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

November 2, 2012

Jennifer Young Gaudet
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-SPRINT-034-121018** – Sprint Spectrum, L.P. notice of intent to modify an existing telecommunications facility located at 66 Sugar Hollow Road, Danbury, Connecticut.

Dear Ms. Gaudet:

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 October 16, 2012. 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/cm

c: The Honorable Mark D. Boughton, Mayor, City of Danbury
Dennis Elpern, City Planner, City of Danbury

EM-SPRINT-034-121018

HPC Wireless Services
46 Mill Plain Rd.
Floor 2
Danbury, CT, 06811
P.: 203.797.1112

HPC WIRELESS SERVICES

October 16, 2012

ORIGINAL

RECEIVED
OCT 18 2012
CONNECTICUT
SITING COUNCIL

VIA OVERNIGHT COURIER

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

Re: Sprint Spectrum, L.P. – exempt modification
66 Sugar Hollow Road, Danbury, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of Sprint Spectrum, L.P. ("Sprint"). Sprint is undertaking modifications to certain existing sites in its Connecticut system in order to implement updated technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that 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 Mayor of the City of Danbury.

Sprint plans to modify the existing wireless communications facility owned by AT&T and located at 66 Sugar Hollow Road in Danbury (coordinates 41.336111, -73.470000). Attached are a compound plan, elevation and details depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to Sprint's operations at the site.

The changes to the facility do not constitute a modification 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. 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. Sprint will replace six (6) existing antennas with three (3) dual pole CDMA antennas and three (3) dual-band panel antennas on the existing platform with a center

line of approximately 90'. Six (6) RRHs (remote radio heads) will be mounted to the pole behind and slightly below the antennas. After an interim period of up to one year, three (3) CDMA antennas will be removed, leaving three (3) antennas. Sprint will also install three (3) hybriflex cables along the existing coaxial cable run, and will remove the coaxial cable at the end of the interim period. The proposed modifications will not extend the height of the approximately 106' structure.

2. The proposed changes will not extend the site boundaries. Sprint will replace two (2) existing cabinets and will add one (1) cabinet on its existing concrete pad. Sprint will also install a fiber distribution box on the pad. These changes will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility 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. As indicated on the attached report prepared by EBI Consulting, Sprint's operations at the site will result in a power density of approximately 31.487%; the combined site operations will result in a total power density of approximately 46.677%.

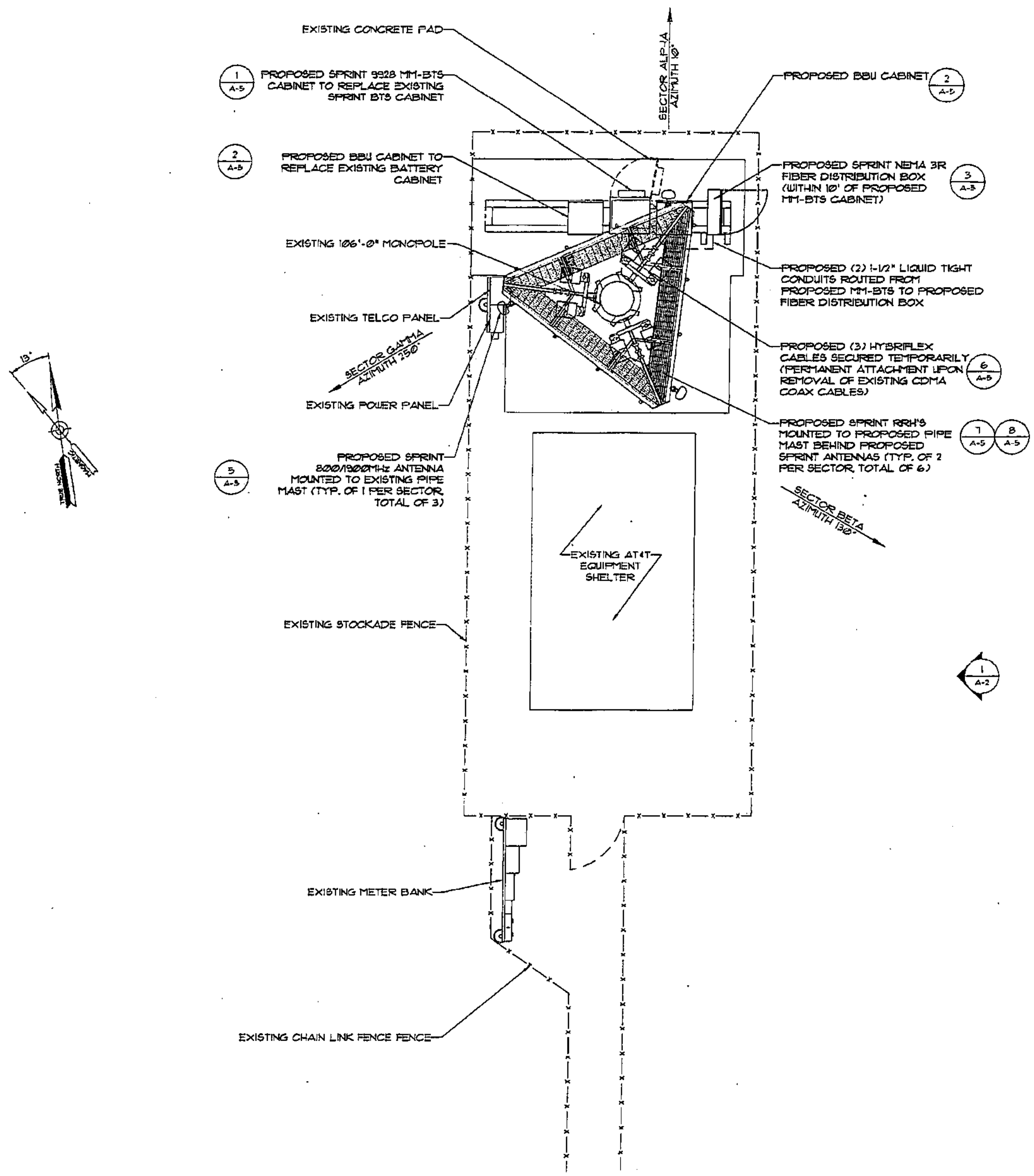
Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Jennifer Young Gaudet

Jennifer Young Gaudet

cc: Honorable Mark Boughton, Mayor, City of Danbury
State of Connecticut (underlying property owner)



1 COMPOUND PLAN
SCALE = 1/4" = 1'-0"

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
P: 800-357-7641

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
P: (978) 952-1600

Sa Salient ARCHITECTS, LLC
New Jersey Office:
8 East Palisade Avenue
Englewood, NJ 07631
P: 201-567-0032 – F: 201-567-5556
New England Office:
15 New England Executive Park
Burlington, MA 01803
P: 781-791-5019 – F: 781-791-5016

STATE OF CONNECTICUT · CHARLES ... WHELAN · No. 10239 · LICENSED ARCHITECT

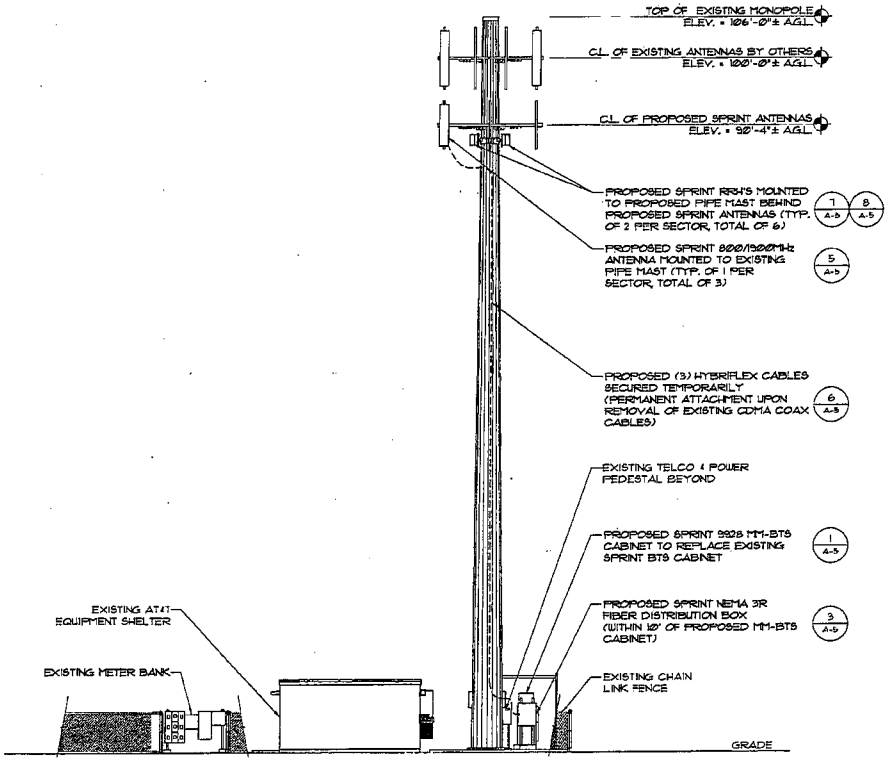
SUBMITTALS

NO	DATE	DESCRIPTION	BY
1	05/28/12	PRELIMINARY	JHP
2	06/07/12	REVISED	NAB
3	06/22/12	REVISED PER COMMENTS	NAB
4	07/03/12	REVISED PER COMMENTS	NAB
5	07/31/12	ISSUED FOR FINAL	AD
6	09/14/12	ISSUED FOR FINAL	VFA

SITE NUMBER:
CT33XC523
SITE NAME:
DANBURY-AT&T
SITE ADDRESS:
66 SUGAR HOLLOW ROAD
DANBURY, CT, 06810

SHEET TITLE:
COMPOUND PLAN

SALIENT PROJ. NO: CT33XC523
DATE:
CHECKED BY: ADC
SHEET NO: A-1



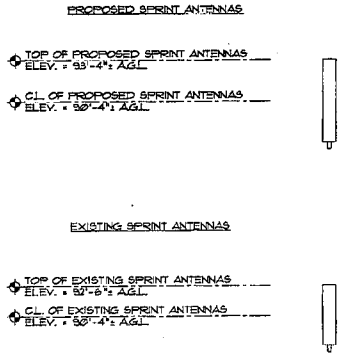
1 WEST ELEVATION

SCALE = 1/8" = 1'-0"

ANTENNA CONFIGURATION NOTE

ALL EXISTING CDMA ANTENNAS TO BE REMOVED / REPLACED WITH NETWORK VISION ANTENNAS FOR FINAL CONFIGURATION.

