULTS

The measurement positions conducted at 623 Honeyspot Road, Stratford, CT are shown on the aerial photo of the surrounding area. Contained on the next page is a table summarizing the pre-construction power density measurements recorded at the points indicated. The measurements presented were taken on the rooftop and surrounding public access points.

5.1 MEASUREMENT LOCATIONS

- Positions measured on the rooftop and ground perimeter are identified below on aerial photo:

5.1.1 MEASUREMENT RESULTS

Measurement Position	Readings recorded on 06/23/2011	
	SPATIAL AVERAGED MEASUREMENTS (% MPE Std, Controlled Population)	SPATIAL AVERAGED MEASUREMENTS (% MPE Std, Uncontrolled Population)
1	0.0119	0.0595
2	0.0052	0.026
3	0.0358	0.179
4	0.0176	0.088
5	0.0893	0.4465
6	0.1912	0.956
7	0.4517	2.2585
8	0.5097	2.5485
9	0.6265	3.1325
10	0.8033	4.0165
11	0.7735	3.8675
12	0.6765	3.3825
13	0.6325	3.1625
14	0.0321	0.1605
15	0.0235	0.1175
16	0.111	0.555
17	0.2264	1.132

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325X	0.6250	1	6.28	6.80	0.924	1.333	Member Bearing
T6	120	Leg	A325X	1.0000	6	11.06	34.56	0.320	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	7.78	7.62	1.021	1.333	Member Bearing
T7	100	Leg	A325X	1.0000	8	11.93	34.56	0.345	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	9.81	9.14	1.073	1.333	Member Bearing
T8	80	Diagonal	A325X	0.7500	1	10.19	9.14	1.115	1.333	Member Bearing
T9	70	Leg	A325X	1.0000	8	15.86	34.56	0.459	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	10.98	12.91	0.850	1.333	Gusset Bearing
T10	60	Leg	A325X	1.0000	8	19.71	34.56	0.570	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	11.44	9.14	1.251	1.333	Member Bearing
T11	40	Leg	A325X	1.0000	8	23.42	34.56	0.678	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	12.10	11.43	1.059	1.333	Member Bearing
T12	20	Leg	A449	1.0000	10	21.51	31.10	0.692	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	13.34	12.91	1.033	1.333	Gusset Bearing

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 3 EH	20'15/32"	5'1/8"	52.9 K=1.00	23.893	3.0159	-8.01	72.06	0.111
T2	160 - 153.333	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3 K=1.00	23.671	4.4074	-11.85	104.33	0.114
T3	153.333 - 146.667	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3 K=1.00	23.671	4.4074	-16.86	104.33	0.162
T4	146.667 - 140	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3 K=1.00	23.671	4.4074	-22.95	104.33	0.220
T5	140 - 120	ROHN 5 EH	20'15/32"	6'8-5/32"	43.6 K=1.00	25.320	6.1120	-49.59	154.75	0.320
T6	120 - 100	ROHN 6 EHS	20'3/8"	6'8-5/32"	36.0 K=1.00	26.380	6.7133	-84.25	177.09	0.476
T7	100 - 80	ROHN 6 EH	20'15/32"	10'1/4"	54.8 K=1.00	23.589	8.4049	-118.64	198.26	0.598
T8	80 - 70	ROHN 8 EHS	10'1/4"	10'1/4"	41.2 K=1.00	25.667	9.7193	-136.76	249.47	0.548
T9	70 - 60	ROHN 8 EHS	10'1/4"	10'1/4"	41.2 K=1.00	25.667	9.7193	-155.28	249.47	0.622
T10	60 - 40	ROHN 8 EHS	20'3/8"	10'1/4"	41.2 K=1.00	25.667	9.7193	-191.70	249.47	0.768
T11	40 - 20	ROHN 8 EH	20'3/8"	10'1/4"	41.8 K=1.00	25.582	12.7627	-227.66	326.50	0.697
T12	20 - 0	ROHN 8 EH	20'3/8"	10'1/4"	41.8 K=1.00	25.582	12.7627	-263.43	326.50	0.807

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x3/16	9'10-5/16'	4'9-15/32'	146.0 K=1.00	7.007	0.7150	-1.69	5.01	0.337
T2	160 - 153.333	L2 1/2x2 1/2x1/4	11'3-15/32"	5'6-1/8"	134.5 K=1.00	8.249	1.1900	-2.27	9.82	0.231
T3	153.333 - 146.667	L2 1/2x2 1/2x1/4	11'10-3/16"	5'9-15/32'	141.5 K=1.00	7.461	1.1900	-2.60	8.88	0.292
T4	146.667 - 140	L2 1/2x2 1/2x1/4	12'5-5/32'	6'31/32"	148.5 K=1.00	6.769	1.1900	-3.15	8.06	0.391
T5	140 - 120	L2 1/2x2 1/2x1/4	14'2-3/4"	6'11-5/32'	169.3 K=1.00	5.207	1.1900	-6.31	6.20	1.018
T6	120 - 100	L3x3x1/4	15'11-7/8'	7'9"	157.1 K=1.00	6.053	1.4400	-7.81	8.72	0.895
T7	100 - 80	L3 1/2x3 1/2x1/4	19'3-1/8"	9'5-3/4"	164.0 K=1.00	5.554	1.6900	-9.79	9.39	1.043
T8	80 - 70	L3 1/2x3 1/2x1/4	20'1-13/16"	9'9-27/32'	169.7 K=1.00	5.184	1.6900	-10.37	8.76	1.183
T9	70 - 60	2L3 1/2x3 1/2x1/4x3/8 2L 'a' > 59.6944 in - 137	21'3/8"	10'3-1/8"	193.5 K=1.00	3.988	3.3800	-11.19	13.48	0.830
T10	60 - 40	L4x4x1/4	22'9-23/32"	11'1-13/16"	168.3 K=1.00	5.274	1.9400	-11.77	10.23	1.150
T11	40 - 20	L4x4x5/16	24'7-7/16'	12'23/32"	182.9 K=1.00	4.463	2.4000	-12.45	10.71	1.162
T12	20 - 0	2L4x4x5/16x3/8 2L 'a' > 74.5105 in - 176	26'5-17/32"	12'11-3/4'	214.9 K=1.00	3.233	4.8000	-13.59	15.52	0.876

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	6'8-9/32"	6'1-29/32'	185.8 K=1.00	4.324	0.4844	-0.08	2.09	0.037
T3	153.333 - 146.667	L2x2x1/8 KL/R > 200 (C) - 46	9'5-13/32'	8'10-3/32'	266.7 K=1.00	2.099	0.4844	-0.16	1.02	0.155
T4	146.667 - 140	L2x2x1/8 KL/R > 200 (C) - 59	10'1-11/16"	9'6-3/8"	287.6 K=1.00	1.805	0.4844	-0.14	0.87	0.165

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8 KL/R > 200 (C) - 7	7'8-5/8"	7'2-9/32"	217.1 K=1.00	3.168	0.4844	-0.18	1.53	0.120

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 3 EH	20'15/32"	5'1/8"	52.9	30.000	3.0159	5.25	90.48	0.058
T2	160 - 153.333	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3	30.000	4.4074	8.57	132.22	0.065
T3	153.333 - 146.667	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3	30.000	4.4074	12.71	132.22	0.096
T4	146.667 - 140	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3	30.000	4.4074	17.40	132.22	0.132
T5	140 - 120	ROHN 5 EH	20'15/32"	6'8-5/32"	43.6	30.000	6.1120	37.79	183.36	0.206
T6	120 - 100	ROHN 6 EHS	20'3/8"	6'8-5/32"	36.0	30.000	6.7133	66.34	201.40	0.329
T7	100 - 80	ROHN 6 EH	20'15/32"	10'1/4"	54.8	30.000	8.4049	95.41	252.15	0.378
T8	80 - 70	ROHN 8 EHS	10'1/4"	10'1/4"	41.2	30.000	9.7193	111.19	291.58	0.381
T9	70 - 60	ROHN 8 EHS	10'1/4"	10'1/4"	41.2	30.000	9.7193	126.88	291.58	0.435
T10	60 - 40	ROHN 8 EHS	20'3/8"	10'1/4"	41.2	30.000	9.7193	157.67	291.58	0.541
T11	40 - 20	ROHN 8 EH	20'3/8"	10'1/4"	41.8	30.000	12.7627	187.34	382.88	0.489
T12	20 - 0	ROHN 8 EH	20'3/8"	10'1/4"	41.8	30.000	12.7627	215.09	382.88	0.562

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x3/16	9'5-1/32"	4'6-27/32"	91.3	29.000	0.4308	1.72	12.49	0.138
T2	160 - 153.333	L2 1/2x2 1/2x1/4	11'3-15/32"	5'6-1/8"	87.8	29.000	0.7519	2.20	21.80	0.101
T3	153.333 - 146.667	L2 1/2x2 1/2x1/4	11'10-3/16"	5'9-15/32"	92.2	29.000	0.7519	2.48	21.80	0.114
T4	146.667 - 140	L2 1/2x2 1/2x1/4	12'5-5/32"	6'31/32"	96.7	29.000	0.7519	3.09	21.80	0.142
T5	140 - 120	L2 1/2x2 1/2x1/4	14'2-3/4"	6'11-5/32"	110.0	29.000	0.7519	6.28	21.80	0.288
T6	120 - 100	L3x3x1/4	15'11-7/8"	7'9"	101.5	32.500	0.9394	7.78	30.53	0.255
T7	100 - 80	L3 1/2x3 1/2x1/4	19'3-1/8"	9'5-3/4"	105.9	32.500	1.1034	9.81	35.86	0.274
T8	80 - 70	L3 1/2x3 1/2x1/4	20'1-13/16"	9'9-27/32"	109.6	32.500	1.1034	10.19	35.86	0.284
T9	70 - 60	2L3 1/2x3 1/2x1/4x3/8 2L 'a' > 59.6944 in - 136	21'3/8"	10'3-1/8"	114.4	29.000	2.2069	10.98	64.00	0.172
T10	60 - 40	L4x4x1/4	22'9-23/32"	11'1-13/16"	108.3	32.500	1.2909	11.44	41.96	0.273
T11	40 - 20	L4x4x5/16	24'7-7/16"	12'23/32"	118.0	32.500	1.5949	12.10	51.84	0.233
T12	20 - 0	2L4x4x5/16x3/8 2L 'a' > 74.5105 in - 175	26'5-17/32"	12'11-3/4"	126.9	29.000	3.1898	13.34	92.51	0.144

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	6'8-9/32"	6'1-29/32"	122.6	29.000	0.2930	0.06	8.50	0.007
T3	153.333 - 146.667	L2x2x1/8	9'5-13/32"	8'10-3/32"	173.9	29.000	0.2930	0.27	8.50	0.032
T4	146.667 - 140	L2x2x1/8	10'1-11/16"	9'6-3/8"	187.2	29.000	0.2930	0.24	8.50	0.029

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	7'8-5/8"	7'2-9/32"	142.4	29.000	0.2930	0.20	8.50	0.024

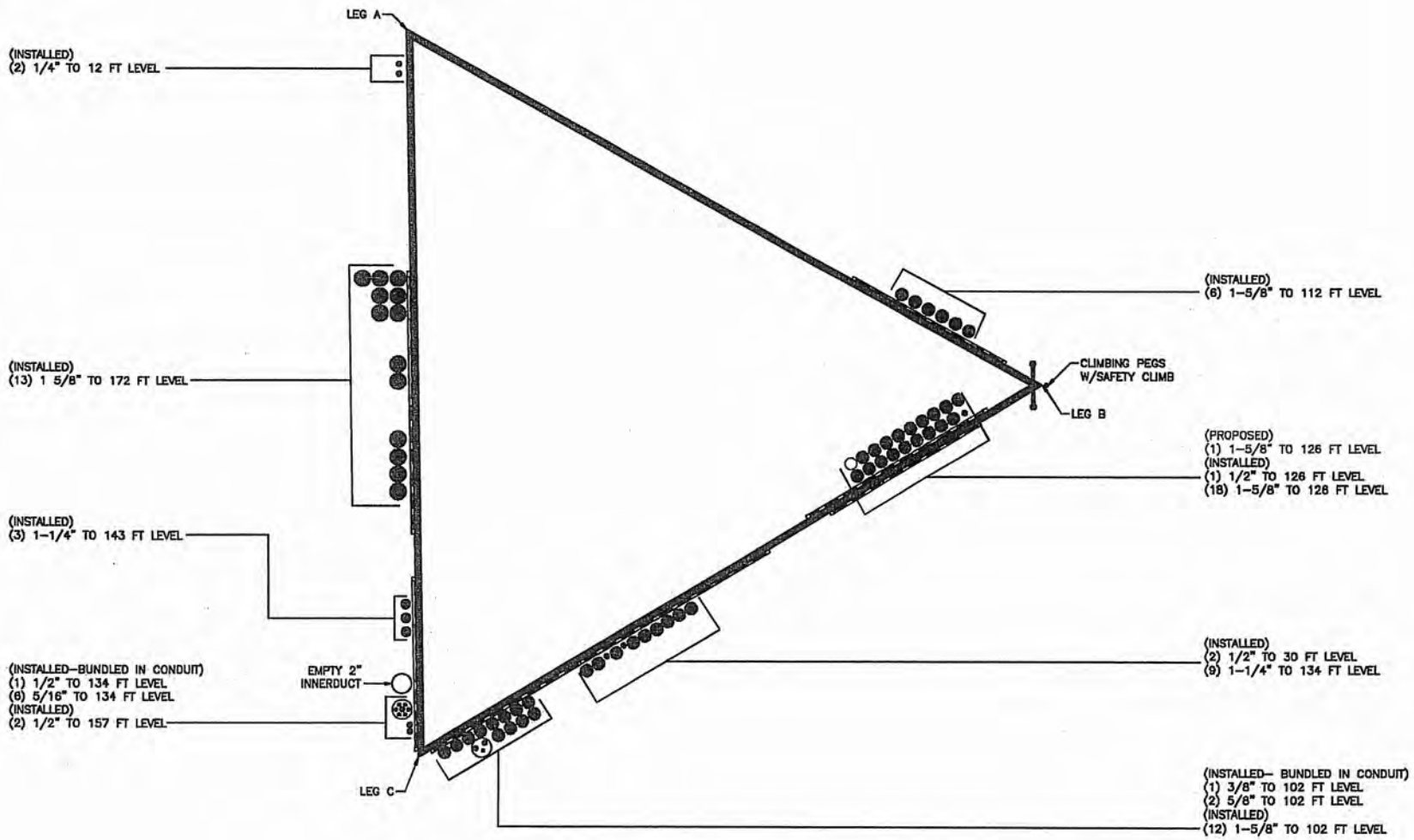
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 3 EH	3	-8.01	96.06	8.3	Pass
T2	160 - 153.333	Leg	ROHN 4 EH	34	-11.85	139.07	8.5	Pass
T3	153.333 - 146.667	Leg	ROHN 4 EH	43	-16.86	139.07	12.1	Pass
T4	146.667 - 140	Leg	ROHN 4 EH	55	-22.95	139.07	16.5	Pass
T5	140 - 120	Leg	ROHN 5 EH	67	-49.59	206.29	24.0	Pass
T6	120 - 100	Leg	ROHN 6 EHS	88	-84.25	236.06	35.7	Pass
T7	100 - 80	Leg	ROHN 6 EH	109	-118.64	264.29	44.9	Pass
T8	80 - 70	Leg	ROHN 8 EHS	124	-136.76	332.54	41.1	Pass
T9	70 - 60	Leg	ROHN 8 EHS	133	-155.28	332.54	46.7	Pass
T10	60 - 40	Leg	ROHN 8 EHS	142	-191.70	332.54	57.6	Pass
T11	40 - 20	Leg	ROHN 8 EH	157	-227.66	435.22	52.3	Pass
T12	20 - 0	Leg	ROHN 8 EH	172	-263.43	435.22	60.5	Pass
T1	180 - 160	Diagonal	L2x2x3/16	15	-1.69	6.68	25.3 28.4 (b)	Pass
T2	160 - 153.333	Diagonal	L2 1/2x2 1/2x1/4	42	-2.27	13.09	17.3 24.2 (b)	Pass
T3	153.333 - 146.667	Diagonal	L2 1/2x2 1/2x1/4	54	-2.60	11.83	21.9 27.4 (b)	Pass
T4	146.667 - 140	Diagonal	L2 1/2x2 1/2x1/4	66	-3.15	10.74	29.3 34.1 (b)	Pass
T5	140 - 120	Diagonal	L2 1/2x2 1/2x1/4	75	-6.31	8.26	76.4	Pass
T6	120 - 100	Diagonal	L3x3x1/4	95	-7.81	11.62	67.2 76.6 (b)	Pass
T7	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	113	-9.79	12.51	78.3 80.5 (b)	Pass
T8	80 - 70	Diagonal	L3 1/2x3 1/2x1/4	128	-10.37	11.68	88.8	Pass
T9	70 - 60	Diagonal	2L3 1/2x3 1/2x1/4x3/8	137	-11.19	17.97	62.3 63.8 (b)	Pass
T10	60 - 40	Diagonal	L4x4x1/4	146	-11.77	13.64	86.3 93.9 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T11	40 - 20	Diagonal	L4x4x5/16	161	-12.45	14.28	87.2	Pass
T12	20 - 0	Diagonal	2L4x4x5/16x3/8	176	-13.59	20.68	65.7	Pass
							77.5 (b)	
T1	180 - 160	Top Girt	L2x2x1/8	6	-0.08	2.79	2.8	Pass
T3	153.333 - 146.667	Top Girt	L2x2x1/8	46	-0.16	1.36	11.7	Pass
T4	146.667 - 140	Top Girt	L2x2x1/8	59	-0.14	1.17	12.4	Pass
T1	180 - 160	Mid Girt	L2x2x1/8	7	-0.18	2.05	9.0	Pass
							Summary	
						Leg (T12)	60.5	Pass
						Diagonal (T10)	93.9	Pass
						Top Girt (T4)	12.4	Pass
						Mid Girt (T1)	9.0	Pass
						Bolt Checks	93.9	Pass
						RATING =	**93.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



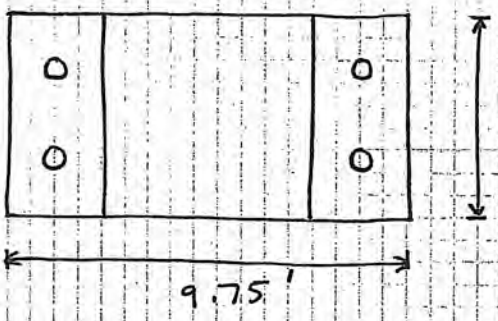
BUSINESS UNIT: 807133 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

FDH

Project: 807133 BRG 134 943057
Sheet ____ of ____ Date: ____
By: ____ FDH Project #: ____
Checked By: ____ Drawing #: ____



TNX Reactions
uplift = 222
Down = 272

$W_c = \{6.25' \cdot 9.75' \cdot 9'\} \cdot 150\ KCF = 82.27\ K$

Compression ultimate Bearing capacity = 30 ksf per Geo

Bearing Area = $6.25' \cdot 9.75' = 60.9375\ ft^2$

total down load = $272\ K + 82.27\ K = 354.27$

Actual Bearing stress = $354.27^{K} / 60.9375\ ft^2 = 5.81\ KSF$

Capacity = $5.81\ ksf / (0.5)(30\ ksf)$

$= 38.8\ \%$

6521 Meridien Drive, Raleigh, NC 27616 (919) 755-1012 Fax: (919) 755-1031 www.fdh-inc.com

FDH

Project: _____
Sheet _____ of _____ Date: _____
By: _____ FDH Project #: _____
Checked By: _____ Drawing #: _____

Uplift Anchor = #11 BAR A615 Gr 60

Tensile strength of BAR

$$P_N = \frac{F_y A_g}{\Omega} = \frac{(60\ ksi)\ \pi/4 \cdot (1.410)^2}{1.67} = 56.1\ k$$

$P_u = 222\ k/4 = 55.5\ k$

Capacity = 55.5/56.1 = 98.9 %

Soil - Grout interaction

ultimate skin friction = 16.0 ksf

$$\frac{P_N}{\Omega} = \frac{\pi (2.25" \times 1/12") (15.5') (16\ ksf)}{2}$$

$= 73.04\ k$

$P_u = 222\ k/4 = 55.5\ k$

Capacity = 55.5k/73.04k = 76.0 %

6521 Meridien Drive, Raleigh, NC 27616 (919) 755-1012 Fax: (919) 755-1031 www.fdh-inc.com

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

2122

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

April 21, 2011

Douglas L. Culp, Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-103-110330** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 50 Rockland Road, Norwalk, Connecticut.

