

January 31, 2017

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

Re: **Notice of Exempt Modification – Facility Modification
170 Ingham Hill Road, Old Saybrook, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains nine (9) antennas at the 133-foot level of the existing 150-foot tower at 170 Ingham Hill Road in Old Saybrook (the “Property”). The tower is owned by Crown Castle. Cellco’s shared use of this tower was approved by the Council in 1992. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same 133-foot level on the tower. Cellco also intends to replace six (6) remote radio heads (“RRHs”) and install three (3) new RRHs behind its antennas and one (1) HYBRIFLEX™ antenna cable, attached to the outside of the monopole. Included in Attachment 1 are specifications for the 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 Carl P. Fortuna, Jr., First Selectman of the Town of Old Saybrook. A copy of this letter is also being sent to Janis Esty, Chairman of the Old Saybrook Planning Commission, Robert Friedman, Chairman of the Old Saybrook Zoning Commission, Robert A. and Carol J. Lorenz, the owners of the Property and Crown, the tower owner.

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

Robinson+Cole

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1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 133-foot level on the 150-foot tower.
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 modified facility 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 General Power Density table for Cellco's modified facility is included behind 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 Town Assessor's Parcel Map and property owner information is included in Attachment 4.

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:

Carl P Fortuna, Jr., Old Saybrook First Selectman
Janis Esty, Chairman of Old Saybrook Planning Commission
Robert Friedman, Chairman of Old Saybrook Zoning Commission
Robert A. and Carol J. Lorenz
Crown Castle
Tim Parks

ATTACHMENT 1



SBNHH-1D65B

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal 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*

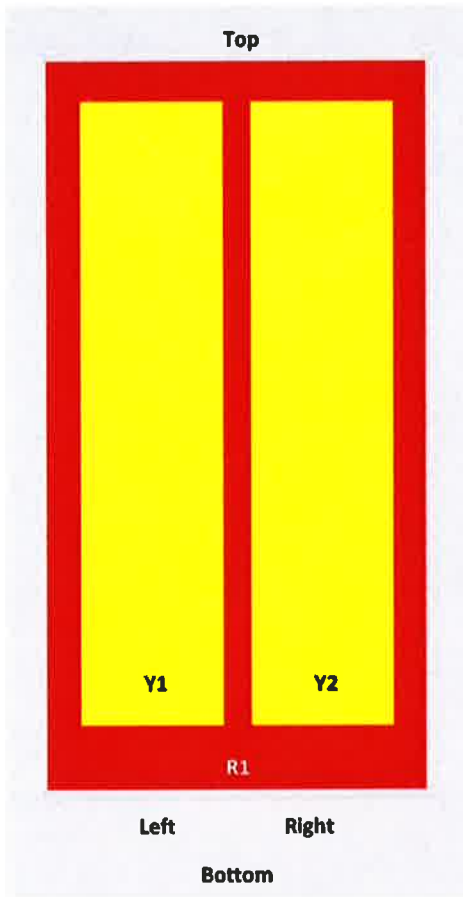
Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0° 14.6	0° 14.5	0° 17.4	0° 17.8	0° 18.1	0° 18.2
	7° 14.6	7° 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	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



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.

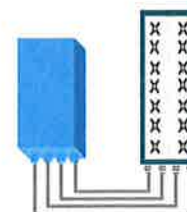


FEATURES

- 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

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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.

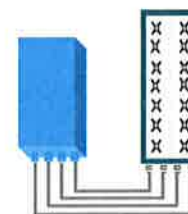


FEATURES

- 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

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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.

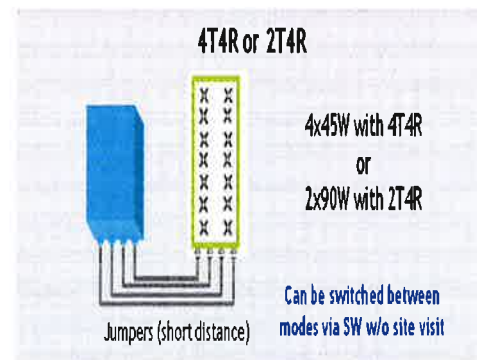
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

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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			
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 Characteristics			
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)
Optical Characteristics			
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
Power Cable Characteristics			
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
Temperature			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

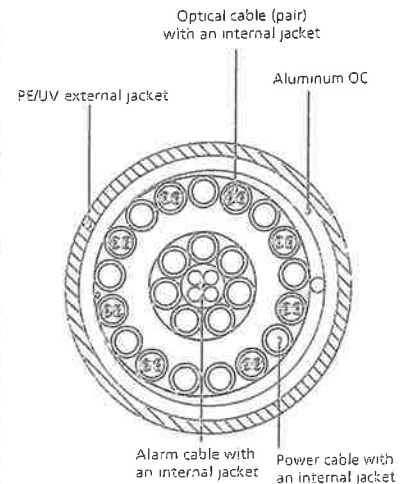


Figure 2: Construction Detail

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

ATTACHMENT 2

Site Name: Old Saybrook Tower Height: 150'		General		Power		Density					
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total			
*AT&T	2	352	154	880	0.0116	0.5867	0.20%				
*AT&T	2	1734	154	1900	0.0569	1.0000	0.57%				
*AT&T	1	423	154	1900	0.0069	1.0000	0.07%				
*AT&T	1	352	154	880	0.0058	0.5867	0.10%				
*AT&T	2	793	154	740	0.0260	0.4933	0.53%				
*AT&T	2	1094	154	2300	0.0359	1.0000	0.36%				
*Paging	1	1000	158	931.1875	0.0156	0.6208	0.25%				
*T-Mobile	2	2334	169	2100	0.0632	1.0000	0.63%				
*T-Mobile	2	707	169	2100	0.0191	1.0000	0.19%				
*T-Mobile	2	1167	169	1950	0.0316	1.0000	0.32%				
*T-Mobile	2	1167	169	1950	0.0316	1.0000	0.32%				
*T-Mobile	1	865	169	700	0.0117	0.4667	0.25%				
Verizon	1	3417	116	0.0913	1970	1.0000	9.13%				
Verizon	9	431	116	0.1037	869	0.5793	17.89%				
Verizon	1	6907	116	0.1846	2145	1.0000	18.46%				
Verizon	1	1723	116	0.0460	746	0.4973	9.26%				
									58.5%		
* Source: Siting Council											

ATTACHMENT 3



October 19th, 2016

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6565

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject: **Structural Analysis Report**

Carrier Designation: **Verizon Wireless Co-Locate**
Carrier Site Number: 119689
Carrier Site Name: Old Saybrook CT

Crown Castle Designation: **Crown Castle BU Number:** 841289
Crown Castle Site Name: OLD SAYBROOK
Crown Castle JDE Job Number: 400463
Crown Castle Work Order Number: 1313982
Crown Castle Application Number: 364451 Rev. 1

Engineering Firm Designation: **B+T Group Project Number:** 93496.007.01

Site Data: **170 Ingham Hill Road, Old Saybrook, Middlesex County, CT**
Latitude 41° 18' 35.55", Longitude -72° 23' 51.13"
150 Foot - Monopole Tower

Dear Sean Dempsey,

B+T Group 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 959102, in accordance with application 364451, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3second gust wind speed of 135 mph converted to a nominal 3second gust wind speed of 105 mph per Section 1609.3 as required for use in the TIA222G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

All 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 B+T Group 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.

Respectfully submitted by:
B+T Engineering, Inc.

Tharun Cheriyan, E.I.T.
Project Engineer

Scott S. Vance, P.E.
Engineer of Record
COA: PEC.0001564 Expires: 02/10/2017



10/19/16

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1) INTRODUCTION

This tower is a 150 ft. monopole designed by Engineered Endeavors Inc., in June of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E. The tower has been modified multiple times and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 105 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
130.0	133.0	3	Alcatel Lucent	B13 RRH 4X30	1	1-5/8	--
		3	Alcatel Lucent	B25 RRH4X30			
		3	Alcatel Lucent	B66A RRH4X45			
		6	Commscope	SBNHH-1D65B			
		1	Rfs Celwave	DB-B1-6C-12AB-0Z			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
160.0	163.0	1	Andrew	CSHAX-6516-R2	--	--	4
	160.0	1	--	Pipe Mount [PM 701-1]	--	--	1
149.0	156.0	1	Andrew	KP4F-23A	--	--	1
	152.0	3	Andrew	SBNHH-1D65A	2	5/8	2
		1	Raycap	DC6-48-60-18-8F			
		3	Ericsson	WCS RRUS-32-B30			
		3	Kmw Com.	AM-X-CD-14-65-00T-RET			
	3	Powerwave Tech.	7770.00	12	1-1/4	1	
	6	Powerwave Tech.	TT19-08BP111-001	1	7/8		
149.0	1	--	Platform Mount [LP 403-1]	--	--	--	
148.0	150.0	6	Ericsson	RRUS 11	2	5/8	1
	148.0	1	--	Side Arm Mount [SO 102-3]			
	147.0	1	Raycap	DC6-48-60-18-8F			
142.0	142.0	1	--	Platform Mount [LP 301-1]	1	1-5/8	2
	141.0	3	Andrew	LNX-6515DS-A1M			
		3	Ericsson	RRUS 11 B12	--	--	2,5
	140.0	3	Commscope	TMAT7LA-11A	--	--	2
		3	Ericsson	AIR 21 B2A/B4P			
		3	Ericsson	AIR 21 B4A/B2P			
		--	--	--	--	6	1-1/4

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	133.0	3	Antel	BXA-80080/4CF	6	1-1/4	1
		1	Rfs Celwave	DB-B1-6C-12AB-0Z	1	1-5/8	
		3	Alcatel Lucent	RRH2X60-AWS	6	1-1/4	4
		3	Alcatel Lucent	RRH2X60-PCS			
	3	Antel	BXA-171085-8BF-EDIN-0				
	6	Rfs Celwave	FD9R6004/2C-3L				
	132.0	3	Commscope	HBXX-6517DS-A2M			
		3	Commscope	LNx-6514DS-A1M			
130.0	1	--	Platform Mount [LP 403-1]	--	--	1	
71.0	72.0	1	Kathrein	FMO	1	1/2	1
	71.0	1	--	Side Arm Mount [SO 301-1]			
22.0	22.0	1	Maxrad	MYA-43012N	1	5/16	1
		1	--	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Coax to Be Relocated from 160'; Considered in This Analysis
- 4) **Equipment to Be Removed; Not Considered in This Analysis**
- 5) Equipment to Be Shielded Completely Behind Antennae

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)
158	158	1	Ems Wireless	TRR90-17	--	--
150	150	12	Allgon	7120.16	--	--
140	140	12	Allgon	7120.16	--	--
130	130	12	Allgon	7184.05	--	--
120	120	12	Allgon	7184.05	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Verizon Wireless Co-Locate Rev# 1	364451	CCI Sites
Tower Manufacturer Drawing	EEL, Job No. 3503	4287398	CCI Sites
Tower Mapping	ReliaPOLE, Project No. 14-0703NEd	5204147	CCI Sites
Tower Modification Drawing	GPD, Date: 10/02/2008	4489382	CCI Sites
Post Modification Inspection	GPD, Date:03/04/2009	4489415	CCI Sites
Tower Modification Drawing	GPD, Date:12/15/2011	4478711	CCI Sites
Post Modification Inspection	HDG, Date: 03/19/2012	4468635	CCI Sites
Tower Modification Drawing	B+T Group, Date: 08/20/2015	5293057	CCI Sites
Post Modification Inspection	SGS, Date: 09/01/2015	5874000	CCI Sites
Tower Modification Drawing	B+T Group, Date: 05/06/2016	6254746	CCI Sites
Post Modification Inspection	SGS, Date: 09/07/2016	6444911	CCI Sites
Foundation Mapping	FDH, Project No. 08-04159E N1	4591935	CCI Sites
Geotech Report	FDH Project No. 08-04159E G1	4468634	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 10/14/2016	CCI Sites

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Mount areas and weights are assumed based on photographs provided.
- 5) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group 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	150 - 123.75	Pole	TP19.625x15.53x0.25	1	-9.338	1149.650	67.5	Pass	
L2	123.75 - 110	Pole	TP21.77x19.625x0.482	2	-11.419	1428.460	90.7	Pass	
L3	110 - 83	Pole	TP26.134x21.77x0.668	3	-253.800	2645.100	80.8	Pass	
		Guy A@91.1	1 5/8	11	171.805	194.400	88.4	Pass	
		Guy B@91.1	1 3/8	10	91.288	139.200	65.6	Pass	
		Guy C@91.1	1 3/8	9	102.503	139.200	73.6	Pass	
L4	83 - 67.5	Pole	TP28.64x26.134x0.545	4	-254.430	2191.230	98.7	Pass	
L5	67.5 - 49.9	Pole	TP30.898x27.449x0.585	5	-257.957	2481.720	94.7	Pass	
L6	49.9 - 33	Pole	TP33.66x30.898x0.644	6	-262.247	3058.500	80.6	Pass	
L7	33 - 32.65	Pole	TP32.966x32.256x0.71	7	-268.132	3588.870	71.2	Pass	
L8	32.65 - 0	Pole	TP38.29x32.966x0.438	8	-268.248	3377.690	74.5	Pass	
							Summary		
							Pole (L4)	98.7	Pass
							Guy A (L3)	88.4	Pass
							Guy B (L3)	65.6	Pass
							Guy C (L3)	73.6	Pass
							Rating =	98.7	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation	% Capacity	Pass / Fail	
1	Flange Connection	110'	58.1	Pass	
1	Anchor Rods	Base	99.9	Pass	
1	Base Plate	Base	62.3	Pass	
1	Base Foundation	Structure	Base	21.1	Pass
		Soil	Base	75.0	Pass
1	Inner Guy Anchor Foundation	Anchor Rod	Base	88.9	Pass
		Soil	Base	72.4	Pass
1	Outer Guy Anchor Foundation	Anchor Rod	Base	53.0	Pass
		Soil	Base	69.4	Pass

Structure Rating (max from all components) =	99.9%
---	--------------

Notes:

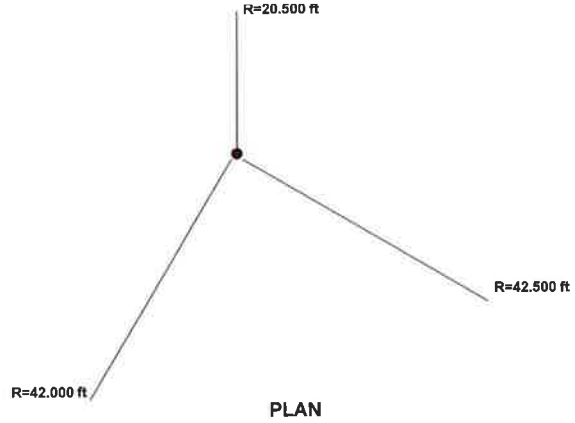
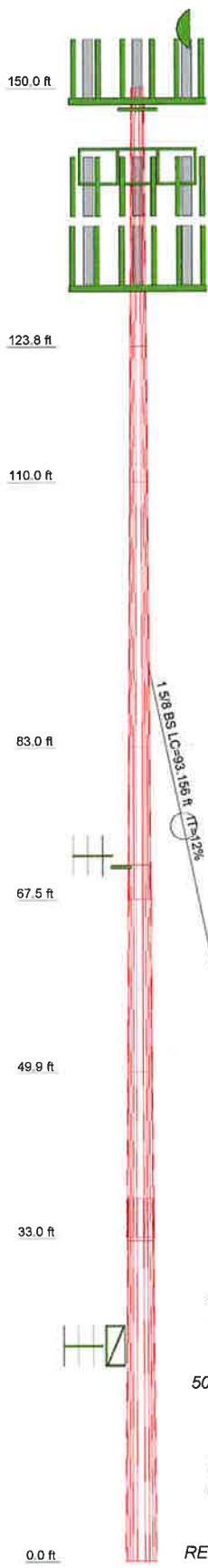
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the final load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	26.250	12	0.250				A572-65	1.2
2	13.750	12	0.482				38.159286ksi	1.4
3	27.000	12	0.668				42.551785ksi	4.2
4	15.500	12	0.545	3.500	26.134	28.640	42.218005ksi	2.4
5	21.100	12	0.585		27.449	30.888	42.368726ksi	3.7
6	16.900	12	0.644	4.000	30.898	33.660	43.004496ksi	3.6
7	4.360	12	0.710		32.256	32.866	43.00978ksi	1.0
8	32.650	12	0.438		32.966	38.290	A572-65	5.5
								23.0

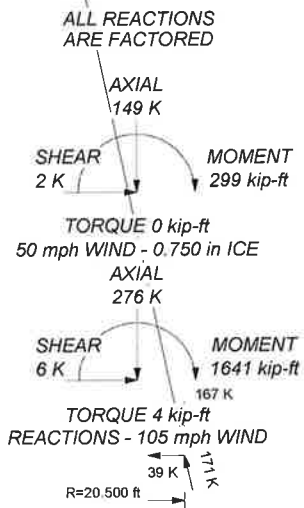


MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	42.368726ksi	42 ksi	57 ksi
38.159286ksi	38 ksi	53 ksi	43.004496ksi	43 ksi	58 ksi
42.551785ksi	43 ksi	58 ksi	43.00978ksi	43 ksi	58 ksi
42.218005ksi	42 ksi	57 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 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 0.000 ft
8. TOWER RATING: 98.7%