ANTENNA SEPARATION TO BE FIELD VERIFIED BY THE GENERAL CONTRACTOR.



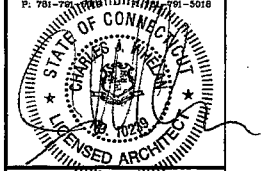
2 HEIGHT COMPARISON

SCALE = 1/4"=1'-0"

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
P: 800-357-7641

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
P: (978) 952-1600

Salient ARCHITECTS, LLC
New Jersey Office:
8 East Palisade Avenue
Englewood, NJ 07631
P: 201-567-0032 – F: 201-567-9556
New England Office:
15 New England Executive Park
Burlington, MA 01803
P: 781-791-3000 – F: 781-791-3018



SUBMITTALS

NO	DATE	DESCRIPTION	BY
1	03/28/12	PRELIMINARY	JJP
2	04/27/12	REVISED	NAS
3	06/22/12	REVISED PER COMMENTS	NAS
4	07/09/12	REVISED PER COMMENTS	NAS
5	07/31/12	ISSUED FOR FINAL	AD
6	09/14/12	ISSUED FOR FINAL	VFA

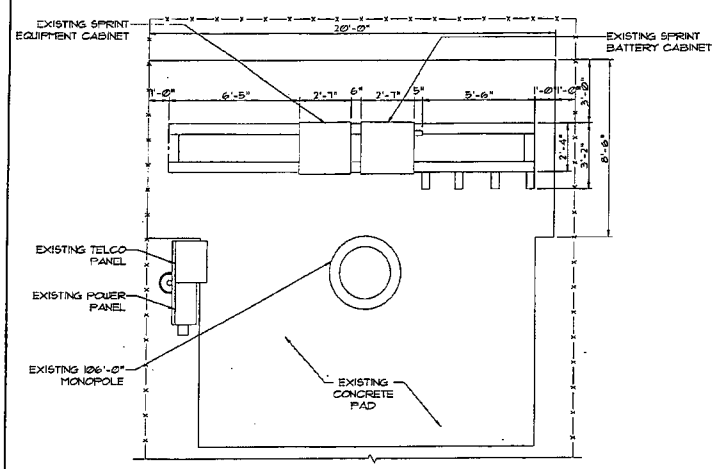
SITE NUMBER:
CT33XC523

SITE NAME:
DANBURY-AT&T

SITE ADDRESS:
66 SUGAR HOLLOW ROAD
DANBURY, CT, 06810

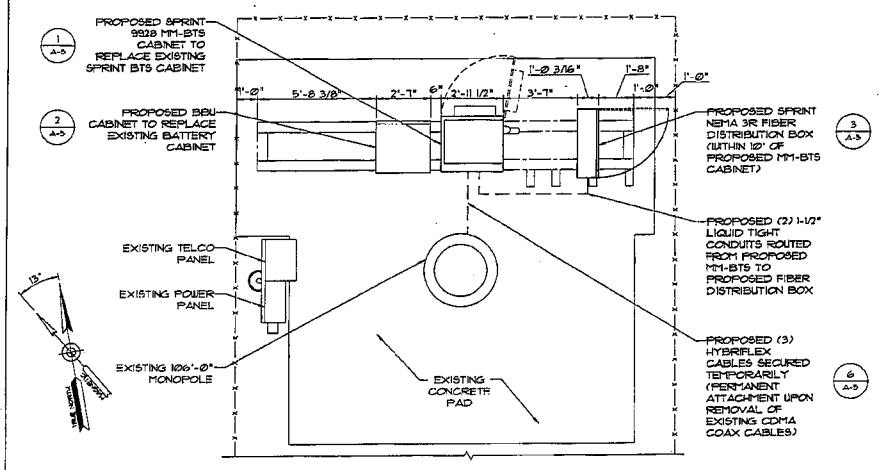
SHEET TITLE:
ELEVATION

SALIENT PROJ. NO: CT33XC523
DATE:
CHECKED BY: ADC
SHEET NO: A-2



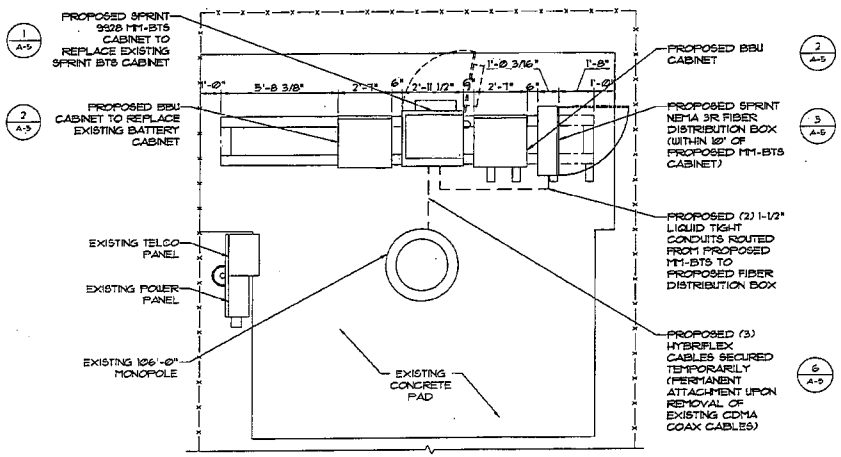
1. ENLARGED EQUIPMENT CABINET LAYOUT (EXISTING)

SCALE = 3/8" = 1'-0"



2. ENLARGED EQUIPMENT CABINET LAYOUT (INTERMEDIATE)

SCALE = 3/8" = 1'-0"



3. ENLARGED EQUIPMENT CABINET LAYOUT (FINAL)

SCALE = 3/8" = 1'-0"

EQUIPMENT CABINET CONFIGURATION

EXISTING LAYOUT: 2 CABINETS
PROPOSED LAYOUT: 3 CABINETS

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
P: 800-357-7641

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
P: (978) 952-1600

Salient ARCHITECTS, LLC
New Jersey Office:
8 East Palisade Avenue
Englewood, NJ 07631
P: 201-567-0032 - F: 201-567-0556
New England Office:
15 New England Executive Park
Burlington, MA 01803
P: 781-791-5010 - F: 781-791-5018

STATE OF CONNECTICUT
CHARLES J. WIDEN
No. 10239
LICENSED ARCHITECT

SUBMITTALS

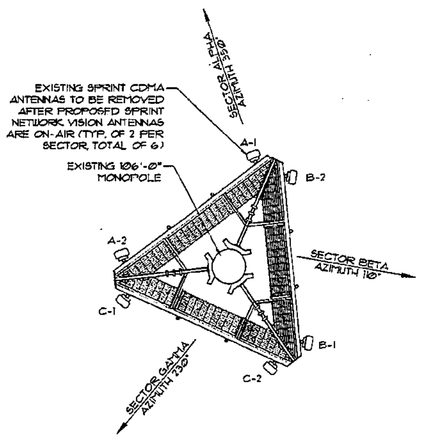
NO	DATE	DESCRIPTION	BY
1	03/28/12	PRELIMINARY	J-P
2	06/07/12	REVISED	NAS
3	06/22/12	REVISED PER COMMENTS	NAS
4	07/09/12	REVISED PER COMMENTS	NAS
5	07/31/12	ISSUED FOR FINAL	AD
6	09/14/12	ISSUED FOR FINAL	VPA

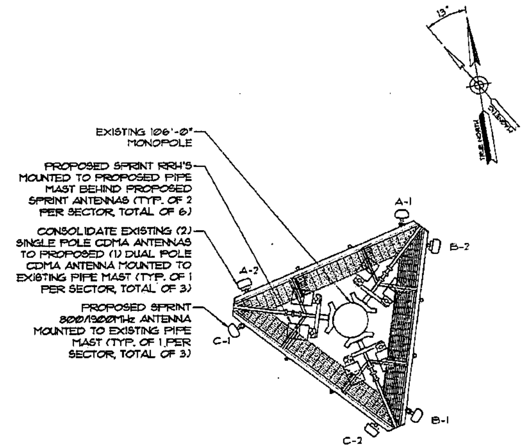
SITE NUMBER: CT33XC523
SITE NAME: DANBURY-AT&T
SITE ADDRESS: 66 SUGAR HOLLOW ROAD DANBURY, CT, 06810

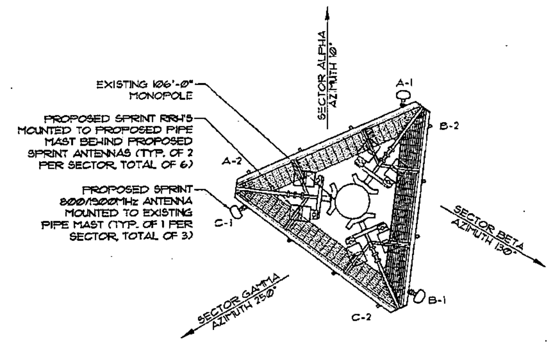
SHEET TITLE: ENLARGED EQUIPMENT CABINET LAYOUT

SALIENT PROJ. NO: CT33XC523
DATE:
CHECKED BY: ADC
SHEET NO: A-3

EXISTING ANTENNA PLAN	INTERIM ANTENNA PLAN	FINAL ANTENNA PLAN







1 ANTENNA SCENARIO

SCALE = N.T.S.