Dear Mr. Culp:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated March 30, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Richard Moccia, Mayor, City of Norwalk
Michael Greene, Director of Planning and Zoning, City of Norwalk
Crown Castle USA, Inc.

CSC
CONNECTICUT SITING COUNCIL

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

April 7, 2011

The Honorable Richard Moccia
Mayor
City of Norwalk
City Hall
125 East Avenue
P. O. Box 5125
Norwalk, CT 06856-5125

RE: **EM-CING-103-110330** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 50 Rockland Road, Norwalk, Connecticut.

Dear Mayor Moccia:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by April 21, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Michael Greene, Director of Planning and Zoning, City of Norwalk

G:\EM\CINGULAR\NORWALK\Moccia5.DOC

CSC
CONNECTICUT SITING COUNCIL

EM-CING-103-110330

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

HAND DELIVERED

March 30, 2011

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 50 Rockland Road Norwalk, CT (owner Crown Castle)

Dear Ms. Roberts:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") 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 attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a new high-performance air interface for cellular mobile communications, 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 AT&T'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 modifications as defined in Connecticut General Statutes ("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 in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS 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, New Cingular Wireless 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 (860) 463-5511 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Douglas L. Culp
Real Estate Consultant

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

50 Rockland Road Norwalk, CT
Site Number CT2122
Exempt Mod's: 10/05

Tower Owner/Manager: Crown Castle USA, Inc.

Equipment configuration: SSLT

Current and/or approved:
Six PowerWave antennas @ 100 ft
Six PowerWave TMA's and Diplexer's @ 100 ft
Twelve runs 1 5/8 inch coax to 100 ft
Equipment Shelter

Planned Modifications:
Retain existing PowerWave Diplexers and TMA's at 100 ft
Retain existing PowerWave Antennas @ 100 ft
Retain all Coax Cabling
Install three PowerWave P65-16 antennas or equivalent @ 100 ft
Install six Ericsson RRUS 11 remote radio heads @ 100 ft
Install one RayCap DC6-48-60-18-8F surge protector @ 100 ft
Install one fiber and two DC power cables to 100 ft

Power Density:

Worst-case calculations for existing wireless operations at the site, using standard parameters for other carriers, indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the Tower, of approximately 65.5% of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 68.7 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users							52.25
AT&T UMTS	107	1900 Band	2	500	0.0314	1.0000	3.14
AT&T UMTS	107	800 Band	1	500	0.0157	0.5867	2.68
AT&T GSM	107	800Band	3	296	0.0279	0.5867	4.75
AT&T GSM	107	1900 Band	2	427	0.0268	1.0000	2.68
Total							**65.5%**

* Data for other users are from Siting Council records.

Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users							52.25
AT&T UMTS	107	800 Band	1	500	0.0157	0.5867	2.68
AT&T UMTS	107	1900 Band	2	500	0.0314	1.0000	3.14
AT&T GSM	107	1900 Band	2	427	0.0268	1.0000	2.68
AT&T GSM	107	880 - 894	3	296	0.0279	0.5867	4.75
AT&T LTE	107	740 - 746	1	500	0.0157	0.4933	3.18
Total							**68.7%**

* Data for other users are from Siting Council records.

Structural information:

The attached structural analysis demonstrates that the monopole and foundation have adequate structural capacity to accommodate the proposed modifications. (Vertical Structures, Inc. dated 3-22-11)

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	50 ROCKLAND ROAD NORWALK, CT 06854
LATITUDE:	41.081381° N 41° 04' 52.97" N
LONGITUDE:	-73.430943° W -73° 25' 51.39" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
NOC#	866-915-5600

at&t

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD

DRAWING INDEX

DRAWING INDEX	REV
T-1 TITLE SHEET	1
GN-1 GENERAL NOTES	1
A-1 COMPOUND & EQUIPMENT PLAN	1
A-2 ANTENNA LAYOUT AND ELEVATION	1
A-3 DETAILS	1
G-1 PLUMBING DIAGRAM & DETAILS	1

VICINITY MAP

DIRECTION TO SITE:
START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TURNPIKE VIA THE EXIT ON THE LEFT TOWARD N.Y. CITY. TAKE THE US-7 EXIT, EXIT 15, TOWARD NORWALK/DANBURY. TAKE THE EXIT TOWARD SOUTH NORWALK/MARITIME AQUARIUM. TURN LEFT ONTO WEST AVE. TURN SLIGHT RIGHT ONTO DR MARTIN LUTHER KING JR DR/MARTIN LUTHER KING DR. CONTINUE TO FOLLOW DR MARTIN LUTHER KING JR DR. TURN RIGHT ONTO ROCKLAND RD. 50 ROCKLAND RD IS ON THE RIGHT.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS

BEFORE YOU DIG

CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

Hudson Design Group

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD
50 ROCKLAND ROAD
NORWALK, CT 06854
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/09/11	ISSUED FOR CONSTRUCTION	HB	DC	DPH
0	02/10/11	ISSUED FOR REVIEW	DB	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

AT&T

TITLE SHEET (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2122.01	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION		PROPOSED / NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF.	REFERENCE		
EGR	EQUIPMENT GROUND RING	REQ'D	REQUIRED	TYP	TYPICAL

Hudson Design Group LLC
36D Gloucester Street, Building 2D North, Suite 2-101, Haverhill, MA 01832
TEL: (978) 521-2262 FAX: (978) 336-5181

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD
50 ROCKLAND ROAD
NORWALK, CT 06854
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/09/11	ISSUED FOR CONSTRUCTION	NG	DC	TYPP
0	02/10/11	ISSUED FOR REVIEW	DG	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DG

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 21179 — LICENSED PROFESSIONAL ENGINEER

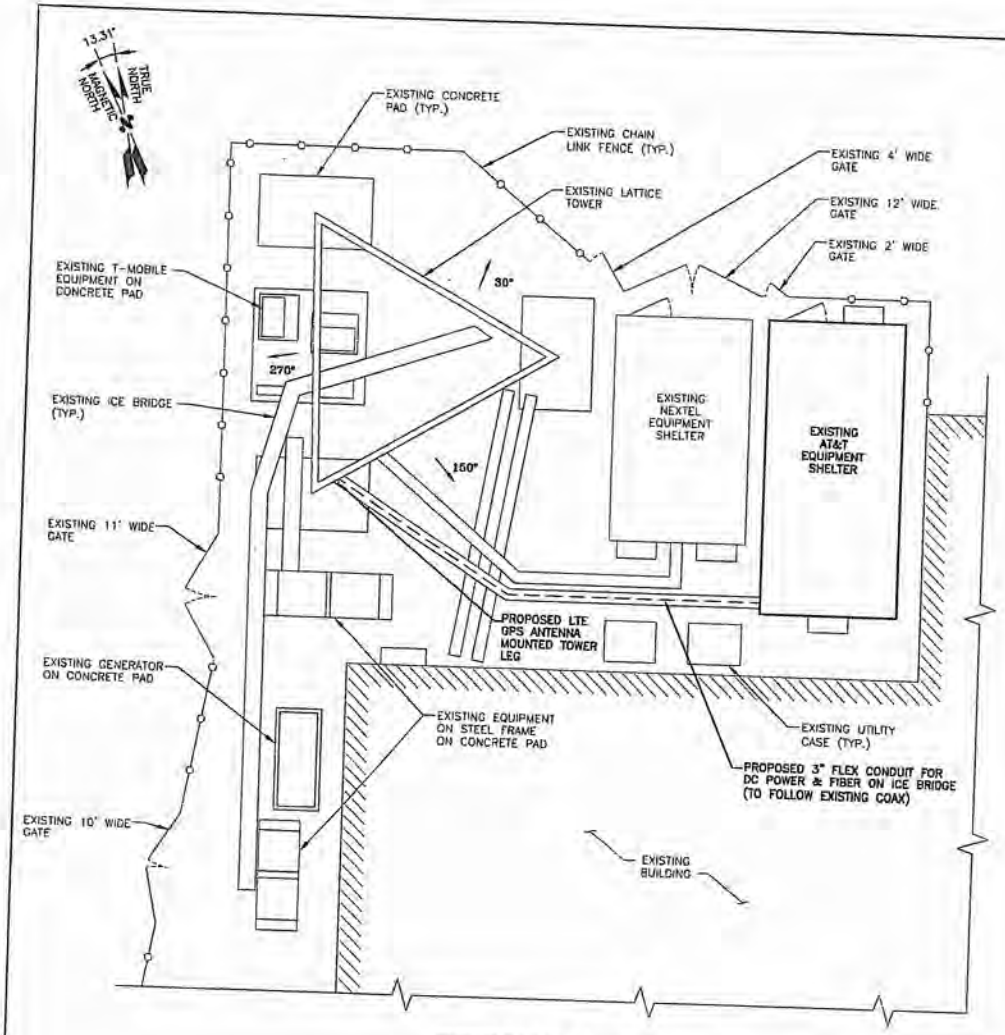
AT&T

GENERAL NOTES (LTE)

JOB NUMBER: 2122.01

DRAWING NUMBER: GN-1

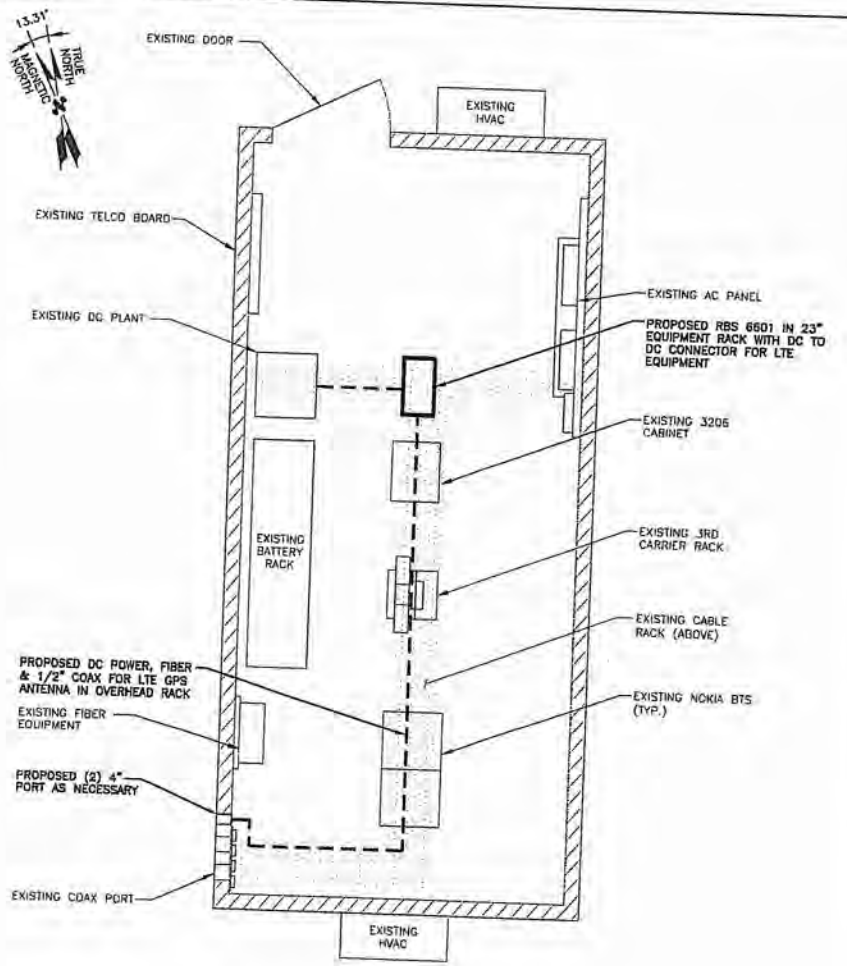
REV: 1



COMPOUND PLAN

SCALE: 3/16"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN

SCALE: 1/2"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

Hudson Design Groupllc
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-103
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD
50 ROCKLAND ROAD
NORWALK, CT 06854
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/09/11	ISSUED FOR CONSTRUCTION	NB	DC	DPH
0	02/10/11	ISSUED FOR REVIEW	DB	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 21179
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS (LTE)

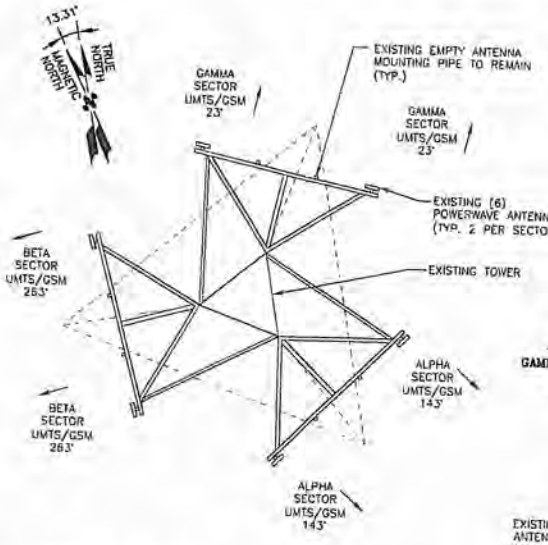
JOB NUMBER	DRAWING NUMBER	REV
2122.01	A-1	1

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

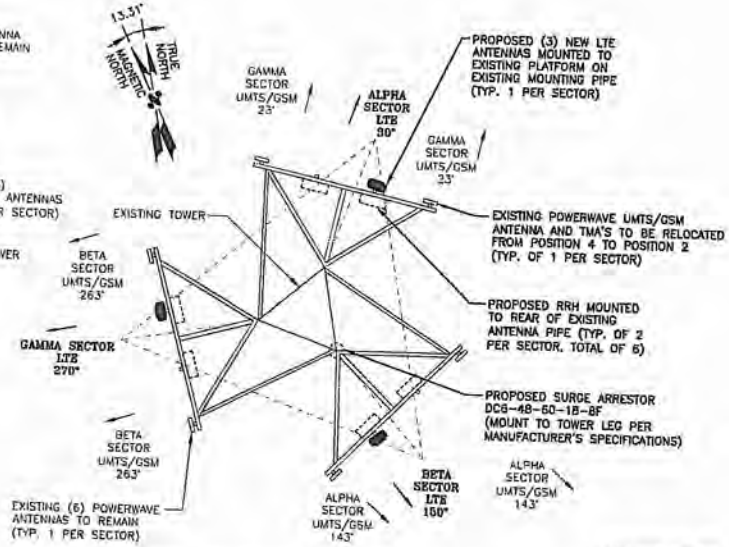
*NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA CONFIGURATION



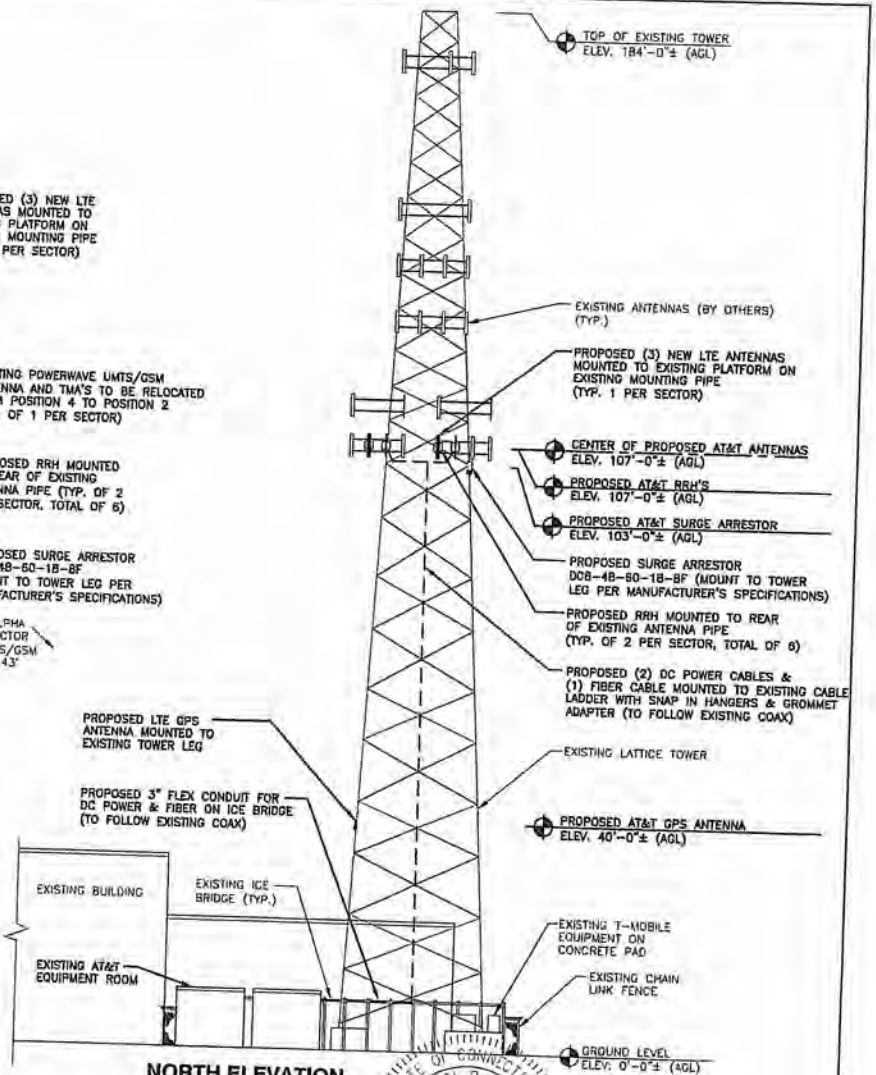
EXISTING GSM/UMTS ANTENNA PLAN

SCALE: N.T.S.



