

July 26, 2017

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
88 Main Street, Monroe, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 165-foot level of the existing 195-foot tower at 88 Main Street in Monroe, Connecticut (the “Property”). The tower is owned by Crown Castle (“Crown”). The Council approved Cellco’s use of this tower in 2003. Cellco now intends to replace six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/1900 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same 165-foot level on the tower. Cellco also intends to install nine (9) remote radio heads (“RRHs”) behind its antennas and install one (1) HYBRIFLEX™ fiber optic antenna cable inside the monopole. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.

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 letter is being sent to Steve Vavrek, Monroe First Selectman; William Agresta, AICP, Monroe’s Planning and Zoning Administrator; Crown, the tower owner; and Stepney Volunteer Fire Company, 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 replacement antennas and RRH’s will be located at the 165-foot level on the 195-foot tower.

16730051-v1

Robinson + Cole

Melanie A. Bachman, Esq.
July 26, 2017
Page 2

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 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.

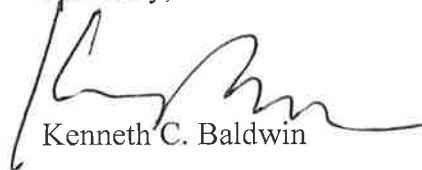
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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 and the owner of the Property 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:

Steve Vavrek, Monroe First Selectman
William Agresta, AICP, Planning and Zoning Administrator
Stepney Volunteer Fire Company
Crown Castle
Tim Parks, Verizon Wireless

ATTACHMENT 1



SBNHH-1D65B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
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, maximum, watts	350	350	350	350	350	300
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	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0° 14.6	0° 14.5	0° 17.4	0° 17.8	0° 18.1	0° 18.2
	7° 14.6	7° 14.4	3° 17.5	3° 17.9	3° 18.3	3° 18.4
	14° 14.2	14° 13.6	7° 17.4	7° 17.9	7° 18.2	7° 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

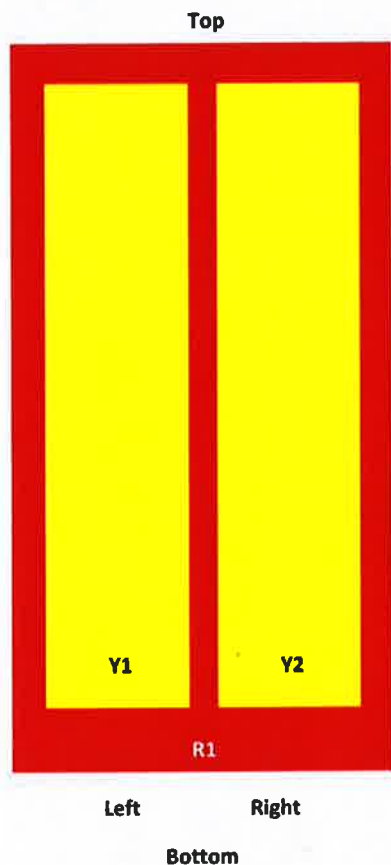
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

Array Layout

SBNHH-1D65B

SBNHH 65

Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	AXXXXXXXXXXXXXXXXX.1
Y1	1695-2360	3-4	2	AXXXXXXXXXXXXXXXXX.2
Y2	1695-2360	5-6		



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 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and 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	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h 150 mph

Dimensions

Length	1851.0 mm 72.9 in
Width	301.0 mm 11.9 in
Depth	180.0 mm 7.1 in
Net Weight, without mounting kit	18.4 kg 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1) Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	1 female 1 male

Packed Dimensions

Length	2025.0 mm 79.7 in
Width	390.0 mm 15.4 in
Depth	296.0 mm 11.7 in
Shipping Weight	31.0 kg 68.3 lb

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU
China RoHS SJ/T 11364-2006
ISO 9001:2008

Classification

Compliant by Exemption
Above Maximum Concentration Value (MCV)
Designed, manufactured and/or distributed under this quality management system



SBNHH-1D65B

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

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

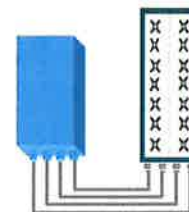


FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R
Can be switched between
modes via SW w/o site
visit

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
Volume in L	38 (with solar shield)
Weight in kg (lb) (w/o mounting HW)	26 (57.2) (with solar shield)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	550W typical @100% RF load (in 2Tx or 4Tx mode)
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

www.alcatel-lucent.com Alcatel, Lucent, Alcatel-Lucent and the Alcatel-Lucent logo are trademarks of Alcatel-Lucent. All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Alcatel-Lucent assumes no responsibility for inaccuracies contained herein. Copyright © 2014 Alcatel-Lucent. All Rights Reserved

ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

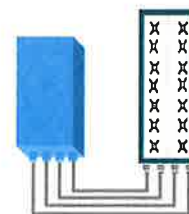


FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options (Pole or Wall)



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2)	2.0 dB typ. (<2.5 dB max)
RX Diversity scheme	2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.)	538 x 304 x 182 (21.2" x 12.0" x 7.2")
Volume (w/ solar shield) in L	30
Weight (w/ solar shield) in kg (lb)	24 (53)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	580W typical @100% RF load
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	Frontal: <200N / Lateral : <150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

www.alcatel-lucent.com Alcatel, Lucent, Alcatel-Lucent and the Alcatel-Lucent logo are trademarks of Alcatel-Lucent. All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Alcatel-Lucent assumes no responsibility for inaccuracies contained herein. Copyright © 2014 Alcatel-Lucent. All Rights Reserved

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.



The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

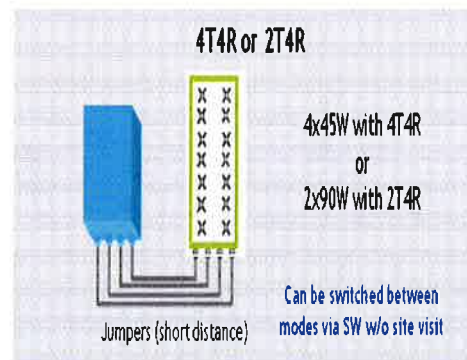
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



TECHNICAL SPECIFICATIONS

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity
Receiver Sensivity (FRC A1-3)	-104.5 dBm maximum
Sizes (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (In 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

www.alcatel-lucent.com Alcatel, Lucent, Alcatel-Lucent and the Alcatel-Lucent logo are trademarks of Alcatel-Lucent. All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Alcatel-Lucent assumes no responsibility for inaccuracies contained herein.
Copyright © 2016 Alcatel-Lucent. All Rights Reserved



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.

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

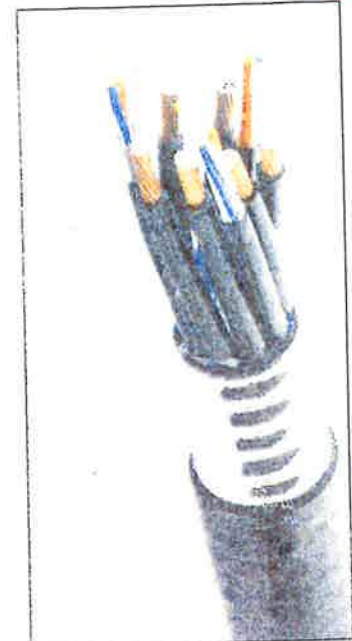


Figure 1: HYBRIFLEX Series

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
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)
DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		(Ω/km (Ω/1000ft))	2.1 (0.307)
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)			UL34-V0, UL1666 RoHS Compliant
Size (Power)		(mm (AWG))	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		(mm (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
Installation Temperature		(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature		(°C (°F))	-40 to +65 (-40 to 149)

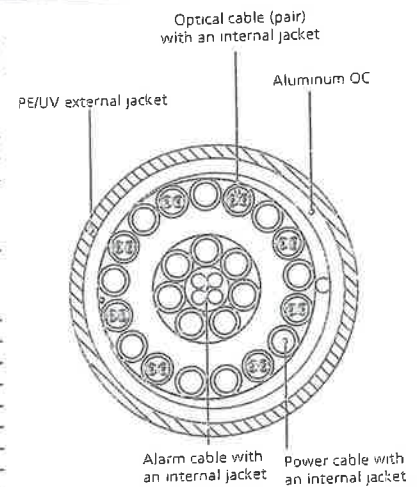


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering.

