Robinson+Cole

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February 19, 2019

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
10 Tanner Marsh Road, Guilford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) telecommunications antennas at the top of the existing 150-foot tower at 10 Tanner Marsh Road in Guilford (the "Property"). The tower is owned by IWG Tower Assets I, LLC, ("IWG"). The Council approved Cellco's use of this tower in 2013. Cellco now intends to replace six (6) of its existing antennas with six (6) model JAHH-65B-R3B antennas, all at the same level on the tower. Cellco also intends to remove three (3) remote radio heads ("RRHs") and install six (6) new RRHs behind its antennas, and two (2) Hybriflex fiber optic antenna cables. Included in Attachment 1 are specifications for Cellco's new antennas, RRHs and fiber optic lines.

Please accept this letter 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 notice is being sent to Guilford's First Selectman, Matthew T. Hoey III; George Kral, Guilford's Town Planner; and IWG, the tower owner. The Town Of Guilford is the owner of the Property.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's antennas and RRHs will be installed at the top of the existing 150-foot tower.

Robinson+Cole

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case General Power Density table for Cellco's modified facility is included in Attachment 2.

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 Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials is included in Attachment 5.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Matthew T. Hoey III, Guilford First Selectman
George Kral, Guilford Town Planner
IWG Tower Assets I, LLC
Tim Parks

ATTACHMENT 1

JAHH-65B-R3B

8-port sector antenna, 2x 698–787, 2x 824-894 and 4x 1695–2360 MHz, 65° HPBW, 3x RET and low bands have diplexers. Internal SBT's on first LB (Port 1) and first HB(Port 5).

- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One RET for 700MHz, one RET for 850MHz, and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO
- Internal filter on low band and interleaved dipole technology providing for attractive, low wind load mechanical package
- Separate RS-485 RET input/output for low and high band

Electrical Specifications

Frequency Band, MHz	**698–787**	**824–894**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port at 50°C, maximum, watts	200	200	300	300	300	250
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

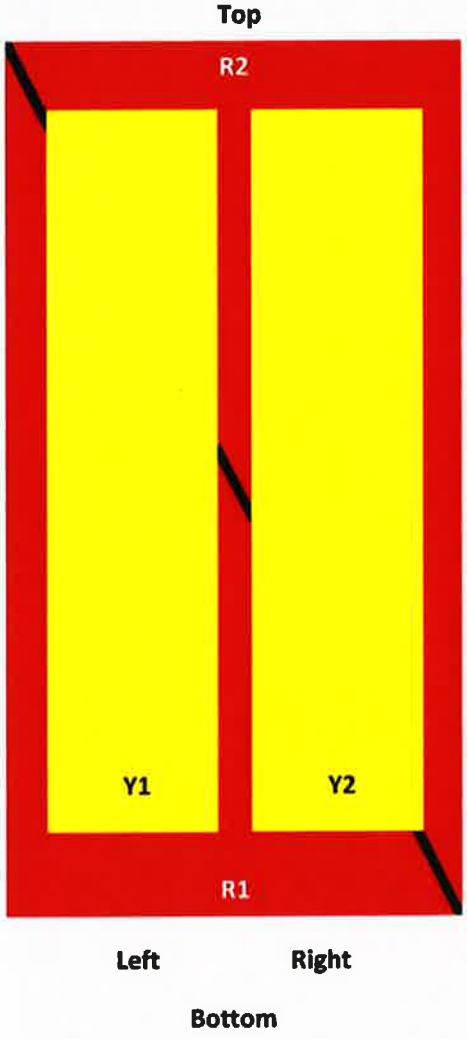
Frequency Band, MHz	**698–787**	**824–894**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2 ° | 14.3 8 ° | 14.3 14 ° | 14.3	2 ° | 15.0 8 ° | 14.9 14 ° | 15.4	0 ° | 17.2 5 ° | 17.6 10 ° | 17.6	0 ° | 17.6 5 ° | 18.2 10 ° | 18.2	0 ° | 17.7 5 ° | 18.3 10 ° | 18.3	0 ° | 17.9 5 ° | 18.7 10 ° | 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24
CPR at Sector, dB	11	12	11	11	11	8

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

COMMSCOPE®

Array Layout

JAHH-65A-R3B JAHH-65B-R3B JAHH-65C-R3B



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 787 MHz | 824 – 894 MHz

JAHH-65B-R3B

Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female
Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	301.0 N @ 150 km/h 67.7 lbf @ 150 km/h
Wind Loading, lateral	254.0 N @ 150 km/h 57.1 lbf @ 150 km/h
Wind Loading, maximum	638.0 N @ 150 km/h 143.4 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1828.0 mm | 72.0 in
Width	350.0 mm | 13.8 in
Depth	208.0 mm | 8.2 in
Net Weight, without mounting kit	28.7 kg | 63.3 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 5
Internal RET	High band (1) | Low band (2)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W
Protocol	3GPP/AISG 2.0 (Single RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

Packed Dimensions

JAHH-65B-R3B

Length	1975.0 mm | 77.8 in
Width	456.0 mm | 18.0 in
Depth	357.0 mm | 14.1 in
Shipping Weight	42.0 kg | 92.6 lb

Regulatory Compliance/Certifications

Agency	**Classification**
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

SAMSUNG

Ultra-Compact Radio Unit 700MHz (B13)

RFD01P-13A

Samsung's RFD01P-13 is a compact remote Radio Unit (RU) designed for deployments that require extreme flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFD01P-13 RU targets support for Band 13 (700MHz) over a near-zero footprint, which makes it ideal for extending broad baseline LTE coverage in virtually any environment.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Ultra-minimal footprint reduces site acquisition and deployment costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability minimizes site maintenance visits
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequency:
B13: DL(746-756MHz)/UL(777-787MHz)
Instantaneous Bandwidth: 10MHz
RF Chain: 4T4R/2T4R/2T2R changeable
Output Power: Total 160W
DU-RU Interface: CPRI (10Gbps)
Dimensions(WHD): 320 x 320 x 151mm (15.4L)
Weight: 17kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Fiber Optic Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Environmental			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

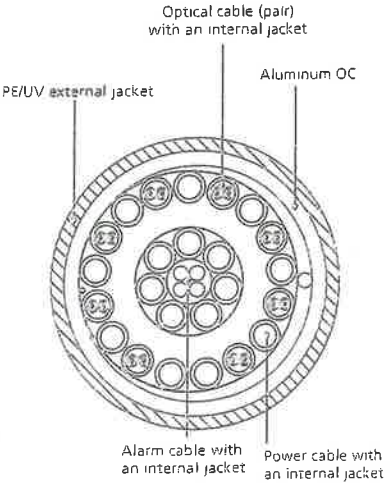


Figure 3: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Guilford 3								
Tower Height: 150ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Sprint	2	693	140	1900	0.0278	1.0000	0.28%	
*Sprint	1	390	140	850	0.0078	0.5667	0.14%	
*Sprint	1	780	140	2500	0.0156	1.0000	0.16%	
*TCI	1	1	90	444.5	0.0001	0.2963	0.00%	
VZW PCS	**1**	**2766**	**150**	**0.0442**	**1970**	**1.0000**	**4.42%**	
VZW 850 LTE	**1**	**1451**	**150**	**0.0232**	**869**	**0.5793**	**4.00%**	
VZW 850 Cellular	**3**	**944**	**150**	**0.0151**	**876**	**0.5840**	**2.58%**	
VZW AWS	**1**	**2911**	**150**	**0.0465**	**2145**	**1.0000**	**4.65%**	
VZW 700	**1**	**1260**	**150**	**0.0201**	**746**	**0.4973**	**4.05%**	
								20.28%
* Source: Siting Council								

ATTACHMENT 3

Structural Analysis Report

Structure	: 150 foot Monopole
Insite Site Name	: Guilford
Insite Site Number	: CT702
Proposed Carrier	: Verizon Wireless
Carrier Site Name	: Guilford 3 CT
Carrier Site Number	: 467601
Site Location	: 10 Tanner Marsh Road New Haven, CT (New Haven County) 41.2888, -72.6583
Date	: November 7, 2018
Max Member Stress Level	: 78.3% (Tower) 57% (Anchor Bolt) 55% (Foundation)
Result	: **PASS**

11/7/2018

Prepared by:
Bennett & Pless, Inc.
B&P Job No.: 18313.041

bennett&pless
Experience Structural Expertise

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Table of Contents

Introduction

We have completed our structural analysis of the proposed equipment installation on the foregoing tower to determine its ability to support the new loads proposed by Verizon Wireless. The objective of the analysis was to determine if the tower meets the current structural codes and standards with the proposed equipment installation.

Existing Structural Information

The following documents for the existing structure were made available for our structural analysis.

Tower Information	Daley Tower Service Job No. 23513-0317 dated July 29, 2013
Foundation Information	Daley Tower Service Job No. 23513-0317 dated July 29, 2013
Geotechnical Information	Terracon Consultants, Inc Job No. J2135125 dated April 9, 2013
Existing Equipment Information	Infinigy Engineering & Surveying, PLLC Job No. 337-000 dated July 8, 2015
Tower Reinforcement Information	Tower has not been previously reinforced

Final Proposed Equipment Loading for Verizon Wireless

The following proposed loading was obtained from the Insite Collocation Application:

Antenna/Equipment					Coax	
Mount	RAD	Qty.	Antenna	Type	Qty.	Size/Type
150.0	-	1	Platform w/ Handrail	Mount	6 2	1-5/8" Coax 1-5/8" Fiber
	150.0	**6**	**Andrew JAHH-65B-R3B**	**Panel**		
		3	**Samsung B5/B13 RRH-BR04C**	**RRH**		
		3	**Samsung B2/B66A RRH-BR049**	**RRH**		
		3	**RFS FDJ85020Q4-S1**	**Diplexer**		
		3	Andrew HBXX-6517DS-A2M	Panel		
		3	Andrew LNX-6514DS-A1M	Panel		
		2	RFS DB-T1-6Z-8AB-OZ	OVP		

Note: Proposed equipment is shown in bold above.
Note: Other existing loading can be found on the tower profile attached.

Design Criteria

The tower was analyzed using tnxTower (Version 8.0.4.0) tower analysis software using the following design criteria.

State/County	New Haven County
State Building Code	2018 Connecticut State Building Code IBC 2015
TIA/EIA Standard Code	TIA-222-G
Basic Wind Speed	129 MPH (V_{ult})/100 MPH (V_{asd})
Basic Wind Speed w/ Ice	50 MPH/ 0.75" Ice
Steel Grade	A572-65 65 ksi pole, A615 anchor bolts
Exposure Category	C
Topographic Category (height)	1 (0.0 ft)
Structure Class	II

Analysis Results

Based on the foregoing information, our structural analysis determined that **the existing tower is structurally capable of supporting the proposed equipment loads without modification.** The existing foundations has been evaluated and **is structurally capable of supporting the proposed equipment loads.**

Assumptions

The below assumptions are true, complete and accurate.

