Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

March 27, 2017

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

Re: **Notice of Exempt Modification – Facility Modification**
151 Young Street, East Hampton, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the top of an existing 140-foot tower at 151 Young Street in East Hampton, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 2010 (Petition No. 956). Cellco now intends to replace all of its existing antennas with six (6) model LPA-80063-6CF, 850 MHz antennas; three (3) model SBNHH-1D65B, 1900 MHz antennas; and three (3) model SBNHH-1D65B, 700/2100 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") and two (2) HYBRIFLEX™ fiber optic antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

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 Michael Maniscalco, Town Manager of the Town of East Hampton; Jeremy DeCarli, East Hampton Planning and Zoning Official; Kevin and Kim Kiely, the Property owners; 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).

1. The proposed modifications will not result in an increase in the height of the existing structure. Cellco's replacement antennas and RRHs will be installed on its existing platform at the 140-foot level on the 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 replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in Attachment 2.

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

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the East Hampton 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:
Michael Maniscalco, East Hampton Town Manager
Jeremy DeCarli, East Hampton Planning and Zoning Official
Kevin and Kim Kiely
Crown Castle
Tim Parks

ATTACHMENT 1

Vertically Polarized, Log Periodic 63° / 14.5 dBd

LPA-80063/6CF ___

When ordering, replace "___" with connector type.

Mechanical specifications

	Length	1800 mm	70.87	in
	Width	380 mm	14.96	in
	Depth	332 mm	13.07	in
4)	Weight	12.25 kg	27	lbs
	Wind Area			
	Front	0.684 m^2	7.39	ft^2
	Side	0.598 m^2	6.45	ft^2
	Rated Wind Velocity (Safety factor 2.0)			
		>235 km/hr	>146	mph
	Wind load @ 100 mph (161 km/hr)			
	Front	993 N	223.3	lbs
	Side	872 N	196.1	lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting & Downtilting:

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in).

Mounting bracket kit #21699999

Downtilt bracket kit #21699999
The downtilt bracket kit includes the mounting bracket kit.

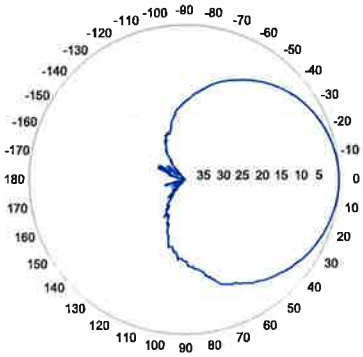
Electrical specifications

	Frequency Range	806-960 MHz
	Impedance	50Ω
3)	Connector	NE, E-DIN
1)	VSWR	≤1.4:1
	Polarization	Vertical
1)	Gain	14.5 dBd
2)	Power Rating	500 W
1)	Half Power Angle	
	H-Plane	63°
	E-Plane	10°
1)	Electrical Downtilt	0°
1)	Null Fill	10%
	Lightning Protection	Direct Ground

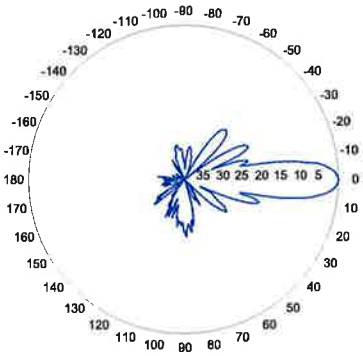
1) Typical Values
2) Power Rating limited by connector only.
3) NE indicates an elongated N Connector.
E-DIN indicates an elongated DIN Connector.
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern[1)]



Horizontal



Vertical

Featuring upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back Ratio.

CF Denotes a Center-Fed Connector.

806-960 MHz

Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Every Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

Amphenol Antel, Inc.
The Antenna Technology Company

1300 Capital Drive Rockford, IL 61109 Toll-Free (888) 417-9562 Tel. (815) 399-0001
Fax. (815) 399-0156 Email: antel@antelinc.com www.antelinc.com

Revision Date: 12/1/05

Product Specifications

COMMSCOPE®

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

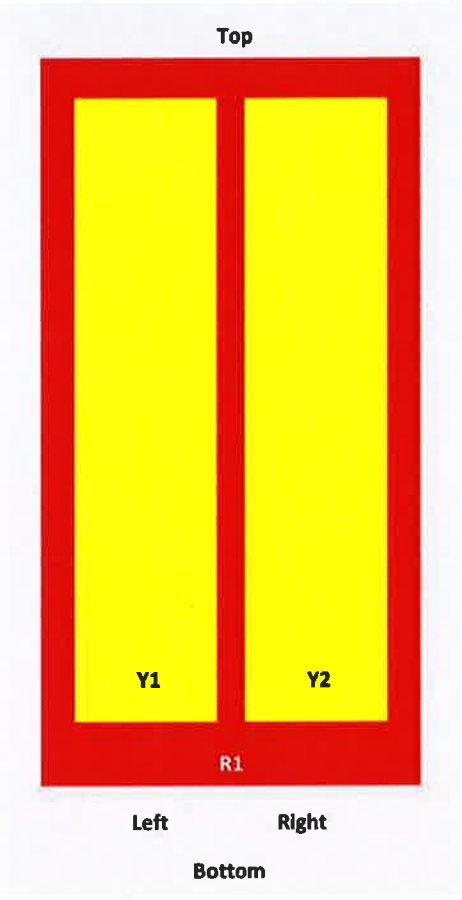
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Array Layout

Product Specifications

SBNHH-1D65B

SBNHH 65



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

Product Specifications

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

Product Specifications

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.

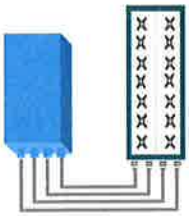
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

Alcatel·Lucent

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.) **Volume in L** **Weight in kg (lb) (w/o mounting HW)**	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range **DC power consumption**	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) IP65 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

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.

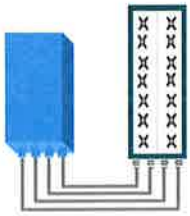
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

Alcatel·Lucent

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) **RX Diversity scheme**	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) **Volume (w/ solar shield) in L** **Weight (w/ solar shield) in kg (lb)**	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range **DC power consumption**	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 580W typical @100% RF load
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) IP65 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

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.

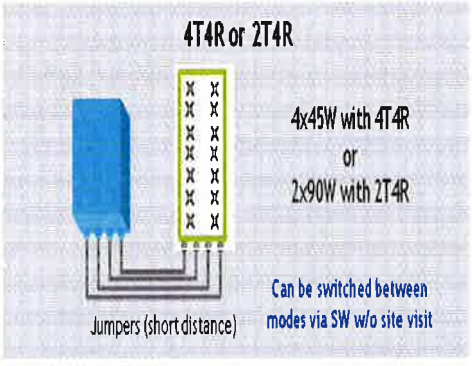
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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 **Receiver Sensivity (FRC A1-3)**	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.) **Volume in Liters** **Weight in kg (lb) (w/o mounting HW)**	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) 35.5 (with solar shield) 29.7 (without solar shield) 25.8kg (56.8lb) (with solar shield)
DC voltage range **DC power consumption**	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure 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

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

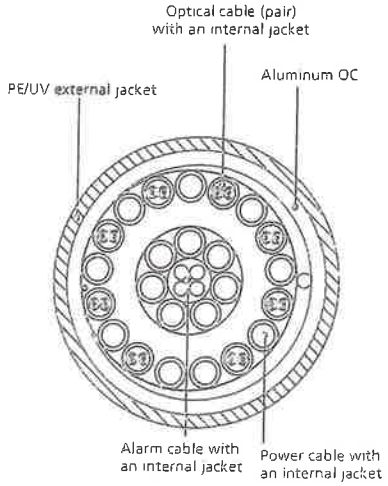


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: East Hampton 2								
Tower Height: 140'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	2	565	120	880	0.0313	0.5867	0.53%	
*AT&T	2	875	120	1900	0.0484	1.0000	0.48%	
*AT&T	1	283	120	880	0.0078	0.5867	0.13%	
*AT&T	4	525	120	1900	0.0581	1.0000	0.58%	
*AT&T	1	1615	120	734	0.0447	0.4893	0.91%	
Verizon	**1**	**5000**	**140**	**0.0917**	**1970**	**1.0000**	**9.17%**	
Verizon	**9**	**392**	**140**	**0.0647**	**869**	**0.5793**	**11.17%**	
Verizon	**1**	**7400**	**140**	**0.1358**	**2145**	**1.0000**	**13.58%**	
Verizon	**1**	**2200**	**140**	**0.0404**	**746**	**0.4973**	**8.12%**	
								44.7%
* Source: Siting Council								

ATTACHMENT 3

Date: **February 20, 2017**

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

Velocitel, Inc., d.b.a. FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
(919) 755-1012

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	214409
	Carrier Site Name:	East Hampton 2 CT
Crown Castle Designation:	**Crown Castle BU Number:**	845994
	Crown Castle Site Name:	EAST HAMPTON - YOUNG STREET
	Crown Castle JDE Job Number:	424260
	Crown Castle Work Order Number:	1362462
	Crown Castle Application Number:	378414 Rev. 2
Engineering Firm Designation:	**FDH Velocitel Project Number:**	17PXRY1400
Site Data:	**151 YOUNG STREET, EAST HAMPTON, Middlesex County, CT**	
	Latitude *41° 32' 38.12"*, Longitude *-72° 30' 22.44"*	
	140 Foot - Monopole Tower	

Dear Charles McGuirt,

FDH Velocitel 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 1002257, in accordance with application 378414, revision 2.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 127 mph converted to a nominal 3-second gust wind speed of 98 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.000 and Risk Category II were used in this analysis.

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

We at *FDH Velocitel* 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:

Anne E. Vago, EI
Project Engineer

Reviewed by:

Dennis D. Abel, PE
Director
CT PE License No. 23247

STATE OF CONNECTICUT
DENNIS D. ABEL
No. 23247
LICENSED
PROFESSIONAL ENGINEER
02-20-2017

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by PENNSUMMIT TUBULAR, LLC in September of 2005. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 98 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.