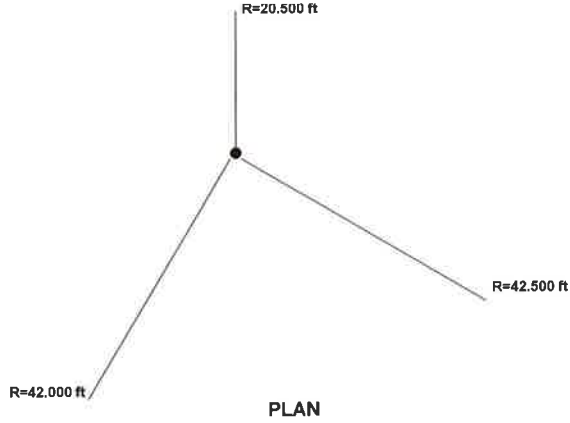
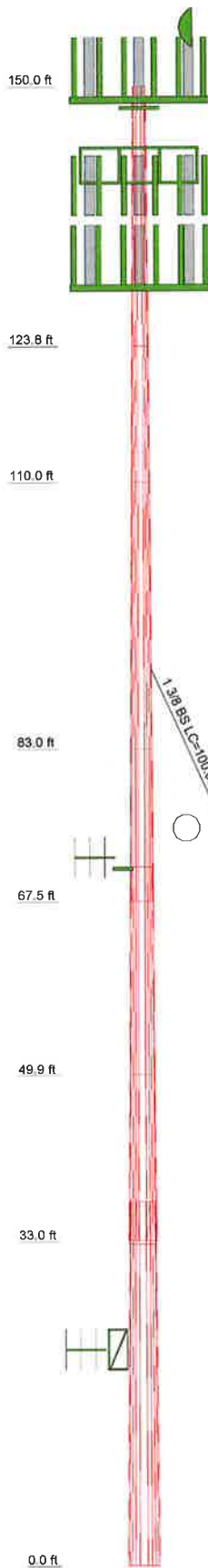
ALL REACTIONS ARE FACTORED



B+T Group
 1717 S. Boulder, Suite 300
 Tulsa, OK 74119
 Phone: (918) 587-4630
 FAX: (918) 295-0265

Job: 93496.007.01 - OLD SAYBROOK, CT (BU # 841:		
Project:	Client: Crown Castle	App'd:
Code: TIA-222-G	Drawn by: Manasa	Scale: NTS
Path:	Date: 10/18/16	Dwg No. E-1

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	26.250	12	0.250		15.530	19.625	A572-65	1.2
2	13.750	12	0.482		19.625	21.770		1.4
3	27.000	12	0.668		21.770	26.134	38.159286ksi	4.2
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5	21.100	12	0.585		27.449	30.898	42.218005ksi	3.7
6	16.900	12	0.644	4.000	30.898	33.660	42.368726ksi	3.6
7	32.650	12	0.438		32.966	38.290	43.004496ksi	10
8							A572-65 43.00978ksi	5.5
								23.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
7770.00 w/ Mount Pipe (E)	149	TMAT7LA-11A (R)	142
7770.00 w/ Mount Pipe (E)	149	TMAT7LA-11A (R)	142
7770.00 w/ Mount Pipe (E)	149	RRUS 11 B12 (R-Shielded)	142
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	149	RRUS 11 B12 (R)	142
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	149	RRUS 11 B12 (R)	142
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	149	Platform Mount [LP 301-1] (R-4 M.P./Sector)	142
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	149	AIR 21 B2A/B4P (R)	142
(2) TT19-08BP111-001 (E)	149	BXA-80080/4CF w/ Mount Pipe (E)	130
(2) TT19-08BP111-001 (E)	149	BXA-80080/4CF w/ Mount Pipe (E)	130
(2) TT19-08BP111-001 (E)	149	DB-B1-6C-12AB-0Z (E)	130
SBNHH-1D65A w/ Mount Pipe (R)	149	(2) SBNHH-1D65B w/ Mount Pipe (P)	130
SBNHH-1D65A w/ Mount Pipe (R)	149	(2) SBNHH-1D65B w/ Mount Pipe (P)	130
SBNHH-1D65A w/ Mount Pipe (R)	149	(2) SBNHH-1D65B w/ Mount Pipe (P)	130
DC6-48-60-18-8F (R)	149	B13 RRH 4X30 (P)	130
WCS RRUS-32-B30 (R)	149	B13 RRH 4X30 (P)	130
WCS RRUS-32-B30 (R)	149	B13 RRH 4X30 (P)	130
WCS RRUS-32-B30 (R)	149	B25 RRH4X30 (P)	130
WCS RRUS-32-B30 (R)	149	B25 RRH4X30 (P)	130
Platform Mount [LP 403-1] (E)	149	B25 RRH4X30 (P)	130
KP4F-23A (E)	149	DB-B1-6C-12AB-0Z (P)	130
(2) RRUS 11 (E)	148	B66A RRH4X45 (P)	130
(2) RRUS 11 (E)	148	B66A RRH4X45 (P)	130
DC6-48-60-18-8F (E-CL/Photo)	148	B66A RRH4X45 (P)	130
4' x 2" Pipe Mount (E)	148	5' x 2" Pipe Mount (E-TBR Antenna)	130
4' x 2" Pipe Mount (E)	148	5' x 2" Pipe Mount (E-TBR Antenna)	130
4' x 2" Pipe Mount (E)	148	5' x 2" Pipe Mount (E-TBR Antenna)	130
Side Arm Mount [SO 102-3] (E)	148	Platform Mount [LP 403-1] (E)	130
(2) RRUS 11 (E)	148	GPS (3"x7") (E-Per Photo)	130
AIR 21 B2A/B4P (R)	142	BXA-80080/4CF w/ Mount Pipe (E)	130
AIR 21 B2A/B4P (R)	142	Yagi (E-Per Photo)	71
AIR 21 B4A/B2P (R)	142	4' x 2" Pipe Mount (E-For Yagi/Photo)	71
AIR 21 B4A/B2P (R)	142	Side Arm Mount [SO 701-1] (E)	71
AIR 21 B4A/B2P (R)	142	FMO (E)	71
LNx-6515DS-A1M (R)	142	Side Arm Mount [SO 301-1] (E)	71
LNx-6515DS-A1M (R)	142	Side Arm Mount [SO 701-1] (E)	22
LNx-6515DS-A1M (R)	142	MYA-43012N (E)	22
TMAT7LA-11A (R-Shielded)	142	4' x 2" Pipe Mount (E-For Yagi/Photo)	22

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	42.368726ksi	42 ksi	57 ksi
38.159286ksi	38 ksi	53 ksi	43.004496ksi	43 ksi	58 ksi
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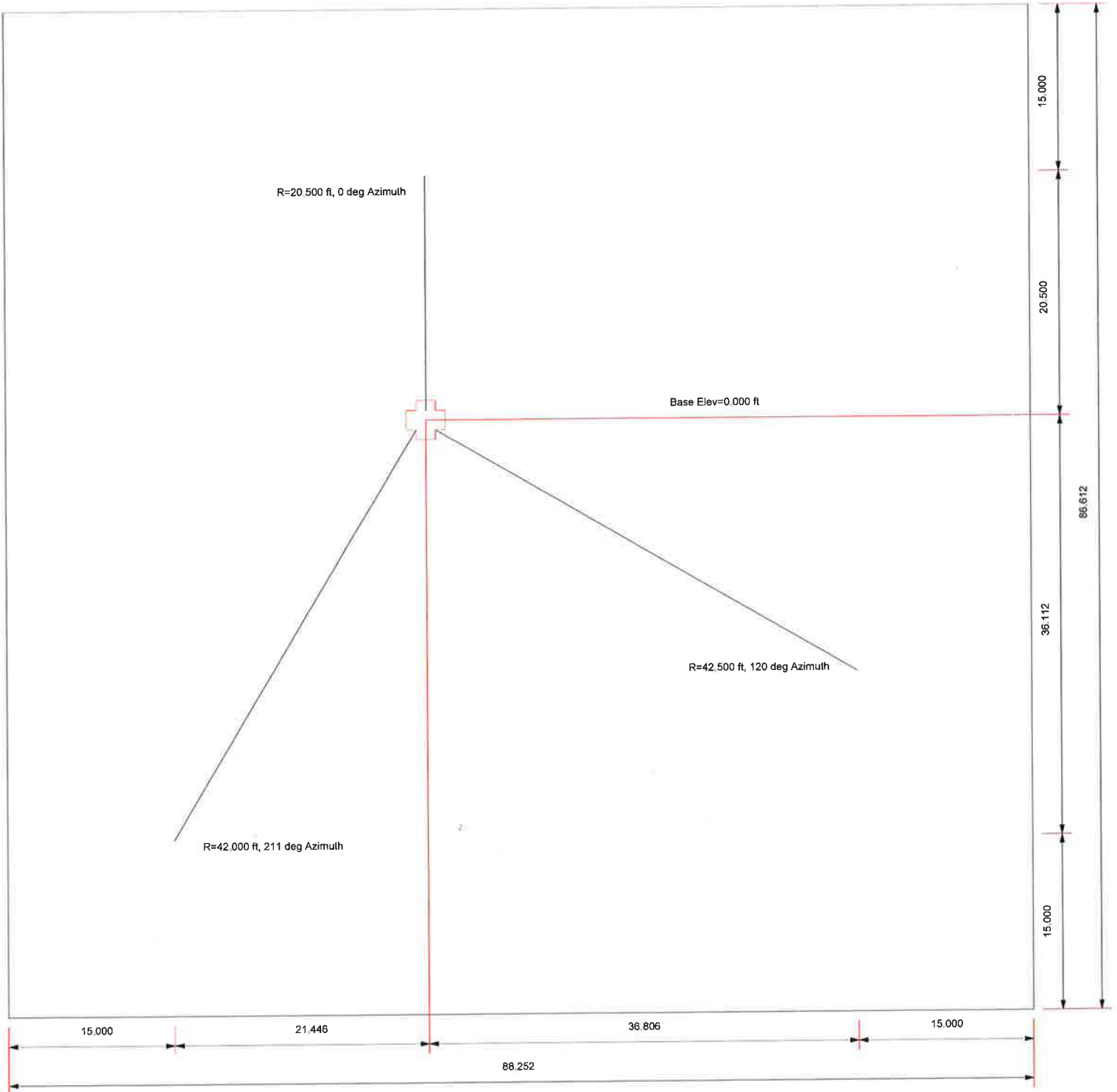
R=42,500 ft →



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 1717 S. Boulder, Suite 300
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 Phone: (918) 587-4630
 FAX: (918) 295-0265

Job: **93496.007.01 - OLD SAYBROOK, CT (BU # 841:**
 Project:
 Client: Crown Castle Drawn by: Manasa App'd:
 Code: TIA-222-G Date: 10/18/16 Scale: NTS
 Path: Dwg No: E-1

Plot Plan
Total Area - 0.18 Acres



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 Tulsa, OK 74119
 Phone: (918) 587-4630
 FAX: (918) 295-0265

Job: 93496.007.01 - OLD SAYBROOK, CT (BU # 841:		
Project:	Client: Crown Castle	Drawn by: Manasa
Code: TIA-222-G	Date: 10/18/16	App'd:
Path:		Scale: NTS
		Dwg No. E-2