1. The existing tower has been maintained to manufacturer's specifications and is in good condition.
2. Foundations are considered to have been properly designed for the original design loads.
3. All member connections are considered to have been designed to meet the load carrying capacity of the connected member.
4. Antenna mount loads have been estimated based on generally accepted industry standards.
5. The mounts for the proposed antennas have been analyzed and designed by others.
6. See additional assumptions contained in the report attached.
7. Tower is within acceptable engineering tolerance at 105%.
8. Foundations are within acceptable engineering tolerance at 110%.

Conclusions

The existing tower described above **does have sufficient capacity** to support the proposed loading based on the governing Building Code. The existing tower foundation also has sufficient capacity.

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance, please call us anytime at 678-990-8700.

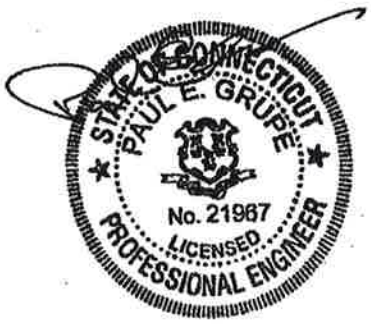
Sincerely,

Analysis by:

Cory Blake, P.E.
Design Engineer

Reviewed by:

Paul Grupe, P.E.
Vice President, Atlanta Office



11/7/2018

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but not necessarily limited, to:

- Information supplied by the client regarding the structure itself, the antenna and transmission line loading on the structure and it components, or relevant information.

- Information from drawings in possession of Bennett & Pless Inc., or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Bennett & Pless Inc. and used in the performance of our engineering services is correct and complete. In the absence of information contrary, we consider that all structures were constructed in accordance with the drawings and specifications and are in a un-corroded condition and have not deteriorated; and we, therefore consider that their capacity has not significantly changed from the original design condition.

All services will be performed to the codes and standards specified by the client, and we do not imply to meet any other code and standard requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes and standards, the client shall specify the exact requirements. In the absence of information to the contrary, all work will be performed in accordance with the revision of ANSI/TIA/EIA-222 requested.

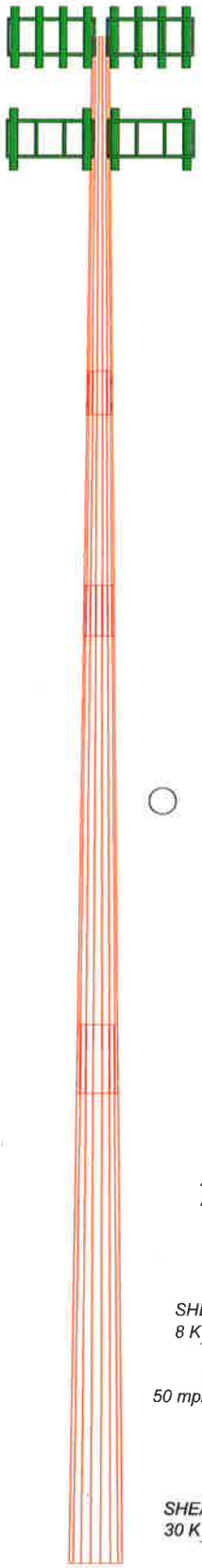
All services are performed, results obtained and recommendations made in accordance with the generally accepted engineering principles and practices. Bennett & Pless Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Disclaimer of Warranties

Bennett & Pless Inc. makes no warranties, expressed or implied, in connection with this report, and disclaims any liability arising from the ability of the existing structure to support the design loads for which it was originally designed. Bennett & Pless Inc. will not be responsible whatsoever for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of Bennett & Pless Inc. pursuant to this report will be limited to the total fee received for preparation of this report.

Attachment 1:
Calculations

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	37.00	18	0.1875	4.25	20.0000	30.4800		1.9
2	26.00	18	0.2500	5.00	28.9012	36.2700		2.3
3	50.00	18	0.3125	6.75	34.3529	48.5200	A572-65	6.9
4	53.00	18	0.3750		45.9824	61.0000		11.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) Andrew JAHH-65B-R3B (Verizon)	150	RFS FDJ85020Q4-S1 (Verizon)	150
(2) Andrew JAHH-65B-R3B (Verizon)	150	RFS DB-T1-6Z-8AB-OZ (Verizon)	150
(2) Andrew JAHH-65B-R3B (Verizon)	150	RFS DB-T1-6Z-8AB-OZ (Verizon)	150
Commscope HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	150	Platform w/ Handrails (Verizon)	150
		Platform w/ Handrails (Sprint)	140
Commscope HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	150	RFS APXVTM14-C-120 (Sprint)	140
		RFS APXVTM14-C-120 (Sprint)	140
Commscope HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	150	RFS APXVTM14-C-120 (Sprint)	140
Andrew LNX-6514DS-A1M (Verizon)	150	RFS APXVSPP18 w/ pipe mount (Sprint)	140
Andrew LNX-6514DS-A1M (Verizon)	150		
Andrew LNX-6514DS-A1M (Verizon)	150	RFS APXVSPP18 w/ pipe mount (Sprint)	140
Samsung B5/B13 RRH-BR04C (Verizon)	150	RFS APXVSPP18 w/ pipe mount (Sprint)	140
Samsung B5/B13 RRH-BR04C (Verizon)	150	Alcatel Lucent 800 MHz (Sprint)	140
		Alcatel Lucent 800 MHz (Sprint)	140
Samsung B5/B13 RRH-BR04C (Verizon)	150	Alcatel Lucent 800 MHz (Sprint)	140
Samsung B2/B66A RRH-BR049 (Verizon)	150	Alcatel Lucent TD 8x20 (Sprint)	140
		Alcatel Lucent TD 8x20 (Sprint)	140
Samsung B2/B66A RRH-BR049 (Verizon)	150	Alcatel Lucent TD 8x20 (Sprint)	140
		Alcatel Lucent 1900 MHz (Sprint)	140
Samsung B2/B66A RRH-BR049 (Verizon)	150	Alcatel Lucent 1900 MHz (Sprint)	140
		Alcatel Lucent 1900 MHz (Sprint)	140
RFS FDJ85020Q4-S1 (Verizon)	150	Alcatel Lucent 800 MHz (Sprint)	140
RFS FDJ85020Q4-S1 (Verizon)	150	Alcatel Lucent 800 MHz (Sprint)	140
		Alcatel Lucent 800 MHz (Sprint)	140

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 78.3%

ALL REACTIONS ARE FACTORED

AXIAL 59 K
SHEAR 8 K
MOMENT 873 kip-ft
TORQUE 2 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 36 K
SHEAR 30 K
MOMENT 3293 kip-ft
TORQUE 7 kip-ft
REACTIONS - 100 mph WIND

bennett&pless
Experience Structural Expertise
Bennett and Pless
750 Park of Commerce Drive
Boca Raton, Florida 33487
Phone: 678.990.8700
FAX: 678.990.8701

Job: 18313.041 - CT702 Guilford - VZW 2nd Amendmen			
Project: Monopole Structural Analysis			
Client: Insite	Drawn by: Chunhui Song	App'd:	
Code: TIA-222-G	Date: 11/07/18	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 100 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks		Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

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	150.00-113.00	37.00	4.25	18	20.0000	30.4800	0.1875	0.7500	A572-65 (65 ksi)
L2	113.00-91.25	26.00	5.00	18	28.9012	36.2700	0.2500	1.0000	A572-65 (65 ksi)
L3	91.25-46.25	50.00	6.75	18	34.3529	48.5200	0.3125	1.2500	A572-65 (65 ksi)
L4	46.25-0.00	53.00		18	45.9824	61.0000	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L1	20.2796	11.7909	584.7409	7.0334	10.1600	57.5532	1170.2512	5.8966	3.1900	17.013
	30.9213	18.0278	2090.0227	10.7538	15.4838	134.9809	4182.7954	9.0156	5.0345	26.851
L2	30.5316	22.7347	2357.8358	10.1712	14.6818	160.5956	4718.7741	11.3695	4.6466	18.586
	36.7910	28.5819	4685.0638	12.7871	18.4252	254.2753	9376.2923	14.2937	5.9435	23.774
L3	36.2732	33.7638	4942.8719	12.0844	17.4513	283.2383	9892.2477	16.8851	5.4961	17.588
	49.2203	47.8158	14039.0663	17.1137	24.6482	569.5787	28096.6055	23.9125	7.9895	25.566
L4	48.5761	54.2843	14265.3644	16.1906	23.3591	610.6988	28549.4995	27.1473	7.4329	19.821
	61.8832	72.1589	33506.6412	21.5219	30.9880	1081.2780	67057.3713	36.0863	10.0760	26.869

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	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-113.00				1	1	1			
L2 113.00-91.25				1	1	1			
L3 91.25-46.25				1	1	1			
L4 46.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
1 5/8" (1.63", 41.3 mm) Fiber (Verizon)	C	No	Yes	Inside Pole	150.00 - 6.00	2	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
1 5/8" coax (Verizon)	C	No	Yes	Inside Pole	150.00 - 6.00	6	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
****									
1 1/4" Coax (Sprint)	C	No	Yes	Inside Pole	140.00 - 6.00	3	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
0.7" Coax Line (Sprint)	C	No	Yes	Inside Pole	140.00 - 6.00	1	1" Ice	0.00	0.66
							No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-113.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.35
		D	0.000	0.000	0.000	0.000	0.00
L2	113.00-91.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.21
		D	0.000	0.000	0.000	0.000	0.00
L3	91.25-46.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.44
		D	0.000	0.000	0.000	0.000	0.00
L4	46.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.40
		D	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-113.00	A	1.721	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.35
		D		0.000	0.000	0.000	0.000	0.00
L2	113.00-91.25	A	1.679	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.21
		D		0.000	0.000	0.000	0.000	0.00
L3	91.25-46.25	A	1.612	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.44
		D		0.000	0.000	0.000	0.000	0.00
L4	46.25-0.00	A	1.448	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.40
		D		0.000	0.000	0.000	0.000	0.00