* This data is provisional and subject to change

ATTACHMENT 2

		General		Power		Density							
Site Name: Monroe S Tower Height: 195ft													
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*AT&T	2	475	175	1900	0.0120	1.0000	0.12%						
*AT&T	6	475	175	850	0.0359	0.5667	0.63%						
*AT&T	4	75	175	700	0.0038	0.4667	0.08%						
*AT&T	4	75	175	1900	0.0038	1.0000	0.04%						
*T-Mobile	2	2334	195	2100	0.0470	1.0000	0.47%						
*T-Mobile	4	1167	195	1950	0.0470	1.0000	0.47%						
*T-Mobile	1	865	195	2100	0.0087	1.0000	0.09%						
Verizon	1	1897	165	0.0251	1970	1.0000	2.51%						
Verizon	9	336	165	0.0399	869	0.5793	6.89%						
Verizon	1	2129	165	0.0281	2145	1.0000	2.81%						
Verizon	1	819	165	0.0108	746	0.4970	2.18%						
								16.29%					
* Source: Siting Council													

ATTACHMENT 3

Date: February 16, 2017

Charles Trask
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject: Structural Analysis Report

Carrier Designation: Verizon Wireless Co-Locate
Carrier Site Number: 118105
Carrier Site Name: Monroe South CT

Crown Castle Designation: Crown Castle BU Number: 826053
Crown Castle Site Name: Monroe-1/Rt 25
Crown Castle JDE Job Number: 422928
Crown Castle Work Order Number: 1362786
Crown Castle Application Number: 378096 Rev. 2

Engineering Firm Designation: Jacobs Engineering Group, Inc. Project Number: 1362786

Site Data: 88 Main Street, Monroe, Fairfield County, CT
Latitude 41° 18' 6.06", Longitude -73° 15' 2.92"
195 Foot - Monopole Tower

Dear Charles Trask,

Jacobs Engineering Group, Inc. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1002139, in accordance with application 378096, revision 2.

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

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

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

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

Structural analysis prepared by:

C. Brian Apple

C. Brian Apple, PE
Project Engineer

tnxTower Report - version 7.0.7.0



Reviewed By:

Matthew E. Watkins, P.E.
Engineering Project Manager

02/16/17

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Components vs. Capacity

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 195 ft Monopole tower designed by Paul J. Ford and Company and manufactured by Summit Manufacturing, LLC in May of 2001. The tower was originally designed for a wind speed of 85 mph per TIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness, and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	165.0	6	andrew	SBNHH-1D65B w/ Mount Pipe	6	1-5/8	-
		3	alcatel lucent	RRH4X45-AWS4 B66			
		3	alcatel lucent	RRH2x60-700			
		3	alcatel lucent	RRH2X60-PCS			
		1	rfs/celwave	DB-B1-6C-8AB-0Z			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
195.0	195.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 71			
		1	crown mounts	Sector Mount [SM 901-3]			
	193.0	3	commscope	LNx-6515DS-VTM w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			
		3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe			
175.0	175.0	3	powerwave technologies	7770.00 w/ Mount Pipe	6 4 1 1	1-5/8 7/8 5/8 3/8	1
		6	powerwave technologies	7020.00			
		6	powerwave technologies	LGP21401			
		3	ericsson	RRUS12/RRUS A2			
		3	ericsson	RRUS-11			
		1	raycap	DC6-48-60-18-8F			
		1	crown mounts	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	165.0	6	antel	LPA-80080/6CF w/ Mount Pipe	13	1-5/8	1
		3	antel	BXA-70063/6CF w/ Mount Pipe			
		1	rfs/celwave	DB-B1-6C-8AB-0Z			
		1	crown mounts	Platform Mount [LP 403-1]			
		3	kathrein	742 213 w/ Mount Pipe	-	-	2
		3	antel	BXA-171085-12BF w/ Mount Pipe			
		3	alcatel lucent	RRH2x40-AWS			

Notes:

- 1) Existing Equipment
- 2) Existing Equipment To Be Removed; Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
195.0	195.0	12	ems	RR90-17-00DP PCS	-	-
185.0	185.0	12	ems	RR90-17-00DP PCS	-	-
175.0	175.0	12	ems	RR90-17-00DP PCS	-	-
165.0	165.0	12	ems	RR90-17-00DP PCS	-	-
155.0	155.0	12	ems	RR90-17-00DP PCS	-	-
135.0	140.0	2	generic	10' Whip Antenna	-	-
115.0	120.0	2	generic	10' Whip Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech., Inc.	3488965	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford and Company / Summit Manufacturing, LLC	3950063	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford and Company / Summit Manufacturing, LLC	3488966	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.7.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P _{allow} (K)	% Capacity	Pass / Fail
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-11.94	1763.91	20.3	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-19.90	2718.44	41.7	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-30.83	3862.64	47.0	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-43.44	4209.09	57.6	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-62.31	5681.23	54.2	Pass
							Summary	
						Pole (L4)	57.6	Pass
						Rating =	57.6	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	53.1	Pass
1	Base Plate	0	45.8	Pass
1	Base Foundation (Structural)	0	48.8	Pass
1	Base Foundation (Soil Interaction)	0	23.3	Pass

Structure Rating (max from all components) =	57.6%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 1"x5'	195	(2) 7020.00	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	195	(2) LGP21401	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	195	(2) LGP21401	175
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	195	(2) LGP21401	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	RRUS12/RRUS A2	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	RRUS12/RRUS A2	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	RRUS-11	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	RRUS-11	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	RRUS-11	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	DC6-48-60-18-8F	175
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	195	Platform Mount [LP 303-1]	175
KRY 112 71	195	(2) SBNHH-1D65B w/ Mount Pipe	165
KRY 112 71	195	(2) SBNHH-1D65B w/ Mount Pipe	165
KRY 112 71	195	(2) SBNHH-1D65B w/ Mount Pipe	165
6"x2.38" Pipe Mount	195	RRH4X45-AWS4 B66	165
6"x2.38" Pipe Mount	195	RRH4X45-AWS4 B66	165
6"x2.38" Pipe Mount	195	RRH4X45-AWS4 B66	165
Sector Mount [SM 901-3]	195	RRH2x60-700	165
LNX-6515DS-VTM w/ Mount Pipe	195	RRH2x60-700	165
LNX-6515DS-VTM w/ Mount Pipe	195	RRH2x60-700	165
LNX-6515DS-VTM w/ Mount Pipe	195	RRH2x60-PCS	165
RRUS 11 B12	195	RRH2X60-PCS	165
RRUS 11 B12	195	RRH2X60-PCS	165
RRUS 11 B12	195	DB-B1-6C-8AB-0Z	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
7770.00 w/ Mount Pipe	175	BXA-70063/6CF w/ Mount Pipe	165
7770.00 w/ Mount Pipe	175	BXA-70063/6CF w/ Mount Pipe	165
7770.00 w/ Mount Pipe	175	BXA-70063/6CF w/ Mount Pipe	165
(2) 7020.00	175	DB-B1-6C-8AB-0Z	165
(2) 7020.00	175	Platform Mount [LP 403-1]	165

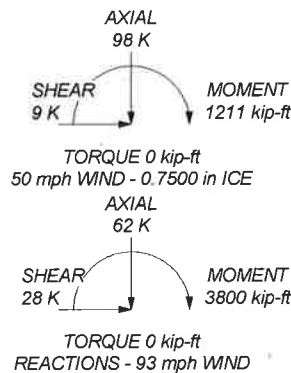
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

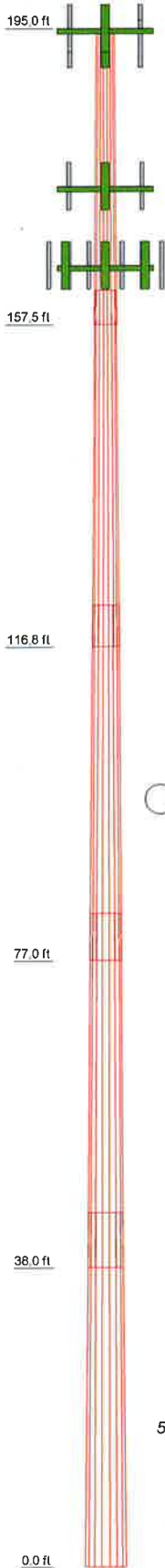
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 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. TOWER RATING: 57.6%

ALL REACTIONS ARE FACTORED



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	37.50	18	0.2500	4.25	26.0000	33.3510	A607-65	3.0
2	45.00	18	0.3125	5.25	32.0179	40.8390	A607-65	5.5
3	45.00	18	0.3750	6.00	39.1849	48.0060	A607-65	7.9
4	45.00	18	0.3750	7.00	46.0798	54.9010	A607-65	9.1
5	45.00	18	0.4375	7.00	52.7788	61.6000	A607-65	12.1
								37.5



JACOBS Jacobs Engineering Group, Inc.
 5449 Bells Ferry Road
 Acworth, GA 30102
 Phone: 770-701-2500
 FAX: 770-701-2501

Job: **Monroe-1/Rt 25**
 Project: **BU# 826053, WO# 1362786**
 Client: Crown Castle
 Code: TIA-222-G
 Path: T:\20053 Monroe-1/Rt 25\WO 1362786\Analysis\CSA\A607\BU826053_WO1362786_LCS.dwg
 Drawn by: CBA
 Date: 02/16/17
 App'd:
 Scale: N
 Dwg No.:

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 1 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 93 mph.