ALPHA	POSITION	ANTENNA STATUS	FREQUENCY (MHZ)	ANTENNA MAKE	ANTENNA MODEL	AZIMUTHS EXISTING (FOR REFERENCE)	AZIMUTHS PROPOSED	MECHANICAL DOWN TILT	ELECTRICAL DOWN TILT	RAD CENTER (AGL)	*HYBRIFLEX CABLE LENGTH (FT)	RRH MODEL	TOP COAX JUMPER SIZE (IN)	*TOP COAX JUMPER LENGTH (FT)	TOP COAX JUMPER MAKE	TOP COAX JUMPER MODEL	COMBINER	*COMBINER JUMPER LENGTH (FT)	ANTENNA COLOR CODING
	A-1	PROPOSED	800/1900	RFS	APXVSPP18-C-A20	350°	10°	0°	-1°	90'-4"	115	(1) 800MHz	1/2	10	RFS	(2) LCF12-50J	N/A	N/A	TBD
								0°	0°			(1) 1900MHz	1/2	10	RFS	(4) LCF12-50J	N/A	N/A	

BETA	POSITION	ANTENNA STATUS	FREQUENCY (MHZ)	ANTENNA MAKE	ANTENNA MODEL	AZIMUTHS EXISTING (FOR REFERENCE)	AZIMUTHS PROPOSED	MECHANICAL DOWN TILT	ELECTRICAL DOWN TILT	RAD CENTER (AGL)	*HYBRIFLEX CABLE LENGTH (FT)	RRH MODEL	TOP COAX JUMPER SIZE (IN)	*TOP COAX JUMPER LENGTH (FT)	TOP COAX JUMPER MAKE	TOP COAX JUMPER MODEL	COMBINER	*COMBINER JUMPER LENGTH (FT)	ANTENNA COLOR CODING
	B-1	PROPOSED	800/1900	RFS	APXVSPP18-C-A20	110°	130°	0°	-8°	90'-4"	115	(1) 800MHz	1/2	10	RFS	(2) LCF12-50J	N/A	N/A	TBD
								0°	0°			(1) 1900MHz	1/2	10	RFS	(4) LCF12-50J	N/A	N/A	

GAMMA	POSITION	ANTENNA STATUS	FREQUENCY (MHZ)	ANTENNA MAKE	ANTENNA MODEL	AZIMUTHS EXISTING (FOR REFERENCE)	AZIMUTHS PROPOSED	MECHANICAL DOWN TILT	ELECTRICAL DOWN TILT	RAD CENTER (AGL)	*HYBRIFLEX CABLE LENGTH (FT)	RRH MODEL	TOP COAX JUMPER SIZE (IN)	*TOP COAX JUMPER LENGTH (FT)	TOP COAX JUMPER MAKE	TOP COAX JUMPER MODEL	COMBINER	*COMBINER JUMPER LENGTH (FT)	ANTENNA COLOR CODING
	C-1	PROPOSED	800/1900	RFS	APXV9ERR18-C-A20	230°	250°	0°	0°	90'-4"	115	(1) 800MHz	1/2	10	RFS	(2) LCF12-50J	N/A	N/A	TBD
								0°	0°			(1) 1900MHz	1/2	10	RFS	(4) LCF12-50J	N/A	N/A	

* CONTRACTOR TO FIELD VERIFY ALL CABLE/JUMPER LENGTHS AGAINST CURRENT B.O.M.

2 RF SYSTEM SCHEDULE

SCALE = N.T.S.

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
P: 800-357-7641

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
P: (978) 952-1600

Sa Salient ARCHITECTS, LLC
New Jersey Office:
8 East Palisade Avenue
Englewood, NJ 07631
P: 201-567-0032 - F: 201-567-9556
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STATE OF CONNECTICUT
CHARLES J. WHELAN
NO. 10239
LICENSED ARCHITECT

SUBMITTALS

NO	DATE	DESCRIPTION	BY
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3	06/22/12	REVISED PER COMMENTS	NAS
4	07/09/12	REVISED PER COMMENTS	NAS
5	07/31/12	ISSUED FOR FINAL	AD
6	09/14/12	ISSUED FOR FINAL	VFA

SITE NUMBER:
CT33XC523

SITE NAME:
DANBURY-AT&T

SITE ADDRESS:
66 SUGAR HOLLOW ROAD
DANBURY, CT, 06810

SHEET TITLE:
ANTENNA SCENARIO AND RF SYSTEM SCHEDULE

SALIENT PROJ. NO: CT33XC523

SHEET NO: A-4

DATE:

CHECKED BY: ADC

AT&T Towers
5405 Windward Parkway
Alpharetta, GA 30004

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119

June 6, 2012

B&T No.: 84510_001

STRUCTURAL ANALYSIS
106' Monopole Tower

AT&T DESIGNATION:	Site ID:	5778-A
	Site FA:	10070924
	Site Name:	Bennett Pond
	AT&T Project:	Sprint Vision Modification 4-16-2012
ANALYSIS CRITERIA:	Codes:	TIA/EIA-222-F (80 mph fastest mile) 2005 Connecticut Building Code
SITE DATA:		66 Sugar Hollow Rd., Danbury, CT, Fairfield County Latitude 41.336692°, Longitude --73.471099° Market MA/RI/VT/NH/ME/CT

Ms. Charlotte Malone,

B&T Engineering, Inc. is pleased to submit this Structural Analysis Report to determine the structural integrity of the aformentioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

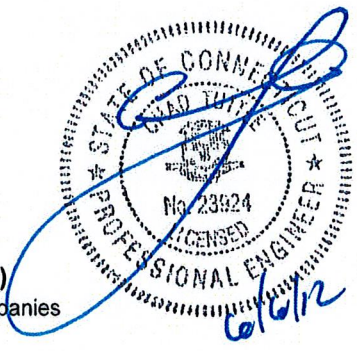
Tower Stress Level with Proposed Equipment:	**98.2%**	**Pass**
Foundation Ratio with Proposed Equipment:	**90.0%**	**Pass**

We at B&T Engineering, Inc. appreciate the opportunity of providing our continuing professioinal services to you and AT&T Towers. If you have any questions or need further assistance on this or any other project please give us a call.

Respectfully Submitted by: B&T Engineering, Inc.

Analysis Prepared by: Zach Smith

Analysis Reviewed by: Chad E. Tuttle, P.E.



ANALYSIS RESULTS:

Table 1 - Section Capacity (Summary)

Component (Tower Section)	% Capacity	Pass / Fail
106 - 72.25	51.3	Pass
72.25 - 35.75	85.3	Pass
35.75 - 0	98.2	Pass

Table 2 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	80.4	**Pass**
1	Base Plate	Base	76.1	**Pass**
1	Base Foundation	Base	90.0	**Pass**

Structure Rating (max from all components) =	98.2%

Notes:

1.) See additional documentation in "Appendix B - Calculations" for calculation supporting the % capacity consumed.

2.) Capacities up to 100% are considered acceptable based on analysis methods used.

Recommendations:

N/A

ANALYSIS PROCEDURE:

Table 4 - Documents Provided

Document	Description	Date	Source
Tower Data	SA Report by GPD	5/16/2011	Siterra
Foundation Information	SA Report by GPD	5/16/2011	Siterra
Geotech Report	NA	N/A	N/A
Loading	Application	4/18/2012	Siterra
	Previous SA by GPD	5/16/2011	Siterra
	Email from Charlotte Malone	5/11/2012	On File
Previous Structural Analysis	GPD	5/16/2011	Siterra
	Paul J Ford	6/10/2008	Siterra

ANALYSIS METHOD:

tnxTower, 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 B.

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 specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Appendix A of this report.
4. Mount areas and weights are assumed based on photographs provided.
5. Refer to the base level drawing for transmission line distribution.
6. AT&T existing loading taken from LTE SA dated 5/16/11 and email clarification from Charlotte Malone.
7. RRUs in the future section of the NOC2 not considered as it is part of the LTE loading already considered.

If any of these assumptions have been made in error, B&T Engineering should be notified to determine the effect on the structural integrity of the tower.

APPENDIX A

TOWER ANALYSIS LOADING

APPENDIX A

TOWER ANALYSIS LOADING

TOWER ANALYSIS LOADING:

Existing / Reserved Loading

Antenna						Mount		Transmission Line	
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Type	Quantity	Size (in)
AT&T Mobility	**106**	**106**	**6**	**Powerwave**	**7770**	**1**	**LP Platform**	**12**	**1-1/4"**
AT&T Mobility	**106**	**106**	**12**	**Powerwave**	**LGP 21401**		**on same mount**		
AT&T Mobility	**106**	**106**	**3**	**Powerwave**	**P65-16-XLH-RR**		**on existing mount**	**2**	**3/4"**
AT&T Mobility	**106**	**106**	**6**	**Ericsson**	**RRUS-11**		**on existing mount**	**1**	**1/2"**
AT&T Mobility	**106**	**106**	**1**	**Raycap**	**DC6-48-60-18-8F**		**on existing mount**		
Sprint	**88**	**90**	**6***	**Decibel**	**DB980F90E-M**	**1**	**LP Platform**	**6**	**7/8"**
Sprint	**75**	**75**	**1**	**Unknown**	**GPS**	**1**	**3' Sidearm**	**1**	**1/2"**