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) Andrew JAHH-65B-R3B (Verizon)	C	From Face	4.00	0.00	0.0000	150.00	No Ice	9.11	5.98	0.06
			0.00	0.00			1/2" Ice	9.58	6.44	0.12
			0.00	0.00			1" Ice	10.05	6.91	0.19
(2) Andrew JAHH-65B-R3B (Verizon)	B	From Face	4.00	0.00	0.0000	150.00	No Ice	9.11	5.98	0.06
			0.00	0.00			1/2" Ice	9.58	6.44	0.12
			0.00	0.00			1" Ice	10.05	6.91	0.19
(2) Andrew JAHH-65B-R3B (Verizon)	A	From Face	4.00	0.00	0.0000	150.00	No Ice	9.11	5.98	0.06
			0.00	0.00			1/2" Ice	9.58	6.44	0.12
			0.00	0.00			1" Ice	10.05	6.91	0.19
Commscope HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	C	From Face	4.00	0.00	0.0000	150.00	No Ice	8.53	5.24	0.04
			0.00	0.00			1/2" Ice	9.00	5.71	0.09
			0.00	0.00			1" Ice	9.48	6.18	0.15
Commscope HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	B	From Face	4.00	0.00	0.0000	150.00	No Ice	8.53	5.24	0.04
			0.00	0.00			1/2" Ice	9.00	5.71	0.09
			0.00	0.00			1" Ice	9.48	6.18	0.15
Commscope HBXX-6517DS-A2M w/ Mount Pipe (Verizon)	A	From Face	4.00	0.00	0.0000	150.00	No Ice	8.53	5.24	0.04
			0.00	0.00			1/2" Ice	9.00	5.71	0.09
			0.00	0.00			1" Ice	9.48	6.18	0.15
Andrew LNX-6514DS-A1M (Verizon)	C	From Face	4.00	0.00	0.0000	150.00	No Ice	8.20	5.42	0.03
			0.00	0.00			1/2" Ice	8.66	5.88	0.08
			0.00	0.00			1" Ice	9.13	6.35	0.14
Andrew LNX-6514DS-A1M (Verizon)	B	From Face	4.00	0.00	0.0000	150.00	No Ice	8.20	5.42	0.03
			0.00	0.00			1/2" Ice	8.66	5.88	0.08
			0.00	0.00			1" Ice	9.13	6.35	0.14
Andrew LNX-6514DS-A1M (Verizon)	A	From Face	4.00	0.00	0.0000	150.00	No Ice	8.20	5.42	0.03
			0.00	0.00			1/2" Ice	8.66	5.88	0.08
			0.00	0.00			1" Ice	9.13	6.35	0.14
Samsung B5/B13 RRH-BR04C (Verizon)	C	From Face	4.00	0.00	0.0000	150.00	No Ice	1.85	1.01	0.07
			0.00	0.00			1/2" Ice	2.02	1.14	0.09
			0.00	0.00			1" Ice	2.20	1.28	0.11
Samsung B5/B13 RRH-BR04C (Verizon)	B	From Face	4.00	0.00	0.0000	150.00	No Ice	1.85	1.01	0.07
			0.00	0.00			1/2" Ice	2.02	1.14	0.09
			0.00	0.00			1" Ice	2.20	1.28	0.11
Samsung B5/B13 RRH-BR04C (Verizon)	A	From Face	4.00	0.00	0.0000	150.00	No Ice	1.85	1.01	0.07
			0.00	0.00			1/2" Ice	2.02	1.14	0.09
			0.00	0.00			1" Ice	2.20	1.28	0.11
Samsung B2/B66A RRH-BR049 (Verizon)	C	From Face	4.00	0.00	0.0000	150.00	No Ice	1.85	1.24	0.08
			0.00	0.00			1/2" Ice	2.02	1.38	0.10
			0.00	0.00			1" Ice	2.20	1.53	0.12
Samsung B2/B66A RRH-BR049 (Verizon)	B	From Face	4.00	0.00	0.0000	150.00	No Ice	1.85	1.24	0.08
			0.00	0.00			1/2" Ice	2.02	1.38	0.10
			0.00	0.00			1" Ice	2.20	1.53	0.12

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
Samsung B2/B66A	A	From Face	4.00	0.0000	150.00	No Ice	1.85	1.24	0.08
RRH-BR049			0.00			1/2" Ice	2.02	1.38	0.10
(Verizon)			0.00			1" Ice	2.20	1.53	0.12
RFS FDJ85020Q4-S1	C	From Face	4.00	0.0000	150.00	No Ice	0.96	0.89	0.02
(Verizon)			0.00			1/2" Ice	1.09	1.02	0.03
			0.00			1" Ice	1.24	1.16	0.04
RFS FDJ85020Q4-S1	B	From Face	4.00	0.0000	150.00	No Ice	0.96	0.89	0.02
(Verizon)			0.00			1/2" Ice	1.09	1.02	0.03
			0.00			1" Ice	1.24	1.16	0.04
RFS FDJ85020Q4-S1	A	From Face	4.00	0.0000	150.00	No Ice	0.96	0.89	0.02
(Verizon)			0.00			1/2" Ice	1.09	1.02	0.03
			0.00			1" Ice	1.24	1.16	0.04
RFS DB-T1-6Z-8AB-OZ	A	From Face	4.00	0.0000	150.00	No Ice	4.80	2.00	0.04
(Verizon)			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
RFS DB-T1-6Z-8AB-OZ	C	From Face	4.00	0.0000	150.00	No Ice	4.80	2.00	0.04
(Verizon)			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
Platform w/ Handrails	C	From Face	0.00	0.0000	150.00	No Ice	26.30	26.30	1.92
(Verizon)			0.00			1/2" Ice	35.60	35.60	2.34
			0.00			1" Ice	44.90	44.90	2.76
****									
Platform w/ Handrails	C	None		0.0000	140.00	No Ice	26.30	26.30	1.92
(Sprint)						1/2" Ice	35.60	35.60	2.34
						1" Ice	44.90	44.90	2.76
RFS APXVTM14-C-120	C	None		0.0000	140.00	No Ice	12.87	7.20	0.05
(Sprint)						1/2" Ice	13.45	7.77	0.12
						1" Ice	14.04	8.35	0.20
RFS APXVTM14-C-120	B	None		0.0000	140.00	No Ice	6.65	2.60	0.03
(Sprint)						1/2" Ice	7.02	2.94	0.07
						1" Ice	7.40	3.29	0.11
RFS APXVTM14-C-120	A	None		0.0000	140.00	No Ice	6.65	2.60	0.03
(Sprint)						1/2" Ice	7.02	2.94	0.07
						1" Ice	7.40	3.29	0.11
RFS APXVSPP18 w/ pipe	C	None		0.0000	140.00	No Ice	8.26	6.95	0.08
mount						1/2" Ice	8.82	8.13	0.15
(Sprint)						1" Ice	9.35	9.02	0.23
RFS APXVSPP18 w/ pipe	B	None		0.0000	140.00	No Ice	8.26	6.95	0.08
mount						1/2" Ice	8.82	8.13	0.15
(Sprint)						1" Ice	9.35	9.02	0.23
RFS APXVSPP18 w/ pipe	A	None		0.0000	140.00	No Ice	8.26	6.95	0.08
mount						1/2" Ice	8.82	8.13	0.15
(Sprint)						1" Ice	9.35	9.02	0.23
Alcatel Lucent 800 MHz	C	None		0.0000	140.00	No Ice	2.31	2.38	0.06
(Sprint)						1/2" Ice	2.52	2.58	0.08
						1" Ice	2.73	2.79	0.11
Alcatel Lucent 800 MHz	B	None		0.0000	140.00	No Ice	2.31	2.38	0.06
(Sprint)						1/2" Ice	2.52	2.58	0.08
						1" Ice	2.73	2.79	0.11
Alcatel Lucent 800 MHz	A	None		0.0000	140.00	No Ice	2.31	2.38	0.06
(Sprint)						1/2" Ice	2.52	2.58	0.08
						1" Ice	2.73	2.79	0.11
Alcatel Lucent TD 8x20	C	None		0.0000	140.00	No Ice	3.70	1.29	0.07
(Sprint)						1/2" Ice	3.95	1.46	0.09
						1" Ice	4.20	1.64	0.12
Alcatel Lucent TD 8x20	B	None		0.0000	140.00	No Ice	3.70	1.29	0.07
(Sprint)						1/2" Ice	3.95	1.46	0.09

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
Alcatel Lucent TD 8x20 (Sprint)	A	None		0.0000	140.00	1" Ice	4.20	1.64	0.12
						No Ice	3.70	1.29	0.07
						1/2" Ice	3.95	1.46	0.09
						1" Ice	4.20	1.64	0.12
Alcatel Lucent 1900 MHz (Sprint)	C	None		0.0000	140.00	No Ice	1.71	1.29	0.05
						1/2" Ice	1.87	1.43	0.07
						1" Ice	2.04	1.58	0.09
Alcatel Lucent 1900 MHz (Sprint)	B	None		0.0000	140.00	No Ice	1.71	1.29	0.05
						1/2" Ice	1.87	1.43	0.07
						1" Ice	2.04	1.58	0.09
Alcatel Lucent 1900 MHz (Sprint)	A	None		0.0000	140.00	No Ice	1.71	1.29	0.05
						1/2" Ice	1.87	1.43	0.07
						1" Ice	2.04	1.58	0.09
Alcatel Lucent 800 MHz (Sprint)	C	None		0.0000	140.00	No Ice	2.31	2.38	0.06
						1/2" Ice	2.52	2.58	0.08
						1" Ice	2.73	2.79	0.11
Alcatel Lucent 800 MHz (Sprint)	B	None		0.0000	140.00	No Ice	2.31	2.38	0.06
						1/2" Ice	2.52	2.58	0.08
						1" Ice	2.73	2.79	0.11
Alcatel Lucent 800 MHz (Sprint)	A	None		0.0000	140.00	No Ice	2.31	2.38	0.06
						1/2" Ice	2.52	2.58	0.08
						1" Ice	2.73	2.79	0.11
****									