Structure Class II.

Exposure Category B.

Topographic Category I.

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.

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

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	195.00-157.50	37.50	4.25	18	26.0000	33.3510	0.2500	1.0000	A607-65 (65 ksi)
L2	157.50-116.75	45.00	5.25	18	32.0179	40.8390	0.3125	1.2500	A607-65 (65 ksi)

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 3 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
HB158-1-08U8-S8J18(1-5/8)	A	Surface Ar (CaAa)	165.00 - 0.00	1	1	0.470 0.480	1.9800		0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf

LDF7-50A(1-5/8)	B	No	Inside Pole	195.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	B	No	Inside Pole	195.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

LDF7-50A(1-5/8)	C	No	Inside Pole	175.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
LDF5-50A(7/8)	C	No	Inside Pole	175.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
9776(5/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
FB-L98B-002-XXX(3/8)	C	No	Inside Pole	175.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
WR-VG66ST-BRD(7/8)	C	No	Inside Pole	175.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
2" Rigid Conduit	C	No	Inside Pole	175.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

LDF7-50A(1-5/8)	A	No	Inside Pole	165.00 - 0.00	5	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

LDF7-50A(1-5/8)	A	No	Inside Pole	165.00 - 0.00	13	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

Feed Line/Linear Appurtenances Section Areas

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 4 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	195.00-157.50	A	0.000	0.000	1.485	0.000	0.12
		B	0.000	0.000	2.156	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.18
L2	157.50-116.75	A	0.000	0.000	8.069	0.000	0.65
		B	0.000	0.000	2.343	0.000	0.46
		C	0.000	0.000	0.000	0.000	0.43
L3	116.75-77.00	A	0.000	0.000	7.871	0.000	0.64
		B	0.000	0.000	2.286	0.000	0.45
		C	0.000	0.000	0.000	0.000	0.42
L4	77.00-38.00	A	0.000	0.000	7.722	0.000	0.63
		B	0.000	0.000	2.243	0.000	0.44
		C	0.000	0.000	0.000	0.000	0.41
L5	38.00-0.00	A	0.000	0.000	7.524	0.000	0.61
		B	0.000	0.000	2.185	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.40

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} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	195.00-157.50	A	1.773	0.000	0.000	4.144	0.000	0.18
		B		0.000	0.000	28.751	0.000	0.76
		C		0.000	0.000	0.000	0.000	0.18
L2	157.50-116.75	A	1.729	0.000	0.000	22.518	0.000	0.99
		B		0.000	0.000	31.242	0.000	0.83
		C		0.000	0.000	0.000	0.000	0.43
L3	116.75-77.00	A	1.670	0.000	0.000	21.616	0.000	0.95
		B		0.000	0.000	29.776	0.000	0.79
		C		0.000	0.000	0.000	0.000	0.42
L4	77.00-38.00	A	1.586	0.000	0.000	20.748	0.000	0.92
		B		0.000	0.000	28.295	0.000	0.76
		C		0.000	0.000	0.000	0.000	0.41
L5	38.00-0.00	A	1.416	0.000	0.000	19.575	0.000	0.87
		B		0.000	0.000	26.286	0.000	0.71
		C		0.000	0.000	0.000	0.000	0.40

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	195.00-157.50	0.0754	-0.0903	0.7371	-0.3627
L2	157.50-116.75	0.0606	-0.3081	0.6879	-0.7908
L3	116.75-77.00	0.0614	-0.3096	0.7157	-0.8228
L4	77.00-38.00	0.0620	-0.3106	0.7273	-0.8393
L5	38.00-0.00	0.0624	-0.3114	0.7219	-0.8405

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 5 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	5/8 rod/step	157.50 - 195.00	1.0000	1.0000
L1	2	Safety Line 3/8	157.50 - 195.00	1.0000	1.0000
L1	20	HB158-1-08U8-S8J18(1-5/8)	157.50 - 165.00	1.0000	1.0000
L2	1	5/8 rod/step	116.75 - 157.50	1.0000	1.0000
L2	2	Safety Line 3/8	116.75 - 157.50	1.0000	1.0000
L2	20	HB158-1-08U8-S8J18(1-5/8)	116.75 - 157.50	1.0000	1.0000
L3	1	5/8 rod/step	77.00 - 116.75	1.0000	1.0000
L3	2	Safety Line 3/8	77.00 - 116.75	1.0000	1.0000
L3	20	HB158-1-08U8-S8J18(1-5/8)	77.00 - 116.75	1.0000	1.0000
L4	1	5/8 rod/step	38.00 - 77.00	1.0000	1.0000
L4	2	Safety Line 3/8	38.00 - 77.00	1.0000	1.0000
L4	20	HB158-1-08U8-S8J18(1-5/8)	38.00 - 77.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment °	Placement ft	C _{AA} Front	C _{AA} Side	Weight K
			ft ft ft			ft ²	ft ²	K
*** Lightning Rod 1"x5'	C	None		0.0000	195.00	No Ice 0.50 1/2" Ice 1.02 1" Ice 1.43	0.50 1.02 1.43	0.03 0.03 0.04
*** *** ***								
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	195.00	No Ice 6.33 1/2" Ice 6.78 1" Ice 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	195.00	No Ice 6.33 1/2" Ice 6.78 1" Ice 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	195.00	No Ice 6.33 1/2" Ice 6.78 1" Ice 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	195.00	No Ice 6.33 1/2" Ice 6.78 1" Ice 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	195.00	No Ice 6.33 1/2" Ice 6.78 1" Ice 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	195.00	No Ice 6.33 1/2" Ice 6.78	5.64 6.43	0.11 0.17

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	Monroe-1/Rt 25	Page	6 of 16
	Project	BU# 826053, WO# 1362786	Date	14:30:05 02/16/17
	Client	Crown Castle	Designed by	CBA

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
KRY 112 71	A	From Face	0.00		0.0000	195.00	1" Ice	7.21	7.13	0.23
			4.00				No Ice	0.58	0.40	0.01
			0.00				1/2" Ice	0.69	0.49	0.02
KRY 112 71	B	From Face	0.00		0.0000	195.00	1" Ice	0.80	0.59	0.03
			4.00				No Ice	0.58	0.40	0.01
			0.00				1/2" Ice	0.69	0.49	0.02
KRY 112 71	C	From Face	0.00		0.0000	195.00	1" Ice	0.80	0.59	0.03
			4.00				No Ice	0.58	0.40	0.01
			0.00				1/2" Ice	0.69	0.49	0.02
6'x2.38" Pipe Mount	A	From Face	0.00		0.0000	195.00	1" Ice	0.80	0.59	0.03
			4.00				No Ice	1.43	1.43	0.04
			0.00				1/2" Ice	1.93	1.93	0.05
6'x2.38" Pipe Mount	B	From Face	0.00		0.0000	195.00	1" Ice	2.30	2.30	0.07
			4.00				No Ice	1.43	1.43	0.04
			0.00				1/2" Ice	1.93	1.93	0.05
6'x2.38" Pipe Mount	C	From Face	0.00		0.0000	195.00	1" Ice	2.30	2.30	0.07
			4.00				No Ice	1.43	1.43	0.04
			0.00				1/2" Ice	1.93	1.93	0.05
Sector Mount [SM 901-3]	C	None	0.00		0.0000	195.00	1" Ice	2.30	2.30	0.07
			4.00				No Ice	12.90	12.90	1.26
			0.00				1/2" Ice	12.90	12.90	1.43

LNx-6515DS-VTM w/ Mount Pipe	A	From Face	4.00		0.0000	195.00	No Ice	11.68	9.84	0.08
			0.00				1/2" Ice	12.40	11.37	0.17
			-2.00				1" Ice	13.14	12.91	0.27
LNx-6515DS-VTM w/ Mount Pipe	B	From Face	4.00		0.0000	195.00	No Ice	11.68	9.84	0.08
			0.00				1/2" Ice	12.40	11.37	0.17
			-2.00				1" Ice	13.14	12.91	0.27
LNx-6515DS-VTM w/ Mount Pipe	C	From Face	4.00		0.0000	195.00	No Ice	11.68	9.84	0.08
			0.00				1/2" Ice	12.40	11.37	0.17
			-2.00				1" Ice	13.14	12.91	0.27
RRUS 11 B12	A	From Face	4.00		0.0000	195.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			-2.00				1" Ice	3.26	1.48	0.10
RRUS 11 B12	B	From Face	4.00		0.0000	195.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			-2.00				1" Ice	3.26	1.48	0.10
RRUS 11 B12	C	From Face	4.00		0.0000	195.00	No Ice	2.83	1.18	0.05
			0.00				1/2" Ice	3.04	1.33	0.07
			-2.00				1" Ice	3.26	1.48	0.10

OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Face	4.00		0.0000	175.00	No Ice	9.90	7.18	0.10
			0.00				1/2" Ice	10.47	8.36	0.18
			0.00				1" Ice	11.01	9.26	0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Face	4.00		0.0000	175.00	No Ice	9.90	7.18	0.10
			0.00				1/2" Ice	10.47	8.36	0.18
			0.00				1" Ice	11.01	9.26	0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Face	4.00		0.0000	175.00	No Ice	9.90	7.18	0.10
			0.00				1/2" Ice	10.47	8.36	0.18
			0.00				1" Ice	11.01	9.26	0.26
7770.00 w/ Mount Pipe	A	From Face	4.00		0.0000	175.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			0.00				1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	B	From Face	4.00		0.0000	175.00	No Ice	5.75	4.25	0.06

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	Monroe-1/Rt 25	Page	7 of 16
	Project	BU# 826053, WO# 1362786	Date	14:30:05 02/16/17
	Client	Crown Castle	Designed by	CBA

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.00						
			0.00			1/2" Ice	6.18	5.01	0.10
			0.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	C	From Face	4.00	0.0000	175.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			0.00			1" Ice	6.61	5.71	0.16
(2) 7020.00	A	From Face	4.00	0.0000	175.00	No Ice	0.10	0.17	0.00
			0.00			1/2" Ice	0.15	0.24	0.01
			0.00			1" Ice	0.20	0.31	0.01
(2) 7020.00	B	From Face	4.00	0.0000	175.00	No Ice	0.10	0.17	0.00
			0.00			1/2" Ice	0.15	0.24	0.01
			0.00			1" Ice	0.20	0.31	0.01
(2) 7020.00	C	From Face	4.00	0.0000	175.00	No Ice	0.10	0.17	0.00
			0.00			1/2" Ice	0.15	0.24	0.01
			0.00			1" Ice	0.20	0.31	0.01
(2) LGP21401	A	From Face	4.00	0.0000	175.00	No Ice	1.10	0.21	0.01
			0.00			1/2" Ice	1.24	0.27	0.02
			0.00			1" Ice	1.38	0.35	0.03
(2) LGP21401	B	From Face	4.00	0.0000	175.00	No Ice	1.10	0.21	0.01
			0.00			1/2" Ice	1.24	0.27	0.02
			0.00			1" Ice	1.38	0.35	0.03
(2) LGP21401	C	From Face	4.00	0.0000	175.00	No Ice	1.10	0.21	0.01
			0.00			1/2" Ice	1.24	0.27	0.02
			0.00			1" Ice	1.38	0.35	0.03
RRUS12/RRUS A2	A	From Face	4.00	0.0000	175.00	No Ice	3.14	1.84	0.07
			0.00			1/2" Ice	3.36	2.01	0.10
			0.00			1" Ice	3.59	2.20	0.13
RRUS12/RRUS A2	B	From Face	4.00	0.0000	175.00	No Ice	3.14	1.84	0.07
			0.00			1/2" Ice	3.36	2.01	0.10
			0.00			1" Ice	3.59	2.20	0.13
RRUS12/RRUS A2	C	From Face	4.00	0.0000	175.00	No Ice	3.14	1.84	0.07
			0.00			1/2" Ice	3.36	2.01	0.10
			0.00			1" Ice	3.59	2.20	0.13
RRUS-11	A	From Face	4.00	0.0000	175.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS-11	B	From Face	4.00	0.0000	175.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS-11	C	From Face	4.00	0.0000	175.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
DC6-48-60-18-8F	B	From Face	4.00	0.0000	175.00	No Ice	0.92	0.92	0.03
			0.00			1/2" Ice	1.46	1.46	0.05
			0.00			1" Ice	1.64	1.64	0.07
Platform Mount [LP 303-1]	C	None		0.0000	175.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71

(2) SBNHH-1D65B w/ Mount Pipe	A	From Face	4.00	0.0000	165.00	No Ice	8.62	7.30	0.07
			0.00			1/2" Ice	9.28	8.58	0.14
			0.00			1" Ice	9.91	9.72	0.22
(2) SBNHH-1D65B w/ Mount Pipe	B	From Face	4.00	0.0000	165.00	No Ice	8.62	7.30	0.07
			0.00			1/2" Ice	9.28	8.58	0.14
			0.00			1" Ice	9.91	9.72	0.22
(2) SBNHH-1D65B w/	C	From Face	4.00	0.0000	165.00	No Ice	8.62	7.30	0.07

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job		Monroe-1/Rt 25		Page		8 of 16	
	Project		BU# 826053, WO# 1362786		Date		14:30:05 02/16/17	
	Client		Crown Castle		Designed by		CBA	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
Mount Pipe			0.00			1/2" Ice	9.28	8.58	0.14	
			0.00			1" Ice	9.91	9.72	0.22	
RRH4X45-AWS4 B66	A	From Face	4.00		0.0000	165.00	No Ice	2.66	1.59	0.06
			0.00				1/2" Ice	2.88	1.77	0.08
			0.00				1" Ice	3.10	1.96	0.11
RRH4X45-AWS4 B66	B	From Face	4.00		0.0000	165.00	No Ice	2.66	1.59	0.06
			0.00				1/2" Ice	2.88	1.77	0.08
			0.00				1" Ice	3.10	1.96	0.11
RRH4X45-AWS4 B66	C	From Face	4.00		0.0000	165.00	No Ice	2.66	1.59	0.06
			0.00				1/2" Ice	2.88	1.77	0.08
			0.00				1" Ice	3.10	1.96	0.11
RRH2x60-700	A	From Face	4.00		0.0000	165.00	No Ice	3.50	1.82	0.06
			0.00				1/2" Ice	3.76	2.05	0.08
			0.00				1" Ice	4.03	2.29	0.11
RRH2x60-700	B	From Face	4.00		0.0000	165.00	No Ice	3.50	1.82	0.06
			0.00				1/2" Ice	3.76	2.05	0.08
			0.00				1" Ice	4.03	2.29	0.11
RRH2x60-700	C	From Face	4.00		0.0000	165.00	No Ice	3.50	1.82	0.06
			0.00				1/2" Ice	3.76	2.05	0.08
			0.00				1" Ice	4.03	2.29	0.11
RRH2X60-PCS	A	From Face	4.00		0.0000	165.00	No Ice	2.20	1.72	0.06
			0.00				1/2" Ice	2.39	1.90	0.08
			0.00				1" Ice	2.59	2.09	0.10
RRH2X60-PCS	B	From Face	4.00		0.0000	165.00	No Ice	2.20	1.72	0.06
			0.00				1/2" Ice	2.39	1.90	0.08
			0.00				1" Ice	2.59	2.09	0.10
RRH2X60-PCS	C	From Face	4.00		0.0000	165.00	No Ice	2.20	1.72	0.06
			0.00				1/2" Ice	2.39	1.90	0.08
			0.00				1" Ice	2.59	2.09	0.10
DB-B1-6C-8AB-0Z	A	From Face	4.00		0.0000	165.00	No Ice	4.80	2.00	0.04
			0.00				1/2" Ice	5.07	2.19	0.08
			0.00				1" Ice	5.35	2.39	0.12

(2) LPA-80080/6CF w/ Mount Pipe	A	From Face	4.00		0.0000	165.00	No Ice	4.56	10.26	0.05
			0.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
(2) LPA-80080/6CF w/ Mount Pipe	B	From Face	4.00		0.0000	165.00	No Ice	4.56	10.26	0.05
			0.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
(2) LPA-80080/6CF w/ Mount Pipe	C	From Face	4.00		0.0000	165.00	No Ice	4.56	10.26	0.05
			0.00				1/2" Ice	5.11	11.43	0.11
			0.00				1" Ice	5.61	12.31	0.19
BXA-70063/6CF w/ Mount Pipe	A	From Face	4.00		0.0000	165.00	No Ice	7.82	5.41	0.04
			0.00				1/2" Ice	8.37	6.56	0.10
			0.00				1" Ice	8.89	7.42	0.17
BXA-70063/6CF w/ Mount Pipe	B	From Face	4.00		0.0000	165.00	No Ice	7.82	5.41	0.04
			0.00				1/2" Ice	8.37	6.56	0.10
			0.00				1" Ice	8.89	7.42	0.17
BXA-70063/6CF w/ Mount Pipe	C	From Face	4.00		0.0000	165.00	No Ice	7.82	5.41	0.04
			0.00				1/2" Ice	8.37	6.56	0.10
			0.00				1" Ice	8.89	7.42	0.17
DB-B1-6C-8AB-0Z	C	From Face	4.00		0.0000	165.00	No Ice	4.80	2.00	0.04
			0.00				1/2" Ice	5.07	2.19	0.08
			0.00				1" Ice	5.35	2.39	0.12
Platform Mount [LP 403-1]	C	None			0.0000	165.00	No Ice	18.85	18.85	1.50
							1/2" Ice	24.30	24.30	1.80
							1" Ice	29.75	29.75	2.09