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
139.0	140.0	3	alcatel lucent	B13 RRH 4X30	2	1-5/8	-
		3	alcatel lucent	B25 RRH4X30			
		3	alcatel lucent	B66A RRH4X45			
		6	antel	LPA-80063-6CF-EDIN w/ Mount Pipe			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		2	raycap	RXXDC-3315-PF-48			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
139.0	140.0	3	antel	BXA-70063/6CF w/ Mount Pipe	6	1-5/8	2
		6	decibel	DB846F65ZAXY w/ Mount Pipe			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
	139.0	1	crown mounts	T-Arm Mount [TA 602-3]	12	1-5/8	1
118.0	120.0	3	ericsson	RRUS-11	12 2 1	1-5/8 7/8 3/8	1
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
	118.0	1	crown mounts	Sector Mount [SM 901-3]			

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140	140	9	-	48"x12"x3" Panel Antenna	-	-
130	130	9	-	48"x12"x3" Panel Antenna	-	-
119.5	119.5	6	Powerwave	7770 Panel	-	-
		6	Powerwave	LGP13519		
		6	Powerwave	LGP21401		
110	110	9	-	48"x12"x3" Panel Antenna	-	-
100	100	9	-	48"x12"x3" Panel Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Velocitel	6109303	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PennSummit Tubular, LLC	4301090	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PennSummit Tubular, LLC	5236444	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	GPD Group	4301091	CCISITES

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) Information for the 20' tower extension taken from previous analysis by GPD Group (DocID 4301091)

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Velocitel 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	140 - 120	Pole	TP24x24x0.375	1	-4.76	876.73	24.8	Pass
L2	120 - 80	Pole	TP36.379x28.163x0.2188	2	-11.43	1540.02	48.4	Pass
L3	80 - 39.5	Pole	TP44.261x35.0171x0.3125	3	-19.49	2862.94	44.0	Pass
L4	39.5 - 0	Pole	TP51.75x42.5062x0.375	4	-32.22	4122.27	43.5	Pass
							Summary	
						Pole (L2)	48.4	Pass
						Rating =	48.4	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	38.1	Pass
1	Base Plate	0	33.8	Pass
1	Base Foundation	0	27.1	Pass
1	Base Foundation Soil Interaction	0	26.3	Pass
1	Flange Bolts	120	38.5	Pass
1	Flange Plates	120	16.4	Pass

Structure Rating (max from all components) =	**48.4%**

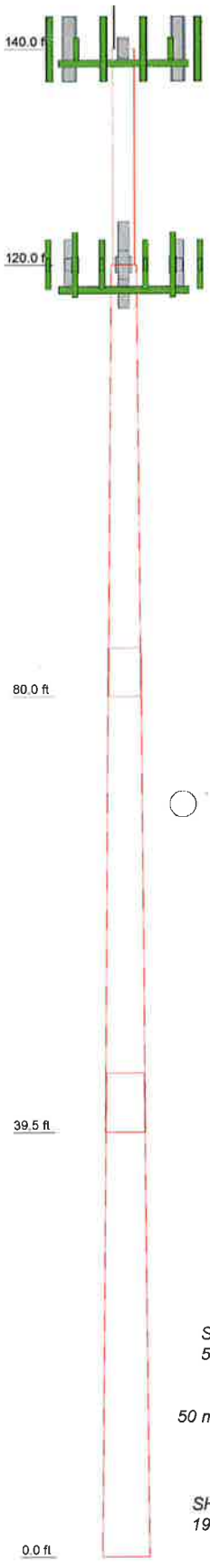
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



Section	1	2	3	4
Length (ft)	20.00	40.00	45.00	45.00
Number of Sides	1	18	18	18
Thickness (in)	0.3750	0.2188	0.3125	0.3750
Socket Length (ft)		4.50	5.50	
Top Dia (in)	24.0000	28.1630	35.0171	42.5062
Bot Dia (in)	24.0000	36.3790	44.2610	51.7500
Grade	A53-B-35		A572-65	
Weight (K)	1.9	3.0	6.0	8.5

Total Weight: 19.4

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	140	(2) RXXDC-3315-PF-48	139
B13 RRH 4X30	139	T-Arm Mount [TA 602-3]	139
B13 RRH 4X30	139	RRUS-11	118
B13 RRH 4X30	139	RRUS-11	118
B25 RRH4X30	139	RRUS-11	118
B25 RRH4X30	139	(2) 7770.00 w/ Mount Pipe	118
B25 RRH4X30	139	(2) 7770.00 w/ Mount Pipe	118
B66A RRH4X45	139	(2) 7770.00 w/ Mount Pipe	118
B66A RRH4X45	139	(2) LGP21401	118
B66A RRH4X45	139	(2) LGP21401	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	(2) LGP21401	118
		P65-17-XLH-RR w/ Mount Pipe	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	AM-X-CD-16-65-00T-RET w/ Mount Pipe	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	AM-X-CD-16-65-00T-RET w/ Mount Pipe	118
(2) SBNHH-1D65B w/ Mount Pipe	139	DC6-48-60-18-8F	118
(2) SBNHH-1D65B w/ Mount Pipe	139	Sector Mount [SM 901-3]	118
(2) SBNHH-1D65B w/ Mount Pipe	139		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 98 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 48.4%

ALL REACTIONS ARE FACTORED

AXIAL 53 K
SHEAR 5 K
MOMENT 522 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 0.7500 in ICE
AXIAL 32 K
SHEAR 19 K
MOMENT 1863 kip-ft
TORQUE 2 kip-ft
REACTIONS - 98 mph WIND

FDH Velocitel
Tower Analysis
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: (919) 755-1012
FAX: (919) 755-1031

Job: 845994_East Hampton - Young Stre
Project: 17PXRY1400
Client: Crown Castle | Drawn by: AVago | App'd:
Code: TIA-222-G | Date: 02/20/17 | Scale: N
Path: C:\Users\avago\Desktop\Analysis\ReportedTowers\845994_East Hampton.eri | Dwg No.

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.
- ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- Basic wind speed of 98 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.00-120.00	20.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-35 (35 ksi)

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
L2	120.00-80.00	40.00	4.50	18	28.1630	36.3790	0.2188	0.8752	A572-65 (65 ksi)
L3	80.00-39.50	45.00	5.50	18	35.0171	44.2610	0.3125	1.2500	A572-65 (65 ksi)
L4	39.50-0.00	45.00		18	42.5062	51.7500	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L2	28.5975	19.4064	1914.5501	9.9202	14.3068	133.8209	3831.6194	9.7051	4.5716	20.894
	36.9402	25.1122	4148.4338	12.8369	18.4805	224.4759	8302.3262	12.5585	6.0176	27.503
L3	36.4959	34.4226	5237.8797	12.3201	17.7887	294.4501	10482.6516	17.2146	5.6130	17.962
	44.9438	43.5914	10637.1814	15.6017	22.4846	473.0877	21288.3594	21.7999	7.2399	23.168
L4	44.3091	50.1466	11245.7084	14.9566	21.5931	520.7999	22506.2142	25.0781	6.8211	18.19
	52.5483	61.1491	20390.6535	18.2381	26.2890	775.6344	40808.1376	30.5804	8.4480	22.528

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 140.00-120.00				1	1	1			
L2 120.00-80.00				1	1	1			
L3 80.00-39.50				1	1	1			
L4 39.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	B	Surface Ar (CaAa)	140.00 - 8.00	1	1	0.400 0.400	0.3750		0.22
***									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
LDF7-50A(1-5/8)	A	No	Inside Pole	139.00 - 8.00	12	No Ice 1/2" Ice	0.00 0.00	0.82 0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	A	No	Inside Pole	139.00 - 8.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
***								
2" Conduit	C	No	Inside Pole	118.00 - 8.00	1	No Ice	0.00	2.40
						1/2" Ice	0.00	2.40
						1" Ice	0.00	2.40
LDF2-50A(3/8)	C	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF5-50A(7/8)	C	No	Inside Pole	118.00 - 0.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF7-50A(1-5/8)	C	No	Inside Pole	118.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-120.00	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	120.00-80.00	A	0.000	0.000	0.000	0.000	0.50
		B	0.000	0.000	1.500	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.49
L3	80.00-39.50	A	0.000	0.000	0.000	0.000	0.50
		B	0.000	0.000	1.519	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.53
L4	39.50-0.00	A	0.000	0.000	0.000	0.000	0.39
		B	0.000	0.000	1.181	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.49

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-120.00	A	1.720	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	7.632	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.00
L2	120.00-80.00	A	1.675	0.000	0.000	0.000	0.000	0.50
		B		0.000	0.000	14.899	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.49
L3	80.00-39.50	A	1.591	0.000	0.000	0.000	0.000	0.50
		B		0.000	0.000	15.086	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.53
L4	39.50-0.00	A	1.421	0.000	0.000	0.000	0.000	0.39
		B		0.000	0.000	11.206	0.000	0.13
		C		0.000	0.000	0.000	0.000	0.49

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	140.00-120.00	0.0533	0.0173	0.4144	0.1346
L2	120.00-80.00	0.0526	0.0171	0.4274	0.1389
L3	80.00-39.50	0.0526	0.0171	0.4431	0.1440
L4	39.50-0.00	0.0413	0.0134	0.3476	0.1129

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	120.00 - 140.00	1.0000	1.0000
L2	1	Safety Line 3/8	80.00 - 120.00	1.0000	1.0000
L3	1	Safety Line 3/8	39.50 - 80.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod	C	From Leg	0.00	0.0000	140.00	No Ice		0.25	0.25	0.03
			0.00			1/2" Ice		0.66	0.66	0.03
			2.00			1" Ice		0.97	0.97	0.04
***										
B13 RRH 4X30	A	From Leg	4.00	0.0000	139.00	No Ice		2.06	1.32	0.06
			0.00			1/2" Ice		2.24	1.48	0.07
			1.00			1" Ice		2.43	1.64	0.09
B13 RRH 4X30	B	From Leg	4.00	0.0000	139.00	No Ice		2.06	1.32	0.06
			0.00			1/2" Ice		2.24	1.48	0.07
			1.00			1" Ice		2.43	1.64	0.09
B13 RRH 4X30	C	From Leg	4.00	0.0000	139.00	No Ice		2.06	1.32	0.06
			0.00			1/2" Ice		2.24	1.48	0.07
			1.00			1" Ice		2.43	1.64	0.09
B25 RRH4X30	A	From Leg	4.00	0.0000	139.00	No Ice		2.20	1.74	0.06
			0.00			1/2" Ice		2.39	1.92	0.08
			1.00			1" Ice		2.59	2.11	0.10
B25 RRH4X30	B	From Leg	4.00	0.0000	139.00	No Ice		2.20	1.74	0.06
			0.00			1/2" Ice		2.39	1.92	0.08
			1.00			1" Ice		2.59	2.11	0.10
B25 RRH4X30	C	From Leg	4.00	0.0000	139.00	No Ice		2.20	1.74	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.39	1.92	0.08
			1.00			1" Ice	2.59	2.11	0.10
B66A RRH4X45	A	From Leg	4.00	0.0000	139.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			1.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	B	From Leg	4.00	0.0000	139.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			1.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	C	From Leg	4.00	0.0000	139.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			1.00			1" Ice	3.01	2.00	0.10
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	A	From Leg	4.00	0.0000	139.00	No Ice	9.97	10.25	0.05
			0.00			1/2" Ice	10.54	11.42	0.15
			1.00			1" Ice	11.08	12.31	0.25
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00	No Ice	9.97	10.25	0.05
			0.00			1/2" Ice	10.54	11.42	0.15
			1.00			1" Ice	11.08	12.31	0.25
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00	No Ice	9.97	10.25	0.05
			0.00			1/2" Ice	10.54	11.42	0.15
			1.00			1" Ice	11.08	12.31	0.25
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	0.0000	139.00	No Ice	8.29	7.00	0.08
			0.00			1/2" Ice	8.85	8.19	0.14
			1.00			1" Ice	9.37	9.08	0.22
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00	No Ice	8.29	7.00	0.08
			0.00			1/2" Ice	8.85	8.19	0.14
			1.00			1" Ice	9.37	9.08	0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00	No Ice	8.29	7.00	0.08
			0.00			1/2" Ice	8.85	8.19	0.14
			1.00			1" Ice	9.37	9.08	0.22
(2) RXXDC-3315-PF-48	A	From Leg	4.00	0.0000	139.00	No Ice	3.36	2.19	0.03
			0.00			1/2" Ice	3.60	2.39	0.06
			1.00			1" Ice	3.84	2.61	0.09
T-Arm Mount [TA 602-3]	C	None		0.0000	139.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
***									
RRUS-11	A	From Leg	4.00	0.0000	118.00	No Ice	2.52	1.07	0.05
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.09
RRUS-11	B	From Leg	4.00	0.0000	118.00	No Ice	2.52	1.07	0.05
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.09
RRUS-11	C	From Leg	4.00	0.0000	118.00	No Ice	2.52	1.07	0.05
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.09
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
(2) LGP21401	A	From Leg	4.00	0.0000	118.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			2.00			1" Ice	1.38	0.54	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21401	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	8.94 10.45 11.99	0.09 0.18 0.27
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.30 7.48 8.37	0.07 0.14 0.21
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.30 7.48 8.37	0.07 0.14 0.21
DC6-48-60-18-8F	A	From Leg	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
Sector Mount [SM 901-3]	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	12.90 17.16 21.42	12.90 17.16 21.42	1.26 1.43 1.61
***									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice