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 150.00-113.00	130.35	1.338	33	78.935	A	0.000	78.935	78.935	100.00	0.000	0.000
					B	0.000	78.935		100.00	0.000	0.000
					C	0.000	78.935		100.00	0.000	0.000
					D	0.000	78.935		100.00	0.000	0.000
L2 113.00-91.25	101.79	1.27	31	61.011	A	0.000	61.011	61.011	100.00	0.000	0.000
					B	0.000	61.011		100.00	0.000	0.000
					C	0.000	61.011		100.00	0.000	0.000
					D	0.000	61.011		100.00	0.000	0.000
L3 91.25-46.25	68.00	1.167	28	160.300	A	0.000	160.300	160.300	100.00	0.000	0.000
					B	0.000	160.300		100.00	0.000	0.000
					C	0.000	160.300		100.00	0.000	0.000
					D	0.000	160.300		100.00	0.000	0.000
L4 46.25-0.00	23.20	0.93	23	212.864	A	0.000	212.864	212.864	100.00	0.000	0.000
					B	0.000	212.864		100.00	0.000	0.000
					C	0.000	212.864		100.00	0.000	0.000
					D	0.000	212.864		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.00-113.00	130.35	1.338	8	1.7209	89.547	A	0.000	89.547	89.547	100.00	0.000	0.000
						B	0.000	89.547		100.00	0.000	0.000
						C	0.000	89.547		100.00	0.000	0.000
						D	0.000	89.547		100.00	0.000	0.000
L2 113.00-91.25	101.79	1.27	8	1.6788	67.249	A	0.000	67.249	67.249	100.00	0.000	0.000
						B	0.000	67.249		100.00	0.000	0.000
						C	0.000	67.249		100.00	0.000	0.000
						D	0.000	67.249		100.00	0.000	0.000
L3 91.25-46.25	68.00	1.167	7	1.6125	172.892	A	0.000	172.892	172.892	100.00	0.000	0.000
						B	0.000	172.892		100.00	0.000	0.000
						C	0.000	172.892		100.00	0.000	0.000
						D	0.000	172.892		100.00	0.000	0.000
L4 46.25-0.00	23.20	0.93	6	1.4481	225.294	A	0.000	225.294	225.294	100.00	0.000	0.000
						B	0.000	225.294		100.00	0.000	0.000
						C	0.000	225.294		100.00	0.000	0.000
						D	0.000	225.294		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.00-113.00	130.35	1.338	10	78.935	A	0.000	78.935	78.935	100.00	0.000	0.000
					B	0.000	78.935		100.00	0.000	0.000
					C	0.000	78.935		100.00	0.000	0.000
					D	0.000	78.935		100.00	0.000	0.000
L2 113.00-91.25	101.79	1.27	10	61.011	A	0.000	61.011	61.011	100.00	0.000	0.000
					B	0.000	61.011		100.00	0.000	0.000
					C	0.000	61.011		100.00	0.000	0.000
					D	0.000	61.011		100.00	0.000	0.000
L3 91.25-46.25	68.00	1.167	9	160.300	A	0.000	160.300	160.300	100.00	0.000	0.000
					B	0.000	160.300		100.00	0.000	0.000
					C	0.000	160.300		100.00	0.000	0.000
					D	0.000	160.300		100.00	0.000	0.000
L4 46.25-0.00	23.20	0.93	7	212.864	A	0.000	212.864	212.864	100.00	0.000	0.000
					B	0.000	212.864		100.00	0.000	0.000
					C	0.000	212.864		100.00	0.000	0.000
					D	0.000	212.864		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	1.88	A	1	0.65	33	1	1	78.935	1.84	49.61	D
150.00-113.00			B	1	0.65		1	1	78.935			
			C	1	0.65		1	1	78.935			
			D	1	0.65		1	1	78.935			
L2	0.21	2.27	A	1	0.65	31	1	1	61.011	1.35	61.96	D
113.00-91.25			B	1	0.65		1	1	61.011			
			C	1	0.65		1	1	61.011			
			D	1	0.65		1	1	61.011			
L3	0.44	6.94	A	1	0.65	28	1	1	160.300	3.24	72.03	D
91.25-46.25			B	1	0.65		1	1	160.300			
			C	1	0.65		1	1	160.300			
			D	1	0.65		1	1	160.300			
L4 46.25-0.00	0.40	11.40	A	1	0.65	23	1	1	212.864	3.43	74.09	D
			B	1	0.65		1	1	212.864			
			C	1	0.65		1	1	212.864			
			D	1	0.65		1	1	212.864			
Sum Weight:	1.40	22.49						OTM	676.40 kip-ft	9.85		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	1.88	A	1	0.65	33	1	1	78.935	1.84	49.61	D
150.00-113.00			B	1	0.65		1	1	78.935			
			C	1	0.65		1	1	78.935			
			D	1	0.65		1	1	78.935			
L2	0.21	2.27	A	1	0.65	31	1	1	61.011	1.35	61.96	D
113.00-91.25			B	1	0.65		1	1	61.011			
			C	1	0.65		1	1	61.011			
			D	1	0.65		1	1	61.011			
L3	0.44	6.94	A	1	0.65	28	1	1	160.300	3.24	72.03	D
91.25-46.25			B	1	0.65		1	1	160.300			
			C	1	0.65		1	1	160.300			
			D	1	0.65		1	1	160.300			
L4 46.25-0.00	0.40	11.40	A	1	0.65	23	1	1	212.864	3.43	74.09	D
			B	1	0.65		1	1	212.864			
			C	1	0.65		1	1	212.864			
			D	1	0.65		1	1	212.864			
Sum Weight:	1.40	22.49						OTM	676.40 kip-ft	9.85		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	4.00	A	1	1.2	8	1	1	89.547	0.96	25.98	D
150.00-113.00			B	1	1.2		1	1	89.547			
			C	1	1.2		1	1	89.547			
			D	1	1.2		1	1	89.547			
L2	0.21	3.84	A	1	1.2	8	1	1	67.249	0.69	31.52	D
113.00-91.25			B	1	1.2		1	1	67.249			
			C	1	1.2		1	1	67.249			
			D	1	1.2		1	1	67.249			
L3	0.44	10.86	A	1	1.2	7	1	1	172.892	1.61	35.86	D
91.25-46.25			B	1	1.2		1	1	172.892			
			C	1	1.2		1	1	172.892			
			D	1	1.2		1	1	172.892			
L4 46.25-0.00	0.40	16.02	A	1	1.2	6	1	1	225.294	1.67	36.19	D
			B	1	1.2		1	1	225.294			
			C	1	1.2		1	1	225.294			
			D	1	1.2		1	1	225.294			
Sum Weight:	1.40	34.72						OTM	343.64 kip-ft	4.93		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	4.00	A	1	1.2	8	1	1	89.547	0.96	25.98	D
150.00-113.00			B	1	1.2		1	1	89.547			
			C	1	1.2		1	1	89.547			
			D	1	1.2		1	1	89.547			
L2	0.21	3.84	A	1	1.2	8	1	1	67.249	0.69	31.52	D
113.00-91.25			B	1	1.2		1	1	67.249			
			C	1	1.2		1	1	67.249			
			D	1	1.2		1	1	67.249			
L3	0.44	10.86	A	1	1.2	7	1	1	172.892	1.61	35.86	D
91.25-46.25			B	1	1.2		1	1	172.892			
			C	1	1.2		1	1	172.892			
			D	1	1.2		1	1	172.892			
L4 46.25-0.00	0.40	16.02	A	1	1.2	6	1	1	225.294	1.67	36.19	D
			B	1	1.2		1	1	225.294			
			C	1	1.2		1	1	225.294			
			D	1	1.2		1	1	225.294			
Sum Weight:	1.40	34.72						OTM	343.64 kip-ft	4.93		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 150.00-113.00	0.35	1.88	A	1	0.65	10	1	1	78.935	0.59	15.98	D
			B	1	0.65		1	1	78.935			
			C	1	0.65		1	1	78.935			
			D	1	0.65		1	1	78.935			
L2 113.00-91.25	0.21	2.27	A	1	0.65	10	1	1	61.011	0.43	19.96	D
			B	1	0.65		1	1	61.011			
			C	1	0.65		1	1	61.011			
			D	1	0.65		1	1	61.011			
L3 91.25-46.25	0.44	6.94	A	1	0.65	9	1	1	160.300	1.04	23.20	D
			B	1	0.65		1	1	160.300			
			C	1	0.65		1	1	160.300			
			D	1	0.65		1	1	160.300			
L4 46.25-0.00	0.40	11.40	A	1	0.65	7	1	1	212.864	1.10	23.86	D
			B	1	0.65		1	1	212.864			
			C	1	0.65		1	1	212.864			
			D	1	0.65		1	1	212.864			
Sum Weight:	1.40	22.49						OTM	217.87 kip-ft	3.17		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 150.00-113.00	0.35	1.88	A	1	0.65	10	1	1	78.935	0.59	15.98	D
			B	1	0.65		1	1	78.935			
			C	1	0.65		1	1	78.935			
			D	1	0.65		1	1	78.935			
L2 113.00-91.25	0.21	2.27	A	1	0.65	10	1	1	61.011	0.43	19.96	D
			B	1	0.65		1	1	61.011			
			C	1	0.65		1	1	61.011			
			D	1	0.65		1	1	61.011			
L3 91.25-46.25	0.44	6.94	A	1	0.65	9	1	1	160.300	1.04	23.20	D
			B	1	0.65		1	1	160.300			
			C	1	0.65		1	1	160.300			
			D	1	0.65		1	1	160.300			
L4 46.25-0.00	0.40	11.40	A	1	0.65	7	1	1	212.864	1.10	23.86	D
			B	1	0.65		1	1	212.864			
			C	1	0.65		1	1	212.864			
			D	1	0.65		1	1	212.864			
Sum Weight:	1.40	22.49						OTM	217.87 kip-ft	3.17		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	22.49					
Bracing Weight	0.00					
Total Member Self-Weight	22.49			-1.74	-1.60	
Total Weight	29.96			-1.74	-1.60	
Wind 0 deg - No Ice		0.00	-18.25	-1898.07	-1.60	0.81
Wind 45 deg - No Ice		13.41	-12.90	-1342.65	-1418.54	-2.68
Wind 90 deg - No Ice		18.96	0.00	-1.74	-2005.45	-4.59
Wind 135 deg - No Ice		13.41	12.90	1339.17	-1418.54	-3.82
Wind 180 deg - No Ice		0.00	18.25	1894.59	-1.60	-0.81
Wind 225 deg - No Ice		-13.41	12.90	1339.17	1415.34	2.68
Wind 270 deg - No Ice		-18.96	0.00	-1.74	2002.25	4.59
Wind 315 deg - No Ice		-13.41	-12.90	-1342.65	1415.34	3.82
Member Ice	12.23					
Total Weight Ice	51.20			-7.00	-2.82	
Wind 0 deg - Ice		0.00	-8.05	-802.74	-2.82	0.45
Wind 45 deg - Ice		5.82	-5.69	-569.67	-585.35	-0.75
Wind 90 deg - Ice		8.23	0.00	-7.00	-826.64	-1.51
Wind 135 deg - Ice		5.82	5.69	555.68	-585.35	-1.39
Wind 180 deg - Ice		0.00	8.05	788.74	-2.82	-0.45
Wind 225 deg - Ice		-5.82	5.69	555.68	579.71	0.75
Wind 270 deg - Ice		-8.23	0.00	-7.00	821.00	1.51
Wind 315 deg - Ice		-5.82	-5.69	-569.67	579.71	1.39
Total Weight	29.96			-1.74	-1.60	
Wind 0 deg - Service		0.00	-5.88	-612.56	-1.60	0.26
Wind 45 deg - Service		4.32	-4.16	-433.65	-458.00	-0.86
Wind 90 deg - Service		6.11	0.00	-1.74	-647.05	-1.48
Wind 135 deg - Service		4.32	4.16	430.17	-458.00	-1.23
Wind 180 deg - Service		0.00	5.88	609.08	-1.60	-0.26
Wind 225 deg - Service		-4.32	4.16	430.17	454.80	0.86
Wind 270 deg - Service		-6.11	0.00	-1.74	643.85	1.48
Wind 315 deg - Service		-4.32	-4.16	-433.65	454.80	1.23