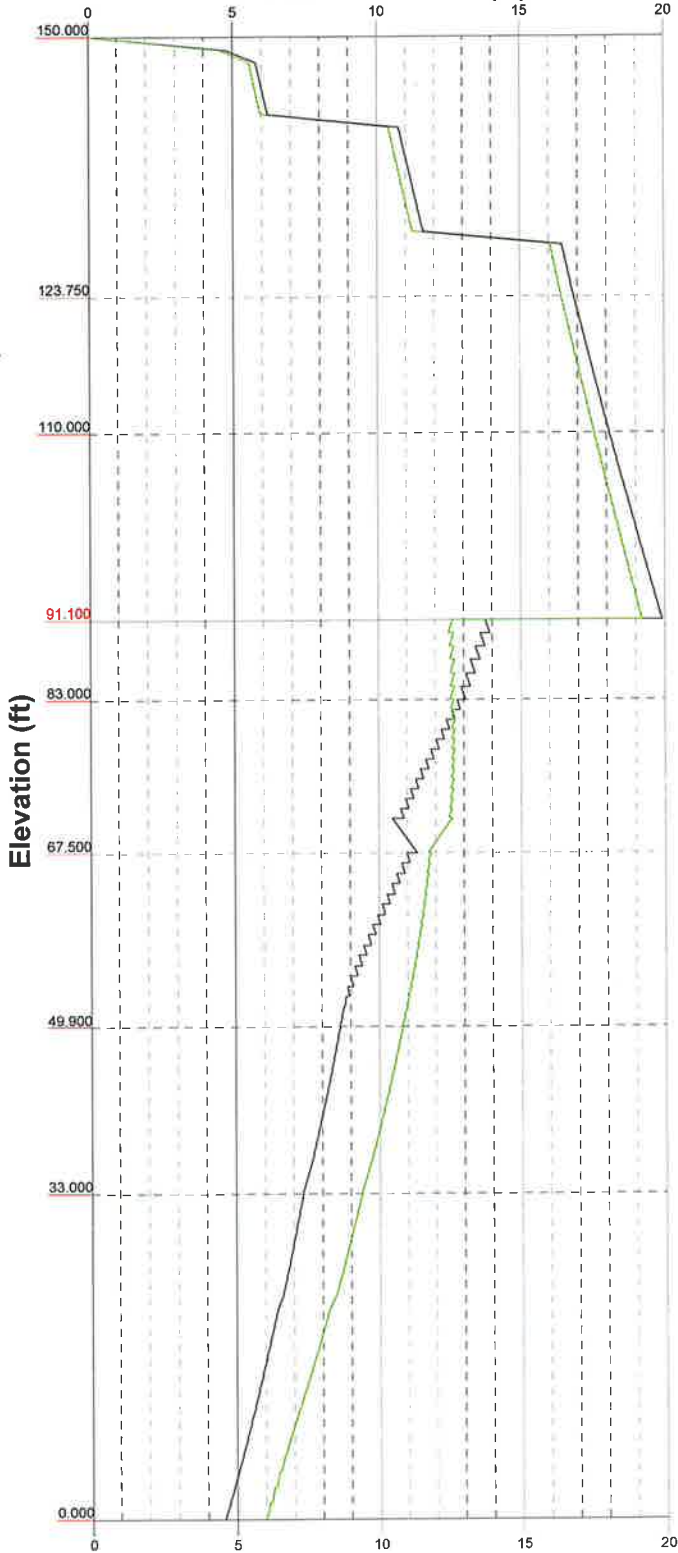
Vx

Vz

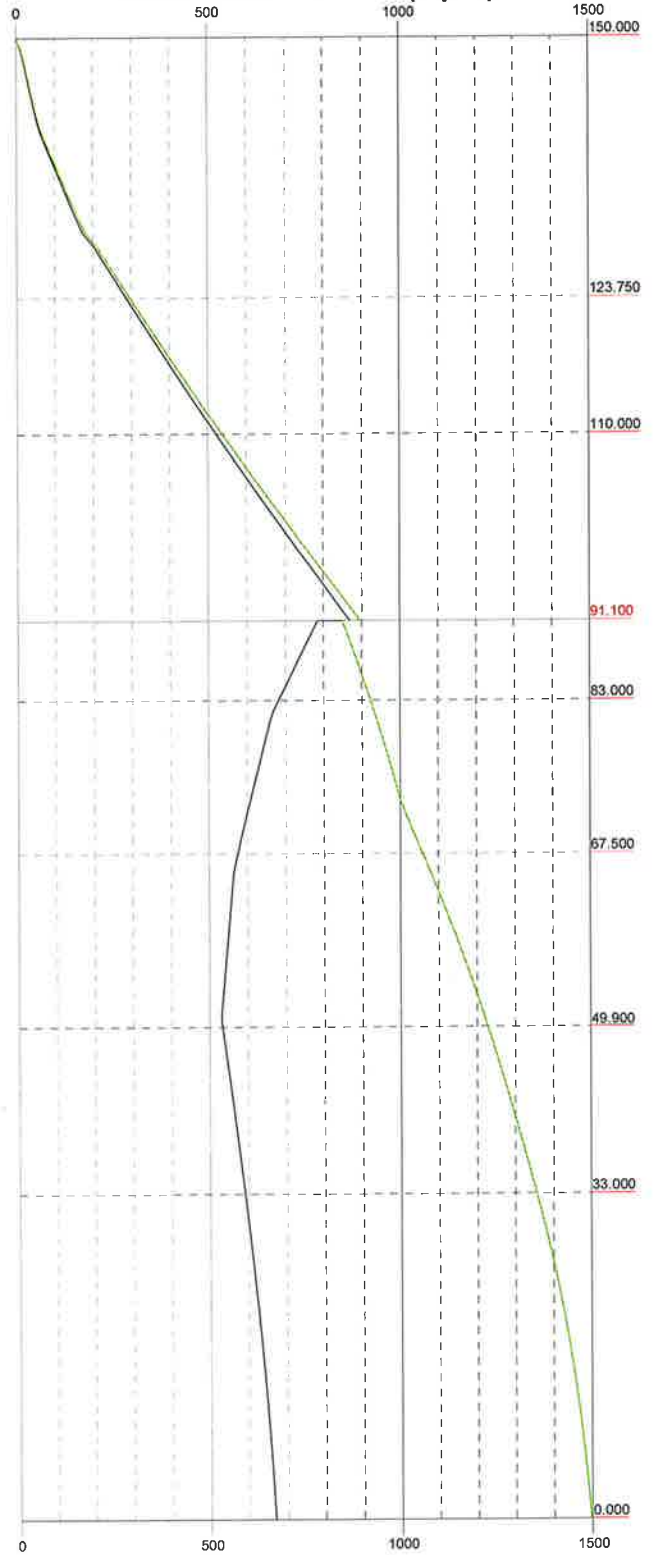
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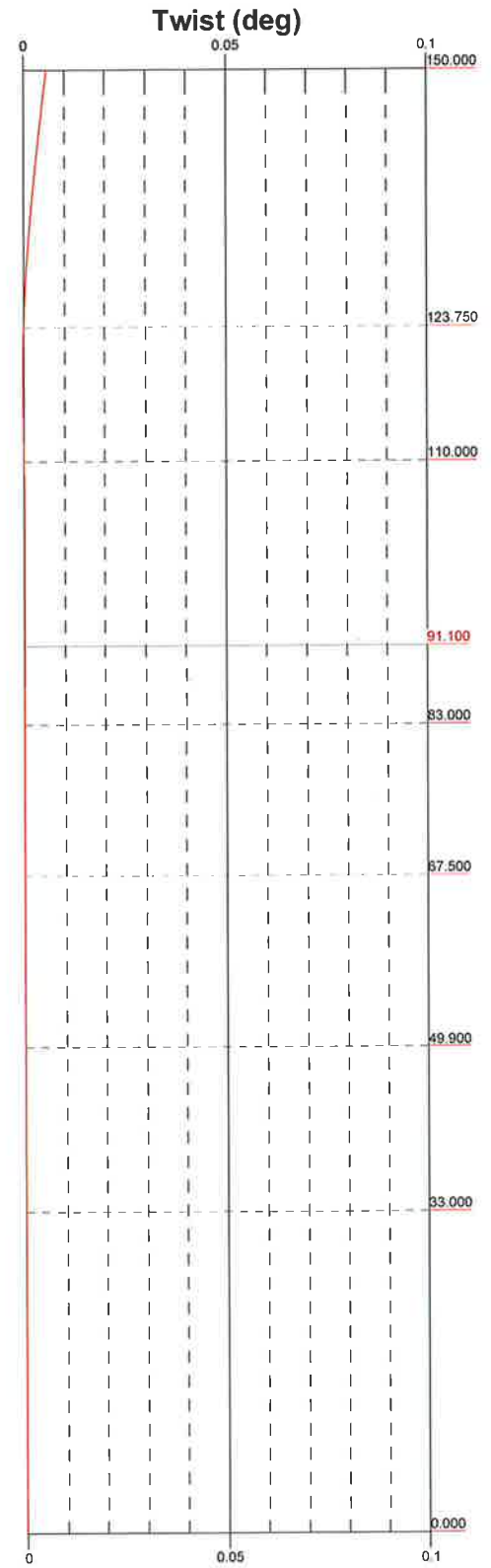
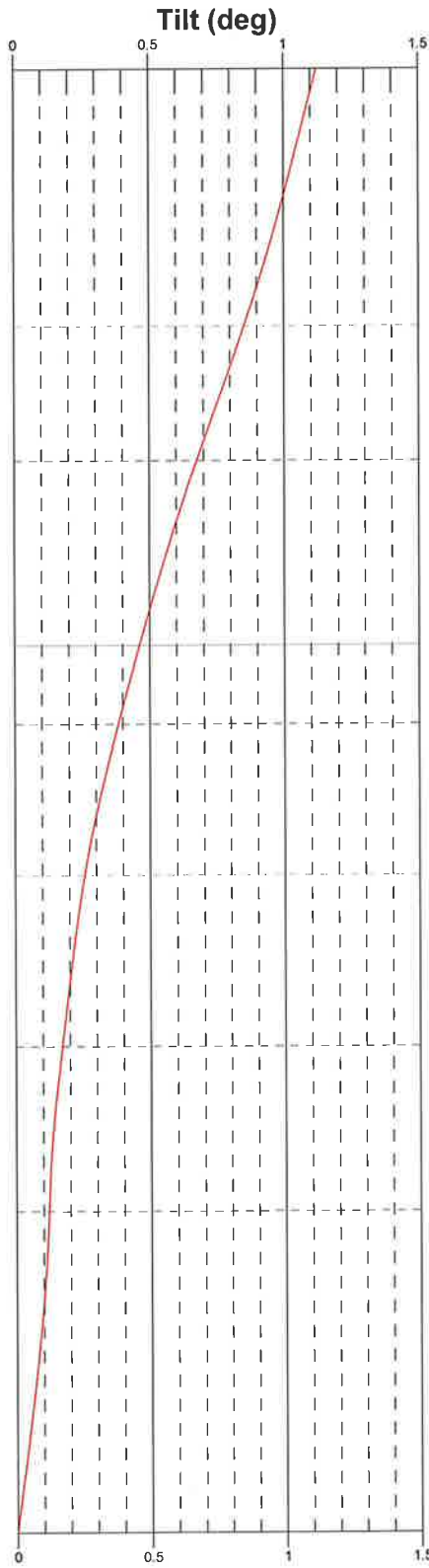
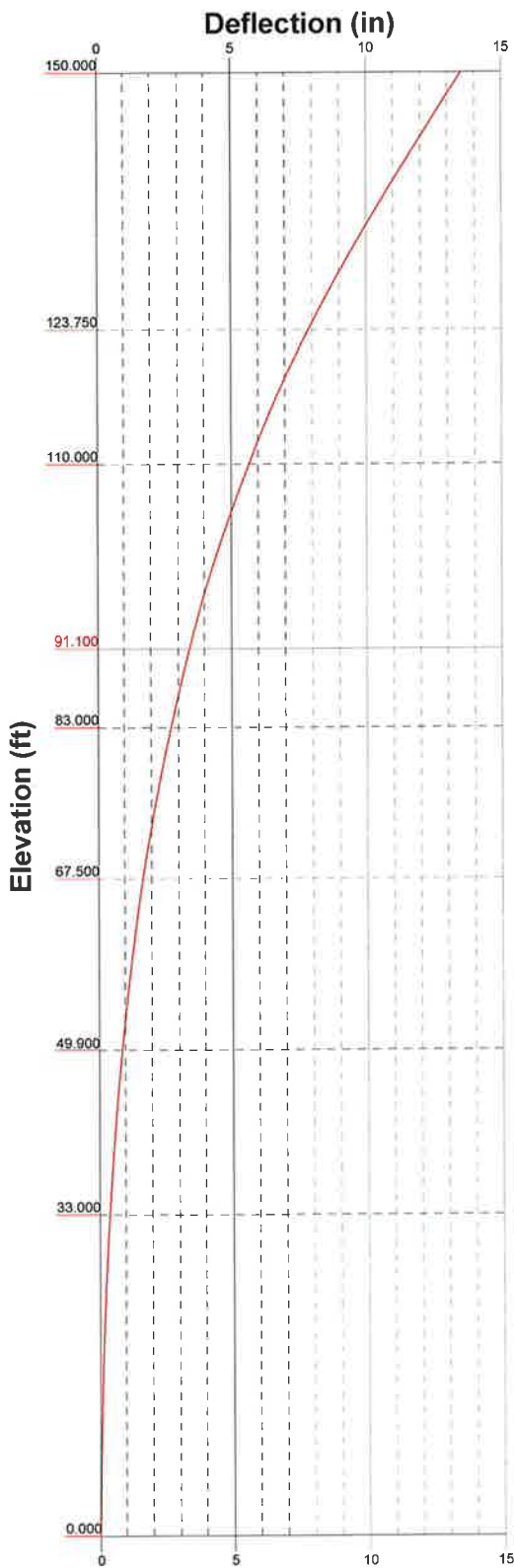
Global Mast Shear (K)




Global Mast Moment (kip-ft)



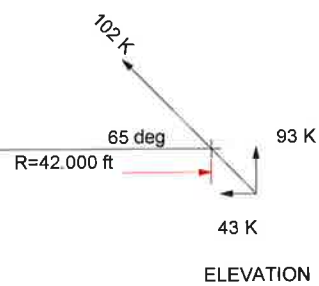
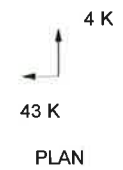
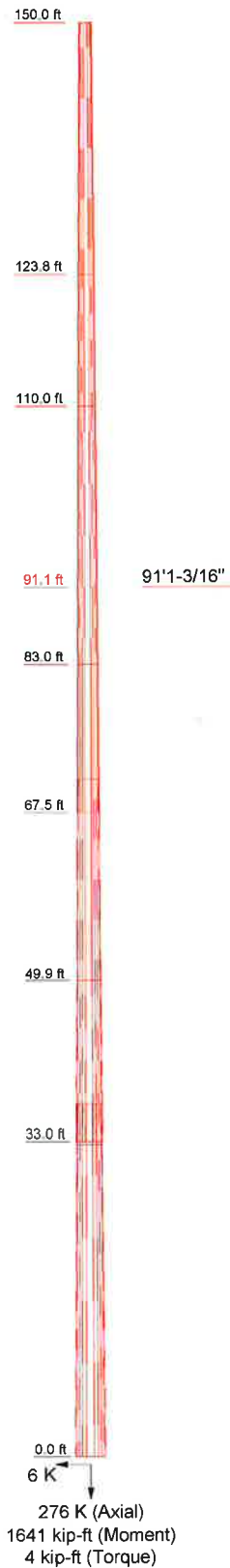
 <p>B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	Job: 93496.007.01 - OLD SAYBROOK, CT (BU # 841)		
	Project:		
	Client: Crown Castle	Drawn by: Manasa	App'd:
	Code: TIA-222-G	Date: 10/18/16	Scale: NTS
	Path:		Dwg No: E-4



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	Project:		
	Client: Crown Castle	Drawn by: Manasa	App'd:
	Code: TIA-222-G	Date: 10/18/16	Scale: NTS
	Path:	Dwg No: E-5	

Guy Tensions and Tower Reactions
TIA-222-G - 105 mph/50 mph 0.750 in Ice Exposure B

Maximum Values
Anchor 'C'@42 ft Azimuth 211 deg Elev 0 ft
Plane through centroid of tower

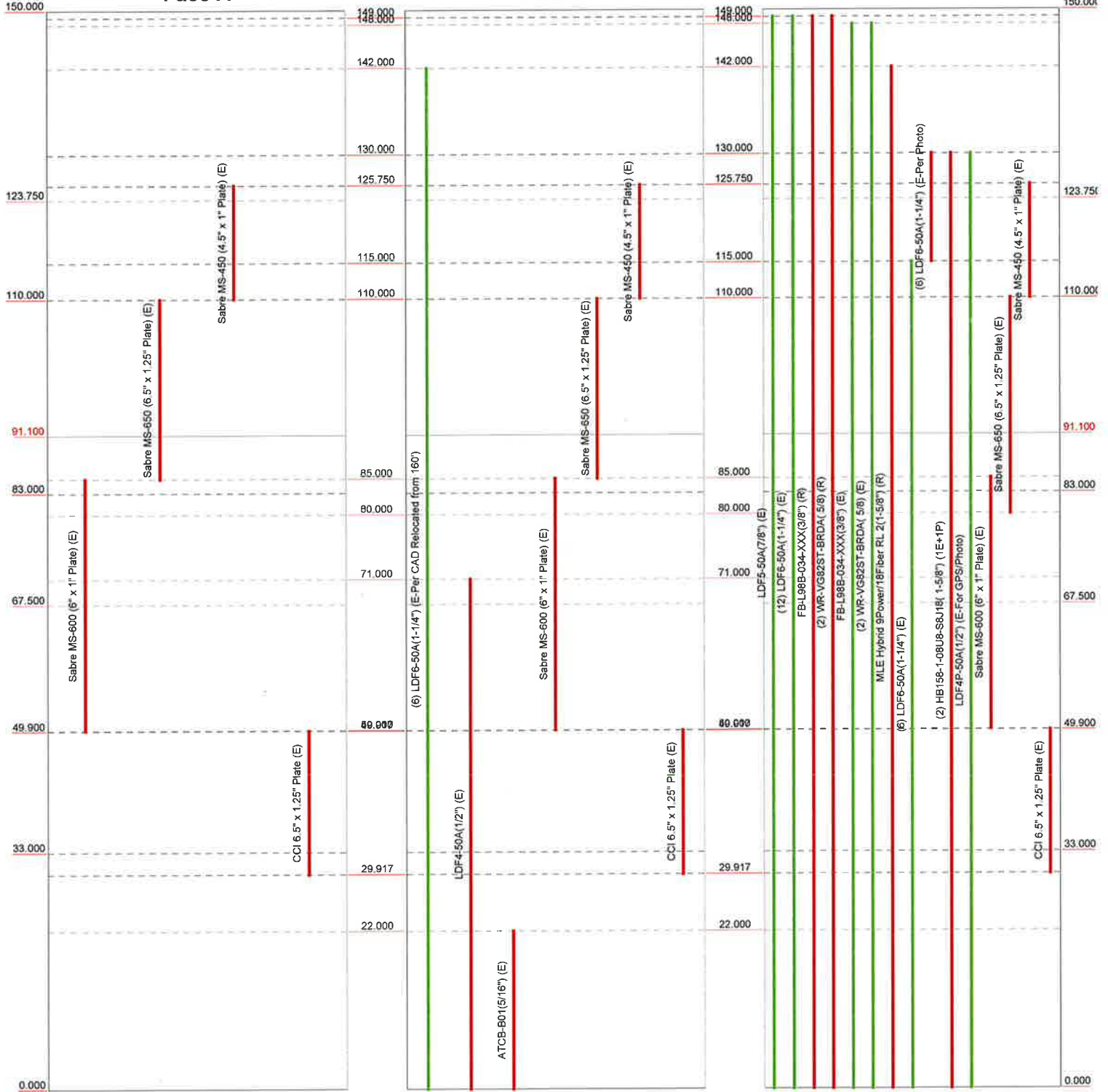



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	Project:		
	Client: Crown Castle	Drawn by: Manasa	App'd:
	Code: TIA-222-G	Date: 10/18/16	Scale: NTS
	Path:	Dwg No. E-6	

Face A

Face B

Face C



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	<p>Project:</p>		
	<p>Client: Crown Castle</p>	<p>Drawn by: Manasa</p>	<p>App'd:</p>
	<p>Code: TIA-222-G</p>	<p>Date: 10/18/16</p>	<p>Scale: NTS</p>
	<p>Path:</p>	<p>Dwg No: E-7</p>	

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	Client Crown Castle	Designed by Manasa

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 Middlesex County, Connecticut.

Basic wind speed of 105 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.000 ft.

Nominal ice thickness of 0.750 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50.000 °F.