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 9 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A		Weight
			Horz Lateral	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K

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 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 10 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

Comb. No.	Description
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 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	195 - 157.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.19	0.02	-0.01
			Max. Mx	20	-11.95	228.96	0.16
			Max. My	14	-11.94	-0.14	-229.13
			Max. Vy	8	15.20	-228.89	-0.17
			Max. Vx	2	-15.25	0.19	229.11
			Max. Torque	24			0.21
L2	157.5 - 116.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.30	-0.50	0.73
			Max. Mx	20	-19.91	901.42	1.99
			Max. My	2	-19.90	1.89	903.68
			Max. Vy	8	18.63	-901.41	-1.78
			Max. Vx	2	-18.68	1.89	903.68
			Max. Torque	24			0.21
L3	116.75 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.77	-1.08	1.61
			Max. Mx	8	-30.84	-1696.38	-3.35
			Max. My	2	-30.83	3.56	1700.70
			Max. Vy	8	22.07	-1696.38	-3.35
			Max. Vx	2	-22.12	3.56	1700.70
			Max. Torque	24			0.21
L4	77 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.07	-1.69	2.56
			Max. Mx	8	-43.44	-2593.91	-4.85
			Max. My	2	-43.44	5.16	2600.24
			Max. Vy	8	25.03	-2593.91	-4.85
			Max. Vx	2	-25.08	5.16	2600.24
			Max. Torque	24			0.21
L5	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.47	-2.46	3.76
			Max. Mx	8	-62.31	-3787.23	-6.54
			Max. My	2	-62.31	7.00	3795.89
			Max. Vy	8	27.89	-3787.23	-6.54
			Max. Vx	2	-27.94	7.00	3795.89
			Max. Torque	24			0.21

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	98.47	0.01	8.86

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	Monroe-1/Rt 25	Page	11 of 16
	Project	BU# 826053, WO# 1362786	Date	14:30:05 02/16/17
	Client	Crown Castle	Designed by	CBA

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H _x	20	62.32	27.86	0.04
	Max. H _z	2	62.32	0.04	27.91
	Max. M _x	2	3795.89	0.04	27.91
	Max. M _z	8	3787.23	-27.86	-0.04
	Max. Torsion	24	0.21	13.96	24.19
	Min. Vert	19	46.74	24.11	-13.92
	Min. H _x	8	62.32	-27.86	-0.04
	Min. H _z	14	62.32	-0.04	-27.91
	Min. M _x	14	-3794.74	-0.04	-27.91
	Min. M _z	20	-3786.99	27.86	0.04
	Min. Torsion	12	-0.21	-13.96	-24.19

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	51.93	0.00	0.00	-0.46	-0.10	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	62.32	-0.04	-27.91	-3795.89	7.00	-0.18
0.9 Dead+1.6 Wind 0 deg - No Ice	46.74	-0.04	-27.91	-3746.89	6.93	-0.18
1.2 Dead+1.6 Wind 30 deg - No Ice	62.32	13.89	-24.15	-3283.90	-1887.53	-0.10
0.9 Dead+1.6 Wind 30 deg - No Ice	46.74	13.89	-24.15	-3241.47	-1863.20	-0.10
1.2 Dead+1.6 Wind 60 deg - No Ice	62.32	24.11	-13.92	-1892.10	-3276.34	-0.00
0.9 Dead+1.6 Wind 60 deg - No Ice	46.74	24.11	-13.92	-1867.59	-3234.12	-0.00
1.2 Dead+1.6 Wind 90 deg - No Ice	62.32	27.86	0.04	6.54	-3787.23	0.10
0.9 Dead+1.6 Wind 90 deg - No Ice	46.74	27.86	0.04	6.60	-3738.46	0.10
1.2 Dead+1.6 Wind 120 deg - No Ice	62.32	24.15	13.99	1903.27	-3283.44	0.18
0.9 Dead+1.6 Wind 120 deg - No Ice	46.74	24.15	13.99	1878.89	-3241.12	0.18
1.2 Dead+1.6 Wind 150 deg - No Ice	62.32	13.96	24.19	3289.85	-1899.85	0.21
0.9 Dead+1.6 Wind 150 deg - No Ice	46.74	13.96	24.19	3247.62	-1875.35	0.20
1.2 Dead+1.6 Wind 180 deg - No Ice	62.32	0.04	27.91	3794.74	-7.24	0.18
0.9 Dead+1.6 Wind 180 deg - No Ice	46.74	0.04	27.91	3746.04	-7.11	0.18
1.2 Dead+1.6 Wind 210 deg - No Ice	62.32	-13.89	24.15	3282.75	1887.29	0.10
0.9 Dead+1.6 Wind 210 deg - No Ice	46.74	-13.89	24.15	3240.62	1863.02	0.10
1.2 Dead+1.6 Wind 240 deg - No Ice	62.32	-24.11	13.92	1890.95	3276.10	0.00
0.9 Dead+1.6 Wind 240 deg - No Ice	46.74	-24.11	13.92	1866.74	3233.94	-0.00
1.2 Dead+1.6 Wind 270 deg - No Ice	62.32	-27.86	-0.04	-7.70	3786.99	-0.10
0.9 Dead+1.6 Wind 270 deg - No Ice	46.74	-27.86	-0.04	-7.45	3738.28	-0.10

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 12 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

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
No Ice						
1.2 Dead+1.6 Wind 300 deg - No Ice	62.32	-24.15	-13.99	-1904.42	3283.19	-0.18
0.9 Dead+1.6 Wind 300 deg - No Ice	46.74	-24.15	-13.99	-1879.75	3240.94	-0.18
1.2 Dead+1.6 Wind 330 deg - No Ice	62.32	-13.96	-24.19	-3291.00	1899.60	-0.21
0.9 Dead+1.6 Wind 330 deg - No Ice	46.74	-13.96	-24.19	-3248.47	1875.17	-0.20
1.2 Dead+1.0 Ice+1.0 Temp	98.47	0.00	-0.00	-3.76	-2.46	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	98.47	-0.01	-8.86	-1210.92	-1.22	-0.03
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	98.47	4.42	-7.67	-1048.52	-603.97	-0.02
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	98.47	7.66	-4.42	-606.25	-1045.61	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	98.47	8.85	0.01	-2.64	-1207.78	0.02
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	98.47	7.67	4.44	600.57	-1047.10	0.03
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	98.47	4.43	7.68	1041.75	-606.55	0.04
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	98.47	0.01	8.86	1202.67	-4.20	0.03
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	98.47	-4.42	7.67	1040.26	598.55	0.02
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	98.47	-7.66	4.42	597.99	1040.20	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	98.47	-8.85	-0.01	-5.62	1202.37	-0.02
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	98.47	-7.67	-4.44	-608.83	1041.68	-0.03
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	98.47	-4.43	-7.68	-1050.01	601.13	-0.04
Dead+Wind 0 deg - Service	51.93	-0.01	-6.50	-877.15	1.54	-0.04
Dead+Wind 30 deg - Service	51.93	3.23	-5.62	-758.88	-436.06	-0.02
Dead+Wind 60 deg - Service	51.93	5.61	-3.24	-437.39	-756.86	-0.00
Dead+Wind 90 deg - Service	51.93	6.48	0.01	1.17	-874.88	0.02
Dead+Wind 120 deg - Service	51.93	5.62	3.26	439.28	-758.50	0.04
Dead+Wind 150 deg - Service	51.93	3.25	5.63	759.57	-438.91	0.05
Dead+Wind 180 deg - Service	51.93	0.01	6.50	876.20	-1.75	0.04
Dead+Wind 210 deg - Service	51.93	-3.23	5.62	757.92	435.86	0.02
Dead+Wind 240 deg - Service	51.93	-5.61	3.24	436.44	756.65	0.00
Dead+Wind 270 deg - Service	51.93	-6.48	-0.01	-2.12	874.67	-0.02
Dead+Wind 300 deg - Service	51.93	-5.62	-3.26	-440.24	758.30	-0.04
Dead+Wind 330 deg - Service	51.93	-3.25	-5.63	-760.52	438.71	-0.05

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-51.93	0.00	0.00	51.93	0.00	0.000%
2	-0.04	-62.32	-27.91	0.04	62.32	27.91	0.000%
3	-0.04	-46.74	-27.91	0.04	46.74	27.91	0.000%
4	13.89	-62.32	-24.15	-13.89	62.32	24.15	0.000%
5	13.89	-46.74	-24.15	-13.89	46.74	24.15	0.000%
6	24.11	-62.32	-13.92	-24.11	62.32	13.92	0.000%