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	1.2 Dead+1.6 Wind 135 deg - No Ice
9	0.9 Dead+1.6 Wind 135 deg - No Ice
10	1.2 Dead+1.6 Wind 180 deg - No Ice
11	0.9 Dead+1.6 Wind 180 deg - No Ice
12	1.2 Dead+1.6 Wind 225 deg - No Ice
13	0.9 Dead+1.6 Wind 225 deg - No Ice
14	1.2 Dead+1.6 Wind 270 deg - No Ice
15	0.9 Dead+1.6 Wind 270 deg - No Ice
16	1.2 Dead+1.6 Wind 315 deg - No Ice
17	0.9 Dead+1.6 Wind 315 deg - No Ice
18	1.2 Dead+1.0 Ice+1.0 Temp
19	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
20	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
21	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
22	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
23	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
24	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
25	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
26	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 45 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 135 deg - Service
31	Dead+Wind 180 deg - Service
32	Dead+Wind 225 deg - Service
33	Dead+Wind 270 deg - Service
34	Dead+Wind 315 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 113	Pole	Max Tension	18	0.00	0.00	-0.00
			Max. Compression	18	-20.48	-3.35	7.83
			Max. Mx	6	-8.17	-476.58	1.82
			Max. My	2	-8.35	-1.92	438.05
			Max. Vy	6	17.85	-476.58	1.82
			Max. Vx	2	-16.66	-1.92	438.05
			Max. Torque	6			7.53
L2	113 - 91.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-24.95	-3.43	8.03
			Max. Mx	6	-11.11	-872.29	1.99
			Max. My	2	-11.25	-1.97	808.78
			Max. Vy	6	19.86	-872.29	1.99
			Max. Vx	2	-18.67	-1.97	808.78
			Max. Torque	14			-7.51
L3	91.25 - 46.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-37.20	-3.53	8.24
			Max. Mx	6	-19.73	-1832.08	2.14
			Max. My	2	-19.80	-2.02	1717.25
			Max. Vy	6	24.58	-1832.08	2.14
			Max. Vx	2	-23.40	-2.02	1717.25
			Max. Torque	14			-7.49
L4	46.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-58.61	-3.51	8.21
			Max. Mx	6	-35.93	-3292.89	2.17
			Max. My	2	-35.93	-2.03	3116.19
			Max. Vy	6	30.36	-3292.89	2.17
			Max. Vx	2	-29.21	-2.03	3116.19
			Max. Torque	14			-7.47

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	58.61	0.00	-0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	15	26.96	30.34	0.00
	Max. H_z	2	35.95	-0.00	29.19
	Max. M_x	2	3116.19	-0.00	29.19
	Max. M_z	6	3292.89	-30.34	0.00
	Max. Torsion	6	7.47	-30.34	0.00
	Min. Vert	3	26.96	-0.00	29.19
	Min. H_x	7	26.96	-30.34	0.00
	Min. H_z	10	35.95	-0.00	-29.19
	Min. M_x	10	-3111.77	-0.00	-29.19
	Min. M_z	14	-3288.83	30.34	0.00
	Min. Torsion	14	-7.47	30.34	0.00

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	29.96	-0.00	0.00	-1.74	-1.60	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	35.95	0.00	-29.19	-3116.19	-2.03	1.46
0.9 Dead+1.6 Wind 0 deg - No Ice	26.96	0.00	-29.19	-3094.19	-1.50	1.42
1.2 Dead+1.6 Wind 45 deg - No Ice	35.95	21.45	-20.64	-2203.97	-2329.27	-4.25
0.9 Dead+1.6 Wind 45 deg - No Ice	26.96	21.45	-20.64	-2188.32	-2312.63	-4.25
1.2 Dead+1.6 Wind 90 deg - No Ice	35.95	30.34	-0.00	-2.16	-3292.89	-7.47
0.9 Dead+1.6 Wind 90 deg - No Ice	26.96	30.34	-0.00	-1.60	-3269.61	-7.41
1.2 Dead+1.6 Wind 135 deg - No Ice	35.95	21.45	20.64	2199.60	-2329.23	-6.32
0.9 Dead+1.6 Wind 135 deg - No Ice	26.96	21.45	20.64	2185.09	-2312.60	-6.24
1.2 Dead+1.6 Wind 180 deg - No Ice	35.95	0.00	29.19	3111.77	-2.03	-1.46
0.9 Dead+1.6 Wind 180 deg - No Ice	26.96	0.00	29.19	3090.93	-1.50	-1.42
1.2 Dead+1.6 Wind 225 deg - No Ice	35.95	-21.45	20.64	2199.60	2325.16	4.25
0.9 Dead+1.6 Wind 225 deg - No Ice	26.96	-21.45	20.64	2185.09	2309.60	4.24
1.2 Dead+1.6 Wind 270 deg - No Ice	35.95	-30.34	-0.00	-2.16	3288.83	7.47
0.9 Dead+1.6 Wind 270 deg - No Ice	26.96	-30.34	-0.00	-1.60	3266.61	7.41
1.2 Dead+1.6 Wind 315 deg - No Ice	35.95	-21.45	-20.64	-2203.98	2325.20	6.32
0.9 Dead+1.6 Wind 315 deg - No Ice	26.96	-21.45	-20.64	-2188.32	2309.63	6.25
1.2 Dead+1.0 Ice+1.0 Temp	58.61	-0.00	0.00	-8.21	-3.51	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	58.61	-0.00	-8.04	-847.78	-3.58	0.53
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	58.61	5.82	-5.69	-601.95	-618.36	-0.83
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	58.61	8.23	0.00	-8.38	-872.96	-1.71

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
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	58.61	5.82	5.69	585.19	-618.36	-1.58
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	58.61	-0.00	8.04	831.01	-3.58	-0.53
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	58.61	-5.82	5.69	585.19	611.19	0.83
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	58.61	-8.23	0.00	-8.38	865.79	1.71
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	58.61	-5.82	-5.69	-601.95	611.19	1.58
Dead+Wind 0 deg - Service	29.96	-0.00	-5.88	-626.43	-1.69	0.29
Dead+Wind 45 deg - Service	29.96	4.32	-4.15	-443.49	-468.49	-0.87
Dead+Wind 90 deg - Service	29.96	6.11	0.00	-1.83	-661.85	-1.52
Dead+Wind 135 deg - Service	29.96	4.32	4.15	439.83	-468.49	-1.28
Dead+Wind 180 deg - Service	29.96	-0.00	5.88	622.77	-1.69	-0.29
Dead+Wind 225 deg - Service	29.96	-4.32	4.15	439.83	465.12	0.87
Dead+Wind 270 deg - Service	29.96	-6.11	0.00	-1.83	658.47	1.52
Dead+Wind 315 deg - Service	29.96	-4.32	-4.15	-443.49	465.12	1.28

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-29.96	0.00	0.00	29.96	-0.00	0.002%
2	0.00	-35.95	-29.19	-0.00	35.95	29.19	0.002%
3	0.00	-26.96	-29.19	-0.00	26.96	29.19	0.003%
4	21.45	-35.95	-20.64	-21.45	35.95	20.64	0.000%
5	21.45	-26.96	-20.64	-21.45	26.96	20.64	0.000%
6	30.34	-35.95	0.00	-30.34	35.95	0.00	0.001%
7	30.34	-26.96	0.00	-30.34	26.96	0.00	0.000%
8	21.45	-35.95	20.64	-21.45	35.95	-20.64	0.000%
9	21.45	-26.96	20.64	-21.45	26.96	-20.64	0.000%
10	0.00	-35.95	29.19	-0.00	35.95	-29.19	0.002%
11	0.00	-26.96	29.19	-0.00	26.96	-29.19	0.003%
12	-21.45	-35.95	20.64	21.45	35.95	-20.64	0.000%
13	-21.45	-26.96	20.64	21.45	26.96	-20.64	0.000%
14	-30.34	-35.95	0.00	30.34	35.95	0.00	0.001%
15	-30.34	-26.96	0.00	30.34	26.96	0.00	0.000%
16	-21.45	-35.95	-20.64	21.45	35.95	20.64	0.000%
17	-21.45	-26.96	-20.64	21.45	26.96	20.64	0.000%
18	0.00	-58.61	0.00	0.00	58.61	-0.00	0.001%
19	0.00	-58.61	-8.05	0.00	58.61	8.04	0.001%
20	5.82	-58.61	-5.69	-5.82	58.61	5.69	0.000%
21	8.23	-58.61	0.00	-8.23	58.61	-0.00	0.001%
22	5.82	-58.61	5.69	-5.82	58.61	-5.69	0.000%
23	0.00	-58.61	8.05	0.00	58.61	-8.04	0.001%
24	-5.82	-58.61	5.69	5.82	58.61	-5.69	0.000%
25	-8.23	-58.61	0.00	8.23	58.61	-0.00	0.001%
26	-5.82	-58.61	-5.69	5.82	58.61	5.69	0.000%
27	0.00	-29.96	-5.88	0.00	29.96	5.88	0.003%
28	4.32	-29.96	-4.16	-4.32	29.96	4.15	0.003%
29	6.11	-29.96	0.00	-6.11	29.96	-0.00	0.003%
30	4.32	-29.96	4.16	-4.32	29.96	-4.15	0.003%
31	0.00	-29.96	5.88	0.00	29.96	-5.88	0.003%
32	-4.32	-29.96	4.16	4.32	29.96	-4.15	0.003%
33	-6.11	-29.96	0.00	6.11	29.96	-0.00	0.003%
34	-4.32	-29.96	-4.16	4.32	29.96	4.15	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00001370
2	Yes	14	0.00000001	0.00007476
3	Yes	13	0.00003354	0.00014219
4	Yes	17	0.00000001	0.00007918
5	Yes	17	0.00000001	0.00005698
6	Yes	15	0.00000001	0.00013329
7	Yes	15	0.00000001	0.00010047
8	Yes	17	0.00000001	0.00007766
9	Yes	17	0.00000001	0.00005599
10	Yes	14	0.00000001	0.00007448
11	Yes	13	0.00003353	0.00014179
12	Yes	17	0.00000001	0.00007669
13	Yes	17	0.00000001	0.00005534
14	Yes	15	0.00000001	0.00013289
15	Yes	15	0.00000001	0.00010025
16	Yes	17	0.00000001	0.00007985
17	Yes	17	0.00000001	0.00005760
18	Yes	10	0.00000001	0.00005298
19	Yes	14	0.00000001	0.00013483
20	Yes	15	0.00000001	0.00008484
21	Yes	14	0.00000001	0.00014597
22	Yes	15	0.00000001	0.00008061
23	Yes	14	0.00000001	0.00012741
24	Yes	15	0.00000001	0.00007771
25	Yes	14	0.00000001	0.00014262
26	Yes	15	0.00000001	0.00008388
27	Yes	12	0.00000001	0.00006750
28	Yes	12	0.00000001	0.00011815
29	Yes	12	0.00000001	0.00013307
30	Yes	12	0.00000001	0.00012364
31	Yes	12	0.00000001	0.00006641
32	Yes	12	0.00000001	0.00010526
33	Yes	12	0.00000001	0.00013122
34	Yes	12	0.00000001	0.00013399