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.



NORTH ELEVATION

SCALE: 3/32"=1'-0"

Hudson Design Groupe LLC
140 CESCIOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-1523
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD
50 ROCKLAND ROAD
NORWALK, CT 06854
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/08/11	ISSUED FOR CONSTRUCTION	NB	DC	DPH
0	02/10/11	ISSUED FOR REVIEW	DB	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

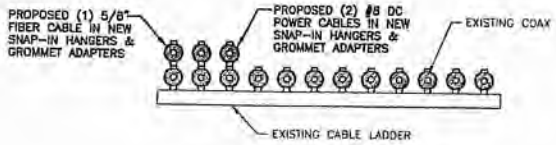
STATE OF CONNECTICUT DANIEL P. HAMM No. 26178 LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

AT&T

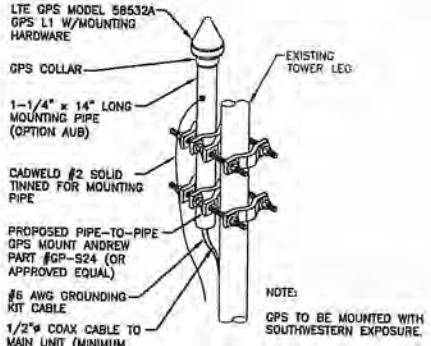
ANTENNA LAYOUT AND ELEVATION (LTE)

JOB NUMBER: 2122.01 | DRAWING NUMBER: A-2 | REV: 1



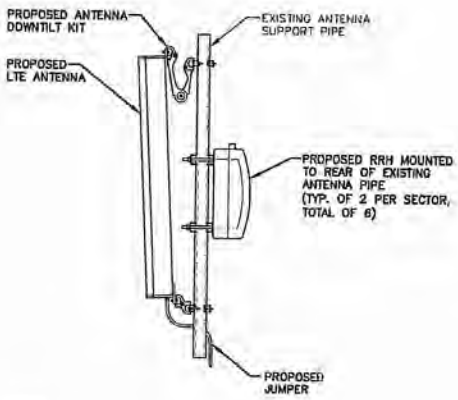
CABLE MOUNTING DETAIL

SCALE: N.T.S.



GPS MOUNTED TO TOWER LEG/ICE BRIDGE

SCALE: N.T.S.



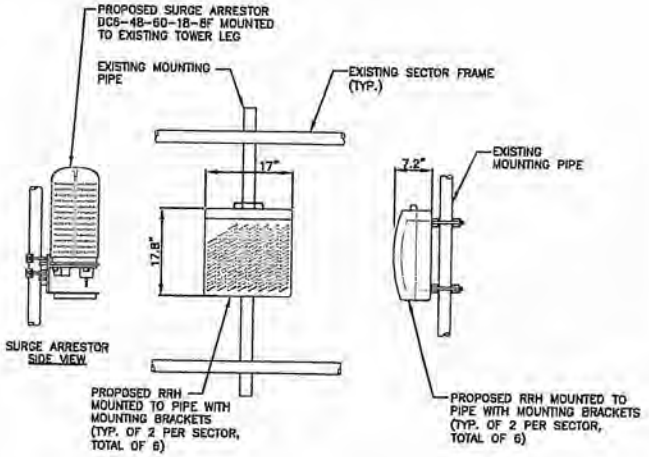
NOTES:

1. REFER TO RF CONFIG & SECTOR SCHEMATICS FOR MODEL, TYPE & QUANTITY REQUIRED PER SECTOR

PROPOSED LTE ANTENNA DETAIL

SCALE: 1" = 1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"



PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL

SCALE: N.T.S.

Hudson Design Groupe LLC
1000 CINCINNATI STREET
N. ADDISON, MA 01845
TEL: (978) 557-5553
FAX: (978) 258-5389

SAT communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD
50 ROCKLAND ROAD
NORWALK, CT 06854
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/09/11	ISSUED FOR CONSTRUCTION	NB	DC	DPH
0	02/10/11	ISSUED FOR REVIEW	DB	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

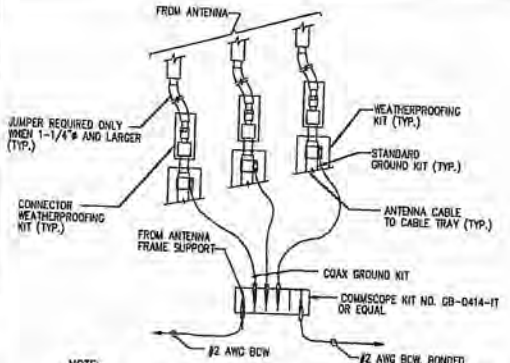
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 21178
LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

AT&T

DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
2122.01	A-3	1

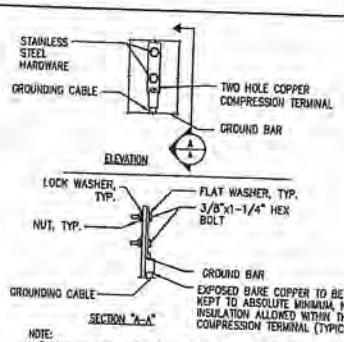


NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

1 — N.T.S.

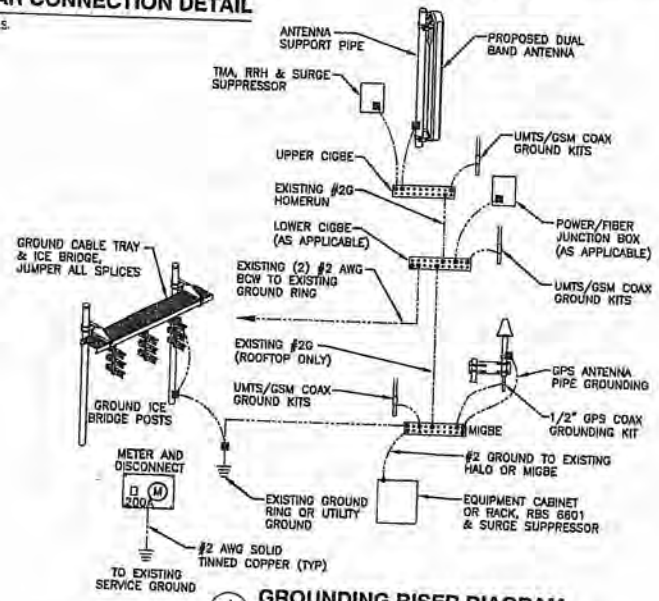


NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

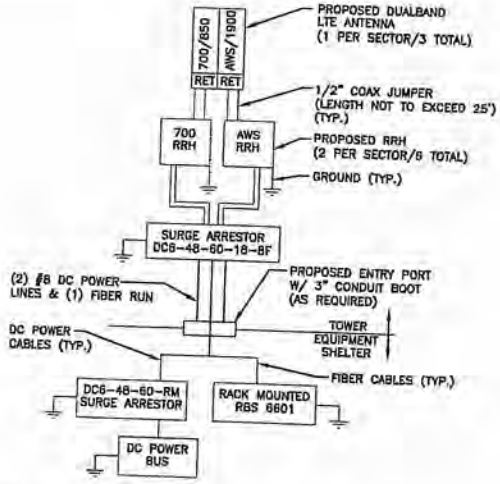
TYPICAL GROUND BAR CONNECTION DETAIL

2 — N.T.S.



GROUNDING RISER DIAGRAM

4 — N.T.S.



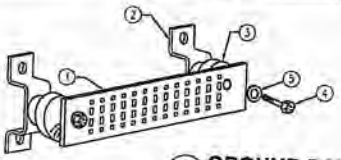
NOTES:

1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

LTE PLUMBING DIAGRAM

3 — N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2	———	WALL MTG. BRKT.
3	2	———	INSULATORS
4	4	———	5/8"-11x1" H.H.C.S.
5	4	———	5/8 LOCKWASHER



GROUND BAR - DETAIL

5 — N.T.S.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

Hudson Design Group LLC
1600 EDGEWOOD STREET
S-BUILDING 2D (NORTH), SUITE 2-101
H. ANDOVER, MA 01843
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI communications
22 KEEWAYDIN DRIVE
SALEM, NH 03079

SITE NUMBER: CT2122
SITE NAME: NORWALK - ROCKLAND ROAD
50 ROCKLAND ROAD
NORWALK, CT 06854
FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/08/11	ISSUED FOR CONSTRUCTION	NB	DC	DPH
0	02/10/11	ISSUED FOR REVIEW	DB	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 21179 — LICENSED PROFESSIONAL ENGINEER

AT&T

PLUMBING DIAGRAM & DETAILS (LTE)

JOB NUMBER: 2122.01
DRAWING NUMBER: G-1
REV: 1

Date: **March 22, 2011**

Veronica Harris
Crown Castle USA Inc.
1200 McArthur Boulevard
Mahwah, NJ 07430
(201) 236-9094

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
ncoomes@verticalstructures.com

Subject: **Structural Analysis Report**

Carrier Designation:

***AT&T Mobility* Co-Locate**
Carrier Site Number: 2122
Carrier Site Name: Norwalk-Rockland Road

Crown Castle Designation:

Crown Castle BU Number: 807133
Crown Castle Site Name: BRG 134
Crown Castle JDE Job Number: 151873
Crown Castle Work Order Number: 394285

Engineering Firm Designation:

Vertical Structures, Inc. Project Number: 2011-004-027

Site Data:

50 Rockland Road Norwalk OFC-MTSO,
SO Norwalk, CT, Fairfield County
Latitude *41° 4' 54.44"*, Longitude *-73° 25' 49.52"*
182.354 Foot - Self Support Tower

Dear Veronica Harris,

Vertical Structures, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 408157, in accordance with application 119126, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Reserved + Proposed Equipment — **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Vertical Structures, Inc.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle USA Inc.. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Nathan Coomes, P.E.
Project Engineer

RISA Tower Report - version 5.4.2.0

Date: **March 22, 2011**

Veronica Harris
Crown Castle USA Inc.
1200 McArthur Boulevard
Mahwah, NJ 07430
(201) 236-9094

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
ncoomes@verticalstructures.com

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	2122
	Carrier Site Name:	Norwalk-Rockland Road
Crown Castle Designation:	**Crown Castle BU Number:**	807133
	Crown Castle Site Name:	BRG 134
	Crown Castle JDE Job Number:	151873
	Crown Castle Work Order Number:	394285
Engineering Firm Designation:	**Vertical Structures, Inc. Project Number:**	2011-004-027
Site Data:	**50 Rockland Road Norwalk OFC-MTSO, SO Norwalk, CT, Fairfield County Latitude *41° 4' 54.44"*, Longitude *-73° 25' 49.52"* 182.354 Foot - Self Support Tower**	

Dear Veronica Harris,

Vertical Structures, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 408157, in accordance with application 119126, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Vertical Structures, Inc.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle USA Inc.. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Nathan Coomes, P.E.
Project Engineer

RISA Tower Report - version 5.4.2.0

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing and Reserved Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE
Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 5 - Section Capacity (Summary)
Table 6 - Tower Component Stresses vs. Capacity – LC1
4.1) Recommendations

5) APPENDIX A
RISATower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 182.354 ft Self Support tower designed by Rohn in 1987. The tower was originally designed for a wind pressure of 30 psf. The tower has been reworked to accommodate additional loading.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice and 50 mph under service loads. Also, per Crown Castle's direction and in accordance with ASCE-7-05 we have considered a fastest mile wind speed of 38 mph with an escalating 0.75 inch ice thickness.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100	102	6	ericsson	RRUS-11 BTS	2 1	5/8 3/8	
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F Surge Arrestor			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
178	178	2		Side Arm Mount [SO 305-1]			1
172	173	9	celwave	APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	18	1 5/8	1
	172	1		Sector Mount [SM 602-3]			
		3	celwave	ATMAA1412D-1A20 TMA			
		6	siemens	DTMA GSM 1900 TMA			
157	157	2		Side Arm Mount [SO 203-1]			1
		1		Side Arm Mount [SO 203-1]			2
		2	andrew	VHLP2-23	2	1/2	1
		1	andrew	VHLP800-11	1	1/2	2
143	143	1		Side Arm Mount [SO 601-3]	6	1 5/8	1
		3	andrew	UMWD-06516-XD w/Mount Pipe			
		3	communications components	DTMA1819VG12A TMA			2

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
134	135	3	argus technologies	LLPX310R w/ Mount Pipe	3 3 1 9	1/4 5/16 1/2 1 1/4	1
		1	andrew	VHLP2-23			
		9	decibel	DB844H90-XY w/Mount Pipe			
		3	samsung telecommunications	FDD_R6_RRH TMA			
	134	1		Sector Mount [SM 506-3]			
128	130	2	andrew	LNX-6514DS-T4M w/Mount Pipe	18	1 5/8	1
		1	powerwave technologies	P65.16.XL.2			
		3	rymsa	MG D3-800TV w/ Mount Pipe			
	128	1		Sector Mount [SM 410-3]			
		4	decibel	DB844G65ZAXY w/Mount Pipe			
		2	decibel	DB844H80E-XY w/Mount Pipe			
113	113	1		Sector Mount [SM 104-3]	6	1 5/8	1
		3	kathrein	800 10504 w/ Mount Pipe			
100	102	6	powerwave technologies	7770.00 w/ mount pipe	12	1 5/8	1
		6	powerwave technologies	LGP13519 Diplexer			
		6	powerwave technologies	LGP2140X TMA			
	100	1		10' Angle Gate (3)			
30	30	2		GPS Antenna	2	1/2	1

Notes:
1) Existing Equipment
2) Reserved Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
217	217	4	celwave	PD10017		
		3	rohn	3' Sidearm		
207	207	6	celwave	PD1132		
		3	rohn	3'-6" Sidearm		
180	180	3		8' Dish		
		3		Pipe Mount		
170	170	1		8' Dish		
		1		Pipe Mount		
156	156	1		8' Dish		
		1		Pipe Mount		
150	150	1		8' Dish		
		1		Pipe Mount		
130	130	1	celwave	PD1109		
		1	rohn	6' Sidearm		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Co-Locate Revision #1	119126	CCI iSite
Tower Drawing	Rohn Drawing No. C870588	392878	CCI iSite
Tower Information	Vertical Structures Job No. 2008-004-0102	N/A	On File
Foundation Drawing	Paul J. Ford Project No. 31298-49	821566	CCI iSite
Geotechnical Report	FDH Project No. 08-07100E G1	2311843	CCI iSite
Rework Drawings	Vertical Structures Job No. 2004-004-033	1257479	CCI iSite