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	Monroe-1/Rt 25	Page	13 of 16
	Project	BU# 826053, WO# 1362786	Date	14:30:05 02/16/17
	Client	Crown Castle	Designed by	CBA

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
7	24.11	-46.74	-13.92	-24.11	46.74	13.92	0.000%
8	27.86	-62.32	0.04	-27.86	62.32	-0.04	0.000%
9	27.86	-46.74	0.04	-27.86	46.74	-0.04	0.000%
10	24.15	-62.32	13.99	-24.15	62.32	-13.99	0.000%
11	24.15	-46.74	13.99	-24.15	46.74	-13.99	0.000%
12	13.96	-62.32	24.19	-13.96	62.32	-24.19	0.000%
13	13.96	-46.74	24.19	-13.96	46.74	-24.19	0.000%
14	0.04	-62.32	27.91	-0.04	62.32	-27.91	0.000%
15	0.04	-46.74	27.91	-0.04	46.74	-27.91	0.000%
16	-13.89	-62.32	24.15	13.89	62.32	-24.15	0.000%
17	-13.89	-46.74	24.15	13.89	46.74	-24.15	0.000%
18	-24.11	-62.32	13.92	24.11	62.32	-13.92	0.000%
19	-24.11	-46.74	13.92	24.11	46.74	-13.92	0.000%
20	-27.86	-62.32	-0.04	27.86	62.32	0.04	0.000%
21	-27.86	-46.74	-0.04	27.86	46.74	0.04	0.000%
22	-24.15	-62.32	-13.99	24.15	62.32	13.99	0.000%
23	-24.15	-46.74	-13.99	24.15	46.74	13.99	0.000%
24	-13.96	-62.32	-24.19	13.96	62.32	24.19	0.000%
25	-13.96	-46.74	-24.19	13.96	46.74	24.19	0.000%
26	0.00	-98.47	0.00	0.00	98.47	0.00	0.000%
27	-0.01	-98.47	-8.86	0.01	98.47	8.86	0.000%
28	4.42	-98.47	-7.67	-4.42	98.47	7.67	0.000%
29	7.66	-98.47	-4.42	-7.66	98.47	4.42	0.000%
30	8.85	-98.47	0.01	-8.85	98.47	-0.01	0.000%
31	7.67	-98.47	4.44	-7.67	98.47	-4.44	0.000%
32	4.43	-98.47	7.68	-4.43	98.47	-7.68	0.000%
33	0.01	-98.47	8.86	-0.01	98.47	-8.86	0.000%
34	-4.42	-98.47	7.67	4.42	98.47	-7.67	0.000%
35	-7.66	-98.47	4.42	7.66	98.47	-4.42	0.000%
36	-8.85	-98.47	-0.01	8.85	98.47	0.01	0.000%
37	-7.67	-98.47	-4.44	7.67	98.47	4.44	0.000%
38	-4.43	-98.47	-7.68	4.43	98.47	7.68	0.000%
39	-0.01	-51.93	-6.50	0.01	51.93	6.50	0.000%
40	3.23	-51.93	-5.62	-3.23	51.93	5.62	0.000%
41	5.61	-51.93	-3.24	-5.61	51.93	3.24	0.000%
42	6.48	-51.93	0.01	-6.48	51.93	-0.01	0.000%
43	5.62	-51.93	3.26	-5.62	51.93	-3.26	0.000%
44	3.25	-51.93	5.63	-3.25	51.93	-5.63	0.000%
45	0.01	-51.93	6.50	-0.01	51.93	-6.50	0.000%
46	-3.23	-51.93	5.62	3.23	51.93	-5.62	0.000%
47	-5.61	-51.93	3.24	5.61	51.93	-3.24	0.000%
48	-6.48	-51.93	-0.01	6.48	51.93	0.01	0.000%
49	-5.62	-51.93	-3.26	5.62	51.93	3.26	0.000%
50	-3.25	-51.93	-5.63	3.25	51.93	5.63	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	0.00075010
3	Yes	4	0.00000001	0.00034619
4	Yes	6	0.00000001	0.00011164
5	Yes	5	0.00000001	0.00090643
6	Yes	6	0.00000001	0.00011175
7	Yes	5	0.00000001	0.00090748

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	Monroe-1/Rt 25	Page	14 of 16
	Project	BU# 826053, WO# 1362786	Date	14:30:05 02/16/17
	Client	Crown Castle	Designed by	CBA

8	Yes	4	0.00000001	0.00071858
9	Yes	4	0.00000001	0.00031704
10	Yes	6	0.00000001	0.00011309
11	Yes	5	0.00000001	0.00091829
12	Yes	6	0.00000001	0.00011249
13	Yes	5	0.00000001	0.00091326
14	Yes	4	0.00000001	0.00068063
15	Yes	4	0.00000001	0.00027493
16	Yes	6	0.00000001	0.00011195
17	Yes	5	0.00000001	0.00090912
18	Yes	6	0.00000001	0.00011169
19	Yes	5	0.00000001	0.00090707
20	Yes	4	0.00000001	0.00068241
21	Yes	4	0.00000001	0.00027774
22	Yes	6	0.00000001	0.00011252
23	Yes	5	0.00000001	0.00091349
24	Yes	6	0.00000001	0.00011326
25	Yes	5	0.00000001	0.00091953
26	Yes	4	0.00000001	0.00000143
27	Yes	5	0.00000001	0.00081605
28	Yes	6	0.00000001	0.00013261
29	Yes	6	0.00000001	0.00013258
30	Yes	5	0.00000001	0.00081393
31	Yes	6	0.00000001	0.00013215
32	Yes	6	0.00000001	0.00013218
33	Yes	5	0.00000001	0.00081063
34	Yes	6	0.00000001	0.00013104
35	Yes	6	0.00000001	0.00013093
36	Yes	5	0.00000001	0.00081028
37	Yes	6	0.00000001	0.00013244
38	Yes	6	0.00000001	0.00013254
39	Yes	4	0.00000001	0.00008300
40	Yes	4	0.00000001	0.00046259
41	Yes	4	0.00000001	0.00046457
42	Yes	4	0.00000001	0.00008232
43	Yes	4	0.00000001	0.00047298
44	Yes	4	0.00000001	0.00046500
45	Yes	4	0.00000001	0.00008250
46	Yes	4	0.00000001	0.00046621
47	Yes	4	0.00000001	0.00046334
48	Yes	4	0.00000001	0.00008209
49	Yes	4	0.00000001	0.00046600
50	Yes	4	0.00000001	0.00047490

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	195 - 157.5 (1)	TP33.351x26x0.25	37.50	0.00	0.0	25.6046	-11.94	1763.91	0.007
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	45.00	0.00	0.0	39.1765	-19.90	2718.44	0.007
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	45.00	0.00	0.0	55.2929	-30.83	3862.64	0.008
L4	77 - 38 (4)	TP54.901x46.0798x0.375	45.00	0.00	0.0	63.2663	-43.44	4209.09	0.010
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	45.00	0.00	0.0	84.9318	-62.31	5681.23	0.011

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	Monroe-1/Rt 25	Page	15 of 16
	Project	BU# 826053, WO# 1362786	Date	14:30:05 02/16/17
	Client	Crown Castle	Designed by	CBA

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
-------------	-----------------	------	---------	----------------------	------	----------------------	---------------------	----------------------	---------------------------------

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	229.22	1170.54	0.196	0.00	1170.54	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	904.77	2207.79	0.410	0.00	2207.79	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	1702.74	3689.06	0.462	0.00	3689.06	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	2603.20	4604.28	0.565	0.00	4604.28	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	3799.89	7150.31	0.531	0.00	7150.31	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	195 - 157.5 (1)	TP33.351x26x0.25	15.27	881.96	0.017	0.21	2343.95	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	18.71	1359.22	0.014	0.21	4420.99	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	22.14	1931.32	0.011	0.21	7387.14	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	25.10	2104.54	0.012	0.21	9219.83	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	27.96	2840.62	0.010	0.21	14318.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 157.5 (1)	0.007	0.196	0.000	0.017	0.000	0.203	1.000	4.8.2 ✓
L2	157.5 - 116.75 (2)	0.007	0.410	0.000	0.014	0.000	0.417	1.000	4.8.2 ✓
L3	116.75 - 77 (3)	0.008	0.462	0.000	0.011	0.000	0.470	1.000	4.8.2 ✓
L4	77 - 38 (4)	0.010	0.565	0.000	0.012	0.000	0.576	1.000	4.8.2 ✓
L5	38 - 0 (5)	0.011	0.531	0.000	0.010	0.000	0.542	1.000	4.8.2 ✓