Deflections calculated using a wind speed of 60 mph.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Safety factor used in guy 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	150.000-123.75 0	26.250	0.000	12	15.530	19.625	0.250	1.000	A572-65 (65 ksi)
L2	123.750-110.00 0	13.750	0.000	12	19.625	21.770	0.482	1.926	38.159286ksi (38 ksi)

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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
L3	110.000-83.000	27.000	0.000	12	21.770	26.134	0.668	2.674	42.551785ksi (43 ksi)
L4	83.000-67.500	15.500	3.500	12	26.134	28.640	0.545	2.181	42.218005ksi (42 ksi)
L5	67.500-49.900	21.100	0.000	12	27.449	30.898	0.585	2.339	42.368726ksi (42 ksi)
L6	49.900-33.000	16.900	4.000	12	30.898	33.660	0.644	2.575	43.004496ksi (43 ksi)
L7	33.000-32.650	4.350	0.000	12	32.256	32.966	0.710	2.839	43.00978ksi (43 ksi)
L8	32.650-0.000	32.650		12	32.966	38.290	0.438	1.750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	16.078	12.300	366.566	5.470	8.045	45.567	742.762	6.054	3.492	13.968
	20.317	15.597	747.321	6.936	10.166	73.514	1514.274	7.676	4.590	18.358
L2	20.317	29.685	1388.536	6.853	10.166	136.590	2813.551	14.610	3.969	8.242
	22.538	33.011	1909.540	7.621	11.277	169.333	3869.246	16.247	4.544	9.435
L3	22.538	45.422	2581.534	7.554	11.277	228.923	5230.889	22.355	4.043	6.048
	27.056	54.817	4537.520	9.117	13.538	335.178	9194.246	26.979	5.212	7.797
L4	27.056	44.918	3754.287	9.161	13.538	277.322	7607.202	22.107	5.543	10.168
	29.650	49.316	4968.568	10.058	14.836	334.910	10067.666	24.272	6.215	11.4
L5	29.650	50.576	4658.971	9.618	14.219	327.665	9440.338	24.892	5.789	9.902
	31.988	57.068	6693.369	10.852	16.005	418.203	13562.580	28.087	6.714	11.483
L6	31.988	62.716	7327.136	10.831	16.005	457.801	14846.764	30.867	6.555	10.182
	34.847	68.442	9522.811	11.820	17.436	546.162	19295.797	33.685	7.296	11.332
L7	34.069	72.092	9157.532	11.294	16.709	548.069	18555.644	35.482	6.743	9.501
	34.129	73.714	9789.294	11.548	17.076	573.272	19835.764	36.280	6.933	9.768
L8	34.129	45.824	6188.656	11.645	17.076	362.414	12539.896	22.553	7.662	17.514
	39.641	53.325	9752.222	13.551	19.834	491.687	19760.646	26.245	9.089	20.775

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1				1	1	1			
150.000-123.750									
L2				1	1	0.931736			
123.750-110.000									
L3				1	1	0.916808			
110.000-83.000									
L4				1	1	0.948412			
83.000-67.500									
L5				1	1	0.958676			
67.500-49.900									
L6				1	1	0.94843			
49.900-33.000									
L7				1	1	0.949707			

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
33.000-32.650									
L8				1	1	1			
32.650-0.000									

Guy Data

Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L_w	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency	
ft			K		ksi	plf	ft	ft	°	ft	%	
91.1	BS	A	1 5/8	38.880	12%	24000.000	5.550	93.061	20.500	0.000	0.000	100%
		B	1 3/8	27.840	12%	24000.000	3.970	99.990	42.500	0.000	0.000	100%
		C	1 3/8	27.840	12%	24000.000	3.970	99.784	42.000	-30.000	0.000	100%

Guy Data(cont'd)

Guy Elevation	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
ft		ft	°				
91.1	Corner						

Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
91.100	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Guy Data (cont'd)

Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	K	K	K	K	ft	ft	ft	ft
91.1	0.516	0.397	0.396		0.615	0.709	0.706	
					1.4 sec/pulse	1.5 sec/pulse	1.5 sec/pulse	

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Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
91.1	No	No			1	1	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
91.1	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z ksf	q _z Ice ksf	Ice Thickness in
91.1	A	45.550	0.021	0.005	1.549
	B	45.550	0.021	0.005	1.549
	C	45.550	0.021	0.005	1.549

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom K	F _x K	F _y K	F _z K	M _x kip-ft	M _y kip-ft	M _z kip-ft
91.1	A	77.939	39.385	0.000	38.527	-8.177	-39.851	0.000	0.000
			38.880						
	B	65.527	28.201	10.053	25.702	5.804	13.293	0.000	-23.023
			27.840						
C	65.788	28.201	-5.868	25.754	9.881	22.904	0.000	13.603	
		27.840							
			Sum:	4.185	89.982	7.508	-3.654	0.000	-9.421

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Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F _x	F _y	F _z	M _x	M _y	M _z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
91.1	A	77.939	52.098 51.046	0.000	50.971	-10.776	-52.724	0.000	0.000
	B	65.527	37.370 36.505	13.251	34.093	7.651	17.633	0.000	-30.541
	C	65.788	37.367 36.502	-7.734	34.160	13.023	30.380	0.000	18.043
	Sum:				5.517	119.225	9.898	-4.711	0.000

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F _x	F _y	F _z	M _x	M _y	M _z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
91.1	A	77.939	39.385 38.880	0.000	38.527	-8.177	-39.851	0.000	0.000
	B	65.527	28.201 27.840	10.053	25.702	5.804	13.293	0.000	-23.023
	C	65.788	28.201 27.840	-5.868	25.754	9.881	22.904	0.000	13.603
	Sum:				4.185	89.982	7.508	-3.654	0.000

Guy-Tensioning Information

		Temperature At Time Of Tensioning															
Guy Elevation	H	V	0 F		20 F		40 F		60 F		80 F		100 F		120 F		
			Initial Tension K	Intercept ft	Initial Tension K	Intercept ft	Initial Tension K	Intercept ft	Initial Tension K	Intercept ft	Initial Tension K	Intercept ft	Initial Tension K	Intercept ft	Initial Tension K	Intercept ft	
91.1	A	19.47	91.10	39.531	0.60	39.314	0.61	39.097	0.61	38.880	0.61	38.663	0.62	38.447	0.62	38.230	0.63
	B	41.47	91.10	29.654	0.67	29.049	0.68	28.444	0.69	27.840	0.71	27.236	0.72	26.633	0.74	26.029	0.76
	C	40.97	91.10	29.618	0.66	29.025	0.68	28.432	0.69	27.840	0.71	27.248	0.72	26.657	0.74	26.065	0.75

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	klf
FB-L98B-034-XXX(3/8") (R)	C	Surface Ar (CaAa)	149.000 - 0.000	1	1	0.200 0.210	0.394		0.000
WR-VG82ST-BRDA(5/8) (R)	C	Surface Ar (CaAa)	149.000 - 0.000	2	2	0.220 0.240	0.645		0.000

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Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
M									
MLE Hybrid 9Power/18Fiber RL 2(1-5/8") (R)	C	Surface Ar (CaAa)	142.000 - 0.000	1	1	-0.470 -0.450	1.625		0.001
LDF6-50A(1-1/4") (E-Per Photo)	C	Surface Ar (CaAa)	130.000 - 115.000	6	6	0.000 0.150	1.550		0.001
HB158-1-08U8-S8J18(1-5/8") (1E+1P)	C	Surface Ar (CaAa)	130.000 - 0.000	2	2	0.250 0.280	1.980		0.001
M									
LDF4-50A(1/2") (E)	B	Surface Ar (CaAa)	71.000 - 0.000	1	1	0.450 0.460	0.630		0.000
M									
ATCB-B01(5/16") (E)	B	Surface Ar (CaAa)	22.000 - 0.000	1	1	0.470 0.480	0.315		0.000
M									
M									
2014 Mod									
Sabre MS-600 (6" x 1" Plate) (E)	A	Surface Af (CaAa)	85.000 - 50.000	1	1	0.000 0.100	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E)	B	Surface Af (CaAa)	85.000 - 50.000	1	1	0.000 0.100	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E)	C	Surface Af (CaAa)	85.000 - 50.000	1	1	0.000 0.100	6.000	14.000	0.000
M									
Sabre MS-650 (6.5" x 1.25" Plate) (E)	A	Surface Af (CaAa)	110.000 - 85.000	1	1	0.120 0.140	6.500	15.500	0.000
Sabre MS-650 (6.5" x 1.25" Plate) (E)	B	Surface Af (CaAa)	110.000 - 85.000	1	1	0.120 0.140	6.500	15.500	0.000
Sabre MS-650 (6.5" x 1.25" Plate) (E)	C	Surface Af (CaAa)	110.000 - 80.000	1	1	0.120 0.140	6.500	15.500	0.000
M									
Sabre MS-450 (4.5" x 1" Plate) (E)	A	Surface Af (CaAa)	125.750 - 110.000	1	1	0.200 0.240	4.500	11.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E)	B	Surface Af (CaAa)	125.750 - 110.000	1	1	0.200 0.240	4.500	11.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E)	C	Surface Af (CaAa)	125.750 - 110.000	1	1	0.200 0.240	4.500	11.000	0.000
M									
2016 Mod									
CCI 6.5" x 1.25" Plate (E)	A	Surface Af (CaAa)	49.917 - 29.917	1	1	-0.240 -0.200	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E)	B	Surface Af (CaAa)	49.917 - 29.917	1	1	-0.240 -0.200	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E)	C	Surface Af (CaAa)	49.917 - 29.917	1	1	-0.240 -0.200	6.500	15.500	0.000
M									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{A,A}	Weight klf
M							
LDF5-50A(7/8") (E)	C	No	Inside Pole	149.000 - 0.000	1	No Ice 1/2" Ice	0.000 0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf
LDF6-50A(1-1/4") (E)	C	No	Inside Pole	149.000 - 0.000	12	1" Ice No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000 0.000	0.000 0.001 0.001 0.001
M								
FB-L98B-034-XXX(3/8")) (E)	C	No	Inside Pole	148.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
WR-VG82ST-BRDA(5/8) (E)	C	No	Inside Pole	148.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
LDF6-50A(1-1/4") (E-Per CAD Relocated from 160')	B	No	Inside Pole	142.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
M								
LDF6-50A(1-1/4") (E)	C	No	Inside Pole	115.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
M								
LDF4P-50A(1/2") (E-For GPS/Photo)	C	No	Inside Pole	130.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
M								
M								
M								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	150.000-123.750	A	0.000	0.000	1.500	0.000	0.000
		B	0.000	0.000	1.500	0.000	0.072
		C	0.000	0.000	17.004	0.000	0.303
L2	123.750-110.000	A	0.000	0.000	10.313	0.000	0.000
		B	0.000	0.000	10.313	0.000	0.054
		C	0.000	0.000	28.444	0.000	0.239
L3	110.000-83.000	A	0.000	0.000	29.083	0.000	0.000
		B	0.000	0.000	29.083	0.000	0.107
		C	0.000	0.000	50.875	0.000	0.469
L4	83.000-67.500	A	0.000	0.000	15.500	0.000	0.000
		B	0.000	0.000	15.720	0.000	0.062
		C	0.000	0.000	30.016	0.000	0.269
L5	67.500-49.900	A	0.000	0.000	17.518	0.000	0.000
		B	0.000	0.000	18.627	0.000	0.072
		C	0.000	0.000	30.311	0.000	0.306
L6	49.900-33.000	A	0.000	0.000	18.308	0.000	0.000
		B	0.000	0.000	19.373	0.000	0.069
		C	0.000	0.000	30.592	0.000	0.294
L7	33.000-32.650	A	0.000	0.000	0.379	0.000	0.000
		B	0.000	0.000	0.401	0.000	0.001
		C	0.000	0.000	0.634	0.000	0.006
L8	32.650-0.000	A	0.000	0.000	2.961	0.000	0.000
		B	0.000	0.000	5.711	0.000	0.136
		C	0.000	0.000	26.693	0.000	0.567

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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	150.000-123.750	A	1.729	0.000	0.000	2.181	0.000	0.024
		B		0.000	0.000	2.181	0.000	0.096
		C		0.000	0.000	51.925	0.000	0.901
L2	123.750-110.000	A	1.702	0.000	0.000	14.936	0.000	0.159
		B		0.000	0.000	14.936	0.000	0.213
		C		0.000	0.000	61.693	0.000	0.936
L3	110.000-83.000	A	1.669	0.000	0.000	38.097	0.000	0.380
		B		0.000	0.000	38.097	0.000	0.487
		C		0.000	0.000	104.662	0.000	1.603
L4	83.000-67.500	A	1.629	0.000	0.000	20.549	0.000	0.198
		B		0.000	0.000	21.909	0.000	0.276
		C		0.000	0.000	60.796	0.000	0.910
L5	67.500-49.900	A	1.589	0.000	0.000	23.224	0.000	0.224
		B		0.000	0.000	30.066	0.000	0.375
		C		0.000	0.000	64.125	0.000	0.985
L6	49.900-33.000	A	1.534	0.000	0.000	23.494	0.000	0.215
		B		0.000	0.000	29.744	0.000	0.353
		C		0.000	0.000	61.330	0.000	0.909
L7	33.000-32.650	A	1.499	0.000	0.000	0.487	0.000	0.004
		B		0.000	0.000	0.616	0.000	0.007
		C		0.000	0.000	1.270	0.000	0.019
L8	32.650-0.000	A	1.395	0.000	0.000	3.723	0.000	0.031
		B		0.000	0.000	21.715	0.000	0.343
		C		0.000	0.000	72.719	0.000	1.271

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	150.000-123.750	-0.069	0.556	-0.146	0.817
L2	123.750-110.000	-0.126	0.599	-0.174	0.781
L3	110.000-83.000	-0.102	0.343	-0.170	0.622
L4	83.000-67.500	-0.138	0.438	-0.185	0.740
L5	67.500-49.900	-0.059	0.371	-0.051	0.738
L6	49.900-33.000	-0.059	0.375	-0.054	0.755
L7	33.000-32.650	-0.060	0.379	-0.055	0.766
L8	32.650-0.000	-0.086	0.687	0.027	1.223

Shielding Factor K_a

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	5	FB-L98B-034-XXX(3/8")	123.75 - 149.00	1.0000	1.0000
L1	6	WR-VG82ST-BRDA(5/8)	123.75 - 149.00	1.0000	1.0000
L1	11	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	123.75 - 142.00	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	17	LDF6-50A(1-1/4")	123.75 - 130.00	1.0000	1.0000
L1	20	HB158-1-08U8-S8J18(1-5/8")	123.75 - 130.00	1.0000	1.0000
L1	39	Sabre MS-450 (4.5" x 1" Plate)	123.75 - 125.75	1.0000	1.0000
L1	40	Sabre MS-450 (4.5" x 1" Plate)	123.75 - 125.75	1.0000	1.0000
L1	41	Sabre MS-450 (4.5" x 1" Plate)	123.75 - 125.75	1.0000	1.0000
L2	5	FB-L98B-034-XXX(3/8")	110.00 - 123.75	1.0000	1.0000
L2	6	WR-VG82ST-BRDA(5/8)	110.00 - 123.75	1.0000	1.0000
L2	11	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	110.00 - 123.75	1.0000	1.0000
L2	17	LDF6-50A(1-1/4")	115.00 - 123.75	1.0000	1.0000
L2	20	HB158-1-08U8-S8J18(1-5/8")	110.00 - 123.75	1.0000	1.0000
L2	39	Sabre MS-450 (4.5" x 1" Plate)	110.00 - 123.75	1.0000	1.0000
L2	40	Sabre MS-450 (4.5" x 1" Plate)	110.00 - 123.75	1.0000	1.0000
L2	41	Sabre MS-450 (4.5" x 1" Plate)	110.00 - 123.75	1.0000	1.0000
L3	5	FB-L98B-034-XXX(3/8")	83.00 - 110.00	1.0000	1.0000
L3	6	WR-VG82ST-BRDA(5/8)	83.00 - 110.00	1.0000	1.0000
L3	11	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	83.00 - 110.00	1.0000	1.0000
L3	20	HB158-1-08U8-S8J18(1-5/8")	83.00 - 110.00	1.0000	1.0000
L3	31	Sabre MS-600 (6" x 1" Plate)	83.00 - 85.00	1.0000	1.0000
L3	32	Sabre MS-600 (6" x 1" Plate)	83.00 - 85.00	1.0000	1.0000
L3	33	Sabre MS-600 (6" x 1" Plate)	83.00 - 85.00	1.0000	1.0000
L3	35	Sabre MS-650 (6.5" x 1.25" Plate)	85.00 - 110.00	1.0000	1.0000
L3	36	Sabre MS-650 (6.5" x 1.25" Plate)	85.00 - 110.00	1.0000	1.0000
L3	37	Sabre MS-650 (6.5" x 1.25" Plate)	83.00 - 110.00	1.0000	1.0000
L4	5	FB-L98B-034-XXX(3/8")	67.50 - 83.00	1.0000	1.0000
L4	6	WR-VG82ST-BRDA(5/8)	67.50 - 83.00	1.0000	1.0000
L4	11	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	67.50 - 83.00	1.0000	1.0000
L4	20	HB158-1-08U8-S8J18(1-5/8")	67.50 - 83.00	1.0000	1.0000
L4	22	LDF4-50A(1/2")	67.50 - 71.00	1.0000	1.0000
L4	31	Sabre MS-600 (6" x 1" Plate)	67.50 - 83.00	1.0000	1.0000
L4	32	Sabre MS-600 (6" x 1" Plate)	67.50 - 83.00	1.0000	1.0000
L4	33	Sabre MS-600 (6" x 1" Plate)	67.50 - 83.00	1.0000	1.0000
L4	37	Sabre MS-650 (6.5" x 1.25" Plate)	80.00 - 83.00	1.0000	1.0000
L4	44	CCI 6.5" x 1.25" Plate	67.50 - 49.92	1.0000	1.0000
L4	45	CCI 6.5" x 1.25" Plate	67.50 - 49.92	1.0000	1.0000
L4	46	CCI 6.5" x 1.25" Plate	67.50 - 49.92	1.0000	1.0000
L6	5	FB-L98B-034-XXX(3/8")	33.00 - 49.90	1.0000	1.0000
L6	6	WR-VG82ST-BRDA(5/8)	33.00 - 49.90	1.0000	1.0000
L6	11	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	33.00 - 49.90	1.0000	1.0000
L6	20	HB158-1-08U8-S8J18(1-5/8")	33.00 - 49.90	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L6	22	LDF4-50A(1/2")	33.00 - 49.90	1.0000	1.0000
L6	44	CCI 6.5" x 1.25" Plate	33.00 - 49.90	1.0000	1.0000
L6	45	CCI 6.5" x 1.25" Plate	33.00 - 49.90	1.0000	1.0000
L6	46	CCI 6.5" x 1.25" Plate	33.00 - 49.90	1.0000	1.0000
L8	5	FB-L98B-034-XXX(3/8")	0.00 - 32.65	1.0000	1.0000
L8	6	WR-VG82ST-BRDA(5/8)	0.00 - 32.65	1.0000	1.0000
L8	11	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	0.00 - 32.65	1.0000	1.0000
L8	20	HB158-1-08U8-S8J18(1-5/8")	0.00 - 32.65	1.0000	1.0000
L8	22	LDF4-50A(1/2")	0.00 - 32.65	1.0000	1.0000
L8	24	ATCB-B01(5/16")	0.00 - 22.00	1.0000	1.0000
L8	44	CCI 6.5" x 1.25" Plate	29.92 - 32.65	1.0000	1.0000
L8	45	CCI 6.5" x 1.25" Plate	29.92 - 32.65	1.0000	1.0000
L8	46	CCI 6.5" x 1.25" Plate	29.92 - 32.65	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
M									
M									
7770.00 w/ Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	149.000	No Ice 5.746	4.254	0.055
			0.000				1/2" Ice 6.179	5.014	0.103
			3.000				1" Ice 6.607	5.711	0.157
7770.00 w/ Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	149.000	No Ice 5.746	4.254	0.055
			0.000				1/2" Ice 6.179	5.014	0.103
			3.000				1" Ice 6.607	5.711	0.157
7770.00 w/ Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	149.000	No Ice 5.746	4.254	0.055
			0.000				1/2" Ice 6.179	5.014	0.103
			3.000				1" Ice 6.607	5.711	0.157
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	A	From Leg	4.000	0.000	0.000	149.000	No Ice 5.232	4.015	0.035
			0.000				1/2" Ice 5.618	4.633	0.080
			3.000				1" Ice 6.012	5.257	0.131
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	B	From Leg	4.000	0.000	0.000	149.000	No Ice 5.232	4.015	0.035
			0.000				1/2" Ice 5.618	4.633	0.080
			3.000				1" Ice 6.012	5.257	0.131
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	C	From Leg	4.000	0.000	0.000	149.000	No Ice 5.232	4.015	0.035
			0.000				1/2" Ice 5.618	4.633	0.080
			3.000				1" Ice 6.012	5.257	0.131
(2) TT19-08BP111-001 (E)	A	From Leg	4.000	0.000	0.000	149.000	No Ice 0.000	0.442	0.016
			0.000				1/2" Ice 0.000	0.530	0.022
			3.000				1" Ice 0.000	0.626	0.029
(2) TT19-08BP111-001 (E)	B	From Leg	4.000	0.000	0.000	149.000	No Ice 0.000	0.442	0.016
			0.000				1/2" Ice 0.000	0.530	0.022
			3.000				1" Ice 0.000	0.626	0.029
(2) TT19-08BP111-001 (E)	C	From Leg	4.000	0.000	0.000	149.000	No Ice 0.000	0.442	0.016
			0.000				1/2" Ice 0.000	0.530	0.022
			3.000				1" Ice 0.000	0.626	0.029
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	149.000	No Ice 5.954	5.190	0.061
			0.000				1/2" Ice 6.390	5.961	0.114