3.1) Analysis Method

RISATower (version 5.4.2.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Vertical Structures, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T1	182.354 - 177.292	Leg	ROHN 3 EH	2	-266.65	72060.70	0.4	Pass
		Diagonal	L2x2x3/16	7	-125.25	9365.82	1.3 1.7 (b)	Pass
		Top Girt	L2x2x1/8	5	-54.89	2581.69	2.1	Pass
T2	177.292 - 172.292	Leg	ROHN 3 EH	14	-642.70	72059.50	0.9	Pass
		Diagonal	L2x2x3/16	16	-419.54	8480.25	4.9	Pass
T3	172.292 - 167.292	Leg	ROHN 3 EH	23	-3755.63	96055.31	3.9	Pass
		Diagonal	L2x2x3/16	28	-1725.37	7682.89	22.5 23.2 (b)	Pass
		Top Girt	L2 1/2x2 1/2x3/16	26	-425.72	5530.83	7.7	Pass
T4	167.292 - 162.208	Leg	ROHN 3 EH	34	-9209.86	96057.31	9.6	Pass
		Diagonal	L2x2x3/16	37	-1930.61	6990.97	27.6	Pass
T5	162.208 - 155.458	Leg	ROHN 4 EH	43	-11729.40	139071.88	8.4	Pass
		Diagonal	L2 1/2x2 1/2x1/4	50	-2391.16	13470.76	17.8 27.8 (b)	Pass
T6	155.458 - 148.792	Leg	ROHN 4 EH	52	-17058.50	139069.22	12.3	Pass
		Diagonal	L2 1/2x2 1/2x1/4	59	-2939.24	12187.90	24.1 34.2 (b)	Pass
		Top Girt	L3x3x3/16	57	678.60	20648.90	3.3 10.1 (b)	Pass
T7	148.792 - 142.021	Leg	ROHN 4 EH	64	-26863.30	139071.88	19.3	Pass
		Diagonal	L2 1/2x2 1/2x1/4	74	-3191.88	11078.72	28.8 37.2 (b)	Pass
		Top Girt	L3x3x3/16	69	-277.00	5609.26	4.9 9.8 (b)	Pass
T8	142.021 - 121.813	Leg	ROHN 5 EH	76	-55437.80	206287.07	26.9	Pass
		Diagonal	L2 1/2x2 1/2x1/4	83	-6509.96	8483.79	76.7	Pass
T9	121.813 - 101.604	Leg	ROHN 6 EHS	97	-90234.70	236066.29	38.2	Pass
		Diagonal	L3x3x1/4	101	-7814.83	11890.11	65.7 91.1 (b)	Pass
T10	101.604 - 81.3333	Leg	ROHN 6 EH	118	-129083.00	264291.23	48.8	Pass
		Diagonal	L3 1/2x3 1/2x1/4	122	-10157.20	12668.82	80.2 83.6 (b)	Pass
T11	81.3333 - 71.1667	Leg	ROHN 8 EHS	133	-137741.00	332544.83	41.4	Pass
		Diagonal	L3 1/2x3 1/2x1/4	137	-10703.10	11760.79	91.0	Pass
T12	71.1667 - 61	Leg	ROHN 8 EHS	142	-167436.00	332544.83	50.4	Pass
		Diagonal	2L4x4x1/4x3/8	146	-11574.00	27169.07	42.6 65.8 (b)	Pass
T13	61 - 40.6667	Leg	ROHN 8 EHS	151	-204576.00	332546.16	61.5	Pass
		Diagonal	L4x4x1/4	155	-12168.10	13779.89	88.3 98.4 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T14	40.6667 - 20.3333	Leg	ROHN 8 EH	166	-241455.00	435225.81	55.5	Pass
		Diagonal	L4x4x5/16	170	-12904.20	14433.59	89.4	Pass
T15	20.3333 - 0	Leg	ROHN 8 EH	181	-277811.00	435225.81	63.8	Pass
		Diagonal	2L4x4x5/16x3/8	185	-13761.40	20880.11	65.9 78.7 (b)	Pass
							Summary	
						Leg (T15)	63.8	Pass
						Diagonal (T13)	98.4	Pass
						Top Girt (T6)	10.1	Pass
						Bolt Checks	98.4	Pass
						Rating =	98.4	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	52.6	Pass
	Base Foundation (Compared w/ Design Loads)	0	93.3	Pass

Structure Rating (max from all components) =	98.4%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity.
2) Capacities up to 105% are considered acceptable based on analysis methods used.

4.1) Recommendations

N/A

APPENDIX A

RISA TOWER OUTPUT

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Side Arm Mount [SO 305-1]	178	P65-16-XL-2 w/ Mount Pipe	128
Side Arm Mount [SO 305-1]	178	MG D3-800TV w/ Mount Pipe (VSI)	128
Sector Mount [SM 602-3]	172	(2) DB844G65ZAXY w/Mount Pipe	128
(3) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	172	Sector Mount [SM 410-3]	128
(3) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	172	LNX-6514DS-T4M w/Mount Pipe	128
(3) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	172	MG D3-800TV w/ Mount Pipe (VSI)	128
ATMAA1412D-1A20 TMA	172	(2) DB844G65ZAXY w/Mount Pipe	128
(2) DTMA GSM 1900 TMA	172	LNX-6514DS-T4M w/Mount Pipe	128
ATMAA1412D-1A20 TMA	172	MG D3-800TV w/ Mount Pipe (VSI)	128
(2) DTMA GSM 1900 TMA	172	(2) DB844H80E-XY w/Mount Pipe	128
ATMAA1412D-1A20 TMA	172	Sector Mount [SM 104-3]	113
(2) DTMA GSM 1900 TMA	172	800 10504 w/ Mount Pipe	113
6' x 2" Mount Pipe	172	6' x 2" Mount Pipe	113
6' x 2" Mount Pipe	172	800 10504 w/ Mount Pipe	113
6' x 2" Mount Pipe	172	6' x 2" Mount Pipe	113
Side Arm Mount [SO 203-1]	157	800 10504 w/ Mount Pipe	113
Side Arm Mount [SO 203-1]	157	6' x 2" Mount Pipe	113
Side Arm Mount [SO 203-1]	157	(2) RRUS-11 BTS (ATI Mobility)	100
VHLP2-23	157	(2) RRUS-11 BTS (ATI Mobility)	100
VHLP2-23	157	DC6-48-60-18-8F Surge Arrestor (ATI Mobility)	100
VHLP800-11	157	5'6"x2" Antenna Mount Pipe (ATI Mobility)	100
DTMA1819VG12A TMA	143	5'6"x2" Antenna Mount Pipe (ATI Mobility)	100
Side Arm Mount [SO 601-3]	143	10' Angle Gate (3) (ATI Mobility)	100
UMWD-05516-XD w/Mount Pipe	143	(2) 7770.00 w/ mount pipe (ATI Mobility)	100
DTMA1819VG12A TMA	143	(2) LGP13519 Diplexer (ATI Mobility)	100
UMWD-05516-XD w/Mount Pipe	143	(2) 7770.00 w/ mount pipe (ATI Mobility)	100
DTMA1819VG12A TMA	143	(2) LGP13519 Diplexer (ATI Mobility)	100
UMWD-05516-XD w/Mount Pipe	143	(2) LGP2140X (ATI Mobility)	100
FDD_R6_RRH TMA	134	P65-16-XLH-RR w/ Mount Pipe (ATI Mobility)	100
(3) DB844H80-XY w/Mount Pipe	134	P65-16-XLH-RR w/ Mount Pipe (ATI Mobility)	100
(3) DB844H80-XY w/Mount Pipe	134	P65-16-XLH-RR w/ Mount Pipe (ATI Mobility)	100
(3) DB844H80-XY w/Mount Pipe	134	P65-16-XLH-RR w/ Mount Pipe (ATI Mobility)	100
Sector Mount [SM 508-3]	134	(2) RRUS-11 BTS (ATI Mobility)	100
LLPX310R w/ Mount Pipe	134	(2) LGP2140X (ATI Mobility)	100
LLPX310R w/ Mount Pipe	134	(2) 7770.00 w/ mount pipe (ATI Mobility)	100
LLPX310R w/ Mount Pipe	134	(2) LGP13519 Diplexer (ATI Mobility)	100
FDD_R6_RRH TMA	134	(2) LGP2140X (ATI Mobility)	100
FDD_R6_RRH TMA	134	GPS/BMR Antenna	30
VHLP2-23	134	GPS/BMR Antenna	30

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2 1/2x2 1/2x3/16		

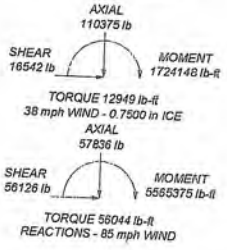
MATERIAL STRENGTH

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 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.4%

MAX. CORNER REACTIONS AT BASE:
DOWN: 276332 lb
UPLIFT: -227022 lb
SHEAR: 34261 lb



Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job	BRG 134, CT BU#807133
Project	Vertical Structures Job No. 2011-004-027
Client: Crown Castle	Drawn by: ncoomes
Code: TIA/EIA-222-F	Date: 03/29/11
Path:	Scale: NTS
	Dwg No. E-1

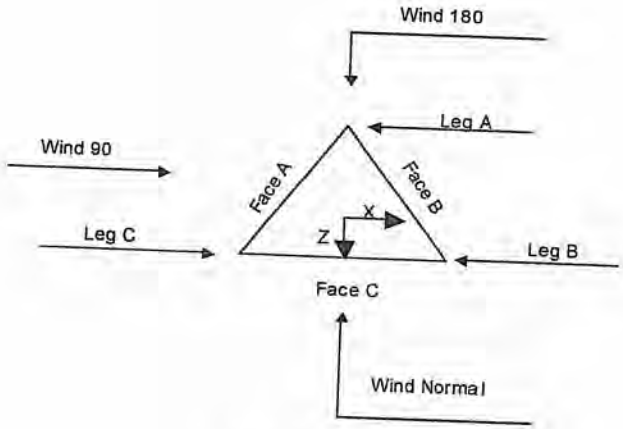
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 182.35 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 6.69 ft at the top and 25.00 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 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
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, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
√ Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	√ SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	182.35-177.29			6.69	1	5.06
T2	177.29-172.29			7.21	1	5.00
T3	172.29-167.29			7.72	1	5.00
T4	167.29-162.21			8.24	1	5.08
T5	162.21-155.46			8.76	1	6.75
T6	155.46-148.79			9.45	1	6.67
T7	148.79-142.02			10.14	1	6.77
T8	142.02-121.81			10.83	1	20.21
T9	121.81-101.60			12.92	1	20.21
T10	101.60-81.33			14.85	1	20.27
T11	81.33-71.17			16.99	1	10.17
T12	71.17-61.00			17.99	1	10.17
T13	61.00-40.67			19.00	1	20.33
T14	40.67-20.33			21.00	1	20.33
T15	20.33-0.00			23.00	1	20.33

Tower Section Geometry *(cont'd)*

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

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	182.35-177.29	5.00	X Brace	No	No	0.7500	0.0000
T2	177.29-172.29	5.00	X Brace	No	No	0.0000	0.0000
T3	172.29-167.29	5.00	X Brace	No	No	0.0000	0.0000
T4	167.29-162.21	5.00	X Brace	No	No	0.0000	1.0000
T5	162.21-155.46	6.67	X Brace	No	No	1.0000	0.0000
T6	155.46-148.79	6.67	X Brace	No	No	0.0000	0.0000
T7	148.79-142.02	6.67	X Brace	No	No	0.0000	1.2500
T8	142.02-121.81	6.67	X Brace	No	No	1.2500	1.2500
T9	121.81-101.60	6.67	X Brace	No	No	1.2500	1.2500
T10	101.60-81.33	10.00	X Brace	No	No	1.2500	2.0000
T11	81.33-71.17	10.00	X Brace	No	No	2.0000	0.0000
T12	71.17-61.00	10.00	X Brace	No	No	0.0000	2.0000
T13	61.00-40.67	10.00	X Brace	No	No	2.0000	2.0000
T14	40.67-20.33	10.00	X Brace	No	No	2.0000	2.0000
T15	20.33-0.00	10.00	X Brace	No	No	2.0000	2.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 182.35-177.29	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T2 177.29-172.29	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T3 172.29-167.29	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 167.29-162.21	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T5 162.21-155.46	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T6 155.46-148.79	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 148.79-142.02	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 142.02-121.81	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 121.81-101.60	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T10 101.60-81.33	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T11 81.33-71.17	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T12 71.17-61.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Double Equal Angle	2L4x4x1/4x3/8	A36 (36 ksi)
T13 61.00-40.67	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A572-50 (50 ksi)
T14 40.67-20.33	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A572-50 (50 ksi)
T15 20.33-0.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Double Equal Angle	2L4x4x5/16x3/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 182.35-177.29	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 172.29-167.29	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 155.46-148.79	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 148.79-142.02	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft²	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 182.35-177.29	0.44	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T2 177.29-172.29	0.44	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T3 172.29-167.29	0.44	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T4 167.29-162.21	0.44	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T5 162.21-155.46	0.46	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T6 155.46-148.79	0.46	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T7 148.79-142.02	0.46	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T8 142.02-121.81	1.39	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T9 121.81-101.60	1.39	0.2500	A36 (36 ksi)	1	1	1	30.0000	30.0000
T10 101.60-81.33	1.04	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T11 81.33-71.17	0.52	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T12 71.17-61.00	0.52	0.3750	A36 (36 ksi)	1	1	1	122.5200	30.0000
T13 61.00-40.67	1.04	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T14 40.67-20.33	1.04	0.3750	A36 (36 ksi)	1	1	1	30.0000	30.0000
T15 20.33-0.00	1.04	0.3750	A36 (36 ksi)	1	1	1	154.9200	30.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 182.35-177.29	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 177.29-172.29	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 172.29-167.29	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 167.29-162.21	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 162.21-155.46	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 155.46-148.79	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 148.79-142.02	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 142.02-121.81	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 121.81-101.60	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 101.60-81.33	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T11 81.33-71.17	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T12 71.17-61.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T13 61.00-40.67	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T14 40.67-20.33	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T15 20.33-0.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 182.35-177.29	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 177.29-172.29	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 172.29-167.29	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 167.29-162.21	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 162.21-155.46	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 155.46-148.79	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower 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
T7 148.79-142.02	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 142.02-121.81	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 121.81-101.60	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 101.60-81.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 81.33-71.17	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 71.17-61.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 61.00-40.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.67-20.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.33-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 182.35-177.29	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T2 177.29-172.29	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T3 172.29-167.29	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T4 167.29-162.21	2.5000	3.8438	2.5000	3.8438	0.0000	0.0000	0.0000	0.0000
T5 162.21-155.46	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T6 155.46-148.79	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T7 148.79-142.02	2.5000	4.3438	2.5000	4.3438	0.0000	0.0000	0.0000	0.0000
T8 142.02-121.81	2.5000	4.8750	2.5000	4.8750	0.0000	0.0000	0.0000	0.0000
T9 121.81-101.60	2.5000	5.4063	2.5000	5.4063	0.0000	0.0000	0.0000	0.0000
T10 101.60-81.33	2.5000	5.4063	2.5000	5.4063	0.0000	0.0000	0.0000	0.0000
T11 81.33-71.17	2.5000	6.4063	2.5000	6.4063	0.0000	0.0000	0.0000	0.0000
T12 71.17-61.00	2.5000	6.4063	2.5000	6.4063	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T13 61.00-40.67	2.5000	6.4063	2.5000	6.4063	0.0000	0.0000	0.0000	0.0000
T14 40.67-20.33	2.5000	6.4063	2.5000	6.4063	0.0000	0.0000	0.0000	0.0000
T15 20.33-0.00	2.5000	6.4063	2.5000	6.4063	0.0000	0.0000	0.0000	0.0000

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 182.35-177.29	Flange	0.8750 A325N	0	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 177.29-172.29	Flange	0.8750 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 172.29-167.29	Flange	0.8750 A325N	0	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 167.29-162.21	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 162.21-155.46	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 155.46-148.79	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 148.79-142.02	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 142.02-121.81	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 121.81-101.60	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 101.60-81.33	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 81.33-71.17	Flange	1.0000 A325N	0	0.7500 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 71.17-61.00	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 61.00-40.67	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 40.67-20.33	Flange	1.0000 A325N	8	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 20.33-0.00	Flange	1.0000 A354-BC	0	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 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
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	173.00 - 8.00	2.0000	0	18	12	0.2700	1.9800		0.82
Feedline Ladder (Af)	A	Yes	Af (CfAe)	172.00 - 8.00	1.0000	0	1	1	1.0000 3.0000	0.5000	1.5000	8.40
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	113.00 - 8.00	2.0000	0.35	6	6	1.0000	1.9800		0.82
Feedline Ladder (Af)	B	Yes	Af (CfAe)	182.35 - 8.00	1.0000	0.35	1	1	3.0000	3.0000	12.0000	8.40
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	130.00 - 8.00	-2.0000	-0.35	18	10	0.2700	1.9800		0.82
Feedline Ladder (Af)	C	Yes	Af (CfAe)	128.00 - 8.00	-1.0000	-0.35	1	1	1.0000 3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	C	Yes	Af (CfAe)	120.00 - 8.00	1.0000	-0.35	1	1	3.0000	1.5000	3.5000	8.40
Feedline Ladder (Af)	C	Yes	Af (CfAe)	182.35 - 120.00	1.0000	-0.35	1	1	3.0000	3.0000	12.0000	8.40
LDF6-50A (1-1/4 FOAM)	C	Yes	Ar (CfAe)	135.00 - 8.00	2.0000	0.25	9	9	0.7000	1.5500		0.66
CR 50 1873 (1-5/8 FOAM) (A&T Mobility)	C	Yes	Ar (CfAe)	102.00 - 8.00	2.0000	0.35	12	8	0.2700 1.0000	1.9800		0.83
FB-L98-002-XXX (3/8") (A&T Mobility)	C	Yes	Ar (CfAe)	102.00 - 8.00	2.0000	0.35	1	1	0.3937	0.0000		0.10
WR-VG86ST-BRD (Power Cable) (A&T Mobility)	C	Yes	Ar (CfAe)	102.00 - 8.00	2.0000	0.35	2	2	0.7760	0.0000		0.15
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	30.00 - 8.00	0.5000	0.3	2	2	1.6300	0.6300		0.15
Feedline Ladder (Af)	C	Yes	Af (CfAe)	100.00 - 8.00	1.0000	0.3	1	1	3.0000	0.5000	1.5000	8.40
Feedline Ladder (Af)	C	Yes	Af (CfAe)	135.00 - 100.00	1.0000	0.3	1	1	3.0000	1.5000	3.5000	8.40
HJ7-50A (1-5/8 AIR)	A	Yes	Ar (CfAe)	143.00 - 8.00	2.0000	-0.35	6	6	0.2700	1.9800		1.04
Feedline Ladder (Af)	A	Yes	Af (CfAe)	143.00 - 8.00	1.0000	-0.35	1	1	3.0000	3.0000	12.0000	8.40
3" Rigid Conduit	A	Yes	Ar (CfAe)	135.00 - 8.00	2.0000	-0.4	2	2	1.0000	3.0000		3.00
860 10012 (5/16" FOAM)	A	Yes	Ar (CfAe)	135.00 - 8.00	2.0000	-0.4	3	2	0.0000	0.0000		0.06
LDF1-50A (1/4 FOAM)	A	Yes	Ar (CfAe)	135.00 - 8.00	2.0000	-0.4	3	2	0.0000	0.0000		0.06
LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	135.00 - 8.00	2.0000	-0.45	4	2	1.0000	0.6300		0.15
LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	157.00 - 135.00	2.0000	-0.45	3	2	1.0000	0.6300		0.15