*Equipment to be Removed

Proposed Loading

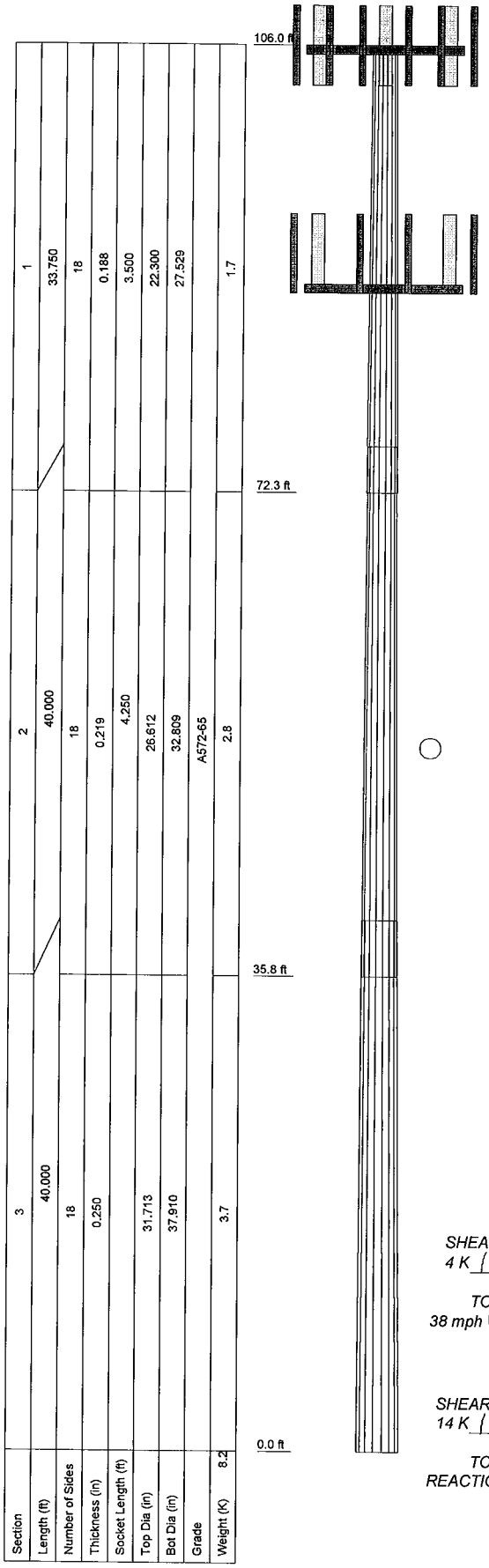
Antenna						Mount		Transmission Line	
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Type	Quantity	Size (in)
Sprint	**88**	**90.33**	**4**	**RFS**	**APXVSPP18-C-A20**			**3**	**1-1/4"**
Sprint	**88**	**90.33**	**2**	**RFS**	**APXVSERR18-C-A20**				
Sprint	**88**	**90.33**	**3**	**Alcatel-Lucent**	**1900 MHz**				
Sprint	**88**	**90.33**	**3**	**Alcatel-Lucent**	**800 MHz**				

Future Loading

Antenna						Mount		Transmission Line	
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Type	Quantity	Size (in)
AT&T Mobility	**106**	**106**	**3**	**Powerwave**	**P65-16-XLH-RR**			**3**	**1-1/4"**

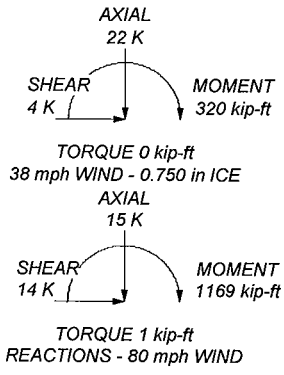
APPENDIX B

CALCULATIONS



Section	1	2	3
Length (ft)	33.750	40.000	40.000
Number of Sides	18	18	18
Thickness (in)	0.188	0.219	0.250
Socket Length (ft)	3.500	4.250	
Top Dia (in)	22.300	26.612	31.713
Bot Dia (in)	27.529	32.809	37.910
Grade	A572-65		
Weight (K)	1.7	2.8	3.7

8.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) 7770.00 w/ Mount Pipe (ATI Mobility-E)	106	P65-16-XLH-RR w/ Mount Pipe (ATI Mobility-F)	106
(2) 7770.00 w/ Mount Pipe (ATI Mobility-E)	106	P65-16-XLH-RR w/ Mount Pipe (ATI Mobility-F)	106
(2) 7770.00 w/ Mount Pipe (ATI Mobility-E)	106	Platform Mount [LP 712-1] (ATI Mobility-E)	106
(4) LGP21401 (ATI Mobility-E)	106	(2) APXVSPP18-C-A20 w/ Mount Pipe (Sprint-P)	90.33
(4) LGP21401 (ATI Mobility-E)	106		
(4) LGP21401 (ATI Mobility-E)	106	(2) APXVSPP18-C-A20 w/ Mount Pipe (Sprint-P)	90.33
P65-16-XLH-RR w/ Mount Pipe (ATI Mobility-E)	106	(2) APXVSERR18-C-A20 w/Mount Pipe (Sprint-P)	90.33
P65-16-XLH-RR w/ Mount Pipe (ATI Mobility-E)	106	1900MHz RRH (25Mhz) (Sprint-P)	90.33
P65-16-XLH-RR w/ Mount Pipe (ATI Mobility-E)	106	1900MHz RRH (25Mhz) (Sprint-P)	90.33
		1900MHz RRH (25Mhz) (Sprint-P)	90.33
(2) RRUS-11 (ATI Mobility-E)	106	800MHZ RRH (Sprint-P)	90.33
(2) RRUS-11 (ATI Mobility-E)	106	800MHZ RRH (Sprint-P)	90.33
(2) RRUS-11 (ATI Mobility-E)	106	800MHZ RRH (Sprint-P)	90.33
DC6-48-60-18-8F Squid (ATI Mobility-E)	106	Platform Mount [LP 712-1] (Sprint-E)	88
P65-16-XLH-RR w/ Mount Pipe (ATI Mobility-F)	106	GPS_A (Sprint-Remove)	75
		3' Sidearm (Sprint-Remove)	75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 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: 98.2%

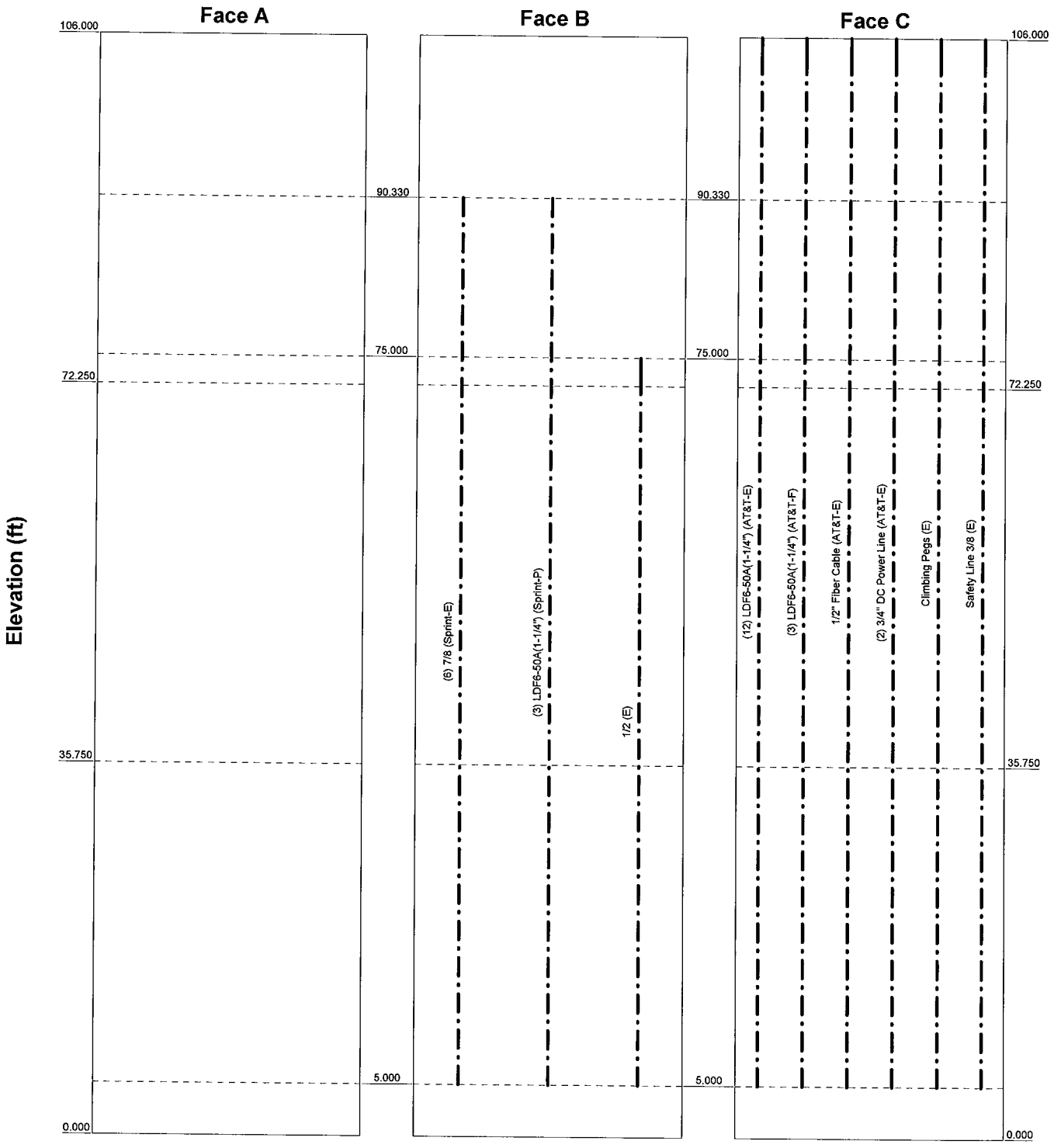
B&T Engineering Inc.
1717 S. Boulder Ave.
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 84510.001 - Bennett Pond, CT(Site# 5778-A)		
Project: 106' MP/ Sprint Co-Locate		
Client: AT&T	Drawn by: zsmith	App'd:
Code: TIA/EIA-222-F	Date: 06/06/12	Scale: NTS
Path: S:\B&T Engineering\Projects\AT&T Towers\84510_Bennett Pond_CT(Site# 5778-A)\Engineering\Tower\84510_001a_Bennett Pond.eri		Dwg No. E-1


ALL FEEDLINES ROUTED
INSIDE MONOPOLE

Feedline Distribution Chart
0' - 106'