Comb. No.	Description
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 120	Pole	Max Tension	2	0.00	-0.00	-0.00
			Max. Compression	26	-11.90	-0.04	1.53
			Max. Mx	20	-4.77	128.20	0.32
			Max. My	2	-4.76	0.03	130.44
			Max. Vy	20	-7.04	128.20	0.32
			Max. Vx	2	-7.13	0.03	130.44
			Max. Torque	8			0.90
L2	120 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.44	-0.26	2.75
			Max. Mx	20	-11.44	525.72	0.64
			Max. My	2	-11.42	0.01	532.76
			Max. Vy	20	-12.53	525.72	0.64
			Max. Vx	2	-12.66	0.01	532.76
			Max. Torque	8			1.62
L3	80 - 39.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.02	-0.53	2.62
			Max. Mx	8	-19.49	-1079.90	0.67
			Max. My	2	-19.49	-0.00	1091.89
			Max. Vy	8	15.49	-1079.90	0.67
			Max. Vx	2	-15.61	-0.00	1091.89
			Max. Torque	8			1.61
L4	39.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.92	-0.81	2.47
			Max. Mx	8	-32.22	-1845.63	0.67
			Max. My	2	-32.22	-0.02	1863.13
			Max. Vy	8	18.52	-1845.63	0.67
			Max. Vx	2	-18.64	-0.02	1863.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	8			1.61

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	52.92	0.00	-0.00
	Max. H_x	20	32.23	18.50	0.00
	Max. H_z	3	24.17	0.00	18.62
	Max. M_x	2	1863.13	0.00	18.62
	Max. M_z	8	1845.63	-18.50	0.00
	Max. Torsion	8	1.61	-18.50	0.00
	Min. Vert	3	24.17	0.00	18.62
	Min. H_x	8	32.23	-18.50	0.00
	Min. H_z	15	24.17	0.00	-18.62
	Min. M_x	14	-1861.79	0.00	-18.62
	Min. M_z	20	-1845.59	18.50	0.00
	Min. Torsion	20	-1.61	18.50	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	26.86	0.00	-0.00	-0.53	-0.02	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	32.23	-0.00	-18.62	-1863.13	-0.02	-0.01
0.9 Dead+1.6 Wind 0 deg - No Ice	24.17	-0.00	-18.62	-1849.70	-0.02	-0.01
1.2 Dead+1.6 Wind 30 deg - No Ice	32.23	9.25	-16.13	-1613.80	-922.83	-0.82
0.9 Dead+1.6 Wind 30 deg - No Ice	24.17	9.25	-16.13	-1602.09	-916.24	-0.81
1.2 Dead+1.6 Wind 60 deg - No Ice	32.23	16.02	-9.31	-932.01	-1598.39	-1.40
0.9 Dead+1.6 Wind 60 deg - No Ice	24.17	16.02	-9.31	-925.18	-1586.97	-1.39
1.2 Dead+1.6 Wind 90 deg - No Ice	32.23	18.50	-0.00	-0.67	-1845.63	-1.61
0.9 Dead+1.6 Wind 90 deg - No Ice	24.17	18.50	-0.00	-0.49	-1832.42	-1.60
1.2 Dead+1.6 Wind 120 deg - No Ice	32.23	16.02	9.31	930.68	-1598.38	-1.39
0.9 Dead+1.6 Wind 120 deg - No Ice	24.17	16.02	9.31	924.19	-1586.96	-1.38
1.2 Dead+1.6 Wind 150 deg - No Ice	32.23	9.25	16.13	1612.46	-922.83	-0.79
0.9 Dead+1.6 Wind 150 deg - No Ice	24.17	9.25	16.13	1601.10	-916.24	-0.79
1.2 Dead+1.6 Wind 180 deg - No Ice	32.23	-0.00	18.62	1861.79	-0.02	0.01
0.9 Dead+1.6 Wind 180 deg -	24.17	-0.00	18.62	1848.71	-0.02	0.01

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice 1.2 Dead+1.6 Wind 210 deg - No Ice	32.23	-9.25	16.13	1612.46	922.79	0.81
0.9 Dead+1.6 Wind 210 deg - No Ice	24.17	-9.25	16.13	1601.10	916.21	0.81
1.2 Dead+1.6 Wind 240 deg - No Ice	32.23	-16.02	9.31	930.68	1598.34	1.40
0.9 Dead+1.6 Wind 240 deg - No Ice	24.17	-16.02	9.31	924.19	1586.93	1.39
1.2 Dead+1.6 Wind 270 deg - No Ice	32.23	-18.50	-0.00	-0.67	1845.59	1.61
0.9 Dead+1.6 Wind 270 deg - No Ice	24.17	-18.50	-0.00	-0.49	1832.39	1.60
1.2 Dead+1.6 Wind 300 deg - No Ice	32.23	-16.02	-9.31	-932.01	1598.35	1.39
0.9 Dead+1.6 Wind 300 deg - No Ice	24.17	-16.02	-9.31	-925.18	1586.94	1.38
1.2 Dead+1.6 Wind 330 deg - No Ice	32.23	-9.25	-16.13	-1613.80	922.79	0.80
0.9 Dead+1.6 Wind 330 deg - No Ice	24.17	-9.25	-16.13	-1602.09	916.21	0.79
1.2 Dead+1.0 Ice+1.0 Temp	52.92	-0.00	0.00	-2.47	-0.81	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	52.92	-0.00	-5.32	-521.96	-0.85	-0.01
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	52.92	2.65	-4.60	-452.40	-259.20	-0.22
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	52.92	4.59	-2.66	-262.35	-448.32	-0.37
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	52.92	5.30	0.00	-2.73	-517.55	-0.42
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	52.92	4.59	2.66	256.88	-448.32	-0.36
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	52.92	2.65	4.60	446.93	-259.20	-0.20
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	52.92	-0.00	5.32	516.49	-0.85	0.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	52.92	-2.65	4.60	446.93	257.50	0.22
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	52.92	-4.59	2.66	256.88	446.62	0.37
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	52.92	-5.30	0.00	-2.73	515.84	0.42
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	52.92	-4.59	-2.66	-262.35	446.62	0.36
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	52.92	-2.65	-4.60	-452.40	257.50	0.20
Dead+Wind 0 deg - Service	26.86	0.00	-3.90	-389.26	-0.02	-0.00
Dead+Wind 30 deg - Service	26.86	1.94	-3.38	-337.18	-192.59	-0.17
Dead+Wind 60 deg - Service	26.86	3.36	-1.95	-194.91	-333.56	-0.29
Dead+Wind 90 deg - Service	26.86	3.88	0.00	-0.56	-385.16	-0.34
Dead+Wind 120 deg - Service	26.86	3.36	1.95	193.80	-333.56	-0.29
Dead+Wind 150 deg - Service	26.86	1.94	3.38	336.07	-192.59	-0.17
Dead+Wind 180 deg - Service	26.86	0.00	3.90	388.15	-0.02	0.00
Dead+Wind 210 deg - Service	26.86	-1.94	3.38	336.07	192.56	0.17
Dead+Wind 240 deg - Service	26.86	-3.36	1.95	193.80	333.53	0.29
Dead+Wind 270 deg - Service	26.86	-3.88	0.00	-0.56	385.13	0.34
Dead+Wind 300 deg - Service	26.86	-3.36	-1.95	-194.91	333.53	0.29
Dead+Wind 330 deg - Service	26.86	-1.94	-3.38	-337.18	192.56	0.17