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

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	182.35-177.29	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	1.266	0.000	0.000	42.52
		C	0.000	1.266	0.000	0.000	42.52
T2	177.29-172.29	A	1.402	0.000	0.000	0.000	10.45
		B	0.000	1.250	0.000	0.000	42.00
		C	0.000	1.250	0.000	0.000	42.00
T3	172.29-167.29	A	9.900	0.196	0.000	0.000	113.35
		B	0.000	1.250	0.000	0.000	42.00
		C	0.000	1.250	0.000	0.000	42.00
T4	167.29-162.21	A	10.065	0.212	0.000	0.000	117.73
		B	0.000	1.271	0.000	0.000	42.70
		C	0.000	1.271	0.000	0.000	42.70
T5	162.21-155.46	A	13.527	0.281	0.000	0.000	157.02
		B	0.000	1.688	0.000	0.000	56.70
		C	0.000	1.688	0.000	0.000	56.70
T6	155.46-148.79	A	13.900	0.278	0.000	0.000	157.40
		B	0.000	1.667	0.000	0.000	56.00
		C	0.000	1.667	0.000	0.000	56.00
T7	148.79-142.02	A	15.087	0.527	0.000	0.000	174.19
		B	0.000	1.693	0.000	0.000	56.87
		C	0.000	1.693	0.000	0.000	56.87
T8	142.02-121.81	A	68.734	5.894	0.000	0.000	858.82
		B	0.000	5.052	0.000	0.000	169.75
		C	28.840	8.247	0.000	0.000	531.68
T9	121.81-101.60	A	72.245	5.894	0.000	0.000	904.52
		B	11.282	5.052	0.000	0.000	225.82
		C	57.358	10.331	0.000	0.000	931.66
T10	101.60-81.33	A	72.468	5.912	0.000	0.000	907.32
		B	20.068	5.068	0.000	0.000	270.01
		C	83.769	8.580	0.000	0.000	1140.44
T11	81.33-71.17	A	36.346	2.965	0.000	0.000	455.06
		B	10.065	2.542	0.000	0.000	135.42
		C	42.014	4.236	0.000	0.000	571.98
T12	71.17-61.00	A	36.346	2.965	0.000	0.000	455.06
		B	10.065	2.542	0.000	0.000	135.42
		C	42.014	4.236	0.000	0.000	571.98
T13	61.00-40.67	A	72.692	5.931	0.000	0.000	910.12
		B	20.130	5.083	0.000	0.000	270.84
		C	84.027	8.472	0.000	0.000	1143.95
T14	40.67-20.33	A	72.692	5.931	0.000	0.000	910.12
		B	20.130	5.083	0.000	0.000	270.84
		C	85.042	8.472	0.000	0.000	1146.85
T15	20.33-0.00	A	44.092	3.597	0.000	0.000	552.04
		B	12.210	3.083	0.000	0.000	164.28
		C	52.263	5.139	0.000	0.000	697.57

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	182.35-177.29	A	0.919	0.000	0.000	0.000	0.000	0.00
		B		0.000	1.783	0.000	0.000	70.54
		C		0.000	1.783	0.000	0.000	70.54
T2	177.29-172.29	A	0.916	0.225	1.461	0.000	0.000	39.47
		B		0.000	1.759	0.000	0.000	69.55
		C		0.000	1.759	0.000	0.000	69.55
T3	172.29-167.29	A	0.913	1.586	10.986	0.000	0.000	326.02

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
T4	167.29-162.21	B	0.910	0.000	1.757	0.000	0.000	69.44
		C		0.000	1.757	0.000	0.000	69.44
		A		1.609	11.210	0.000	0.000	333.98
T5	162.21-155.46	B	0.906	0.000	1.785	0.000	0.000	70.47
		C		0.000	1.785	0.000	0.000	70.47
		A		2.446	15.092	0.000	0.000	450.21
T6	155.46-148.79	B	0.901	0.000	2.367	0.000	0.000	93.38
		C		0.000	2.367	0.000	0.000	93.38
		A		3.452	15.601	0.000	0.000	468.67
T7	148.79-142.02	B	0.896	0.000	2.334	0.000	0.000	92.00
		C		0.000	2.334	0.000	0.000	92.00
		A		3.803	17.101	0.000	0.000	507.83
T8	142.02-121.81	B	0.886	0.000	2.367	0.000	0.000	93.19
		C		0.000	2.367	0.000	0.000	93.19
		A		25.816	77.637	0.000	0.000	2327.92
T9	121.81-101.60	B	0.868	0.000	7.041	0.000	0.000	276.61
		C		6.210	45.740	0.000	0.000	1298.04
		A		30.326	79.899	0.000	0.000	2432.54
T10	101.60-81.33	B	0.848	3.529	21.151	0.000	0.000	541.71
		C		12.030	81.138	0.000	0.000	2354.32
		A		30.003	80.053	0.000	0.000	2411.78
T11	81.33-71.17	B	0.829	6.208	32.146	0.000	0.000	741.30
		C		23.626	106.837	0.000	0.000	3100.53
		A		14.862	40.109	0.000	0.000	1197.06
T12	71.17-61.00	B	0.815	3.083	16.102	0.000	0.000	367.48
		C		11.694	53.454	0.000	0.000	1540.07
		A		14.718	40.077	0.000	0.000	1187.43
T13	61.00-40.67	B	0.790	3.059	16.086	0.000	0.000	364.16
		C		11.575	53.406	0.000	0.000	1528.97
		A		28.922	80.039	0.000	0.000	2340.61
T14	40.67-20.33	B	0.750	6.032	32.115	0.000	0.000	716.51
		C		22.721	106.641	0.000	0.000	3018.45
		A		28.111	79.859	0.000	0.000	2287.04
T15	20.33-0.00	B	0.750	5.897	32.025	0.000	0.000	697.98
		C		25.476	106.370	0.000	0.000	2983.96
		A		17.051	48.439	0.000	0.000	1387.22
		B		3.577	19.425	0.000	0.000	423.37
		C		17.750	64.520	0.000	0.000	1828.25

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	182.35-177.29	A	0.000	0.000	0.000	0.000
		B	0.000	0.214	0.144	0.233
		C	0.000	0.214	0.144	0.233
T2	177.29-172.29	A	0.000	0.124	0.113	0.135
		B	0.000	0.148	0.100	0.162
		C	0.000	0.148	0.100	0.162
T3	172.29-167.29	A	0.000	1.310	1.215	1.541
		B	0.000	0.206	0.150	0.242
		C	0.000	0.206	0.150	0.242
T4	167.29-162.21	A	0.000	0.905	0.782	0.995
		B	0.000	0.141	0.097	0.155
		C	0.000	0.141	0.097	0.155
T5	162.21-155.46	A	0.000	0.991	1.056	1.367

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		B	0.000	0.150	0.129	0.207
T6	155.46-148.79	C	0.000	0.150	0.129	0.207
		A	0.000	1.493	1.603	2.192
		B	0.000	0.205	0.188	0.302
T7	148.79-142.02	C	0.000	0.205	0.188	0.302
		A	0.000	1.583	1.715	2.339
		B	0.000	0.201	0.186	0.297
T8	142.02-121.81	C	0.000	0.201	0.186	0.297
		A	0.000	5.303	5.298	7.485
		B	0.000	0.404	0.359	0.570
T9	121.81-101.60	C	0.000	2.711	2.633	3.826
		A	0.000	5.348	6.436	9.240
		B	0.000	1.223	1.345	2.113
T10	101.60-81.33	C	0.000	4.581	5.575	7.915
		A	0.000	3.687	5.329	7.613
		B	0.000	1.295	1.709	2.673
T11	81.33-71.17	C	0.000	4.391	6.279	9.065
		A	0.000	1.751	2.598	3.694
		B	0.000	0.615	0.833	1.299
T12	71.17-61.00	C	0.000	2.084	3.056	4.398
		A	0.000	1.693	2.931	4.154
		B	0.000	0.596	0.940	1.462
T13	61.00-40.67	C	0.000	2.016	3.448	4.947
		A	0.000	3.207	5.765	8.120
		B	0.000	1.131	1.849	2.863
T14	40.67-20.33	C	0.000	3.824	6.783	9.682
		A	0.000	2.962	5.664	7.900
		B	0.000	1.047	1.816	2.793
T15	20.33-0.00	C	0.000	3.630	6.737	9.681
		A	0.000	1.772	3.388	4.726
		B	0.000	0.626	1.086	1.671
		C	0.000	2.233	4.078	5.954

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	182.35-177.29	3.1381	1.8118	2.2373	1.2917
T2	177.29-172.29	2.1308	1.2302	1.9840	1.1455
T3	172.29-167.29	-4.6620	-2.6916	-2.3661	-1.3661
T4	167.29-162.21	-5.7945	-3.3455	-3.1892	-1.8413
T5	162.21-155.46	-5.7692	-3.1410	-3.4050	-1.8411
T6	155.46-148.79	-5.5757	-2.5034	-3.0522	-1.3857
T7	148.79-142.02	-6.8303	-2.1900	-3.8406	-1.1972
T8	142.02-121.81	-13.0935	6.7157	-8.3446	5.1760
T9	121.81-101.60	-6.9704	11.6885	-3.7408	9.0431
T10	101.60-81.33	-10.1366	17.4449	-6.2348	13.8870
T11	81.33-71.17	-10.2820	17.8166	-6.4666	14.4560
T12	71.17-61.00	-10.4008	18.0816	-6.5624	14.7596
T13	61.00-40.67	-11.0445	19.2836	-7.0356	15.8344
T14	40.67-20.33	-12.0466	20.9723	-8.1271	17.6264
T15	20.33-0.00	-9.6515	16.7232	-6.8607	14.3947

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
Side Arm Mount [SO 305-1]	B	From Leg	1.50 0.00 0.00	0.0000	178.00	No Ice	0.94	1.41	30.00
						1/2" Ice	1.48	2.17	43.27
						1" Ice	2.02	2.93	56.54
						2" Ice	3.10	4.45	83.07
						4" Ice	5.26	7.49	136.14
Side Arm Mount [SO 305-1]	C	From Leg	1.50 0.00 0.00	0.0000	178.00	No Ice	0.94	1.41	30.00
						1/2" Ice	1.48	2.17	43.27
						1" Ice	2.02	2.93	56.54
						2" Ice	3.10	4.45	83.07
						4" Ice	5.26	7.49	136.14
** Sector Mount [SM 602-3]	C	None		0.0000	172.00	No Ice	33.11	33.11	1540.50
						1/2" Ice	44.90	44.90	2158.77
						1" Ice	56.69	56.69	2777.04
						2" Ice	80.27	80.27	4013.58
						4" Ice	127.43	127.43	6486.66
(3) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	A	From Leg	5.00 -1.00 1.00	-10.0000	172.00	No Ice	7.07	3.43	61.50
						1/2" Ice	7.64	4.25	106.30
						1" Ice	8.18	4.95	160.90
						2" Ice	9.29	6.40	291.72
						4" Ice	11.64	9.51	670.63
(3) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	B	From Leg	4.75 -1.50 1.00	-20.0000	172.00	No Ice	7.07	3.43	61.50
						1/2" Ice	7.64	4.25	106.30
						1" Ice	8.18	4.95	160.90
						2" Ice	9.29	6.40	291.72
						4" Ice	11.64	9.51	670.63
(3) APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	C	From Leg	5.00 -1.00 1.00	-10.0000	172.00	No Ice	7.07	3.43	61.50
						1/2" Ice	7.64	4.25	106.30
						1" Ice	8.18	4.95	160.90
						2" Ice	9.29	6.40	291.72
						4" Ice	11.64	9.51	670.63
ATMAA1412D-1A20 TMA	A	From Leg	5.00 -1.00 0.00	-10.0000	172.00	No Ice	1.17	0.47	13.00
						1/2" Ice	1.31	0.57	20.62
						1" Ice	1.47	0.69	30.11
						2" Ice	1.81	0.95	55.52
						4" Ice	2.58	1.57	137.44
(2) DTMA GSM 1900 TMA	A	From Leg	5.00 -1.00 0.00	-10.0000	172.00	No Ice	0.83	0.39	11.20
						1/2" Ice	0.96	0.50	16.67
						1" Ice	1.10	0.62	23.82
						2" Ice	1.41	0.89	43.89
						4" Ice	2.13	1.52	112.65
ATMAA1412D-1A20 TMA	B	From Leg	4.75 -1.50 0.00	-20.0000	172.00	No Ice	1.17	0.47	13.00
						1/2" Ice	1.31	0.57	20.62
						1" Ice	1.47	0.69	30.11
						2" Ice	1.81	0.95	55.52
						4" Ice	2.58	1.57	137.44
(2) DTMA GSM 1900 TMA	B	From Leg	4.75 -1.50 0.00	-20.0000	172.00	No Ice	0.83	0.39	11.20
						1/2" Ice	0.96	0.50	16.67
						1" Ice	1.10	0.62	23.82
						2" Ice	1.41	0.89	43.89
						4" Ice	2.13	1.52	112.65
ATMAA1412D-1A20 TMA	C	From Leg	5.00	-10.0000	172.00	No Ice	1.17	0.47	13.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
			-1.00 0.00			1/2" Ice	1.31	0.57	20.62
						1" Ice	1.47	0.69	30.11
						2" Ice	1.81	0.95	55.52
(2) DTMA GSM 1900 TMA	C	From Leg	5.00 -1.00 0.00	-10.0000	172.00	4" Ice	2.58	1.57	137.44
						No Ice	0.83	0.39	11.20
						1/2" Ice	0.96	0.50	16.67
						1" Ice	1.10	0.62	23.82
						2" Ice	1.41	0.89	43.89
6' x 2" Mount Pipe	A	From Leg	5.00 -1.00 0.00	0.0000	172.00	4" Ice	2.13	1.52	112.65
						No Ice	1.43	1.43	22.00
						1/2" Ice	1.92	1.92	32.83
						1" Ice	2.29	2.29	47.71
						2" Ice	3.06	3.06	90.28
6' x 2" Mount Pipe	B	From Leg	4.75 -1.50 0.00	0.0000	172.00	4" Ice	4.70	4.70	230.84
						No Ice	1.43	1.43	22.00
						1/2" Ice	1.92	1.92	32.83
						1" Ice	2.29	2.29	47.71
						2" Ice	3.06	3.06	90.28
6' x 2" Mount Pipe	C	From Leg	5.00 -1.00 0.00	0.0000	172.00	4" Ice	4.70	4.70	230.84
						No Ice	1.43	1.43	22.00
						1/2" Ice	1.92	1.92	32.83
						1" Ice	2.29	2.29	47.71
						2" Ice	3.06	3.06	90.28
**						4" Ice	4.70	4.70	230.84
Side Arm Mount [SO 601-3]	A	None		0.0000	143.00	No Ice	8.46	8.46	476.10
						1/2" Ice	11.77	11.77	589.56
						1" Ice	15.08	15.08	703.02
						2" Ice	21.70	21.70	929.94
UMWD-06516-XD w/Mount Pipe	A	From Leg	1.95 2.25 0.00	50.0000	143.00	4" Ice	34.94	34.94	1383.78
						No Ice	4.27	3.90	38.75
						1/2" Ice	4.88	4.96	75.51
						1" Ice	5.41	5.73	122.56
						2" Ice	6.56	7.32	238.28
DTMA1819VG12A TMA	A	From Leg	1.95 2.25 0.00	50.0000	143.00	4" Ice	9.02	10.72	590.48
						No Ice	0.81	0.30	12.60
						1/2" Ice	0.94	0.39	17.78
						1" Ice	1.07	0.49	24.54
						2" Ice	1.36	0.72	43.58
UMWD-06516-XD w/Mount Pipe	B	From Leg	1.95 2.25 0.00	50.0000	143.00	4" Ice	2.05	1.28	109.20
						No Ice	4.27	3.90	38.75
						1/2" Ice	4.88	4.96	75.51
						1" Ice	5.41	5.73	122.56
						2" Ice	6.56	7.32	238.28
DTMA1819VG12A TMA	B	From Leg	1.95 2.25 0.00	50.0000	143.00	4" Ice	9.02	10.72	590.48
						No Ice	0.81	0.30	12.60
						1/2" Ice	0.94	0.39	17.78
						1" Ice	1.07	0.49	24.54
						2" Ice	1.36	0.72	43.58
UMWD-06516-XD w/Mount Pipe	A	From Leg	1.05 -2.85 0.00	-70.0000	143.00	4" Ice	2.05	1.28	109.20
						No Ice	4.27	3.90	38.75
						1/2" Ice	4.88	4.96	75.51
						1" Ice	5.41	5.73	122.56
						2" Ice	6.56	7.32	238.28
DTMA1819VG12A TMA	A	From Leg	1.05 -2.85	-70.0000	143.00	4" Ice	9.02	10.72	590.48
						No Ice	0.81	0.30	12.60
						1/2" Ice	0.94	0.39	17.78