Round Flat App In Face App Out Face Truss Leg



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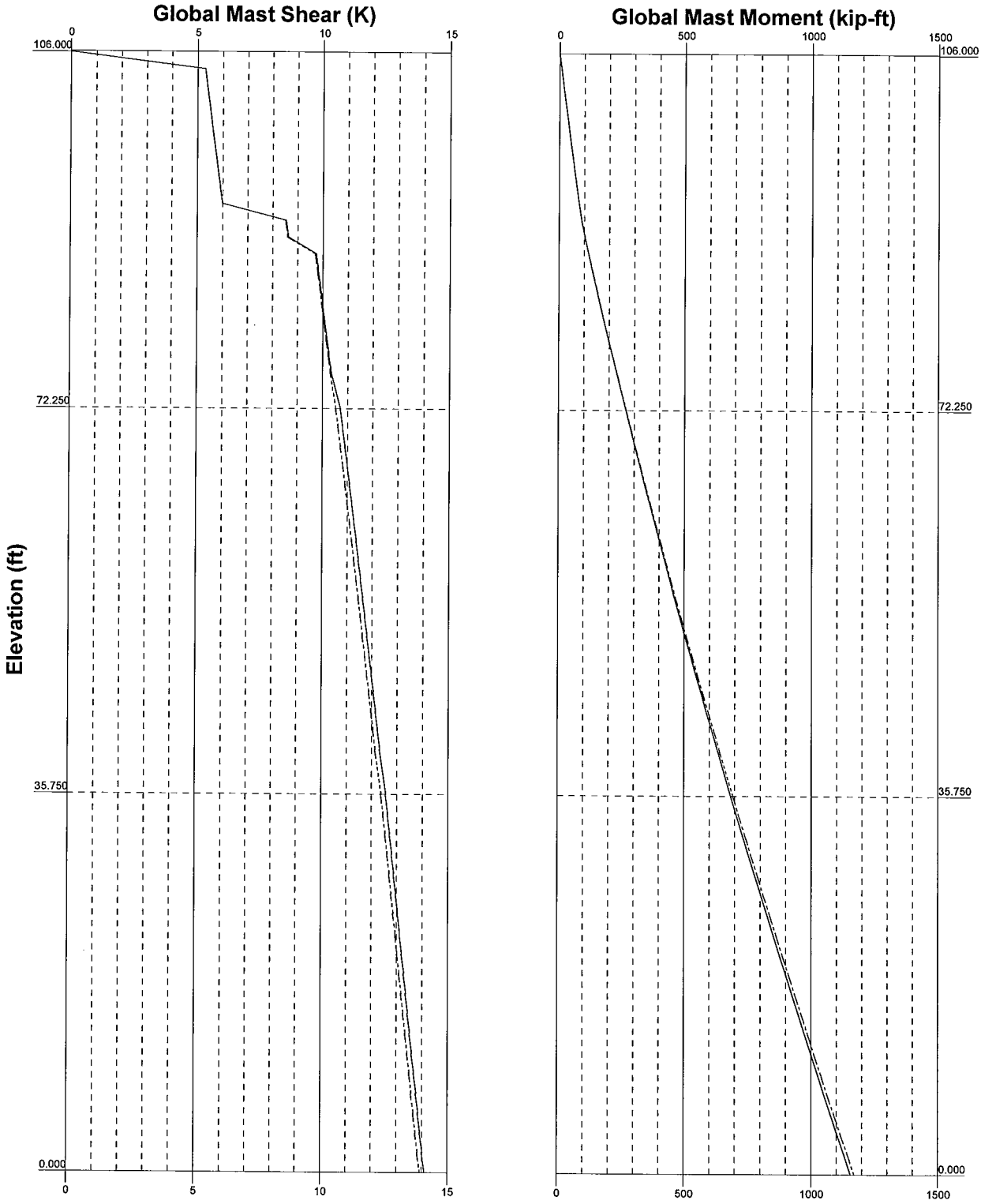
Client: AT&T	Drawn by: zsmith	App'd:
Code: TIA/EIA-222-F	Date: 06/06/12	Scale: NTS
Path:		Dwg No. E-7

TIA/EIA-222-F - 80 mph/38 mph 0.750 in Ice

Vx ---------- Vz

Maximum Values

Mx ---------- Mz



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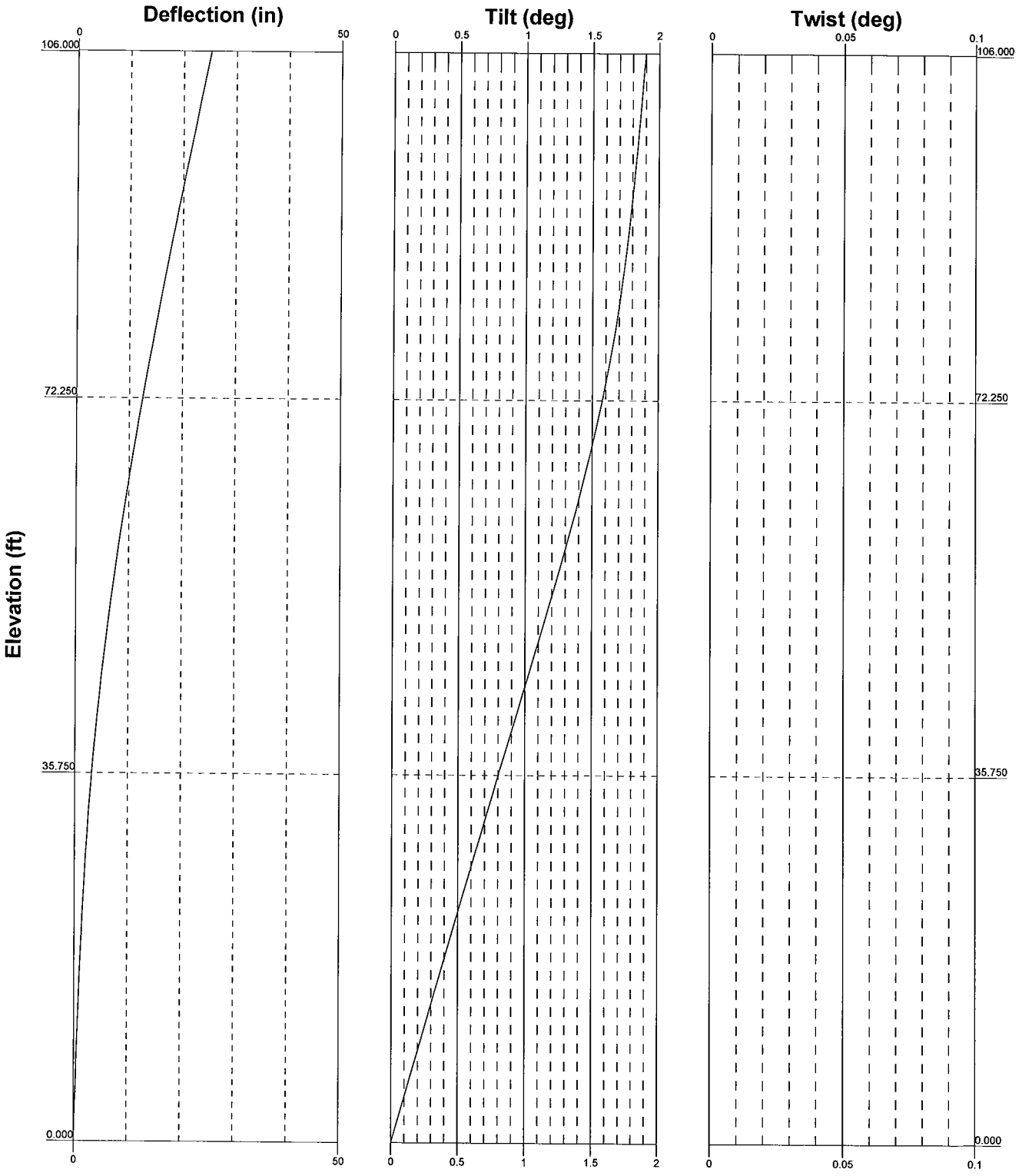
Job: 84510.001 - Bennett Pond, CT(Site# 5778-A)			
Project: 106' MP/ Sprint Co-Locate			
Client: AT&T	Drawn by: zsmith	App'd:	
Code: TIA/EIA-222-F	Date: 06/06/12	Scale: NTS	
Path: S:\B&T Engineering\Projects\AT&T Towers\84510_Bennett Pond_5778\Analysis\mp\[Tower84510_60ft_Bennett Pond.eri		Dwg No. E-4	

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

Maximum Values



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Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 84510.001 - Bennett Pond, CT(Site# 5778-A)		
Project: 106' MP/ Sprint Co-Locate		
Client: AT&T	Drawn by: zsmith	App'd:
Code: TIA/EIA-222-F	Date: 06/06/12	Scale: NTS
Path:		Dwg No. E-5

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 80 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °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, 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		

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	106.000-72.250	33.750	3.500	18	22.300	27.529	0.188	0.750	A572-65 (65 ksi)
L2	72.250-35.750	40.000	4.250	18	26.612	32.809	0.219	0.875	A572-65 (65 ksi)
L3	35.750-0.000	40.000		18	31.713	37.910	0.250	1.000	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	22.644	13.160	812.941	7.850	11.328	71.761	1626.952	6.581	3.595	19.172
	27.954	16.272	1536.783	9.706	13.985	109.890	3075.589	8.137	4.515	24.081
L2	27.573	18.329	1613.075	9.369	13.519	119.321	3228.273	9.166	4.299	19.646
	33.315	22.633	3037.056	11.570	16.667	182.220	6078.108	11.319	5.389	24.631
L3	32.871	24.966	3122.355	11.169	16.110	193.813	6248.819	12.485	5.141	20.566
	38.495	29.883	5354.579	13.369	19.258	278.040	10716.204	14.944	6.232	24.929

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 106.000-72.250				1	1	1		
L2 72.250-35.750				1	1	1		
L3 35.750-0.000				1	1	1		