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-26.86	0.00	0.00	26.86	0.00	0.000%
2	0.00	-32.23	-18.63	0.00	32.23	18.62	0.005%
3	0.00	-24.17	-18.63	0.00	24.17	18.62	0.004%
4	9.25	-32.23	-16.13	-9.25	32.23	16.13	0.000%
5	9.25	-24.17	-16.13	-9.25	24.17	16.13	0.000%
6	16.02	-32.23	-9.31	-16.02	32.23	9.31	0.000%
7	16.02	-24.17	-9.31	-16.02	24.17	9.31	0.000%
8	18.50	-32.23	0.00	-18.50	32.23	0.00	0.001%
9	18.50	-24.17	0.00	-18.50	24.17	0.00	0.002%
10	16.02	-32.23	9.31	-16.02	32.23	-9.31	0.000%
11	16.02	-24.17	9.31	-16.02	24.17	-9.31	0.000%
12	9.25	-32.23	16.13	-9.25	32.23	-16.13	0.000%
13	9.25	-24.17	16.13	-9.25	24.17	-16.13	0.000%
14	0.00	-32.23	18.63	0.00	32.23	-18.62	0.005%
15	0.00	-24.17	18.63	0.00	24.17	-18.62	0.004%
16	-9.25	-32.23	16.13	9.25	32.23	-16.13	0.000%
17	-9.25	-24.17	16.13	9.25	24.17	-16.13	0.000%
18	-16.02	-32.23	9.31	16.02	32.23	-9.31	0.000%
19	-16.02	-24.17	9.31	16.02	24.17	-9.31	0.000%
20	-18.50	-32.23	0.00	18.50	32.23	0.00	0.001%
21	-18.50	-24.17	0.00	18.50	24.17	0.00	0.002%
22	-16.02	-32.23	-9.31	16.02	32.23	9.31	0.000%
23	-16.02	-24.17	-9.31	16.02	24.17	9.31	0.000%
24	-9.25	-32.23	-16.13	9.25	32.23	16.13	0.000%
25	-9.25	-24.17	-16.13	9.25	24.17	16.13	0.000%
26	0.00	-52.92	0.00	0.00	52.92	-0.00	0.002%
27	0.00	-52.92	-5.32	0.00	52.92	5.32	0.001%
28	2.65	-52.92	-4.61	-2.65	52.92	4.60	0.001%
29	4.59	-52.92	-2.66	-4.59	52.92	2.66	0.001%
30	5.30	-52.92	0.00	-5.30	52.92	-0.00	0.001%
31	4.59	-52.92	2.66	-4.59	52.92	-2.66	0.001%
32	2.65	-52.92	4.61	-2.65	52.92	-4.60	0.001%
33	0.00	-52.92	5.32	0.00	52.92	-5.32	0.001%
34	-2.65	-52.92	4.61	2.65	52.92	-4.60	0.001%
35	-4.59	-52.92	2.66	4.59	52.92	-2.66	0.001%
36	-5.30	-52.92	0.00	5.30	52.92	-0.00	0.001%
37	-4.59	-52.92	-2.66	4.59	52.92	2.66	0.001%
38	-2.65	-52.92	-4.61	2.65	52.92	4.60	0.001%
39	0.00	-26.86	-3.90	-0.00	26.86	3.90	0.003%
40	1.94	-26.86	-3.38	-1.94	26.86	3.38	0.003%
41	3.36	-26.86	-1.95	-3.36	26.86	1.95	0.003%
42	3.88	-26.86	0.00	-3.88	26.86	-0.00	0.003%
43	3.36	-26.86	1.95	-3.36	26.86	-1.95	0.003%
44	1.94	-26.86	3.38	-1.94	26.86	-3.38	0.003%
45	0.00	-26.86	3.90	-0.00	26.86	-3.90	0.003%
46	-1.94	-26.86	3.38	1.94	26.86	-3.38	0.003%
47	-3.36	-26.86	1.95	3.36	26.86	-1.95	0.003%
48	-3.88	-26.86	0.00	3.88	26.86	-0.00	0.003%
49	-3.36	-26.86	-1.95	3.36	26.86	1.95	0.003%
50	-1.94	-26.86	-3.38	1.94	26.86	3.38	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	14	0.00006978	0.00008357
3	Yes	14	0.00004888	0.00007190
4	Yes	18	0.00000001	0.00008202
5	Yes	18	0.00000001	0.00006438
6	Yes	18	0.00000001	0.00009092
7	Yes	18	0.00000001	0.00007157
8	Yes	16	0.00000001	0.00007001
9	Yes	15	0.00000001	0.00012799
10	Yes	18	0.00000001	0.00007950
11	Yes	17	0.00000001	0.00014772
12	Yes	18	0.00000001	0.00008824
13	Yes	18	0.00000001	0.00006945
14	Yes	14	0.00006977	0.00008344
15	Yes	14	0.00004888	0.00007181
16	Yes	18	0.00000001	0.00008835
17	Yes	18	0.00000001	0.00006953
18	Yes	18	0.00000001	0.00007947
19	Yes	17	0.00000001	0.00014766
20	Yes	16	0.00000001	0.00007002
21	Yes	15	0.00000001	0.00012800
22	Yes	18	0.00000001	0.00009087
23	Yes	18	0.00000001	0.00007153
24	Yes	18	0.00000001	0.00008211
25	Yes	18	0.00000001	0.00006444
26	Yes	7	0.00000001	0.00002086
27	Yes	15	0.00000001	0.00010694
28	Yes	15	0.00000001	0.00013850
29	Yes	15	0.00000001	0.00014255
30	Yes	15	0.00000001	0.00010705
31	Yes	15	0.00000001	0.00013359
32	Yes	15	0.00000001	0.00013677
33	Yes	15	0.00000001	0.00010427
34	Yes	15	0.00000001	0.00013637
35	Yes	15	0.00000001	0.00013310
36	Yes	15	0.00000001	0.00010666
37	Yes	15	0.00000001	0.00014188
38	Yes	15	0.00000001	0.00013798
39	Yes	13	0.00000001	0.00004771
40	Yes	13	0.00000001	0.00005209
41	Yes	13	0.00000001	0.00007321
42	Yes	13	0.00000001	0.00005781
43	Yes	13	0.00000001	0.00005125
44	Yes	13	0.00000001	0.00006489
45	Yes	13	0.00000001	0.00004741
46	Yes	13	0.00000001	0.00006517
47	Yes	13	0.00000001	0.00005128
48	Yes	13	0.00000001	0.00005781
49	Yes	13	0.00000001	0.00007305
50	Yes	13	0.00000001	0.00005217