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job Monroe-1/Rt 25	Page 16 of 16
	Project BU# 826053, WO# 1362786	Date 14:30:05 02/16/17
	Client Crown Castle	Designed by CBA

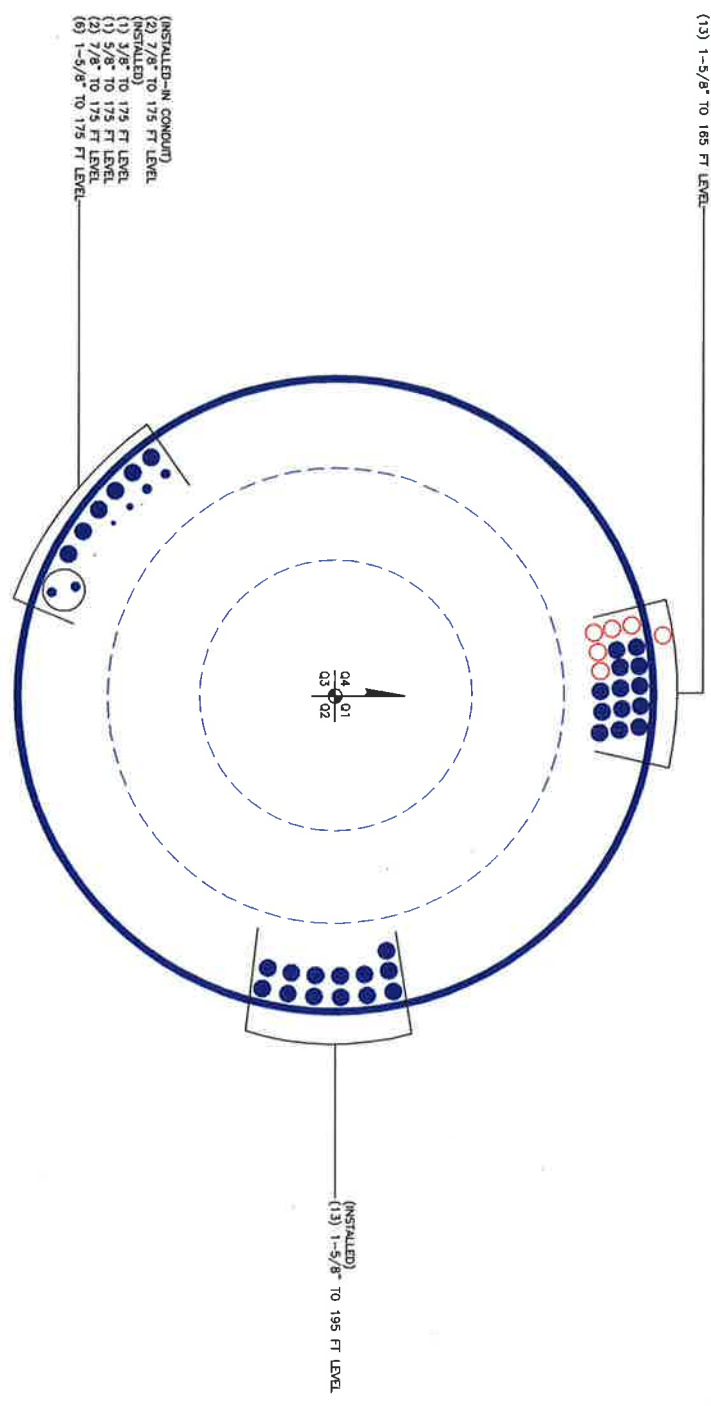
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-11.94	1763.91	20.3	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-19.90	2718.44	41.7	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-30.83	3862.64	47.0	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-43.44	4209.09	57.6	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-62.31	5681.23	54.2	Pass
Summary								
Pole (L4)							57.6	Pass
RATING =							57.6	Pass

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED)
 (6) 1-5/8" TO 165 FT LEVEL
 (INSTALLED)
 (13) 1-5/8" TO 165 FT LEVEL



(INSTALLER-IN CONDUIT)
 (2) 1-5/8" TO 175 FT LEVEL
 (INSTALLED)
 (1) 7/8" TO 175 FT LEVEL
 (1) 5/8" TO 175 FT LEVEL
 (2) 7/8" TO 175 FT LEVEL
 (6) 1-5/8" TO 175 FT LEVEL

(INSTALLED)
 (13) 1-5/8" TO 195 FT LEVEL

CROWN REGION ADDRESS
 USA

NO. OF
 JS
 JS
 JS
 JS
 JS
 JS

- 13/02/13 UPDATED PER WORK ORDER 1362785
- 23/4/12 UPDATED PER WORK ORDER 1048401
- 7/4/12 UPDATED PER WORK ORDER 1024555
- 8/3/2010 UPDATED PER WORK ORDER 1018331 1020091
- 20/07/08 # 800070
- 20/07/08 # 802369
- 14/10/09 UPDATED PER WORK ORDER # 488614
- 11/02/03 NEW BUILD PER WORK ORDER # 572717

DRAWN BY: AH
 CHECKED BY: KNL
 DRAWING DATE: 2/12/13

SITE NUMBER: _____
 SITE NAME: _____
 MONROE - 11RT3
 BUSINESS UNIT NUMBER: _____
 826053
 SITE ADDRESS:
 88 MAIN STREET
 MONROE, CT 06468
 FAIRFIELD COUNTY
 USA
 SHEET TITLE
BASE LEVEL
 SHEET NUMBER

BUSINESS UNIT: 826053 TOWER ID: C-BASELEVEL

BASE LEVEL DRAWING

FILE NAME: 826053-BASELEVEL.dwg

1" = 1'-0" 1

A1-0

APPENDIX C
ADDITIONAL CALCULATIONS

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

BU#: 826053
 Site Name: Monroe-1/Rt 25
 App #: 378096 Rev. 2

Anchor Rod Data

Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	69	in
Anchor Spacing:	6	in

Plate Data

W=Side:	68	in
Thick:	3	in
Grade:	55	ksi
Clip Distance:	10.5	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:	61.6	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, Mu:	3800	ft-kips
Factored Axial, Pu:	62	kips
Factored Shear, Vu:	28	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/ η): 138.1 Kips
 Axial Design Strength, $\Phi^*F_u^*A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 53.1% **Pass**

Base Plate Results

Base Plate Stress: 22.7 ksi
 PL Design Bending Strength, Φ^*F_y : 49.5 ksi
 Base Plate Stress Ratio: 45.8% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	34.57
Max PL Length:	34.57

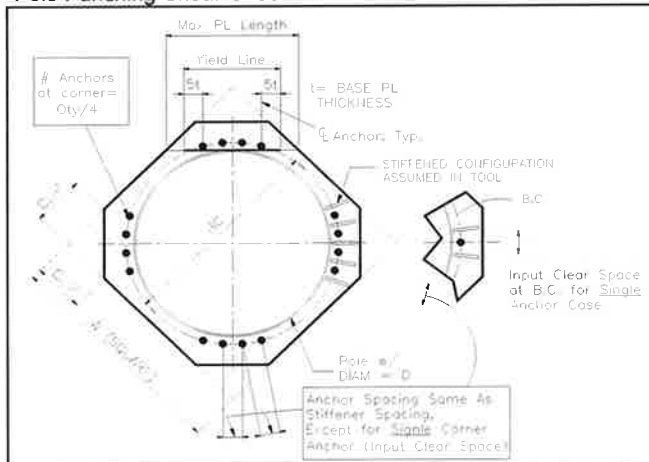
N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: 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

BU: 826053
 Site Name: Monroe-1/Rt 25
 App Number: 378096 Rev. 2
 Work Order: 1362786



Monopole Drilled Pier

Input

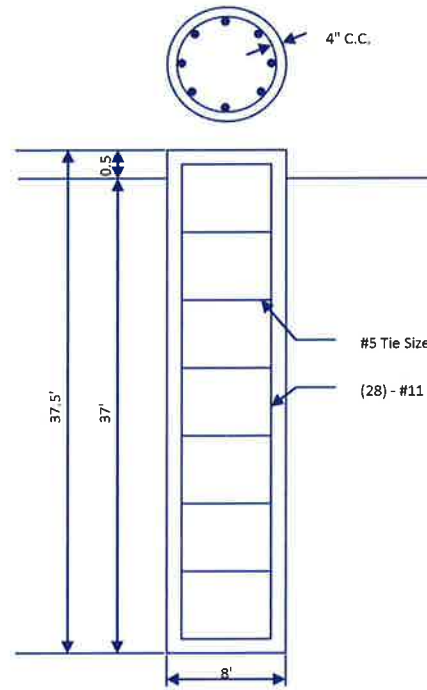
Criteria
 TIA Revision: G
 ACI 318 Revision: 2008
 Seismic Category: B

Forces
 Compression: 62 kips
 Shear: 28 kips
 Moment: 3800 k-ft
 Swelling Force: 0 kips