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 klf
LDF6-50A(1-1/4") (AT&T-E)	C	No	Inside Pole	106.000 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF6-50A(1-1/4") (AT&T-F)	C	No	Inside Pole	106.000 - 5.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
1/2" Fiber Cable (AT&T-E)	C	No	Inside Pole	106.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
3/4" DC Power Line (AT&T-E)	C	No	Inside Pole	106.000 - 5.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
- 7/8 (Sprint-E)	B	No	Inside Pole	90.330 - 5.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF6-50A(1-1/4") (Sprint-P)	B	No	Inside Pole	90.330 - 5.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
-								
1/2 (E)	B	No	Inside Pole	75.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
-								
Climbing Pegs (E)	C	No	CaAa (Out Of Face)	106.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
Safety Line 3/8 (E)	C	No	CaAa (Out Of Face)	106.000 - 5.000	1	No Ice	0.037	0.000
						1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004

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 K
L1	106.000-72.250	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.095
		C	0.000	0.000	0.000	1.266	0.387
L2	72.250-35.750	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.200
		C	0.000	0.000	0.000	1.369	0.419
L3	35.750-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.168
		C	0.000	0.000	0.000	1.153	0.353

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 K
L1	106.000-72.250	A	0.845	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.095
		C		0.000	0.000	0.000	6.966	0.417
L2	72.250-35.750	A	0.795	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.200
		C		0.000	0.000	0.000	7.534	0.451
L3	35.750-0.000	A	0.750	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.168
		C		0.000	0.000	0.000	6.045	0.379

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	106.000-72.250	-0.048	0.028	-0.230	0.133
L2	72.250-35.750	-0.048	0.028	-0.235	0.136
L3	35.750-0.000	-0.041	0.024	-0.197	0.114

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
_									
(2) 7770.00 w/ Mount Pipe (AT&T Mobility-E)	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.101 0.155 0.287 0.665
(2) 7770.00 w/ Mount Pipe (AT&T Mobility-E)	B	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.101 0.155 0.287 0.665
(2) 7770.00 w/ Mount Pipe (AT&T Mobility-E)	A	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.101 0.155 0.287 0.665
(4) LGP21401 (AT&T Mobility-E)	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
(4) LGP21401 (AT&T Mobility-E)	B	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
(4) LGP21401 (AT&T Mobility-E)	A	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility-E)	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.290 9.910 11.176 13.829	6.362 7.538 8.427 10.239 14.099	0.079 0.141 0.216 0.393 0.886
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility-E)	B	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.637 9.290 9.910 11.176	6.362 7.538 8.427 10.239	0.079 0.141 0.216 0.393

tnxTower	Job	Page
	84510.001 - Bennett Pond, CT(Site# 5778-A)	5 of 13
B&T Engineering Inc. 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	**Project** 106' MP/ Sprint Co-Locate	**Date** 08:30:55 06/06/12
	Client AT&T	**Designed by** zsmith

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 K
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility-E)	A	From Leg	4.000 0.000 0.000	0.000	106.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.829 8.637 9.290 9.910 11.176 13.829	14.099 6.362 7.538 8.427 10.239 14.099	0.886 0.079 0.141 0.216 0.393 0.886
(2) RRUS-11 (AT&T Mobility-E)	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.424 4.708 5.001 5.613 6.940	1.186 1.351 1.526 1.900 2.753	0.055 0.081 0.110 0.179 0.368
(2) RRUS-11 (AT&T Mobility-E)	B	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.424 4.708 5.001 5.613 6.940	1.186 1.351 1.526 1.900 2.753	0.055 0.081 0.110 0.179 0.368
(2) RRUS-11 (AT&T Mobility-E)	A	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.424 4.708 5.001 5.613 6.940	1.186 1.351 1.526 1.900 2.753	0.055 0.081 0.110 0.179 0.368
DC6-48-60-18-8F Squid (AT&T Mobility-E)	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.266 1.456 1.658 2.093 3.098	1.266 1.456 1.658 2.093 3.098	0.020 0.035 0.053 0.095 0.215
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility-F)	C	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.290 9.910 11.176 13.829	6.362 7.538 8.427 10.239 14.099	0.079 0.141 0.216 0.393 0.886
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility-F)	B	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.290 9.910 11.176 13.829	6.362 7.538 8.427 10.239 14.099	0.079 0.141 0.216 0.393 0.886
P65-16-XLH-RR w/ Mount Pipe (AT&T Mobility-F)	A	From Leg	4.000 0.000 0.000	0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.637 9.290 9.910 11.176 13.829	6.362 7.538 8.427 10.239 14.099	0.079 0.141 0.216 0.393 0.886
Platform Mount [LP 712-1] (AT&T Mobility-E)	C	None		0.000	106.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.530 29.940 35.350 46.170 67.810	24.530 29.940 35.350 46.170 67.810	1.335 1.646 1.956 2.577 3.820
_									
(2) APXVSPP18-C-A20 w/ Mount Pipe (Sprint-P)	C	From Leg	4.000 0.000 0.000	10.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.148 0.225 0.406 0.909
(2) APXVSPP18-C-A20 w/ Mount Pipe (Sprint-P)	B	From Leg	4.000 0.000 0.000	10.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.946 8.127 9.021 10.844 14.851	0.083 0.148 0.225 0.406 0.909

tnxTower	Job	Page
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B&T Engineering Inc. 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	**Project** 106' MP/ Sprint Co-Locate	**Date** 08:30:55 06/06/12
	Client AT&T	**Designed by** zsmith

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 K
(2) APXVSERR18-C-A20 w/Mount Pipe (Sprint-P)	A	From Leg	4.000 0.000 0.000	10.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	7.500 8.686 9.586 11.419 15.565	0.089 0.156 0.236 0.423 0.937
1900MHz RRH (25Mhz) (Sprint-P)	C	From Leg	4.000 0.000 0.000	0.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.907 3.145 3.391 3.909 5.050	3.801 4.065 4.337 4.908 6.152	0.088 0.119 0.154 0.236 0.451
1900MHz RRH (25Mhz) (Sprint-P)	B	From Leg	4.000 0.000 0.000	0.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.907 3.145 3.391 3.909 5.050	3.801 4.065 4.337 4.908 6.152	0.088 0.119 0.154 0.236 0.451
1900MHz RRH (25Mhz) (Sprint-P)	A	From Leg	4.000 0.000 0.000	0.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.907 3.145 3.391 3.909 5.050	3.801 4.065 4.337 4.908 6.152	0.088 0.119 0.154 0.236 0.451
800MHZ RRH (Sprint-P)	C	From Leg	4.000 0.000 0.000	0.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800MHZ RRH (Sprint-P)	B	From Leg	4.000 0.000 0.000	0.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800MHZ RRH (Sprint-P)	A	From Leg	4.000 0.000 0.000	0.000	90.330	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.490 2.706 2.931 3.407 4.462	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
Platform Mount [LP 712-1] (Sprint-E)	C	None		0.000	88.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.530 29.940 35.350 46.170 67.810	24.530 29.940 35.350 46.170 67.810	1.335 1.646 1.956 2.577 3.820
_									
GPS_A (Sprint-Remove)	A	From Leg	2.000 0.000 0.000	0.000	75.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.297 0.374 0.459 0.655 1.151	0.297 0.374 0.459 0.655 1.151	0.001 0.005 0.010 0.025 0.079
3' Sidearm (Sprint-Remove)	A	From Leg	1.500 0.000 0.000	0.000	75.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.110 0.170 0.230 0.350 0.590	4.000 6.500 9.000 14.000 24.000	0.020 0.040 0.060 0.100 0.180
_									

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
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 K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	106 - 72.25	Pole	Max Tension	14	0.000	0.000	0.000
			Max. Compression	14	-11.441	0.245	-0.036
			Max. Mx	11	-6.107	230.903	0.122
			Max. My	2	-6.118	0.207	230.141
			Max. Vy	11	-10.340	230.903	0.122
			Max. Vx	2	-10.296	0.207	230.141
			Max. Torque	4			0.279
L2	72.25 - 35.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-15.960	0.303	0.095
			Max. Mx	11	-9.624	639.598	0.413
			Max. My	2	-9.637	0.502	632.466
			Max. Vy	11	-12.326	639.598	0.413

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	35.75 - 0	Pole	Max. Vx	2	-12.145	0.502	632.466
			Max. Torque	4			0.509
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-22.097	0.366	0.059
			Max. Mx	11	-14.763	1168.725	0.688
			Max. My	2	-14.764	0.820	1154.364
			Max. Vy	11	-14.101	1168.725	0.688
			Max. Vx	2	-13.924	0.820	1154.364
			Max. Torque	4			0.507

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	24	22.097	3.712	0.002
	Max. H_x	11	14.778	14.085	0.007
	Max. H_z	2	14.778	0.007	13.909
	Max. M_x	2	1154.364	0.007	13.909
	Max. M_z	5	1168.406	-14.085	-0.007
	Max. Torsion	4	0.506	-12.195	6.948
	Min. Vert	1	14.778	0.000	0.000
	Min. H_x	5	14.778	-14.085	-0.007
	Min. H_z	8	14.778	-0.007	-13.909
	Min. M_x	8	-1154.306	-0.007	-13.909
	Min. M_z	11	-1168.725	14.085	0.007
	Min. Torsion	10	-0.503	12.195	-6.948