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	140 - 139	TP24x24x0.375	20.00	0.00	0.0	27.8325	-0.25	876.73	0.000
	139 - 138					27.8325	-2.50	876.73	0.003
	138 - 137					27.8325	-2.63	876.73	0.003
	137 - 136					27.8325	-2.75	876.73	0.003
	136 - 135					27.8325	-2.87	876.73	0.003
	135 - 134					27.8325	-3.00	876.73	0.003
	134 - 133					27.8325	-3.13	876.73	0.004
	133 - 132					27.8325	-3.25	876.73	0.004
	132 - 131					27.8325	-3.38	876.73	0.004
	131 - 130					27.8325	-3.50	876.73	0.004
	130 - 129					27.8325	-3.63	876.73	0.004
	129 - 128					27.8325	-3.75	876.73	0.004
	128 - 127					27.8325	-3.88	876.73	0.004
	127 - 126					27.8325	-4.00	876.73	0.005
	126 - 125					27.8325	-4.13	876.73	0.005
	125 - 124					27.8325	-4.26	876.73	0.005
	124 - 123					27.8325	-4.38	876.73	0.005
	123 - 122					27.8325	-4.51	876.73	0.005
	122 - 121					27.8325	-4.64	876.73	0.005
	121 - 120					27.8325	-4.76	876.73	0.005
L2	120 - 118.132	TP36.379x28.163x0.2188	40.00	0.00	0.0	19.6730	-4.96	1353.82	0.004
	118.132 - 116.263					19.9395	-7.50	1365.65	0.005
	116.263 - 114.395					20.2060	-7.71	1377.30	0.006
	114.395 - 112.526					20.4725	-7.92	1388.77	0.006
	112.526 - 110.658					20.7390	-8.14	1400.08	0.006
	110.658 - 108.789					21.0056	-8.36	1411.20	0.006
	108.789 - 106.921					21.2721	-8.58	1422.16	0.006
	106.921 - 105.053					21.5386	-8.80	1432.94	0.006
	105.053 - 103.184					21.8051	-9.03	1443.54	0.006
	103.184 - 101.316					22.0716	-9.25	1453.98	0.006
	101.316 - 99.4474					22.3382	-9.48	1464.23	0.006
	99.4474 - 97.5789					22.6047	-9.72	1474.32	0.007
	97.5789 - 95.7105					22.8712	-9.95	1484.23	0.007
	95.7105 - 93.8421					23.1377	-10.19	1493.96	0.007
	93.8421 - 91.9737					23.4042	-10.43	1503.52	0.007
	91.9737 - 90.1053					23.6708	-10.68	1512.91	0.007
	90.1053 - 88.2368					23.9373	-10.92	1522.12	0.007
	88.2368 - 86.3684					24.2038	-11.17	1531.16	0.007
	86.3684 - 84.5					24.4703	-11.43	1540.02	0.007
	84.5 - 80					25.1122	-5.29	1560.66	0.003
L3	84.5 - 80	TP44.261x35.0171x0.3125	45.00	0.00	0.0	35.3395	-7.36	2533.70	0.003
	80 - 78.0556					35.7357	-13.01	2553.59	0.005
	78.0556 -					36.1319	-13.36	2573.30	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	76.1111								
	76.1111 - 74.1667					36.5281	-13.72	2592.82	0.005
	74.1667 - 72.2222					36.9242	-14.08	2612.15	0.005
	72.2222 - 70.2778					37.3204	-14.44	2631.29	0.005
	70.2778 - 68.3333					37.7166	-14.81	2650.24	0.006
	68.3333 - 66.3889					38.1128	-15.18	2669.00	0.006
	66.3889 - 64.4444					38.5090	-15.55	2687.58	0.006
	64.4444 - 62.5					38.9051	-15.93	2705.96	0.006
	62.5 - 60.5556					39.3013	-16.31	2724.16	0.006
	60.5556 - 58.6111					39.6975	-16.70	2742.17	0.006
	58.6111 - 56.6667					40.0937	-17.08	2759.99	0.006
	56.6667 - 54.7222					40.4899	-17.48	2777.62	0.006
	54.7222 - 52.7778					40.8861	-17.87	2795.06	0.006
	52.7778 - 50.8333					41.2822	-18.27	2812.31	0.006
	50.8333 - 48.8889					41.6784	-18.67	2829.38	0.007
	48.8889 - 46.9444					42.0746	-19.08	2846.26	0.007
	46.9444 - 45					42.4708	-19.49	2862.94	0.007
	45 - 39.5					43.5914	-10.03	2909.12	0.003
L4	45 - 39.5	TP51.75x42.5062x0.375	45.00	0.00	0.0	51.4914	-11.75	3678.77	0.003
	39.5 - 37.4211					51.9997	-22.29	3704.06	0.006
	37.4211 - 35.3421					52.5080	-22.80	3729.12	0.006
	35.3421 - 33.2632					53.0163	-23.32	3753.98	0.006
	33.2632 - 31.1842					53.5246	-23.84	3778.61	0.006
	31.1842 - 29.1053					54.0329	-24.37	3803.03	0.006
	29.1053 - 27.0263					54.5412	-24.90	3827.24	0.007
	27.0263 - 24.9474					55.0495	-25.43	3851.23	0.007
	24.9474 - 22.8684					55.5578	-25.98	3875.00	0.007
	22.8684 - 20.7895					56.0661	-26.52	3898.56	0.007
	20.7895 - 18.7105					56.5744	-27.07	3921.90	0.007
	18.7105 - 16.6316					57.0827	-27.63	3945.02	0.007
	16.6316 - 14.5526					57.5910	-28.18	3967.93	0.007
	14.5526 - 12.4737					58.0993	-28.75	3990.63	0.007
	12.4737 - 10.3947					58.6076	-29.32	4013.11	0.007
	10.3947 -					59.1159	-29.89	4035.37	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	8.31579 8.31579 - 6.23684					59.6242	-30.47	4057.42	0.008
	6.23684 - 4.15789					60.1325	-31.05	4079.25	0.008
	4.15789 - 2.07895					60.6408	-31.63	4100.87	0.008
	2.07895 - 0					61.1491	-32.22	4122.27	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	140 - 139	TP24x24x0.375	0.10	538.74	0.000	0.00	538.74	0.000
	139 - 138		11.69	538.74	0.022	0.00	538.74	0.000
	138 - 137		17.78	538.74	0.033	0.00	538.74	0.000
	137 - 136		23.93	538.74	0.044	0.00	538.74	0.000
	136 - 135		30.14	538.74	0.056	0.00	538.74	0.000
	135 - 134		36.40	538.74	0.068	0.00	538.74	0.000
	134 - 133		42.73	538.74	0.079	0.00	538.74	0.000
	133 - 132		49.12	538.74	0.091	0.00	538.74	0.000
	132 - 131		55.57	538.74	0.103	0.00	538.74	0.000
	131 - 130		62.08	538.74	0.115	0.00	538.74	0.000
	130 - 129		68.65	538.74	0.127	0.00	538.74	0.000
	129 - 128		75.28	538.74	0.140	0.00	538.74	0.000
	128 - 127		81.97	538.74	0.152	0.00	538.74	0.000
	127 - 126		88.71	538.74	0.165	0.00	538.74	0.000
	126 - 125		95.52	538.74	0.177	0.00	538.74	0.000
	125 - 124		102.39	538.74	0.190	0.00	538.74	0.000
	124 - 123		109.31	538.74	0.203	0.00	538.74	0.000
	123 - 122		116.30	538.74	0.216	0.00	538.74	0.000
	122 - 121		123.34	538.74	0.229	0.00	538.74	0.000
	121 - 120		130.44	538.74	0.242	0.00	538.74	0.000
L2	120 - 118.132	TP36.379x28.163x0.2188	143.89	788.73	0.182	0.00	788.73	0.000
	118.132 - 116.263		167.59	806.48	0.208	0.00	806.48	0.000
	116.263 - 114.395		187.07	824.31	0.227	0.00	824.31	0.000
	114.395 - 112.526		206.79	842.23	0.246	0.00	842.23	0.000
	112.526 - 110.658		226.77	860.22	0.264	0.00	860.22	0.000
	110.658 - 108.789		246.99	878.27	0.281	0.00	878.27	0.000
	108.789 - 106.921		267.46	896.41	0.298	0.00	896.41	0.000
	106.921 - 105.053		288.18	914.60	0.315	0.00	914.60	0.000
	105.053 - 103.184		309.15	932.85	0.331	0.00	932.85	0.000
	103.184 - 101.316		330.37	951.15	0.347	0.00	951.15	0.000
	101.316 - 99.4474		351.84	969.51	0.363	0.00	969.51	0.000
	99.4474 -		373.56	987.91	0.378	0.00	987.91	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uv} kip-ft	ϕM_{nv} kip-ft	Ratio $\frac{M_{uv}}{\phi M_{nv}}$
	97.5789							
	97.5789 - 95.7105		395.54	1006.36	0.393	0.00	1006.36	0.000
	95.7105 - 93.8421		417.77	1024.84	0.408	0.00	1024.84	0.000
	93.8421 - 91.9737		440.26	1043.36	0.422	0.00	1043.36	0.000
	91.9737 - 90.1053		463.00	1061.90	0.436	0.00	1061.90	0.000
	90.1053 - 88.2368		485.99	1080.47	0.450	0.00	1080.47	0.000
	88.2368 - 86.3684		509.25	1099.07	0.463	0.00	1099.07	0.000
	86.3684 - 84.5		532.76	1117.68	0.477	0.00	1117.68	0.000
	84.5 - 80		249.73	1162.55	0.215	0.00	1162.55	0.000
L3	84.5 - 80	TP44.261x35.0171x0.3125	340.81	1854.63	0.184	0.00	1854.63	0.000
	80 - 78.0556		616.02	1890.33	0.326	0.00	1890.33	0.000
	78.0556 - 76.1111		641.79	1926.22	0.333	0.00	1926.22	0.000
	76.1111 - 74.1667		667.83	1962.29	0.340	0.00	1962.29	0.000
	74.1667 - 72.2222		694.16	1998.55	0.347	0.00	1998.55	0.000
	72.2222 - 70.2778		720.76	2034.97	0.354	0.00	2034.97	0.000
	70.2778 - 68.3333		747.65	2071.57	0.361	0.00	2071.57	0.000
	68.3333 - 66.3889		774.81	2108.32	0.368	0.00	2108.32	0.000
	66.3889 - 64.4444		802.26	2145.24	0.374	0.00	2145.24	0.000
	64.4444 - 62.5		829.98	2182.32	0.380	0.00	2182.32	0.000
	62.5 - 60.5556		857.98	2219.54	0.387	0.00	2219.54	0.000
	60.5556 - 58.6111		886.25	2256.92	0.393	0.00	2256.92	0.000
	58.6111 - 56.6667		914.81	2294.43	0.399	0.00	2294.43	0.000
	56.6667 - 54.7222		943.63	2332.07	0.405	0.00	2332.07	0.000
	54.7222 - 52.7778		972.73	2369.86	0.410	0.00	2369.86	0.000
	52.7778 - 50.8333		1002.12	2407.77	0.416	0.00	2407.77	0.000
	50.8333 - 48.8889		1031.77	2445.79	0.422	0.00	2445.79	0.000
	48.8889 - 46.9444		1061.69	2483.94	0.427	0.00	2483.94	0.000
	46.9444 - 45		1091.89	2522.21	0.433	0.00	2522.21	0.000
	45 - 39.5		550.01	2631.00	0.209	0.00	2631.00	0.000
L4	45 - 39.5	TP51.75x42.5062x0.375	628.91	3269.97	0.192	0.00	3269.97	0.000
	39.5 - 37.4211		1212.43	3325.22	0.365	0.00	3325.22	0.000
	37.4211 - 35.3421		1246.19	3380.73	0.369	0.00	3380.73	0.000
	35.3421 - 33.2632		1280.24	3436.48	0.373	0.00	3436.48	0.000
	33.2632 - 31.1842		1314.57	3492.47	0.376	0.00	3492.47	0.000
	31.1842 - 29.1053		1349.17	3548.70	0.380	0.00	3548.70	0.000
	29.1053 -		1384.04	3605.16	0.384	0.00	3605.16	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uv} kip-ft	ϕM_{nv} kip-ft	Ratio $\frac{M_{uv}}{\phi M_{nv}}$
	27.0263							
	27.0263 - 24.9474		1419.19	3661.84	0.388	0.00	3661.84	0.000
	24.9474 - 22.8684		1454.63	3718.74	0.391	0.00	3718.74	0.000
	22.8684 - 20.7895		1490.34	3775.85	0.395	0.00	3775.85	0.000
	20.7895 - 18.7105		1526.34	3833.17	0.398	0.00	3833.17	0.000
	18.7105 - 16.6316		1562.62	3890.68	0.402	0.00	3890.68	0.000
	16.6316 - 14.5526		1599.18	3948.39	0.405	0.00	3948.39	0.000
	14.5526 - 12.4737		1636.03	4006.29	0.408	0.00	4006.29	0.000
	12.4737 - 10.3947		1673.16	4064.38	0.412	0.00	4064.38	0.000
	10.3947 - 8.31579		1710.58	4122.64	0.415	0.00	4122.64	0.000
	8.31579 - 6.23684		1748.28	4181.07	0.418	0.00	4181.07	0.000
	6.23684 - 4.15789		1786.28	4239.67	0.421	0.00	4239.67	0.000
	4.15789 - 2.07895		1824.56	4298.43	0.424	0.00	4298.43	0.000
	2.07895 - 0		1863.13	4357.34	0.428	0.00	4357.34	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	140 - 139	TP24x24x0.375	0.04	438.36	0.000	0.00	849.76	0.000
	139 - 138		6.06	438.36	0.014	0.01	849.76	0.000
	138 - 137		6.12	438.36	0.014	0.01	849.76	0.000
	137 - 136		6.18	438.36	0.014	0.01	849.76	0.000
	136 - 135		6.24	438.36	0.014	0.01	849.76	0.000
	135 - 134		6.30	438.36	0.014	0.01	849.76	0.000
	134 - 133		6.36	438.36	0.015	0.01	849.76	0.000
	133 - 132		6.42	438.36	0.015	0.01	849.76	0.000
	132 - 131		6.48	438.36	0.015	0.01	849.76	0.000
	131 - 130		6.54	438.36	0.015	0.01	849.76	0.000
	130 - 129		6.60	438.36	0.015	0.01	849.76	0.000
	129 - 128		6.66	438.36	0.015	0.01	849.76	0.000
	128 - 127		6.72	438.36	0.015	0.01	849.76	0.000
	127 - 126		6.78	438.36	0.015	0.01	849.76	0.000
	126 - 125		6.84	438.36	0.016	0.01	849.76	0.000
	125 - 124		6.90	438.36	0.016	0.01	849.76	0.000
	124 - 123		6.96	438.36	0.016	0.01	849.76	0.000
	123 - 122		7.01	438.36	0.016	0.01	849.76	0.000
	122 - 121		7.07	438.36	0.016	0.01	849.76	0.000
	121 - 120		7.13	438.36	0.016	0.01	849.76	0.000
L2	120 - 118.132	TP36.379x28.163x0.2188	7.27	676.91	0.011	0.01	1579.38	0.000
	118.132 - 116.263		10.36	682.82	0.015	0.01	1614.93	0.000
	116.263 -		10.50	688.65	0.015	0.01	1650.64	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	114.395							
	114.395 - 112.526		10.63	694.39	0.015	0.01	1686.52	0.000
	112.526 - 110.658		10.76	700.04	0.015	0.01	1722.54	0.000
	110.658 - 108.789		10.89	705.60	0.015	0.01	1758.71	0.000
	108.789 - 106.921		11.03	711.08	0.016	0.01	1795.01	0.000
	106.921 - 105.053		11.16	716.47	0.016	0.01	1831.43	0.000
	105.053 - 103.184		11.30	721.77	0.016	0.01	1867.97	0.000
	103.184 - 101.316		11.43	726.99	0.016	0.01	1904.63	0.000
	101.316 - 99.4474		11.57	732.12	0.016	0.01	1941.39	0.000
	99.4474 - 97.5789		11.70	737.16	0.016	0.01	1978.24	0.000
	97.5789 - 95.7105		11.84	742.11	0.016	0.01	2015.18	0.000
	95.7105 - 93.8421		11.97	746.98	0.016	0.01	2052.18	0.000
	93.8421 - 91.9737		12.11	751.76	0.016	0.01	2089.27	0.000
	91.9737 - 90.1053		12.25	756.46	0.016	0.01	2126.40	0.000
	90.1053 - 88.2368		12.38	761.06	0.016	0.01	2163.59	0.000
	88.2368 - 86.3684		12.52	765.58	0.016	0.01	2200.82	0.000
	86.3684 - 84.5		12.66	770.01	0.016	0.01	2238.09	0.000
	84.5 - 80		5.61	780.33	0.007	0.00	2327.94	0.000
L3	84.5 - 80	TP44.261x35.0171x0.3125	7.43	1266.85	0.006	0.01	3713.81	0.000
	80 - 78.0556		13.18	1276.80	0.010	0.01	3785.29	0.000
	78.0556 - 76.1111		13.33	1286.65	0.010	0.01	3857.16	0.000
	76.1111 - 74.1667		13.47	1296.41	0.010	0.01	3929.39	0.000
	74.1667 - 72.2222		13.62	1306.07	0.010	0.01	4001.98	0.000
	72.2222 - 70.2778		13.76	1315.64	0.010	0.01	4074.92	0.000
	70.2778 - 68.3333		13.91	1325.12	0.010	0.01	4148.20	0.000
	68.3333 - 66.3889		14.05	1334.50	0.011	0.01	4221.81	0.000
	66.3889 - 64.4444		14.19	1343.79	0.011	0.01	4295.73	0.000
	64.4444 - 62.5		14.34	1352.98	0.011	0.01	4369.98	0.000
	62.5 - 60.5556		14.48	1362.08	0.011	0.01	4444.52	0.000
	60.5556 - 58.6111		14.62	1362.08	0.011	0.01	4519.35	0.000
	58.6111 - 56.6667		14.76	1371.08	0.011	0.01	4594.47	0.000
	56.6667 - 54.7222		14.91	1379.99	0.011	0.01	4669.86	0.000
	54.7222 - 52.7778		15.05	1388.81	0.011	0.01	4745.51	0.000
	52.7778 -		15.19	1397.53	0.011	0.01	4821.42	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	50.8333							
	50.8333 - 48.8889		15.33	1406.16	0.011	0.01	4897.57	0.000
	48.8889 - 46.9444		15.47	1414.69	0.011	0.01	4973.97	0.000
	46.9444 - 45		15.61	1423.13	0.011	0.01	5050.58	0.000
	45 - 39.5		7.61	1431.47	0.005	0.01	5268.44	0.000
L4	45 - 39.5	TP51.75x42.5062x0.375	8.45	1839.39	0.005	0.01	6547.93	0.000
	39.5 - 37.4211		16.19	1839.39	0.009	0.01	6658.58	0.000
	37.4211 - 35.3421		16.32	1852.03	0.009	0.01	6769.73	0.000
	35.3421 - 33.2632		16.46	1864.56	0.009	0.01	6881.37	0.000
	33.2632 - 31.1842		16.59	1876.99	0.009	0.01	6993.49	0.000
	31.1842 - 29.1053		16.72	1889.31	0.009	0.01	7106.08	0.000
	29.1053 - 27.0263		16.86	1901.52	0.009	0.01	7219.14	0.000
	27.0263 - 24.9474		16.99	1913.62	0.009	0.01	7332.64	0.000
	24.9474 - 22.8684		17.12	1925.61	0.009	0.01	7446.57	0.000
	22.8684 - 20.7895		17.26	1937.50	0.009	0.01	7560.93	0.000
	20.7895 - 18.7105		17.40	1949.28	0.009	0.01	7675.71	0.000
	18.7105 - 16.6316		17.53	1972.51	0.009	0.01	7790.88	0.000
	16.6316 - 14.5526		17.67	1983.97	0.009	0.01	7906.44	0.000
	14.5526 - 12.4737		17.81	1995.31	0.009	0.01	8022.38	0.000
	12.4737 - 10.3947		17.94	2006.55	0.009	0.01	8138.69	0.000
	10.3947 - 8.31579		18.08	2017.69	0.009	0.01	8255.36	0.000
	8.31579 - 6.23684		18.22	2028.71	0.009	0.01	8372.33	0.000
	6.23684 - 4.15789		18.36	2039.63	0.009	0.01	8489.75	0.000
	4.15789 - 2.07895		18.50	2050.43	0.009	0.01	8607.33	0.000
	2.07895 - 0		18.64	2061.13	0.009	0.01	8725.33	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 139	0.000	0.000	0.000	0.000	0.000	0.000 ✔	1.000	4.8.2 ✔
	139 - 138	0.003	0.022	0.000	0.014	0.000	0.025 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uv}/\phi M_{nv}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	138 - 137	0.003	0.033	0.000	0.014	0.000	0.036 ✔	1.000	4.8.2 ✔
	137 - 136	0.003	0.044	0.000	0.014	0.000	0.048 ✔	1.000	4.8.2 ✔
	136 - 135	0.003	0.056	0.000	0.014	0.000	0.059 ✔	1.000	4.8.2 ✔
	135 - 134	0.003	0.068	0.000	0.014	0.000	0.071 ✔	1.000	4.8.2 ✔
	134 - 133	0.004	0.079	0.000	0.015	0.000	0.083 ✔	1.000	4.8.2 ✔
	133 - 132	0.004	0.091	0.000	0.015	0.000	0.095 ✔	1.000	4.8.2 ✔
	132 - 131	0.004	0.103	0.000	0.015	0.000	0.107 ✔	1.000	4.8.2 ✔
	131 - 130	0.004	0.115	0.000	0.015	0.000	0.119 ✔	1.000	4.8.2 ✔
	130 - 129	0.004	0.127	0.000	0.015	0.000	0.132 ✔	1.000	4.8.2 ✔
	129 - 128	0.004	0.140	0.000	0.015	0.000	0.144 ✔	1.000	4.8.2 ✔
	128 - 127	0.004	0.152	0.000	0.015	0.000	0.157 ✔	1.000	4.8.2 ✔
	127 - 126	0.005	0.165	0.000	0.015	0.000	0.169 ✔	1.000	4.8.2 ✔
	126 - 125	0.005	0.177	0.000	0.016	0.000	0.182 ✔	1.000	4.8.2 ✔
	125 - 124	0.005	0.190	0.000	0.016	0.000	0.195 ✔	1.000	4.8.2 ✔
	124 - 123	0.005	0.203	0.000	0.016	0.000	0.208 ✔	1.000	4.8.2 ✔
	123 - 122	0.005	0.216	0.000	0.016	0.000	0.221 ✔	1.000	4.8.2 ✔
	122 - 121	0.005	0.229	0.000	0.016	0.000	0.234 ✔	1.000	4.8.2 ✔
	121 - 120	0.005	0.242	0.000	0.016	0.000	0.248 ✔	1.000	4.8.2 ✔
L2	120 - 118.132	0.004	0.182	0.000	0.011	0.000	0.186 ✔	1.000	4.8.2 ✔
	118.132 - 116.263	0.005	0.208	0.000	0.015	0.000	0.214 ✔	1.000	4.8.2 ✔
	116.263 - 114.395	0.006	0.227	0.000	0.015	0.000	0.233 ✔	1.000	4.8.2 ✔
	114.395 - 112.526	0.006	0.246	0.000	0.015	0.000	0.251 ✔	1.000	4.8.2 ✔
	112.526 - 110.658	0.006	0.264	0.000	0.015	0.000	0.270 ✔	1.000	4.8.2 ✔
	110.658 - 108.789	0.006	0.281	0.000	0.015	0.000	0.287 ✔	1.000	4.8.2 ✔
	108.789 - 106.921	0.006	0.298	0.000	0.016	0.000	0.305 ✔	1.000	4.8.2 ✔
	106.921 - 105.053	0.006	0.315	0.000	0.016	0.000	0.321 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	105.053 - 103.184	0.006	0.331	0.000	0.016	0.000	0.338 ✔	1.000	4.8.2 ✔
	103.184 - 101.316	0.006	0.347	0.000	0.016	0.000	0.354 ✔	1.000	4.8.2 ✔
	101.316 - 99.4474	0.006	0.363	0.000	0.016	0.000	0.370 ✔	1.000	4.8.2 ✔
	99.4474 - 97.5789	0.007	0.378	0.000	0.016	0.000	0.385 ✔	1.000	4.8.2 ✔
	97.5789 - 95.7105	0.007	0.393	0.000	0.016	0.000	0.400 ✔	1.000	4.8.2 ✔
	95.7105 - 93.8421	0.007	0.408	0.000	0.016	0.000	0.415 ✔	1.000	4.8.2 ✔
	93.8421 - 91.9737	0.007	0.422	0.000	0.016	0.000	0.429 ✔	1.000	4.8.2 ✔
	91.9737 - 90.1053	0.007	0.436	0.000	0.016	0.000	0.443 ✔	1.000	4.8.2 ✔
	90.1053 - 88.2368	0.007	0.450	0.000	0.016	0.000	0.457 ✔	1.000	4.8.2 ✔
	88.2368 - 86.3684	0.007	0.463	0.000	0.016	0.000	0.471 ✔	1.000	4.8.2 ✔
	86.3684 - 84.5	0.007	0.477	0.000	0.016	0.000	0.484 ✔	1.000	4.8.2 ✔
	84.5 - 80	0.003	0.215	0.000	0.007	0.000	0.218 ✔	1.000	4.8.2 ✔
L3	84.5 - 80	0.003	0.184	0.000	0.006	0.000	0.187 ✔	1.000	4.8.2 ✔
	80 - 78.0556	0.005	0.326	0.000	0.010	0.000	0.331 ✔	1.000	4.8.2 ✔
	78.0556 - 76.1111	0.005	0.333	0.000	0.010	0.000	0.338 ✔	1.000	4.8.2 ✔
	76.1111 - 74.1667	0.005	0.340	0.000	0.010	0.000	0.346 ✔	1.000	4.8.2 ✔
	74.1667 - 72.2222	0.005	0.347	0.000	0.010	0.000	0.353 ✔	1.000	4.8.2 ✔
	72.2222 - 70.2778	0.005	0.354	0.000	0.010	0.000	0.360 ✔	1.000	4.8.2 ✔
	70.2778 - 68.3333	0.006	0.361	0.000	0.010	0.000	0.367 ✔	1.000	4.8.2 ✔
	68.3333 - 66.3889	0.006	0.368	0.000	0.011	0.000	0.373 ✔	1.000	4.8.2 ✔
	66.3889 - 64.4444	0.006	0.374	0.000	0.011	0.000	0.380 ✔	1.000	4.8.2 ✔
	64.4444 - 62.5	0.006	0.380	0.000	0.011	0.000	0.386 ✔	1.000	4.8.2 ✔
	62.5 - 60.5556	0.006	0.387	0.000	0.011	0.000	0.393 ✔	1.000	4.8.2 ✔
	60.5556 - 58.6111	0.006	0.393	0.000	0.011	0.000	0.399 ✔	1.000	4.8.2 ✔
	58.6111 - 56.6667	0.006	0.399	0.000	0.011	0.000	0.405 ✔	1.000	4.8.2 ✔
	56.6667 - 54.7222	0.006	0.405	0.000	0.011	0.000	0.411 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	54.7222 - 52.7778	0.006	0.410	0.000	0.011	0.000	0.417 ✔	1.000	4.8.2 ✔
	52.7778 - 50.8333	0.006	0.416	0.000	0.011	0.000	0.423 ✔	1.000	4.8.2 ✔
	50.8333 - 48.8889	0.007	0.422	0.000	0.011	0.000	0.429 ✔	1.000	4.8.2 ✔
	48.8889 - 46.9444	0.007	0.427	0.000	0.011	0.000	0.434 ✔	1.000	4.8.2 ✔
	46.9444 - 45	0.007	0.433	0.000	0.011	0.000	0.440 ✔	1.000	4.8.2 ✔
	45 - 39.5	0.003	0.209	0.000	0.005	0.000	0.213 ✔	1.000	4.8.2 ✔
L4	45 - 39.5	0.003	0.192	0.000	0.005	0.000	0.196 ✔	1.000	4.8.2 ✔
	39.5 - 37.4211	0.006	0.365	0.000	0.009	0.000	0.371 ✔	1.000	4.8.2 ✔
	37.4211 - 35.3421	0.006	0.369	0.000	0.009	0.000	0.375 ✔	1.000	4.8.2 ✔
	35.3421 - 33.2632	0.006	0.373	0.000	0.009	0.000	0.379 ✔	1.000	4.8.2 ✔
	33.2632 - 31.1842	0.006	0.376	0.000	0.009	0.000	0.383 ✔	1.000	4.8.2 ✔
	31.1842 - 29.1053	0.006	0.380	0.000	0.009	0.000	0.387 ✔	1.000	4.8.2 ✔
	29.1053 - 27.0263	0.007	0.384	0.000	0.009	0.000	0.390 ✔	1.000	4.8.2 ✔
	27.0263 - 24.9474	0.007	0.388	0.000	0.009	0.000	0.394 ✔	1.000	4.8.2 ✔
	24.9474 - 22.8684	0.007	0.391	0.000	0.009	0.000	0.398 ✔	1.000	4.8.2 ✔
	22.8684 - 20.7895	0.007	0.395	0.000	0.009	0.000	0.402 ✔	1.000	4.8.2 ✔
	20.7895 - 18.7105	0.007	0.398	0.000	0.009	0.000	0.405 ✔	1.000	4.8.2 ✔
	18.7105 - 16.6316	0.007	0.402	0.000	0.009	0.000	0.409 ✔	1.000	4.8.2 ✔
	16.6316 - 14.5526	0.007	0.405	0.000	0.009	0.000	0.412 ✔	1.000	4.8.2 ✔
	14.5526 - 12.4737	0.007	0.408	0.000	0.009	0.000	0.416 ✔	1.000	4.8.2 ✔
	12.4737 - 10.3947	0.007	0.412	0.000	0.009	0.000	0.419 ✔	1.000	4.8.2 ✔
	10.3947 - 8.31579	0.007	0.415	0.000	0.009	0.000	0.422 ✔	1.000	4.8.2 ✔
	8.31579 - 6.23684	0.008	0.418	0.000	0.009	0.000	0.426 ✔	1.000	4.8.2 ✔
	6.23684 - 4.15789	0.008	0.421	0.000	0.009	0.000	0.429 ✔	1.000	4.8.2 ✔
	4.15789 - 2.07895	0.008	0.424	0.000	0.009	0.000	0.432 ✔	1.000	4.8.2 ✔
	2.07895 - 0	0.008	0.428	0.000	0.009	0.000	0.435 ✔	1.000	4.8.2 ✔