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
				0.00						
							1" Ice	1.07	0.49	24.54
							2" Ice	1.36	0.72	43.58
							4" Ice	2.05	1.28	109.20
** Sector Mount [SM 506-3]	B	None			0.0000	134.00	No Ice	35.47	35.47	1742.40
							1/2" Ice	50.60	50.60	2347.80
							1" Ice	65.73	65.73	2953.20
							2" Ice	95.99	95.99	4164.00
							4" Ice	156.51	156.51	6585.60
LLPX310R w/ Mount Pipe	A	From Leg	3.25	3.75	50.0000	134.00	No Ice	5.43	3.38	50.56
							1/2" Ice	5.99	4.15	89.99
							1" Ice	6.51	4.80	138.53
							2" Ice	7.57	6.19	255.15
							4" Ice	9.86	9.25	597.35
LLPX310R w/ Mount Pipe	B	From Leg	3.25	3.75	50.0000	134.00	No Ice	5.43	3.38	50.56
							1/2" Ice	5.99	4.15	89.99
							1" Ice	6.51	4.80	138.53
							2" Ice	7.57	6.19	255.15
							4" Ice	9.86	9.25	597.35
LLPX310R w/ Mount Pipe	C	From Leg	3.25	3.75	50.0000	134.00	No Ice	5.43	3.38	50.56
							1/2" Ice	5.99	4.15	89.99
							1" Ice	6.51	4.80	138.53
							2" Ice	7.57	6.19	255.15
							4" Ice	9.86	9.25	597.35
FDD_R6_RRH TMA	A	From Leg	3.25	3.75	50.0000	134.00	No Ice	1.79	0.78	33.00
							1/2" Ice	1.97	0.92	44.50
							1" Ice	2.16	1.07	58.31
							2" Ice	2.57	1.39	93.60
							4" Ice	3.49	2.14	200.35
FDD_R6_RRH TMA	B	From Leg	3.25	3.75	50.0000	134.00	No Ice	1.79	0.78	33.00
							1/2" Ice	1.97	0.92	44.50
							1" Ice	2.16	1.07	58.31
							2" Ice	2.57	1.39	93.60
							4" Ice	3.49	2.14	200.35
FDD_R6_RRH TMA	C	From Leg	3.25	3.75	50.0000	134.00	No Ice	1.79	0.78	33.00
							1/2" Ice	1.97	0.92	44.50
							1" Ice	2.16	1.07	58.31
							2" Ice	2.57	1.39	93.60
							4" Ice	3.49	2.14	200.35
(3) DB844H90-XY w/Mount Pipe	A	From Leg	3.25	3.75	50.0000	134.00	No Ice	3.58	5.63	35.55
							1/2" Ice	4.20	6.73	77.48
							1" Ice	4.73	7.54	129.56
							2" Ice	5.86	9.21	254.87
							4" Ice	8.27	12.75	624.47
(3) DB844H90-XY w/Mount Pipe	B	From Leg	3.25	3.75	50.0000	134.00	No Ice	3.58	5.63	35.55
							1/2" Ice	4.20	6.73	77.48
							1" Ice	4.73	7.54	129.56
							2" Ice	5.86	9.21	254.87
							4" Ice	8.27	12.75	624.47
(3) DB844H90-XY w/Mount Pipe	C	From Leg	3.25	3.75	50.0000	134.00	No Ice	3.58	5.63	35.55
							1/2" Ice	4.20	6.73	77.48
							1" Ice	4.73	7.54	129.56
							2" Ice	5.86	9.21	254.87
							4" Ice	8.27	12.75	624.47
** Sector Mount [SM 410-3]	B	None			0.0000	128.00	No Ice	23.96	23.96	1100.47
							1/2" Ice	34.06	34.06	1599.78

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
LNX-6514DS-T4M w/Mount Pipe	A	From Leg	3.25 3.75 2.00	50.0000	128.00	1" Ice 2" Ice 4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	44.16 64.36 104.76 8.63 9.29 9.90 11.17 13.82	44.16 64.36 104.76 7.07 8.25 9.15 10.98 15.01	2099.09 3097.71 5094.95 63.55 129.72 207.93 391.18 899.38
MG D3-800TV w/ Mount Pipe (VSI)	A	From Leg	3.25 3.75 2.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.71 4.19 4.63 5.65 7.82	3.56 4.39 5.09 6.54 9.69	39.50 72.47 114.81 219.81 541.92
(2) DB844G65ZAXY w/Mount Pipe	A	From Leg	3.25 3.75 0.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.38 6.07 6.65 7.83 10.34	5.40 6.49 7.30 8.96 12.49	41.55 89.98 148.78 288.22 688.80
LNX-6514DS-T4M w/Mount Pipe	B	From Leg	3.25 3.75 2.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.63 9.29 9.90 11.17 13.82	7.07 8.25 9.15 10.98 15.01	63.55 129.72 207.93 391.18 899.38
MG D3-800TV w/ Mount Pipe (VSI)	B	From Leg	3.25 3.75 2.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.71 4.19 4.63 5.65 7.82	3.56 4.39 5.09 6.54 9.69	39.50 72.47 114.81 219.81 541.92
(2) DB844H80E-XY w/Mount Pipe	B	From Leg	3.25 3.75 0.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.58 4.20 4.73 5.86 8.27	5.63 6.73 7.54 9.21 12.75	35.55 77.48 129.56 254.87 624.47
P65.16.XL.2 w/ Mount Pipe	C	From Leg	3.25 3.75 2.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.88 9.63 10.36 11.75 14.66	6.02 7.29 8.41 10.32 14.36	62.20 124.60 199.63 376.85 877.75
MG D3-800TV w/ Mount Pipe (VSI)	C	From Leg	3.25 3.75 2.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.71 4.19 4.63 5.65 7.82	3.56 4.39 5.09 6.54 9.69	39.50 72.47 114.81 219.81 541.92
(2) DB844G65ZAXY w/Mount Pipe	C	From Leg	3.25 3.75 0.00	50.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.38 6.07 6.65 7.83 10.34	5.40 6.49 7.30 8.96 12.49	41.55 89.98 148.78 288.22 688.80
** 10' Angle Gate (3) (AT&T Mobility)	B	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	16.88 22.50 28.13 39.38 61.88	16.88 22.50 28.13 39.38 61.88	525.00 750.00 975.00 1425.00 2325.00
(2) 7770.00 w/ mount pipe (AT&T Mobility)	A	From Leg	0.75 0.00 2.00	43.0000	100.00	No Ice 1/2" Ice 1" Ice	6.22 6.77 7.30	4.35 5.20 5.92	56.90 102.99 159.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) LGP13519 Diplexer (AT&T Mobility)	A	From Leg	0.75	0.00	43.0000	100.00	2" Ice	8.38	7.41	293.01
							4" Ice	10.69	10.76	679.74
				2.00			No Ice	0.27	0.18	5.50
							1/2" Ice	0.34	0.25	7.92
							1" Ice	0.43	0.32	11.41
							2" Ice	0.62	0.49	22.43
(2) LGP2140X (AT&T Mobility)	A	From Leg	0.75	0.00	43.0000	100.00	4" Ice	1.10	0.94	66.02
							No Ice	1.23	0.37	17.50
				2.00			1/2" Ice	1.38	0.48	24.46
							1" Ice	1.54	0.60	33.28
							2" Ice	1.89	0.87	57.28
(2) 7770.00 w/ mount pipe (AT&T Mobility)	B	From Leg	0.75	0.00	43.0000	100.00	4" Ice	2.69	1.51	136.16
							No Ice	6.22	4.35	56.90
				2.00			1/2" Ice	6.77	5.20	102.99
							1" Ice	7.30	5.92	159.01
							2" Ice	8.38	7.41	293.01
(2) LGP13519 Diplexer (AT&T Mobility)	B	From Leg	0.75	0.00	43.0000	100.00	4" Ice	10.69	10.76	679.74
							No Ice	0.27	0.18	5.50
				2.00			1/2" Ice	0.34	0.25	7.92
							1" Ice	0.43	0.32	11.41
							2" Ice	0.62	0.49	22.43
(2) LGP2140X (AT&T Mobility)	B	From Leg	0.75	0.00	43.0000	100.00	4" Ice	1.10	0.94	66.02
							No Ice	1.23	0.37	17.50
				2.00			1/2" Ice	1.38	0.48	24.46
							1" Ice	1.54	0.60	33.28
							2" Ice	1.89	0.87	57.28
(2) 7770.00 w/ mount pipe (AT&T Mobility)	C	From Leg	0.75	0.00	43.0000	100.00	4" Ice	2.69	1.51	136.16
							No Ice	6.22	4.35	56.90
				2.00			1/2" Ice	6.77	5.20	102.99
							1" Ice	7.30	5.92	159.01
							2" Ice	8.38	7.41	293.01
(2) LGP13519 Diplexer (AT&T Mobility)	C	From Leg	0.75	0.00	43.0000	100.00	4" Ice	10.69	10.76	679.74
							No Ice	0.27	0.18	5.50
				2.00			1/2" Ice	0.34	0.25	7.92
							1" Ice	0.43	0.32	11.41
							2" Ice	0.62	0.49	22.43
(2) LGP2140X (AT&T Mobility)	C	From Leg	0.75	0.00	43.0000	100.00	4" Ice	1.10	0.94	66.02
							No Ice	1.23	0.37	17.50
				2.00			1/2" Ice	1.38	0.48	24.46
							1" Ice	1.54	0.60	33.28
							2" Ice	1.89	0.87	57.28
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility)	A	From Leg	0.75	0.00	50.0000	100.00	4" Ice	2.69	1.51	136.16
							No Ice	8.88	6.60	82.20
				2.00			1/2" Ice	9.63	7.88	147.36
							1" Ice	10.36	9.00	225.21
							2" Ice	11.75	10.93	408.26
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility)	B	From Leg	0.75	0.00	50.0000	100.00	4" Ice	14.66	15.02	921.60
							No Ice	8.88	6.60	82.20
				2.00			1/2" Ice	9.63	7.88	147.36
							1" Ice	10.36	9.00	225.21
							2" Ice	11.75	10.93	408.26
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility)	C	From Leg	0.75	0.00	50.0000	100.00	4" Ice	14.66	15.02	921.60
							No Ice	8.88	6.60	82.20
				2.00			1/2" Ice	9.63	7.88	147.36
							1" Ice	10.36	9.00	225.21
							2" Ice	11.75	10.93	408.26
							4" Ice	14.66	15.02	921.60

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
(2) RRUS-11 BTS (AT&T Mobility)	A	From Leg	0.75 0.00 2.00	50.0000	100.00	No Ice	4.42	1.19	55.00
						1/2" Ice	4.71	1.35	80.77
						1" Ice	5.00	1.53	109.98
						2" Ice	5.61	1.90	179.45
						4" Ice	6.94	2.75	368.09
(2) RRUS-11 BTS (AT&T Mobility)	B	From Leg	0.75 0.00 2.00	50.0000	100.00	No Ice	4.42	1.19	55.00
						1/2" Ice	4.71	1.35	80.77
						1" Ice	5.00	1.53	109.98
						2" Ice	5.61	1.90	179.45
						4" Ice	6.94	2.75	368.09
(2) RRUS-11 BTS (AT&T Mobility)	C	From Leg	0.75 0.00 2.00	50.0000	100.00	No Ice	4.42	1.19	55.00
						1/2" Ice	4.71	1.35	80.77
						1" Ice	5.00	1.53	109.98
						2" Ice	5.61	1.90	179.45
						4" Ice	6.94	2.75	368.09
DC6-48-60-18-8F Surge Arrestor (AT&T Mobility)	B	From Leg	0.75 0.00 2.00	50.0000	100.00	No Ice	2.22	2.22	20.00
						1/2" Ice	2.44	2.44	39.25
						1" Ice	2.66	2.66	61.47
						2" Ice	3.15	3.15	115.61
						4" Ice	4.21	4.21	268.16
5'6"x2" Antenna Mount Pipe (AT&T Mobility)	A	From Leg	0.75 0.00 2.00	0.0000	100.00	No Ice	1.31	1.31	20.00
						1/2" Ice	1.70	1.70	29.95
						1" Ice	2.04	2.04	43.65
						2" Ice	2.75	2.75	82.93
						4" Ice	4.28	4.28	213.27
5'6"x2" Antenna Mount Pipe (AT&T Mobility)	B	From Leg	0.75 0.00 2.00	0.0000	100.00	No Ice	1.31	1.31	20.00
						1/2" Ice	1.70	1.70	29.95
						1" Ice	2.04	2.04	43.65
						2" Ice	2.75	2.75	82.93
						4" Ice	4.28	4.28	213.27
5'6"x2" Antenna Mount Pipe (AT&T Mobility)	C	From Leg	0.75 0.00 2.00	0.0000	100.00	No Ice	1.31	1.31	20.00
						1/2" Ice	1.70	1.70	29.95
						1" Ice	2.04	2.04	43.65
						2" Ice	2.75	2.75	82.93
						4" Ice	4.28	4.28	213.27
** GPS/BMR Antenna	B	From Leg	0.50 -2.00 0.00	-90.0000	30.00	No Ice	2.00	2.00	50.00
						1/2" Ice	2.80	2.80	70.00
						1" Ice	3.60	3.60	90.00
						2" Ice	5.20	5.20	130.00
						4" Ice	8.40	8.40	210.00
GPS/BMR Antenna	C	From Leg	0.50 2.00 0.00	90.0000	30.00	No Ice	2.00	2.00	50.00
						1/2" Ice	2.80	2.80	70.00
						1" Ice	3.60	3.60	90.00
						2" Ice	5.20	5.20	130.00
						4" Ice	8.40	8.40	210.00
** Side Arm Mount [SO 203-1]	A	From Leg	1.50 0.00 0.00	0.0000	157.00	No Ice	2.96	3.36	125.00
						1/2" Ice	4.10	4.68	153.55
						1" Ice	5.24	6.00	182.10
						2" Ice	7.52	8.64	239.19
						4" Ice	12.08	13.92	353.38
Side Arm Mount [SO 203-1]	B	From Leg	1.50 0.00 0.00	0.0000	157.00	No Ice	2.96	3.36	125.00
						1/2" Ice	4.10	4.68	153.55
						1" Ice	5.24	6.00	182.10
						2" Ice	7.52	8.64	239.19
						4" Ice	12.08	13.92	353.38

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
Side Arm Mount [SO 203-1]	C	From Leg	1.50 0.00 0.00	0.0000	157.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.96 4.10 5.24 7.52 12.08	3.36 4.68 6.00 8.64 13.92	125.00 153.55 182.10 239.19 353.38
** Sector Mount [SM 104-3]	C	None		0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	30.02 40.48 50.94 71.86 113.70	30.02 40.48 50.94 71.86 113.70	952.50 1404.60 1856.70 2760.90 4569.30
800 10504 w/ Mount Pipe	A	From Leg	3.83 -3.21 0.00	-40.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.47 3.84 4.23 5.08 6.99	3.05 3.68 4.33 5.67 8.61	35.85 65.14 103.05 198.43 494.74
6' x 2" Mount Pipe	A	From Leg	3.83 -3.21 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	22.00 32.83 47.71 90.28 230.84
800 10504 w/ Mount Pipe	B	From Leg	3.83 -3.21 0.00	-40.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.47 3.84 4.23 5.08 6.99	3.05 3.68 4.33 5.67 8.61	35.85 65.14 103.05 198.43 494.74
6' x 2" Mount Pipe	B	From Leg	3.83 -3.21 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	22.00 32.83 47.71 90.28 230.84
800 10504 w/ Mount Pipe	C	From Leg	3.83 -3.21 0.00	-40.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.47 3.84 4.23 5.08 6.99	3.05 3.68 4.33 5.67 8.61	35.85 65.14 103.05 198.43 494.74
6' x 2" Mount Pipe	C	From Leg	3.83 -3.21 0.00	0.0000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	22.00 32.83 47.71 90.28 230.84

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
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00	-35.0000		157.00	2.17	No Ice 1/2" Ice	3.72 4.01	31.00 51.56

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft 0.00	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
									1" Ice	4.30	72.12
									2" Ice	4.88	113.24
									4" Ice	6.04	195.48
VHLP2-23	B	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	-75.0000		157.00	2.17	No Ice	3.72	31.00
									1/2" Ice	4.01	51.56
									1" Ice	4.30	72.12
									2" Ice	4.88	113.24
									4" Ice	6.04	195.48
VHLP800-11	C	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	68.0000		157.00	2.92	No Ice	6.68	47.60
									1/2" Ice	7.07	83.90
									1" Ice	7.46	120.20
									2" Ice	8.23	192.80
									4" Ice	9.78	338.00
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Leg	3.25 3.75 1.00	50.0000		134.00	2.17	No Ice	3.72	31.00
									1/2" Ice	4.01	51.56
									1" Ice	4.30	72.12
									2" Ice	4.88	113.24
									4" Ice	6.04	195.48

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	182.354	Diagonal	A325N	0.6250	1	123.73	5437.50	0.023 ✓	1.333	Member Bearing
		Top Girt	A325N	0.6250	1	54.89	5437.50	0.010 ✓	1.333	Member Bearing
T2	177.292	Diagonal	A325N	0.6250	1	419.54	6442.72	0.065 ✓	1.333	Bolt Shear
T3	172.292	Diagonal	A325N	0.6250	1	1679.76	5437.50	0.309 ✓	1.333	Member Bearing
		Top Girt	A325N	0.6250	1	419.18	5437.50	0.077 ✓	1.333	Member Bearing
T4	167.292	Leg	A325N	0.8750	4	1528.32	26426.70	0.058 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	1950.27	5437.50	0.359 ✓	1.333	Member Bearing
T5	162.208	Diagonal	A325N	0.6250	1	2391.16	6442.72	0.371 ✓	1.333	Bolt Shear
T6	155.458	Diagonal	A325N	0.6250	1	2939.24	6442.72	0.456 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	734.68	5437.50	0.135 ✓	1.333	Member Bearing
T7	148.792	Leg	A325N	1.0000	4	5111.25	34490.20	0.148 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	3191.88	6442.72	0.495 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	707.72	5437.50	0.130 ✓	1.333	Member Bearing
T8	142.021	Leg	A325N	1.0000	6	7092.92	34440.00	0.206 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	6509.96	6442.72	1.010 ✓	1.333	Bolt Shear
T9	121.813	Leg	A325N	1.0000	6	12035.70	34375.70	0.350 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	7822.80	6442.72	1.214 ✓	1.333	Bolt Shear
T10	101.604	Leg	A325N	1.0000	8	13144.60	34415.40	0.382 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	10191.10	9140.63	1.115 ✓	1.333	Member Bearing
T11	81.3333	Diagonal	A325N	0.7500	1	10703.10	9277.52	1.154 ✓	1.333	Bolt Shear

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
T12	71.1667	Leg	A325N	1.0000	8	17208.10	34379.70	0.501	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	11332.40	12914.10	0.878	1.333	Gusset Bearing
T13	61	Leg	A325N	1.0000	8	21160.00	34348.80	0.616	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	12168.10	9277.52	1.312	1.333	Bolt Shear
T14	40.6667	Leg	A325N	1.0000	8	24959.90	34320.20	0.727	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	12904.20	13253.60	0.974	1.333	Bolt Shear
T15	20.3333	Diagonal	A325N	0.7500	1	13553.70	12914.10	1.050	1.333	Gusset Bearing