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz Lateral	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
(R)			3.000						
SBNHH-1D65A w/ Mount	B	From Leg	4.000		0.000	149.000	1" Ice 6.820	6.658	0.174
Pipe			0.000				No Ice 5.954	5.190	0.061
(R)			3.000				1/2" Ice 6.390	5.961	0.114
SBNHH-1D65A w/ Mount	C	From Leg	4.000		0.000	149.000	1" Ice 6.820	6.658	0.174
Pipe			0.000				No Ice 5.954	5.190	0.061
(R)			3.000				1/2" Ice 6.390	5.961	0.114
DC6-48-60-18-8F	A	From Leg	4.000		0.000	149.000	1" Ice 6.820	6.658	0.174
(R)			0.000				No Ice 0.917	0.917	0.019
			3.000				1/2" Ice 1.458	1.458	0.037
WCS RRUS-32-B30	A	From Leg	4.000		0.000	149.000	1" Ice 1.643	1.643	0.057
(R)			0.000				No Ice 3.314	2.424	0.077
			3.000				1/2" Ice 3.558	2.638	0.105
WCS RRUS-32-B30	B	From Leg	4.000		0.000	149.000	1" Ice 3.809	2.860	0.136
(R)			0.000				No Ice 3.314	2.424	0.077
			3.000				1/2" Ice 3.558	2.638	0.105
WCS RRUS-32-B30	C	From Leg	4.000		0.000	149.000	1" Ice 3.809	2.860	0.136
(R)			0.000				No Ice 3.314	2.424	0.077
			3.000				1/2" Ice 3.558	2.638	0.105
Platform Mount [LP 403-1]	C	None			0.000	149.000	1" Ice 3.809	2.860	0.136
(E)							No Ice 18.850	18.850	1.500
							1/2" Ice 24.300	24.300	1.797
							1" Ice 29.750	29.750	2.093
M									
(2) RRUS 11	A	From Leg	2.000		0.000	148.000	No Ice 2.784	1.187	0.048
(E)			0.000				1/2" Ice 2.992	1.334	0.068
			2.000				1" Ice 3.207	1.490	0.092
(2) RRUS 11	B	From Leg	2.000		0.000	148.000	No Ice 2.784	1.187	0.048
(E)			0.000				1/2" Ice 2.992	1.334	0.068
			2.000				1" Ice 3.207	1.490	0.092
(2) RRUS 11	C	From Leg	2.000		0.000	148.000	No Ice 2.784	1.187	0.048
(E)			0.000				1/2" Ice 2.992	1.334	0.068
			2.000				1" Ice 3.207	1.490	0.092
DC6-48-60-18-8F	A	From Leg	2.000		0.000	148.000	No Ice 0.917	0.917	0.019
(E-CL/Photo)			0.000				1/2" Ice 1.458	1.458	0.037
			-1.000				1" Ice 1.643	1.643	0.057
4' x 2" Pipe Mount	A	From Leg	2.000		0.000	148.000	No Ice 0.785	0.785	0.029
(E)			0.000				1/2" Ice 1.028	1.028	0.035
			0.000				1" Ice 1.281	1.281	0.044
4' x 2" Pipe Mount	B	From Leg	2.000		0.000	148.000	No Ice 0.785	0.785	0.029
(E)			0.000				1/2" Ice 1.028	1.028	0.035
			0.000				1" Ice 1.281	1.281	0.044
4' x 2" Pipe Mount	C	From Leg	2.000		0.000	148.000	No Ice 0.785	0.785	0.029
(E)			0.000				1/2" Ice 1.028	1.028	0.035
			0.000				1" Ice 1.281	1.281	0.044
Side Arm Mount [SO 102-3]	C	None			0.000	148.000	No Ice 3.000	3.000	0.081
(E)							1/2" Ice 3.480	3.480	0.111
							1" Ice 3.960	3.960	0.141
M									
AIR 21 B2A/B4P	A	From Leg	4.000		0.000	142.000	No Ice 5.924	4.219	0.083
(R)			0.000				1/2" Ice 6.288	4.562	0.124
			-2.000				1" Ice 6.659	4.913	0.170
AIR 21 B2A/B4P	B	From Leg	4.000		0.000	142.000	No Ice 5.924	4.219	0.083
(R)			0.000				1/2" Ice 6.288	4.562	0.124
			-2.000				1" Ice 6.659	4.913	0.170
AIR 21 B2A/B4P	C	From Leg	4.000		0.000	142.000	No Ice 5.924	4.219	0.083
(R)			0.000				1/2" Ice 6.288	4.562	0.124
			-2.000				1" Ice 6.659	4.913	0.170

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
AIR 21 B4A/B2P (R)	A	From Leg	4.000	0.000	142.000	No Ice	5.924	4.219	0.083
			0.000			1/2" Ice	6.288	4.562	0.124
			-2.000			1" Ice	6.659	4.913	0.170
AIR 21 B4A/B2P (R)	B	From Leg	4.000	0.000	142.000	No Ice	5.924	4.219	0.083
			0.000			1/2" Ice	6.288	4.562	0.124
			-2.000			1" Ice	6.659	4.913	0.170
AIR 21 B4A/B2P (R)	C	From Leg	4.000	0.000	142.000	No Ice	5.924	4.219	0.083
			0.000			1/2" Ice	6.288	4.562	0.124
			-2.000			1" Ice	6.659	4.913	0.170
LNx-6515DS-A1M (R)	A	From Leg	4.000	0.000	142.000	No Ice	11.409	7.698	0.050
			0.000			1/2" Ice	12.027	8.291	0.116
			-1.000			1" Ice	12.653	8.891	0.189
LNx-6515DS-A1M (R)	B	From Leg	4.000	0.000	142.000	No Ice	11.409	7.698	0.050
			0.000			1/2" Ice	12.027	8.291	0.116
			-1.000			1" Ice	12.653	8.891	0.189
LNx-6515DS-A1M (R)	C	From Leg	4.000	0.000	142.000	No Ice	11.409	7.698	0.050
			0.000			1/2" Ice	12.027	8.291	0.116
			-1.000			1" Ice	12.653	8.891	0.189
TMAT7LA-11A (R-Shielded)	A	From Leg	4.000	0.000	142.000	No Ice	0.000	0.347	0.022
			0.000			1/2" Ice	0.000	0.423	0.029
			-2.000			1" Ice	0.000	0.506	0.037
TMAT7LA-11A (R)	B	From Leg	4.000	0.000	142.000	No Ice	0.000	0.347	0.022
			0.000			1/2" Ice	0.000	0.423	0.029
			-2.000			1" Ice	0.000	0.506	0.037
TMAT7LA-11A (R)	C	From Leg	4.000	0.000	142.000	No Ice	0.000	0.347	0.022
			0.000			1/2" Ice	0.000	0.423	0.029
			-2.000			1" Ice	0.000	0.506	0.037
RRUS 11 B12 (R-Shielded)	A	From Leg	4.000	0.000	142.000	No Ice	0.000	1.182	0.051
			0.000			1/2" Ice	0.000	1.330	0.072
			-1.000			1" Ice	0.000	1.485	0.095
RRUS 11 B12 (R)	B	From Leg	4.000	0.000	142.000	No Ice	0.000	1.182	0.051
			0.000			1/2" Ice	0.000	1.330	0.072
			-1.000			1" Ice	0.000	1.485	0.095
RRUS 11 B12 (R)	C	From Leg	4.000	0.000	142.000	No Ice	0.000	1.182	0.051
			0.000			1/2" Ice	0.000	1.330	0.072
			-1.000			1" Ice	0.000	1.485	0.095
Platform Mount [LP 301-1] (R-4 M.P./Sector)	C	None		0.000	142.000	No Ice	30.100	30.100	1.589
						1/2" Ice	40.800	40.800	2.029
						1" Ice	51.500	51.500	2.470
M									
BXA-80080/4CF w/ Mount Pipe (E)	A	From Leg	4.000	0.000	130.000	No Ice	5.037	4.033	0.033
			0.000			1/2" Ice	5.421	4.655	0.077
			3.000			1" Ice	5.813	5.281	0.127
BXA-80080/4CF w/ Mount Pipe (E)	B	From Leg	4.000	0.000	130.000	No Ice	5.037	4.033	0.033
			0.000			1/2" Ice	5.421	4.655	0.077
			3.000			1" Ice	5.813	5.281	0.127
BXA-80080/4CF w/ Mount Pipe (E)	C	From Leg	4.000	0.000	130.000	No Ice	5.037	4.033	0.033
			0.000			1/2" Ice	5.421	4.655	0.077
			3.000			1" Ice	5.813	5.281	0.127
DB-B1-6C-12AB-0Z (E)	A	From Leg	4.000	0.000	130.000	No Ice	3.364	2.192	0.021
			0.000			1/2" Ice	3.597	2.395	0.050
			3.000			1" Ice	3.838	2.606	0.082
(2) SBNHH-1D65B w/ Mount Pipe (P)	A	From Leg	4.000	0.000	130.000	No Ice	8.397	7.071	0.066
			0.000			1/2" Ice	8.960	8.260	0.135
			3.000			1" Ice	9.490	9.170	0.212
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000	0.000	130.000	No Ice	8.397	7.071	0.066
			0.000			1/2" Ice	8.960	8.260	0.135

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
(P)			3.000			1" Ice	9.490	9.170	0.212
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.000		0.000	No Ice	8.397	7.071	0.066
			0.000			1/2" Ice	8.960	8.260	0.135
(P)			3.000			1" Ice	9.490	9.170	0.212
B13 RRH 4X30	A	From Leg	4.000		0.000	No Ice	2.055	1.320	0.056
			0.000			1/2" Ice	2.241	1.475	0.073
(P)			3.000			1" Ice	2.433	1.638	0.093
B13 RRH 4X30	B	From Leg	4.000		0.000	No Ice	2.055	1.320	0.056
			0.000			1/2" Ice	2.241	1.475	0.073
(P)			3.000			1" Ice	2.433	1.638	0.093
B13 RRH 4X30	C	From Leg	4.000		0.000	No Ice	2.055	1.320	0.056
			0.000			1/2" Ice	2.241	1.475	0.073
(P)			3.000			1" Ice	2.433	1.638	0.093
B25 RRH4X30	A	From Leg	4.000		0.000	No Ice	2.200	1.742	0.055
			0.000			1/2" Ice	2.393	1.920	0.075
(P)			3.000			1" Ice	2.593	2.106	0.099
B25 RRH4X30	B	From Leg	4.000		0.000	No Ice	2.200	1.742	0.055
			0.000			1/2" Ice	2.393	1.920	0.075
(P)			3.000			1" Ice	2.593	2.106	0.099
B25 RRH4X30	C	From Leg	4.000		0.000	No Ice	2.200	1.742	0.055
			0.000			1/2" Ice	2.393	1.920	0.075
(P)			3.000			1" Ice	2.593	2.106	0.099
DB-B1-6C-12AB-0Z	A	From Leg	4.000		0.000	No Ice	3.364	2.192	0.021
			0.000			1/2" Ice	3.597	2.395	0.050
(P)			3.000			1" Ice	3.838	2.606	0.082
B66A RRH4X45	A	From Leg	4.000		0.000	No Ice	2.580	1.630	0.057
			0.000			1/2" Ice	2.794	1.811	0.077
(P)			3.000			1" Ice	3.015	1.999	0.101
B66A RRH4X45	B	From Leg	4.000		0.000	No Ice	2.580	1.630	0.057
			0.000			1/2" Ice	2.794	1.811	0.077
(P)			3.000			1" Ice	3.015	1.999	0.101
B66A RRH4X45	C	From Leg	4.000		0.000	No Ice	2.580	1.630	0.057
			0.000			1/2" Ice	2.794	1.811	0.077
(P)			3.000			1" Ice	3.015	1.999	0.101
5' x 2" Pipe Mount (E-TBR Antenna)	A	From Leg	4.000		0.000	No Ice	1.000	1.000	0.029
			0.000			1/2" Ice	1.393	1.393	0.037
(P)			0.000			1" Ice	1.703	1.703	0.048
5' x 2" Pipe Mount (E-TBR Antenna)	B	From Leg	4.000		0.000	No Ice	1.000	1.000	0.029
			0.000			1/2" Ice	1.393	1.393	0.037
(P)			0.000			1" Ice	1.703	1.703	0.048
5' x 2" Pipe Mount (E-TBR Antenna)	C	From Leg	4.000		0.000	No Ice	1.000	1.000	0.029
			0.000			1/2" Ice	1.393	1.393	0.037
(P)			0.000			1" Ice	1.703	1.703	0.048
Platform Mount [LP 403-1] (E)	C	None			0.000	No Ice	18.850	18.850	1.500
						1/2" Ice	24.300	24.300	1.797
(P)						1" Ice	29.750	29.750	2.093
M									
FMO (E)	C	From Leg	2.000		0.000	No Ice	8.400	8.400	0.010
			0.000			1/2" Ice	8.815	8.815	0.181
(P)			1.000			1" Ice	9.237	9.237	0.361
Side Arm Mount [SO 301-1] (E)	C	From Leg	1.000		0.000	No Ice	1.000	0.900	0.023
			0.000			1/2" Ice	1.390	1.420	0.033
(P)			0.000			1" Ice	1.780	1.940	0.042
M									
MYA-43012N (E)	C	From Leg	3.000		0.000	No Ice	0.620	0.620	0.005
			0.000			1/2" Ice	1.116	1.116	0.006
(P)			0.000			1" Ice	1.612	1.612	0.008

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
4' x 2" Pipe Mount (E-For Yagi/Photo)	C	From Leg	3.000	0.000	22.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
Side Arm Mount [SO 701-1] (E)	C	From Leg	1.500	0.000	22.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
M Yagi (E-Per Photo)	A	From Leg	3.000	0.000	71.000	No Ice	0.058	0.058	0.010
			0.000			1/2" Ice	0.095	0.095	0.011
			0.000			1" Ice	0.140	0.140	0.013
4' x 2" Pipe Mount (E-For Yagi/Photo)	A	From Leg	3.000	0.000	71.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
Side Arm Mount [SO 701-1] (E)	A	From Leg	1.500	0.000	71.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
M GPS (3"x7") (E-Per Photo)	C	From Leg	4.000	0.000	130.000	No Ice	0.175	0.175	0.008
			0.000			1/2" Ice	0.234	0.234	0.010
			4.000			1" Ice	0.301	0.301	0.013
M									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz	Lateral						
KP4F-23A (E)	B	Grid	From Leg	4.000	0.000	149.000	4.000	No Ice	12.570	0.070	
				0.000				1/2" Ice	13.090	0.140	
				7.000				1" Ice	16.130	0.200	
M											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy