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 113	17.776	29	1.2409	0.0251
L2	117.25 - 91.25	10.059	29	0.9301	0.0074
L3	96.25 - 46.25	6.435	29	0.6990	0.0041
L4	53 - 0	1.792	29	0.3182	0.0012

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	(2) Andrew JAHH-65B-R3B	29	17.776	1.2409	0.0251	24991
140.00	Platform w/ Handrails	29	15.264	1.1511	0.0186	12495

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 113	88.082	6	6.1083	0.1239
L2	117.25 - 91.25	49.972	6	4.6157	0.0366
L3	96.25 - 46.25	31.991	6	3.4737	0.0203
L4	53 - 0	8.916	6	1.5829	0.0062

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	(2) Andrew JAHH-65B-R3B	6	88.082	6.1083	0.1239	5216
140.00	Platform w/ Handrails	6	75.688	5.6816	0.0921	2607

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 113 (1)	TP30.48x20x0.1875	37.00	150.00	174.3	17.3114	-8.17	128.72	0.063
L2	113 - 91.25 (2)	TP36.27x28.9012x0.25	26.00	150.00	146.5	27.4574	-11.11	288.89	0.038
L3	91.25 - 46.25 (3)	TP48.52x34.3529x0.3125	50.00	150.00	109.5	45.9188	-19.73	864.79	0.023
L4	46.25 - 0 (4)	TP61x45.9824x0.375	53.00	150.00	83.6	72.1589	-35.93	2219.75	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 113 (1)	TP30.48x20x0.1875	476.59	664.00	0.718	0.00	664.00	0.000
L2	113 - 91.25 (2)	TP36.27x28.9012x0.25	872.29	1312.77	0.664	0.00	1312.77	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L3	91.25 - 46.25 (3)	TP48.52x34.3529x0.3125	1832.08	2859.28	0.641	0.00	2859.28	0.000
L4	46.25 - 0 (4)	TP61x45.9824x0.375	3292.89	5660.30	0.582	0.00	5660.30	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 113 (1)	TP30.48x20x0.1875	17.85	554.26	0.032	7.51	1330.93	0.006
L2	113 - 91.25 (2)	TP36.27x28.9012x0.25	19.86	921.89	0.022	7.49	2631.61	0.003
L3	91.25 - 46.25 (3)	TP48.52x34.3529x0.3125	24.58	1500.10	0.016	7.47	5731.38	0.001
L4	46.25 - 0 (4)	TP61x45.9824x0.375	30.36	2266.44	0.013	7.47	11345.08	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 113 (1)	0.063	0.718	0.000	0.032	0.006	0.783 ✔	1.000	4.8.2 ✔
L2	113 - 91.25 (2)	0.038	0.664	0.000	0.022	0.003	0.704 ✔	1.000	4.8.2 ✔
L3	91.25 - 46.25 (3)	0.023	0.641	0.000	0.016	0.001	0.664 ✔	1.000	4.8.2 ✔
L4	46.25 - 0 (4)	0.016	0.582	0.000	0.013	0.001	0.598 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 113	Pole	TP30.48x20x0.1875	1	-8.17	128.72	78.3	Pass
L2	113 - 91.25	Pole	TP36.27x28.9012x0.25	2	-11.11	288.89	70.4	Pass
L3	91.25 - 46.25	Pole	TP48.52x34.3529x0.3125	3	-19.73	864.79	66.4	Pass
L4	46.25 - 0	Pole	TP61x45.9824x0.375	4	-35.93	2219.75	59.8	Pass
						Summary		
						Pole (L1)	78.3	Pass
						RATING =	**78.3**	**Pass**

Base/Flange Plate	Plate Type	***Baseplate***	
	Pole Diameter	61	in
	Pole Thickness	0.375	in
	Plate Diameter	74	in
	Plate Thickness	2	in
	Plate Fy	60	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	596.26	k-in
	Applied	276.50	k-in
Stiffeners	#	***0***	

Bolts	#	***16***	
	Bolt Circle	68	in
	(R)adial / (S)quare	R	
●	Diameter	2.25	in
	Hole Diameter	2.625	in
	Type	A615-75	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	147.46	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev. ***G***

Moment	3293.0 k-ft
Axial	36.0 k
Shear	30.0 k

Date	11/5/2018
Engineer	P.Young
Site #	CT702
Carrier	InSite

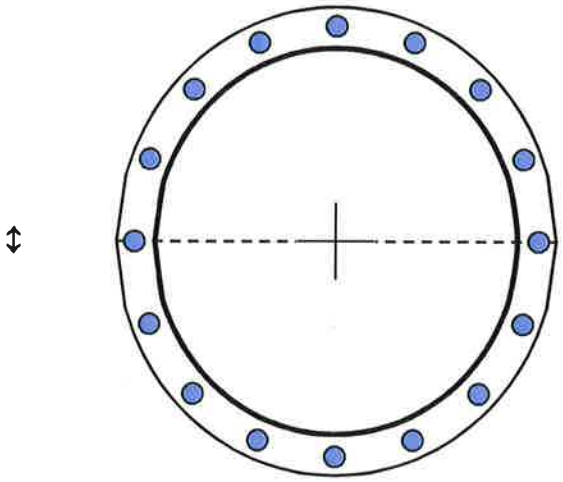
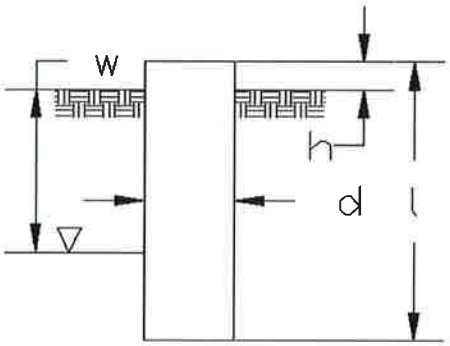


Plate Stress Ratio:
0.46 (Pass)

Bolt Stress Ratio:
0.57 (Pass)

Site Name:	Guilford	*Program Last Updated:*	*9/10/2015*
Site Number:	CT702	*Bennett & Pless Inc.*	
Engineer:	PY		
Engineering Number:	0		
Date:	11/07/18		



Design Base Loads (Factored) - Analysis per TIA-222-G Standards

Analyze or Design a Foundation?	Analyze	
Foundation Mapped:	N	
Moment (M):	3293.0	k-ft
Shear/Leg (V):	30.0	k
Axial Load (P):	36.0	k
Uplift/Leg (U):	0.0	k
Tower Type (GT / SST / MP):	MP	
Diameter of Caisson (d):	8.0	ft
Caisson Embedment (L-h):	22.5	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	25.5	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Water:	62.4	pcf
Tension Skin Friction/Compression Skin Friction:	1.00	
Pullout Angle:	30.0	degrees

Engineer Notes

Soil Mechanical Properties

Depth (ft) Top	Depth (ft) Bottom	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
0.0	3.5	130	0	0	0	0
3.5	30.4	130	0	38	4000	20000
30.4						

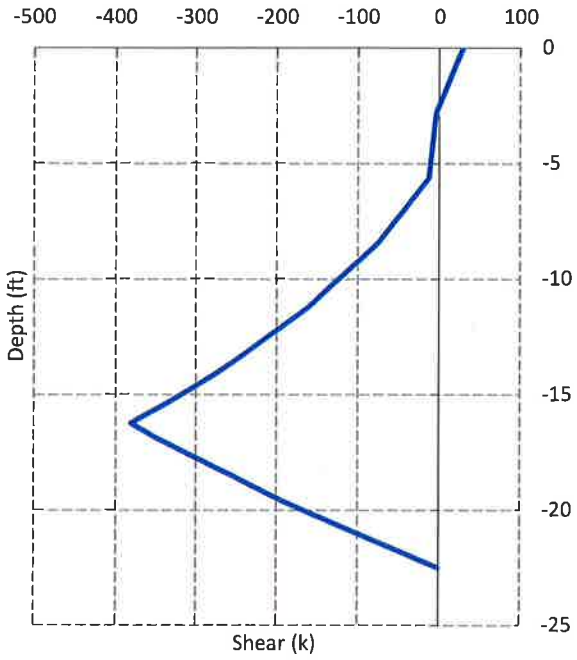
Required Embedment:	17.5	ft - OK, Caisson Embedment Satisfactory
Volume of Concrete:	1156.1	ft^3 = 42.8 yd^3
Weight of Concrete (Buoyancy Effect Considered):	173.4	k
Average Soil Unit Weight:	120.4	pcf
Skin Friction Resistance:	1910.1	k
Compressive Bearing Resistance:	1005.3	k
Pullout Weight (Minus Concrete Weight):	921.0	k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	690.7	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	2186.5	k
P_u:	76.2	k
$T_u/\phi_s T_n$:	0.00	Result: OK
$P_u/\phi_s P_n$:	0.03	Result: OK
Total Lateral Resistance:	2697.9	k
Inflection Point (Below Ground Surface):	16.2	ft
Design Overturning Moment At Inflection Point (M_D):	3795.3	k-ft
Nominal Moment Capacity ($\phi_s M_n$):	8119.9	k-ft
$M_D/\phi_s M_n$:	0.47	Result: OK
ϕ_s:	0.75	