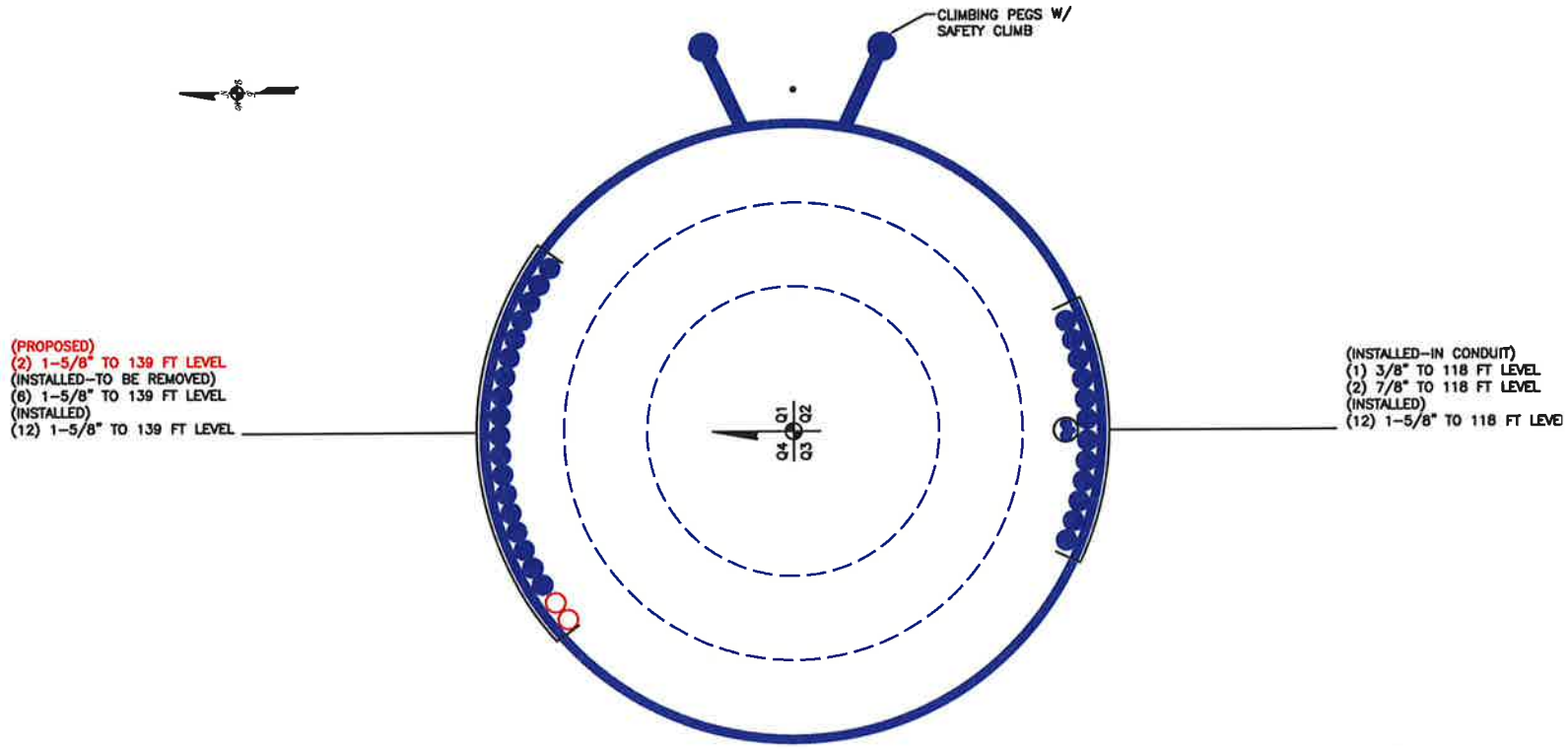
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	140 - 120	Pole	TP24x24x0.375	1	-4.76	876.73	24.8	Pass
L2	120 - 80	Pole	TP36.379x28.163x0.2188	2	-11.43	1540.02	48.4	Pass
L3	80 - 39.5	Pole	TP44.261x35.0171x0.3125	3	-19.49	2862.94	44.0	Pass
L4	39.5 - 0	Pole	TP51.75x42.5062x0.375	4	-32.22	4122.27	43.5	Pass
							Summary	
						Pole (L2)	48.4	Pass
						RATING =	**48.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS W/
SAFETY CLIMB
(PROPOSED)
(2) 1-5/8" TO 139 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-5/8" TO 139 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 139 FT LEVEL
(INSTALLED-IN CONDUIT)
(1) 3/8" TO 118 FT LEVEL
(2) 7/8" TO 118 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 118 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