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Comb. No.	Description
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

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 - 123.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-25.699	-1.743	0.313
			Max. Mx	5	-9.555	-297.131	-5.076
			Max. My	8	-10.279	-2.697	-287.905
			Max. Vy	5	16.885	-297.131	-5.076
			Max. Vx	8	16.454	-2.697	-287.905
			Max. Torque	7			1.361
L2	123.75 - 110	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-29.361	-2.134	-0.645
			Max. Mx	5	-11.716	-537.436	-9.175
			Max. My	8	-12.481	-3.935	-521.831
			Max. Vy	5	18.109	-537.436	-9.175
			Max. Vx	8	17.583	-3.935	-521.831
			Max. Torque	13			-1.352
L3	110 - 83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-253.800	-877.740	-388.198
			Max. Mx	5	-238.773	-922.358	-35.842
			Max. My	8	-16.698	-5.712	-869.416
			Max. Vy	5	19.918	-896.244	-15.706
			Max. Vx	8	19.221	-5.712	-869.416
			Max. Torque	6			5.096
		Guy A	Bottom Tension	6	171.325		
			Top Tension	6	171.805		
			Top Cable Vert	6	167.314		
			Top Cable Norm	6	38.497		
			Top Cable Tan	6	6.383		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
L4	83 - 67.5	Pole	Bot Cable Vert	6	-166.740					
			Bot Cable Norm	6	38.765					
			Bot Cable Tan	6	6.868					
			Guy B	Bottom Tension	12	90.930				
			Top Tension	12	91.288					
			Top Cable Vert	12	83.031					
			Top Cable Norm	12	37.939					
			Top Cable Tan	12	0.129					
			Bot Cable Vert	12	-82.459					
			Bot Cable Norm	12	38.325					
			Bot Cable Tan	12	0.129					
			Guy C	Bottom Tension	4	102.149				
		Top Tension	4	102.503						
		Top Cable Vert	4	93.327						
		Top Cable Norm	4	42.344						
		Top Cable Tan	4	1.950						
		Bot Cable Vert	4	-92.776						
		Bot Cable Norm	4	42.690						
		Bot Cable Tan	4	2.183						
		Max Tension	1	0.000	0.000	0.000				
		Max. Compression	6	-256.364	-1019.001	-445.193				
		Max. Mx	6	-256.364	-1019.001	-445.193				
		Max. My	2	-132.988	-2.936	682.138				
		Max. Vy	6	12.875	-890.525	-393.328				
		Max. Vx	2	12.687	-4.946	631.605				
		Max. Torque	6			5.089				
		L5	67.5 - 49.9	Pole	Max Tension	1	0.000	0.000	0.000	
Max. Compression	6				-262.238	-1228.473	-533.443			
Max. Mx	6				-262.238	-1228.473	-533.443			
Max. My	8				-168.571	-22.461	-575.084			
Max. Vy	6				11.087	-1069.583	-465.844			
Max. Vx	2				11.833	-10.603	489.652			
Max. Torque	6						4.338			
L6	49.9 - 33				Pole	Max Tension	1	0.000	0.000	0.000
						Max. Compression	6	-265.849	-1327.489	-577.840
						Max. Mx	6	-265.849	-1327.489	-577.840
						Max. My	6	-265.849	-1327.489	-577.840
						Max. Vy	12	8.646	299.900	130.902
		Max. Vx	2	10.836		-19.131	289.284			
		Max. Torque	6				4.328			
		L7	33 - 32.65	Pole		Max Tension	1	0.000	0.000	0.000
						Max. Compression	6	-268.240	-1358.298	-592.201
						Max. Mx	6	-268.240	-1358.298	-592.201
						Max. My	6	-268.240	-1358.298	-592.201
						Max. Vy	12	7.334	164.294	33.006
Max. Vx	2				9.405	-26.847	117.636			
Max. Torque	6						4.324			
L8	32.65 - 0				Pole	Max Tension	1	0.000	0.000	0.000
						Max. Compression	6	-275.923	-1498.297	-668.167
						Max. Mx	6	-275.923	-1498.297	-668.167
						Max. My	6	-275.923	-1498.297	-668.167
						Max. Vy	12	7.319	161.733	31.130
		Max. Vx	2	9.369		-27.003	114.351			
		Max. Torque	6				4.323			

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Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K	
Mast	Max. Vert	6	275.925	-1.968	-1.490	
	Max. H _x	3	133.245	1.747	-5.180	
	Max. H _z	8	186.169	-0.351	2.107	
	Max. M _x	21	-40.751	-0.397	0.703	
	Max. M _z	6	1498.297	-1.968	-1.490	
	Max. Torsion	6	4.002	-1.968	-1.490	
	Min. Vert	32	106.180	0.026	-0.113	
	Min. H _x	11	201.181	-4.583	-2.372	
	Min. H _z	4	205.033	-0.475	-6.012	
	Min. M _x	6	-668.167	-1.968	-1.490	
	Min. M _z	9	-272.822	-1.024	1.230	
	Min. Torsion	9	-1.894	-1.024	1.230	
	Guy C @ 42 ft Elev 0 ft Azimuth 211 deg	Max. Vert	9	-0.550	-0.055	0.089
		Max. H _x	10	-0.699	-0.000	0.221
Max. H _z		4	-92.776	-23.676	35.590	
Min. Vert		4	-92.776	-23.676	35.590	
Min. H _x		5	-89.121	-23.992	33.414	
Min. H _z		9	-0.550	-0.055	0.089	
Guy B @ 42.5 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-0.298	-0.005	-0.001	
	Max. H _x	11	-82.235	33.540	18.328	
	Max. H _z	12	-82.459	33.255	19.051	
	Min. Vert	12	-82.459	33.255	19.051	
	Min. H _x	6	-0.298	-0.005	-0.001	
	Min. H _z	7	-0.452	0.126	-0.052	
Guy A @ 20.5 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-4.194	-0.003	-0.661	
	Max. H _x	10	-127.796	1.757	-28.967	
	Max. H _z	2	-4.194	-0.003	-0.661	
	Min. Vert	6	-166.740	-6.868	-38.765	
	Min. H _x	6	-166.740	-6.868	-38.765	
	Min. H _z	6	-166.740	-6.868	-38.765	

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	111.461	0.345	0.861	66.856	-40.060	-0.012
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	154.585	0.333	5.911	138.259	-39.270	-0.255
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	133.245	-1.747	5.180	145.299	-67.855	-0.377
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	205.033	0.475	6.012	450.396	-770.426	-0.105
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	260.759	0.956	4.298	640.782	-1297.955	-1.901
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	275.925	1.968	1.490	668.167	-1498.297	-4.002
1.2 Dead+1.6 Wind 150 deg -	225.653	3.850	-0.871	448.298	-1096.137	-3.391

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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+1.0 Guy						
1.2 Dead+1.6 Wind 180 deg -	186.169	0.351	-2.107	284.882	-56.481	0.097
No Ice+1.0 Guy						
1.2 Dead+1.6 Wind 210 deg -	227.677	1.024	-1.230	387.573	272.822	1.894
No Ice+1.0 Guy						
1.2 Dead+1.6 Wind 240 deg -	237.761	3.428	0.506	398.145	238.390	1.557
No Ice+1.0 Guy						
1.2 Dead+1.6 Wind 270 deg -	201.181	4.583	2.372	275.870	104.079	0.438
No Ice+1.0 Guy						
1.2 Dead+1.6 Wind 300 deg -	153.341	4.551	3.503	115.195	-34.003	-0.164
No Ice+1.0 Guy						
1.2 Dead+1.6 Wind 330 deg -	157.278	2.789	5.340	136.947	-43.680	-0.043
No Ice+1.0 Guy						
1.2 Dead+1.0 Ice+1.0	127.154	0.282	0.616	54.895	-33.263	-0.006
Temp+Guy						
1.2 Dead+1.0 Wind 0 deg+1.0	131.849	0.463	2.113	82.752	-35.225	-0.136
Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 30 deg+1.0	129.323	-0.286	1.792	76.983	-39.436	0.053
Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 60 deg+1.0	134.116	-0.365	1.609	100.027	-98.845	0.150
Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 90 deg+1.0	143.950	0.130	1.256	130.237	-195.007	0.096
Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 120	149.333	0.799	0.738	144.645	-261.407	-0.171
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 150	135.844	0.496	-0.209	83.032	-147.008	-0.351
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 180	126.111	0.397	-0.703	40.751	-49.727	-0.215
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 210	130.253	0.792	-0.398	51.613	-20.410	-0.019
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 240	133.794	1.518	0.138	57.963	-28.156	0.214
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 270	134.322	1.715	0.770	62.053	-34.901	0.261
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 300	135.434	1.477	1.369	67.335	-30.366	-0.018
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 330	133.921	1.092	1.885	78.164	-36.646	-0.192
deg+1.0 Ice+1.0 Temp+1.0 Guy						
Dead+Wind 0 deg -	115.447	0.347	1.747	82.164	-40.086	-0.050
Service+Guy						
Dead+Wind 30 deg -	112.669	-0.054	1.613	79.798	-40.687	-0.132
Service+Guy						
Dead+Wind 60 deg -	109.760	-0.336	1.306	75.186	-42.483	-0.100
Service+Guy						
Dead+Wind 90 deg -	108.646	-0.353	0.916	72.757	-53.749	-0.080
Service+Guy						
Dead+Wind 120 deg -	109.185	-0.111	0.537	72.963	-71.464	-0.100
Service+Guy						
Dead+Wind 150 deg -	106.180	-0.026	0.113	55.476	-44.211	-0.065
Service+Guy						
Dead+Wind 180 deg -	107.455	0.345	-0.014	52.046	-40.498	0.024
Service+Guy						
Dead+Wind 210 deg -	110.190	0.736	0.107	53.977	-39.609	0.128
Service+Guy						
Dead+Wind 240 deg -	113.330	1.044	0.419	59.250	-39.600	0.096
Service+Guy						
Dead+Wind 270 deg -	115.967	1.167	0.857	66.788	-39.778	0.037
Service+Guy						
Dead+Wind 300 deg -	117.615	1.059	1.310	74.147	-38.439	0.036
Service+Guy						

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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+Wind 330 deg - Service+Guy	117.184	0.755	1.640	80.413	-39.882	0.029

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	0.000	-35.514	0.000	-0.000	35.514	0.000	0.000%
2	-0.049	-42.490	-29.815	0.049	42.490	29.815	0.000%
3	14.876	-42.431	-25.751	-14.876	42.431	25.751	0.000%
4	25.816	-42.358	-14.856	-25.817	42.358	14.856	0.001%
5	29.878	-42.294	0.053	-29.878	42.294	-0.053	0.000%
6	27.086	-42.238	15.668	-27.086	42.238	-15.668	0.000%
7	14.981	-42.205	25.895	-14.981	42.205	-25.895	0.000%
8	0.069	-42.219	29.823	-0.069	42.219	-29.823	0.000%
9	-14.818	-42.278	25.785	14.818	42.278	-25.785	0.000%
10	-25.800	-42.350	14.869	25.800	42.350	-14.869	0.000%
11	-29.878	-42.415	-0.032	29.878	42.415	0.032	0.000%
12	-27.052	-42.471	-15.649	27.052	42.471	15.649	0.000%
13	-14.963	-42.504	-25.905	14.963	42.504	25.905	0.000%
14	0.000	-74.086	0.000	0.000	74.086	0.000	0.000%
15	-0.207	-74.154	-6.573	0.207	74.154	6.572	0.000%
16	3.415	-74.126	-5.915	-3.415	74.126	5.915	0.000%
17	5.705	-74.091	-3.262	-5.705	74.091	3.262	0.000%
18	6.634	-74.058	0.013	-6.634	74.058	-0.013	0.000%
19	6.473	-74.030	3.739	-6.473	74.030	-3.739	0.000%
20	3.284	-74.012	5.666	-3.284	74.012	-5.666	0.000%
21	0.030	-74.018	6.506	-0.030	74.018	-6.506	0.000%
22	-3.412	-74.046	5.917	3.412	74.046	-5.917	0.000%
23	-5.849	-74.082	3.140	5.849	74.082	-3.140	0.000%
24	-6.706	-74.114	-0.130	6.706	74.114	0.130	0.000%
25	-6.540	-74.143	-3.778	6.540	74.143	3.778	0.000%
26	-3.422	-74.160	-5.670	3.422	74.160	5.670	0.000%
27	-0.009	-35.538	-5.444	0.009	35.538	5.444	0.000%
28	2.716	-35.528	-4.702	-2.716	35.528	4.702	0.000%
29	4.714	-35.514	-2.713	-4.714	35.514	2.713	0.000%
30	5.456	-35.503	0.010	-5.456	35.503	-0.010	0.000%
31	4.946	-35.492	2.861	-4.946	35.492	-2.861	0.001%
32	2.735	-35.486	4.728	-2.735	35.486	-4.728	0.000%
33	0.013	-35.489	5.446	-0.013	35.489	-5.446	0.000%
34	-2.706	-35.500	4.708	2.706	35.500	-4.708	0.000%
35	-4.711	-35.513	2.715	4.711	35.513	-2.715	0.000%
36	-5.456	-35.525	-0.006	5.456	35.525	0.006	0.000%
37	-4.940	-35.535	-2.857	4.940	35.535	2.857	0.000%
38	-2.732	-35.541	-4.730	2.732	35.541	4.730	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.00027942
2	Yes	5	0.0000001	0.00082451
3	Yes	6	0.0000001	0.00047660
4	Yes	8	0.0000001	0.00057774

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5	Yes	10	0.00002083	0.00061856
6	Yes	11	0.00000001	0.00045506
7	Yes	9	0.00000001	0.00065924
8	Yes	7	0.00000001	0.00014322
9	Yes	8	0.00000001	0.00023864
10	Yes	8	0.00000001	0.00025342
11	Yes	7	0.00000001	0.00022883
12	Yes	6	0.00000001	0.00016114
13	Yes	6	0.00000001	0.00019173
14	Yes	5	0.00000001	0.00043934
15	Yes	5	0.00000001	0.00089244
16	Yes	6	0.00000001	0.00018250
17	Yes	8	0.00000001	0.00016851
18	Yes	8	0.00000001	0.00048496
19	Yes	8	0.00000001	0.00058960
20	Yes	8	0.00000001	0.00029813
21	Yes	7	0.00000001	0.00009819
22	Yes	6	0.00000001	0.00089438
23	Yes	6	0.00000001	0.00071051
24	Yes	6	0.00000001	0.00014301
25	Yes	6	0.00000001	0.00010908
26	Yes	5	0.00000001	0.00094059
27	Yes	4	0.00000001	0.00071064
28	Yes	4	0.00000001	0.00095476
29	Yes	5	0.00000001	0.00006432
30	Yes	6	0.00000001	0.00017451
31	Yes	6	0.00000001	0.00058241
32	Yes	5	0.00000001	0.00022682
33	Yes	5	0.00000001	0.00003829
34	Yes	4	0.00000001	0.00080336
35	Yes	4	0.00000001	0.00083294
36	Yes	4	0.00000001	0.00069460
37	Yes	4	0.00000001	0.00071179
38	Yes	4	0.00000001	0.00064616

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.75	13.534	31	1.121	0.006
L2	123.75 - 110	7.877	31	0.852	0.002
L3	110 - 83	5.671	31	0.674	0.001
L4	83 - 67.5	2.724	31	0.383	0.001
L5	71 - 49.9	1.898	31	0.282	0.000
L6	49.9 - 33	0.894	31	0.173	0.000
L7	37 - 32.65	0.491	31	0.127	0.000
L8	32.65 - 0	0.379	31	0.120	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	KP4F-23A	31	13.534	1.121	0.006	16414
149.000	7770.00 w/ Mount Pipe	31	13.303	1.112	0.006	16414

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.000	(2) RRUS 11	31	13.071	1.103	0.006	16414
142.000	AIR 21 B2A/B4P	31	11.693	1.046	0.005	10259
130.000	BXA-80080/4CF w/ Mount Pipe	31	9.088	0.924	0.003	4103
91.100	Guy	31	3.437	0.462	0.001	5501
71.000	FMO	31	1.898	0.282	0.000	9353
22.000	MYA-43012N	31	0.182	0.093	0.000	15803

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.75	135.671	6	8.878	0.133
L2	123.75 - 110	89.921	6	7.379	0.086
L3	110 - 83	70.122	6	6.382	0.061
L4	83 - 67.5	38.987	6	4.663	0.022
L5	71 - 49.9	28.358	6	3.819	0.010
L6	49.9 - 33	14.019	6	2.617	0.004
L7	37 - 32.65	7.821	6	1.986	0.003
L8	32.65 - 0	6.056	6	1.882	0.003