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	14.778	0.000	0.000	-0.028	0.153	0.000
Dead+Wind 0 deg - No Ice	14.778	-0.007	-13.909	-1154.364	0.820	-0.203
Dead+Wind 30 deg - No Ice	14.778	7.037	-12.042	-999.377	-583.567	-0.410
Dead+Wind 60 deg - No Ice	14.778	12.195	-6.948	-576.611	-1011.529	-0.506
Dead+Wind 90 deg - No Ice	14.778	14.085	0.007	0.634	-1168.406	-0.466
Dead+Wind 120 deg - No Ice	14.778	12.202	6.960	577.700	-1012.185	-0.301
Dead+Wind 150 deg - No Ice	14.778	7.049	12.049	999.978	-584.708	-0.056
Dead+Wind 180 deg - No Ice	14.778	0.007	13.909	1154.306	-0.502	0.202
Dead+Wind 210 deg - No Ice	14.778	-7.037	12.042	999.320	583.883	0.407
Dead+Wind 240 deg - No Ice	14.778	-12.195	6.948	576.557	1011.846	0.503
Dead+Wind 270 deg - No Ice	14.778	-14.085	-0.007	-0.687	1168.725	0.466
Dead+Wind 300 deg - No Ice	14.778	-12.202	-6.960	-577.755	1012.506	0.304
Dead+Wind 330 deg - No Ice	14.778	-7.049	-12.049	-1000.036	585.028	0.059
Dead+Ice+Temp	22.097	0.000	0.000	-0.059	0.366	0.000
Dead+Wind 0 deg+Ice+Temp	22.097	-0.002	-3.642	-313.615	0.548	-0.081
Dead+Wind 30 deg+Ice+Temp	22.097	1.855	-3.153	-271.532	-159.073	-0.155
Dead+Wind 60 deg+Ice+Temp	22.097	3.214	-1.820	-156.710	-275.963	-0.188
Dead+Wind 90 deg+Ice+Temp	22.097	3.712	0.002	0.085	-318.802	-0.170
Dead+Wind 120 deg+Ice+Temp	22.097	3.216	1.822	156.838	-276.112	-0.106
Dead+Wind 150 deg+Ice+Temp	22.097	1.857	3.155	271.550	-159.332	-0.014

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 180 deg+Ice+Temp	22.097	0.002	3.642	313.483	0.248	0.081
Dead+Wind 210 deg+Ice+Temp	22.097	-1.855	3.153	271.400	159.868	0.155
Dead+Wind 240 deg+Ice+Temp	22.097	-3.214	1.820	156.578	276.758	0.187
Dead+Wind 270 deg+Ice+Temp	22.097	-3.712	-0.002	-0.216	319.597	0.170
Dead+Wind 300 deg+Ice+Temp	22.097	-3.216	-1.822	-156.969	276.908	0.106
Dead+Wind 330 deg+Ice+Temp	22.097	-1.857	-3.155	-271.682	160.128	0.015
Dead+Wind 0 deg - Service	14.778	-0.003	-5.369	-446.149	0.416	-0.079
Dead+Wind 30 deg - Service	14.778	2.716	-4.648	-386.253	-225.435	-0.159
Dead+Wind 60 deg - Service	14.778	4.707	-2.682	-222.868	-390.836	-0.196
Dead+Wind 90 deg - Service	14.778	5.437	0.003	0.226	-451.469	-0.181
Dead+Wind 120 deg - Service	14.778	4.710	2.687	223.251	-391.091	-0.117
Dead+Wind 150 deg - Service	14.778	2.721	4.651	386.449	-225.877	-0.022
Dead+Wind 180 deg - Service	14.778	0.003	5.369	446.090	-0.095	0.079
Dead+Wind 210 deg - Service	14.778	-2.716	4.648	386.194	225.755	0.159
Dead+Wind 240 deg - Service	14.778	-4.707	2.682	222.809	391.156	0.196
Dead+Wind 270 deg - Service	14.778	-5.437	-0.003	-0.285	451.790	0.181
Dead+Wind 300 deg - Service	14.778	-4.710	-2.687	-223.310	391.412	0.118
Dead+Wind 330 deg - Service	14.778	-2.721	-4.651	-386.509	226.197	0.023

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-14.778	0.000	0.000	14.778	0.000	0.000%
2	-0.007	-14.778	-13.909	0.007	14.778	13.909	0.000%
3	7.037	-14.778	-12.042	-7.037	14.778	12.042	0.000%
4	12.195	-14.778	-6.948	-12.195	14.778	6.948	0.000%
5	14.085	-14.778	0.007	-14.085	14.778	-0.007	0.000%
6	12.202	-14.778	6.960	-12.202	14.778	-6.960	0.000%
7	7.049	-14.778	12.049	-7.049	14.778	-12.049	0.000%
8	0.007	-14.778	13.909	-0.007	14.778	-13.909	0.000%
9	-7.037	-14.778	12.042	7.037	14.778	-12.042	0.000%
10	-12.195	-14.778	6.948	12.195	14.778	-6.948	0.000%
11	-14.085	-14.778	-0.007	14.085	14.778	0.007	0.000%
12	-12.202	-14.778	-6.960	12.202	14.778	6.960	0.000%
13	-7.049	-14.778	-12.049	7.049	14.778	12.049	0.000%
14	0.000	-22.097	0.000	0.000	22.097	0.000	0.000%
15	-0.002	-22.097	-3.642	0.002	22.097	3.642	0.000%
16	1.855	-22.097	-3.153	-1.855	22.097	3.153	0.000%
17	3.214	-22.097	-1.820	-3.214	22.097	1.820	0.000%
18	3.712	-22.097	0.002	-3.712	22.097	-0.002	0.000%
19	3.216	-22.097	1.822	-3.216	22.097	-1.822	0.000%
20	1.857	-22.097	3.155	-1.857	22.097	-3.155	0.000%
21	0.002	-22.097	3.642	-0.002	22.097	-3.642	0.000%
22	-1.855	-22.097	3.153	1.855	22.097	-3.153	0.000%
23	-3.214	-22.097	1.820	3.214	22.097	-1.820	0.000%
24	-3.712	-22.097	-0.002	3.712	22.097	0.002	0.000%
25	-3.216	-22.097	-1.822	3.216	22.097	1.822	0.000%
26	-1.857	-22.097	-3.155	1.857	22.097	3.155	0.000%
27	-0.003	-14.778	-5.369	0.003	14.778	5.369	0.000%
28	2.716	-14.778	-4.648	-2.716	14.778	4.648	0.000%
29	4.707	-14.778	-2.682	-4.707	14.778	2.682	0.000%
30	5.437	-14.778	0.003	-5.437	14.778	-0.003	0.000%
31	4.710	-14.778	2.687	-4.710	14.778	-2.687	0.000%
32	2.721	-14.778	4.651	-2.721	14.778	-4.651	0.000%
33	0.003	-14.778	5.369	-0.003	14.778	-5.369	0.000%
34	-2.716	-14.778	4.648	2.716	14.778	-4.648	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
35	-4.707	-14.778	2.682	4.707	14.778	-2.682	0.000%
36	-5.437	-14.778	-0.003	5.437	14.778	0.003	0.000%
37	-4.710	-14.778	-2.687	4.710	14.778	2.687	0.000%
38	-2.721	-14.778	-4.651	2.721	14.778	4.651	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	0.00032387
3	Yes	5	0.00000001	0.00056591
4	Yes	5	0.00000001	0.00058733
5	Yes	4	0.00000001	0.00048430
6	Yes	5	0.00000001	0.00057026
7	Yes	5	0.00000001	0.00057696
8	Yes	4	0.00000001	0.00028422
9	Yes	5	0.00000001	0.00058600
10	Yes	5	0.00000001	0.00056408
11	Yes	4	0.00000001	0.00052760
12	Yes	5	0.00000001	0.00058318
13	Yes	5	0.00000001	0.00057697
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00014202
16	Yes	5	0.00000001	0.00019721
17	Yes	5	0.00000001	0.00020139
18	Yes	5	0.00000001	0.00014392
19	Yes	5	0.00000001	0.00019858
20	Yes	5	0.00000001	0.00019862
21	Yes	5	0.00000001	0.00014189
22	Yes	5	0.00000001	0.00020093
23	Yes	5	0.00000001	0.00019851
24	Yes	5	0.00000001	0.00014449
25	Yes	5	0.00000001	0.00020158
26	Yes	5	0.00000001	0.00019975
27	Yes	4	0.00000001	0.00008219
28	Yes	5	0.00000001	0.00005996
29	Yes	5	0.00000001	0.00006502
30	Yes	4	0.00000001	0.00012185
31	Yes	5	0.00000001	0.00006104
32	Yes	5	0.00000001	0.00006225
33	Yes	4	0.00000001	0.00007913
34	Yes	5	0.00000001	0.00006447
35	Yes	5	0.00000001	0.00005985
36	Yes	4	0.00000001	0.00012562
37	Yes	5	0.00000001	0.00006399
38	Yes	5	0.00000001	0.00006234

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	106 - 72.25	25.171	36	1.899	0.002
L2	75.75 - 35.75	13.724	36	1.628	0.002
L3	40 - 0	3.978	36	0.899	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
106.000	(2) 7770.00 w/ Mount Pipe	36	25.171	1.899	0.002	23050
90.330	(2) APXVSPP18-C-A20 w/ Mount Pipe	36	19.059	1.789	0.002	7354
88.000	Platform Mount [LP 712-1]	36	18.174	1.769	0.002	6402
75.000	GPS_A	36	13.464	1.617	0.002	3748

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	106 - 72.25	65.024	11	4.906	0.006
L2	75.75 - 35.75	35.468	11	4.208	0.005
L3	40 - 0	10.286	11	2.325	0.002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
106.000	(2) 7770.00 w/ Mount Pipe	11	65.024	4.906	0.006	9041
90.330	(2) APXVSPP18-C-A20 w/ Mount Pipe	11	49.244	4.624	0.005	2883
88.000	Platform Mount [LP 712-1]	11	46.961	4.571	0.005	2509
75.000	GPS_A	11	34.799	4.180	0.005	1467