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	182.354 - 177.292	ROHN 3 EH	5.07	5.01	52.9 K=1.00	23.893	3.0159	-266.65	72060.70	0.004
T2	177.292 - 172.292	ROHN 3 EH	5.01	5.01	52.9 K=1.00	23.893	3.0159	-642.70	72059.50	0.009
T3	172.292 - 167.292	ROHN 3 EH	5.01	5.01	52.9 K=1.00	23.893	3.0159	-3755.63	72059.50	0.052
T4	167.292 - 162.208	ROHN 3 EH	5.09	5.01	52.9 K=1.00	23.894	3.0159	-9209.86	72061.00	0.128
T5	162.208 - 155.458	ROHN 4 EH	6.76	6.68	54.3 K=1.00	23.671	4.4074	-11729.40	104330.00	0.112
T6	155.458 - 148.792	ROHN 4 EH	6.68	6.68	54.3 K=1.00	23.671	4.4074	-17058.50	104328.00	0.164
T7	148.792 - 142.021	ROHN 4 EH	6.78	6.68	54.3 K=1.00	23.671	4.4074	-26863.30	104330.00	0.257
T8	142.021 - 121.813	ROHN 5 EH	20.24	6.68	43.6 K=1.00	25.320	6.1120	-55437.80	154754.00	0.358
T9	121.813 - 101.604	ROHN 6 EHS	20.24	6.68	36.0 K=1.00	26.380	6.7133	-90234.70	177094.00	0.510
T10	101.604 - 81.3333	ROHN 6 EH	20.31	10.02	54.8 K=1.00	23.590	8.4049	-129083.00	198268.00	0.651
T11	81.3333 - 71.1667	ROHN 8 EHS	10.18	10.02	41.2 K=1.00	25.668	9.7193	-137741.00	249471.00	0.552
T12	71.1667 - 61	ROHN 8 EHS	10.18	10.02	41.2 K=1.00	25.668	9.7193	-167436.00	249471.00	0.671
T13	61 - 40.6667	ROHN 8 EHS	20.37	10.02	41.2 K=1.00	25.668	9.7193	-204576.00	249472.00	0.820
T14	40.6667 - 20.3333	ROHN 8 EH	20.37	10.02	41.8 K=1.00	25.582	12.7627	-241455.00	326501.00	0.740
T15	20.3333 - 0	ROHN 8 EH	20.37	10.02	41.8	25.582	12.7627	-277811.00	326501.00	0.851

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 $\frac{P}{P_a}$
					K=1.00					

° DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	182.354 - 177.292	L2x2x3/16	7.80	4.04	123.1 K=1.00	9.827	0.7150	-125.25	7026.12	0.018
T2	177.292 - 172.292	L2x2x3/16	8.22	4.25	129.6 K=1.00	8.898	0.7150	-419.54	6361.78	0.066
T3	172.292 - 167.292	L2x2x3/16	8.66	4.47	136.1 K=1.00	8.061	0.7150	-1725.37	5763.61	0.299
T4	167.292 - 162.208	L2x2x3/16	9.10	4.68	142.7 K=1.00	7.335	0.7150	-1930.61	5244.54	0.368
T5	162.208 - 155.458	L2 1/2x2 1/2x1/4	10.46	5.43	132.6 K=1.00	8.492	1.1900	-2391.16	10105.60	0.237
T6	155.458 - 148.792	L2 1/2x2 1/2x1/4	11.02	5.70	139.4 K=1.00	7.683	1.1900	-2939.24	9143.21	0.321
T7	148.792 - 142.021	L2 1/2x2 1/2x1/4	11.59	5.98	146.2 K=1.00	6.984	1.1900	-3191.88	8311.12	0.384
T8	142.021 - 121.813	L2 1/2x2 1/2x1/4	13.31	6.84	167.1 K=1.00	5.348	1.1900	-6509.96	6364.43	1.023
T9	121.813 - 101.604	L3x3x1/4	14.99	7.66	155.3 K=1.00	6.194	1.4400	-7814.83	8919.81	0.876
T10	101.604 - 81.3333	L3 1/2x3 1/2x1/4	18.26	9.42	163.0 K=1.00	5.624	1.6900	-10157.20	9503.99	1.069
T11	81.3333 - 71.1667	L3 1/2x3 1/2x1/4	19.03	9.78	169.1 K=1.00	5.221	1.6900	-10703.10	8822.80	1.213
T12	71.1667 - 61	2L4x4x1/4x3/8	19.89	10.21	168.6 K=1.00	5.253	3.8800	-11574.00	20381.90	0.568
T13	61 - 40.6667	2L 'a' > 58.4334 in - 146 L4x4x1/4	21.66	11.09	167.4 K=1.00	5.329	1.9400	-12168.10	10337.50	1.177
T14	40.6667 - 20.3333	L4x4x5/16	23.47	11.99	181.9 K=1.00	4.512	2.4000	-12904.20	10827.90	1.192
T15	20.3333 - 0	2L4x4x5/16x3/8 2L 'a' > 74.1135 in - 185	25.31	12.91	213.9 K=1.00	3.263	4.8000	-13761.40	15664.00	0.879

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 $\frac{P}{P_a}$

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	182.354 - 177.292	L2x2x1/8	6.69	6.40	193.3 K=1.00	3.998	0.4844	-54.89	1936.75	0.028
T3	172.292 - 167.292	L2 1/2x2 1/2x3/16	7.72	7.43	180.2 K=1.00	4.600	0.9020	-425.72	4149.16	0.103
T6	155.458 - 148.792	L3x3x3/16	9.45	9.08	182.7 K=1.00	4.472	1.0900	-132.86	4874.89	0.027
T7	148.792 - 142.021	L3x3x3/16	10.14	9.77	196.7 K=1.00	3.861	1.0900	-277.00	4208.00	0.066

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	182.354 - 177.292	ROHN 3 EH	5.07	5.01	52.9	30.000	3.0159	48.43	90477.90	0.001
T2	177.292 - 172.292	ROHN 3 EH	5.01	5.01	52.9	30.000	3.0159	281.01	90477.90	0.003
T3	172.292 - 167.292	ROHN 3 EH	5.01	5.01	52.9	30.000	3.0159	1798.66	90477.90	0.020
T4	167.292 - 162.208	ROHN 3 EH	5.09	5.01	52.9	30.000	3.0159	6113.29	90477.90	0.068
T5	162.208 - 155.458	ROHN 4 EH	6.76	6.68	54.3	30.000	4.4074	8133.78	132223.00	0.062
T6	155.458 - 148.792	ROHN 4 EH	6.68	6.68	54.3	30.000	4.4074	12541.20	132223.00	0.095
T7	148.792 - 142.021	ROHN 4 EH	6.78	6.68	54.3	30.000	4.4074	20445.00	132223.00	0.155
T8	142.021 - 121.813	ROHN 5 EH	20.24	6.68	43.6	30.000	6.1120	42557.50	183359.00	0.232
T9	121.813 - 101.604	ROHN 6 EHS	20.24	6.68	36.0	30.000	6.7133	72214.50	201398.00	0.359
T10	101.604 - 81.3333	ROHN 6 EH	20.31	10.02	54.8	30.000	8.4049	105157.00	252148.00	0.417
T11	81.3333 - 71.1667	ROHN 8 EHS	10.18	10.02	41.2	30.000	9.7193	112516.00	291579.00	0.386
T12	71.1667 - 61	ROHN 8 EHS	10.18	10.02	41.2	30.000	9.7193	137665.00	291579.00	0.472
T13	61 - 40.6667	ROHN 8 EHS	20.37	10.02	41.2	30.000	9.7193	169280.00	291579.00	0.581
T14	40.6667 - 20.3333	ROHN 8 EH	20.37	10.02	41.8	30.000	12.7627	199679.00	382882.00	0.522
T15	20.3333 - 0	ROHN 8 EH	20.37	10.02	41.8	30.000	12.7627	228343.00	382882.00	0.596

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	182.354 - 177.292	L2x2x3/16	7.80	4.04	78.6	29.000	0.4308	123.73	12492.70	0.010
T2	177.292 - 172.292	L2x2x3/16	8.22	4.25	82.7	29.000	0.4308	348.58	12492.70	0.028
T3	172.292 - 167.292	L2x2x3/16	8.66	4.47	86.9	29.000	0.4308	1679.76	12492.70	0.134
T4	167.292 - 162.208	L2x2x3/16	9.10	4.68	91.1	29.000	0.4308	1950.27	12492.70	0.156
T5	162.208 - 155.458	L2 1/2x2 1/2x1/4	10.46	5.43	84.7	29.000	0.7519	2327.97	21804.40	0.107
T6	155.458 - 148.792	L2 1/2x2 1/2x1/4	11.02	5.70	89.0	29.000	0.7519	2784.88	21804.40	0.128
T7	148.792 - 142.021	L2 1/2x2 1/2x1/4	11.59	5.98	93.4	29.000	0.7519	3131.07	21804.40	0.144
T8	142.021 - 121.813	L2 1/2x2 1/2x1/4	13.31	6.84	106.7	29.000	0.7519	6493.00	21804.40	0.298
T9	121.813 - 101.604	L3x3x1/4	14.99	7.66	98.8	32.500	0.9394	7822.80	30529.70	0.256
T10	101.604 - 81.3333	L3 1/2x3 1/2x1/4	18.26	9.42	103.8	32.500	1.1034	10191.10	35861.70	0.284
T11	81.3333 - 71.1667	L3 1/2x3 1/2x1/4	19.03	9.78	107.7	32.500	1.1034	10505.10	35861.70	0.293
T12	71.1667 - 61	2L4x4x1/4x3/8	19.89	10.21	98.0	29.000	2.5819	11332.40	74874.40	0.151
T13	61 - 40.6667	2L 'a' > 58.4334 in - 145 L4x4x1/4	21.66	11.09	106.5	32.500	1.2909	11800.80	41955.50	0.281
T14	40.6667 - 20.3333	L4x4x5/16	23.47	11.99	116.1	32.500	1.5949	12545.60	51835.00	0.242
T15	20.3333 - 0	2L4x4x5/16x3/8	25.31	12.91	124.9	29.000	3.1898	13553.70	92505.50	0.147
		2L 'a' > 74.1135 in - 184								

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	182.354 - 177.292	L2x2x1/8	6.69	6.40	122.7	29.000	0.2930	33.67	8496.09	0.004
T3	172.292 - 167.292	L2 1/2x2 1/2x3/16	7.72	7.43	114.6	29.000	0.5710	419.18	16559.90	0.025
T6	155.458 - 148.792	L3x3x3/16	9.45	9.08	116.0	29.000	0.7120	678.60	20648.90	0.033*
T7	148.792 - 142.021	L3x3x3/16	10.14	9.77	124.8	29.000	0.7120	611.13	20648.90	0.030*

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 $\frac{P}{P_a}$

* DL controls

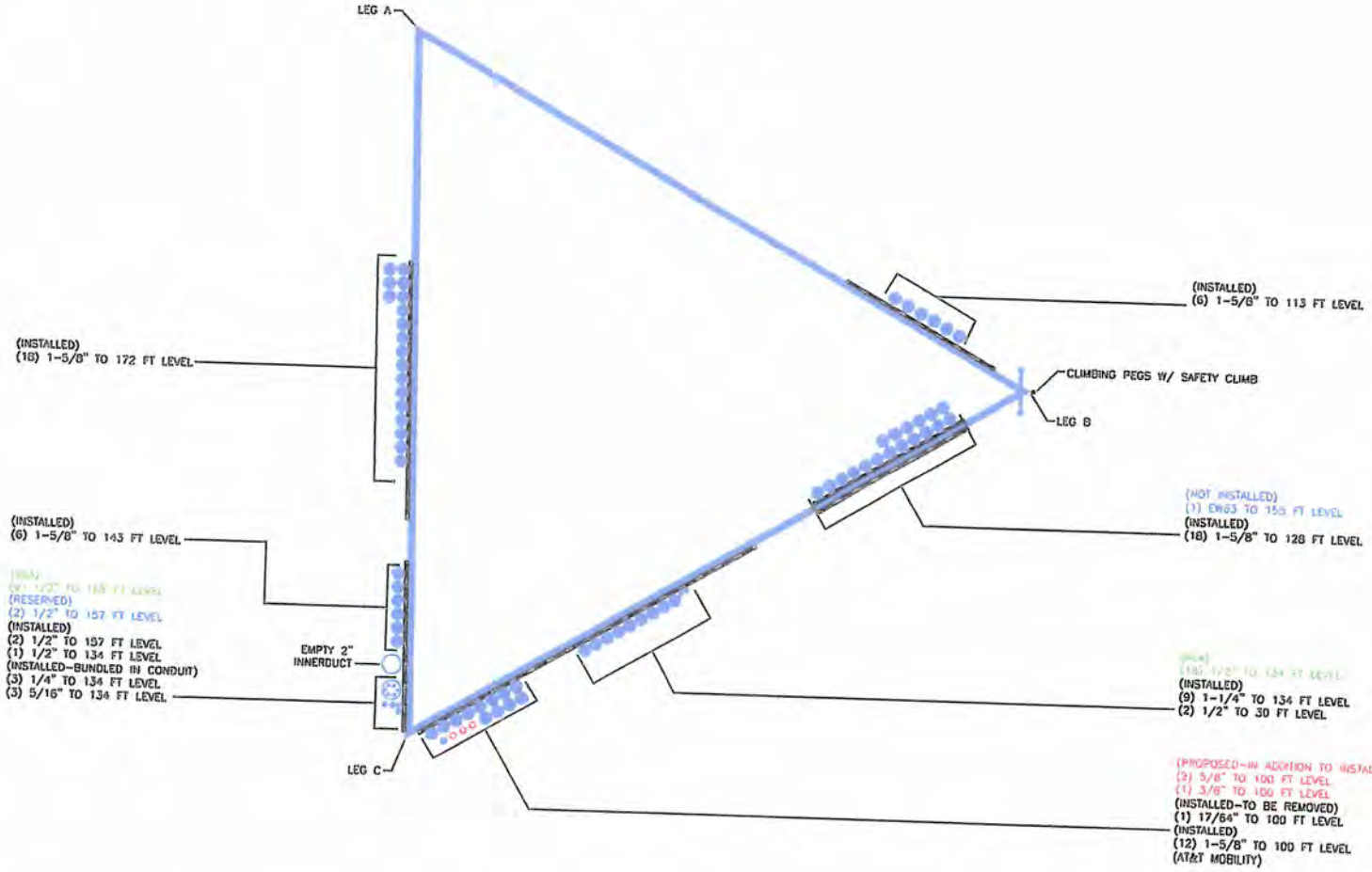
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	182.354 - 177.292	Leg	ROHN 3 EH	2	-266.65	72060.70	0.4	Pass
		Diagonal	L2x2x3/16	7	-125.25	9365.82	1.3	Pass
T2	177.292 - 172.292	Top Girt	L2x2x1/8	5	-54.89	2581.69	1.7 (b)	
		Leg	ROHN 3 EH	14	-642.70	72059.50	2.1	Pass
							0.9	Pass
T3	172.292 - 167.292	Diagonal	L2x2x3/16	16	-419.54	8480.25	4.9	Pass
		Leg	ROHN 3 EH	23	-3755.63	96055.31	3.9	Pass
		Diagonal	L2x2x3/16	28	-1725.37	7682.89	22.5	Pass
T4	167.292 - 162.208	Top Girt	L2 1/2x2 1/2x3/16	26	-425.72	5530.83	23.2 (b)	
		Leg	ROHN 3 EH	34	-9209.86	96057.31	7.7	Pass
							9.6	Pass
T5	162.208 - 155.458	Diagonal	L2x2x3/16	37	-1930.61	6990.97	27.6	Pass
		Leg	ROHN 4 EH	43	-11729.40	139071.88	8.4	Pass
		Diagonal	L2 1/2x2 1/2x1/4	50	-2391.16	13470.76	17.8	Pass
T6	155.458 - 148.792	Leg	ROHN 4 EH	52	-17058.50	139069.22	27.8 (b)	
		Diagonal	L2 1/2x2 1/2x1/4	59	-2939.24	12187.90	12.3	Pass
		Top Girt	L3x3x3/16	57	678.60	20648.90	24.1	Pass
T7	148.792 - 142.021	Leg	ROHN 4 EH	64	-26863.30	139071.88	34.2 (b)	
		Diagonal	L2 1/2x2 1/2x1/4	74	-3191.88	11078.72	3.3	Pass
		Top Girt	L3x3x3/16	69	-277.00	5609.26	10.1 (b)	
T8	142.021 - 121.813	Leg	ROHN 5 EH	76	-55437.80	206287.07	19.3	Pass
		Diagonal	L2 1/2x2 1/2x1/4	83	-6509.96	8483.79	28.8	Pass
T9	121.813 - 101.604	Leg	ROHN 6 EHS	97	-90234.70	236066.29	37.2 (b)	
		Diagonal	L3x3x1/4	101	-7814.83	11890.11	4.9	Pass
T10	101.604 - 81.3333	Leg	ROHN 6 EH	118	-129083.00	264291.23	9.8 (b)	
		Diagonal	L3 1/2x3 1/2x1/4	122	-10157.20	12668.82	26.9	Pass
T11	81.3333 - 71.1667	Leg	ROHN 8 EHS	133	-137741.00	332544.83	76.7	Pass
							38.2	Pass
T12	71.1667 - 61	Diagonal	L3 1/2x3 1/2x1/4	137	-10703.10	11760.79	65.7	Pass
		Leg	ROHN 8 EHS	142	-167436.00	332544.83	91.1 (b)	
		Diagonal	2L4x4x1/4x3/8	146	-11574.00	27169.07	48.8	Pass
							80.2	Pass
							83.6 (b)	
							41.4	Pass
							91.0	Pass
							50.4	Pass
							42.6	Pass
							65.8 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T13	61 - 40.6667	Leg	ROHN 8 EHS	151	-204576.00	332546.16	61.5	Pass
		Diagonal	L4x4x1/4	155	-12168.10	13779.89	88.3	Pass
T14	40.6667 - 20.3333	Leg	ROHN 8 EH	166	-241455.00	435225.81	98.4 (b) 55.5	Pass
T15	20.3333 - 0	Diagonal	L4x4x5/16	170	-12904.20	14433.59	89.4	Pass
		Leg	ROHN 8 EH	181	-277811.00	435225.81	63.8	Pass
		Diagonal	2L4x4x5/16x3/8	185	-13761.40	20880.11	65.9	Pass
							78.7 (b)	
							Summary	
						Leg (T15)	63.8	Pass
						Diagonal (T13)	98.4	Pass
						Top Girt (T6)	10.1	Pass
						Bolt Checks	98.4	Pass
						RATING =	**98.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