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	KP4F-23A	6	135.671	8.878	0.166	3180
149.000	7770.00 w/ Mount Pipe	6	133.839	8.826	0.164	3180
148.000	(2) RRUS 11	6	132.007	8.775	0.162	3180
142.000	AIR 21 B2A/B4P	6	121.078	8.465	0.149	1987
130.000	BXA-80080/4CF w/ Mount Pipe	6	100.062	7.786	0.123	791
91.100	Guy	6	47.281	5.189	0.046	877
71.000	FMO	6	28.358	3.819	0.020	987
22.000	MYA-43012N	6	2.937	1.466	0.005	1018

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_u K	Required S.F.	Actual S.F.
L3	91.100 (A)	1 5/8 BS	38.880	324.001	171.805	194.400	1.000	1.132 ✓
	91.100 (B) (10)	1 3/8 BS	27.840	232.000	91.288	139.200	1.000	1.525 ✓
	91.100 (C) (9)	1 3/8 BS	27.840	232.000	102.503	139.200	1.000	1.358 ✓

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Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _n K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 123.75 (1)	TP19.625x15.53x0.25	26.250	0.000	0.0	15.597	-9.338	1149.650	0.008
L2	123.75 - 110 (2)	TP21.77x19.625x0.482	13.750	0.000	0.0	33.011	-11.419	1428.460	0.008
L3	110 - 83 (3)	TP26.134x21.77x0.668	27.000	0.000	0.0	54.817	-253.800	2645.100	0.096
L4	83 - 67.5 (4)	TP28.64x26.134x0.545	15.500	0.000	0.0	45.770	-254.430	2191.230	0.116
L5	67.5 - 49.9 (5)	TP30.898x27.449x0.585	21.100	0.000	0.0	51.653	-257.957	2481.720	0.104
L6	49.9 - 33 (6)	TP33.66x30.898x0.644	16.900	0.000	0.0	62.716	-262.247	3058.500	0.086
L7	33 - 32.65 (7)	TP32.966x32.256x0.71	4.350	0.000	0.0	73.583	-268.132	3588.870	0.075
L8	32.65 - 0 (8)	TP38.29x32.966x0.438	32.650	0.000	0.0	45.824	-268.248	3377.690	0.079

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	150 - 123.75 (1)	TP19.625x15.53x0.25	300.793	451.558	0.666	0.000	451.558	0.000
L2	123.75 - 110 (2)	TP21.77x19.625x0.482	548.281	610.622	0.898	0.000	610.622	0.000
L3	110 - 83 (3)	TP26.134x21.77x0.668	959.750	1347.800	0.712	0.000	1347.800	0.000
L4	83 - 67.5 (4)	TP28.64x26.134x0.545	1000.442	1149.183	0.871	0.000	1149.183	0.000
L5	67.5 - 49.9 (5)	TP30.898x27.449x0.585	1154.242	1368.992	0.843	0.000	1368.992	0.000
L6	49.9 - 33 (6)	TP33.66x30.898x0.644	1339.267	1860.467	0.720	0.000	1860.467	0.000
L7	33 - 32.65 (7)	TP32.966x32.256x0.71	1478.992	2321.692	0.637	0.000	2321.692	0.000
L8	32.65 - 0 (8)	TP38.29x32.966x0.438	1481.758	2226.133	0.666	0.000	2226.133	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _u K	Ratio $\frac{V_u}{\phi V_u}$	Actual T _u kip-ft	φT _u kip-ft	Ratio $\frac{T_u}{\phi T_u}$
L1	150 - 123.75 (1)	TP19.625x15.53x0.25	17.095	574.823	0.030	0.969	915.617	0.001
L2	123.75 - 110 (2)	TP21.77x19.625x0.482	19.008	714.231	0.027	0.846	1238.150	0.001
L3	110 - 83 (3)	TP26.134x21.77x0.668	14.093	1322.550	0.011	5.090	2732.917	0.002
L4	83 - 67.5 (4)	TP28.64x26.134x0.545	13.485	1095.610	0.012	5.087	2330.183	0.002
L5	67.5 - 49.9 (5)	TP30.898x27.449x0.585	12.023	1248.510	0.010	4.338	2775.892	0.002
L6	49.9 - 33 (6)	TP33.66x30.898x0.644	9.154	1538.130	0.006	4.328	3772.450	0.001
L7	33 - 32.65 (7)	TP32.966x32.256x0.71	7.982	1797.620	0.004	4.324	4707.667	0.001
L8	32.65 - 0 (8)	TP38.29x32.966x0.438	7.740	1702.660	0.005	4.323	4513.900	0.001

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Section No.	Elevation ft	Size	Actual V_n K	ϕV_n K	Ratio $\frac{V_n}{\phi V_n}$	Actual T_n kip-ft	ϕT_n kip-ft	Ratio $\frac{T_n}{\phi T_n}$
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Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_n ϕP_n	Ratio M_{ax} ϕM_{ax}	Ratio M_{tw} ϕM_{tw}	Ratio V_n ϕV_n	Ratio T_n ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 123.75 (1)	0.008	0.666	0.000	0.030	0.001	0.675	1.000	4.8.2 ✓
L2	123.75 - 110 (2)	0.008	0.898	0.000	0.027	0.001	0.907	1.000	4.8.2 ✓
L3	110 - 83 (3)	0.096	0.712	0.000	0.011	0.002	0.808	1.000	4.8.2 ✓
L4	83 - 67.5 (4)	0.116	0.871	0.000	0.012	0.002	0.987	1.000	4.8.2 ✓
L5	67.5 - 49.9 (5)	0.104	0.843	0.000	0.010	0.002	0.947	1.000	4.8.2 ✓
L6	49.9 - 33 (6)	0.086	0.720	0.000	0.006	0.001	0.806	1.000	4.8.2 ✓
L7	33 - 32.65 (7)	0.075	0.637	0.000	0.004	0.001	0.712	1.000	4.8.2 ✓
L8	32.65 - 0 (8)	0.079	0.666	0.000	0.005	0.001	0.745	1.000	4.8.2 ✓

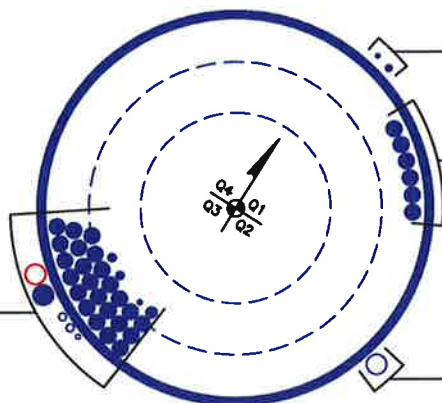
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 123.75	Pole	TP19.625x15.53x0.25	1	-9.338	1149.650	67.5	Pass
L2	123.75 - 110	Pole	TP21.77x19.625x0.482	2	-11.419	1428.460	90.7	Pass
L3	110 - 83	Pole	TP26.134x21.77x0.668	3	-253.800	2645.100	80.8	Pass
		Guy A@91.1	1 5/8	11	171.805	194.400	88.4	Pass
		Guy B@91.1	1 3/8	10	91.288	139.200	65.6	Pass
		Guy C@91.1	1 3/8	9	102.503	139.200	73.6	Pass
L4	83 - 67.5	Pole	TP28.64x26.134x0.545	4	-254.430	2191.230	98.7	Pass
L5	67.5 - 49.9	Pole	TP30.898x27.449x0.585	5	-257.957	2481.720	94.7	Pass
L6	49.9 - 33	Pole	TP33.66x30.898x0.644	6	-262.247	3058.500	80.6	Pass
L7	33 - 32.65	Pole	TP32.966x32.256x0.71	7	-268.132	3588.870	71.2	Pass
L8	32.65 - 0	Pole	TP38.29x32.966x0.438	8	-268.248	3377.690	74.5	Pass
							Summary	
							Pole (L4)	98.7 Pass
							Guy A (L3)	88.4 Pass
							Guy B (L3)	65.6 Pass
							Guy C (L3)	73.6 Pass
							RATING =	98.7 Pass

APPENDIX B
BASE LEVEL DRAWING

(PROPOSED)
 (1) 1-5/8" TO 130 FT LEVEL
 (INSTALLED--TO BE REMOVED)
 (6) 1-1/4" TO 130 FT LEVEL
 (INSTALLED)
 (6) 1-1/4" TO 130 FT LEVEL
 (1) 1-5/8" TO 130 FT LEVEL

(RESERVED)
 (1) 3/8" TO 149 FT LEVEL
 (2) 5/8" TO 149 FT LEVEL
 (INSTALLED)
 (1) 3/8" TO 148 FT LEVEL
 (2) 5/8" TO 148 FT LEVEL
 (1) 7/8" TO 149 FT LEVEL
 (12) 1-1/4" TO 149 FT LEVEL



(INSTALLED)
 (1) 5/16" TO 22 FT LEVEL
 (1) 1/2" TO 71 FT LEVEL

(INSTALLED--TO BE RELOCATED TO 142 FT LEVEL)
 (6) 1-1/4" TO 160 FT LEVEL

(RESERVED)
 (1) 1-5/8" TO 142 FT LEVEL

BUSINESS UNIT: 841289

APPENDIX C
ADDITIONAL CALCULATIONS

PROJECT	93496.007.01 - OLD SAYBROOK, CT		
SUBJECT	Bridge Stiffeners @ 110'		
DATE	10-18-16	PAGE	1 OF 1



0

Determine Load to Bridge Stiffener:

M =	548.3 k-ft	From Risa Model	Stiffener Width	6.500 in
I =	3417.9 in^4	From AutoCAD Sketch	Stiffener Thickness	1.250 in
ybar =	14.630 in		Stiffener Height	166.000 in
S =	233.63 in^3	I/y	Fy	65 ksi
fc =	28.16 ksi	M/S	Fu	80 ksi
Ag =	8.125 in^2		Step Width	3.00 in
Pu =	228.82 k	fc x Ag	Bolt Circle	25.50 in
			Number of Bolts	12
			Bolt Size	1
			Gap @ Flange	6.00 in

Determine ΦP_n (Allowable Axial Load):

$P_n = F_{cr} \times A_g$		Eqn E3-1, AISC 13th Edition, Section E3.
K =	0.99	
l =	16.000 in	Unsupported Length
$I_y =$	1.058 in^4	Local Weak Axis Moment of Inertia
$A_g =$	8.125 in^2	Stiffener Cross Sectional Area
$r_y =$.361 in	Radius of Gyration (Weak Axis)
$kl/r =$	43.90	
$4.71 \times \sqrt{E/F_y} =$	99.49	Limit State Equation for Flexural Buckling - AISC 13th Edition, Section E3.
$F_e =$	148.53 ksi	Eqn E3-4 - AISC 13th Edition, Section E3.
		Elastic Critical Buckling Stress
$F_{cr} =$	54.12 ksi	Eqn E3-2, AISC 13th Edition, Section E3
		Critical Buckling Stress
$P_n =$	439.73 k	Nominal Compressive Strength
$\Phi P_n =$	395.76 k	Allowable Compressive Strength
		Unity% = 57.8 %

Tension Rupture Check:

AISC 13th Edition, Chapter J4.1

Hole Size	1.25	
U =	1	Shear Lag Factor - Table D3.1 and TIA222-G
$A_g =$	8.125 in^2	Gross Area
$A_n =$	6.563 in^2	Net Area
$A_e =$	6.563 in^2	Effective Area
$\Phi R_n =$	475.31 k	Tension Yielding: Eqn J4-1
$\Phi R_n =$	393.75 k	Tension Rupture: Eqn J4-2
$\Phi R_n(\text{Equiv}) =$	393.75 ksi	
		Unity% 58.11 %

Moment to Existing Bolt Group:

$S_{BG} =$	268.07 in^3	# Bolts Acting	3
ft =	24.54 ksi		
$A_b =$.785 in^2		
T =	57.83 k		
Arm =	25.50 ksi		
$M_{EQ} =$	122.9 k-ft		

<-----Insert into Flange Spreadsheet

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: 841289
 Site Name: OLD SAYBROOK, CT
 App #: 364451, Rev. 1

Reactions		
Mu	122.9	ft-kips
Axial, Pu:	11.419	kips
Shear, Vu:	19.008	kips
Elevation:	110	feet

Bolt Threads:	
X-Excluded	
$\phi V_n = \phi(0.55 \cdot A_b \cdot F_u)$	
$\phi = 0.75, \phi \cdot V_n$ (kips):	
38.88	

Pole Manufacturer:	Other
--------------------	-------

If No stiffeners, Criteria:	TIA G
-----------------------------	-------

<-Only Applicable to Unstiffened Cases

Bolt Data		
Qty:	12	
Diameter (in.):	1	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	75	<-- Disregard
N/A:	55	<-- Disregard
Circle (in.):	25.5	

Flange Bolt Results

Bolt Tension Capacity, $\phi \cdot T_n, B1$: 54.54 kips
 Adjusted $\phi \cdot T_n$ (due to $V_u = V_u / Q_t$), B: 54.49 kips
 Max Bolt directly applied Tu: 18.33 Kips
 Min. PL "tc" for B cap. w/o Pry: 1.000 in
 Min PL "treq" for actual T w/ Pry: 0.430 in
 Min PL "t1" for actual T w/o Pry: 0.580 in
 T allowable w/o Prying: 54.54 kips $\alpha < 0$ case
 Prying Force, q: 0.00 kips
 Total Bolt Tension = Tu + q: 18.33 kips
 Non-Prying Bolt Stress Ratio, Tu/B: 33.6% Pass

Rigid	
$\phi \cdot T_n$	
$\phi T_n [(1 - (V_u / \phi V_n)^2)^{0.5}]$	

Plate Data		
Diam:	28	in
Thick, t:	1	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	5.83	in

Exterior Flange Plate Results

Flexural Check
 Compression Side Plate Stress: 16.9 ksi
 Allowable Plate Stress: 32.4 ksi
 Compression Plate Stress Ratio: 52.1% Pass
 No Prying
 Tension Side Stress Ratio, $(treq/t)^2$: 18.5% Pass

Rigid	
TIA G	
$\phi \cdot F_y$	
Comp. Y.L. Length:	
13.28	

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:	0.25	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	18	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

n/a

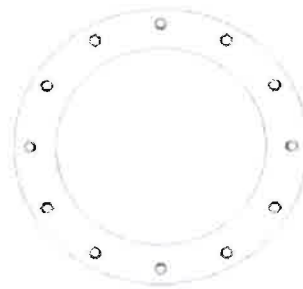
Stiffener Results

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

Pole Data		
Diam:	21.77	in
Thick:	0.22	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

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#:	841289	
Site Name:	OLD SAYBROOK	
App #:	364451, Rev. 1	
Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, F_y :	75	ksi
Strength, F_u :	100	ksi
Bolt Circle:	44	in
Anchor Spacing:	6	in

Base Reactions		
TIA Revision:	G	
Factored Moment, M_u :	1641	ft-kips
Factored Axial, P_u :	276	kips
Factored Shear, V_u :	6	kips

Anchor Rod Results

TIA G --> Max Rod ($C_u + V_u/\eta$): 259.8 Kips
 Axial Design Strength, $\Phi F_u A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 99.9% **Pass**

Plate Data		
W=Side:	49	in
Thick:	2.5	in
Grade:	50	ksi
Clip Distance:	6	in

Base Plate Results

Base Plate Stress: 28.0 ksi
 PL Design Bending Strength, ΦF_y : 45.0 ksi
 Base Plate Stress Ratio: 62.3% **Pass**

Flexural Check

PL Ref. Data	
Yield Line (in):	31.00
Max PL Length:	31.01

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

N/A - Unstiffened

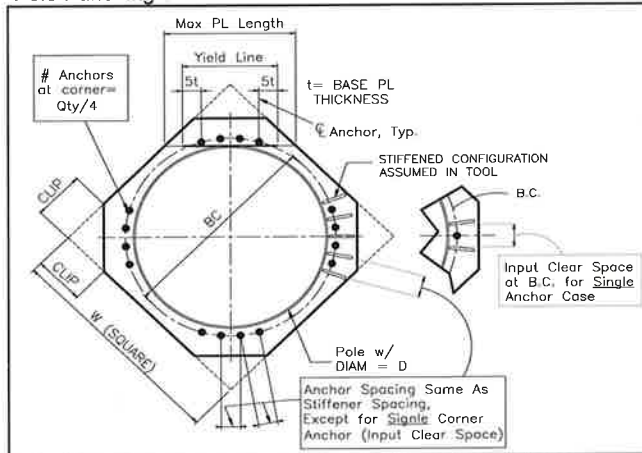
Stiffener Results

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

Pole Data		
Diam:	38.29	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round



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

PROJECT	841289 - OLD SAYBROOK,CT		
SUBJECT	Foundation Analysis		
DATE	10-18-16	PAGE	1 OF 1