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	106 - 72.25 (1)	TP27.529x22.3x0.188	33.750	0.000	0.0	39.000	15.949	-6.107	622.007	0.010
L2	72.25 - 35.75 (2)	TP32.809x26.612x0.219	40.000	0.000	0.0	39.000	22.176	-9.624	864.851	0.011
L3	35.75 - 0 (3)	TP37.91x31.713x0.25	40.000	0.000	0.0	38.937	29.883	-14.763	1163.550	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	106 - 72.25 (1)	TP27.529x22.3x0.188	230.903	26.249	39.000	0.673	0.000	0.000	39.000	0.000
L2	72.25 - 35.75 (2)	TP32.809x26.612x0.219	639.598	43.882	39.000	1.125	0.000	0.000	39.000	0.000
L3	35.75 - 0 (3)	TP37.91x31.713x0.25	1168.725	50.441	38.937	1.295	0.000	0.000	38.937	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	106 - 72.25 (1)	TP27.529x22.3x0.188	10.340	0.648	26.000	0.050	0.073	0.004	26.000	0.000
L2	72.25 - 35.75 (2)	TP32.809x26.612x0.219	12.326	0.556	26.000	0.043	0.472	0.016	26.000	0.001
L3	35.75 - 0 (3)	TP37.91x31.713x0.25	14.101	0.472	26.000	0.036	0.466	0.010	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	106 - 72.25 (1)	0.010	0.673	0.000	0.050	0.000	0.683 ✔	1.333	H1-3+VT ✔
L2	72.25 - 35.75 (2)	0.011	1.125	0.000	0.043	0.001	1.137 ✔	1.333	H1-3+VT ✔
L3	35.75 - 0 (3)	0.013	1.295	0.000	0.036	0.000	1.309 ✔	1.333	H1-3+VT ✔

tnxTower	Job	Page
	84510.001 - Bennett Pond, CT(Site# 5778-A)	13 of 13
B&T Engineering Inc. 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Project 106' MP/ Sprint Co-Locate	Date 08:30:55 06/06/12
	Client AT&T	Designed by zsmith

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	106 - 72.25	Pole	TP27.529x22.3x0.188	1	-6.107	829.135	51.3	Pass
L2	72.25 - 35.75	Pole	TP32.809x26.612x0.219	2	-9.624	1152.846	85.3	Pass
L3	35.75 - 0	Pole	TP37.91x31.713x0.25	3	-14.763	1551.012	98.2	Pass
							Summary	
						Pole (L3)	98.2	Pass
						RATING =	**98.2**	**Pass**

Program Version 6.0.4.0 - 1/27/2012 File: 84510_001a_Bennett PondCT.eri

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

Site#: *5778-A*
Site Name: *Bennett Pond, CT*

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	44	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	43	in
Thick:	2.5	in
Grade:	50	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	37.91	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	1169	ft-kips
Unfactored Axial, P:	15	kips
Unfactored Shear, V:	14	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	157.5 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	80.8% Pass

Base Plate Results Flexural Check

Base Plate Stress:	38.0 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	76.1% Pass

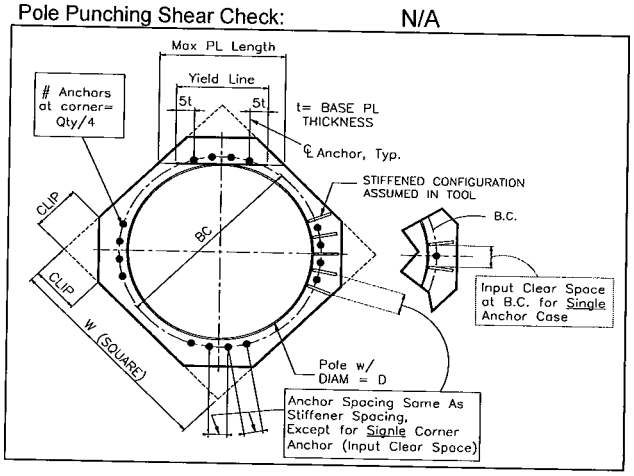
PL Ref. Data
Yield Line (in): 22.90
Max PL Length: 22.90

N/A - Unstiffened
Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Analysis date: 6/6/2012

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

Site#: *5778*
Site Name: *Bennett Pond CT*

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	6	ft
Pad Thickness, T:	6.5	ft
Pad Width=Length, L:	16.5	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	16.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	272.25	ft^2
Pier Height:	0.00	ft
Soil (above pad) Height:	-0.50	ft

Soil Parameters		
Unit Weight, γ:	100.0	pcf
Ultimate Bearing Capacity, qn:	8.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	0.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	6.00	ksf
Passive Pres. Coeff., Kp	1.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	18.9	kips
Pad Force Location Above D:	1.97	ft
ϕ(Passive Pressure Moment):	37.23	ft-kips
Factored O.T. M(WL), "1.6W":	1701.0	ft-kips
Factored OT (MW-Msoil), M1	1663.77	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	265.4	kips
Unfactored (Total ftg-soil Wt):	265.44	kips
1.2D. **No Soil Wedges.**	348.62	kips
0.9D. **With Soil Wedges**	266.53	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	8.2	kips
Unfactored WL Axial, PW:	15	kips
Unfactored WL Shear, V:	14	kips
Unfactored WL Moment, M:	1169	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	30.09	kips
0.90	0.9D+1.6W, Pu:	27.63	kips
1.35	Vu:	18.9	kips
	Mu:	1578.15	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	348.62	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	1663.77	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	4.77	ft
Orthogonal qu=	3.04	ksf
qu/ϕ*qn Ratio=	**50.63%**	Pass

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	3.37	ft
Diagonal qu=	3.67	ksf
qu/ϕ*qn Ratio=	**61.10%**	Pass

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

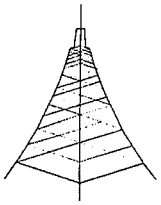
(w/ Soil Wedges) [Reaction+Conc+Soil]	266.53	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	1663.77	ft-kips

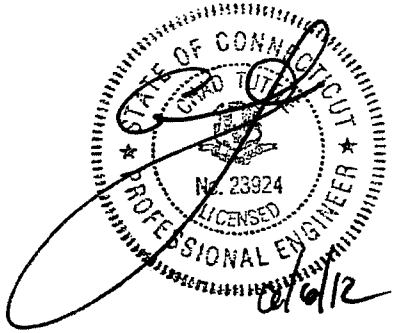
Orthogonal ecc3 = M2/P2 =	6.24	ft
Ortho Non Bearing Length,NBL=	12.48	ft
Orthogonal qu=	4.02	ksf
Diagonal qu=	4.53	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	1169.00		
M Orthogonal:	1299.61	**89.95%**	Pass
M Diagonal:	1299.61	**89.95%**	Pass

Analysis Date: 6/6/2012

at&t





Letter of Explanation (LOE)
MUST be attached to any Structural Analysis

Site Name	**Bennett Pond**
Site Number	**5778-A**
PE of Record	**Chad E. Tuttle, P.E.**

ALL STRUCTURES	Statement in COL A is Correct	from Col A	N/A	Alternate Value / Concept Used	Explanation	Yes	No	N/A	Comments / Reference
Structure Analyzed to F Code	X				2005 CT Building Code				
Note: ALL G analyses MUST be justified. A simple notation of jurisdiction requirement will suffice. F BUILT TOWERS in G Code jurisdictions MUST Have the new "5% Grace" Test Applied.G to be applied ONLY where this is exceeded. This 5% test applies to "like for like" only									
Guy Tensions Adjusted Within Code to Find Optimum tension / Minimum Reinforcement (Applies to Guyed Tower Failures Only). Note : AT&T requires a pulse chart for altered Tensions			X						
Antenna Azimuths Inputted Per AT&T Information. NOTE that new antennas should be calculated at 0 degrees to allow flexibility.	X								
All Yield Stresses > = 50 ksi (legs)			X		Monopole; Shaft = 65 ksi				
All Yield Stresses > = 36 ksi (Diagonals and Horizontals))			X		Monopole				
Structures Designated Class II (G Only)			X						
Exposure B Rating Used (Topography)			X						
K value for Slenderness ratio < 1.0			X		Monopole				
Shielding of All Appurtenances Used when Appropriate PER 2.6.9.4 (G Code Only)			X						
0.75 Reduction "Shape" Factor (Figure 2.6) for platform mounts, 0.8 for T-Boom Mounts Used (G Only)			X						
Pipes and round Members have 1.0 Drag Factors. Note if Pipe is attached to flat antenna, these must be considered separately if differing Drag factors are Used		X			In compliance with the TIA-222-F Table 3				
Are Tower Diagonals Designed as "Tension Only"			X		Monopole				

MODIFICATION SECTION	Statement in COL A is Correct	Deviation from Col A	N/A	Alternate Value / Concept Used	Explanation	Yes	No	N/A	Comments / Reference
Guyed									
Guyed Only: Reinforcement Recommendation accompanies Optimum Guy Tensioning Scenario.									
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Self Supporting									
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Monopole									
Compression Collars									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Foundation									
Guyed Anchor Failure: Berm Solution									
SS Foundation Pad and Pier Failure Berm									
SS Foundation Caisson / Concrete Cap									
Monopole: Cap									

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

Sprint Existing Facility

Site ID: CT33XC523

Danbury AT&T
66 Sugar Hollow Road
Danbury, CT 06877

September 05, 2012

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

EBI Consulting

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September 05, 2012

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

Re: Emissions Values for Site **CT33XC523 – Danbury AT&T**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 66 Sugar Hollow Road, Danbury, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 66 Sugar Hollow Road, Danbury, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the RFS APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

6) The antenna mounting height centerline of the proposed antennas is **90.3 feet** above ground level (AGL)
7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Site ID	CT33XC523 - Danbury AT&T
Site Addresss	66 Sugar Hill Road. Danbury, CT 06877
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	90.3	84.3	1/2 "	0.5	0	1386.9474	70.16343	7.01634%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	90.3	84.3	1/2 "	0.5	0	389.96892	19.7279	3.47935%
															Sector total Power Density Value:		10.496%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	90.3	84.3	1/2 "	0.5	0	1386.9474	70.16343	7.01634%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	90.3	84.3	1/2 "	0.5	0	389.96892	19.7279	3.47935%
															Sector total Power Density Value:		10.496%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	90.3	84.3	1/2 "	0.5	0	1386.9474	70.16343	7.01634%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	90.3	84.3	1/2 "	0.5	0	389.96892	19.7279	3.47935%
															Sector total Power Density Value:		10.496%

Site Composite MPE %	
Carrier	MPE %
Sprint	31.487%
AT&T	15.190%
Total Site MPE %	46.677%

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the Sprint facility are **31.487% (10.496% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **46.667%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government

Scott Heffernan
RF Engineering Director

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