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

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

Site Data

BU#: *845994*
Site Name: *East Hampton - Young Street*
App #: *378414*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	59	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	57	in
Thick:	3	in
Grade:	55	ksi
Clip Distance:	10	in

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

Pole Data		
Diam:	51.75	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	1863	ft-kips
Factored Axial, Pu:	32	kips
Factored Shear, Vu:	19	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	99.1 Kips
Axial Design Strength, Φ*Fu*Anet:	260.0 Kips
Anchor Rod Stress Ratio:	38.1% **Pass**

Base Plate Results — Flexural Check

Base Plate Stress:	16.7 ksi
PL Design Bending Strength, Φ*Fy:	49.5 ksi
Base Plate Stress Ratio:	33.8% **Pass**

PL Ref. Data
Yield Line (in): 28.86
Max PL Length: 28.86

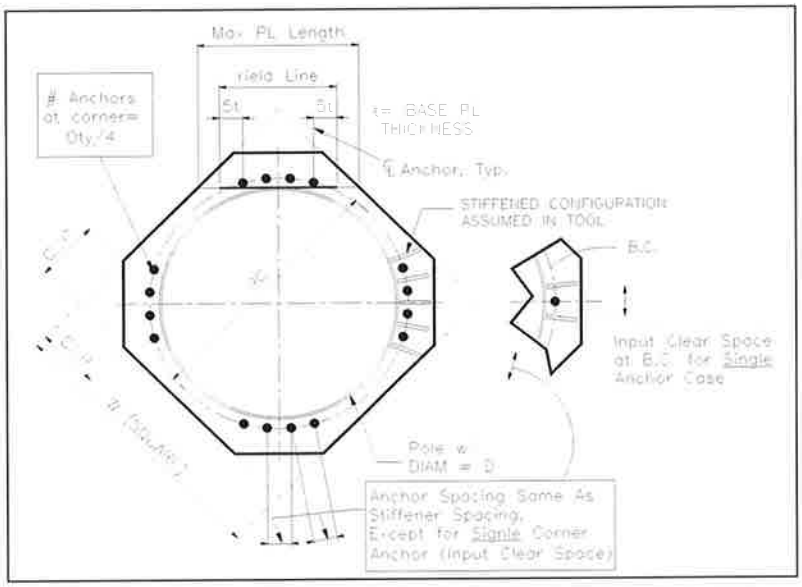
N/A - Unstiffened

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	N/A



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

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

Site Data

BU#: *845994*
Site Name: *East Hampton - Young Stre*
App #: *378414*
top plate
Pole Manufacturer: Other

Reactions		
Mu	130.44	ft-kips
Axial, Pu:	4.76	kips
Shear, Vu:	7.13	kips
Elevation:	120	feet

Top plate

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
21.87

Bolt Data			
Qty:	16		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	33		

Plate Data		
Diam:	37	in
Thick, t:	1.75	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.71	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	24	in
Thick:	0.375	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn, **B1**:	30.06 kips	
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	30.05 kips	
Max Bolt directly applied Tu:	11.56 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.341 in	
Min PL "treq" for actual **T w/ Pry:**	0.615 in	
Min PL "t1" for actual **T w/o Pry:**	0.831 in	
T allowable w/o Prying:	30.06 kips	α'<0 case
Prying Force, q:	0.00 kips	
Total Bolt Tension=Tu+q:	11.56 kips	
Non-Prying Bolt Stress Ratio, Tu/B:	38.5% Pass	

Rigid
φ*Tn
φTn[(1-(Vu/φVn)^2]^0.5

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	6.4 ksi
Allowable Plate Stress:	45.0 ksi
Compression Plate Stress Ratio:	14.2% Pass
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	12.4% Pass

Rigid
TIA G
φ*Fy
Comp. Y.L. Length: 22.65

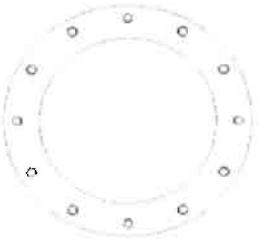
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



* 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

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

Site Data

BU#: *845994*
Site Name: *East Hampton - Young Stre*
App #: *378414*

Reactions		
Mu	130.44	ft-kips
Axial, Pu:	4.76	kips
Shear, Vu:	7.13	kips
Elevation:	120	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
21.87

Pole Manufacturer:	Other

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	16		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	33		

Plate Data		
Diam:	37	in
Thick, t:	1.25	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	5.59	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	28.163	in
Thick:	0.2188	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,B1:	30.06	kips	
Adjusted φ*Tn (due to Vu=Vu/Qty), B:	30.05	kips	
Max Bolt directly applied Tu:	11.56	Kips	
Min. PL "tc" for B cap. w/o Pry:	0.871	in	
Min PL "treq" for actual T w/ Pry:	0.397	in	
Min PL "t1" for actual T w/o Pry:	0.540	in	
T allowable w/o Prying:	30.06	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	11.56	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	38.5%	Pass	

Rigid
φ*Tn
φTn[(1-(Vu/φVn)^2]^0.5

Exterior Flange Plate Results — Flexural Check

Compression Side Plate Stress:	7.4	ksi
Allowable Plate Stress:	45.0	ksi
Compression Plate Stress Ratio:	16.4%	Pass
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	10.1%	Pass

Rigid
TIA G
φ*Fy
Comp. Y.L. Length:
17.20

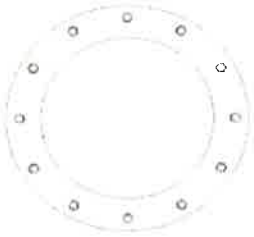
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



* 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

FDH VELOCITEL
ENGINEERING INNOVATION

Monopole Slip Splice Length

FDHV Project No.:	17PXRY1400
Site Name:	East Hampton
Site ID/BU:	845994
Date:	2/20/2017

Section Range	Req. Splice Length, 1.5D (ft)	Act. Splice Length (ft)	Top Section Base Ø (in)	Top Section Thickness (in)	Top Section Inside Width, D (in)	Section Scenario	Top Elevation (ft)	Bottom Elevation (ft)	Section Results
L1-L2	2.906	0.000	24	0.375	23.250	N/A	120.00	120.00	N/A
L2-L3	4.493	4.500	36.379	0.2188	35.941	A	84.50	80.00	OK
L3-L4	5.455	5.500	44.261	0.3125	43.636	A	45.00	39.50	OK

Section Mods?	Plate F_y (ksi)	Plate F_u (ksi)	Plate Width (in)	Plate Thick (in)	Total No. Plates	Int. Bolt Spacing (in)	Bolt Hole Ø (in)	M_u (kip-ft)	$P_u/\Phi P_n$ (%)	$V_u/\Phi V_n$ (%)	$T_u/\Phi T_n$ (%)

Scenario Definitions:	
A	No stress reduction and no additional capacity evaluation for the slip splice is required.
B	Reduction in effective yield stress for the slip splice per ANSI/TIA-222-G Section 13.3.5. Capacity evaluation for the slip splice is required.
C	Reinforcement of the slip splice is required. The shaft cannot be considered effective and therefore the reinforcement must take 100% of the load.