CROWN REGION ADDRESS

USA

07/10/09	A5-BOLT INFORMATION ADDED PER WORK ORDER # 190301
20/12/09	APPLICATION ADDED PER WORK ORDER # 247923
01/03/10	A5-BOLT INFORMATION ADDED PER WORK ORDER # 218204
05/09/10	APPLICATION ADDED PER WORK ORDER # 203992
07/12/10	APPLICATION ADDED PER WORK ORDER # 203832
12/02/10	A5-BOLT INFORMATION ADDED PER WORK ORDER # 247923
13/05/10	APPLICATION ADDED PER WORK ORDER # 241202
10/03/11	A5-BOLT INFORMATION ADDED PER WORK ORDER # 334766 & # 330263
14/03/11	APPLICATION ADDED PER WORK ORDER # 334845

DRAWN BY: KDI/DK
CHECKED BY:
DRAWING DATE: 18/08/06

SITE NUMBER:
SITE NAME:

SITE NAME

BRG 134 943057

BUSINESS UNIT NUMBER

807133

SITE ADDRESS

50 ROCKLAND ROAD
SO NORWALK, CT 06854
FAIRFIELD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

LEGEND: FEEDLINES

- SOLID BLUE CIRCLE DENOTES EXISTING FEEDLINE
- OPEN RED CIRCLE DENOTES PROPOSED FEEDLINE
- BLUE "X" DENOTES LOCATION NOT GIVEN

NOTE: ASSUME FEEDLINE ATTACHMENT HEIGHT TO TOWER STEEL AT 8-FEET ABOVE FINISHED GRADE UNLESS OTHERWISE SPECIFIED

BUSINESS UNIT: 807133 TOWER ID: C_BASELEVEL

BASE LEVEL DRAWING

SCALE: N.T.S. | 1

PLOT DATE: 2/4/2011 FILENAME: 807133_BASELEVEL.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	BRG 134, CT BU#807133
Job Number:	2011-004-027
Tower Model:	180' Rohn SSV Self-Supporting Tower
Date:	3/22/2011

Input Information:

# Bolts	10	
Bolt Diameter	1	in
Allowable Tension, F_u	125	ksi
Steel Grade	A193 B7	
Applied Shear	34.261	kips
Uplift per Leg	227.022	kips

Bolt Cross-Sectional Area, **A**	0.785	in^2
Applied Shear, f_v	4.36	ksi
Maximum Allowable Tensile Stress, F_t	41.25	ksi
Allowable Tension Force	323.98	kips
Maximum Allowable	431.86	kips
% Capacity	**52.6%**	

The Bolt Group is sufficient for the applied Uplift Force

Maximum Allowable Tensile Stress, F_t

$$0.43F_u - 1.8f_v \leq 0.33F_u$$

This equation is for threaded parts, A449 bolts over 1 1/2" dia. (threads included in shear plane) Manual of Steel Construction ASD, 9th Edition, pg. 5-74, Table J3.3

P65-16-XLH-RR : Dual Broadband Antennas

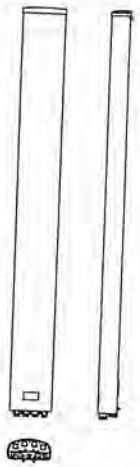
POLARIZATION: Dual linear ±45°
FREQUENCY (MHz): 698-894, 1710-2170
HORIZONTAL BEAM WIDTH (°): 65, 65
GAIN (dBi/dBd): 15.5/13.4 17.5/15.4
TILT: 1-12, 0-8
LENGTH: 72"

ELECTRICAL SPECIFICATIONS*

Frequency range (MHz)	698-894			1710-2170		
Frequency band (MHz)	698-806		806-894	1710-1880	1850-1990	1900-2170
Gain (dBi/dBd)	14.8/12.7		15.5/13.4	16.9/14.8	17.2/15.1	17.5/15.4
Polarization	Dual Linear +/- 45				Dual Linear +/- 45	
Nominal Impedance (Ω)	50				50	
VSWR	< 1.5:1				< 1.5:1	
Horizontal beam width, -3 dB (°)	66		65	60	63	63
Vertical beam width, -3 dB (°)	14.7		12.5	6.8	6.4	5.7
Electrical down tilt (°)	1 to 12				0 to 8	
Side lobe suppression, vertical 1st upper (dB)	> 16		>16	> 16		
Isolation between inputs (dB)	>16		>16			
Inter band Isolation (dB)	> 30		> 30	> 30	> 30	
Tracking, horizontal plane ±60° (dB)	> 40				> 40	
First null fill (dB)	< 2			< 2	< 2	< 2
Vertical beam squint (°)				>-20	>-20	>-20
Front to back ratio (dB) 180°±30° copolar	< 0.8		< 0.8	< 0.5	< 0.5	< 0.5
Front to back ratio (dB) 180°±30° total power	>24		>24	> 30	>30	>28
Cross polar discrimination (XPD) 0° (dB)	> 15		> 15	> 15	> 15	> 15
Cross polar discrimination (XPD) ±60° (dB)	> 10		> 10	> 10	> 10	> 10
Far field coupling						
IM3, 2xTx@43dBm (dBc)	<-153				<-153	
IM7, 2xTx@43dBm (dBc)						
Power handling, average per input (W)	500				250	
Power handling, average total (W)	1000				500	

MECHANICAL SPECIFICATIONS*

Connector	4 X 7/16 DIN Female, IP67
Connector position	Bottom
Dimensions, HxWxD, mm (ft)	72" x 12" x 6" (1829 x 305 x 152)
Mounting	Pre-mounted Tilt Brackets
Weight, with brackets, kg (lbs)	29 (64)
Weight, without brackets, kg (lbs)	24 (53)
Wind load, frontal/lateral/rear side 42 m/s Cd=1.6 (N)	1380
Maximum operational wind speed, m/s (mph)	100 (45)
Survival wind speed, m/s (mph)	150 (67)
Lightning protection	DC Ground
Operating Temperature	-40C to +60C
Radome material	PVC, IP55
Packet size, HxWxD, mm (ft)	87" x 16" x 10" (2225 x 400 x 225)
Radome colour	Light Grey
Shipping weight, kg (lbs)	34 (75)
RET	iRET AISGv1.1, MET and AISGv2.0
Brackets	7256.00, 7454.00



*All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

ANTENNA PATTERNS*

For detailed patterns visit http://www.powerwave.com/rpa/.

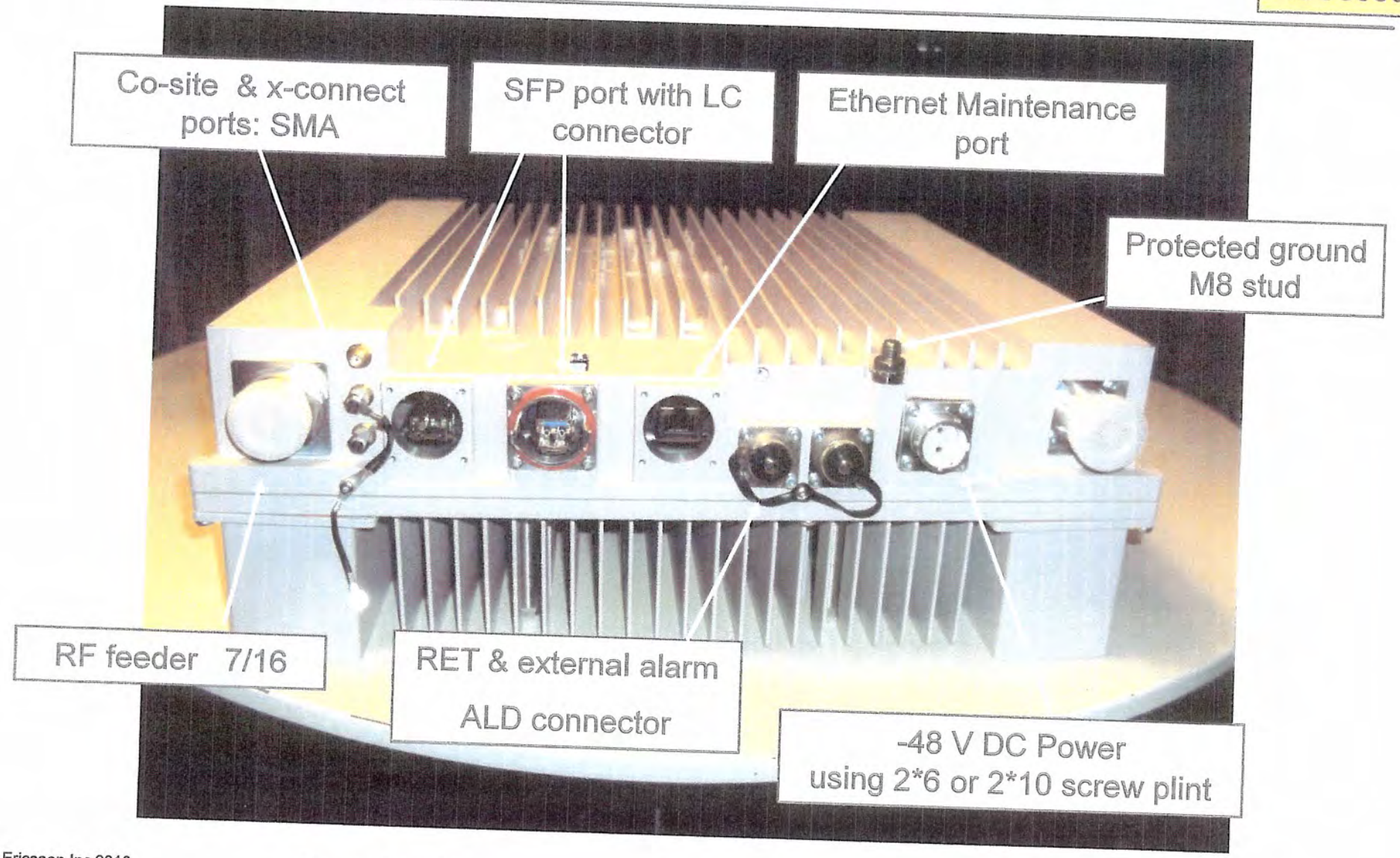
RRUS 11 – Dual PA RRU.
Technical Data

RBS6000

- Multi standard
- RF: 2x30 Watts
- Carrier BW: 1.4 – 20 MHz
- Alarms: 2
- Dimensions (with sunshield):
  - Width: 17.0 in
  - Height: 17.8 in
  - Depth: 7.2 in
  - Weight: 55 lbs (Band 12)
  - Weight: 50 lbs (Band 4)
- Temperature: -40 to +131 F
- Cooling: Self convection
- Power: -48 VDC
- Rec. fuse size 20 Amp
  - Rec. DC cable:
    - 6 mm^2 up to 60 meters
    - 10 mm^2 over 60 meters
    - Shielded
- Power Cons: 200 Watts typ.

RRUS-11 I/F

RBS6000



TT19-08BP111-001 | TMA Twin 1900 with 850 Bypass 12 dB AISG 1.1

ELECTRICAL SPECIFICATIONS

UL Frequency Range (MHz)	1850-1910 with 824-894 bypass
UL Rejection	>77 dB
UL Gain(dB)	12
UL Return Loss	>18
UL Noise Figure	<1.7 dB, Typical
UL Output 3rd Order Intercept Point(dBm)	>+23
UL Bypass Loss(dB)	2.5, Typical
UL Max Input Power (dBm)	+14 dBm
DL Frequency Range (MHz)	1930-1990 with 824-894 bypass
DL Return Loss	>18
DL Insertion Loss (dB)	850 MHz, <0.3; 1900 MHz, <0.5
Intermodulation	@ 2 x +43 dBm TX carriers, in receive band, <160 dBc, reffered to antenna port
Input Voltage (V)	AISG Mode: 10-30; Current alarm mode: 8 -17
Alarm Functionality	AISG compatible or in case of no AISG command received, current alarm mode 170-190 mA
Power Consumption	<1.1W @12V
Power Handling, RMS	850: >57 dBm; 1900: >55 dBm
AISG Compatibility	AISG 1.1 fully upgreadable to AISG 2.0 (AISG version only dependent on loaded SW version) TT19-08BP112-001 has AISG 2.0 loaded from factory

MECHANICAL SPECIFICATIONS

Dimension HxWxD mm(ft)	250x169x137 mm (9.9"x6.7"x5.4")
Weight(lbs)	<16
Colors	Off white (NCS 1502-R)
RF Connectors	DIN 7/16 female, long neck
Mounting Kit	Mounting kit for pole and wall is included

ENVIRONMENTAL SPECIFICATIONS

Temperature Range	-40° C to +65° C (-40° F to +149° F)
Operational	ETS 300 019-1-4
Transportation	ETS 300 019-1-2
Storage	ETS 300 019-1-1
Lightning Protection	3 kA 10/350 µs; 20 kA (Shield)
Housing	Aluminum
MTBF	>1 million hours per TMA
Ingress Protection	IP65 and IP68

APPROVAL AND TESTS

Safety	EN60950
EMC	3GPP: TS 25.113

*All specifications subject to change without notice. Contact your Powerwave representative for complete performance data.

POWER

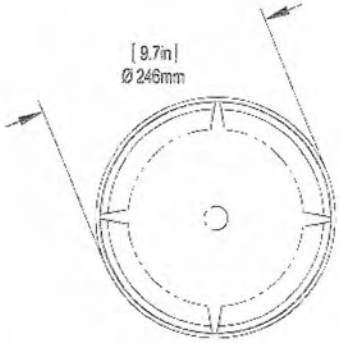
DC6-48-60-18-8F

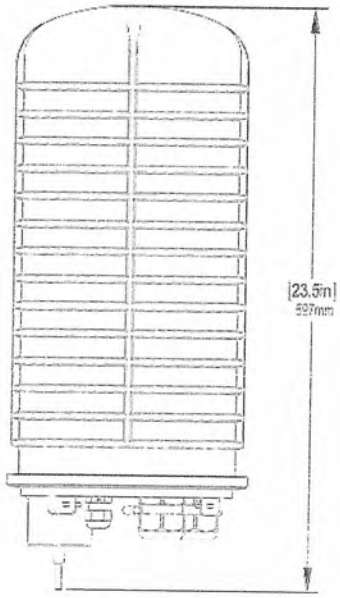
DC Surge Suppression Solution

The DC6-48-60-18 is a dual chambered, DC surge suppression system for use in multi-circuit, Distributed Antenna Systems. The system will protect up to 6 Remote Radio Heads from voltage surges and lightning, and connect up to 18 fiber pairs. The system is enclosed in a NEMA 4 rated, waterproof enclosure.

FEATURES

- Protects up to 6 Remote Radio Heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for Remote Radio Head protection.
- Includes fiber connections for up to 18 pairs of fiber.
- LED indicators on individual circuits provide visual indication of suppressor status.
- Form 'C' relays allow for remote monitoring of the suppressor status.
- Patented Strikesorb technology provides over 60 kA of surge current capacity per circuit.
- Strikesorb suppression modules are fully recognized to UL 1449-3rd Edition Safety Standard, meeting all intermediate and high current fault requirements to facilitate use in OEM applications.
- Raycap recommends that DC protection system be installed within 2 meters or 6 feet of the radio.
- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.





Raycap

Phone 208.777.1166 Toll Free 800.890.2569 Fax 208.777.4466 www.raycapsurgeprotection.com

DC6-48-60-18-8F

DC Power Surge Protection

Electrical Specifications	
Model Number	DC6-48-60-18-8F
Nominal Operating Voltage	48 VDC
Nominal Discharge Current (I_n)	20 kA 8/20 µs
Maximum Discharge Current (I_{max}) per NEMA LS-1	60 kA 8/20 µs
Maximum Continuous Operating Voltage (U_c)	75 VDC
Voltage Protection Rating	400 V

Mechanical Specifications	
Suppression Connection Method	Compression lug, #2-#14 AWG Copper, #2-#12 Aluminum
Fiber Connection Method	LC-LC Single mode duplex
Environmental Rating	IP 68, 7m 72hrs
Operating Temperature	-40° C to + 80° C
Storage Temperature	-70° C to + 80° C
Cold Temperature Cycling	IEC 61300-2-22e -30° C to + 60° C 200 hrs @ 5 psi
Resistance to Aggressive Materials	CEI IEC 61073-2 including acids and bases
UV Protection	ISO 4892-2 Method A Xenon-Arc 2160 hrs
Weight	20 lbs without Mounting Bracket

STANDARDS

Strikesorb modules are compliant to the following Surge Protection Device (SPD) Standards:

- ANSI/UL 1449 – 3rd Edition
- IEEE C62.41
- NEMA LS-1, IEC 61643-1:2005 2nd Edition:2005
- IEC 61643-12
- EN 61643-11:2002 (including A11:2007)

GS-07F-0435V

Certified to ISO 9001:2000

TÜV Rheinland of North America

Raycap, Inc. 806 W. Clearwater Loop • Post Falls • Idaho • 83854 • USA
Phone 208.777.1166 • Toll Free 800.890.2569 • Fax 208.777.4466 • www.raycapsurgeprotection.com

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 463-5511
Fax: (860) 513-7190

Douglas L. Culp
Real Estate Consultant

March 30, 2011

Mr. Richard A. Moccia
Mayor, City of Norwalk
Norwalk City Hall
125 East Ave.
Norwalk, CT 06851-3200

Re: Telecommunications Facility – 50 Rockland Road Norwalk, CT

Dear Mayor Moccia:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes Cingular's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures; please call me at (860) 463-5511 or Ms. Linda Roberts, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Douglas L. Culp
Real Estate Consultant

Enclosure