Caisson Strength Capacity

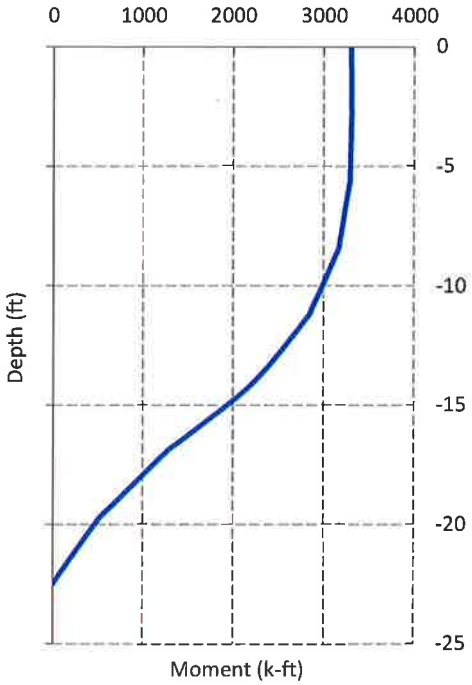
Concrete Compressive Strength (f'_c):	4000	psi
Vertical Steel Rebar Size #:	11	
Vertical Steel Rebar Area:	1.56	in^2
# of Vertical Steel Rebars:	24	

Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Horizontal Tie / Stirrup Size #:	5	
Horizontal Tie / Stirrup Area:	0.31	in^2
Design Horizontal Tie / Stirrup Spacing:	12.0	in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	60	ksi
Rebar Cage Diameter:	88.0	in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90	ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.75	ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor (ϕ_V):	0.65	ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000	ksi
Design Moment (M_u):	3315.7	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	7259.8	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.46	Result: OK
Design Shear (V_u):	380.8	k
Nominal Shear Capacity ($\phi_V V_n$):	688.4	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.55	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	2021.8	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	76.2	k
Nominal Compression Capacity ($\phi_P P_n$):	12731.0	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.01	Result: OK
Bending Reinforcement Ratio:	0.005	ACI318-05 - 10.8.4 & 10.9.1
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.46	Result: OK

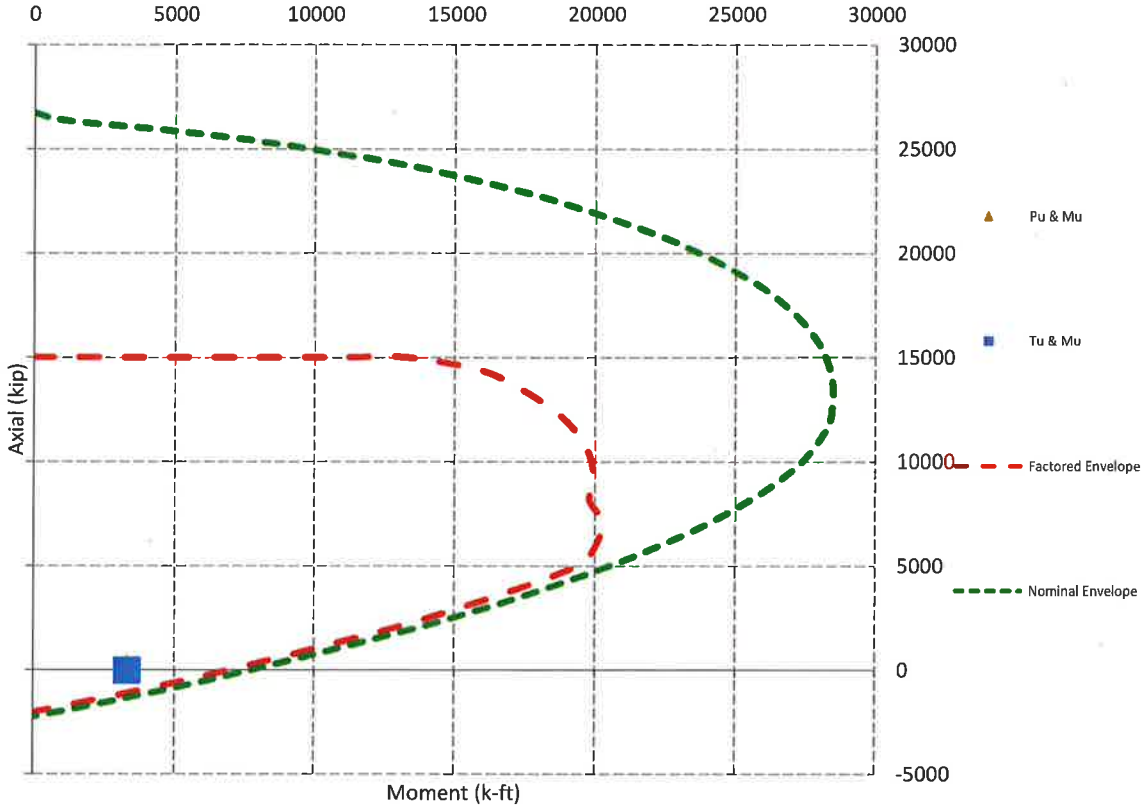
Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads



Attachment 2:
Collocation Application

WORKSHEET 1 OF 2 (COMPLETE BOTH WORKSHEET TABS)

InSite Towers, LLC

CUSTOMER APPLICATION

DATE SUBMITTED: 09/24/18

A Site Application Fee to be paid upon submission of this Customer Application.

CUSTOMER INFORMATION

COMPANY NAME:	Cellco Partnership d/b/a Verizon Wireless	PHONE:	518-527-0011
ENTITY Type: i.e. Inc., LLP	Partnership	FAX:	518-306-1711
STATE of inc.		SERVICE (PCS, SMR):	

CUSTOMER ADDRESSES

COMPANY Address:	180 Washington Valley Road	CITY/STATE:	Bedminster, NJ	ZIP:	7921
BILLING Address:	SAME	CITY/STATE:		ZIP:	
NOTICE Address 1:	SAME	CITY/STATE:		ZIP:	
NOTICE Address 2:		CITY/STATE:		ZIP:	

CUSTOMER CONTACTS

PRIMARY CONTACT:	Andrea Armstrong	PHONE:	518-527-0011
TITLE:	Site Acquisition Specialist	E-MAIL Address:	aarmstrong@airosmithdevelopment.com
SIGNATORY NAME:	TBD	PHONE:	
TITLE:		E-MAIL Address:	
EMERGENCY CONTACT:	Same	PHONE:	
TITLE:		E-MAIL Address:	
TECHNICAL/OPS:	TBD	PHONE:	
TITLE:		E-MAIL Address:	
RF ENGINEER:	Jamie Laredo	PHONE:	860-308-4534
TITLE:	RF Design and Traffic	E-MAIL Address:	jamie.laredo@verizonwireless.com
BILLING CONTACT:	Same	PHONE:	
TITLE:		E-MAIL Address:	
LEGAL CONTACT:	Same	PHONE:	
TITLE:		E-MAIL Address:	

SITE INFORMATION

CUSTOMER Site # / Name:	467601 / Guilford 3 CT	INSITE Site # and Name:	CT702 / Guilford
SITE LATITUDE:	41.288806	SITE LONGITUDE:	-72.658306
SITE ADDRESS:	10 Tanner Marsh Road	CITY:	New Haven
STATE:	CT ZIP: 6437	STRUCTURE TYPE:	Self Support (Lattice Tower)

USE THIS SECTION TO PROVIDE A DESCRIPTION OF COLOCATION OR MODIFICATION REQUEST

Verizon wishes to swap (6) six existing antenna panels and (6) six existing RRUs, remove (3) RRUs and add (3) diplexers. The mounts added are for the new antenna and will be swapped for existing mount pipes with (3) Commscope BSAMNT-SBS-2-2 Mounting kit w/pipes. Feed lines to remain unchanged.

USE THIS SECTION TO LIST EQUIPMENT TO BE REMOVED

Remove (3) three HBXX-6517DS-A2M Antenna Panels, Remove (3) three LNX-6514DS-A1M antenna panels, Remove (3) three 2x60AWS RRU, Remove (3) three 2x60LTE RRU, Remove (3) three 2x60PCS RRU

APPLICATION PREPARED BY

NAME:	Andrea Armstrong	PHONE:	518-527-0011
COMPANY:	Airosmith Development	ADDRESS:	32 Clinton Street Saratoga Springs, NY 12866
TITLE:	Site Acquisition Specialist	E-MAIL Address:	aarmstrong@airosmithdevelopment.com

EXHIBIT
Equipment

Site Name and #: CT702 / Guilford **Licensee Name:** Cellco Partnership d/b/a Verizon Wireless

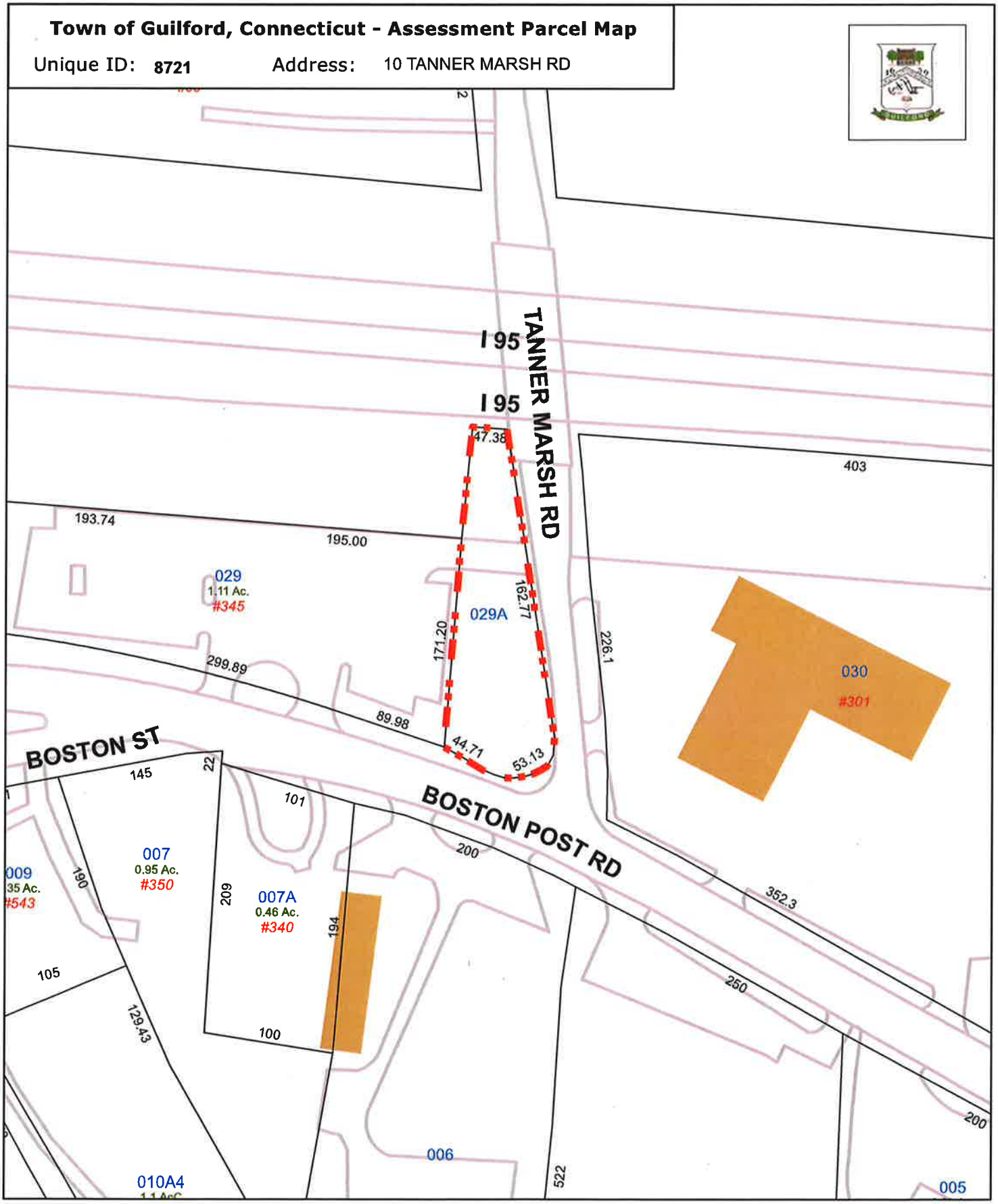
The mounting method and exact location of the space and equipment listed herein shall be subject to InSite's approval.