Monopole Pad & Pier Foundation Analysis

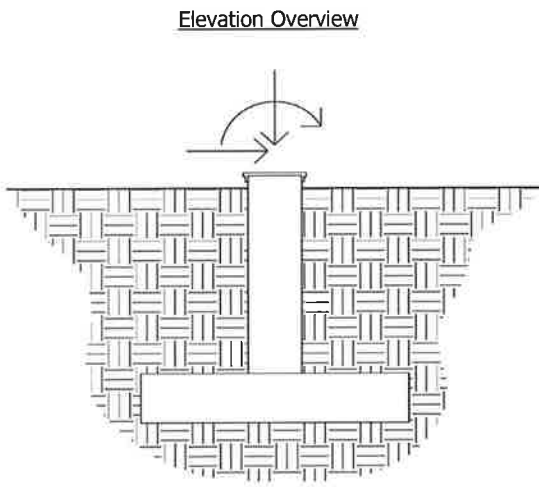
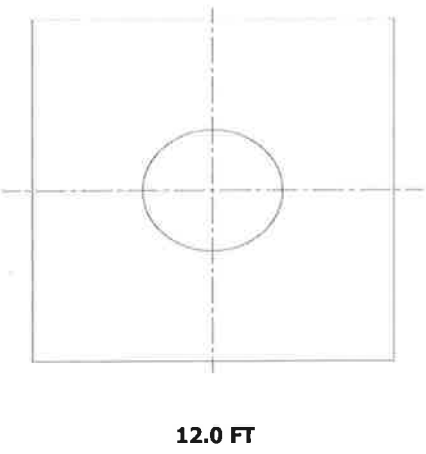
Rev. Type: **G**

Design Loads:

	Input factored loads	
Shear:	<u>6.0</u>	kips
Moment:	<u>1,641.0</u>	ft-kips
Tower Height:	<u>150.0</u>	ft
Tower Weight:	<u>276.0</u>	kips

Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	<u>38.29</u>	in
Bearing Depth:	<u>8.7</u>	ft
Pad Width:	<u>12.0</u>	ft
Neglected Depth:	<u>3.3</u>	ft
Thickness:	<u>2.5</u>	ft
Pier Diameter:	<u>8.0</u>	ft
Pier Height Above Grade:	<u>0.3</u>	ft
BP Dist. Above Pier:	<u>0.0</u>	in
Clear Cover:	<u>3.0</u>	in
Pier Rebar Size:	<u>11</u>	
Pier Rebar Quantity:	<u>44</u>	
	<u>4</u>	
Pier Tie Size:	<u>7</u>	
Tie Quantity:	<u>60000</u>	psi
Rebar Yield Strength:	<u>3000</u>	psi
Concrete Strength:	<u>0.131502</u>	kcf
Concrete Unit Weight:		



Soil Data:

	Allowable Values	
Soil Unit Weight:	<u>0.081</u>	kcf
Ult. Bearing Capacity:	<u>30.000</u>	ksf
Angle of Friction:	<u>42.000</u>	deg
Cohesion:	<u>0.000</u>	ksf
Passive Pressure:	<u>0.000</u>	ksf
Base Friction:	<u>0.400</u>	

** Notes:

Minimum steel has been assumed for Pad.

Summary of Results

Req'd Pier Diam.	OK
Overturning	75.0%
Shear Capacity	4.0%
Bearing	45.2%
Pad Shear - 2-way	20.1%
Pad Moment Capacity	21.1%
Pier Moment Capacity	13.4%

PROJECT	841289 - OLD SAYBROOK, CT
SUBJECT	Guy Anchor Analysis
DATE	10-18-16



B+T GRP
 1717 S. Boulder, Suite 300
 Tulsa, OK 74119
 (918) 587-4630

Deadman Guy Anchor Analysis Rev G

Design Loads:

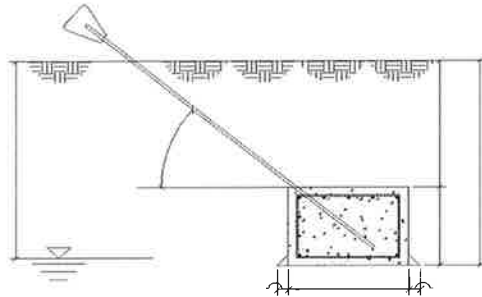
Uplift (Pv) = 167.00 k
 Shear (Ph) = 39.00 k

Rev. G Reduction Factors:

Soil Friction = 0.75
 Soil Lateral = 0.75
 Soil Uplift = 0.75
 Dead Weight = 0.90

Anchor Dims / Properties:

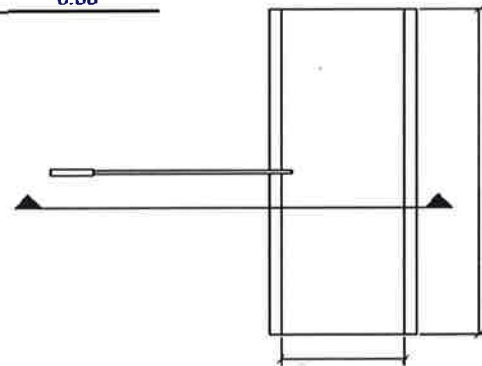
Anchor Radius = 20.50 ft
 Deadman Block Width (W) = 5.00 ft
 Deadman Block Thickness (H) = 2.00 ft
 Deadman Block Length (L) = 37.00 ft
 Depth to BOC (D) = 8.00 ft
 Concrete Density = 0.09 kcf
 Concrete Strength = 4000 psi



Soil Data:

Frost Depth = 3.33 ft
 Ultimate Soil Friction = 0.00 ksf

	Unit Wt. (pcf)	Angle (deg)	Cohesion (kcf)
Berm: 3'	<u>0.12</u>	<u>0.00</u>	<u>0.00</u>
Layer 1: 2.7'	<u>0.11</u>	<u>0.00</u>	<u>0.00</u>
Layer 2: 3.33'	<u>0.05</u>	<u>0.00</u>	<u>0.00</u>
Layer 3: 4'	<u>0.05</u>	<u>31.00</u>	<u>0.00</u>
Layer 4: 8'	<u>0.07</u>	<u>42.00</u>	<u>0.00</u>



Steel Reinforcement:

Bar Size = 9
 No. of Bars in Top of Block = 13
 No. of Bars in Front of Block = 4
 Rebar Tensile Strength = 60000 psi
 Clear Cover = 3.00 in
 Strength Reduction Factor = 0.90

Anchor Shaft:

Shaft Diameter = 1.75 in
 Shaft Grade = 50 ksi

<u>Summary of Results</u>	
Uplift	72.4%
Lateral	22.9%
Anchor Rod	88.9%
Rebar	OK

PROJECT	841289 - OLD SAYBROOK, CT
SUBJECT	Guy Anchor Analysis
DATE	10-18-16



Deadman Guy Anchor Analysis Rev G

Design Loads:

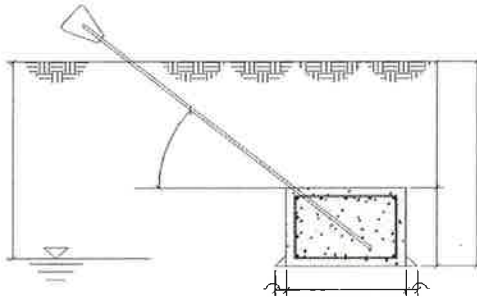
Uplift (Pv)	=	<u>93.00</u>	k
Shear (Ph)	=	<u>43.00</u>	k

Rev. G Reduction Factors:

Soil Friction	=	<u>0.75</u>
Soil Lateral	=	<u>0.75</u>
Soil Uplift	=	<u>0.75</u>
Dead Weight	=	<u>0.90</u>

Anchor Dims / Properties:

Anchor Radius	=	<u>42.00</u>	ft
Deadman Block Width (W)	=	<u>5.00</u>	ft
Deadman Block Thickness (H)	=	<u>2.00</u>	ft
Deadman Block Length (L)	=	<u>30.00</u>	ft
Depth to BOC (D)	=	<u>8.00</u>	ft
Concrete Density	=	<u>0.09</u>	kcf
Concrete Strength	=	<u>4000</u>	psi

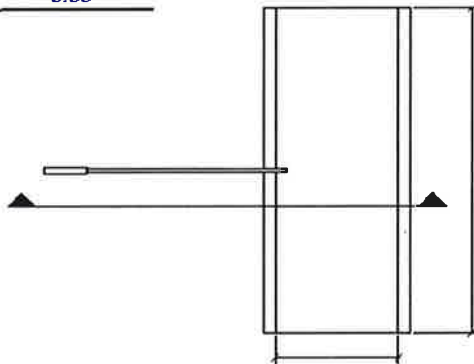


Soil Data:

Frost Depth	=	<u>3.33</u>	ft
Ultimate Soil Friction	=	<u>0.00</u>	ksf

Unit Wt. (pcf) Angle (deg) Cohesion (kcf)

Layer 1: 2.7'	<u>0.11</u>	<u>0.00</u>	<u>0.00</u>
Layer 2: 3.33'	<u>0.05</u>	<u>0.00</u>	<u>0.00</u>
Layer 3: 4'	<u>0.05</u>	<u>31.00</u>	<u>0.00</u>
Layer 4: 8'	<u>0.07</u>	<u>42.00</u>	<u>0.00</u>



Steel Reinforcement:

Bar Size	=	<u>9</u>
No. of Bars in Top of Block	=	<u>13</u>
No. of Bars in Front of Block	=	<u>4</u>
Rebar Tensile Strength	=	<u>60000</u> psi
Clear Cover	=	<u>3.00</u> in
Strength Reduction Factor	=	<u>0.90</u>

Anchor Shaft:

Shaft Diameter	=	<u>1.75</u> in
Shaft Grade	=	<u>50</u> ksi

Summary of Results	
Uplift	69.4%
Lateral	32.7%
Anchor Rod	53.0%
Rebar	OK



[ASCE 7 Windspeed](#)
[ASCE 7 Ground Snow Load](#)
[Related Resources](#)
[Sponsors](#)
[About ATC](#)
[Contact](#)

Search Results

Query Date: Tue Oct 18 2016

Latitude: 41.3099

Longitude: -72.3975

**ASCE 7-10 Windspeeds
(3-sec peak gust in mph*):**

Risk Category I: 121

Risk Category II: 132

Risk Category III-IV: 142

MRI 10-Year:** 79

MRI 25-Year:** 89

MRI 50-Year:** 98

MRI 100-Year:** 107

ASCE 7-05 Windspeed:

117 (3-sec peak gust in mph)

ASCE 7-93 Windspeed:

84 (fastest mile in mph)



Map data ©2016 Google, INEGI

*Miles per hour

**Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.

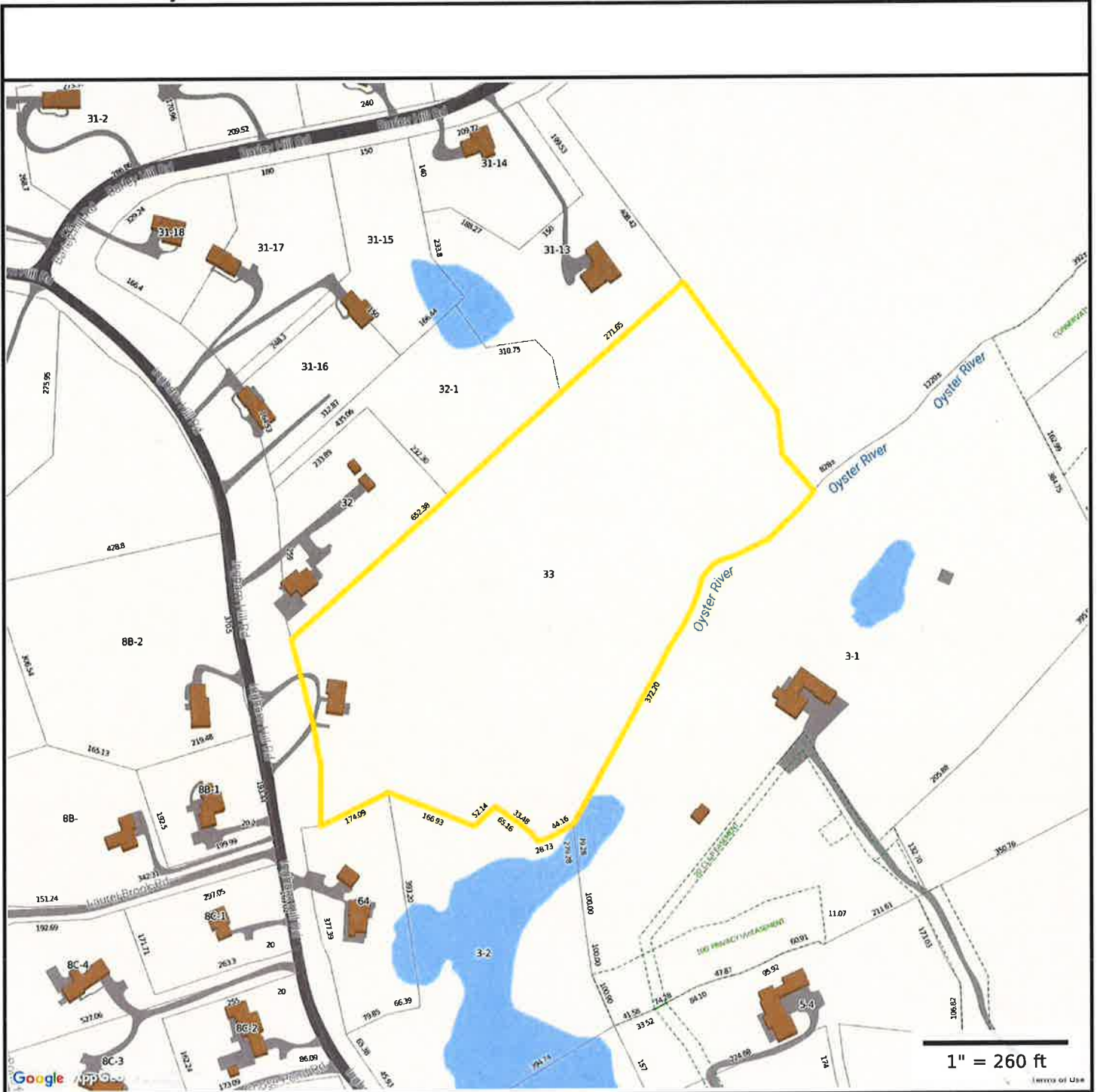


[Print your results](#)

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ATTACHMENT 4



Property Information

Property ID 051/033-0000
Location 170 INGHAM HILL RD
Owner LORENZ CAROL J & ROBERT A



**MAP FOR REFERENCE ONLY
 NOT A LEGAL DOCUMENT**

Town of Old Saybrook, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Properties updated 01/24/2017

170 INGHAM HILL RD

Location 170 INGHAM HILL RD

MBLU 051/ 033/ / /

Acct# 00559800

Owner LORENZ CAROL J & ROBERT
A

Assessment \$164,300

Appraisal \$285,500

PID 3322

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$145,700	\$139,800	\$285,500

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$102,000	\$62,300	\$164,300

Owner of Record

Owner LORENZ CAROL J & ROBERT A
Co-Owner
Address P O BOX 351
CENTER OSSIPEE N H, NH 03814-0351

Sale Price \$0
Certificate
Book & Page 0211/0890
Sale Date 03/15/1984

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
LORENZ CAROL J & ROBERT A	\$0		0211/0890	03/15/1984

Building Information

Building 1 : Section 1

Year Built: 1959
Living Area: 1,383

Building Attributes	
Field	Description
Style	Ranch
Model	Residential
Stories:	1 Story

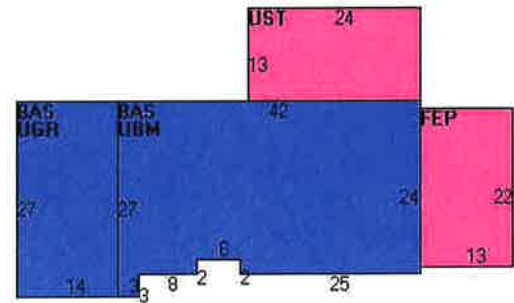
Occupancy	1
Exterior Wall 1	Wood Shingle
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asph/F GlS/Cmp
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Vinyl/Asphalt
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	3 Bedrooms
Total Bthrms:	1
Total Half Baths:	1
Total Rooms:	6 Rooms

Building Photo



(<http://images.vgsi.com/photos/OldSaybrookCTPhotos/\00\01>)

Building Layout



Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
BAS	First Floor	1,383	1,383	
FEP	Porch, Enclosed, Framed	286	0	
UBM	Basement, Unfinished	1,005	0	
UGR	Garage, Unfinished	378	0	
UST	Utility, Storage, Unfinished	312	0	
		3,364	1,383	

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
FPL1	FIREPLACE 1 ST	1 UNITS	\$2,000	1

Land

Land Use

Land Line Valuation

Use Code 1010
Description Single Family
Zone AA-1

Size (Acres) 11.8
Depth 0
Assessed Value \$62,300
Appraised Value \$139,800

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2014	\$145,700	\$139,800	\$285,500
2013	\$145,700	\$139,800	\$285,500
2012	\$228,600	\$148,600	\$377,200

Assessment			
Valuation Year	Improvements	Land	Total
2014	\$102,000	\$62,300	\$164,300
2013	\$102,000	\$62,300	\$164,300
2012	\$160,000	\$68,400	\$228,400