Notes:

1. This sheet applies only to monopoles being analyzed under ANSI/TIA-222-G.
2. The capacities computed in this sheet supersede both tnx and CCIPole.
3. This sheet is currently set up to handle one size of flat plate monopole reinforcement.
4. Make sure to fill out "Section Mods?" in order to display proper capacity.
5. If "N/A" is displayed, it means there is an existing flange connection at that elevation.

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

Site Data

BU#: *845994*
Site Name: *East Hampton - Young Street*

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	2.75	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	7	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	25	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	7	ft
Concrete Density:	150	pcf
Pier Cross Section Area:	49.00	ft^2
Pier Height:	4.50	ft
Soil (above pad) Height:	4.00	ft

Soil Parameters		
Unit Weight, γ:	115	pcf
Ultimate Bearing Capacity, qn:	30	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	31.5	degrees
Undrained Shear Strength, Cu:	0	ksf
Allowable Bearing: ϕ*qn:	22.50	ksf
Passive Pres. Coeff., Kp	3.19	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	19.0	kips
Pad Force Location Above D:	1.36	ft
ϕ(Passive Pressure Moment):	25.91	ft-kips
Factored O.T. M(WL), "1.6W":	2009.9	ft-kips
Factored OT (MW-Msoil), M1	1983.95	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	2.45	ft
Sum of Soil Wedges Wt:	22.85	kips
Soil Wedges ecc, K1:	12.15	ft
Ftg+Soil above Pad wt:	579.3	kips
Unfactored (Total ftg-soil Wt):	602.13	kips
1.2D. **No Soil Wedges**	727.14	kips
0.9D. **With Soil Wedges**	565.92	kips

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

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDu:	32	kips
Factored WL Shear, Vu:	19	kips
Factored WL Moment, Mu:	1863	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	32	kips
0.90	0.9D+1.6W, Pu:	24	kips
1.00	Vu:	19	kips
	Mu:	1863	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	727.14	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	1983.95	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	2.73	ft
Orthogonal qu=	1.67	ksf
qu/ϕ*qn Ratio=	**7.4%**	Pass

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	1.93	ft
Diagonal qu=	1.63	ksf
qu/ϕ*qn Ratio=	**7.2%**	Pass

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	565.92	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	1734.09	ft-kips

Orthogonal ecc3 = M2/P2 =	3.06	ft
Ortho Non Bearing Length,NBL=	6.13	ft
Orthogonal qu=	1.35	ksf
Diagonal qu=	1.33	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	1863.00		
M Orthogonal:	7079.88	**26.3%**	Pass
M Diagonal:	7079.88	**26.3%**	Pass

FDH VELOCITEL
ENGINEERING INNOVATION

Version	2.7
Version Date	12/31/2016

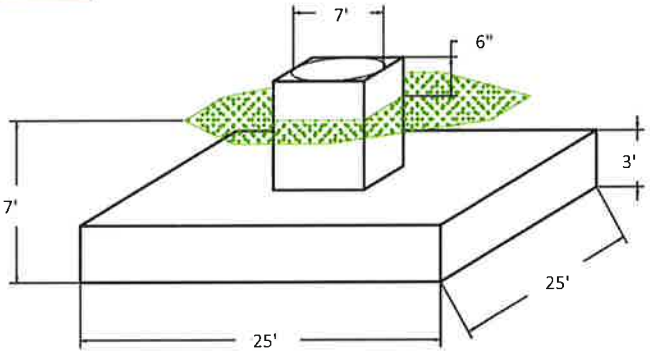
FDH Velocitel -- 6521 Meridien Drive, Raleigh, NC 27616 -- Ph. 919.755.1012 -- Fax 919.755.1031

MONOPOLE PAD AND PIER STEEL CHECKS

Project & Site Details			
Project No.	17PXRY1400	Rev.	0
Project Name	East Hampton - Young Street		
Site ID	845994		
Date	Monday, February 20, 2017		
Code	ANSI/TIA-222-G		
Overstress Capacity	105%		

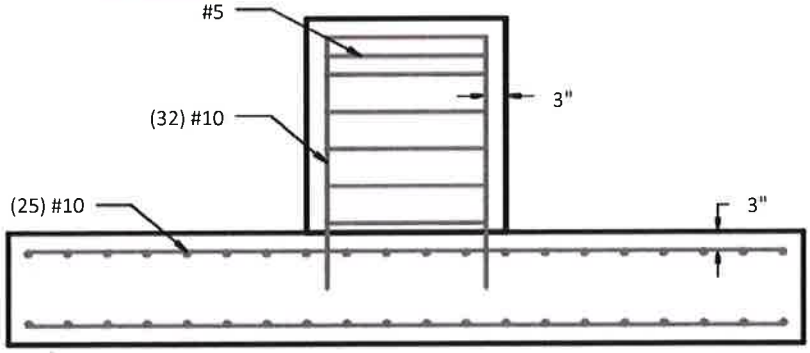
tnx Reactions		
Moment, M	1,863	kip-ft
Shear, V	19	k
Axial, P	32	k

Foundation Details		
Pier Above Grade, E	0.5	ft
Pad Depth Below Grade, D	7.0	ft
Pad Width, W	25.0	ft
Pad Thickness, T	3.0	ft
Pier Shape	Square	-
Pier Diameter, D_p	7.0	ft
Density of Soil, γ_s	0.115	kcf
Density of Concrete, γ_c	0.150	kcf



Pad Steel Details		
Horiz. Bar Size	#10	-
Pad Bar Diameter, d_b	1.27	in
Number of pad bars, n	25	-
Strength of Concrete, f_c'	3,000	psi
Clear Cover, cc	3.0	in
Yield Strength of Steel, F_y	60	ksi

Pier Steel Details		
Vertical Bar Size	#10	-
Pier Bar Diameter, d_v	1.27	in
Number of pier bars, n_v	32	-
Tie Size	#5	-
Tie Bar Diameter, d_t	0.625	in
Clear Cover, cc	3.0	in



Pad Steel Checks		
Pad Shear	12.7%	PASS
Two-Way Shear	10.8%	PASS
Pad Flexure	14.8%	PASS
Steel Yielding	OK	

Pier Steel Checks		
Pier Compression	0.3%	PASS
Applied Moment, Mu	1948.50	k-ft
LPILE Nominal Moment Capacity	95,851	k-in
Ø Mn	7188.84	k-ft
Pier Flexure	27.1%	PASS

ATTACHMENT 4


228.08
169.31
133.32
167.32
407.82
170.83
99.66
24-1
2.2 AC
125.06
46.52
245.85
7-1
2 AC
304.67
342.15
165
215.9
210.1
128.51
170.64
88.37
59.6
68.66
253.8
109.84
154.20
243.9
246.89
41.69
7B
0.76 AC
37.19
249.74
135
165.43
245.24
246.89
7-2
59.25
141
141.6
137.83
119.2

151 YOUNG ST

Location	151 YOUNG ST	**Mblu**	13/ 32/ 7/ 1/
Acct#	R02394	**Owner**	KIELY KEVIN G + KIM S
Assessment	$353,910	**Appraisal**	$505,570
PID	2270	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$414,610	$90,960	$505,570
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$290,230	$63,680	$353,910

Owner of Record

Owner KIELY KEVIN G + KIM S
Co-Owner
Address 151 YOUNG ST
EAST HAMPTON, CT 06424

Sale Price $0
Certificate
Book & Page 150/ 331
Sale Date 08/27/1980
Instrument 29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
KIELY KEVIN G + KIM S	$0		150/ 331	29	08/27/1980

Building Information

Building 1 : Section 1

Year Built: 1710
Living Area: 3,704
Replacement Cost: $376,914
Building Percent Good: 84
Replacement Cost Less Depreciation: $316,610

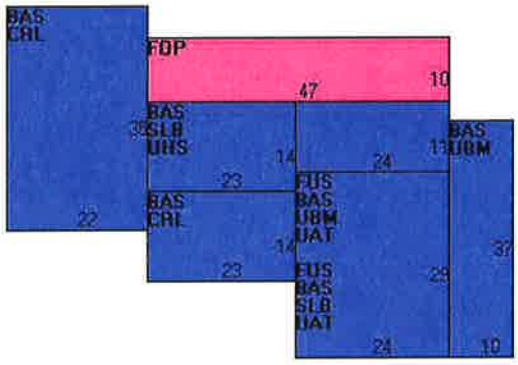
Building Attributes	
Field	**Description**

Style	Family Duplex
Model	Residential
Grade:	B+
Story Height	2 Stories
Foundation	Stone
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable
Roof Cover	Wood Shingle
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	5 Bedrooms
Total Bthrms:	3
Total Half Baths:	0
# Extra Fixtures	1
Total Rooms:	9
Bath Style:	Average
Kitchen Style:	Average
Fireplace	0
Fin Basement	0
Fin Bsmt Qual	
Bsmt. Garages	0
Gas Fireplace	Gas

Building Photo

(http://images.vgsi.com/photos/EastHamptonCTPhotos//\00\00

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,744	2,744
FUS	Finished Upper Story	960	960
CRL	Crawl Space	1,092	0
FOP	Framed Open Porch	470	0
SLB	Slab	586	0
UAT	Unfinished Attic	960	0
UBM	Unfin Basement	1,066	0
UHS	Unfinished Half Story	322	0
		8,200	3,704

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	101
Description	Single Family
Zone	R-4
Neighborhood	200
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2
Frontage	
Depth	
Assessed Value	$63,680
Appraised Value	$90,960

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
BRN1	Barn 1 Story	FR	Frame	1672 S.F.	$49,660	1
SPL1	InGround Pool			512 S.F.	$13,820	1
GAR1	Garage	FR	Frame	950 S.F.	$21,380	1
SHD1	Shed	FR	Frame	100 S.F.	$1,500	1
BRN8	Pole Barn	FR	Frame	529 S.F.	$11,640	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$414,610	$90,960	$505,570
2014	$477,290	$100,510	$577,800
2012	$477,290	$100,510	$577,800

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$290,230	$63,680	$353,910
2014	$334,100	$70,360	$404,460
2012	$334,100	$70,360	$404,460