SYSTEM REQUIREMENTS										
POWER provided by:	Utility Company direct				TELCO provided by:	Fiber				
Power Requirements:	Amps:	200	Volts:	240	No. of Outlets:	None				
Generator Provided by:	Licensee	Make:	Unknown	Model:	Unknown	Fuel Type:	Diesel	Capacity:	200 gal.	
Batteries:	Quantity:	None	Make:	N/A	Model:	N/A				
Note: audible alarms related to generator and other equipment shall be permanently disabled at unmanned sites										
SPACE REQUIREMENTS & RADIO INVENTORY										
Type of Space Required:	Ground:	Yes	Floor:	No	Total Square Feet:	288 sq. ft.				
Dimensions of Equipment Floor/Ground Space:	12' x 24'				Equipment Height:	N/A				
Dimensions of Generator Ground Space:	Inside Shelter				Dimensions of Fuel Tank Ground Space:	N/A				
No. of Transmitters (Tx):	None	Transmitter Make/Model:	N/A		Transmitter Power Output:	N/A				
No. of Receivers (Rx):	None	Receiver Make/Model:	N/A		Transmitter ERP:	N/A				
Cabinet also contains:										

EQUIPMENT LOADING DESCRIPTION (FINAL CONFIGURATION)					
	Sector 1	Sector 2	Sector 3	DISH(ES)	OTHER
Antenna Type (1):	Panel	Panel	Panel	N/A	N/A
# of Antennas (1)/ Sector:	Two (2)	Two (2)	Two (2)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (1):	Andrew	Andrew	Andrew	N/A	N/A
Antenna Model (1):	JAHH-65B-R3B	JAHH-65B-R3B	JAHH-65B-R3B	N/A	N/A
Antenna Dimensions (1):	72" x 13.8" x 8.2"	72" x 13.8" x 8.2"	72" x 13.8" x 8.2"	N/A	N/A
Antenna Weight (1):	63 lbs	63 lbs	63 lbs	N/A	N/A
Antenna RAD Ctr (1):	150 ft	150 ft	150 ft	N/A	N/A
Antenna Type (2):	Panel	Panel	Panel	N/A	N/A
# of Antennas (2)/ Sector:	One (1)	One (1)	One (1)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (2):	Andrew	Andrew	Andrew	N/A	N/A
Antenna Model (2):	HBXX-6517DS-A2M	HBXX-6517DS-A2M	HBXX-6517DS-A2M	N/A	N/A
Antenna Dimensions (2):	74.9" x 12" x 6.5"	74.9" x 12" x 6.5"	74.9" x 12" x 6.5"	N/A	N/A
Antenna Weight (2):	43 lbs	43 lbs	43 lbs	N/A	N/A
Antenna RAD Ctr (2):	150 ft	150 ft	150 ft	N/A	N/A
Antenna Type (3):	Panel	Panel	Panel	N/A	N/A
# of Antennas (3)/ Sector:	One (1)	One (1)	One (1)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (3):	Andrew	Andrew	Andrew	N/A	N/A
Antenna Model (3):	LNX-6514DS-A1M	LNX-6514DS-A1M	LNX-6514DS-A1M	N/A	N/A
Antenna Dimensions (3):	72.7" x 12" x 7.1"	72.7" x 12" x 7.1"	72.7" x 12" x 7.1"	N/A	N/A
Antenna Weight (3):	38 lbs	38 lbs	38 lbs	N/A	N/A
Antenna RAD Ctr (3):	150 ft	150 ft	150 ft	N/A	N/A
# of RRU/RRHs/ Sector (1):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (1):	Samsung	Samsung	Samsung		
RRU/RRH Model (1):	B5/B13 RRH-BR04C	B5/B13 RRH-BR04C	B5/B13 RRH-BR04C		
RRU/RRH Dimensions (1):	14.9" x 14.9" x 8.1"	14.9" x 14.9" x 8.1"	14.9" x 14.9" x 8.1"		
RRU/RRH Weight (1):	70 lbs	70 lbs	70 lbs		
RRU/RRH RAD Ctr (1):	150 ft	150 ft	150 ft		
# of RRU/RRHs/ Sector (2):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (2):	Samsung	Samsung	Samsung		
RRU/RRH Model (2):	B2/B66A RRH-BR049	B2/B66A RRH-BR049	B2/B66A RRH-BR049		
RRU/RRH Dimension (2):	14.9" x 14.9" x 10"	14.9" x 14.9" x 10"	14.9" x 14.9" x 10"		
RRU/RRH Weight (2):	84 lbs	84 lbs	84 lbs		
RRU/RRH RAD Ctr (2):	150 ft	150 ft	150 ft		
# of TMAs/ Sector:	None	None	None		
# of Diplexers/ Sector:	One (1)	One (1)	One (1)		
Diplexer Manufacturer:	RFS	RFS	RFS		
Diplexer Model:	FDJ85020Q4-S1	FDJ85020Q4-S1	FDJ85020Q4-S1		
Diplexer Dimensions:	6.8" x 16.9" x 6.3"	6.8" x 16.9" x 6.3"	6.8" x 16.9" x 6.3"		
Diplexer Weight:	23.6 lbs	23.6 lbs	23.6 lbs		
Diplexer RAD Ctr:	150 ft	150 ft	150 ft		
# of Surge Suppressors/Sctr:	One (1)	One (1)	N/A		
Surge Suppressor Make:	RFS	RFS	N/A		
Surge Suppressor Model:	DB-T1-6Z-8AB-OZ	DB-T1-6Z-8AB-OZ	N/A		
Surge Supressor Dimensions:	24" x 24" x 10"	24" x 24" x 10"	N/A		
Surge Supressor Weight:	44 lbs	44 lbs	N/A		
Surge Supressors RAD Ctr:	150 ft	150 ft	N/A	Please include microwave dish frequencies below:	Please include microwave dish frequencies below:
OTHER:	None	None	None		
Transmit Frequencies:	746-756; 870-894; 1930-1990; 2110-2155 MHz			N/A	N/A
Receive Frequencies:	777-787; 825-849; 1850-1910; 1710-1780 MHz			N/A	N/A
# of Lines:	Two (2)	Two (2)	Two (2)	None	None

EQUIPMENT LOADING DESCRIPTION (FINAL CONFIGURATION)					
	Sector 1	Sector 2	Sector 3	DISH(ES)	OTHER
Line Size:	1-5/8"	1-5/8"	1-5/8"	N/A	N/A
# of Lines:	Two (2)	None	None	None	None
Line Size:	1-5/8" Fiber	N/A	N/A	N/A	N/A
Mount Type:	Platform w/Handrail	Platform w/Handrail	Platform w/Handrail	N/A	N/A
Mount Size:	Up to Fourteen Feet (14')	Up to Fourteen Feet (14')	Up to Fourteen Feet (14')	N/A	N/A

ATTACHMENT 4



Approximate Scale: 1 inch = 100 feet

0 60 120 Feet

Map Produced: July 2018

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein.

Town of Guilford
Property Listing Report

Parcel ID 049029A

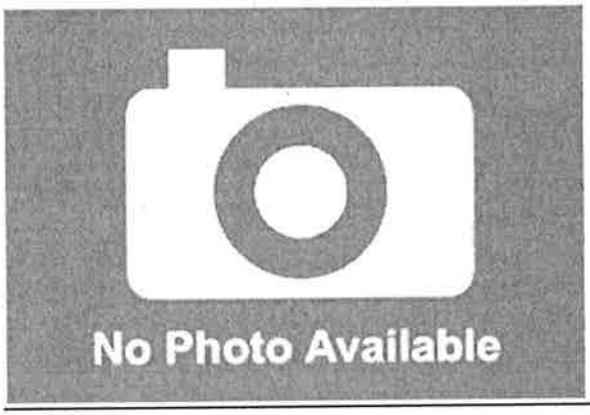
Account

Property Information

Owner	TOWN OF GUILFORD
Address	10 TANNER MARSH RD
Mailing Address	31 PARK ST GUILFORD , CT 06437
Land Use	-
Land Class	Vacant Land

Census Tract	1901
Neighborhood	G
Zoning	TS
Acreage	0.29
Utilities	
Lot Setting/ Desc	/

Photo



PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	0	0
Outbuildings	0	0
Improvements		
Extras		
Land	75000	52500
Total	75000	52500
Previous		

Construction Details

Year Built	
Stories	
Building Style	
Building Use	Industrial Vacant Land
Building Condition	
Total Rooms	
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

EXTERIOR WALLS:	
Primary	
Secondary	
INTERIOR WALLS:	
Primary	
Secondary	
FLOORS:	
Primary	
Secondary	
HEATING/AC:	
Heating Type	
Heating Fuel	
AC Type	

BUILDING AREA:	
Effective Building Area	
Gross Building Area	0
Total Living Area	

SALES HISTORY:	
Sale Date	8/29/1967
Sale Price	0
Book/ Page	0166/0222

Report Created On 2/11/2019

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	2	2	neopost 02/19/2019 US POSTAGE $002.79 ZIP 06103 041L1220X637
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Matthew T. Hoey III, First Selectman Town of Guilford 31 Park Street Guilford, CT 06437				
2.	George Kral, Town Planner Town of Guilford 31 Park Street Guilford, CT 06437				
3.					
4.					
5.					
6.					

USPS OLD STATE HOUSE STA 06103 FEB 19 2019

Guilford 3

See Reverse for Instructions