Foundation Dimensions
 Pier Diameter: 8 ft
 Ext. above grade: 0.5 ft
 Depth below grade: 37 ft

Material Properties
 Number of Rebar: 28
 Rebar Size: 11
 Tie Size: 5
 Rebar tensile strength: 60 ksi
 Concrete Strength: 4500 psi
 Ultimate Concrete Strain: 0.003 in/in
 Clear Cover to Ties: 4 in

Soil Profile: Soil 1



Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Friction (ksf)	Ultimate Comp. Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3	0	3	115	0	0			0	
2	1	3	4	52.6	0	0			0	
3	16	4	20	52.6	0	34			0	
4	17	20	37	52.6	0	34			30	

Analysis Results

Soil Lateral Capacity
 Depth to Zero Shear: 7.80 ft
 Max Moment, Mu: 3996.51 k-ft
 Soil Safety Factor: 5.72
 Safety Factor Req'd: 1.33
RATING: 23.3%

Soil Axial Capacity
 Skin Friction (k): 318.58 kips
 End Bearing (k): 1130.97 kips
 Comp. Capacity (k), φCn: 1449.55 kips
 Comp. (k), Cu: 62.00 kips
RATING: 4.3%

Concrete/Steel Check
 Mu (from soil analysis) 3996.51 k-ft
 φMn 8195.44 k-ft
RATING: 48.8%

rho provided 0.60
 rho required 0.34 OK

Rebar Spacing 8.17
 Spacing required 22.56 OK

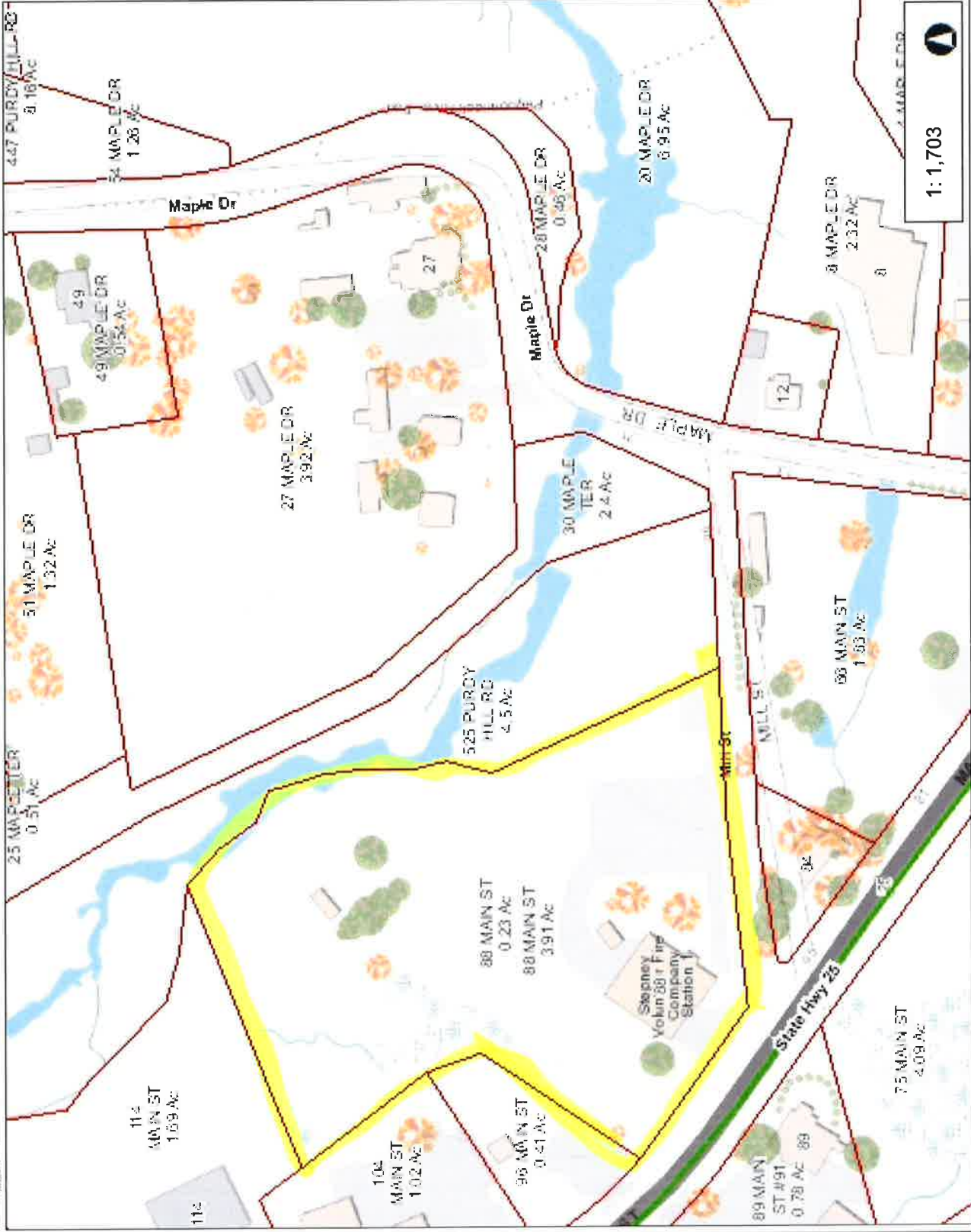
Dev. Length required 28.87
 Dev. Length provided 50.45 OK

Overall Foundation Rating: 48.8%

ATTACHMENT 4

Town of Monroe

Map Title



- Legend**
- Parcels
 - Streetname**
 - Roadways**
 - Local
 - Collector
 - Minor Collector
 - Minor Arterial
 - Major Collector
 - PA Other
 - PA Other Expwy
 - PA Interstate

283.9 0 141.95 283.9 Feet

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

1:1,703



88 MAIN ST

Location 88 MAIN ST

Map/Lot 012/ 019/ 0Z/ /

Acct# 0120190Z

Owner STEPNEY VOLUNTEER FIRE
CO

Assessment \$267,700

Appraisal \$382,400

PID 16246

Building Count 1

Survey

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2014	\$163,900	\$218,500	\$382,400

Assessment			
Valuation Year	Improvements	Land	Total
2014	\$114,700	\$153,000	\$267,700

Owner of Record

Owner STEPNEY VOLUNTEER FIRE CO
Co-Owner DEBORAH HEIM, TREASURER
Address 88 MAIN ST
MONROE, CT 06468-1637

Sale Price \$0
Certificate 1
Book & Page
Sale Date

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
STEPNEY VOLUNTEER FIRE CO	\$0	1		

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

Building Attributes	
Field	Description
Style	Vacant Land

Model	
Stories:	
Occupancy	
Exterior Wall 1	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Fireplaces	
Basement Gar.	
Basement	
In Law Apt	

Building Photo



(<http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\64\0>)

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 431
Description TEL REL TW
Zone I1
Neighborhood
Alt Land Approved No
Category

Land Line Valuation

Size (Acres) 0.23
Appraised Value \$218,500

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
RS1	Frame Utility Shed			360 S.F.	\$3,600	1
TT4	TOWER MONOPOLE			1 UNITS	\$125,000	1
FN1	FENCE CHAIN			2520 L.F.	\$35,300	1

Valuation History

Appraisal

Valuation Year	Improvements	Land	Total
2015	\$163,900	\$218,500	\$382,400
2009		\$220,000	\$390,650

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$114,700	\$153,000	\$267,700
2009		\$154,000	\$273,455

(c) 2016 Vision Government Solutions, Inc. All rights reserved.

ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

TOTAL NO.
of Pieces Listed by Sender

3

TOTAL NO.
of Pieces Received at Post Office™

3

Affix Stamp Here
Postmark with Date of Receipt.

neopost™
07/26/2017
US POSTAGE \$002.38⁰
ZIP 06103
041L12208930

Postmaster, per (name of receiving employee)

USPS® Tracking Number
Firm-specific Identifier

Address
(Name, Street, City, State, and ZIP Code™)

Postage

Fee

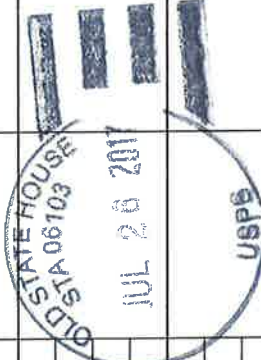
Special Handling

Parcel Airlift

1. Steve Vavrek, First Selectman
Town of Monroe
7 Fan Hill Road
Monroe, CT 06468

2. William Agosta, AICP
Planning and Zoning Administrator
Town of Monroe
7 Fan Hill Road
Monroe, CT 06468

3. Stepany Volunteer Fire Department
c/o Deborah Heim, Treasurer
88 Main Street
Monroe, CT 06468-1637



1.

2.

3.

4.

5.

6.